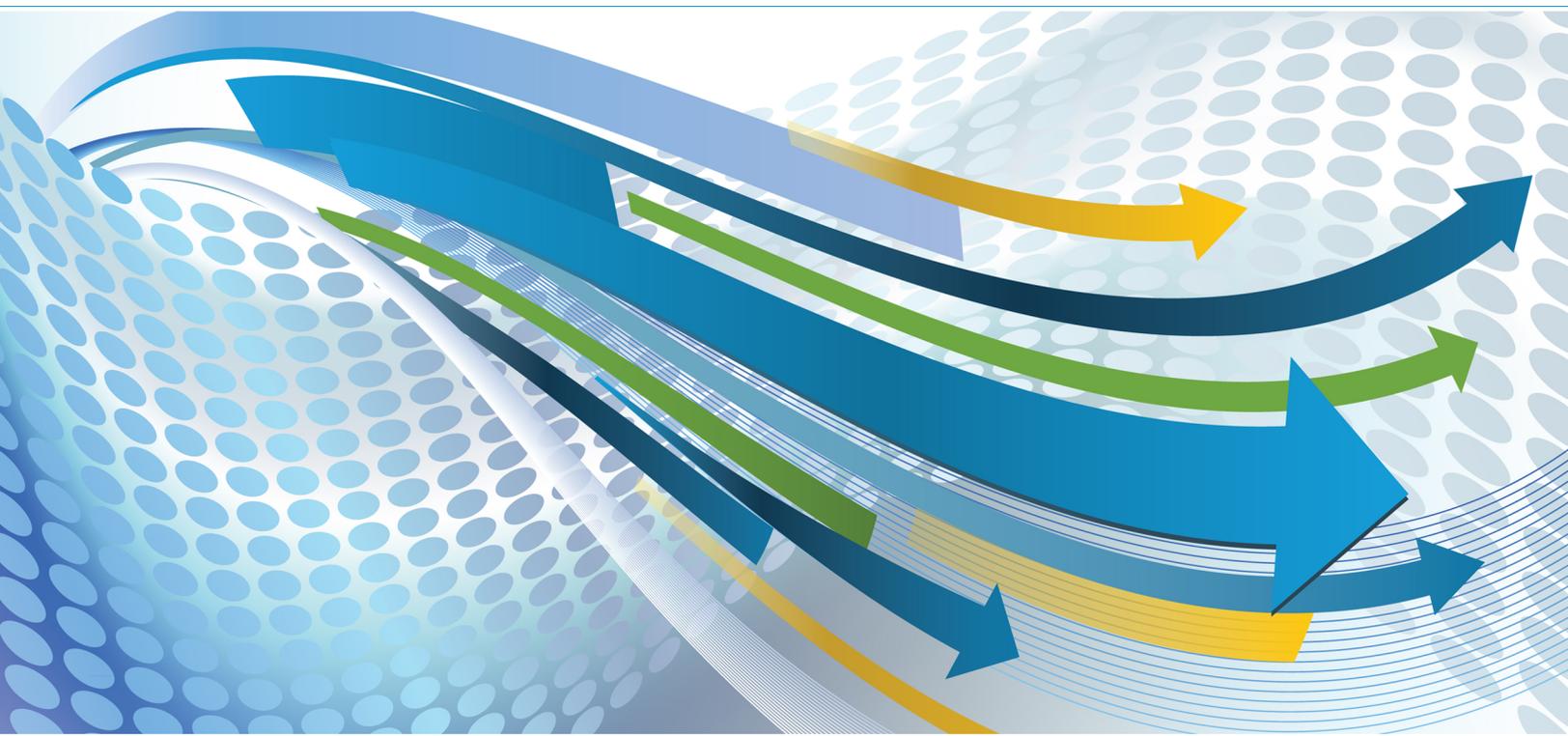


July 2017

Monthly Energy Review



Independent Statistics & Analysis
U.S. Energy Information
Administration

www.eia.gov/mer



Monthly Energy Review

The *Monthly Energy Review (MER)* is the U.S. Energy Information Administration's (EIA) primary report of recent and historical energy statistics. Included are statistics on total energy production, consumption, trade, and energy prices; overviews of petroleum, natural gas, coal, electricity, nuclear energy, renewable energy, and international petroleum; carbon dioxide emissions; and data unit conversions.

Release of the MER is in keeping with responsibilities given to EIA in Public Law 95-91 (Department of Energy Organization Act), which states, in part, in Section 205(a)(2):

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

The MER is intended for use by Members of Congress, federal and state agencies, energy analysts, and the general public. EIA welcomes suggestions from readers regarding the content of the MER and other EIA publications.

Related Monthly Publications: Other monthly EIA reports are *Petroleum Supply Monthly*, *Petroleum Marketing Monthly*, *Natural Gas Monthly*, and *Electric Power Monthly*. For more information, contact EIA's Office of Communications via email at infoctr@eia.gov.

Important Notes About the Data

Data Displayed: For tables beginning in 1949, annual data are usually displayed only in 5-year increments between 1950 and 2000 in the tables in Portable Document Format (PDF) files; however, all annual data are shown in the Excel and comma-separated values (CSV) files. Also, only two to three years of monthly data are displayed in the PDF files; however, for many series, monthly data beginning with January 1973 are available in the Excel and CSV files.

Comprehensive Changes: Each month, most MER tables and figures carry a new month of data, which is usually preliminary (and sometimes estimated or even forecast) and likely to be revised in the succeeding month.

Annual Data From 1949: In 2013, EIA expanded the MER to incorporate annual data as far back as 1949 in those data tables that were previously published in both the *Annual Energy Review (AER)* and MER. Analysts may wish to use the data in this report in conjunction with the AER which offers annual data beginning in 1949 for many related supplemental data series that are not found in the MER. The AER is available at <http://www.eia.gov/totalenergy/data/annual>.

Electronic Access

The MER is available on EIA's website in a variety of formats at <http://www.eia.gov/totalenergy/data/monthly>.

- Full report and sections: PDF files
- Report tables: PDF files
- Table data (unrounded): Excel and CSV files
- Graphs: PDF files

Note: PDF files display selected annual and monthly data; Excel and CSV files display all available annual and monthly data, often at a greater level of precision than the PDF files.

Timing of Release: The MER is posted on the EIA website no later than the last work day of the month at <http://www.eia.gov/totalenergy/data/monthly>.

Monthly Energy Review

July 2017

U.S. Energy Information Administration
Office of Energy Statistics
U.S. Department of Energy
Washington, DC 20585

This report was prepared by the U.S. Energy Information Administration (EIA), the statistical and analytical agency within the U.S. Department of Energy. By law, EIA's data, analyses, and forecasts are independent of approval by any other officer or employee of the United States Government. The views in this report therefore should not be construed as representing those of the Department of Energy or other federal agencies.

Contacts

The *Monthly Energy Review* is prepared by the U.S. Energy Information Administration, Office of Energy Statistics, Office of Survey Development and Statistical Integration, Integrated Energy Statistics Team, under the direction of Barbara T. Fichman, 202-586-5737 (barbara.fichman@eia.gov). Questions and comments specifically related to the *Monthly Energy Review* may be addressed to Alexander Sun, 202-287-5948 (alexander.sun@eia.gov).

For assistance in acquiring data, please contact EIA's Office of Communications at 202-586-8800 (infoctr@eia.gov). Questions about the collection, processing, or interpretation of the information may be directed to the following subject specialists:

Section 1. Energy Overview	Dianne R. Dunn	202-586-2792 dianne.dunn@eia.gov
Section 2. Energy Consumption by Sector	Dianne R. Dunn	202-586-2792 dianne.dunn@eia.gov
Section 3. Petroleum	Jennifer Barrick	202-586-6254 jennifer.barrick@eia.gov
Section 4. Natural Gas	Jennifer Wade	202-586-4749 jennifer.wade@eia.gov
Section 5. Crude Oil and Natural Gas Resource Development	Gary Long	202-586-3467 gary.long@eia.gov
Section 6. Coal	Fadi Shadid	202-586-6393 fadi.shadid@eia.gov
Section 7. Electricity	Ronald S. Hankey	202-586-2630 ronald.hankey@eia.gov
Section 8. Nuclear Energy	Stan Kaplan	202-586-5114 stan.kaplan@eia.gov
Section 9. Energy Prices		
Petroleum	Maureen Klein	202-586-8013 maureen.klein@eia.gov
Natural Gas	Jennifer Wade	202-586-4749 jennifer.wade@eia.gov
Average Retail Prices of Electricity	Peter Wong	202-586-7574 peter.wong@eia.gov
Cost of Fuel at Electric Generating Plants	Rebecca Peterson	202-586-4509 rebecca.peterson@eia.gov
Section 10. Renewable Energy	Stan Kaplan	202-586-5114 stan.kaplan@eia.gov
Section 11. International Petroleum	Patricia Smith	202-586-6925 patricia.smith@eia.gov
Section 12. Environment	Perry Lindstrom	202-586-0934 perry.lindstrom@eia.gov

Contents

	Page
Section	1. Energy Overview 1
Section	2. Energy Consumption by Sector. 27
Section	3. Petroleum. 47
Section	4. Natural Gas. 81
Section	5. Crude Oil and Natural Gas Resource Development. 89
Section	6. Coal. 95
Section	7. Electricity. 105
Section	8. Nuclear Energy. 127
Section	9. Energy Prices. 131
Section	10. Renewable Energy. 149
Section	11. International Petroleum. 167
Section	12. Environment. 177
Appendix	A. British Thermal Unit Conversion Factors. 191
Appendix	B. Metric Conversion Factors, Metric Prefixes, and Other Physical Conversion Factors. 205
Appendix	C. Population, U.S. Gross Domestic Product, and U.S. Gross Output. 209
Appendix	D. Estimated Primary Energy Consumption in the United States, Selected Years, 1635–1945. 211
Appendix	E. Alternative Approaches for Deriving Energy Contents of Noncombustible Renewables. 213
Glossary	. . . . . 217

Tables

	Page
Section 1. Energy Overview	
1.1 Primary Energy Overview.	3
1.2 Primary Energy Production by Source.	5
1.3 Primary Energy Consumption by Source.	7
1.4a Primary Energy Imports by Source.	10
1.4b Primary Energy Exports by Source and Total Net Imports.	11
1.5 Merchandise Trade Value.	13
1.6 Cost of Fuels to End Users in Real (1982–1984) Dollars.	15
1.7 Primary Energy Consumption, Energy Expenditures, and Carbon Dioxide Emissions Indicators.	17
1.8 Motor Vehicle Mileage, Fuel Consumption, and Fuel Economy.	19
1.9 Heating Degree Days by Census Division.	20
1.10 Cooling Degree Days by Census Division.	21
Section 2. Energy Consumption by Sector	
2.1 Energy Consumption by Sector.	29
2.2 Residential Sector Energy Consumption.	31
2.3 Commercial Sector Energy Consumption.	33
2.4 Industrial Sector Energy Consumption.	35
2.5 Transportation Sector Energy Consumption.	37
2.6 Electric Power Sector Energy Consumption.	39
2.7 U.S. Government Energy Consumption by Agency, Fiscal Years.	40
2.8 U.S. Government Energy Consumption by Source, Fiscal Years.	41
Section 3. Petroleum	
3.1 Petroleum Overview	49
3.2 Refinery and Blender Net Inputs and Net Production.	51
3.3 Petroleum Trade	
3.3a Overview.	53
3.3b Imports and Exports by Type.	55
3.3c Imports From OPEC Countries.	56
3.3d Imports From Non-OPEC Countries.	57
3.4 Petroleum Stocks.	59
3.5 Petroleum Products Supplied by Type.	61
3.6 Heat Content of Petroleum Products Supplied by Type.	63
3.7 Petroleum Consumption	
3.7a Residential and Commercial Sectors.	65
3.7b Industrial Sector.	66
3.7c Transportation and Electric Power Sectors.	67
3.8 Heat Content of Petroleum Consumption	
3.8a Residential and Commercial Sectors.	70
3.8b Industrial Sector.	71
3.8c Transportation and Electric Power Sectors.	72
Section 4. Natural Gas	
4.1 Natural Gas Overview.	83
4.2 Natural Gas Trade by Country	84
4.3 Natural Gas Consumption by Sector.	85
4.4 Natural Gas in Underground Storage.	86

Tables

	Page
Section 5. Crude Oil and Natural Gas Resource Development	
5.1 Crude Oil and Natural Gas Drilling Activity Measurements.	91
5.2 Crude Oil and Natural Gas Exploratory and Development Wells.	92
Section 6. Coal	
6.1 Coal Overview.	97
6.2 Coal Consumption by Sector.	98
6.3 Coal Stocks by Sector.	99
Section 7. Electricity	
7.1 Electricity Overview.	107
7.2 Electricity Net Generation	
7.2a Total (All Sectors).	109
7.2b Electric Power Sector.	110
7.2c Commercial and Industrial Sectors.	111
7.3 Consumption of Combustible Fuels for Electricity Generation	
7.3a Total (All Sectors).	113
7.3b Electric Power Sector.	114
7.3c Commercial and Industrial Sectors (Selected Fuels).	115
7.4 Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output	
7.4a Total (All Sectors).	117
7.4b Electric Power Sector.	118
7.4c Commercial and Industrial Sectors (Selected Fuels).	119
7.5 Stocks of Coal and Petroleum: Electric Power Sector.	121
7.6 Electricity End Use.	123
Section 8. Nuclear Energy	
8.1 Nuclear Energy Overview.	129
Section 9. Energy Prices	
9.1 Crude Oil Price Summary.	133
9.2 F.O.B. Costs of Crude Oil Imports From Selected Countries.	134
9.3 Landed Costs of Crude Oil Imports From Selected Countries.	135
9.4 Retail Motor Gasoline and On-Highway Diesel Fuel Prices.	136
9.5 Refiner Prices of Residual Fuel Oil.	137
9.6 Refiner Prices of Petroleum Products for Resale.	138
9.7 Refiner Prices of Petroleum Products to End Users.	139
9.8 Average Retail Prices of Electricity.	141
9.9 Cost of Fossil-Fuel Receipts at Electric Generating Plants.	143
9.10 Natural Gas Prices.	145
Section 10. Renewable Energy	
10.1 Renewable Energy Production and Consumption by Source.	151
10.2 Renewable Energy Consumption	
10.2a Residential and Commercial Sectors.	152
10.2b Industrial and Transportation Sectors.	153
10.2c Electric Power Sector	154
10.3 Fuel Ethanol Overview.	155
10.4 Biodiesel and Other Renewable Fuels Overview.	156
10.5 Solar Energy Consumption.	157
10.6 Solar Electricity Net Generation.	158

Tables

Page

Section 11. International Petroleum

11.1	World Crude Oil Production	
	11.1a OPEC Members.	170
	11.1b Persian Gulf Nations, Non-OPEC, and World.	171
11.2	Petroleum Consumption in OECD Countries.	173
11.3	Petroleum Stocks in OECD Countries.	175

Section 12. Environment

12.1	Carbon Dioxide Emissions From Energy Consumption by Source	179
12.2	Carbon Dioxide Emissions From Energy Consumption: Residential Sector	181
12.3	Carbon Dioxide Emissions From Energy Consumption: Commercial Sector.	182
12.4	Carbon Dioxide Emissions From Energy Consumption: Industrial Sector.	183
12.5	Carbon Dioxide Emissions From Energy Consumption: Transportation Sector.	184
12.6	Carbon Dioxide Emissions From Energy Consumption: Electric Power Sector.	185
12.7	Carbon Dioxide Emissions From Biomass Energy Consumption	186

Appendix A. British Thermal Unit Conversion Factors

A1	Approximate Heat Content of Petroleum and Other Liquids.	191
A2	Approximate Heat Content of Petroleum Production, Imports, and Exports.	192
A3	Approximate Heat Content of Petroleum Consumption and Fuel Ethanol.	193
A4	Approximate Heat Content of Natural Gas.	194
A5	Approximate Heat Content of Coal and Coal Coke.	195
A6	Approximate Heat Rates for Electricity, and Heat Content of Electricity.	196

Appendix B. Metric Conversion Factors, Metric Prefixes, and Other Physical Conversion Factors

B1	Metric Conversion Factors.	206
B2	Metric Prefixes.	207
B3	Other Physical Conversion Factors.	207

Appendix C. Population, U.S. Gross Domestic Product, and U.S. Gross Output

C1	Population, U.S. Gross Domestic Product, and U.S. Gross Output.	209
----	---	-----

Appendix D. Estimated Primary Energy Consumption in the United States, Selected Years, 1635–1945

D1	Estimated Primary Energy Consumption in the United States, Selected Years, 1635–1945.	211
----	---	-----

Appendix E. Alternative Approaches for Deriving Energy Contents of Noncombustible Renewables

E1	Noncombustible Renewable Primary Energy Consumption:	
	E1a Conventional Hydroelectric Power, Geothermal, and Wind.	214
	E1b Solar and Total.	215

Figures

	Page
Section 1. Energy Overview	
1.1 Primary Energy Overview.	2
1.2 Primary Energy Production.	4
1.3 Primary Energy Consumption.	6
1.4a Primary Energy Imports and Exports.	8
1.4b Primary Energy Net Imports.	9
1.5 Merchandise Trade Value.	12
1.6 Cost of Fuels to End Users in Real (1982–1984) Dollars.	14
1.7 Primary Energy Consumption and Energy Expenditures Indicators.	16
1.8 Motor Vehicle Mileage, Fuel Consumption, and Fuel Economy, 1949–2015	18
Section 2. Energy Consumption by Sector	
2.1 Energy Consumption by Sector.	28
2.2 Residential Sector Energy Consumption.	30
2.3 Commercial Sector Energy Consumption.	32
2.4 Industrial Sector Energy Consumption.	34
2.5 Transportation Sector Energy Consumption.	36
2.6 Electric Power Sector Energy Consumption.	38
Section 3. Petroleum	
3.1 Petroleum Overview	48
3.2 Refinery and Blender Net Inputs and Net Production.	50
3.3 Petroleum Trade	
3.3a Overview.	52
3.3b Imports.	54
3.4 Petroleum Stocks.	58
3.5 Petroleum Products Supplied by Type.	60
3.6 Heat Content of Petroleum Products Supplied by Type.	62
3.7 Petroleum Consumption by Sector.	64
3.8a Heat Content of Petroleum Consumption by End-User Sector, 1949–2016.	68
3.8b Heat Content of Petroleum Consumption by End-User Sector, Monthly.	69
Section 4. Natural Gas	
4.1 Natural Gas.	82
Section 5. Crude Oil and Natural Gas Resource Development	
5.1 Crude Oil and Natural Gas Resource Development Indicators.	90
Section 6. Coal	
6.1 Coal.	96
Section 7. Electricity	
7.1 Electricity Overview.	106
7.2 Electricity Net Generation.	108
7.3 Consumption of Selected Combustible Fuels for Electricity Generation.	112
7.4 Consumption of Selected Combustible Fuels for Electricity Generation and Useful Thermal Output.	116
7.5 Stocks of Coal and Petroleum: Electric Power Sector.	120
7.6 Electricity End Use.	122

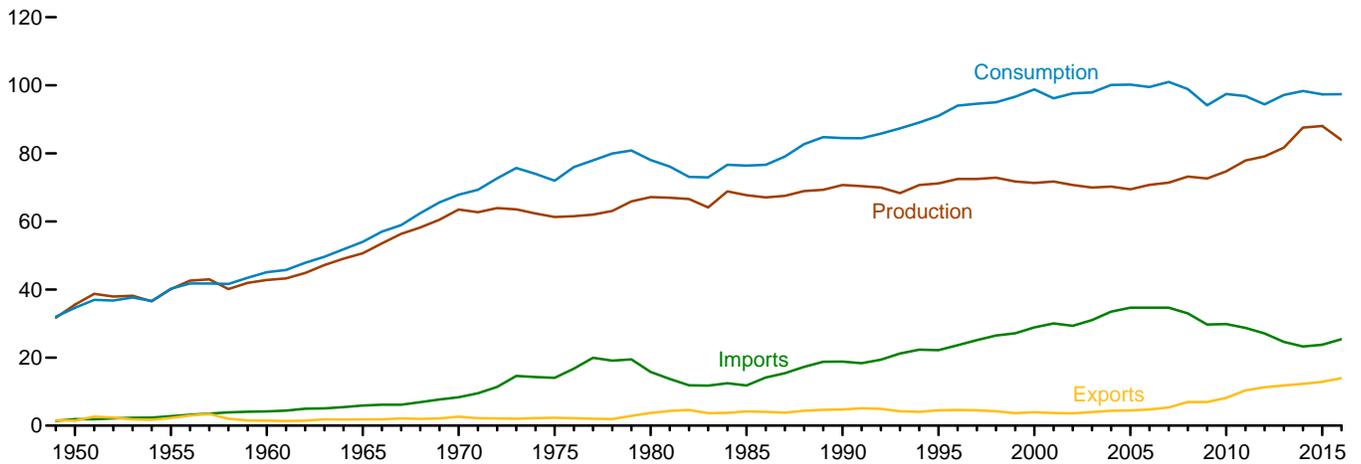
Figures

	Page
Section 8. Nuclear Energy	
8.1 Nuclear Energy Overview.	128
Section 9. Energy Prices	
9.1 Petroleum Prices.	132
9.2 Average Retail Prices of Electricity.	140
9.3 Cost of Fossil-Fuel Receipts at Electric Generating Plants.	142
9.4 Natural Gas Prices.	144
Section 10. Renewable Energy	
10.1 Renewable Energy Consumption.	150
Section 11. International Petroleum	
11.1 World Crude Oil Production	
11.1a Overview.	168
11.1b By Selected Countries.	169
11.2 Petroleum Consumption in OECD Countries.	172
11.3 Petroleum Stocks in OECD Countries.	174
Section 12. Environment	
12.1 Carbon Dioxide Emissions From Energy Consumption by Source	178
12.2 Carbon Dioxide Emissions From Energy Consumption by Sector.	180

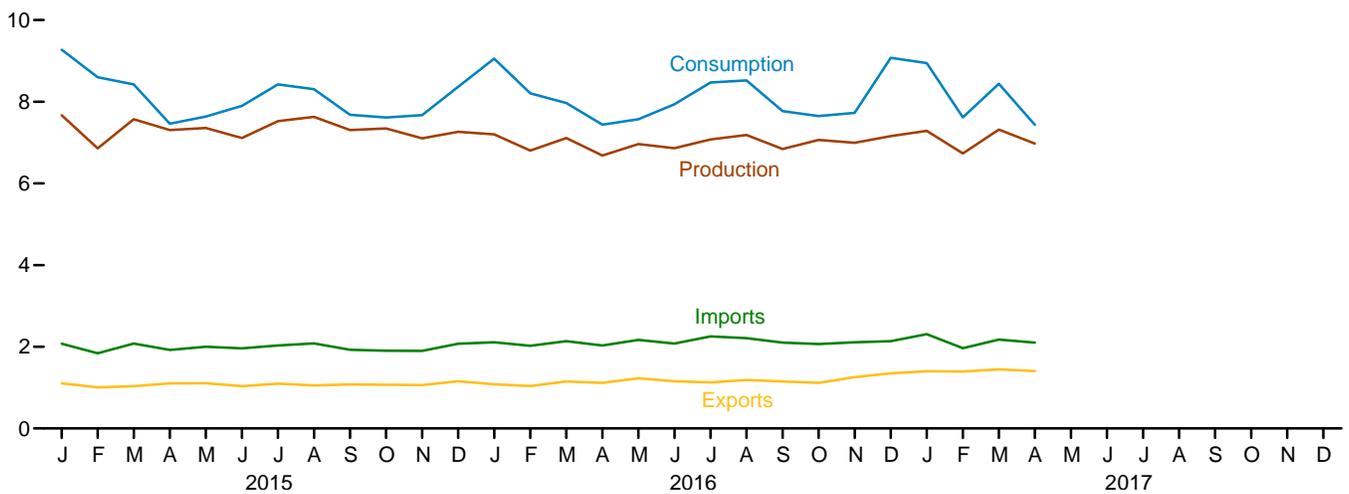
1. Energy Overview

Figure 1.1 Primary Energy Overview
(Quadrillion Btu)

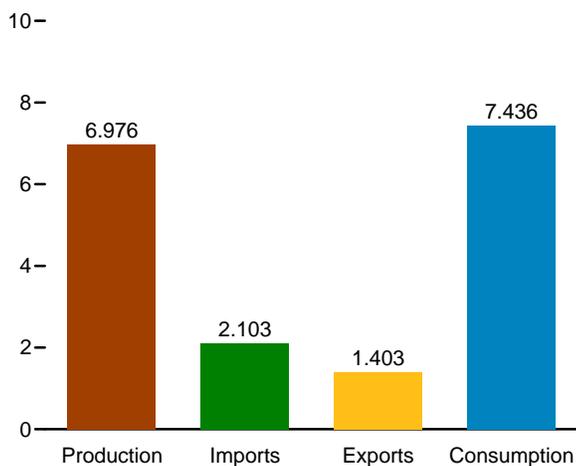
Overview, 1949–2016



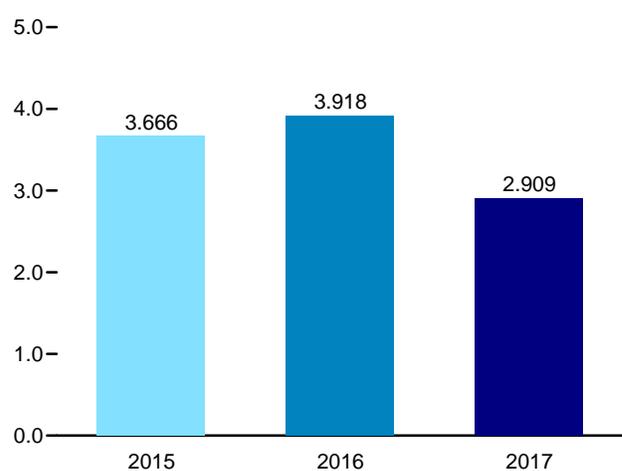
Overview, Monthly



Overview, April 2017



Net Imports, January



Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.
Source: Table 1.1.

Table 1.1 Primary Energy Overview
(Quadrillion Btu)

	Production				Trade			Stock Change and Other ^d	Consumption			
	Fossil Fuels ^a	Nuclear Electric Power	Renewable Energy ^b	Total	Imports	Exports	Net Imports ^c		Fossil Fuels ^e	Nuclear Electric Power	Renewable Energy ^b	Total ^f
1950 Total	32.563	0.000	2.978	35.540	1.913	1.465	0.448	-1.372	31.632	0.000	2.978	34.616
1955 Total	37.364	.000	2.784	40.148	2.790	2.286	.504	-.444	37.410	.000	2.784	40.208
1960 Total	39.869	.006	2.928	42.803	4.188	1.477	2.710	-.427	42.137	.006	2.928	45.086
1965 Total	47.235	.043	3.396	50.674	5.892	1.829	4.063	-.722	50.577	.043	3.396	54.015
1970 Total	59.186	.239	4.070	63.495	8.342	2.632	5.709	-1.367	63.522	.239	4.070	67.838
1975 Total	54.733	1.900	4.687	61.320	14.032	2.323	11.709	-1.065	65.357	1.900	4.687	71.965
1980 Total	59.008	2.739	5.428	67.175	15.796	3.695	12.101	-1.210	69.828	2.739	5.428	78.067
1985 Total	57.539	4.076	6.084	67.698	11.781	4.196	7.584	1.110	66.093	4.076	6.084	76.392
1990 Total	58.560	6.104	6.040	70.704	18.817	4.752	14.065	-.284	72.332	6.104	6.040	84.484
1995 Total	57.540	7.075	6.557	71.173	22.180	4.496	17.684	2.174	77.262	7.075	6.559	91.031
2000 Total	57.366	7.862	6.102	71.330	28.865	3.962	24.904	2.583	84.735	7.862	6.104	98.817
2001 Total	58.541	8.029	5.162	71.732	30.052	3.731	26.321	-1.883	82.906	8.029	5.160	96.170
2002 Total	56.834	8.145	5.731	70.710	29.331	3.608	25.722	1.211	83.700	8.145	5.726	97.643
2003 Total	56.033	7.960	5.942	69.935	31.007	4.013	26.994	.989	83.992	7.960	5.944	97.918
2004 Total	55.942	8.223	6.063	70.228	33.492	4.351	29.141	.721	85.754	8.223	6.075	100.090
2005 Total	55.049	8.161	6.221	69.431	34.659	4.462	30.197	.560	85.709	8.161	6.233	100.188
2006 Total	55.934	8.215	6.586	70.735	34.649	4.727	29.921	-1.171	84.570	8.215	6.637	99.485
2007 Total	56.435	8.459	6.510	71.404	34.679	5.338	29.341	-.270	85.927	8.459	6.523	101.015
2008 Total	57.588	8.426	7.191	73.205	32.970	6.949	26.021	-.336	83.178	8.426	7.174	98.891
2009 Total	56.669	8.355	7.620	72.645	29.690	6.920	22.770	-1.297	78.042	8.355	7.604	94.178
2010 Total	58.216	8.434	8.077	74.728	29.866	8.176	21.690	1.027	80.891	8.434	8.030	97.445
2011 Total	60.550	8.269	9.095	77.913	28.748	10.373	18.375	.553	79.447	8.269	8.999	96.842
2012 Total	62.303	8.062	8.743	79.108	27.068	11.267	15.801	-.492	77.487	8.062	8.706	94.416
2013 Total	64.201	8.244	9.250	81.696	24.623	11.788	12.835	2.627	79.440	8.244	9.276	97.157
2014 Total	69.653	8.338	9.607	87.597	23.241	12.270	10.971	-.239	80.240	8.338	9.570	98.329
2015 January	6.084	.777	.808	7.669	2.075	1.103	.972	.632	7.685	.777	.793	9.273
February	5.443	.664	.753	6.859	1.840	1.006	.834	.908	7.175	.664	.748	8.601
March	6.080	.675	.817	7.572	2.079	1.035	1.044	-.192	6.917	.675	.813	8.424
April	5.866	.625	.814	7.305	1.922	1.105	.816	-.661	6.003	.625	.812	7.460
May	5.860	.688	.807	7.355	2.000	1.110	.890	-.606	6.122	.688	.808	7.639
June	5.623	.717	.773	7.112	1.963	1.032	.930	-.145	6.386	.717	.775	7.897
July	5.978	.747	.798	7.523	2.032	1.095	.937	-.034	6.858	.747	.799	8.425
August	6.101	.757	.772	7.630	2.082	1.054	1.028	-.349	6.753	.757	.776	8.308
September	5.890	.695	.723	7.308	1.925	1.076	.849	-.475	6.237	.695	.730	7.682
October	5.956	.633	.755	7.345	1.901	1.070	.832	-.562	6.210	.633	.755	7.614
November	5.667	.630	.807	7.104	1.899	1.060	.839	-.269	6.222	.630	.804	7.674
December	5.673	.728	.862	7.264	2.076	1.156	.920	.183	6.764	.728	.857	8.367
Total	70.221	8.337	9.487	88.045	23.794	12.902	10.892	-1.572	79.330	8.337	9.471	97.365
2016 January	5.582	.758	.861	7.202	2.111	1.080	1.031	.824	R 7.433	.758	.844	R 9.057
February	5.267	.686	.852	6.805	2.022	1.038	.984	.417	R 6.658	.686	.844	R 8.206
March	5.495	.692	.924	7.110	2.139	1.151	.988	-.131	6.341	.692	.916	R 7.967
April	5.157	.652	.875	6.684	2.031	R 1.116	R .915	R -.160	5.902	.652	.870	R 7.438
May	5.382	.696	.887	6.965	2.169	R 1.227	R .942	R -.334	5.975	.696	.883	R 7.573
June	5.314	.703	.845	6.861	2.078	R 1.155	R .923	R .154	R 6.374	.703	.839	R 7.938
July	5.484	.736	.856	7.076	2.252	R 1.126	R 1.126	R .269	R 6.851	.736	.858	R 8.471
August	5.635	.748	.804	7.187	R 2.212	R 1.187	R 1.026	R .310	6.946	.748	.804	R 8.522
September	5.387	.684	.773	6.844	R 2.103	R 1.153	R .950	R -.023	6.295	.684	.772	7.771
October	5.612	.635	.819	7.066	R 2.065	R 1.117	R .948	-.365	6.183	.635	.813	R 7.649
November	5.497	.682	.817	6.996	2.111	R 1.255	R .856	R -.126	6.206	.682	.817	7.726
December	5.499	.749	.908	7.157	R 2.135	R 1.350	R .785	R 1.134	R 7.404	.749	.900	R 9.076
Total	65.310	8.422	10.220	83.953	R 25.429	R 13.955	R 11.474	R 1.967	R 78.569	8.422	10.161	R 97.394
2017 January	R 5.602	.765	.920	R 7.286	R 2.308	R 1.399	.909	R .753	R 7.264	.765	.897	R 8.948
February	R 5.197	.670	.866	R 6.733	R 1.966	R 1.393	.573	R .314	6.080	.670	.852	R 7.619
March	R 5.615	.681	1.023	R 7.318	R 2.176	R 1.449	R .727	R .394	6.731	.681	1.010	8.440
April	5.394	.593	.988	6.976	2.103	1.403	.700	-.240	5.842	.593	.983	7.436
4-Month Total	21.808	2.709	3.797	28.313	8.553	5.644	2.909	1.221	25.916	2.709	3.741	32.443
2016 4-Month Total	21.500	2.789	3.512	27.801	8.303	4.384	3.918	.950	26.334	2.789	3.474	32.669
2015 4-Month Total	23.473	2.741	3.192	29.405	7.916	4.249	3.666	.687	27.779	2.741	3.167	33.758

^a Coal, natural gas (dry), crude oil, and natural gas plant liquids.
^b See Tables 10.1–10.2c for notes on series components and estimation; and see Note, "Renewable Energy Production and Consumption," at end of Section 10.
^c Net imports equal imports minus exports.
^d Includes petroleum stock change and adjustments; natural gas net storage withdrawals and balancing item; coal stock change, losses, and unaccounted for; fuel ethanol stock change; and biodiesel stock change and balancing item.
^e Coal, coal coke net imports, natural gas, and petroleum.
^f Also includes electricity net imports.
R=Revised.

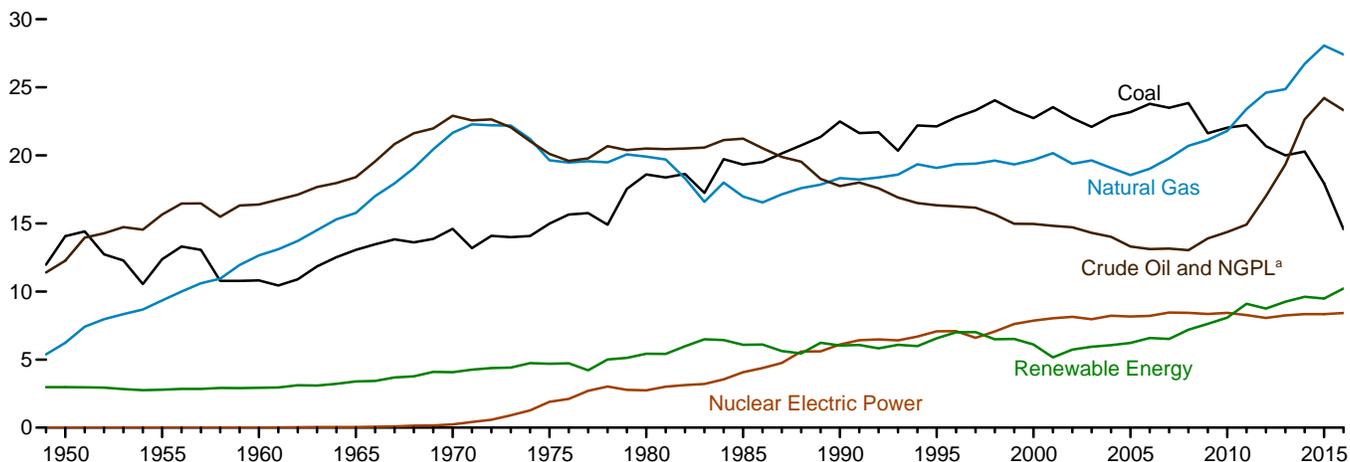
Notes: • See "Primary Energy," "Primary Energy Production," and "Primary Energy Consumption," in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

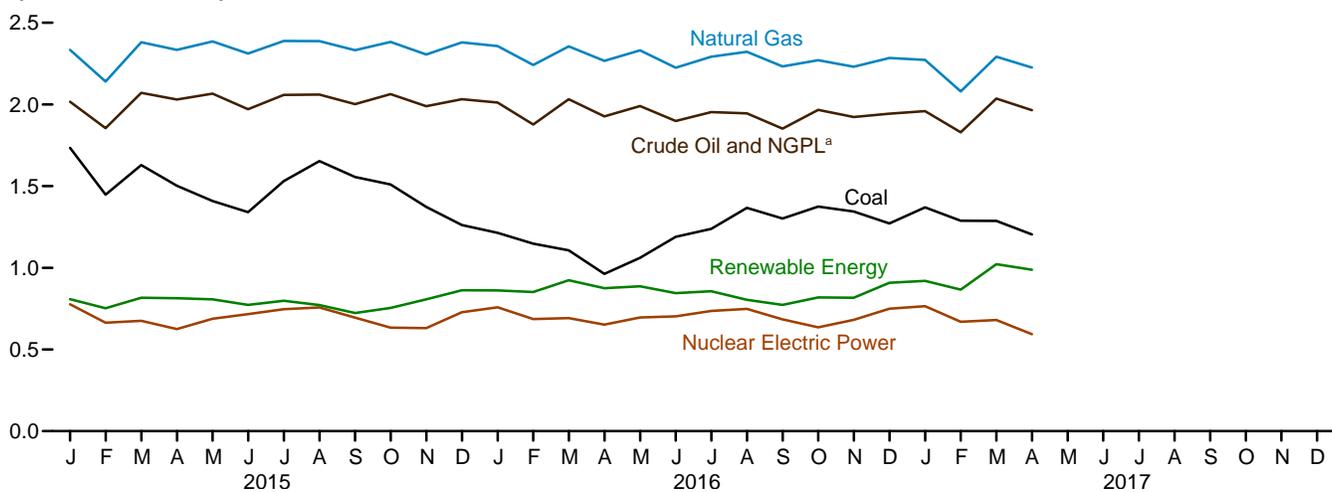
Sources: • **Production:** Table 1.2. • **Trade:** Tables 1.4a and 1.4b. • **Stock Change and Other:** Calculated as consumption minus production and net imports. • **Consumption:** Table 1.3.

Figure 1.2 Primary Energy Production
(Quadrillion Btu)

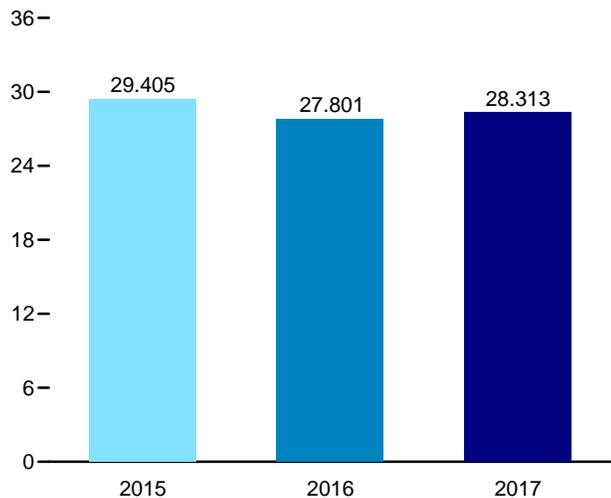
By Source, 1949–2016



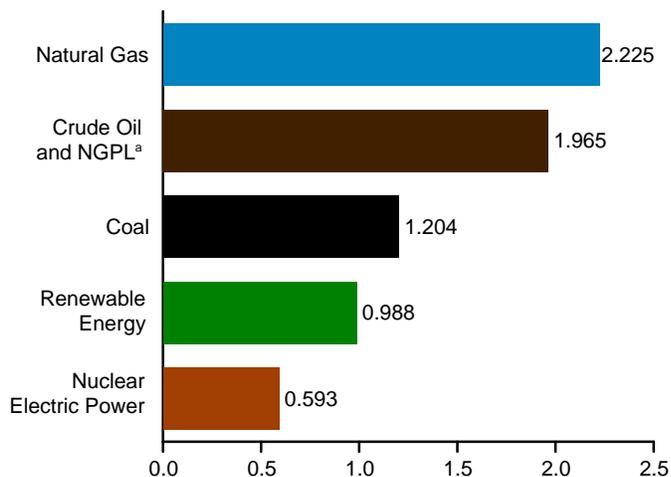
By Source, Monthly



Total, January



By Source, April 2017



^a Natural gas plant liquids.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.

Source: Table 1.2.

Table 1.2 Primary Energy Production by Source
(Quadrillion Btu)

	Fossil Fuels					Nuclear Electric Power	Renewable Energy ^a						Total
	Coal ^b	Natural Gas (Dry)	Crude Oil ^c	NGPL ^d	Total		Hydroelectric Power ^e	Geo-thermal	Solar	Wind	Bio-mass	Total	
1950 Total	14.060	6.233	11.447	0.823	32.563	0.000	1.415	NA	NA	NA	1.562	2.978	35.540
1955 Total	12.370	9.345	14.410	1.240	37.364	.000	1.360	NA	NA	NA	1.424	2.784	40.148
1960 Total	10.817	12.656	14.935	1.461	39.869	.006	1.608	(s)	NA	NA	1.320	2.928	42.803
1965 Total	13.055	15.775	16.521	1.883	47.235	.043	2.059	.002	NA	NA	1.335	3.396	50.674
1970 Total	14.607	21.666	20.401	2.512	59.186	.239	2.634	.006	NA	NA	1.431	4.070	63.495
1975 Total	14.989	19.640	17.729	2.374	54.733	1.900	3.155	.034	NA	NA	1.499	4.687	61.320
1980 Total	18.598	19.908	18.249	2.254	59.008	2.739	2.900	.053	NA	NA	2.475	5.428	67.175
1985 Total	19.325	16.980	18.992	2.241	57.539	4.076	2.970	.097	(s)	(s)	3.016	6.084	67.698
1990 Total	22.488	18.326	15.571	2.175	58.560	6.104	3.046	.171	.059	.029	2.735	6.040	70.704
1995 Total	22.130	19.082	13.887	2.442	57.540	7.075	3.205	.152	.068	.033	3.099	6.557	71.173
2000 Total	22.735	19.662	12.358	2.611	57.366	7.862	2.811	.164	.063	.057	3.006	6.102	71.330
2001 Total	23.547	20.166	12.282	2.547	58.541	8.029	2.242	.164	.062	.070	2.624	5.162	71.732
2002 Total	22.732	19.382	12.160	2.559	56.834	8.145	2.689	.171	.060	.105	2.705	5.731	70.710
2003 Total	22.094	19.633	11.960	2.346	56.033	7.960	2.793	.173	.058	.113	2.805	5.942	69.935
2004 Total	22.852	19.074	11.550	2.466	55.942	8.223	2.688	.178	.058	.142	2.996	6.063	70.228
2005 Total	23.185	18.556	10.974	2.334	55.049	8.161	2.703	.181	.058	.178	3.101	6.221	69.431
2006 Total	23.790	19.022	10.767	2.356	55.934	8.215	2.869	.181	.061	.264	3.212	6.586	70.735
2007 Total	23.493	19.786	10.747	2.409	56.435	8.459	2.446	.186	.065	.341	3.472	6.510	71.404
2008 Total	23.851	20.703	10.614	2.419	57.588	8.426	2.511	.192	.074	.546	3.868	7.191	73.205
2009 Total	21.624	21.139	11.332	2.574	56.669	8.355	2.669	.200	.078	.721	3.953	7.620	72.645
2010 Total	22.038	21.806	11.591	2.781	58.216	8.434	2.539	.208	.090	.923	4.316	8.077	74.728
2011 Total	22.221	23.406	11.952	2.970	60.550	8.269	3.103	.212	.111	1.168	4.501	9.095	77.913
2012 Total	20.677	24.610	13.770	3.246	62.303	8.062	2.629	.212	.157	1.340	4.406	8.743	79.108
2013 Total	20.001	24.859	15.809	3.532	64.201	8.244	2.562	.214	.225	1.601	4.647	9.250	81.696
2014 Total	20.286	26.718	18.552	4.096	69.653	8.338	2.467	.214	.337	1.728	4.861	9.607	87.597
2015 January	1.734	2.334	1.662	.355	6.084	.777	.225	.018	.021	.141	.403	.808	7.669
February	1.448	2.140	1.523	.331	5.443	.664	.208	.017	.025	.139	.364	.753	6.859
March	1.628	2.380	1.695	.376	6.080	.675	.226	.018	.035	.143	.395	.817	7.572
April	1.502	2.334	1.651	.379	5.866	.625	.209	.017	.040	.167	.381	.814	7.305
May	1.409	2.385	1.679	.387	5.860	.688	.188	.018	.043	.160	.398	.807	7.355
June	1.341	2.311	1.598	.373	5.623	.717	.190	.017	.043	.125	.397	.773	7.112
July	1.531	2.389	1.669	.389	5.978	.747	.196	.018	.045	.127	.411	.798	7.523
August	1.654	2.387	1.663	.397	6.101	.757	.178	.018	.045	.122	.408	.772	7.630
September	1.555	2.332	1.616	.386	5.890	.695	.150	.016	.039	.130	.387	.723	7.308
October	1.510	2.383	1.658	.405	5.956	.633	.155	.018	.034	.153	.395	.755	7.345
November	1.373	2.305	1.596	.393	5.667	.630	.180	.018	.030	.183	.396	.807	7.104
December	1.262	2.380	1.635	.397	5.673	.728	.216	.018	.027	.187	.414	.862	7.264
Total	17.946	28.061	19.647	4.567	70.221	8.337	2.321	.212	.426	1.777	4.751	9.487	88.045
2016 January	1.214	E 2.357	E 1.631	.381	5.582	.758	.237	.019	.027	.173	.406	.861	7.202
February	1.148	E 2.242	E 1.518	.359	5.267	.686	.225	.018	.038	.188	.383	.852	6.805
March	1.107	E 2.356	E 1.627	.405	5.495	.692	.252	.019	.045	.205	.403	.924	7.110
April	.963	E 2.267	E 1.536	.391	5.157	.652	.237	.018	.050	.193	.377	.875	6.684
May	1.061	E 2.331	E 1.576	.414	5.382	.696	.236	.019	.058	.175	.398	.887	6.965
June	1.189	E 2.225	E 1.495	.404	5.314	.703	.213	.018	.059	.152	.403	.845	6.861
July	1.238	E 2.292	E 1.542	.412	5.484	.736	.198	.019	.064	.164	.412	.856	7.076
August	1.367	E 2.322	E 1.554	.392	5.635	.748	.180	.019	.062	.126	.416	.804	7.187
September	1.302	E 2.233	E 1.471	.382	5.387	.684	.152	.019	.057	.153	.392	.773	6.844
October	1.374	E 2.271	E 1.558	.408	5.612	.635	.161	.019	.050	.190	.399	.819	7.066
November	1.344	E 2.230	E 1.521	.402	5.497	.682	.175	.019	.042	.180	.401	.817	6.996
December	1.271	E 2.285	E 1.557	.386	5.499	.749	.210	.020	.037	.214	.427	.908	7.157
Total	14.578	E 27.412	E 18.586	4.735	65.310	8.422	2.477	.226	.587	2.114	4.816	10.220	83.953
2017 January	R 1.369	E 2.273	E 1.571	.388	R 5.602	.765	.258	.020	.036	.190	.416	.920	R 7.286
February	R 1.288	RE 2.080	RE 1.454	.375	R 5.197	.670	.229	.018	.041	.202	.376	.866	R 6.733
March	R 1.287	RE 2.292	RE 1.615	.420	R 5.615	.681	.281	.020	.066	.239	.417	1.023	R 7.318
April	1.204	E 2.225	E 1.559	.405	5.394	.593	.272	.019	.072	.237	.388	.988	6.976
4-Month Total	5.149	E 8.870	E 6.200	1.589	21.808	2.709	1.041	.076	.215	.867	1.597	3.797	28.313
2016 4-Month Total	4.431	E 9.222	E 6.312	1.536	21.500	2.789	.951	.074	.159	.759	1.568	3.512	27.801
2015 4-Month Total	6.312	9.188	6.532	1.441	23.473	2.741	.868	.070	.121	.590	1.543	3.192	29.405

^a Most data are estimates. See Tables 10.1–10.2c for notes on series components and estimation; and see Note, "Renewable Energy Production and Consumption," at end of Section 10.

^b Beginning in 1989, includes waste coal supplied. Beginning in 2001, also includes a small amount of refuse recovery. See Table 6.1.

^c Includes lease condensate.

^d Natural gas plant liquids.

^e Conventional hydroelectric power.

R=Revised. E=Estimate. NA=Not available. (s)=Less than 0.5 trillion Btu.

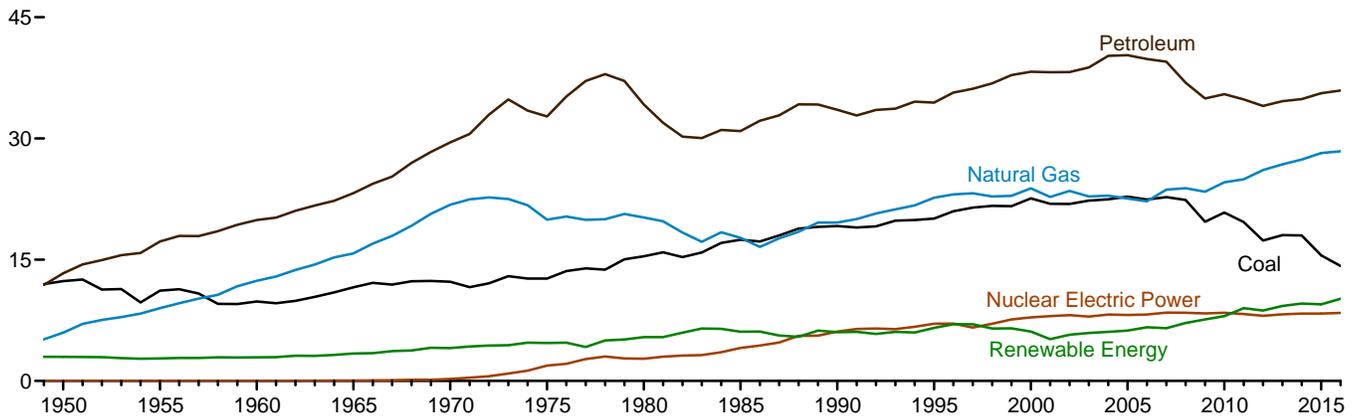
Notes: • See "Primary Energy Production" in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

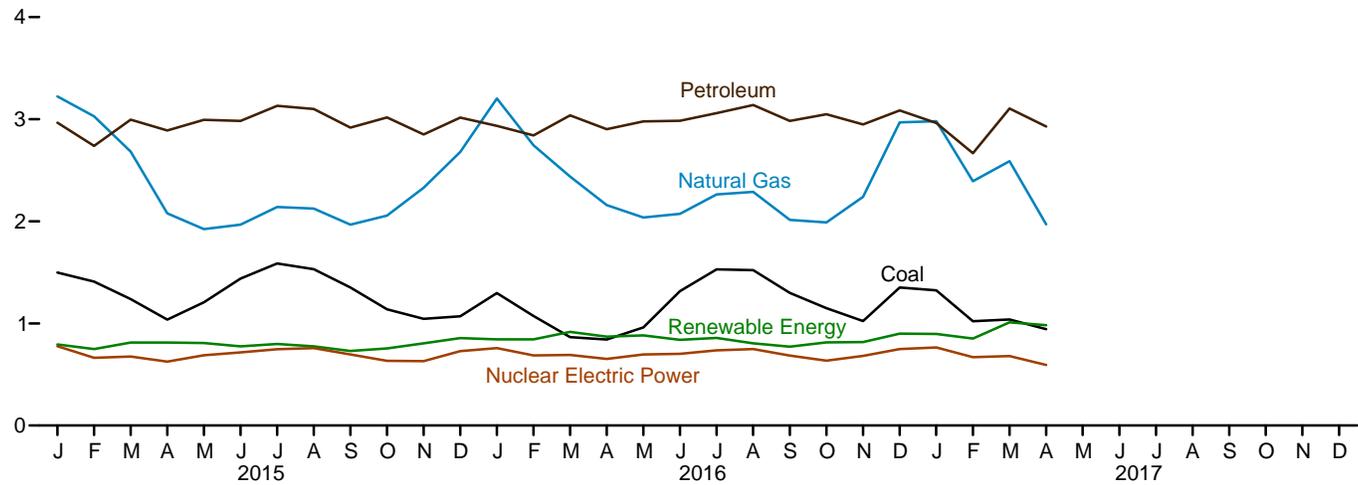
Sources: See end of section.

Figure 1.3 Primary Energy Consumption
(Quadrillion Btu)

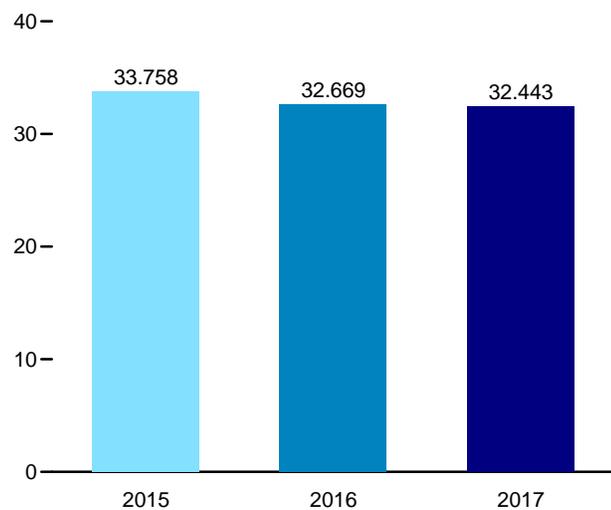
By Source,^a 1949–2016



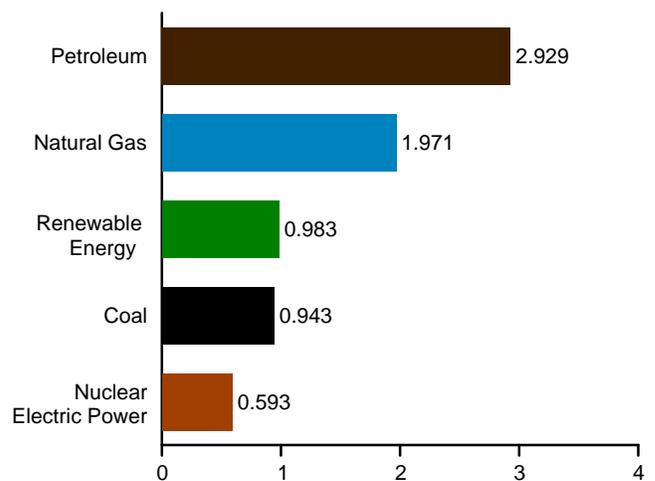
By Source,^a Monthly



Total, January



By Source,^a April 2017



^a Small quantities of net imports of coal coke and electricity are not shown.
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.
Source: Table 1.3.

Table 1.3 Primary Energy Consumption by Source
(Quadrillion Btu)

	Fossil Fuels				Nuclear Electric Power	Renewable Energy ^a						Total ^f
	Coal	Natural Gas ^b	Petroleum ^c	Total ^d		Hydroelectric Power ^e	Geothermal	Solar	Wind	Biomass	Total	
1950 Total	12.347	5.968	13.315	31.632	0.000	1.415	NA	NA	NA	1.562	2.978	34.616
1955 Total	11.167	8.998	17.255	37.410	.000	1.360	NA	NA	NA	1.424	2.784	40.208
1960 Total	9.838	12.385	19.919	42.137	.006	1.608	(s)	NA	NA	1.320	2.928	45.086
1965 Total	11.581	15.769	23.246	50.577	.043	2.059	.002	NA	NA	1.335	3.396	54.015
1970 Total	12.265	21.795	29.521	63.522	.239	2.634	.006	NA	NA	1.431	4.070	67.838
1975 Total	12.663	19.948	32.732	65.357	1.900	3.155	.034	NA	NA	1.499	4.687	71.965
1980 Total	15.423	20.235	34.205	69.828	2.739	2.900	.053	NA	NA	2.475	5.428	78.067
1985 Total	17.478	17.703	30.925	66.093	4.076	2.970	.097	(s)	(s)	3.016	6.084	76.392
1990 Total	19.173	19.603	33.552	72.332	6.104	3.046	.171	.059	.029	2.735	6.040	84.484
1995 Total	20.089	22.671	34.441	77.262	7.075	3.205	.152	.068	.033	3.101	6.559	91.031
2000 Total	22.580	23.824	38.266	84.735	7.862	2.811	.164	.063	.057	3.008	6.104	98.817
2001 Total	21.914	22.773	38.190	82.906	8.029	2.242	.164	.062	.070	2.622	5.160	96.170
2002 Total	21.904	23.510	38.226	83.700	8.145	2.689	.171	.060	.105	2.701	5.726	97.643
2003 Total	22.321	22.831	38.790	83.992	7.960	2.793	.173	.058	.113	2.806	5.944	97.918
2004 Total	22.466	22.923	40.227	85.754	8.223	2.688	.178	.058	.142	3.008	6.075	100.090
2005 Total	22.797	22.565	40.303	85.709	8.161	2.703	.181	.058	.178	3.114	6.233	100.188
2006 Total	22.447	22.239	39.824	84.570	8.215	2.869	.181	.061	.264	3.262	6.637	99.485
2007 Total	22.749	23.663	39.489	85.927	8.459	2.446	.186	.065	.341	3.485	6.523	101.015
2008 Total	22.387	23.843	36.907	83.178	8.426	2.511	.192	.074	.546	3.851	7.174	98.891
2009 Total	19.691	23.416	34.959	78.042	8.355	2.669	.200	.078	.721	3.936	7.604	94.118
2010 Total	20.834	24.575	35.489	80.891	8.434	2.539	.208	.090	.923	4.270	8.030	97.445
2011 Total	19.658	24.955	34.824	79.447	8.269	3.103	.212	.111	1.168	4.405	8.999	96.842
2012 Total	17.378	26.089	34.016	77.487	8.062	2.629	.212	.157	1.340	4.369	8.706	94.416
2013 Total	18.039	26.805	34.613	79.440	8.244	2.562	.214	.225	1.601	4.673	9.276	97.157
2014 Total	17.998	27.383	34.881	80.240	8.338	2.467	.214	.337	1.728	4.825	9.570	98.329
2015 January	1.498	3.223	2.966	7.685	.777	.225	.018	.021	.141	.388	.793	9.273
February	1.409	3.028	2.739	7.175	.664	.208	.017	.025	.139	.360	.748	8.601
March	1.238	2.682	2.996	6.917	.675	.226	.018	.035	.143	.391	.813	8.424
April	1.037	2.078	2.890	6.003	.625	.209	.017	.040	.167	.380	.812	7.460
May	1.206	1.923	2.995	6.122	.688	.188	.018	.043	.160	.400	.808	7.639
June	1.439	1.967	2.983	6.386	.717	.190	.017	.043	.125	.399	.775	7.897
July	1.587	2.140	3.132	6.858	.747	.196	.018	.045	.127	.413	.799	8.425
August	1.531	2.124	3.099	6.753	.757	.178	.018	.045	.122	.413	.776	8.308
September	1.351	1.968	2.917	6.237	.695	.150	.016	.039	.130	.394	.730	7.682
October	1.138	2.056	3.017	6.210	.633	.155	.018	.034	.153	.396	.755	7.614
November	1.045	2.328	2.851	6.222	.630	.180	.018	.030	.183	.393	.804	7.674
December	1.070	2.679	3.016	6.764	.728	.216	.018	.027	.187	.408	.857	8.367
Total	15.549	28.196	35.603	79.330	8.337	2.321	.212	.426	1.777	4.734	9.471	97.365
2016 January	R 1.297	3.203	2.935	R 7.433	.758	.237	.019	.027	.173	.388	.844	R 9.057
February	1.073	2.745	2.841	R 6.658	.686	.225	.018	.038	.188	.375	.844	R 8.206
March	.866	R 2.438	3.037	6.341	.692	.252	.019	.045	.205	.395	.916	R 7.967
April	.842	2.159	2.902	5.902	.652	.237	.018	.050	.193	.372	.870	R 7.438
May	.960	2.037	2.979	5.975	.696	.236	.019	.058	.175	.395	.883	R 7.573
June	R 1.317	2.073	2.985	R 6.374	.703	.213	.018	.059	.152	.397	.839	R 7.938
July	1.530	2.264	3.059	R 6.851	.736	.198	.019	.064	.164	.414	.858	R 8.471
August	1.521	R 2.288	3.139	6.946	.748	.180	.019	.062	.126	.417	.804	R 8.522
September	1.298	R 2.014	2.984	6.295	.684	.152	.019	.057	.153	.391	.772	R 7.771
October	R 1.149	1.990	3.048	6.183	.635	.161	.019	.050	.190	.394	.813	R 7.649
November	1.022	R 2.240	2.948	6.206	.682	.175	.019	.042	.180	.400	.817	R 7.726
December	R 1.352	R 2.970	3.085	R 7.404	.749	.210	.020	.037	.214	.419	.900	R 9.076
Total	R 14.227	R 28.419	35.942	R 78.569	8.422	2.477	.226	.587	2.114	4.756	10.161	R 97.394
2017 January	R 1.323	R 2.980	2.963	R 7.264	.765	.258	.020	.036	.190	.393	.897	R 8.948
February	R 1.022	2.393	2.666	6.080	.670	.229	.018	.041	.202	.362	.852	R 7.619
March	R 1.039	R 2.589	3.105	6.731	.681	.281	.020	.066	.239	.404	1.010	8.440
April	.943	1.971	2.929	5.842	.593	.272	.019	.072	.237	.383	.983	7.436
4-Month Total	4.326	9.933	11.664	25.916	2.709	1.041	.076	.215	.867	1.542	3.741	32.443
2016 4-Month Total	4.078	10.544	11.715	26.334	2.789	.951	.074	.159	.759	1.531	3.474	32.669
2015 4-Month Total	5.182	11.011	11.592	27.779	2.741	.868	.070	.121	.590	1.518	3.167	33.758

^a Most data are estimates. See Tables 10.1–10.2c for notes on series components and estimation; and see Note, "Renewable Energy Production and Consumption," at end of Section 10.

^b Natural gas only; excludes supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.

^c Petroleum products supplied, including natural gas plant liquids and crude oil burned as fuel. Does not include biofuels that have been blended with petroleum—biofuels are included in "Biomass."

^d Includes coal coke net imports. See Tables 1.4a and 1.4b.

^e Conventional hydroelectric power.

^f Includes coal coke net imports and electricity net imports, which are not

separately displayed. See Tables 1.4a and 1.4b.

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

Notes: • See "Primary Energy Consumption" in Glossary.

• See Table D1 for estimated energy consumption for 1635–1945. • Totals may not equal sum of components due to independent rounding.

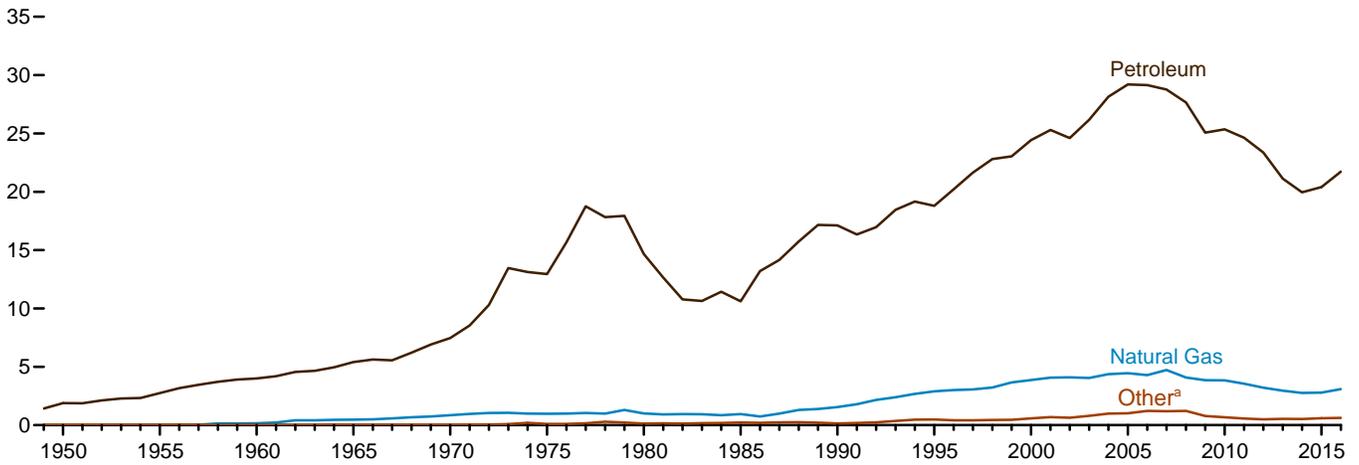
• Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

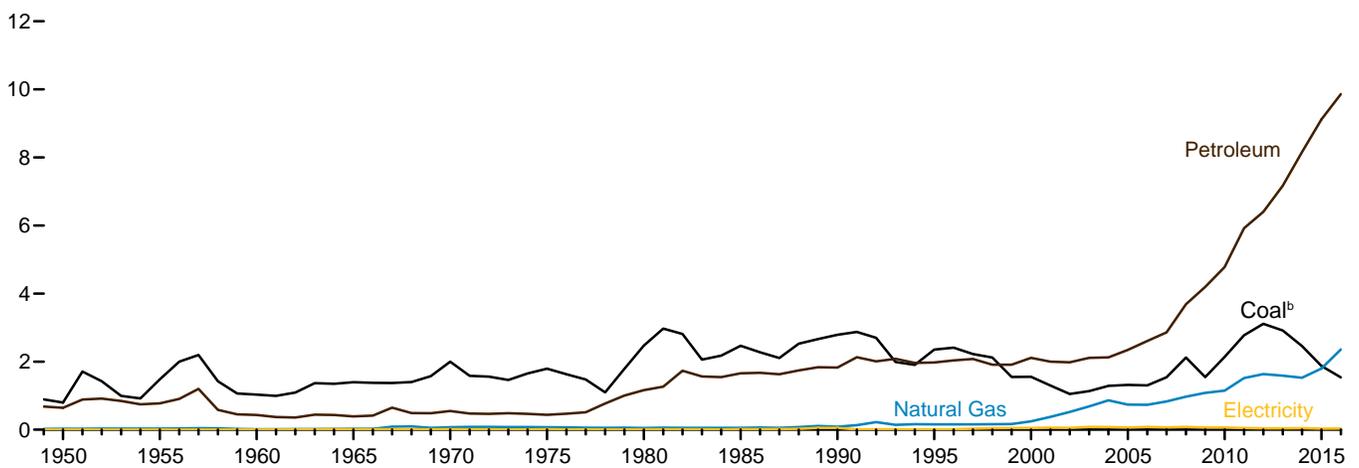
Sources: See end of section.

Figure 1.4a Primary Energy Imports and Exports
(Quadrillion Btu)

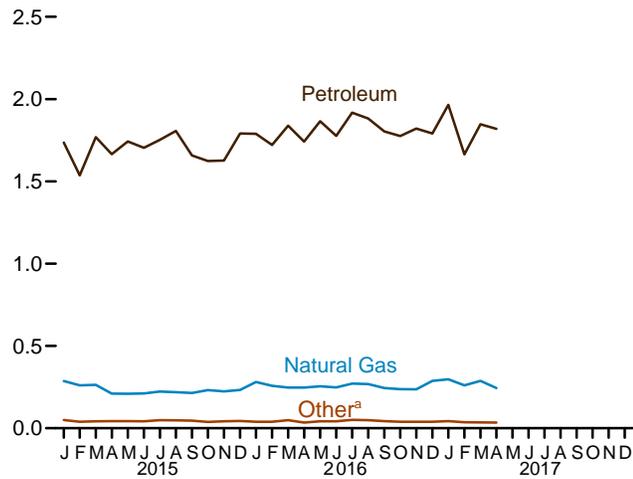
Imports by Source, 1949–2016



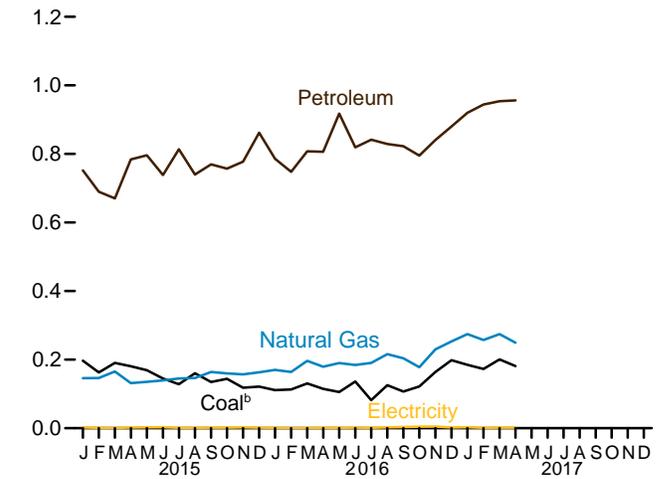
Exports by Source, 1949–2016



Imports by Source, Monthly



Exports by Major Source, Monthly



^a Coal, coal coke, biomass, and electricity.

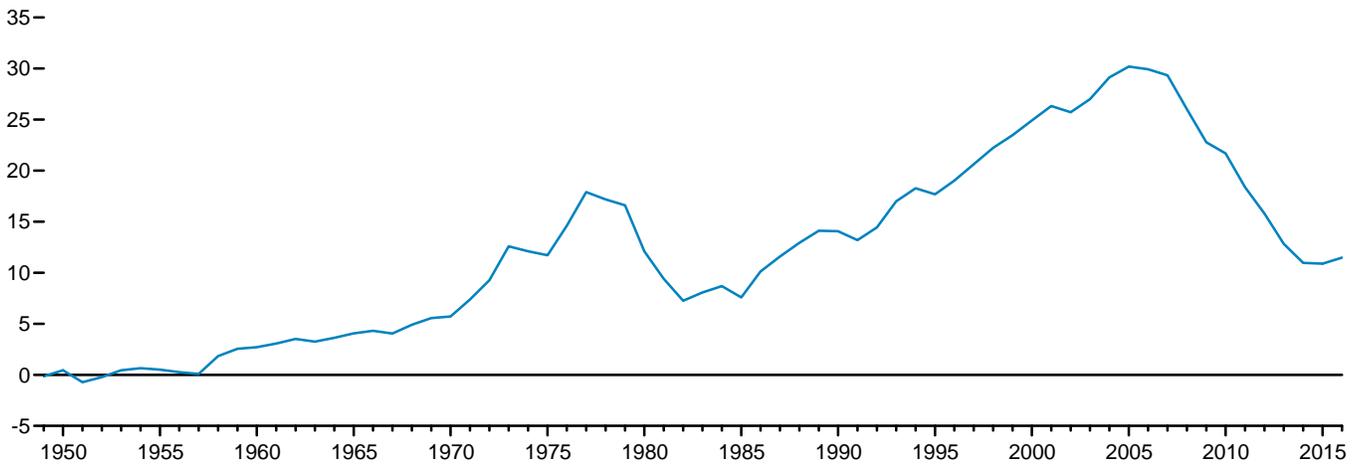
^b Includes coal coke.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.

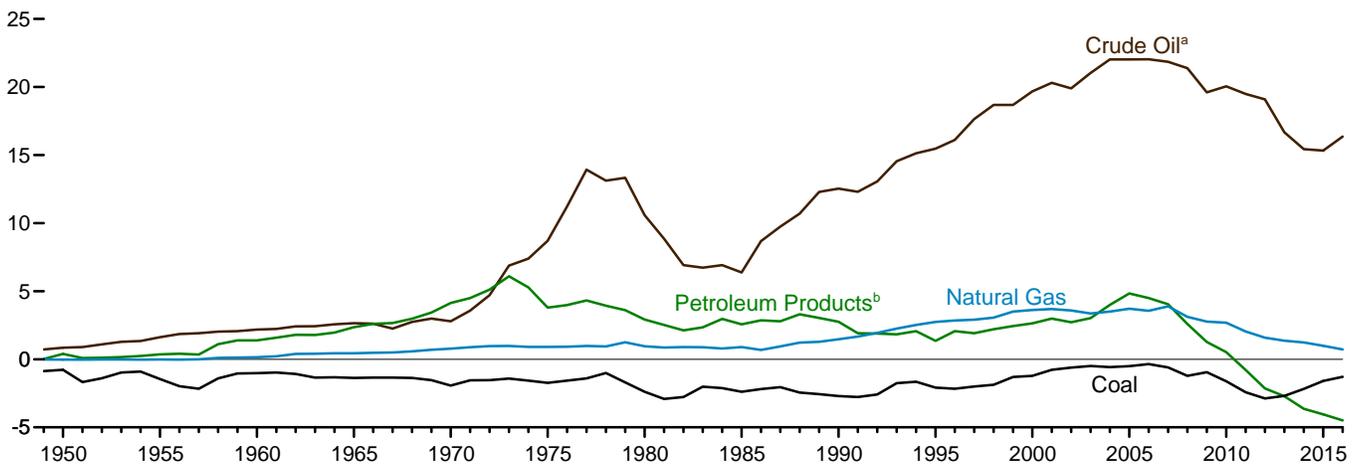
Sources: Tables 1.4a and 1.4b.

Figure 1.4b Primary Energy Net Imports
(Quadrillion Btu)

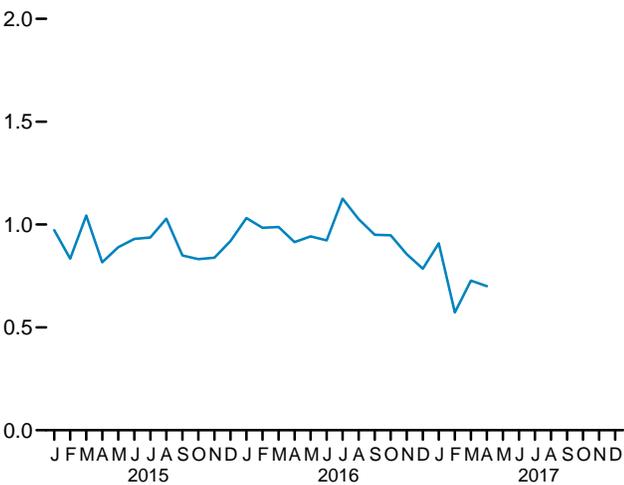
Total, 1949–2016



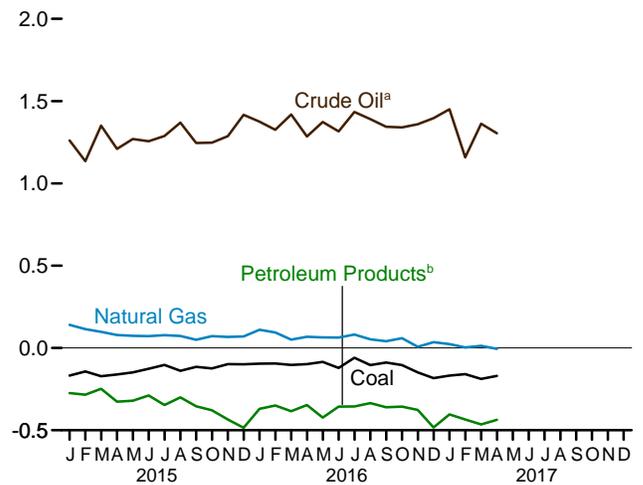
By Major Source, 1949–2016



Total, Monthly



By Major Source, Monthly



^a Crude oil and lease condensate. Includes imports into the Strategic Petroleum Reserve, which began in 1977.

^b Petroleum products, unfinished oils, pentanes plus, and gasoline

blending components. Does not include biofuels.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.

Sources: Tables 1.4a and 1.4b.

Table 1.4a Primary Energy Imports by Source
(Quadrillion Btu)

	Imports								
	Coal	Coal Coke	Natural Gas	Petroleum			Biomass ^c	Electricity	Total
				Crude Oil ^a	Petroleum Products ^b	Total			
1950 Total	0.009	0.011	0.000	1.056	0.830	1.886	NA	0.007	1.913
1955 Total .....	.008	.003	.011	1.691	1.061	2.752	NA	.016	2.790
1960 Total .....	.007	.003	.161	2.196	1.802	3.999	NA	.018	4.188
1965 Total .....	.005	.002	.471	2.654	2.748	5.402	NA	.012	5.892
1970 Total .....	.001	.004	.846	2.814	4.656	7.470	NA	.021	8.342
1975 Total .....	.024	.045	.978	8.721	4.227	12.948	NA	.038	14.032
1980 Total .....	.030	.016	1.006	11.195	3.463	14.658	NA	.085	15.796
1985 Total .....	.049	.014	.952	6.814	3.796	10.609	NA	.157	11.781
1990 Total .....	.067	.019	1.551	12.766	4.351	17.117	NA	.063	18.817
1995 Total .....	.237	.095	2.901	15.669	3.131	18.800	.001	.146	22.180
2000 Total .....	.313	.094	3.869	19.783	4.641	24.424	(s)	.166	28.865
2001 Total .....	.495	.063	4.068	20.348	4.946	25.294	.002	.131	30.052
2002 Total .....	.422	.080	4.104	19.920	4.677	24.597	.002	.125	29.331
2003 Total .....	.626	.068	4.042	21.060	5.105	26.165	.002	.104	31.007
2004 Total .....	.682	.170	4.365	22.082	6.063	28.145	.013	.117	33.492
2005 Total .....	.762	.088	4.450	22.091	7.108	29.198	.012	.150	34.659
2006 Total .....	.906	.101	4.291	22.085	7.054	29.139	.066	.146	34.649
2007 Total .....	.909	.061	4.723	21.914	6.842	28.756	.055	.175	34.679
2008 Total .....	.855	.089	4.084	21.448	6.214	27.662	.085	.195	32.970
2009 Total .....	.566	.009	3.845	19.699	5.367	25.066	.027	.178	29.690
2010 Total .....	.484	.030	3.834	20.140	5.219	25.359	.004	.154	29.866
2011 Total .....	.327	.035	3.555	19.595	5.038	24.633	.019	.178	28.748
2012 Total .....	.212	.028	3.216	19.239	4.122	23.361	.049	.202	27.068
2013 Total .....	.199	.003	2.955	16.957	4.169	21.126	.102	.236	24.623
2014 Total .....	.252	.002	2.763	16.178	3.773	19.951	.046	.227	23.241
2015 January .....	.029	(s)	.286	1.348	.388	1.736	.003	.021	2.075
February .....	.020	(s)	.261	1.206	.331	1.536	.004	.019	1.840
March .....	.019	(s)	.264	1.427	.342	1.769	.004	.023	2.079
April .....	.020	(s)	.210	1.311	.354	1.665	.004	.022	1.922
May .....	.021	(s)	.209	1.362	.380	1.743	.005	.023	2.000
June .....	.019	(s)	.211	1.332	.372	1.704	.006	.023	1.963
July .....	.025	(s)	.222	1.384	.368	1.752	.009	.024	2.032
August .....	.022	(s)	.219	1.451	.356	1.807	.010	.024	2.082
September .....	.020	.002	.214	1.315	.343	1.658	.009	.023	1.925
October .....	.019	(s)	.232	1.335	.288	1.623	.009	.018	1.901
November .....	.020	(s)	.224	1.341	.286	1.627	.008	.020	1.899
December .....	.022	.001	.233	1.486	.305	1.790	.009	.020	2.076
Total .....	.256	.003	2.786	16.299	4.111	20.410	.079	.259	23.794
2016 January .....	.016	(s)	.280	1.440	.349	1.789	.003	.024	2.111
February .....	.019	(s)	.258	1.388	.333	1.722	.003	.021	2.022
March .....	.027	(s)	.247	1.509	.330	1.839	.005	.022	2.139
April .....	.017	(s)	.247	1.387	.355	1.741	.007	.018	2.031
May .....	.021	.001	.255	1.491	.374	1.865	.008	.021	2.169
June .....	.015	.002	.248	1.382	.395	1.776	.013	.025	2.078
July .....	.022	(s)	.272	1.518	.400	1.918	.012	.028	2.252
August .....	.021	(s)	^R .269	1.508	.375	1.882	.014	.027	^R 2.212
September .....	.018	.002	^R .244	1.463	.341	1.804	.012	.023	^R 2.103
October .....	.017	.001	^R .237	1.427	.348	1.775	.013	.021	^R 2.065
November .....	.016	(s)	^R .237	1.462	.359	1.821	.015	.023	2.111
December .....	.015	(s)	^R .288	1.475	.316	1.791	.017	.024	^R 2.135
Total .....	.223	.006	^R 3.082	17.449	4.274	21.723	.121	.275	^R 25.429
2017 January .....	.017	(s)	^R .298	1.583	.382	1.965	.004	.025	^R 2.308
February .....	.014	(s)	^R .261	1.337	.328	1.665	.006	.021	^R 1.966
March .....	.013	(s)	^R .288	1.510	.337	1.847	.006	.023	^R 2.176
April .....	.011	(s)	.244	1.476	.343	1.819	.006	.023	2.103
4-Month Total .....	.054	(s)	1.090	5.906	1.389	7.295	.022	.091	8.553
2016 4-Month Total .....	.078	(s)	1.033	5.723	1.367	7.091	.018	.084	8.303
2015 4-Month Total .....	.088	(s)	1.021	5.293	1.414	6.707	.015	.085	7.916

^a Crude oil and lease condensate. Includes imports into the Strategic Petroleum Reserve, which began in 1977.

^b Petroleum products, unfinished oils, pentanes plus, and gasoline blending components. Does not include biofuels.

^c Fuel ethanol (minus denaturant) and biodiesel.

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

Notes: • See "Primary Energy" in Glossary. • Totals may not equal sum of

components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 1.4b Primary Energy Exports by Source and Total Net Imports
(Quadrillion Btu)

	Exports									Net Imports ^a
	Coal	Coal Coke	Natural Gas	Petroleum			Biomass ^d	Electricity	Total	
				Crude Oil ^b	Petroleum Products ^c	Total				
1950 Total	0.786	0.010	0.027	0.202	0.440	0.642	NA	0.001	1.465	0.448
1955 Total	1.465	.013	.032	.067	.707	.774	NA	.002	2.286	.504
1960 Total	1.023	.009	.012	.018	.413	.431	NA	.003	1.477	2.710
1965 Total	1.376	.021	.027	.006	.386	.392	NA	.013	1.829	4.063
1970 Total	1.936	.061	.072	.029	.520	.549	NA	.014	2.632	5.709
1975 Total	1.761	.032	.074	.012	.427	.439	NA	.017	2.323	11.709
1980 Total	2.421	.051	.049	.609	.551	1.160	NA	.014	3.695	12.101
1985 Total	2.438	.028	.056	.432	1.225	1.657	NA	.017	4.196	7.584
1990 Total	2.772	.014	.087	.230	1.594	1.824	NA	.055	4.752	14.065
1995 Total	2.318	.034	.156	.200	1.776	1.976	NA	.012	4.496	17.684
2000 Total	1.528	.028	.245	.106	2.003	2.110	NA	.051	3.962	24.904
2001 Total	1.265	.033	.377	.043	1.956	1.999	(s)	.056	3.731	26.321
2002 Total	1.032	.020	.520	.019	1.963	1.982	(s)	.054	3.608	25.722
2003 Total	1.117	.018	.686	.026	2.083	2.110	.001	.082	4.013	26.994
2004 Total	1.253	.033	.862	.057	2.068	2.125	.001	.078	4.351	29.141
2005 Total	1.273	.043	.735	.067	2.276	2.344	.001	.065	4.462	30.197
2006 Total	1.264	.040	.730	.052	2.554	2.606	.005	.083	4.727	29.921
2007 Total	1.507	.036	.830	.058	2.803	2.861	.036	.069	5.338	29.341
2008 Total	2.071	.049	.972	.061	3.626	3.686	.089	.083	6.949	26.021
2009 Total	1.515	.032	1.082	.093	4.101	4.194	.035	.062	6.920	22.770
2010 Total	2.101	.036	1.147	.088	4.691	4.780	.047	.065	8.176	21.690
2011 Total	2.751	.024	1.519	.100	5.820	5.919	.108	.051	10.373	18.375
2012 Total	3.087	.024	1.633	.143	6.261	6.404	.078	.041	11.267	15.801
2013 Total	2.895	.021	1.587	.284	6.886	7.170	.076	.039	11.788	12.835
2014 Total	2.435	.023	1.528	.744	7.414	8.158	.081	.045	12.270	10.971
2015 January .....	.197	.002	.146	.087	.662	.749	.006	.003	1.103	.972
February .....	.163	.001	.146	.070	.615	.685	.006	.005	1.006	.834
March .....	.191	.001	.165	.077	.590	.667	.008	.003	1.035	1.044
April .....	.181	.002	.132	.102	.680	.782	.007	.002	1.105	.816
May .....	.169	.003	.135	.093	.701	.794	.007	.002	1.110	.890
June .....	.145	.003	.139	.076	.660	.736	.007	.002	1.032	.930
July .....	.128	.001	.145	.096	.715	.811	.007	.002	1.095	.937
August .....	.161	.001	.146	.081	.656	.737	.006	.002	1.054	1.028
September .....	.135	.002	.164	.070	.697	.767	.006	.002	1.076	.849
October .....	.144	.002	.160	.088	.667	.755	.007	.002	1.070	.832
November .....	.118	.002	.157	.055	.721	.775	.005	.002	1.060	.839
December .....	.121	.002	.163	.069	.790	.859	.008	.003	1.156	.920
Total	1.852	.021	1.800	.964	8.153	9.118	.080	.031	12.902	10.892
2016 January .....	.111	.001	.170	.065	.719	.784	.012	.002	1.080	1.031
February .....	.113	(s)	.164	.062	.683	.745	.012	.003	1.038	.984
March .....	.130	.001	.197	.090	.714	.804	.015	.004	1.151	.988
April .....	.115	.001	R .179	.102	.701	.803	.014	.003	R 1.116	R .915
May .....	.105	.001	R .190	.117	.798	.915	.013	.003	R 1.227	R .942
June .....	.136	.002	R .185	.066	.751	.817	.013	.002	R 1.155	R .923
July .....	.082	.001	R .190	.084	.755	.839	.011	.002	R 1.126	R 1.126
August .....	.125	.003	R .216	.117	.710	.826	.014	.003	R 1.187	R 1.026
September .....	.107	.003	R .204	.119	.701	.820	.016	.003	R 1.153	R .950
October .....	.122	.004	R .178	.087	.705	.792	.018	.003	R 1.117	R .948
November .....	.164	.005	R .230	.103	.736	.838	.016	.002	R 1.255	R .856
December .....	.199	.002	R .253	.078	.799	.877	.016	.002	R 1.350	R .785
Total	1.510	.025	R 2.356	1.089	8.771	9.860	.170	.033	R 13.955	R 11.474
2017 January .....	.185	.003	R .274	.132	.785	.918	.017	.002	R 1.399	.909
February .....	.173	.001	R .257	.179	.762	.941	.017	.003	R 1.393	.573
March .....	.201	.002	R .274	.148	.802	.950	.018	.004	R 1.449	R .727
April .....	.181	.001	.249	.172	.780	.952	.015	.005	1.403	.700
4-Month Total .....	.740	.007	1.055	.631	3.129	3.760	.067	.014	5.644	2.909
2016 4-Month Total .....	.469	.003	.710	.318	2.817	3.136	.054	.012	4.384	3.918
2015 4-Month Total .....	.731	.006	.589	.337	2.546	2.883	.027	.013	4.249	3.666

^a Net imports equal imports minus exports.

^b Crude oil and lease condensate.

^c Petroleum products, unfinished oils, pentanes plus, and gasoline blending components. Does not include biofuels.

^d Beginning in 2001, includes biodiesel. Beginning in 2010, also includes fuel ethanol (minus denaturant). Beginning in 2016, also includes wood and wood-derived fuels.

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

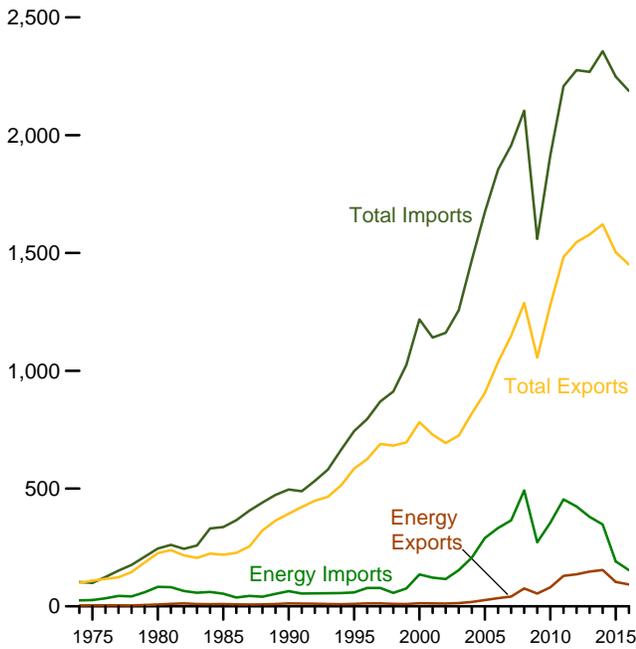
Notes: • See "Primary Energy" in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

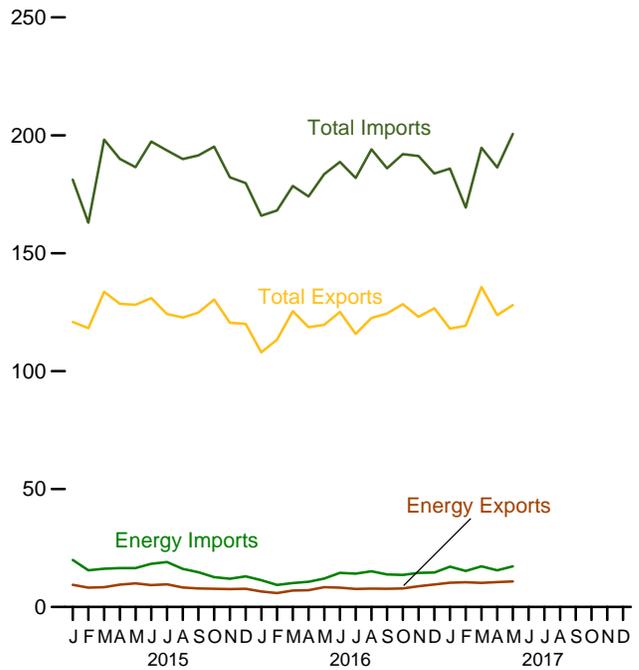
Sources: See end of section.

Figure 1.5 Merchandise Trade Value
(Billion Dollars^a)

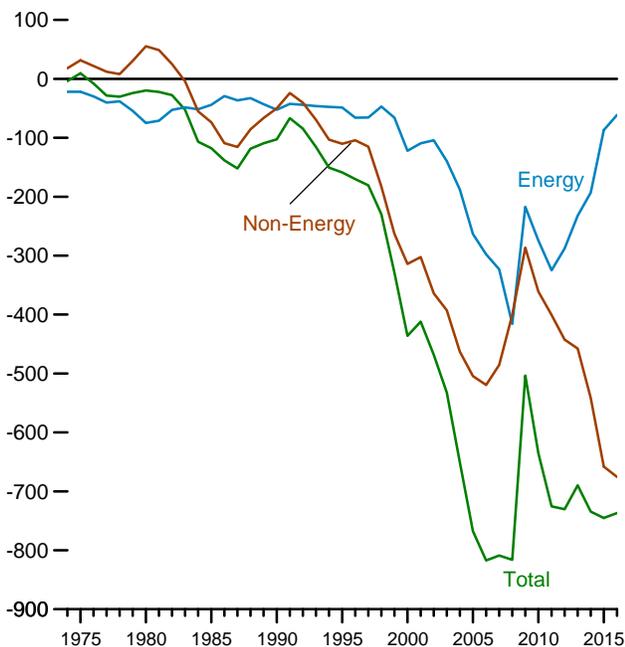
Imports and Exports, 1974–2016



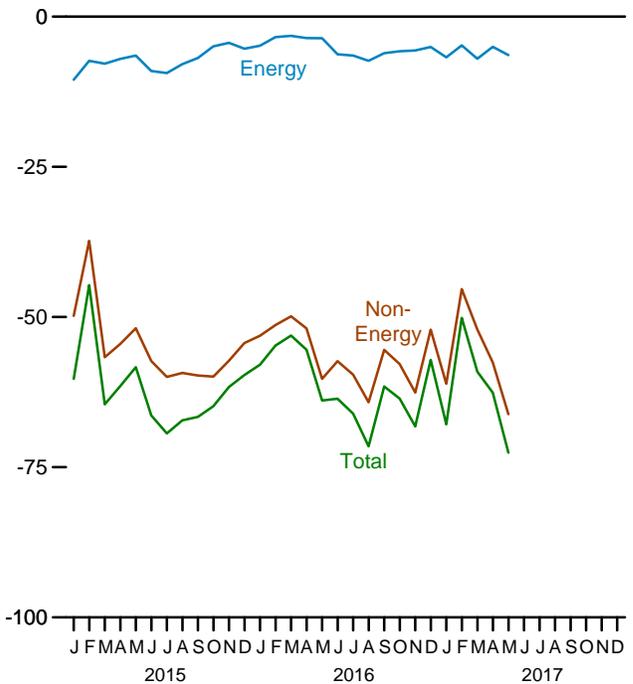
Imports and Exports, Monthly



Trade Balance, 1974–2016



Trade Balance, Monthly



^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary>.
Source: Table 1.5.

Table 1.5 Merchandise Trade Value
(Million Dollars^a)

	Petroleum ^b			Energy ^c			Non-Energy Balance	Total Merchandise		
	Exports	Imports	Balance	Exports	Imports	Balance		Exports	Imports	Balance
1974 Total	792	24,668	-23,876	3,444	25,454	-22,010	18,126	99,437	103,321	-3,884
1975 Total	907	25,197	-24,289	4,470	26,476	-22,006	31,557	108,856	99,305	9,551
1980 Total	2,833	78,637	-75,803	7,982	82,924	-74,942	55,246	225,566	245,262	-19,696
1985 Total	4,707	50,475	-45,768	9,971	53,917	-43,946	-73,765	218,815	336,526	-117,712
1990 Total	6,901	61,583	-54,682	12,233	64,661	-52,428	-50,068	393,592	496,088	-102,496
1995 Total	6,321	54,368	-48,047	10,358	59,109	-48,751	-110,050	584,742	743,543	-158,801
2000 Total	10,192	119,251	-109,059	13,179	135,367	-122,188	-313,916	781,918	1,218,022	-436,104
2001 Total	8,868	102,747	-93,879	12,494	121,923	-109,429	-302,470	729,100	1,140,999	-411,899
2002 Total	8,569	102,663	-94,094	11,541	115,748	-104,207	-364,056	693,103	1,161,366	-468,263
2003 Total	10,209	132,433	-122,224	13,768	153,298	-139,530	-392,820	724,771	1,257,121	-532,350
2004 Total	13,130	179,266	-166,136	18,642	206,660	-188,018	-462,912	818,775	1,469,704	-650,930
2005 Total	19,155	250,068	-230,913	26,488	289,723	-263,235	-504,242	905,978	1,673,455	-767,477
2006 Total	28,171	299,714	-271,543	34,711	332,500	-297,789	-519,515	1,036,635	1,853,938	-817,304
2007 Total	33,293	327,620	-294,327	41,725	364,987	-323,262	-485,501	1,148,199	1,956,962	-808,763
2008 Total	61,695	449,847	-388,152	76,075	491,885	-415,810	-400,389	1,287,442	2,103,641	-816,199
2009 Total	44,509	251,833	-207,324	54,536	271,739	-217,203	-286,379	1,056,043	1,559,625	-503,582
2010 Total	64,753	333,472	-268,719	80,625	354,982	-274,357	-361,005	1,278,495	1,913,857	-635,362
2011 Total	^b 102,180	^b 431,866	^b -329,686	128,989	453,839	-324,850	-400,597	1,482,508	2,207,954	-725,447
2012 Total	111,951	408,509	-296,558	136,054	423,862	-287,808	-442,638	1,545,821	2,276,267	-730,446
2013 Total	123,218	363,141	-239,923	147,539	379,758	-232,219	-457,712	1,578,439	2,268,370	-689,931
2014 Total	127,818	326,709	-198,891	154,498	347,474	-192,976	-541,506	1,621,874	2,356,356	-734,482
2015 January	7,754	18,216	-10,462	9,418	19,909	-10,491	-49,802	120,880	181,173	-60,293
February	6,685	13,815	-7,130	8,189	15,545	-7,356	-37,324	118,237	162,916	-44,680
March	6,646	14,826	-8,180	8,390	16,228	-7,838	-56,685	133,664	198,187	-64,523
April	7,762	15,567	-7,805	9,448	16,469	-7,021	-54,495	128,510	190,026	-61,516
May	8,359	15,578	-7,219	9,989	16,472	-6,483	-51,865	128,161	186,509	-58,348
June	7,838	17,434	-9,596	9,260	18,309	-9,049	-57,326	130,949	197,324	-66,375
July	8,298	18,075	-9,777	9,639	19,039	-9,400	-59,978	124,201	193,579	-69,378
August	6,809	15,203	-8,394	8,241	16,147	-7,906	-59,304	122,722	189,932	-67,210
September	6,532	13,811	-7,279	7,879	14,753	-6,874	-59,744	124,853	191,470	-66,618
October	6,345	11,657	-5,312	7,703	12,644	-4,941	-59,907	130,333	195,181	-64,848
November	6,323	11,148	-4,825	7,609	11,965	-4,356	-57,274	120,522	182,152	-61,630
December	6,380	12,126	-5,746	7,692	13,018	-5,326	-54,338	120,070	179,735	-59,664
Total	85,733	177,455	-91,722	103,458	190,501	-87,043	-658,039	1,503,101	2,248,183	-745,082
2016 January	5,342	10,256	-4,914	6,549	11,380	-4,831	-53,100	107,968	165,899	-57,931
February	4,775	8,416	-3,641	5,921	9,327	-3,406	-51,348	113,363	168,117	-54,754
March	5,712	9,395	-3,683	6,970	10,164	-3,194	-49,888	125,425	178,508	-53,082
April	5,865	10,041	-4,176	7,119	10,668	-3,549	-51,902	118,645	174,096	-55,451
May	6,961	11,349	-4,388	8,412	12,013	-3,601	-60,287	119,625	183,512	-63,888
June	6,728	13,733	-7,005	8,203	14,474	-6,271	-57,339	125,098	188,708	-63,610
July	6,313	13,173	-6,860	7,665	14,151	-6,486	-59,594	115,810	181,890	-66,080
August	6,381	14,184	-7,803	7,815	15,159	-7,344	-64,173	122,529	194,046	-71,517
September	6,418	12,917	-6,499	7,740	13,827	-6,087	-55,477	124,431	185,995	-61,564
October	6,187	12,705	-6,518	7,857	13,625	-5,768	-57,815	128,440	192,023	-63,583
November	6,850	13,503	-6,653	8,818	14,445	-5,627	-62,577	123,034	191,239	-68,204
December	7,102	13,260	-6,158	9,552	14,589	-5,037	-52,093	126,642	183,772	-57,130
Total	74,636	142,933	-68,297	92,623	153,822	-61,199	-675,595	1,451,011	2,187,805	-736,794
2017 January	7,552	15,713	-8,161	10,321	17,077	-6,756	-61,104	118,004	185,863	-67,860
February	7,779	14,167	-6,388	10,522	15,293	-4,771	-45,365	119,238	169,375	-50,136
March	7,415	15,917	-8,502	10,215	17,215	-7,000	-52,086	135,663	194,750	-59,086
April	7,953	14,412	-6,459	10,537	15,558	-5,021	^R -57,561	^R 123,765	^R 186,347	^R -62,582
May	8,297	16,220	-7,923	10,826	17,234	-6,408	-66,168	128,025	200,602	-72,576
5-Month Total	38,996	76,430	-37,433	52,422	82,379	-29,956	-282,284	624,695	936,936	-312,241
2016 5-Month Total	28,656	49,457	-20,802	34,972	53,551	-18,581	-266,525	585,026	870,132	-285,106
2015 5-Month Total	37,046	78,002	-40,956	45,263	84,623	-39,360	-250,171	629,451	918,810	-289,359

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

^b Through 2010, data are for crude oil, petroleum preparations, liquefied propane and butane, and other mineral fuels. Beginning in 2011, data are for petroleum products and preparations.

^c Petroleum, coal, natural gas, and electricity.

R=Revised.

Notes: • Monthly data are not adjusted for seasonal variations. • See Note, "Merchandise Trade Value," at end of section. • Totals may not equal sum of

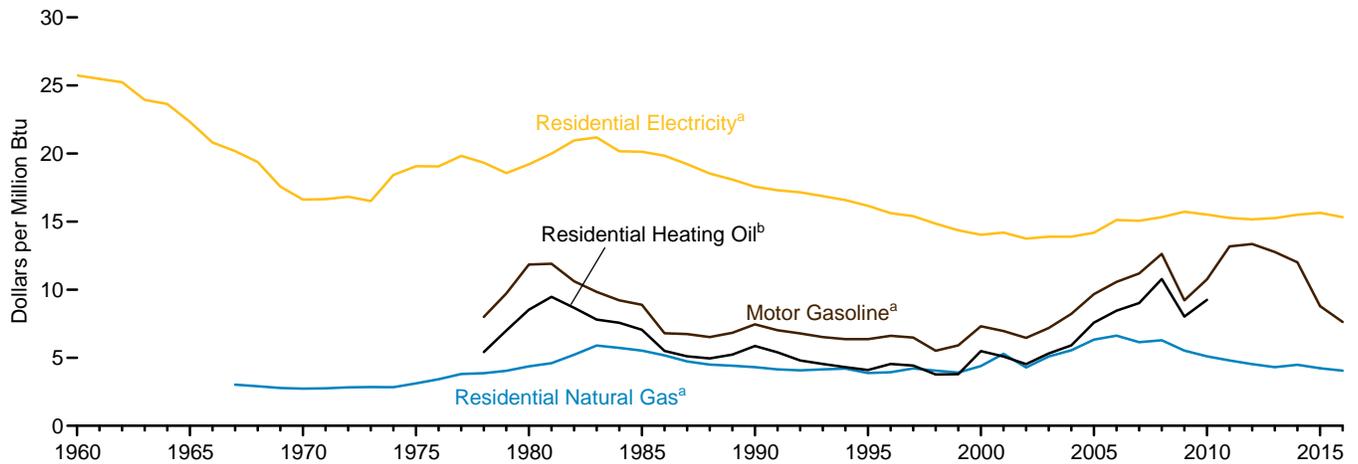
components due to independent rounding. • The U.S. import statistics reflect both government and nongovernment imports of merchandise from foreign countries into the U.S. customs territory, which comprises the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual and monthly data beginning in 1974.

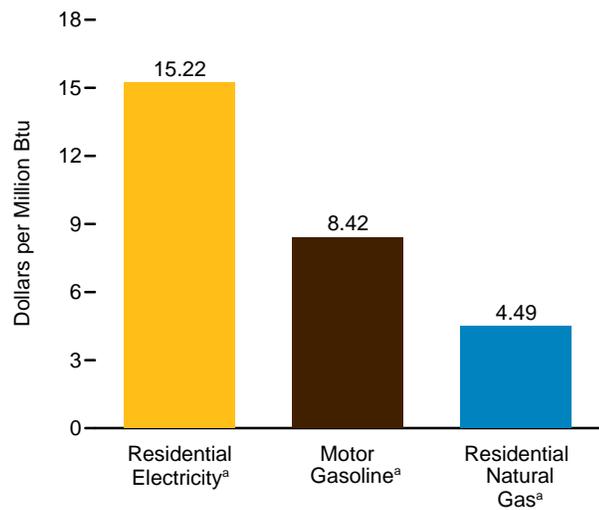
Sources: See end of section.

Figure 1.6 Cost of Fuels to End Users in Real (1982–1984) Dollars

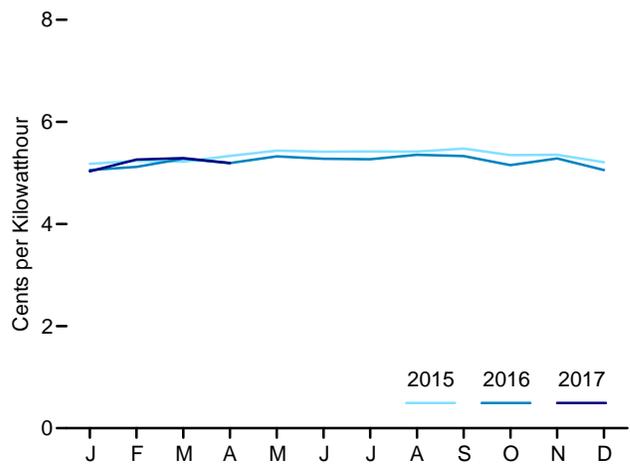
Costs, 1960–2016



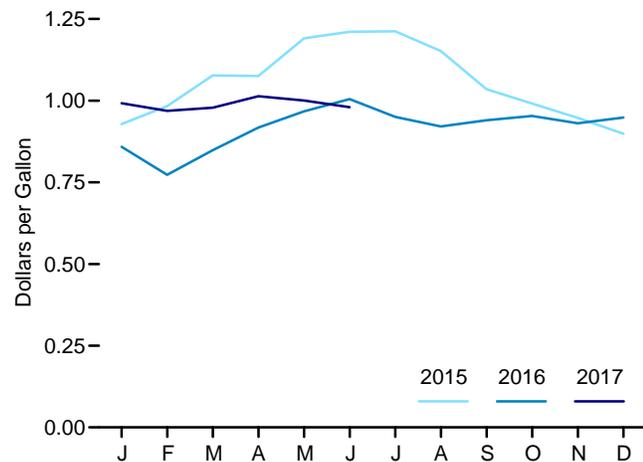
Costs, April 2017



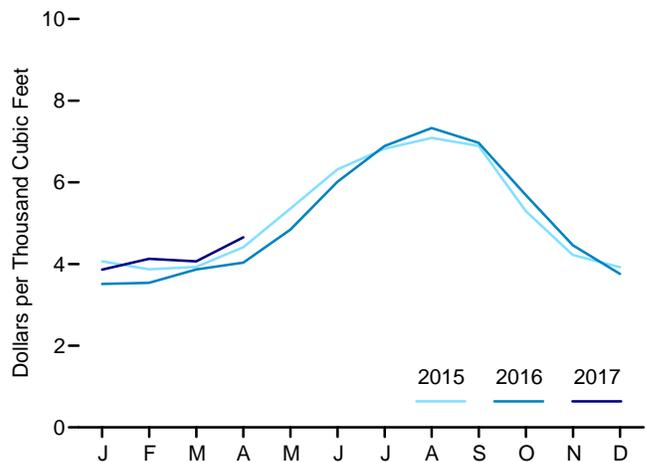
Residential Electricity,^a Monthly



Motor Gasoline,^a Monthly



Residential Natural Gas,^a Monthly



^a Includes taxes.

^b Excludes taxes.

Note: See "Real Dollars" in Glossary.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.

Source: Table 1.6.

Table 1.6 Cost of Fuels to End Users in Real (1982–1984) Dollars

	Consumer Price Index, All Urban Consumers ^a	Motor Gasoline ^b		Residential Heating Oil ^c		Residential Natural Gas ^b		Residential Electricity ^b	
	Index 1982–1984=100	Dollars per Gallon	Dollars per Million Btu	Dollars per Gallon	Dollars per Million Btu	Dollars per Thousand Cubic Feet	Dollars per Million Btu	Cents per Kilowatt-hour	Dollars per Million Btu
1960 Average	29.6	NA	NA	NA	NA	NA	NA	8.8	25.74
1965 Average	31.5	NA	NA	NA	NA	NA	NA	7.6	22.33
1970 Average	38.8	NA	NA	NA	NA	2.81	2.72	5.7	16.62
1975 Average	53.8	NA	NA	NA	NA	3.18	3.12	6.5	19.07
1980 Average	82.4	1.482	11.85	1.182	8.52	4.47	4.36	6.6	19.21
1985 Average	107.6	1.112	8.89	0.979	7.06	5.69	5.52	6.87	20.13
1990 Average	130.7	0.931	7.44	0.813	5.86	4.44	4.31	5.99	17.56
1995 Average	152.4	0.791	6.36	0.569	4.10	3.98	3.87	5.51	16.15
2000 Average	172.2	0.908	7.31	0.761	5.49	4.51	4.39	4.79	14.02
2001 Average	177.1	0.864	6.96	0.706	5.09	5.44	5.28	4.84	14.20
2002 Average	179.9	0.801	6.46	0.628	4.52	4.39	4.28	4.69	13.75
2003 Average	184.0	0.890	7.19	0.736	5.31	5.23	5.09	4.74	13.89
2004 Average	188.9	1.018	8.22	0.819	5.91	5.69	5.55	4.74	13.89
2005 Average	195.3	1.197	9.67	1.051	7.58	6.50	6.33	4.84	14.18
2006 Average	201.6	1.307	10.58	1.173	8.46	6.81	6.63	5.16	15.12
2007 Average	207.342	1.374	11.20	1.250	9.01	6.31	6.14	5.14	15.05
2008 Average	215.303	1.541	12.62	1.495	10.78	6.45	6.28	5.23	15.33
2009 Average	214.537	1.119	9.21	1.112	8.02	5.66	5.52	5.37	15.72
2010 Average	218.056	1.301	10.76	1.283	9.25	5.22	5.11	5.29	15.51
2011 Average	224.939	1.590	13.18	NA	NA	4.90	4.80	5.21	15.27
2012 Average	229.594	1.609	13.35	NA	NA	4.64	4.53	5.17	15.17
2013 Average	232.957	1.538	12.76	NA	NA	4.43	4.31	5.21	15.26
2014 Average	236.736	1.447	12.01	NA	NA	4.63	4.49	5.29	15.50
2015 January	233.707	0.929	7.71	NA	NA	4.07	3.92	5.18	15.17
February	234.722	0.983	8.16	NA	NA	3.87	3.73	5.24	15.35
March	236.119	1.077	8.94	NA	NA	3.93	3.79	5.22	15.30
April	236.599	1.076	8.93	NA	NA	4.41	4.26	5.33	15.63
May	237.805	1.191	9.88	NA	NA	5.35	5.16	5.44	15.94
June	238.638	1.211	10.05	NA	NA	6.32	6.09	5.41	15.87
July	238.654	1.212	10.06	NA	NA	6.82	6.58	5.42	15.89
August	238.316	1.152	9.56	NA	NA	7.09	6.83	5.42	15.88
September	237.945	1.035	8.59	NA	NA	6.89	6.65	5.48	16.05
October	237.838	0.991	8.23	NA	NA	5.30	5.11	5.35	15.67
November	237.336	0.948	7.87	NA	NA	4.22	4.07	5.36	15.70
December	236.525	0.898	7.46	NA	NA	3.92	3.78	5.21	15.27
Average	237.017	1.059	8.79	NA	NA	4.38	4.22	5.34	15.64
2016 January	236.916	0.859	7.13	NA	NA	3.51	3.39	5.06	14.82
February	237.111	0.773	6.42	NA	NA	3.54	3.41	5.12	15.01
March	238.132	0.849	7.05	NA	NA	R 3.87	R 3.73	5.28	15.47
April	239.261	0.918	7.62	NA	NA	R 4.03	R 3.89	5.20	15.23
May	240.229	0.967	8.03	NA	NA	R 4.84	R 4.67	5.32	15.60
June	241.018	1.005	8.34	NA	NA	R 6.01	R 5.80	5.28	15.47
July	240.628	0.950	7.89	NA	NA	6.89	6.64	5.27	15.44
August	240.849	0.921	7.65	NA	NA	R 7.33	R 7.07	5.36	15.70
September	241.428	0.940	7.80	NA	NA	R 6.97	R 6.72	5.33	15.62
October	241.729	0.953	7.91	NA	NA	R 5.69	R 5.49	5.15	15.11
November	241.353	0.931	7.73	NA	NA	4.46	4.30	5.28	15.48
December	241.432	0.948	7.87	NA	NA	R 3.76	3.62	5.06	14.82
Average	240.007	0.918	7.62	NA	NA	R 4.20	R 4.05	5.23	15.33
2017 January	242.839	0.992	8.24	NA	NA	3.86	3.72	5.03	14.75
February	243.603	0.969	8.04	NA	NA	4.13	3.98	5.26	15.42
March	243.801	0.979	8.12	NA	NA	R 4.07	3.92	5.29	15.51
April	244.524	1.014	8.42	NA	NA	R 4.65	R 4.49	R 5.19	R 15.22
May	244.733	1.000	8.30	NA	NA	NA	NA	NA	NA
June	244.955	0.980	8.13	NA	NA	NA	NA	NA	NA

^a Data are U.S. city averages for all items, and are not seasonally adjusted.

^b Includes taxes.

^c Excludes taxes.

R=Revised. NA=Not available.

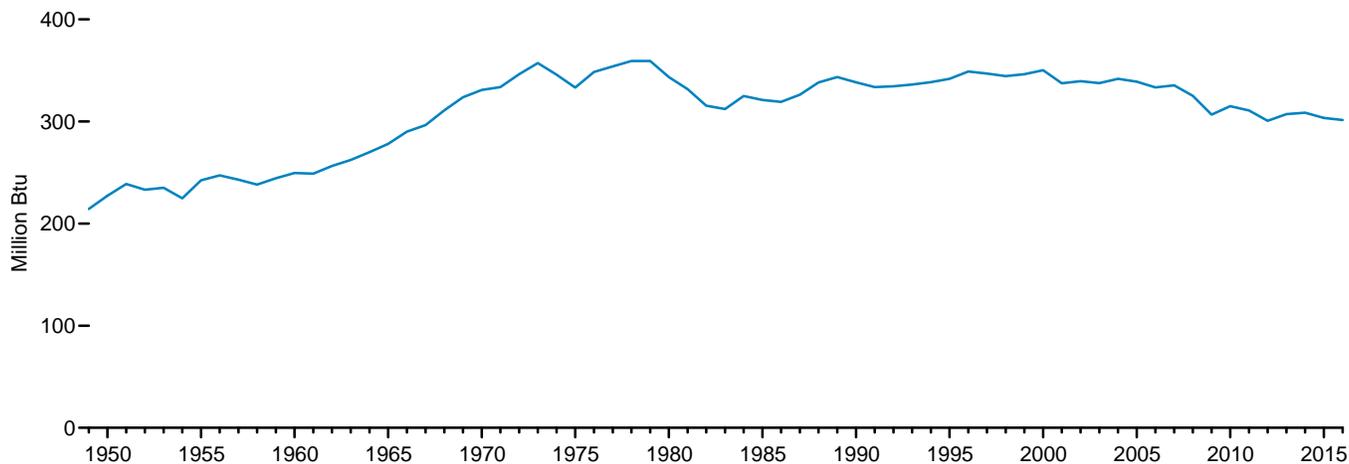
Notes: • See "Real Dollars" in Glossary. • Fuel costs are calculated by using the Urban Consumer Price Index (CPI) developed by the Bureau of Labor Statistics. • Annual averages may not equal average of months due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1960 and monthly data beginning in 1995.

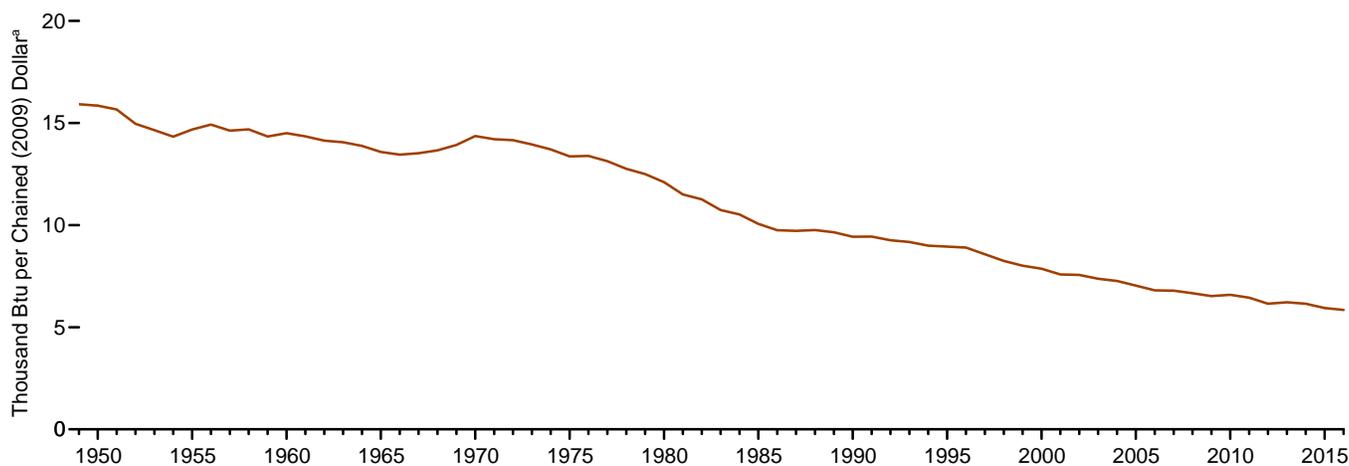
Sources: • **Fuel Prices:** Tables 9.4 (All Grades), 9.8, and 9.10, adjusted by the CPI; and *Monthly Energy Review*, September 2012, Table 9.8c. • **Consumer Price Index, All Urban Consumers:** U.S. Department of Labor, Bureau of Labor Statistics, series ID CUUR0000SA0. • **Conversion Factors:** Tables A1, A3, A4, and A6.

Figure 1.7 Primary Energy Consumption and Energy Expenditures Indicators

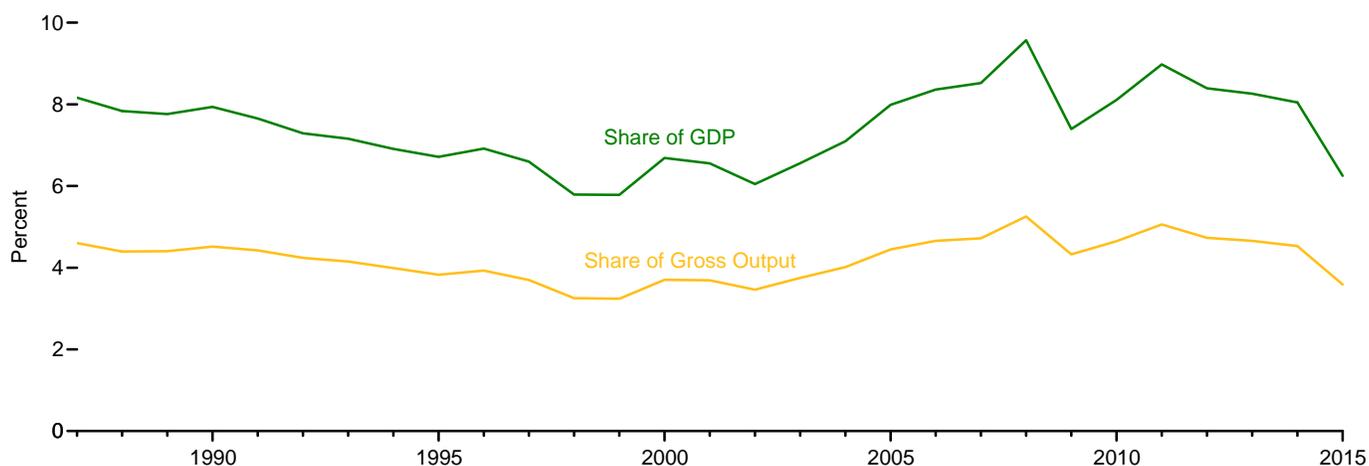
Energy Consumption per Capita, 1949–2016



Primary Energy Consumption per Real Dollar^a of Gross Domestic Product, 1949–2016



Energy Expenditures as Share of Gross Domestic Product and Gross Output,^b 1987–2015



^a See "Chained Dollars" and "Real Dollars" in Glossary.

^b Gross output is the value of gross domestic product (GDP) plus the value of intermediate inputs used to produce GDP.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.
Source: Table 1.7.

Table 1.7 Primary Energy Consumption, Energy Expenditures, and Carbon Dioxide Emissions Indicators

	Primary Energy Consumption ^a			Energy Expenditures ^b				Carbon Dioxide Emissions ^c		
	Consumption	Consumption per Capita	Consumption per Real Dollar ^d of GDP ^e	Expenditures	Expenditures per Capita	Expenditures as Share of GDP ^e	Expenditures as Share of Gross Output ^f	Emissions	Emissions per Capita	Emissions per Real Dollar ^d of GDP ^e
	Quadrillion Btu	Million Btu	Thousand Btu per Chained (2009) Dollar ^d	Million Nominal Dollars ^g	Nominal Dollars ^g	Percent	Percent	Million Metric Tons Carbon Dioxide	Metric Tons Carbon Dioxide	Metric Tons Carbon Dioxide per Million Chained (2009) Dollars ^d
1950	34.616	227	15.85	NA	NA	NA	NA	2,382	15.6	1,091
1955	40.208	242	14.68	NA	NA	NA	NA	2,685	16.2	980
1960	45.086	250	14.50	NA	NA	NA	NA	2,914	16.1	937
1965	54.015	278	13.58	NA	NA	NA	NA	3,462	17.8	871
1970	67.838	331	14.37	82,875	404	7.7	NA	4,261	20.8	902
1975	71.965	333	13.36	171,851	796	10.2	NA	4,439	20.6	824
1980	78.067	344	12.10	374,347	1,647	13.1	NA	4,771	21.0	740
1981	76.106	332	11.50	427,898	1,865	13.3	NA	4,646	20.2	702
1982	73.099	316	11.26	426,479	1,841	12.7	NA	4,405	19.0	679
1983	72.971	312	10.74	417,617	1,786	11.5	NA	4,377	18.7	644
1984	76.632	325	10.52	R 435,309	1,846	10.8	NA	4,614	19.6	633
1985	76.392	321	10.06	R 438,339	R 1,842	10.1	NA	4,600	19.3	606
1986	76.647	319	9.75	R 384,088	R 1,599	8.4	NA	4,608	19.2	586
1987	79.054	326	9.72	R 397,623	R 1,641	8.2	4.6	4,766	19.7	586
1988	82.709	338	9.76	R 411,565	R 1,683	7.8	4.4	4,984	20.4	588
1989	84.785	344	9.65	R 439,046	R 1,779	7.8	4.4	5,070	20.5	577
1990	84.484	338	9.43	R 474,647	R 1,901	7.9	4.5	5,039	20.2	563
1991	84.437	334	9.44	R 472,434	R 1,867	7.7	4.4	4,993	19.7	558
1992	85.782	334	9.26	R 476,840	R 1,859	7.3	4.2	5,087	19.8	549
1993	87.365	336	9.18	R 492,267	1,894	7.2	4.2	5,185	19.9	545
1994	89.087	339	8.99	R 504,854	1,919	6.9	4.0	5,261	20.0	531
1995	91.031	342	8.95	R 514,622	1,933	6.7	3.8	5,323	20.0	523
1996	94.021	349	8.90	R 560,292	2,080	6.9	3.9	5,510	20.5	522
1997	94.600	347	8.57	R 567,960	R 2,083	6.6	3.7	5,584	20.5	506
1998	95.018	344	8.24	R 526,280	1,908	5.8	3.3	5,635	20.4	489
1999	96.648	346	8.01	R 558,624	2,002	5.8	3.2	5,688	20.4	471
2000	98.817	350	7.87	R 687,708	R 2,437	6.7	3.7	5,868	20.8	467
2001	96.170	337	7.58	R 696,240	R 2,443	6.6	3.7	5,761	20.2	454
2002	97.643	339	7.56	R 663,962	R 2,308	6.0	3.5	5,804	20.2	450
2003	97.918	338	7.38	R 755,068	2,603	6.6	3.8	5,853	20.2	441
2004	100.090	342	7.27	R 871,209	R 2,975	7.1	4.0	5,970	20.4	433
2005	100.188	339	7.04	R 1,045,729	3,539	8.0	4.4	5,993	20.3	421
2006	99.485	333	6.81	R 1,158,819	3,884	8.4	4.7	5,910	19.8	404
2007	101.015	335	6.79	R 1,233,864	R 4,096	8.5	4.7	6,000	19.9	403
2008	98.891	325	6.67	R 1,408,750	4,633	9.6	5.3	5,809	19.1	392
2009	94.118	307	6.53	R 1,066,275	R 3,476	7.4	4.3	5,386	17.6	374
2010	97.445	315	6.59	R 1,213,336	R 3,922	8.1	4.6	5,582	18.0	378
2011	96.842	311	6.45	R 1,392,945	R 4,469	9.0	5.1	5,445	17.5	362
2012	94.416	301	6.15	R 1,356,215	4,319	8.4	4.7	5,232	16.7	341
2013	97.157	307	6.22	R 1,378,885	R 4,361	8.3	4.7	5,360	17.0	343
2014	98.329	309	6.15	R 1,399,486	R 4,393	8.0	4.5	5,406	17.0	338
2015	97.365	303	5.94	R 1,127,132	R 3,512	R 6.2	R 3.6	5,259	16.4	321
2016	R 97.394	301	5.85	NA	NA	NA	NA	R 5,170	16.0	310

^a See "Primary Energy Consumption" in Glossary.

^b Expenditures include taxes where data are available.

^c Carbon dioxide emissions from energy consumption. See Table 12.1.

^d See "Chained Dollars" and "Real Dollars" in Glossary.

^e See "Gross Domestic Product (GDP)" in Glossary.

^f Gross output is the value of GDP plus the value of intermediate inputs used to produce GDP.

^g See "Nominal Dollars" in Glossary.

R=Revised. NA=Not available.

Notes: • Data are estimates. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949.

Sources: • **Consumption:** Table 1.3. • **Consumption per Capita:** Calculated as energy consumption divided by U.S. population (see Table C1).

• **Consumption per Real Dollar of GDP:** Calculated as energy consumption divided by U.S. gross domestic product in chained (2009) dollars (see Table C1).

• **Expenditures:** U.S. Energy Information Administration, "State Energy Price and Expenditure Estimates, 1970 Through 2014" (June 2016), U.S. Table ET1.

• **Expenditures per Capita:** Calculated as energy expenditures divided by U.S. population (see Table C1).

• **Expenditures as Share of GDP:** Calculated as energy expenditures divided by U.S. gross domestic product in nominal dollars (see Table C1).

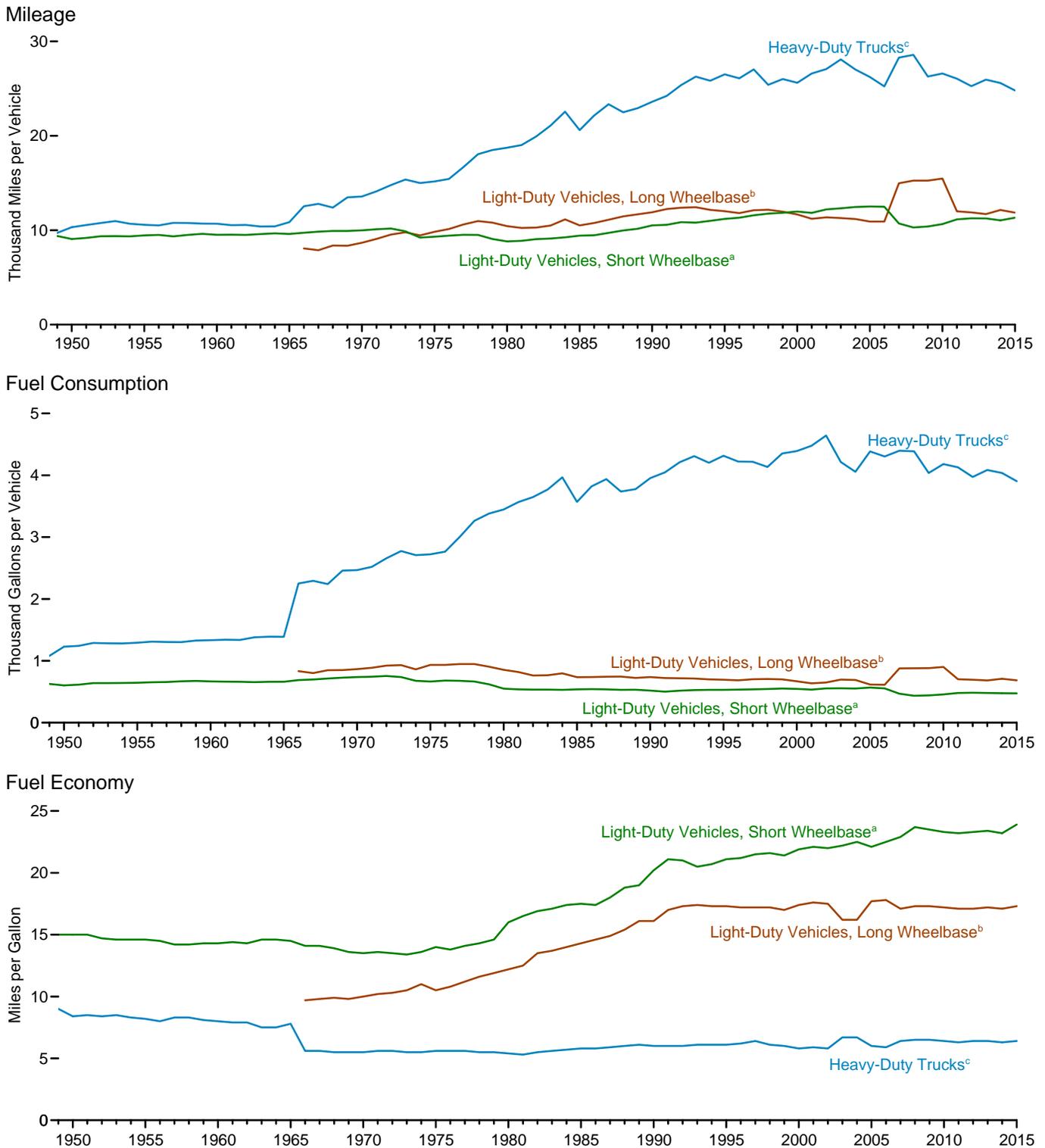
• **Expenditures as Share of Gross Output:** Calculated as energy expenditures divided by U.S. gross output (see Table C1).

• **Emissions:** 1949–1972—U.S. Energy Information Administration, *Annual Energy Review 2011*, Table 11.1. 1973 forward—Table 12.1.

• **Emissions per Capita:** Calculated as carbon dioxide emissions divided by U.S. population (see Table C1).

• **Emissions per Real Dollar of GDP:** Calculated as carbon dioxide emissions divided by U.S. gross domestic product in chained (2009) dollars (see Table C1).

Figure 1.8 Motor Vehicle Mileage, Fuel Consumption, and Fuel Economy, 1949–2015



^a Through 1989, data are for passenger cars and motorcycles. For 1990–2006, data are for passenger cars only. Beginning in 2007, data are for light-duty vehicles (passenger cars, light trucks, vans, and sport utility vehicles) with a wheelbase less than or equal to 121 inches.

^b For 1966–2000, data are for vans, pickup trucks, and sport utility vehicles. Beginning in 2007, data are for light-duty vehicles (passenger cars, light trucks, vans, and sport utility vehicles) with a wheelbase greater than 121 inches.

^c For 1949–1965, data are for single-unit trucks with 2 axles and 6 or more tires, combination trucks, and other vehicles with 2 axles and 4

tires that are not passenger cars. For 1966–2006 data are for single-unit trucks with 2 axles and 6 or more tires, and combination trucks. Beginning in 2007, data are for single-unit trucks with 2 axles and 6 or more tires (or a gross vehicle weight rating exceeding 10,000 pounds), and combination trucks.

Note: Through 1965, “Light-Duty Vehicles, Long Wheelbase” data are included in “Heavy-Duty Trucks.”

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.

Source: Table 1.8.

Table 1.8 Motor Vehicle Mileage, Fuel Consumption, and Fuel Economy

	Light-Duty Vehicles, Short Wheelbase ^a			Light-Duty Vehicles, Long Wheelbase ^b			Heavy-Duty Trucks ^c			All Motor Vehicles ^d		
	Mileage	Fuel Consumption	Fuel Economy	Mileage	Fuel Consumption	Fuel Economy	Mileage	Fuel Consumption	Fuel Economy	Mileage	Fuel Consumption	Fuel Economy
	Miles per Vehicle	Gallons per Vehicle	Miles per Gallon	Miles per Vehicle	Gallons per Vehicle	Miles per Gallon	Miles per Vehicle	Gallons per Vehicle	Miles per Gallon	Miles per Vehicle	Gallons per Vehicle	Miles per Gallon
1950	9,060	603	15.0	(^e)	(^e)	(^e)	10,316	1,229	8.4	9,321	725	12.8
1955	9,447	645	14.6	(^e)	(^e)	(^e)	10,576	1,293	8.2	9,661	761	12.7
1960	9,518	668	14.3	(^e)	(^e)	(^e)	10,693	1,333	8.0	9,732	784	12.4
1965	9,603	661	14.5	(^e)	(^e)	(^e)	10,851	1,387	7.8	9,826	787	12.5
1970	9,989	737	13.5	8,676	866	10.0	13,565	2,467	5.5	9,976	830	12.0
1975	9,309	665	14.0	9,829	934	10.5	15,167	2,722	5.6	9,627	790	12.2
1980	8,813	551	16.0	10,437	854	12.2	18,736	3,447	5.4	9,458	712	13.3
1981	8,873	538	16.5	10,244	819	12.5	19,016	3,565	5.3	9,477	697	13.6
1982	9,050	535	16.9	10,276	762	13.5	19,931	3,647	5.5	9,644	686	14.1
1983	9,118	534	17.1	10,497	767	13.7	21,083	3,769	5.6	9,760	686	14.2
1984	9,248	530	17.4	11,151	797	14.0	22,550	3,967	5.7	10,017	691	14.5
1985	9,419	538	17.5	10,506	735	14.3	20,597	3,570	5.8	10,020	685	14.6
1986	9,464	543	17.4	10,764	738	14.6	22,143	3,821	5.8	10,143	692	14.7
1987	9,720	539	18.0	11,114	744	14.9	23,349	3,937	5.9	10,453	694	15.1
1988	9,972	531	18.8	11,465	745	15.4	22,485	3,736	6.0	10,721	688	15.6
1989	10,157	533	19.0	11,676	724	16.1	22,926	3,776	6.1	10,932	688	15.9
1990	10,504	520	20.2	11,902	738	16.1	23,603	3,953	6.0	11,107	677	16.4
1991	10,571	501	21.1	12,245	721	17.0	24,229	4,047	6.0	11,294	669	16.9
1992	10,857	517	21.0	12,381	717	17.3	25,373	4,210	6.0	11,558	683	16.9
1993	10,804	527	20.5	12,430	714	17.4	26,262	4,309	6.1	11,595	693	16.7
1994	10,992	531	20.7	12,156	701	17.3	25,838	4,202	6.1	11,683	698	16.7
1995	11,203	530	21.1	12,018	694	17.3	26,514	4,315	6.1	11,793	700	16.8
1996	11,330	534	21.2	11,811	685	17.2	26,092	4,221	6.2	11,813	700	16.9
1997	11,581	539	21.5	12,115	703	17.2	27,032	4,218	6.4	12,107	711	17.0
1998	11,754	544	21.6	12,173	707	17.2	25,397	4,135	6.1	12,211	721	16.9
1999	11,848	553	21.4	11,957	701	17.0	26,014	4,352	6.0	12,206	732	16.7
2000	11,976	547	21.9	11,672	669	17.4	25,617	4,391	5.8	12,164	720	16.9
2001	11,831	534	22.1	11,204	636	17.6	26,602	4,477	5.9	11,887	695	17.1
2002	12,202	555	22.0	11,364	650	17.5	27,071	4,642	5.8	12,171	719	16.9
2003	12,325	556	22.2	11,287	697	16.2	28,093	4,215	6.7	12,208	718	17.0
2004	12,460	553	22.5	11,184	690	16.2	27,023	4,057	6.7	12,200	714	17.1
2005	12,510	567	22.1	10,920	617	17.7	26,235	4,385	6.0	12,082	706	17.1
2006	12,485	554	22.5	10,920	612	17.8	25,231	4,304	5.9	12,017	698	17.2
2007	^a 10,710	^a 468	^a 22.9	^b 14,970	^b 877	^b 17.1	^c 28,290	^c 4,398	6.4	11,915	693	17.2
2008	10,290	435	23.7	15,256	880	17.3	28,573	4,387	6.5	11,631	667	17.4
2009	10,391	442	23.5	15,252	882	17.3	26,274	4,037	6.5	11,631	661	17.6
2010	10,650	456	23.3	15,474	901	17.2	26,604	4,180	6.4	11,866	681	17.4
2011	11,150	481	23.2	12,007	702	17.1	26,054	4,128	6.3	11,652	665	17.5
2012	11,262	484	23.3	11,885	694	17.1	25,255	3,973	6.4	11,707	665	17.6
2013	11,244	480	23.4	11,712	683	17.2	25,951	4,086	6.4	11,679	663	17.6
2014	11,048	476	23.2	12,138	710	17.1	25,594	4,036	6.3	11,621	666	17.5
2015 ^P	11,327	475	23.9	11,855	684	17.3	24,797	3,904	6.4	11,742	656	17.9

^a Through 1989, data are for passenger cars and motorcycles. For 1990–2006, data are for passenger cars only. Beginning in 2007, data are for light-duty vehicles (passenger cars, light trucks, vans, and sport utility vehicles) with a wheelbase less than or equal to 121 inches.

^b For 1966–2006, data are for vans, pickup trucks, and sport utility vehicles. Beginning in 2007, data are for light-duty vehicles (passenger cars, light trucks, vans, and sport utility vehicles) with a wheelbase greater than 121 inches.

^c For 1949–1965, data are for single-unit trucks with 2 axles and 6 or more tires, combination trucks, and other vehicles with 2 axles and 4 tires that are not passenger cars. For 1966–2006, data are for single-unit trucks with 2 axles and 6 or more tires, and combination trucks. Beginning in 2007, data are for single-unit trucks with 2 axles and 6 or more tires (or a gross vehicle weight rating exceeding 10,000 pounds), and combination trucks.

^d Includes buses and motorcycles, which are not separately displayed.

^e Included in "Heavy-Duty Trucks."

P=Preliminary.

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

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949.

Sources: • **Light-Duty Vehicles, Short Wheelbase: 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.

Table 1.9 Heating Degree Days by Census Division

	New England ^a	Middle Atlantic ^b	East North Central ^c	West North Central ^d	South Atlantic ^e	East South Central ^f	West South Central ^g	Mountain ^h	Pacific ⁱ	United States
1950 Total	6,794	6,324	7,027	7,455	3,521	3,547	2,277	6,341	3,906	5,367
1955 Total	6,872	6,231	6,486	6,912	3,508	3,513	2,294	6,704	4,320	5,246
1960 Total	6,828	6,391	6,908	7,184	3,780	4,134	2,767	6,281	3,799	5,404
1965 Total	7,029	6,393	6,587	6,932	3,372	3,501	2,237	6,086	3,819	5,146
1970 Total	7,022	6,388	6,721	7,090	3,452	3,823	2,558	6,119	3,726	5,218
1975 Total	6,547	5,892	6,406	6,880	2,970	3,437	2,312	6,260	4,117	4,905
1980 Total	7,071	6,477	6,975	6,836	3,378	3,964	2,494	5,554	3,539	5,080
1985 Total	6,749	5,971	6,668	7,262	2,899	3,660	2,535	6,059	3,935	4,889
1990 Total	5,987	5,252	5,780	6,137	2,307	2,942	1,968	5,391	3,603	4,180
1995 Total	6,684	6,093	6,740	6,911	2,988	3,648	2,147	5,101	3,269	4,640
2000 Total	6,625	5,999	6,315	6,500	2,905	3,551	2,153	4,971	3,460	4,494
2001 Total	6,202	5,541	5,844	6,221	2,604	3,327	2,162	5,004	3,545	4,257
2002 Total	6,234	5,550	6,128	6,485	2,664	3,443	2,292	5,197	3,510	4,356
2003 Total	6,975	6,258	6,536	6,593	2,884	3,559	2,205	4,817	3,355	4,544
2004 Total	6,709	5,892	6,178	6,329	2,715	3,291	2,041	5,010	3,346	4,344
2005 Total	6,644	5,950	6,222	6,213	2,775	3,380	1,985	4,896	3,377	4,348
2006 Total	5,885	5,211	5,703	5,821	2,475	3,211	1,802	4,915	3,557	4,040
2007 Total	6,537	5,756	6,074	6,384	2,525	3,187	2,105	4,939	3,506	4,268
2008 Total	6,434	5,782	6,677	7,118	2,712	3,600	2,125	5,233	3,566	4,494
2009 Total	6,644	5,922	6,512	6,841	2,812	3,536	2,152	5,139	3,538	4,481
2010 Total	5,934	5,553	6,185	6,565	3,167	3,948	2,449	5,082	3,624	4,463
2011 Total	6,114	5,483	6,172	6,565	2,565	3,343	2,114	5,322	3,818	4,312
2012 Total	5,561	4,970	5,356	5,515	2,306	2,876	1,650	4,574	3,411	3,769
2013 Total	6,426	5,838	6,621	7,135	2,736	3,648	2,326	5,273	3,362	4,465
2014 Total	6,675	6,203	7,194	7,304	2,951	3,932	2,422	4,744	3,774	4,550
2015 January	1,336	1,260	1,334	1,266	643	835	623	818	471	890
February	1,412	1,318	1,404	1,305	666	864	498	600	334	867
March	1,101	1,002	951	802	357	445	279	484	285	584
April	588	481	454	398	131	147	55	396	295	300
May	147	100	159	215	22	37	14	268	208	119
June	84	30	45	40	1	1	0	42	26	24
July	7	4	12	12	0	0	0	24	8	6
August	8	8	24	33	0	1	0	21	13	11
September	43	27	39	50	8	13	1	78	58	32
October	459	391	365	355	143	164	42	247	111	227
November	610	529	604	650	236	312	218	686	471	445
December	725	625	775	960	279	401	357	937	619	581
Total	6,521	5,775	6,166	6,088	2,486	3,220	2,088	4,600	2,899	4,086
2016 January	1,130	1,120	1,241	1,303	659	856	564	917	568	871
February	958	901	957	936	482	573	309	621	341	628
March	757	645	670	654	240	322	180	542	393	450
April	605	515	506	425	151	162	62	383	244	310
May	254	214	221	208	58	70	17	255	179	151
June	46	22	25	28	1	0	0	42	44	21
July	4	1	3	11	0	0	0	15	19	6
August	5	1	5	17	0	0	0	31	12	6
September	69	37	40	75	2	5	1	115	65	39
October	390	317	285	304	91	89	22	265	199	197
November	672	608	582	569	290	338	155	514	331	418
December	1,057	975	1,165	1,257	478	671	445	925	626	783
Total	5,947	5,356	5,701	5,786	2,452	3,086	1,756	4,624	3,023	3,878
2017 January	1,043	973	1,082	1,211	476	578	418	962	667	767
February	907	778	775	817	323	408	209	627	495	547
March	1,042	909	834	782	347	385	147	469	394	543
April	454	340	349	401	76	93	51	405	308	248
4-Month Total	3,445	3,001	3,040	3,211	1,222	1,464	825	2,464	1,865	2,105
2016 4-Month Total	3,450	3,182	3,375	3,318	1,532	1,913	1,115	2,463	1,547	2,258
2015 4-Month Total	4,437	4,061	4,144	3,773	1,797	2,290	1,455	2,298	1,385	2,641

^a Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

^b New Jersey, New York, and Pennsylvania.

^c Illinois, Indiana, Michigan, Ohio, and Wisconsin.

^d Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.

^e Delaware, Florida, Georgia, Maryland (and the District of Columbia), North Carolina, South Carolina, Virginia, and West Virginia.

^f Alabama, Kentucky, Mississippi, and Tennessee.

^g Arkansas, Louisiana, Oklahoma, and Texas.

^h Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.

ⁱ Alaska, California, Hawaii, Oregon, and Washington.

Notes: • Degree days are relative measurements of outdoor air temperature used as an index for heating and cooling energy requirements. Heating degree days are the number of degrees that the daily average temperature falls below 65 degrees Fahrenheit (°F). Cooling degree days are the number of degrees that the daily average temperature rises above 65°F. The daily average temperature is the

mean of the maximum and minimum temperatures in a 24-hour period. For example, a weather station recording an average daily temperature of 40°F would report 25 heating degree days for that day (and 0 cooling degree days). If a weather station recorded an average daily temperature of 78°F, cooling degree days for that station would be 13 (and 0 heating degree days). • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Source: State-level degree day data are from U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Centers for Environmental Information. Using these state-level data, the U.S. Energy Information Administration calculates population-weighted census-division and U.S. degree day averages using state populations from the same year the degree days are measured. See methodology at http://www.eia.gov/forecasts/steo/special/pdf/2012_sp_04.pdf.

Table 1.10 Cooling Degree Days by Census Division

	New England ^a	Middle Atlantic ^b	East North Central ^c	West North Central ^d	South Atlantic ^e	East South Central ^f	West South Central ^g	Mountain ^h	Pacific ⁱ	United States
1950 Total	295	401	505	647	1,414	1,420	2,282	682	629	871
1955 Total	532	761	922	1,139	1,636	1,674	2,508	780	558	1,144
1960 Total	318	487	626	871	1,583	1,532	2,367	974	796	1,000
1965 Total	310	498	618	832	1,613	1,552	2,461	780	577	979
1970 Total	423	615	747	980	1,744	1,571	2,282	971	734	1,079
1975 Total	422	584	721	937	1,791	1,440	2,162	903	597	1,049
1980 Total	438	680	769	1,158	1,911	1,754	2,651	1,071	653	1,214
1985 Total	324	509	602	780	1,878	1,522	2,519	1,095	761	1,121
1990 Total	429	562	602	913	2,054	1,563	2,526	1,212	838	1,200
1995 Total	471	704	877	928	2,028	1,613	2,398	1,213	794	1,261
2000 Total	279	458	632	983	1,925	1,674	2,775	1,480	772	1,232
2001 Total	464	623	722	994	1,897	1,478	2,543	1,508	861	1,255
2002 Total	508	772	899	1,045	2,182	1,757	2,515	1,467	783	1,363
2003 Total	475	615	619	907	1,980	1,452	2,496	1,553	978	1,268
2004 Total	368	591	585	722	2,038	1,517	2,482	1,290	828	1,217
2005 Total	598	892	944	1,063	2,098	1,676	2,647	1,372	777	1,388
2006 Total	485	693	734	1,034	2,053	1,648	2,786	1,466	922	1,360
2007 Total	447	694	881	1,102	2,219	1,892	2,475	1,564	828	1,392
2008 Total	462	667	683	818	1,993	1,537	2,501	1,385	918	1,282
2009 Total	350	524	534	698	2,029	1,479	2,590	1,393	894	1,241
2010 Total	635	908	964	1,096	2,269	1,977	2,757	1,358	674	1,456
2011 Total	554	836	859	1,074	2,259	1,727	3,112	1,450	736	1,470
2012 Total	565	815	974	1,221	2,162	1,762	2,915	1,573	917	1,495
2013 Total	540	683	690	892	2,000	1,441	2,536	1,462	892	1,306
2014 Total	420	596	610	814	2,009	1,493	2,474	1,431	1,068	1,299
2015 January	0	0	0	0	34	3	5	2	11	9
February	0	0	0	0	19	0	6	11	12	7
March	0	0	0	3	84	21	39	32	27	30
April	0	0	1	8	131	52	141	40	22	53
May	31	72	82	56	242	175	260	75	29	126
June	40	115	139	203	394	353	454	313	175	255
July	193	251	202	289	456	443	585	325	216	336
August	206	230	169	202	410	340	561	362	260	315
September	86	136	128	168	296	236	424	231	191	223
October	0	1	7	13	135	59	188	84	96	77
November	0	0	0	0	103	16	52	3	10	29
December	0	1	2	0	100	24	25	0	8	26
Total	555	805	729	942	2,405	1,721	2,740	1,479	1,057	1,486
2016 January	0	0	0	0	24	2	9	0	7	7
February	0	0	0	0	23	3	26	10	14	11
March	0	0	3	10	89	36	86	24	13	35
April	0	0	1	8	87	38	122	42	24	42
May	7	17	42	48	185	125	236	90	37	97
June	71	129	187	262	379	372	474	332	168	271
July	240	308	277	306	508	474	619	407	235	383
August	238	311	296	268	484	461	547	305	233	361
September	59	115	131	138	352	321	428	174	124	219
October	0	6	19	28	156	114	230	99	47	86
November	0	0	0	2	56	12	80	14	17	26
December	0	0	0	0	65	4	17	0	8	17
Total	615	886	956	1,070	2,408	1,963	2,874	1,498	927	1,555
2017 January	0	0	0	0	49	20	35	0	7	16
February	0	0	0	3	54	18	67	5	6	22
March	0	0	1	6	55	28	112	31	15	32
April	0	2	8	9	124	76	142	49	24	56
4-Month Total	0	2	9	17	282	142	356	85	53	126
2016 4-Month Total	0	0	4	17	223	80	244	77	59	95
2015 4-Month Total	0	0	1	11	268	76	191	85	72	99

^a Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

^b New Jersey, New York, and Pennsylvania.

^c Illinois, Indiana, Michigan, Ohio, and Wisconsin.

^d Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.

^e Delaware, Florida, Georgia, Maryland (and the District of Columbia), North Carolina, South Carolina, Virginia, and West Virginia.

^f Alabama, Kentucky, Mississippi, and Tennessee.

^g Arkansas, Louisiana, Oklahoma, and Texas.

^h Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.

ⁱ Alaska, California, Hawaii, Oregon, and Washington.

Notes: • Degree days are relative measurements of outdoor air temperature used as an index for heating and cooling energy requirements. Cooling degree days are the number of degrees that the daily average temperature rises above 65 degrees Fahrenheit (°F). Heating degree days are the number of degrees that the daily average temperature falls below 65°F. The daily average temperature is the

mean of the maximum and minimum temperatures in a 24-hour period. For example, if a weather station recorded an average daily temperature of 78°F, cooling degree days for that station would be 13 (and 0 heating degree days). A weather station recording an average daily temperature of 40°F would report 25 heating degree days for that day (and 0 cooling degree days).

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

• Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Source: State-level degree day data are from U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Centers for Environmental Information. Using these state-level data, the U.S. Energy Information Administration calculates population-weighted census-division and U.S. degree day averages using state populations from the same year the degree days are measured. See methodology at http://www.eia.gov/forecasts/steo/special/pdf/2012_sp_04.pdf.

Energy Overview

Note. Merchandise Trade Value. Imports data presented are based on the customs values. Those values do not include insurance and freight and are consequently lower than the cost, insurance, and freight (CIF) values, which are also reported by the Bureau of the Census. All exports data, and imports data through 1980, are on a free alongside ship (f.a.s.) basis.

“Balance” is exports minus imports; a positive balance indicates a surplus trade value and a negative balance indicates a deficit trade value. “Energy” includes mineral fuels, lubricants, and related material. “Non-Energy Balance” and “Total Merchandise” include foreign exports (i.e., re-exports) and nonmonetary gold and U.S. Department of Defense Grant-Aid shipments. The “Non-Energy Balance” is calculated by subtracting the “Energy” from the “Total Merchandise Balance.”

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

Table 1.2 Sources

Coal

1949–1988: Coal production data from Table 6.1 are converted to Btu by multiplying by the coal production heat content factors in Table A5.

1989 forward: Coal production data from Table 6.1 are converted to Btu by multiplying by the coal production heat content factors in Table A5. Waste coal supplied data from Table 6.1 are converted to Btu by multiplying by the waste coal supplied heat content factors in Table A5. Coal production (including waste coal supplied) is equal to coal production plus waste coal supplied.

Natural Gas (Dry)

1949 forward: Natural gas (dry) production data from Table 4.1 are converted to Btu by multiplying by the natural gas (dry) production heat content factors in Table A4.

Crude Oil

1949 forward: Crude oil (including lease condensate) production data from Table 3.1 are converted to Btu by multiplying by the crude oil (including lease condensate) production heat content factors in Table A2.

NGPL

1949 forward: Natural gas plant liquids (NGPL) production data from Table 3.1 are converted to Btu by multiplying by the NGPL production heat content factors in Table A2.

Fossil Fuels Total

1949 forward: Total fossil fuels production is the sum of the production values for coal, natural gas (dry), crude oil, and NGPL.

Nuclear Electric Power

1949 forward: Nuclear electricity net generation data from Table 7.2a are converted to Btu by multiplying by the nuclear heat rate factors in Table A6.

Renewable Energy

1949 forward: Table 10.1.

Total Primary Energy Production

1949 forward: Total primary energy production is the sum of the production values for fossil fuels, nuclear electric power, and renewable energy.

Table 1.3 Sources

Coal

1949 forward: Coal consumption data from Table 6.1 are converted to Btu by multiplying by the total coal consumption heat content factors in Table A5.

Natural Gas

1949–1979: Natural gas (including supplemental gaseous fuels) consumption data from Table 4.1 are converted to Btu by multiplying by the total natural gas consumption heat content factors in Table A4.

1980 forward: Natural gas (including supplemental gaseous fuels) consumption data from Table 4.1 are converted to Btu by multiplying by the total natural gas consumption heat content factors in Table A4. Supplemental gaseous fuels data in Btu are estimated using the method described in Note 3, “Supplemental Gaseous Fuels,” at the end of Section 4. Natural gas (excluding supplemental gaseous fuels) consumption is equal to natural gas (including supplemental gaseous fuels) consumption minus supplemental gaseous fuels.

Petroleum

1949–1992: Petroleum (excluding biofuels) consumption is equal to total petroleum products supplied from Table 3.6.

1993–2008: Petroleum (excluding biofuels) consumption is equal to total petroleum products supplied from Table 3.6 minus fuel ethanol consumption from Table 10.3.

2009 forward: Petroleum (excluding biofuels) consumption is equal to: total petroleum products supplied from Table 3.6; minus fuel ethanol (minus denaturant) consumption from Table 10.3; minus refinery and blender net inputs of renewable fuels (excluding fuel ethanol) from U.S. Energy Information Administration (EIA), *Petroleum Supply Annual/Petroleum Supply Monthly*, Table 1 (for biomass-based diesel fuel, the data are converted to Btu by multiplying

by the biodiesel heat content factor in Table A1; for other renewable diesel fuel, the data are converted to Btu by multiplying by the other renewable diesel fuel heat content factor in Table A1).

Coal Coke Net Imports

1949 forward: Coal coke net imports are equal to coal coke imports from Table 1.4a minus coal coke exports from Table 1.4b.

Fossil Fuels Total

1949 forward: Total fossil fuels consumption is the sum of the consumption values for coal, natural gas, and petroleum, plus coal coke net imports.

Nuclear Electric Power

1949 forward: Nuclear electricity net generation data from Table 7.2a are converted to Btu by multiplying by the nuclear heat rate factors in Table A6.

Renewable Energy

1949 forward: Table 10.1.

Electricity Net Imports

1949 forward: Electricity net imports are equal to electricity imports from Table 1.4a minus electricity exports from Table 1.4b.

Total Primary Energy Consumption

1949 forward: Total primary energy consumption is the sum of the consumption values for fossil fuels, nuclear electric power, and renewable energy, plus electricity net imports.

Table 1.4a Sources

Coal

1949 forward: Coal imports data from Table 6.1 are converted to Btu by multiplying by the coal imports heat content factors in Table A5.

Coal Coke

1949 forward: Coal coke imports data from U.S. Department of Commerce, Bureau of the Census, Monthly Report IM 145, are converted to Btu by multiplying by the coal coke imports heat content factor in Table A5.

Natural Gas

1949 forward: Natural gas imports data from Table 4.1 are converted to Btu by multiplying by the natural gas imports heat content factors in Table A4.

Crude Oil

1949 forward: Crude oil imports data from Table 3.3b are converted to Btu by multiplying by the crude oil imports heat content factors in Table A2.

Petroleum Products

1949–1992: Petroleum products (excluding biofuels) imports are equal to total petroleum imports from Table 3.3b minus crude oil imports from Table 3.3b; petroleum products (excluding biofuels) imports data are converted to Btu by multiplying by the total petroleum products imports heat content factors in Table A2.

1993–2008: Petroleum products (excluding biofuels) imports are equal to petroleum products (including biofuels) imports (see 1949–1992 sources above) minus fuel ethanol (minus denaturant) imports (see “Biomass—Fuel Ethanol (Minus Denaturant)” sources below).

2009 forward: Renewable fuels (excluding fuel ethanol) imports data are from U.S. Energy Information Administration, *Petroleum Supply Annual (PSA)*, Tables 1 and 25, and *Petroleum Supply Monthly (PSM)*, Tables 1 and 37 (for biomass-based diesel fuel and other renewable fuels, the data are converted to Btu by multiplying by the biodiesel heat content factor in Table A1; for other renewable diesel fuel, the data are converted to Btu by multiplying by the other renewable diesel fuel heat content factor in Table A1). Petroleum products (excluding biofuels) imports are equal to petroleum products (including biofuels) imports (see 1949–1992 sources above) minus fuel ethanol (minus denaturant) imports (see “Biomass—Fuel Ethanol (Minus Denaturant)” sources below) minus renewable fuels (excluding fuel ethanol) imports.

Total Petroleum

1949 forward: Total petroleum imports are equal to crude oil imports plus petroleum products imports.

Biomass—Fuel Ethanol (Minus Denaturant)

1993 forward: Fuel ethanol (including denaturant) imports data are from PSA/PSM Table 1. Fuel ethanol (minus denaturant) production is equal to fuel ethanol (including denaturant) production from Table 10.3 minus denaturant from Table 10.3. Fuel ethanol (minus denaturant) imports are equal to fuel ethanol (including denaturant) imports multiplied by the ratio of fuel ethanol (minus denaturant) production to fuel ethanol (including denaturant) production. Fuel ethanol (minus denaturant) imports data are converted to Btu by multiplying by 3,539 million Btu per barrel, the undenatured ethanol heat content factor in Table A3.

Biomass—Biodiesel

2001 forward: Biodiesel imports data are from Table 10.4, and are converted to Btu by multiplying by the biodiesel heat content factor in Table A1.

Biomass—Other Renewable Fuels

2009 forward: Other renewable fuels imports data are from PSA Table 25 and PSM Table 37. For other renewable diesel fuel, the data are converted to Btu by multiplying by the other renewable diesel fuel heat content factor in Table A1; for other renewable fuels, the data are converted to Btu by multiplying by the biodiesel heat content factor in Table A1.

Total Biomass

1993–2000: Total biomass imports are equal to fuel ethanol (minus denaturant) imports.

2001–2008: Total biomass imports are equal to fuel ethanol (minus denaturant) imports plus biodiesel imports.

2009 forward: Total biomass imports are the sum of imports values for fuel ethanol (minus denaturant), biodiesel, and other renewable fuels.

Electricity

1949 forward: Electricity imports data from Table 7.1 are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Total Primary Energy Imports

1949 forward: Total primary energy imports are the sum of the imports values for coal, coal coke, natural gas, total petroleum, total biomass, and electricity.

Table 1.4b Sources

Coal

1949 forward: Coal exports data from Table 6.1 are converted to Btu by multiplying by the coal exports heat content factors in Table A5.

Coal Coke

1949 forward: Coal coke exports data from U.S. Department of Commerce, Bureau of the Census, Monthly Report EM 545, are converted to Btu by multiplying by the coal coke exports heat content factor in Table A5.

Natural Gas

1949 forward: Natural gas exports data from Table 4.1 are converted to Btu by multiplying by the natural gas exports heat content factors in Table A4.

Crude Oil

1949 forward: Crude oil exports data from Table 3.3b are converted to Btu by multiplying by the crude oil exports heat content factor in Table A2.

Petroleum Products

1949–2009: Petroleum products (excluding biofuels) exports are equal to total petroleum exports from Table 3.3b minus crude oil exports from Table 3.3b; petroleum products (excluding biofuels) exports data are converted to Btu by multiplying by the total petroleum products exports heat content factors in Table A2.

2010: Petroleum products (including biofuels) exports are equal to total petroleum exports from Table 3.3b minus crude oil exports from Table 3.3b; petroleum products (including biofuels) exports data are converted to Btu by multiplying by the total petroleum products exports heat content factors in Table A2. Petroleum products (excluding biofuels) exports are equal to petroleum products (including biofuels) exports minus fuel ethanol (minus denaturant) exports (see “Biomass—Fuel Ethanol (Minus Denaturant)” sources below).

2011 forward: Biomass-based diesel fuel exports data are from U.S. Energy Information Administration (EIA), *Petroleum Supply Annual (PSA)*, Table 31, and *Petroleum Supply Monthly (PSM)*, Table 49, and are converted to Btu by multiplying by the biodiesel heat content factor in Table A1. Petroleum products (excluding biofuels) exports are equal to petroleum products (including biofuels) exports (see 2010 sources above) minus fuel ethanol (minus denaturant) exports (see “Biomass—Fuel Ethanol (Minus Denaturant)” sources below) minus biomass-based diesel fuel exports.

Total Petroleum

1949 forward: Total petroleum exports are equal to crude oil exports plus petroleum products exports.

Biomass—Fuel Ethanol (Minus Denaturant)

2010 forward: Fuel ethanol (including denaturant) exports data are from PSA/PSM Table 1. Fuel ethanol (minus denaturant) production is equal to fuel ethanol (including denaturant) production from Table 10.3 minus denaturant from Table 10.3. Fuel ethanol (minus denaturant) exports are equal to fuel ethanol (including denaturant) exports multiplied by the ratio of fuel ethanol (minus denaturant) production to fuel ethanol (including denaturant) production. Fuel ethanol (minus denaturant) exports are converted to Btu by multiplying by 3.539 million Btu per barrel, the undenatured ethanol heat content factor in Table A3.

Biomass—Biodiesel

2001 forward: Biodiesel exports data are from Table 10.4, and are converted to Btu by multiplying by the biodiesel heat content factor in Table A1.

Biomass—Densified Biomass

2016 forward: Densified biomass exports data are from EIA, Form EIA-63C, “Densified Biomass Fuel Report.”

Total Biomass

2001–2009: Total biomass exports are equal to biodiesel exports.

2010 forward: Total biomass exports are equal to fuel ethanol (minus denaturant) exports plus biodiesel exports.

2016 forward: Total biomass exports are the sum of the exports values for fuel ethanol (minus denaturant), biodiesel, and densified biomass.

Electricity

1949 forward: Electricity exports data from Table 7.1 are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Total Primary Energy Exports

1949 forward: Total primary energy exports are the sum of the exports values for coal, coal coke, natural gas, total petroleum, total biomass, and electricity.

Total Primary Energy Net Imports

1949 forward: Total primary energy net imports are equal to total primary energy imports from Table 1.4a minus total primary energy exports.

Table 1.5 Sources

U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Division:

Petroleum Exports

1974–1987: “U.S. Exports,” FT-410, December issues.

1988 and 1989: “Report on U.S. Merchandise Trade,” Final Revisions.

1990–1992: “U.S. Merchandise Trade,” Final Report.

1993–2009: “U.S. International Trade in Goods and Services,” Annual Revisions.

2010–2011: “U.S. International Trade in Goods and Services,” 2012 Annual Revisions.

2012–2014: “U.S. International Trade in Goods and Services,” 2014 Annual Revisions.

2015 forward: “U.S. International Trade in Goods and Services,” FT-900, monthly.

Petroleum Imports

1974–1987: “U.S. Merchandise Trade,” FT-900, December issues, 1975–1988.

1988 and 1989: “Report on U.S. Merchandise Trade,” Final Revisions.

1990–1993: “U.S. Merchandise Trade,” Final Report.

1994–2009: “U.S. International Trade in Goods and Services,” Annual Revisions.

2010–2011: “U.S. International Trade in Goods and Services,” 2012 Annual Revisions.

2012–2014: “U.S. International Trade in Goods and Services,” 2014 Annual Revisions.

2015 forward: “U.S. International Trade in Goods and Services,” FT-900, monthly.

Energy Exports and Imports

1974–1987: U.S. merchandise trade press releases and database printouts for adjustments.

1988: January–July, monthly FT-900 supplement, 1989 issues. August–December, monthly FT-900, 1989 issues.

1989: Monthly FT-900, 1990 issues.

1990–1992: “U.S. Merchandise Trade,” Final Report.

1993–2009: “U.S. International Trade in Goods and Services,” Annual Revisions.

2010–2011: “U.S. International Trade in Goods and Services,” 2012 Annual Revisions.

2012–2014: “U.S. International Trade in Goods and Services,” 2014 Annual Revisions.

2015 forward: “U.S. International Trade in Goods and Services,” FT-900, monthly.

Petroleum Balance

1974 forward: The petroleum balance is calculated by the U.S. Energy Information Administration (EIA) as petroleum imports minus petroleum exports.

Energy Balance

1974 forward: The energy balance is calculated by EIA as energy imports minus energy exports.

Non-Energy Balance

1974 forward: The non-energy balance is calculated by EIA as the total merchandise balance minus the energy balance.

Total Merchandise

1974–1987: U.S. merchandise trade press releases and database printouts for adjustments.

1988: “Report on U.S. Merchandise Trade, 1988 Final Revisions,” August 18, 1989.

1989: “Report on U.S. Merchandise Trade, 1989 Revisions,” July 10, 1990.

1990: “U.S. Merchandise Trade, 1990 Final Report,” May 10, 1991, and “U.S. Merchandise Trade, December 1992,” February 18, 1993, page 3.

1991: “U.S. Merchandise Trade, 1992 Final Report,” May 12, 1993.

1992–2009: “U.S. International Trade in Goods and Services,” Annual Revisions.

2010–2011: “U.S. International Trade in Goods and Services,” 2012 Annual Revisions.

2012–2014: “U.S. International Trade in Goods and Services,” 2014 Annual Revisions.

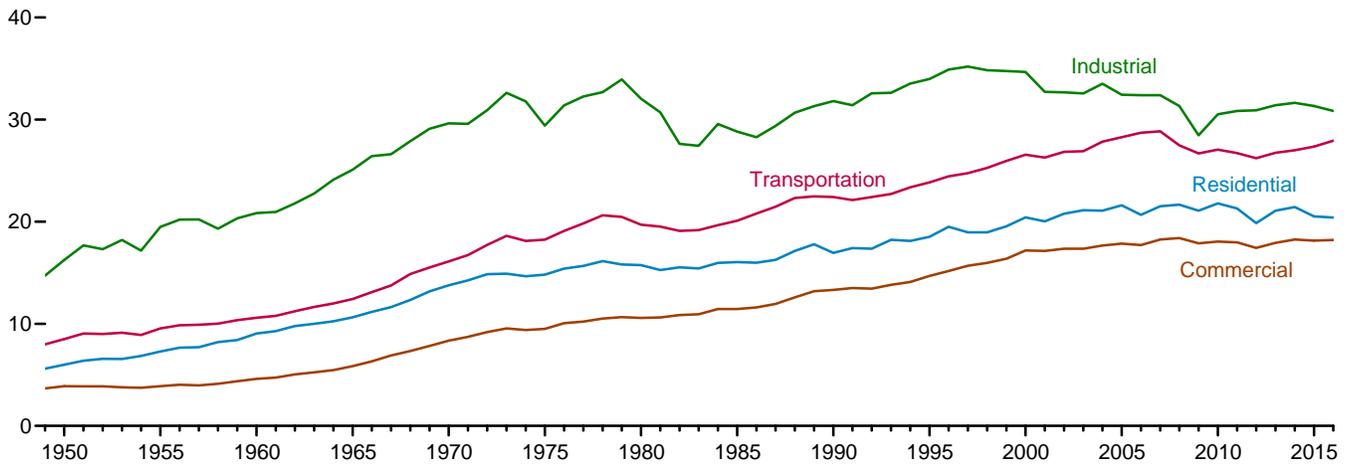
2015 forward: “U.S. International Trade in Goods and Services,” FT-900, monthly.

THIS PAGE INTENTIONALLY LEFT BLANK

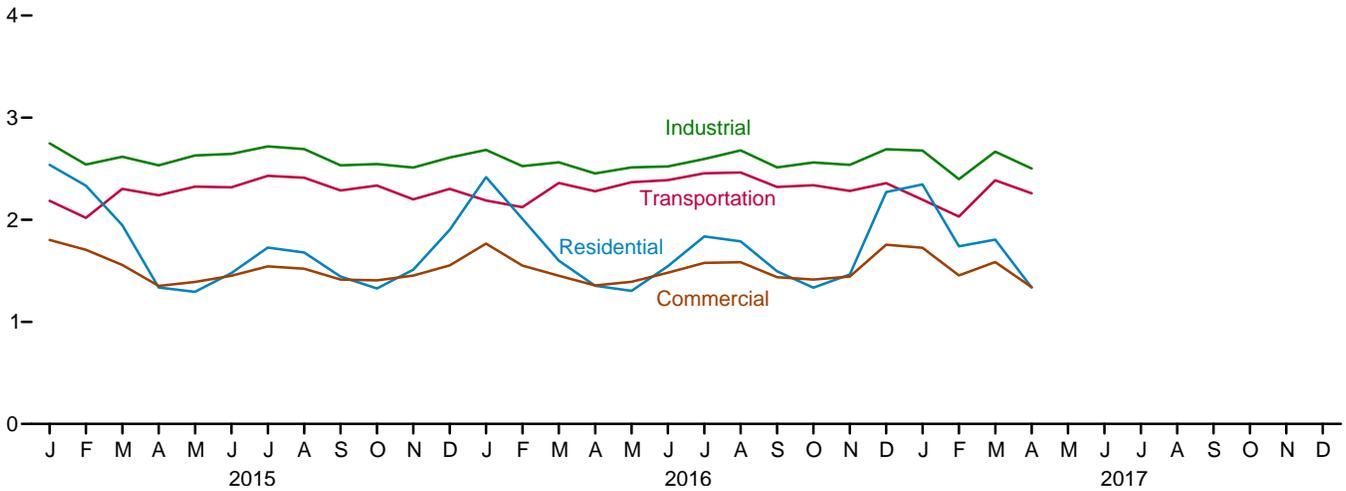
2. Energy Consumption by Sector

Figure 2.1 Energy Consumption by Sector
(Quadrillion Btu)

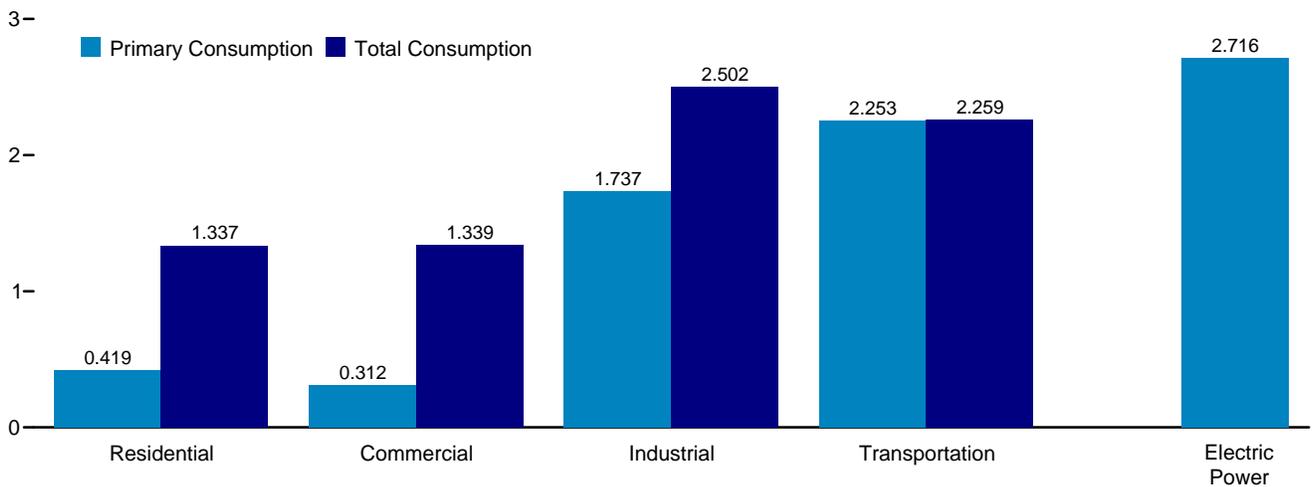
Total Consumption by End-Use Sector, 1949–2016



Total Consumption by End-Use Sector, Monthly



By Sector, April 2017



Web Page: <http://www.eia.gov/totalenergy/data/monthly/#consumption>.
Source: Table 2.1.

Table 2.1 Energy Consumption by Sector
(Trillion Btu)

	End-Use Sectors								Electric Power Sector ^{c,d}	Balancing Item ^g	Primary Total ^h
	Residential		Commercial ^a		Industrial ^b		Transportation				
	Primary ^e	Total ^f	Primary ^e	Total ^f	Primary ^e	Total ^f	Primary ^e	Total ^f			
1950 Total	4,829	5,989	2,834	3,893	13,890	16,241	8,383	8,492	4,679	(s)	34,616
1955 Total	5,608	7,278	2,561	3,895	16,103	19,485	9,474	9,550	6,461	(s)	40,208
1960 Total	6,651	9,039	2,723	4,609	16,996	20,842	10,560	10,596	8,158	(s)	45,086
1965 Total	7,279	10,639	3,177	5,845	20,148	25,098	12,399	12,432	11,012	(s)	54,015
1970 Total	8,322	13,766	4,237	8,346	22,964	29,628	16,062	16,098	16,253	(s)	67,838
1975 Total	7,990	14,813	4,059	9,492	21,434	29,413	18,210	18,245	20,270	1	71,965
1980 Total	7,439	15,753	4,105	10,578	22,595	32,039	19,659	19,697	24,269	-1	78,067
1985 Total	7,148	16,041	3,732	11,451	19,443	28,816	20,041	20,088	26,032	-4	76,392
1990 Total	6,556	16,944	3,896	13,320	21,180	31,810	22,366	22,420	^d 30,495	-9	84,484
1995 Total	6,934	18,517	4,100	14,690	22,718	33,970	23,796	23,851	33,479	3	91,031
2000 Total	7,156	20,421	4,278	17,175	22,823	34,662	26,495	26,555	38,062	2	98,817
2001 Total	6,864	20,038	4,085	17,137	21,793	32,719	26,219	26,282	37,215	-6	96,170
2002 Total	6,907	20,786	4,132	17,346	21,798	32,661	26,785	26,846	38,016	5	97,643
2003 Total	7,232	21,119	4,298	17,346	21,534	32,553	26,826	26,900	38,028	-1	97,918
2004 Total	6,987	21,081	4,232	17,655	22,411	33,516	27,764	27,843	38,701	-6	100,090
2005 Total	6,901	21,613	4,052	17,853	21,410	32,442	28,199	28,280	39,626	(s)	100,188
2006 Total	6,154	20,670	3,747	17,707	21,529	32,391	28,638	28,717	39,417	(s)	99,485
2007 Total	6,589	21,519	3,922	18,253	21,363	32,385	28,771	28,858	40,371	-1	101,015
2008 Total	6,889	21,668	4,100	18,402	20,528	31,334	27,404	27,486	39,989	1	98,891
2009 Total	6,633	21,077	4,055	17,887	18,756	28,466	26,605	26,687	38,069	(s)	94,118
2010 Total	6,540	21,795	4,023	18,058	20,278	30,526	26,978	27,059	39,619	7	97,445
2011 Total	6,392	21,301	4,063	17,979	20,456	30,843	26,632	26,712	39,293	8	96,842
2012 Total	5,672	19,858	3,725	17,422	20,742	30,915	26,144	26,219	38,131	2	94,416
2013 Total	6,705	21,068	4,164	17,932	21,263	31,409	26,671	26,750	38,357	-1	97,157
2014 Total	6,990	21,429	4,380	18,255	21,407	31,643	26,917	26,996	38,629	6	98,329
2015 January	1,135	2,538	665	1,802	1,936	2,747	2,178	2,185	3,357	2	9,273
February	1,081	2,334	638	1,705	1,765	2,541	2,011	2,018	3,103	3	8,601
March	794	1,946	498	1,558	1,833	2,617	2,296	2,303	3,002	(s)	8,424
April	444	1,336	323	1,352	1,738	2,534	2,235	2,241	2,723	-2	7,460
May	303	1,295	251	1,391	1,765	2,629	2,318	2,324	3,002	(s)	7,639
June	232	1,478	216	1,452	1,752	2,646	2,312	2,318	3,383	3	7,897
July	222	1,727	219	1,543	1,814	2,719	2,424	2,431	3,741	6	8,425
August	220	1,679	222	1,520	1,800	2,692	2,405	2,412	3,655	6	8,308
September	220	1,444	221	1,414	1,706	2,533	2,280	2,286	3,251	4	7,682
October	359	1,327	307	1,407	1,734	2,546	2,329	2,335	2,886	-1	7,614
November	573	1,511	399	1,453	1,717	2,511	2,194	2,200	2,792	-1	7,674
December	777	1,901	478	1,554	1,823	2,610	2,297	2,303	2,993	-1	8,367
Total	6,359	20,512	4,436	18,152	21,383	31,327	27,278	27,355	37,890	19	97,365
2016 January	1,071	^R 2,418	634	1,766	1,901	2,683	2,182	2,189	3,268	1	^R 9,057
February	^R 867	2,010	537	1,551	1,797	2,526	2,116	2,122	2,892	-3	8,206
March	607	^R 1,599	409	1,452	1,809	2,562	2,355	2,361	2,794	-6	^R 7,967
April	464	1,354	332	^R 1,356	1,688	2,453	2,273	2,279	2,685	-5	^R 7,438
May	324	1,303	268	1,392	1,698	2,513	2,361	2,367	2,925	-3	7,573
June	^R 235	^R 1,545	225	^R 1,480	1,680	2,522	2,381	2,388	3,414	3	^R 7,938
July	225	1,836	226	1,578	1,723	2,595	2,448	2,455	3,842	6	8,471
August	211	1,789	226	1,584	1,818	2,680	2,457	2,463	3,803	7	^R 8,522
September	231	1,496	233	1,437	1,732	2,513	2,315	2,321	3,256	3	7,771
October	326	1,335	294	1,414	1,784	2,561	2,333	2,339	2,913	(s)	^R 7,649
November	526	1,464	387	1,444	1,779	2,538	2,276	2,282	2,761	-2	7,726
December	^R 996	^R 2,271	^R 599	1,755	1,898	2,691	2,351	2,358	3,231	1	^R 9,076
Total	^R 6,082	20,413	^R 4,368	^R 18,212	21,308	30,841	27,849	27,925	37,784	3	^R 97,394
2017 January	^R 1,029	^R 2,346	611	1,726	^R 1,906	^R 2,678	2,190	2,197	3,211	^R 1	^R 8,948
February	739	^R 1,739	471	1,455	1,687	2,397	2,025	2,031	2,702	-3	^R 7,619
March	743	1,805	^R 486	^R 1,586	^R 1,874	^R 2,667	2,379	2,386	2,961	-3	8,440
April	419	1,337	312	1,339	1,737	2,502	2,253	2,259	2,716	(s)	7,436
4-Month Total	2,929	7,227	1,879	6,106	7,205	10,244	8,846	8,872	11,589	-6	32,443
2016 4-Month Total	3,009	7,381	1,911	6,125	7,196	10,224	8,926	8,951	11,640	-13	32,669
2015 4-Month Total	3,454	8,154	2,124	6,417	7,272	10,439	8,720	8,746	12,186	2	33,758

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

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

^c 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.

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

^e See "Primary Energy Consumption" in Glossary.

^f Total energy consumption in the end-use sectors consists of primary energy consumption, electricity retail sales, and electrical system energy losses. See Note 1, "Electrical System Energy Losses," at end of section.

^g 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 coal and natural gas.

^h Primary energy consumption total. See Table 1.3.

^R Revised. (s)=Less than 0.5 trillion Btu and greater than -0.5 trillion Btu.

Notes: • Data are estimates, except for the electric power sector. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

• See Note 2, "Energy Consumption Data and Surveys," at end of section.

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

• Geographic coverage is the 50 states and the District of Columbia.

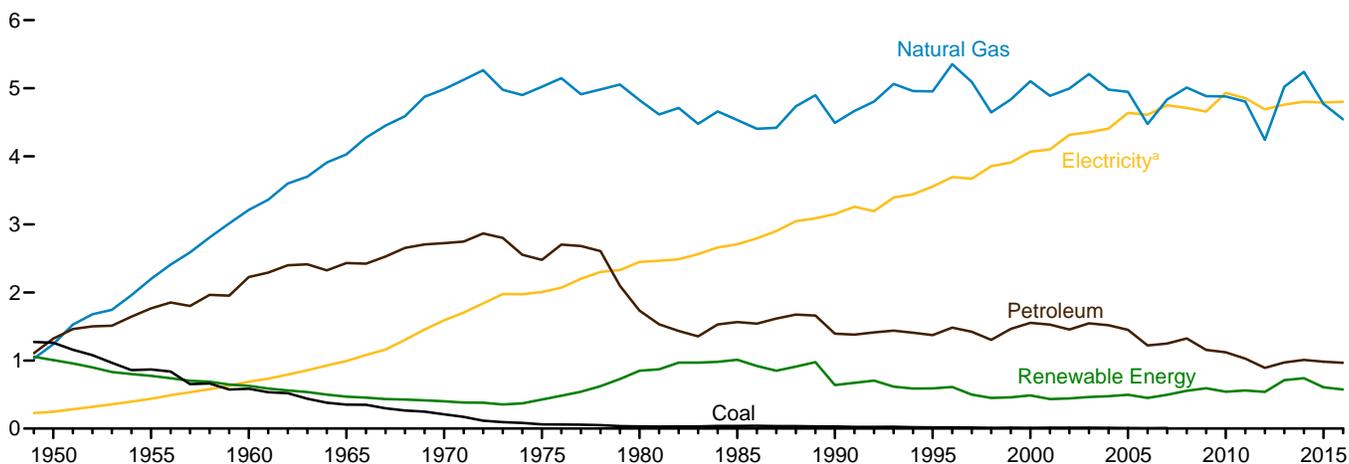
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#consumption> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: • **End-Use Sectors:** Tables 2.2–2.5. • **Electric Power Sector:** Table 2.6. • **Balancing Item:** Calculated as primary energy total consumption minus the sum of total energy consumption in the four end-use sectors.

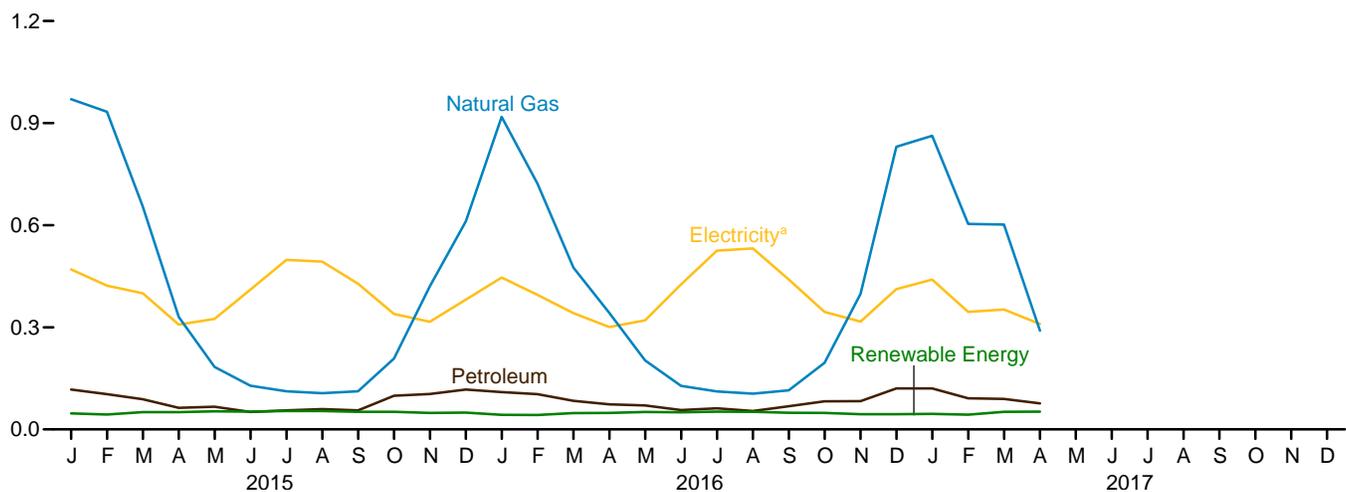
• **Primary Total:** Table 1.3.

Figure 2.2 Residential Sector Energy Consumption
(Quadrillion Btu)

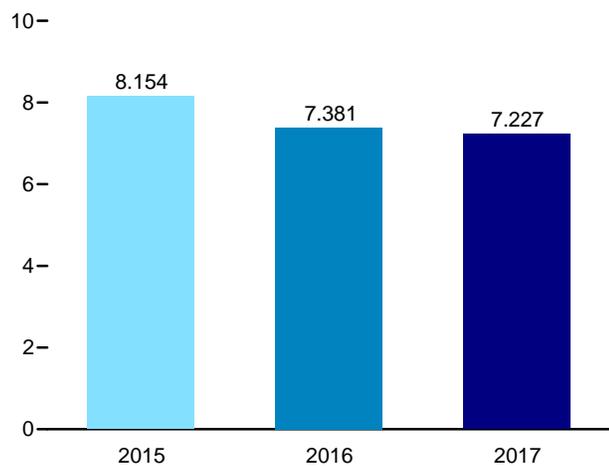
By Major Source, 1949–2016



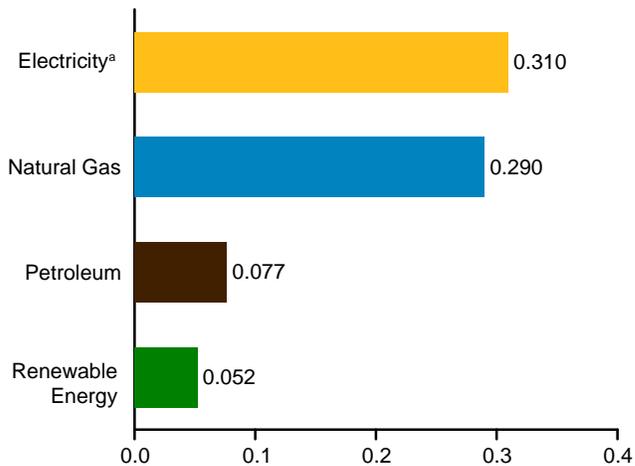
By Major Source, Monthly



Total, January–April



By Major Source, April 2017



^a Electricity retail sales.
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#consumption>.
Source: Table 2.2.

Table 2.2 Residential Sector Energy Consumption
(Trillion Btu)

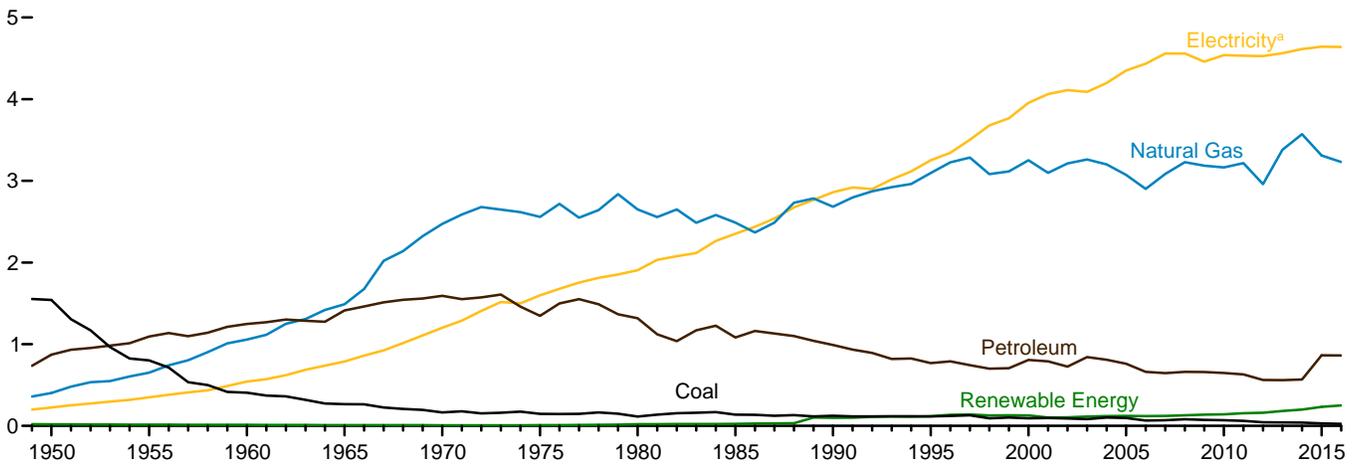
	Primary Consumption ^a									Electricity Retail Sales ^e	Electrical System Energy Losses ^f	Total
	Fossil Fuels				Renewable Energy ^b				Total Primary			
	Coal	Natural Gas ^c	Petroleum	Total	Geo-thermal	Solar ^d	Bio-mass	Total				
1950 Total	1,261	1,240	1,322	3,824	NA	NA	1,006	1,006	4,829	246	913	5,989
1955 Total	867	2,198	1,767	4,833	NA	NA	775	775	5,608	438	1,232	7,278
1960 Total	585	3,212	2,227	6,024	NA	NA	627	627	6,651	687	1,701	9,039
1965 Total	352	4,028	2,432	6,811	NA	NA	468	468	7,279	993	2,367	10,639
1970 Total	209	4,987	2,725	7,922	NA	NA	401	401	8,322	1,591	3,852	13,766
1975 Total	63	5,023	2,479	7,564	NA	NA	425	425	7,990	2,007	4,817	14,813
1980 Total	31	4,825	1,734	6,589	NA	NA	850	850	7,439	2,448	5,866	15,753
1985 Total	39	4,534	1,565	6,138	NA	NA	1,010	1,010	7,148	2,709	6,184	16,041
1990 Total	31	4,491	1,394	5,916	6	55	580	640	6,556	3,153	7,235	16,944
1995 Total	17	4,954	1,373	6,345	7	63	520	589	6,934	3,557	8,026	18,517
2000 Total	11	5,105	1,553	6,669	9	58	420	486	7,156	4,069	9,197	20,421
2001 Total	12	4,889	1,528	6,429	9	55	370	435	6,864	4,100	9,074	20,038
2002 Total	12	4,995	1,456	6,463	10	53	380	444	6,907	4,317	9,562	20,786
2003 Total	12	5,209	1,546	6,768	13	52	400	465	7,232	4,353	9,534	21,119
2004 Total	11	4,981	1,519	6,511	14	51	410	475	6,987	4,408	9,687	21,081
2005 Total	8	4,946	1,450	6,405	16	50	430	496	6,901	4,638	10,074	21,613
2006 Total	6	4,476	1,221	5,704	18	53	380	451	6,154	4,611	9,905	20,670
2007 Total	8	4,835	1,249	6,092	22	55	420	497	6,589	4,750	10,180	21,519
2008 Total	NA	5,010	1,324	6,334	26	58	470	555	6,889	4,711	10,068	21,668
2009 Total	NA	4,883	1,157	6,040	33	60	500	593	6,633	4,657	9,788	21,077
2010 Total	NA	4,878	1,121	5,999	37	65	440	541	6,540	4,933	10,321	21,795
2011 Total	NA	4,805	1,027	5,832	40	71	450	560	6,392	4,855	10,054	21,301
2012 Total	NA	4,242	892	5,134	40	79	420	539	5,672	4,690	9,496	19,858
2013 Total	NA	5,023	970	5,993	40	92	580	711	6,705	4,759	9,604	21,068
2014 Total	NA	5,242	1,009	6,251	40	109	590	739	6,990	4,801	9,638	21,429
2015												
January	NA	970	117	1,088	3	6	37	47	1,135	470	933	2,538
February	NA	933	104	1,037	3	7	34	44	1,081	423	830	2,334
March	NA	655	89	743	3	10	37	51	794	400	752	1,946
April	NA	330	63	393	3	11	36	51	444	308	584	1,336
May	NA	183	67	250	3	12	37	53	303	325	667	1,295
June	NA	128	51	179	3	13	36	52	232	410	836	1,478
July	NA	112	56	168	3	13	37	54	222	498	1,007	1,727
August	NA	106	60	166	3	13	37	54	220	493	966	1,679
September	NA	112	56	168	3	12	36	52	220	428	797	1,444
October	NA	208	99	307	3	11	37	52	359	339	630	1,327
November	NA	420	104	524	3	9	36	49	573	316	622	1,511
December	NA	611	117	728	3	8	37	49	777	381	743	1,901
Total	NA	4,769	982	5,751	40	128	440	607	6,359	4,791	9,362	20,512
2016												
January	NA	^R 918	110	1,028	3	8	32	43	1,071	446	901	^R 2,418
February	NA	722	103	825	3	10	30	42	^R 867	395	747	2,010
March	NA	475	84	559	3	13	32	48	607	342	651	^R 1,599
April	NA	343	74	416	3	14	31	48	464	301	589	1,354
May	NA	203	70	273	3	16	32	51	^R 324	321	658	^R 1,303
June	NA	128	57	185	3	17	31	50	^R 235	426	884	^R 1,545
July	NA	111	62	173	3	17	32	52	225	525	1,085	1,836
August	NA	105	54	159	3	17	32	52	211	532	1,046	1,789
September	NA	115	68	^R 182	3	15	31	49	231	441	824	1,496
October	NA	196	82	278	3	13	32	48	326	345	664	1,335
November	NA	398	83	481	3	11	31	45	526	317	622	1,464
December	NA	^R 831	120	^R 951	3	10	32	45	^R 996	412	863	^R 2,271
Total	NA	4,543	967	^R 5,509	40	161	373	573	^R 6,082	4,802	9,528	20,413
2017												
January	NA	^R 863	120	^R 983	3	10	32	46	^R 1,029	440	877	^R 2,346
February	NA	604	91	695	3	11	29	43	739	345	656	^R 1,739
March	NA	602	90	692	3	16	32	51	743	352	709	1,805
April	NA	290	77	367	3	18	31	52	419	310	608	1,337
4-Month Total	NA	2,359	378	2,737	13	54	125	192	2,929	1,447	2,851	7,227
2016 4-Month Total	NA	2,458	370	2,828	13	45	123	181	3,009	1,484	2,888	7,381
2015 4-Month Total	NA	2,889	373	3,262	13	35	145	193	3,454	1,600	3,099	8,154

a See "Primary Energy Consumption" in Glossary.
b See Table 10.2a for notes on series components.
c Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
d Distributed (small-scale) solar photovoltaic (PV) electricity generation in the residential, commercial, and industrial sectors. See Tables 10.2a and 10.5.
e Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.
f 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

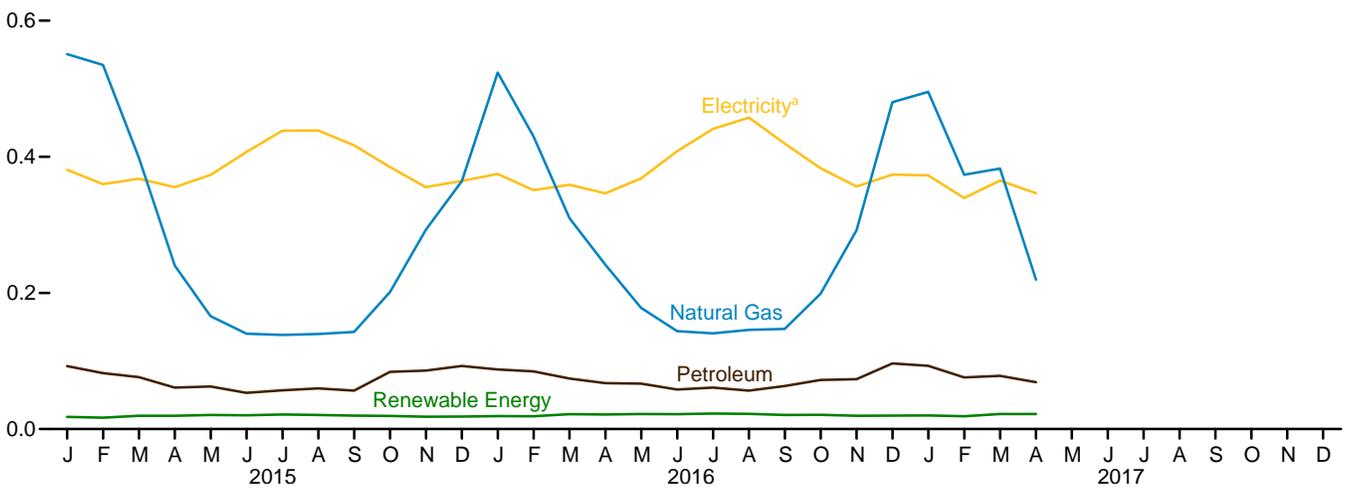
electricity retail sales. See Note 1, "Electrical System Energy Losses," at end of section.
R=Revised. NA=Not available.
Notes: • Data are estimates, except for electricity retail sales. • See Note 2, "Energy Consumption Data and Surveys," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#consumption> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: See end of section.

Figure 2.3 Commercial Sector Energy Consumption
(Quadrillion Btu)

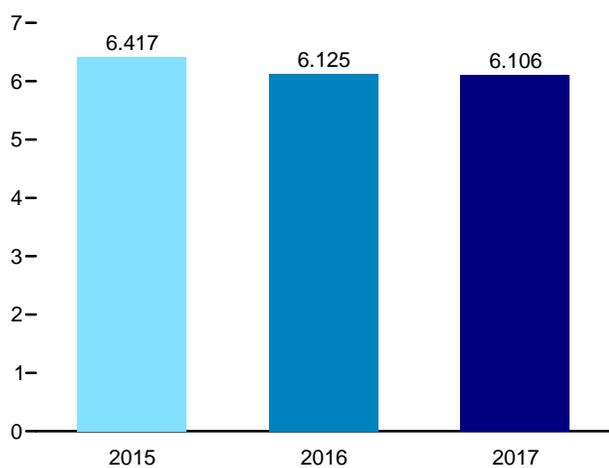
By Major Source, 1949–2016



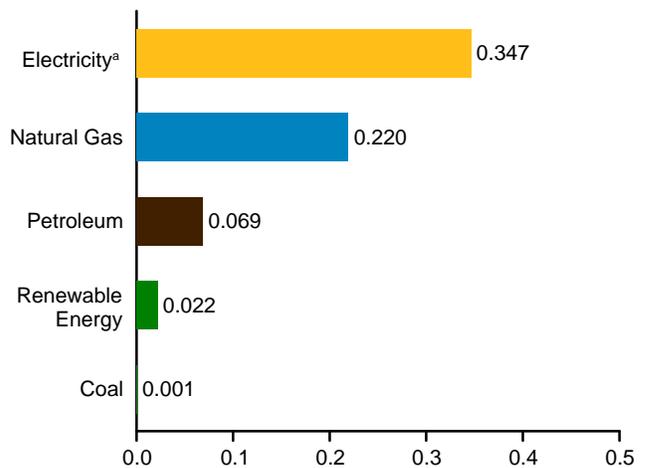
By Major Source, Monthly



Total, January–April



By Major Source, April 2017



^a Electricity retail sales.
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#consumption>.
Source: Table 2.3.

Table 2.3 Commercial Sector Energy Consumption
(Trillion Btu)

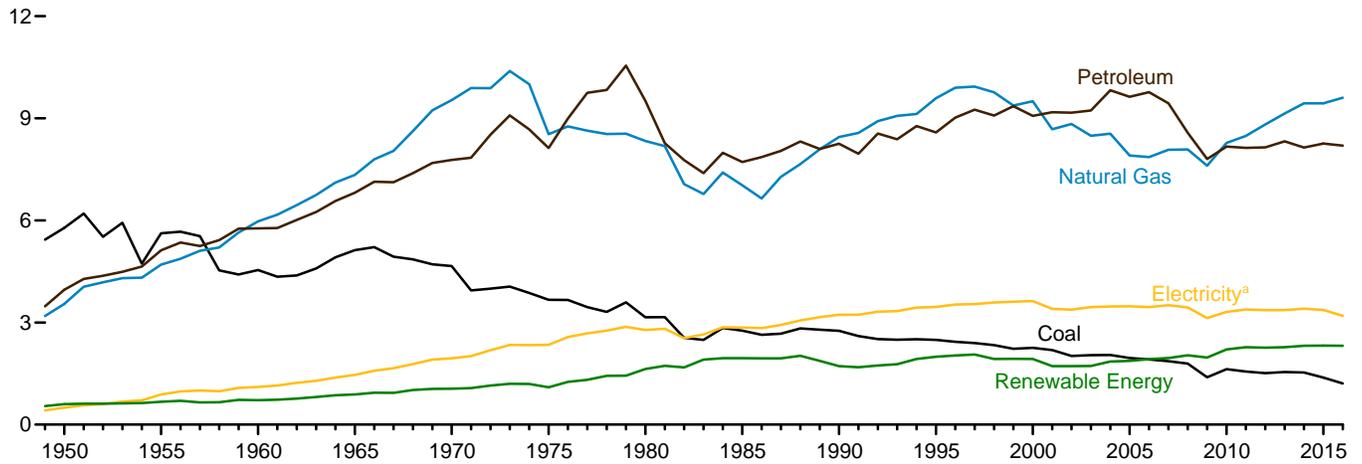
	Primary Consumption ^a										Total Primary	Electricity Retail Sales ^g	Electrical System Energy Losses ^h	Total
	Fossil Fuels				Renewable Energy ^b									
	Coal	Natural Gas ^c	Petroleum ^d	Total	Hydroelectric Power ^e	Geothermal	Solar ^f	Wind	Bio-mass	Total				
1950 Total	1,542	401	872	2,815	NA	NA	NA	NA	19	19	2,834	225	834	3,893
1955 Total	801	651	1,095	2,547	NA	NA	NA	NA	15	15	2,561	350	984	3,895
1960 Total	407	1,056	1,248	2,711	NA	NA	NA	NA	12	12	2,723	543	1,344	4,609
1965 Total	265	1,490	1,413	3,168	NA	NA	NA	NA	9	9	3,177	789	1,880	5,845
1970 Total	165	2,473	1,592	4,229	NA	NA	NA	NA	8	8	4,237	1,201	2,908	8,346
1975 Total	147	2,558	1,346	4,051	NA	NA	NA	NA	8	8	4,059	1,598	3,835	9,492
1980 Total	115	2,651	1,318	4,084	NA	NA	NA	NA	21	21	4,105	1,906	4,567	10,578
1985 Total	137	2,488	1,083	3,708	NA	NA	NA	NA	24	24	3,732	2,351	5,368	11,451
1990 Total	124	2,682	991	3,798	1	3	(s)	—	94	98	3,896	2,860	6,564	13,320
1995 Total	117	3,096	769	3,982	1	5	(s)	—	113	119	4,100	3,252	7,337	14,690
2000 Total	92	3,252	806	4,150	1	8	1	—	119	128	4,278	3,956	8,942	17,175
2001 Total	97	3,097	789	3,983	1	8	1	—	92	101	4,085	4,062	8,990	17,137
2002 Total	90	3,212	725	4,027	(s)	9	1	—	95	105	4,132	4,110	9,104	17,346
2003 Total	82	3,261	841	4,184	1	11	1	—	101	114	4,298	4,090	8,958	17,346
2004 Total	103	3,201	809	4,113	1	12	1	—	105	120	4,232	4,198	9,225	17,655
2005 Total	97	3,073	761	3,931	1	14	2	—	105	121	4,052	4,351	9,451	17,853
2006 Total	65	2,902	661	3,627	1	14	2	—	103	120	3,747	4,435	9,525	17,707
2007 Total	70	3,085	646	3,801	1	14	4	—	103	121	3,922	4,560	9,771	18,253
2008 Total	81	3,228	660	3,970	1	15	6	—	109	130	4,100	4,559	9,743	18,402
2009 Total	73	3,187	659	3,919	1	17	7	(s)	112	137	4,055	4,459	9,373	17,887
2010 Total	70	3,165	647	3,881	1	19	11	(s)	111	142	4,023	4,539	9,497	18,058
2011 Total	62	3,216	630	3,908	(s)	20	19	(s)	115	154	4,063	4,531	9,385	17,979
2012 Total	44	2,960	562	3,565	(s)	20	32	1	108	161	3,725	4,528	9,168	17,422
2013 Total	41	3,380	560	3,982	(s)	20	41	1	120	182	4,164	4,562	9,206	17,932
2014 Total	40	3,572	569	4,181	(s)	20	52	1	126	199	4,380	4,614	9,261	18,255
2015 January	4	551	92	647	(s)	2	3	(s)	13	18	665	381	756	1,802
February	4	535	82	621	(s)	2	4	(s)	12	17	638	360	707	1,705
March	4	399	76	479	(s)	2	5	(s)	13	20	498	368	692	1,558
April	2	240	61	303	(s)	2	5	(s)	13	20	323	355	674	1,352
May	2	166	62	230	(s)	2	6	(s)	13	21	251	373	767	1,391
June	2	140	53	196	(s)	2	6	(s)	13	20	216	407	829	1,452
July	2	138	57	197	(s)	2	6	(s)	14	21	219	438	886	1,543
August	2	140	60	201	(s)	2	6	(s)	13	21	222	439	859	1,520
September	2	143	57	201	(s)	2	5	(s)	13	20	221	417	776	1,414
October	2	201	84	288	(s)	2	5	(s)	13	19	307	385	715	1,407
November	2	293	86	381	(s)	2	4	(s)	13	18	399	355	698	1,453
December	3	364	93	460	(s)	2	3	(s)	13	18	478	365	711	1,554
Total	31	3,309	863	4,204	(s)	20	57	1	154	232	4,436	4,643	9,073	18,152
2016 January	3	524	88	^R 614	(s)	2	4	(s)	13	19	634	375	757	1,766
February	3	430	85	518	(s)	2	5	(s)	12	19	537	351	663	1,551
March	3	310	74	387	(s)	2	6	(s)	14	22	409	359	684	1,452
April	2	242	67	311	(s)	2	7	(s)	13	21	332	346	678	^R 1,356
May	1	178	67	246	(s)	2	7	(s)	13	22	268	368	756	1,392
June	1	144	58	203	(s)	2	7	(s)	13	22	225	408	847	^R 1,480
July	1	141	61	203	(s)	2	8	(s)	13	23	226	441	911	1,578
August	1	146	57	204	(s)	2	7	(s)	13	22	226	457	900	1,584
September	1	147	63	212	(s)	2	7	(s)	13	21	233	420	785	1,437
October	2	199	72	273	(s)	2	6	(s)	13	21	294	383	737	1,414
November	2	292	73	368	(s)	2	5	(s)	13	19	387	356	700	1,444
December	3	^R 480	96	^R 579	(s)	2	4	(s)	14	20	^R 599	374	782	1,755
Total	24	^R 3,231	861	^R 4,117	1	20	72	1	157	251	^R 4,368	4,639	9,205	^R 18,212
2017 January	3	495	93	591	(s)	2	5	(s)	14	20	611	373	743	1,726
February	2	374	76	452	(s)	2	5	(s)	12	19	471	339	645	1,455
March	^R 3	383	78	^R 464	(s)	2	7	(s)	13	22	^R 486	365	735	^R 1,586
April	1	220	69	290	(s)	2	8	(s)	13	22	312	347	680	1,339
4-Month Total	9	1,471	316	1,796	(s)	6	24	(s)	51	83	1,879	1,424	2,804	6,106
2016 4-Month Total	11	1,505	314	1,830	(s)	7	21	(s)	53	81	1,911	1,431	2,783	6,125
2015 4-Month Total	14	1,725	312	2,050	(s)	6	17	(s)	50	74	2,124	1,464	2,829	6,417

^a See "Primary Energy Consumption" in Glossary.
^b See Table 10.2a for notes on series components and estimation.
^c Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
^d Does not include biofuels that have been blended with petroleum—biofuels are included in "Biomass."
^e Conventional hydroelectric power.
^f Solar photovoltaic (PV) electricity net generation in the commercial sector, both utility-scale and distributed (small-scale). See Tables 10.2a and 10.5.
^g Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.
^h 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 1, "Electrical System Energy Losses," at end of

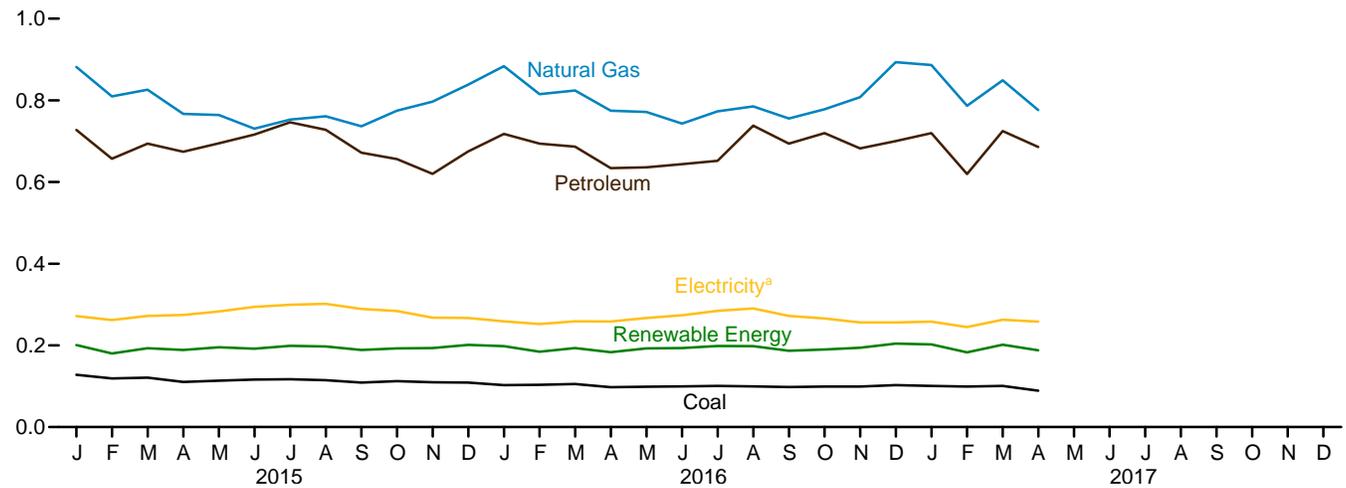
section.
^R=Revised. NA=Not available. —=No data reported. (s)=Less than 0.5 trillion Btu.
Notes: • Data are estimates, except for coal totals beginning in 2008; hydroelectric power; solar; wind; and electricity retail sales beginning in 1979.
• The commercial sector includes commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7. • See Note 2, "Energy Consumption Data and Surveys," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#consumption> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: See end of section.

Figure 2.4 Industrial Sector Energy Consumption
(Quadrillion Btu)

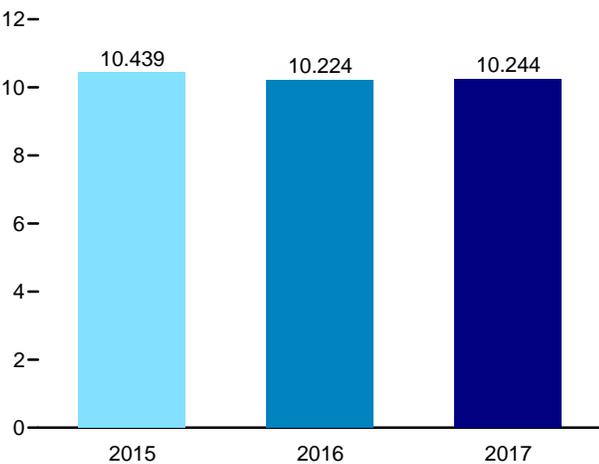
By Major Source, 1949–2016



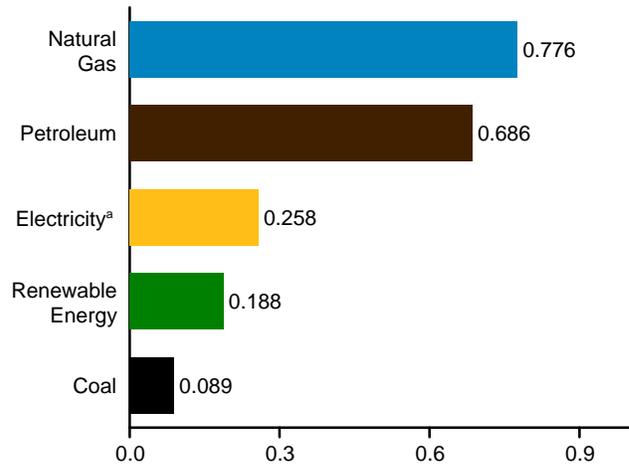
By Major Source, Monthly



Total, January–April



By Major Source, April 2017



^a Electricity retail sales.
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#consumption>.
Source: Table 2.4.

Table 2.4 Industrial Sector Energy Consumption
(Trillion Btu)

	Primary Consumption ^a											Total Primary	Elec- tricity Retail Sales ^h	Electrical System Energy Losses ⁱ	Total ^e
	Fossil Fuels				Renewable Energy ^b										
	Coal	Natural Gas ^c	Petro- leum ^d	Total ^e	Hydro- electric Power ^f	Geo- thermal	Solar ^g	Wind	Bio- mass	Total					
1950 Total	5,781	3,546	3,960	13,288	69	NA	NA	NA	532	602	13,890	500	1,852	16,241	
1955 Total	5,620	4,701	5,123	15,434	38	NA	NA	NA	631	669	16,103	887	2,495	19,485	
1960 Total	4,543	5,973	5,766	16,277	39	NA	NA	NA	680	719	16,996	1,107	2,739	20,842	
1965 Total	5,127	7,339	6,813	19,260	33	NA	NA	NA	855	888	20,148	1,463	3,487	25,098	
1970 Total	4,656	9,536	7,776	21,911	34	NA	NA	NA	1,019	1,053	22,964	1,948	4,716	29,628	
1975 Total	3,667	8,532	8,127	20,339	32	NA	NA	NA	1,063	1,096	21,434	2,346	5,632	29,413	
1980 Total	3,155	8,333	9,509	20,962	33	NA	NA	NA	1,600	1,633	22,595	2,781	6,664	32,039	
1985 Total	2,760	7,032	7,714	17,492	33	NA	NA	NA	1,918	1,951	19,443	2,855	6,518	28,816	
1990 Total	2,756	8,451	8,251	19,463	31	2	(s)	-	1,684	1,717	21,180	3,226	7,404	31,810	
1995 Total	2,488	9,592	8,585	20,726	55	3	(s)	-	1,934	1,992	22,718	3,455	7,796	33,970	
2000 Total	2,256	9,500	9,073	20,895	42	4	(s)	-	1,881	1,928	22,823	3,631	8,208	34,662	
2001 Total	2,192	8,676	9,177	20,074	33	5	(s)	-	1,681	1,719	21,793	3,400	7,526	32,719	
2002 Total	2,019	8,632	9,167	20,078	39	5	(s)	-	1,676	1,720	21,798	3,379	7,484	32,661	
2003 Total	2,041	8,488	9,229	19,809	43	3	(s)	-	1,678	1,725	21,534	3,454	7,565	32,553	
2004 Total	2,047	8,550	9,825	20,560	33	4	(s)	-	1,815	1,852	22,411	3,473	7,631	33,516	
2005 Total	1,954	7,907	9,634	19,540	32	4	(s)	-	1,834	1,871	21,410	3,477	7,554	32,442	
2006 Total	1,914	7,861	9,767	19,603	29	4	1	-	1,892	1,926	21,529	3,451	7,411	32,391	
2007 Total	1,865	8,074	9,442	19,405	16	5	1	-	1,937	1,958	21,363	3,507	7,515	32,385	
2008 Total	1,793	8,083	8,576	18,493	17	5	1	-	2,012	2,035	20,528	3,444	7,362	31,334	
2009 Total	1,392	7,609	7,806	16,784	18	4	2	-	1,948	1,972	18,756	3,130	6,580	28,466	
2010 Total	1,631	8,278	8,167	18,070	16	4	3	-	2,185	2,208	20,728	3,314	6,934	30,526	
2011 Total	1,561	8,481	8,131	18,184	17	4	4	(s)	2,246	2,272	20,456	3,382	7,005	30,843	
2012 Total	1,513	8,819	8,147	18,482	22	4	7	(s)	2,226	2,259	20,742	3,363	6,810	30,915	
2013 Total	1,546	9,140	8,321	18,991	33	4	9	(s)	2,226	2,272	21,263	3,362	6,785	31,409	
2014 Total	1,530	9,441	8,143	19,093	12	4	11	1	2,286	2,314	21,407	3,404	6,832	31,643	
2015 January	128	882	728	1,735	1	(s)	1	(s)	199	201	1,936	272	539	2,747	
February	119	810	657	1,585	1	(s)	1	(s)	178	180	1,765	262	515	2,541	
March	121	826	694	1,640	1	(s)	1	(s)	190	193	1,833	272	512	2,617	
April	110	767	674	1,549	1	(s)	1	(s)	186	189	1,738	275	521	2,534	
May	114	764	695	1,570	1	(s)	1	(s)	192	195	1,765	283	581	2,629	
June	116	731	716	1,560	1	(s)	1	(s)	189	192	1,752	294	599	2,646	
July	117	753	746	1,615	1	(s)	1	(s)	196	199	1,814	299	605	2,719	
August	115	761	728	1,602	1	(s)	1	(s)	195	197	1,800	302	591	2,692	
September	109	736	672	1,517	1	(s)	1	(s)	186	189	1,706	289	538	2,533	
October	112	775	656	1,542	1	(s)	1	(s)	190	193	1,734	284	528	2,546	
November	110	797	620	1,524	1	(s)	1	(s)	191	193	1,717	268	526	2,511	
December	109	839	675	1,622	1	(s)	1	(s)	198	201	1,823	267	520	2,610	
Total	1,380	9,440	8,260	19,062	13	4	14	(s)	2,290	2,321	21,383	3,366	6,578	31,327	
2016 January	R 103	884	718	1,703	1	(s)	1	(s)	196	198	1,901	259	523	2,683	
February	103	815	694	1,612	1	(s)	1	(s)	182	184	1,797	252	477	2,526	
March	R 106	824	687	1,616	1	(s)	1	(s)	190	194	1,809	259	494	2,562	
April	R 98	775	634	1,505	1	(s)	2	(s)	180	183	1,688	259	507	2,453	
May	99	R 771	636	1,505	1	(s)	2	(s)	189	193	1,698	267	548	2,513	
June	100	743	644	1,487	1	(s)	2	(s)	190	193	1,680	274	568	2,522	
July	101	773	652	1,525	1	(s)	2	(s)	195	199	1,723	284	588	2,595	
August	99	R 785	738	1,620	1	(s)	2	(s)	195	198	1,818	290	571	2,680	
September	98	R 755	694	1,546	1	(s)	2	(s)	184	187	1,732	272	509	2,513	
October	99	778	720	1,594	1	(s)	1	(s)	187	190	1,784	266	512	2,561	
November	99	808	682	R 1,584	1	(s)	1	(s)	192	194	1,779	256	503	2,538	
December	R 103	893	700	1,694	1	(s)	1	(s)	202	205	1,898	256	536	2,691	
Total	R 1,207	R 9,605	8,198	18,991	12	4	17	1	2,283	2,318	21,308	3,195	6,339	30,841	
2017 January	R 101	887	720	R 1,704	1	(s)	1	(s)	200	203	R 1,906	258	514	R 2,678	
February	R 99	R 787	620	R 1,504	1	(s)	1	(s)	180	183	1,687	245	465	2,397	
March	101	R 849	725	R 1,673	1	(s)	2	(s)	198	202	R 1,874	263	529	R 2,667	
April	89	776	686	1,550	1	(s)	2	(s)	184	188	1,737	258	507	2,502	
4-Month Total	389	3,299	2,750	6,430	5	1	7	(s)	762	775	7,205	1,024	2,015	10,244	
2016 4-Month Total	409	3,298	2,732	6,436	5	1	5	(s)	748	759	7,196	1,029	2,000	10,224	
2015 4-Month Total	478	3,284	2,752	6,509	5	1	4	(s)	753	763	7,272	1,080	2,086	10,439	

^a See "Primary Energy Consumption" in Glossary.

^b See Table 10.2b for notes on series components and estimation.

^c Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.

^d Does not include biofuels that have been blended with petroleum—biofuels are included in "Biomass."

^e Includes coal coke net imports, which are not separately displayed. See Tables 1.4a and 1.4b.

^f Conventional hydroelectric power.

^g Solar photovoltaic (PV) electricity net generation in the industrial sector, both utility-scale and distributed (small-scale). See Tables 10.2b and 10.5.

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

ⁱ 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 1, "Electrical System Energy Losses," at end of section.

R=Revised. NA=Not available. - =No data reported. (s)=Less than 0.5 trillion Btu.

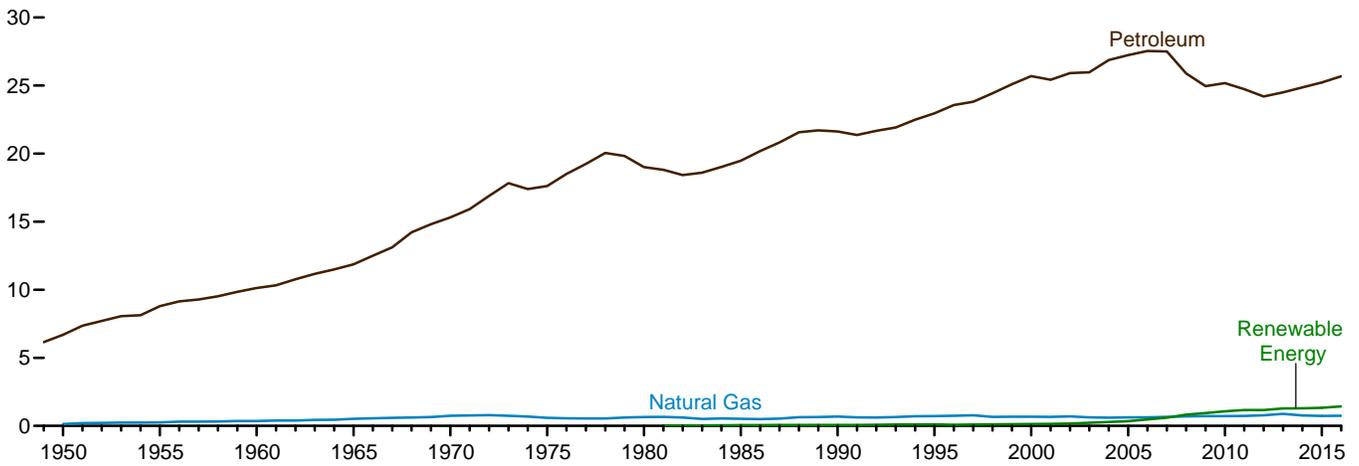
Notes: • Data are estimates, except for coal totals; hydroelectric power in 1949-1978 and 1989 forward; solar; wind; and electricity retail sales. • The industrial sector includes industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7. • See Note 2, "Energy Consumption Data and Surveys," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#consumption> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

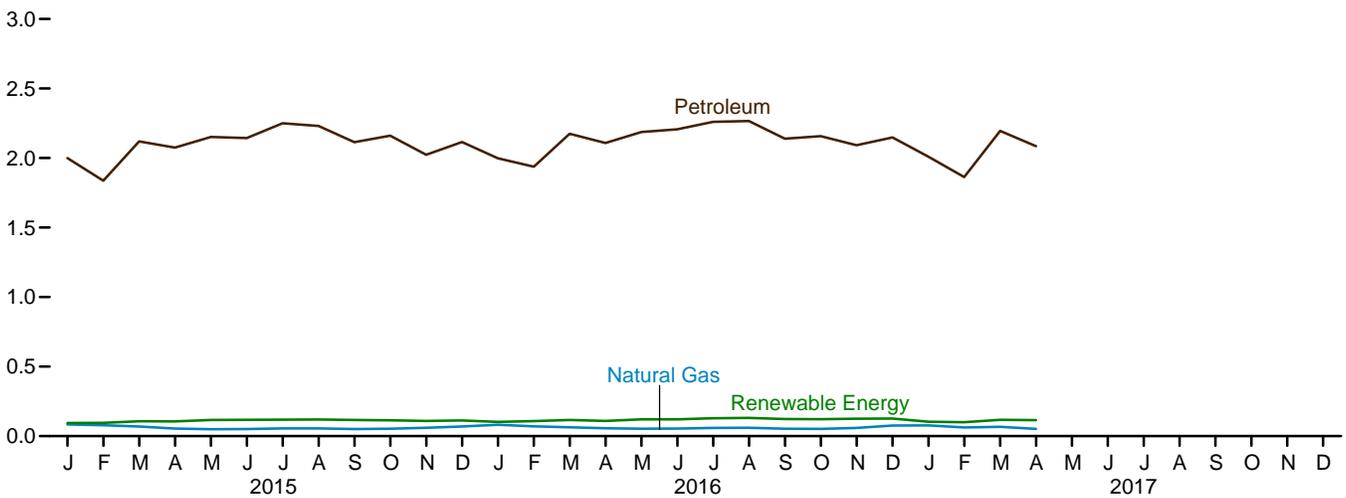
Sources: See end of section.

Figure 2.5 Transportation Sector Energy Consumption
(Quadrillion Btu)

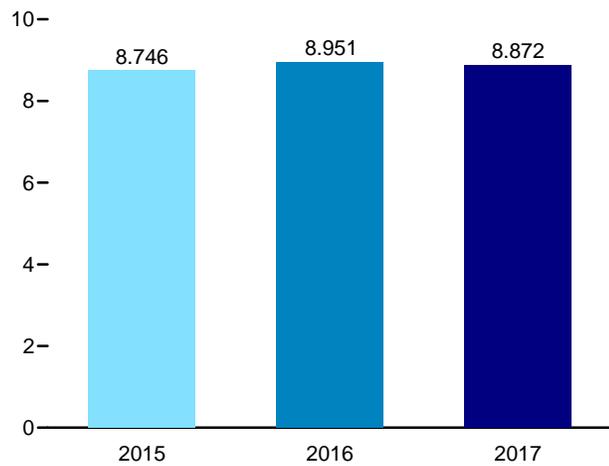
By Major Source, 1949–2016



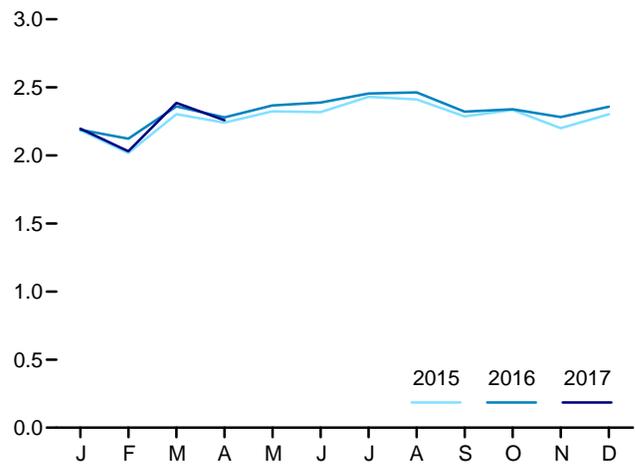
By Major Source, Monthly



Total, January–April



Total, Monthly



Web Page: <http://www.eia.gov/totalenergy/data/monthly/#consumption>.
Source: Table 2.5.

Table 2.5 Transportation Sector Energy Consumption
(Trillion Btu)

	Primary Consumption ^a						Electricity Retail Sales ^e	Electrical System Energy Losses ^f	Total
	Fossil Fuels				Renewable Energy ^b	Total Primary			
	Coal	Natural Gas ^c	Petroleum ^d	Total	Biomass				
1950 Total	1,564	130	6,690	8,383	NA	8,383	23	86	8,492
1955 Total	421	254	8,799	9,474	NA	9,474	20	56	9,550
1960 Total	75	359	10,125	10,560	NA	10,560	10	26	10,596
1965 Total	16	517	11,866	12,399	NA	12,399	10	24	12,432
1970 Total	7	745	15,310	16,062	NA	16,062	11	26	16,098
1975 Total	1	595	17,615	18,210	NA	18,210	11	24	18,245
1980 Total	(g)	650	19,009	19,659	NA	19,659	11	27	19,697
1985 Total	(g)	519	19,472	19,992	50	20,041	14	32	20,088
1990 Total	(g)	680	21,626	22,306	60	22,366	16	37	22,420
1995 Total	(g)	724	22,959	23,683	112	23,796	17	38	23,851
2000 Total	(g)	672	25,689	26,361	135	26,495	18	42	26,555
2001 Total	(g)	658	25,419	26,077	142	26,219	20	43	26,282
2002 Total	(g)	699	25,917	26,616	170	26,785	19	42	26,846
2003 Total	(g)	627	25,969	26,596	230	26,826	23	51	26,900
2004 Total	(g)	602	26,872	27,474	290	27,764	25	54	27,843
2005 Total	(g)	624	27,236	27,860	339	28,199	26	56	28,280
2006 Total	(g)	625	27,538	28,163	475	28,638	25	54	28,717
2007 Total	(g)	663	27,505	28,169	602	28,771	28	60	28,858
2008 Total	(g)	692	25,888	26,580	825	27,404	26	56	27,486
2009 Total	(g)	715	24,955	25,670	935	26,605	27	56	26,687
2010 Total	(g)	719	25,184	25,903	1,075	26,978	26	55	27,059
2011 Total	(g)	734	24,740	25,474	1,158	26,632	26	54	26,712
2012 Total	(g)	780	24,202	24,982	1,162	26,144	25	51	26,219
2013 Total	(g)	887	24,506	25,394	1,278	26,671	26	53	26,750
2014 Total	(g)	760	24,865	25,625	1,292	26,917	26	53	26,996
2015 January	(g)	84	2,000	2,084	94	2,178	2	5	2,185
February	(g)	78	1,837	1,916	95	2,011	2	5	2,018
March	(g)	69	2,120	2,189	107	2,296	2	4	2,303
April	(g)	54	2,075	2,129	105	2,235	2	4	2,241
May	(g)	50	2,152	2,202	116	2,318	2	4	2,324
June	(g)	51	2,144	2,195	117	2,312	2	4	2,318
July	(g)	56	2,250	2,306	118	2,424	2	4	2,431
August	(g)	55	2,231	2,286	120	2,405	2	4	2,412
September	(g)	51	2,113	2,164	116	2,280	2	4	2,286
October	(g)	53	2,161	2,214	114	2,329	2	4	2,335
November	(g)	60	2,024	2,084	110	2,194	2	4	2,200
December	(g)	69	2,115	2,184	113	2,297	2	4	2,303
Total	(g)	732	25,221	25,953	1,325	27,278	26	51	27,355
2016 January	(g)	82	1,998	2,080	102	2,182	2	5	2,189
February	(g)	70	1,938	2,008	108	2,116	2	4	2,122
March	(g)	63	2,175	2,238	117	2,355	2	4	2,361
April	(g)	56	2,108	2,165	109	2,273	2	4	2,279
May	(g)	53	2,187	2,240	121	2,361	2	4	2,367
June	(g)	54	2,206	2,260	121	2,381	2	4	2,388
July	(g)	59	2,261	2,320	129	2,448	2	5	2,455
August	(g)	60	2,266	2,326	131	2,457	2	4	2,463
September	(g)	53	2,139	2,192	123	2,315	2	4	2,321
October	(g)	53	2,158	2,210	122	2,333	2	4	2,339
November	(g)	59	2,093	2,151	125	2,276	2	4	2,282
December	(g)	76	2,149	2,225	126	2,351	2	5	2,358
Total	(g)	738	25,677	26,415	1,434	27,849	26	51	27,925
2017 January	(g)	77	2,009	2,086	104	2,190	2	5	2,197
February	(g)	62	1,863	1,925	100	2,025	2	4	2,031
March	(g)	67	2,195	2,262	117	2,379	2	4	2,386
April	(g)	52	2,085	2,137	115	2,253	2	4	2,259
4-Month Total	(g)	258	8,153	8,411	436	8,846	9	17	8,872
2016 4-Month Total	(g)	271	8,218	8,490	436	8,926	9	17	8,951
2015 4-Month Total	(g)	285	8,032	8,318	402	8,720	9	18	8,746

^a See "Primary Energy Consumption" in Glossary.

^b See Table 10.2b for notes on series components.

^c Natural gas only; does not include supplemental gaseous fuels—see Note 3, "Supplemental Gaseous Fuels," at end of Section 4. Data are for natural gas consumed in the operation of pipelines (primarily in compressors) and small amounts consumed as vehicle fuel—see Table 4.3.

^d Does not include biofuels that have been blended with petroleum—biofuels are included in "Biomass."

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

^f 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 1, "Electrical System Energy Losses," at end of

section.

^g Beginning in 1978, the small amounts of coal consumed for transportation are reported as industrial sector consumption.

NA=Not available.

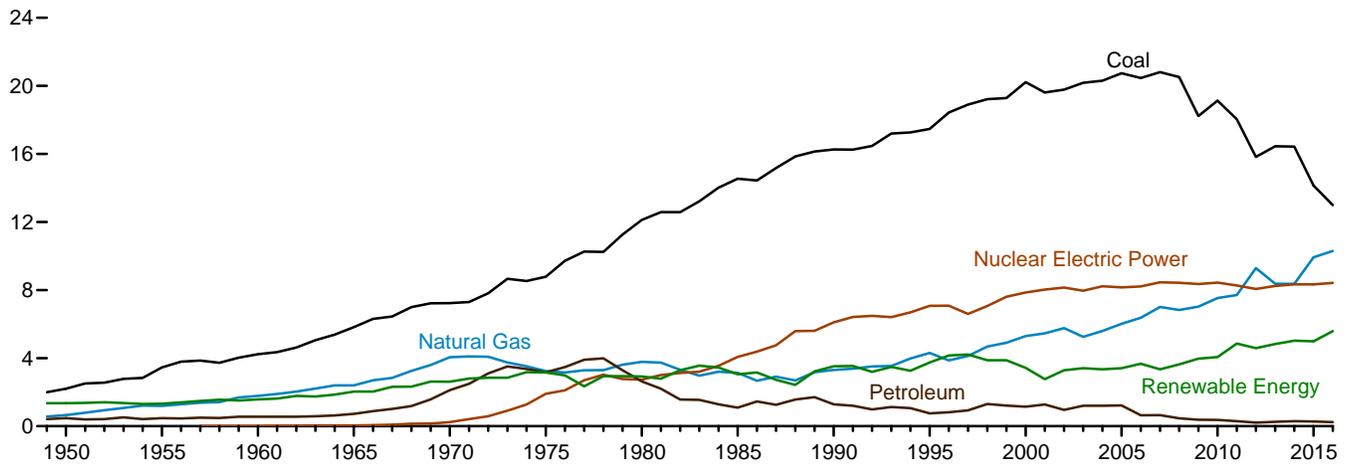
Notes: • Data are estimates, except for coal totals through 1977; and electricity retail sales beginning in 1979. • See Note 2, "Energy Consumption Data and Surveys," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#consumption> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

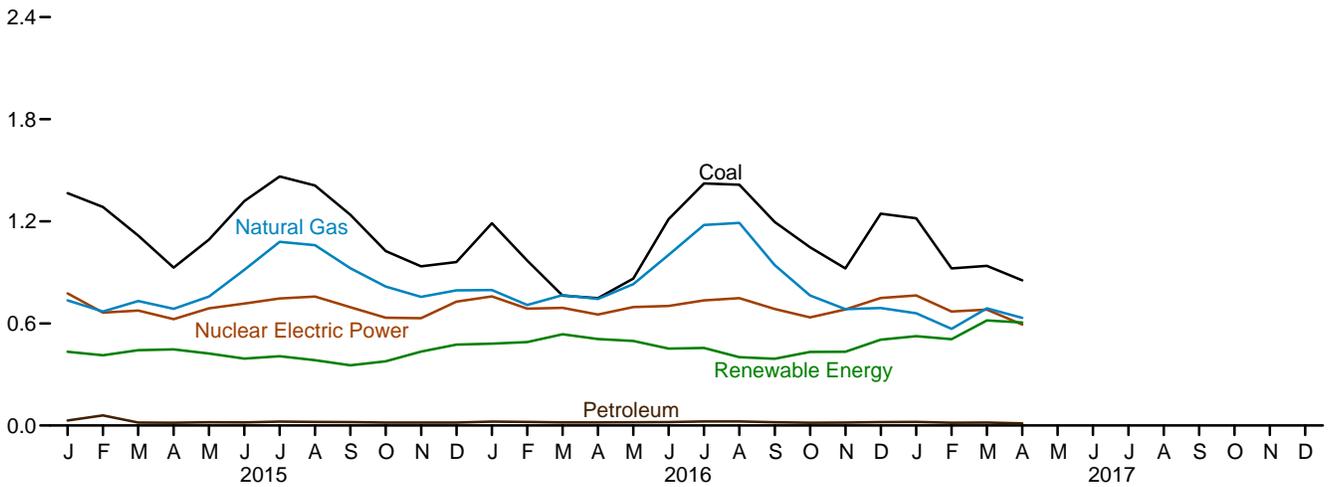
Sources: See end of section.

Figure 2.6 Electric Power Sector Energy Consumption
(Quadrillion Btu)

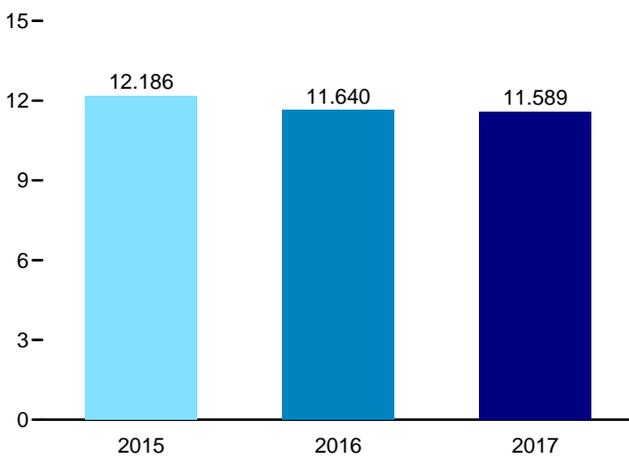
By Major Source, 1949–2016



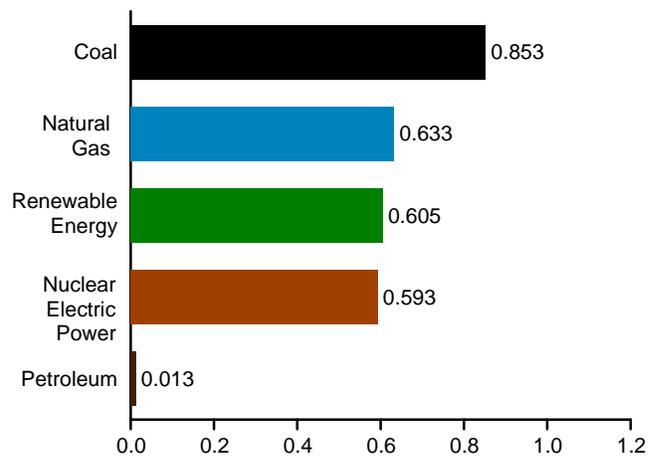
By Major Source, Monthly



Total, January–April



By Major Source, April 2017



Web Page: <http://www.eia.gov/totalenergy/data/monthly/#consumption>.
Source: Table 2.6.

Table 2.6 Electric Power Sector Energy Consumption
(Trillion Btu)

	Primary Consumption ^a												Elec- tricity Net Imports ^f	Total Primary
	Fossil Fuels				Nuclear Electric Power	Renewable Energy ^b								
	Coal	Natural Gas ^c	Petro- leum	Total		Hydro- electric Power ^d	Geo- thermal	Solar ^e	Wind	Bio- mass	Total			
1950 Total	2,199	651	472	3,322	0	1,346	NA	NA	NA	5	1,351	6	4,679	
1955 Total	3,458	1,194	471	5,123	0	1,322	NA	NA	NA	3	1,325	14	6,461	
1960 Total	4,228	1,785	553	6,565	6	1,569	(s)	NA	NA	2	1,571	15	8,158	
1965 Total	5,821	2,395	722	8,938	43	2,026	2	NA	NA	3	2,031	(s)	11,012	
1970 Total	7,227	4,054	2,117	13,399	239	2,600	6	NA	NA	4	2,609	7	16,253	
1975 Total	8,786	3,240	3,166	15,191	1,900	3,122	34	NA	NA	2	3,158	21	20,270	
1980 Total	12,123	3,778	2,634	18,534	2,739	2,867	53	NA	NA	4	2,925	71	24,269	
1985 Total	14,542	3,135	1,090	18,767	4,076	2,937	97	(s)	(s)	14	3,049	140	26,032	
1990 Total^g	16,261	3,309	1,289	20,859	6,104	3,014	161	4	29	317	3,524	8	30,495	
1995 Total	17,466	4,302	755	22,523	7,075	3,149	138	5	33	422	3,747	134	33,479	
2000 Total	20,220	5,293	1,144	26,658	7,862	2,768	144	5	57	453	3,427	115	38,062	
2001 Total	19,614	5,458	1,276	26,348	8,029	2,209	142	6	70	337	2,763	75	37,215	
2002 Total	19,783	5,767	961	26,511	8,145	2,650	147	6	105	380	3,288	72	38,016	
2003 Total	20,185	5,246	1,205	26,636	7,960	2,749	146	5	113	397	3,411	22	38,028	
2004 Total	20,305	5,595	1,201	27,101	8,223	2,655	148	6	142	388	3,339	39	38,701	
2005 Total	20,737	6,015	1,222	27,974	8,161	2,670	147	6	178	406	3,406	85	39,626	
2006 Total	20,462	6,375	637	27,474	8,215	2,839	145	5	264	412	3,665	63	39,417	
2007 Total	20,808	7,005	648	28,461	8,459	2,430	145	6	341	423	3,345	107	40,371	
2008 Total	20,513	6,829	459	27,801	8,426	2,494	146	9	546	435	3,630	112	39,969	
2009 Total	18,225	7,022	382	25,630	8,355	2,650	146	9	721	441	3,967	116	38,069	
2010 Total	19,133	7,528	370	27,031	8,434	2,521	148	12	923	459	4,064	89	39,619	
2011 Total	18,035	7,712	295	26,042	8,269	3,085	149	17	1,167	437	4,855	127	39,293	
2012 Total	15,821	9,287	214	25,322	8,062	2,606	148	40	1,339	453	4,586	161	38,131	
2013 Total	16,451	8,376	255	25,082	8,244	2,529	151	83	1,600	470	4,833	197	38,357	
2014 Total	16,427	8,362	295	25,085	8,338	2,454	151	165	1,726	530	5,026	182	38,629	
2015														
January	1,366	735	29	2,130	777	224	13	11	141	45	433	18	3,357	
February	1,284	670	59	2,013	664	207	12	14	139	41	412	14	3,103	
March	1,116	732	18	1,865	675	225	13	19	143	43	443	19	3,002	
April	928	686	17	1,630	625	208	12	22	166	40	448	20	2,723	
May	1,092	758	19	1,869	688	186	13	23	160	41	423	20	3,002	
June	1,319	915	19	2,252	717	189	12	23	125	44	393	21	3,383	
July	1,464	1,079	23	2,566	747	195	13	24	127	48	407	21	3,741	
August	1,411	1,060	21	2,492	757	177	13	25	122	48	384	22	3,655	
September	1,238	924	20	2,182	695	149	11	20	130	43	354	20	3,251	
October	1,025	817	17	1,860	633	154	12	17	152	41	378	16	2,886	
November	936	756	18	1,710	630	179	12	16	183	44	434	18	2,792	
December	960	794	17	1,771	728	214	13	14	187	47	476	17	2,993	
Total	14,138	9,926	276	24,341	8,337	2,308	148	228	1,776	525	4,985	227	37,890	
2016														
January	1,189	796	23	2,007	758	236	14	14	173	45	481	21	3,268	
February	969	708	21	1,698	686	224	13	22	188	43	490	17	2,892	
March	763	766	18	1,548	692	250	14	25	205	43	536	18	2,794	
April	748	744	18	1,510	652	236	12	27	193	40	508	15	2,685	
May	863	831	19	1,713	696	235	14	33	175	40	496	19	2,925	
June	1,213	1,003	20	2,236	703	212	13	33	152	42	452	23	3,414	
July	1,422	1,178	24	2,625	736	197	13	38	164	45	456	25	3,842	
August	1,415	1,191	24	2,630	748	180	13	36	126	46	401	24	3,803	
September	1,197	943	20	2,159	684	151	14	34	153	41	393	20	3,256	
October	1,048	764	16	1,828	635	160	14	29	190	39	432	18	2,913	
November	923	684	17	1,625	682	175	14	25	180	40	433	21	2,761	
December	1,244	690	20	1,954	749	209	15	21	214	46	505	22	3,231	
Total	12,995	10,299	240	23,534	8,422	2,465	162	337	2,112	509	5,585	242	37,784	
2017														
January	1,218	660	21	1,899	765	257	14	20	189	44	525	23	3,211	
February	923	568	16	1,507	670	228	13	24	202	41	507	18	2,702	
March	938	688	17	1,644	681	280	14	41	238	44	618	18	2,961	
April	853	633	13	1,499	593	271	14	44	237	39	605	18	2,716	
4-Month Total	3,932	2,549	68	6,548	2,709	1,036	55	130	866	168	2,255	77	11,589	
2016 4-Month Total	3,669	3,014	80	6,763	2,789	946	53	88	758	171	2,016	72	11,640	
2015 4-Month Total	4,693	2,823	123	7,638	2,741	864	49	65	589	169	1,736	72	12,186	

a See "Primary Energy Consumption" in Glossary.
b See Table 10.2c for notes on series components.
c Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
d Conventional hydroelectric power.
e Solar photovoltaic (PV) and solar thermal electricity net generation in the electric power sector. See Tables 10.2c and 10.5.
f Net imports equal imports minus exports.
g Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.
NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for fuels consumed to produce electricity and useful thermal output. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • See Note 2, "Energy Consumption Data and Surveys," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#consumption> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: See end of section.

Table 2.7 U.S. Government Energy Consumption by Agency, Fiscal Years
(Trillion Btu)

Fiscal Year ^a	Agri-culture	Defense	Energy	GSA ^b	HHS ^c	Interior	Justice	NASA ^d	Postal Service	Trans- portation	Veterans Affairs	Other ^e	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	20.7	6.0	7.8	8.2	10.9	27.8	19.6	25.1	13.1	1,450.3
1986	6.8	1,222.8	46.9	14.0	6.2	6.9	8.6	11.2	28.0	19.4	25.0	10.8	1,406.7
1987	7.3	1,280.5	48.5	13.1	6.6	6.6	8.1	11.3	28.5	19.0	24.9	11.9	1,466.3
1988	7.8	1,165.8	49.9	12.4	6.4	7.0	9.4	11.3	29.6	18.7	26.3	15.8	1,360.3
1989	8.7	1,274.4	44.2	12.7	6.7	7.1	7.7	12.4	30.3	18.5	26.2	15.6	1,464.7
1990	9.6	1,241.7	43.5	17.5	7.1	7.4	7.0	12.4	30.6	19.0	24.9	17.5	1,438.0
1991	9.6	1,269.3	42.1	14.0	6.2	7.1	8.0	12.5	30.8	19.0	25.1	18.1	1,461.7
1992	9.1	1,104.0	44.3	13.8	6.8	7.0	7.5	12.6	31.7	17.0	25.3	15.7	1,294.8
1993	9.3	1,048.8	43.4	14.1	7.2	7.5	9.1	12.4	33.7	19.4	25.7	16.2	1,246.8
1994	9.4	977.0	42.1	14.0	7.5	7.9	10.3	12.6	35.0	19.8	25.6	17.1	1,178.2
1995	9.0	926.0	47.3	13.7	6.1	6.4	10.2	12.4	36.2	18.7	25.4	17.1	1,128.5
1996	9.1	904.5	44.6	14.5	6.6	4.3	12.1	11.5	36.4	19.6	26.8	17.7	1,107.7
1997	7.4	880.0	43.1	14.4	7.9	6.6	12.0	12.0	40.8	19.1	27.3	20.8	1,091.2
1998	7.9	837.1	31.5	14.1	7.4	6.4	15.8	11.7	39.5	18.5	27.6	19.5	1,037.1
1999	7.8	810.7	27.0	14.4	7.1	7.5	15.4	11.4	39.8	22.6	27.5	19.8	1,010.9
2000	7.4	779.1	30.5	17.6	8.0	7.8	19.7	11.1	43.3	21.2	27.0	20.3	993.1
2001	7.4	787.2	31.1	18.4	8.5	9.5	19.7	10.9	43.4	17.8	27.7	20.7	1,002.3
2002	7.2	837.5	30.7	17.5	8.0	8.2	17.7	10.7	41.6	18.3	27.7	18.4	1,043.4
2003	7.7	895.1	31.9	18.5	10.1	7.3	22.7	10.8	50.9	5.5	30.6	41.0	1,132.3
2004	7.0	960.7	31.4	18.3	8.8	8.7	17.5	9.9	50.5	5.2	29.9	44.0	1,191.7
2005	7.5	933.2	29.6	18.4	9.6	8.6	18.8	10.3	53.5	5.0	30.0	42.1	1,166.4
2006	6.8	843.7	32.9	18.2	9.3	8.1	23.5	10.2	51.8	4.6	29.3	38.1	1,076.4
2007	6.8	864.6	31.5	19.1	9.9	7.5	20.7	10.6	45.8	5.6	30.0	38.1	1,090.2
2008	6.5	910.8	32.1	18.8	10.3	7.1	19.0	10.8	47.1	7.7	29.0	R 44.1	R 1,143.2
2009	6.6	874.3	31.1	18.6	10.8	7.9	16.5	10.2	44.2	4.3	29.9	40.4	1,094.8
2010	6.8	889.9	31.7	18.8	10.4	7.3	15.7	10.1	43.3	5.7	30.2	42.9	1,112.7
2011	8.3	890.3	33.1	18.5	10.5	7.3	13.9	10.1	43.0	6.7	30.6	41.7	1,114.1
2012	6.7	828.5	30.3	16.3	10.0	6.7	15.1	8.9	40.8	5.6	29.7	40.6	1,039.3
2013	7.3	749.5	28.9	16.4	10.5	6.2	15.3	8.7	41.9	5.3	29.9	39.3	959.3
2014	6.3	R 730.6	29.4	17.0	9.5	6.2	15.6	8.3	43.0	5.2	31.4	39.0	941.5
2015	R 6.2	R 734.5	R 30.1	R 16.9	R 9.0	R 6.8	R 16.2	R 8.4	R 44.0	R 6.0	R 30.7	R 37.8	R 946.5
2016	R 6.2	R 709.2	R 28.9	R 15.8	R 8.7	R 6.4	R 15.6	R 8.5	R 43.9	R 6.0	R 30.3	R 37.6	R 917.2

^a For 1975 and 1976, the U.S. Government's fiscal year was July 1 through June 30. Beginning in 1977, the U.S. Government's fiscal year is October 1 through September 30 (for example, fiscal year 2014 is October 2013 through September 2014).

^b General Services Administration.

^c Health and Human Services.

^d National Aeronautics and Space Administration.

^e Includes all U.S. government agencies not separately displayed. See <http://ctsedweb.ee.doe.gov/Annual/Report/AgencyReference.aspx> for agency list. R=Revised.

Notes: • Data in this table are developed using conversion factors that often

differ from those in Tables A1–A6. • Data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the U.S. Department of Defense. U.S. Government energy use for electricity generation and uranium enrichment is excluded. • Totals may not equal sum of components due to independent rounding.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#consumption> (Excel and CSV files) for all annual data beginning in 1975.

Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Federal Energy Management Program. See <http://ctsedweb.ee.doe.gov/Annual/Report/Report.aspx>, "A-1 Total Site-Delivered Energy Use in All End-Use Sectors, by Federal Agency (Billion Btu)" dataset.

Table 2.8 U.S. Government Energy Consumption by Source, Fiscal Years
(Trillion Btu)

Fiscal Year ^a	Coal	Natural Gas ^b	Petroleum					Other Mobility Fuels ^f	Electricity	Purchased Steam and Other ^g	Total	
			Aviation Gasoline	Fuel Oil ^c	Jet Fuel	LPG ^d	Motor Gasoline ^e					Total
1975	77.9	166.2	22.0	376.0	707.4	5.6	63.2	1,174.2	0.0	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	.0	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	.0	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	.0	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	.0	141.2	7.1	1,375.4
1980	63.5	147.3	4.9	307.7	638.7	3.8	56.5	1,011.6	.2	141.9	6.8	1,371.2
1981	65.1	142.2	4.6	351.3	653.3	3.5	53.2	1,066.0	.2	144.5	6.2	1,424.2
1982	68.6	146.2	3.6	349.4	672.7	3.7	53.1	1,082.5	.2	147.5	6.2	1,451.4
1983	62.4	147.8	2.6	329.5	673.4	3.8	51.6	1,060.8	.2	151.5	9.0	1,431.8
1984	65.3	157.4	1.9	342.9	693.7	3.9	51.2	1,093.6	.2	155.9	10.1	1,482.5
1985	64.8	149.9	1.9	292.6	705.7	3.8	50.4	1,054.3	.2	167.2	13.9	1,450.3
1986	63.8	140.9	1.4	271.6	710.2	3.6	45.3	1,032.1	.3	155.8	13.7	1,406.7
1987	67.0	145.6	1.0	319.5	702.3	3.6	43.1	1,069.5	.4	169.9	13.9	1,466.3
1988	60.2	144.6	6.0	284.8	617.2	2.7	41.2	951.9	.4	171.2	32.0	1,360.3
1989	48.7	152.4	.8	245.3	761.7	3.5	41.1	1,052.4	2.2	188.6	20.6	1,464.7
1990	44.3	159.4	.5	245.2	732.4	3.8	37.2	1,019.1	2.6	193.6	19.1	1,438.0
1991	45.9	154.1	.4	232.6	774.5	3.0	34.1	1,044.7	6.0	192.7	18.3	1,461.7
1992	51.7	151.2	1.0	200.6	628.2	3.0	35.6	868.4	8.4	192.5	22.5	1,294.8
1993	38.3	152.9	.7	187.0	612.4	3.5	34.5	838.1	5.8	193.1	18.6	1,246.8
1994	35.0	143.9	.6	198.5	550.7	3.2	29.5	782.6	7.7	190.9	18.2	1,178.2
1995	31.7	149.4	.3	178.4	522.3	3.0	31.9	735.9	8.4	184.8	18.2	1,128.5
1996	23.3	147.3	.2	170.5	513.0	3.1	27.6	714.4	18.7	184.0	20.1	1,107.7
1997	22.5	153.8	.3	180.0	475.7	2.6	39.0	697.6	14.5	183.6	19.2	1,091.2
1998	23.9	140.4	.2	174.5	445.5	3.5	43.0	666.8	5.9	181.4	18.8	1,037.1
1999	21.2	137.4	.1	162.1	444.7	2.4	41.1	650.4	.4	180.0	21.5	1,010.9
2000	22.7	133.8	.2	171.3	403.1	2.5	43.9	621.0	1.8	193.6	20.2	993.1
2001	18.8	133.7	.2	176.9	415.2	3.1	42.5	638.0	4.8	188.4	18.6	1,002.3
2002	16.9	133.7	.2	165.6	472.9	2.8	41.3	682.8	3.2	188.3	18.5	1,043.4
2003	18.1	135.5	.3	190.8	517.9	3.2	46.3	758.4	3.3	193.8	23.2	1,132.3
2004	17.4	135.3	.2	261.4	508.2	2.9	44.1	816.9	3.1	197.1	22.0	1,191.7
2005	17.1	135.7	.4	241.4	492.2	3.4	48.8	786.1	5.6	197.6	24.3	1,166.4
2006	23.5	132.6	.6	209.3	442.6	2.7	48.3	703.6	2.1	196.7	18.2	1,076.4
2007	20.4	131.5	.4	212.9	461.1	2.7	46.5	723.7	2.9	194.9	16.7	1,090.2
2008	20.8	^R 129.6	.4	198.4	^R 525.4	2.3	^R 49.0	^R 775.4	3.6	^R 196.1	17.7	^R 1,143.2
2009	20.3	131.7	.3	166.4	505.7	3.2	48.3	723.9	10.1	191.3	17.7	1,094.8
2010	20.0	130.1	.4	157.8	535.8	2.5	51.3	747.7	3.0	193.7	18.2	1,112.7
2011	18.5	124.7	.9	166.5	533.6	2.0	52.7	755.8	2.7	193.2	19.1	1,114.1
2012	15.9	116.2	.4	148.6	493.5	1.7	50.1	694.4	3.1	187.2	22.5	1,039.3
2013	14.3	122.5	.7	140.0	424.0	1.9	46.6	613.2	2.8	184.7	21.8	959.3
2014	13.5	125.6	.3	133.5	414.3	1.8	44.9	594.8	3.6	182.1	21.9	941.5
2015	12.6	123.3	.3	^R 134.4	418.9	1.8	46.8	^R 602.2	3.7	^R 184.4	^R 20.3	^R 946.5
2016	10.2	115.4	.3	129.7	403.9	1.7	46.5	582.2	3.6	184.5	21.4	917.2

^a For 1975 and 1976, the U.S. Government's fiscal year was July 1 through June 30. Beginning in 1977, the U.S. Government's fiscal year is October 1 through September 30 (for example, fiscal year 2014 is October 2013 through September 2014).

^b Natural gas, plus a small amount of supplemental gaseous fuels.

^c Distillate fuel oil, including diesel fuel; and residual fuel oil, including Navy Special.

^d Liquefied petroleum gases, primarily propane.

^e Includes E10 (a mixture of 10% ethanol and 90% motor gasoline) and E15 (a mixture of 15% ethanol and 85% motor gasoline).

^f Other types of fuel used in vehicles and equipment. Primarily includes alternative fuels such as compressed natural gas (CNG); liquefied natural gas (LNG); E85 (a mixture of 85% ethanol and 15% motor gasoline); B20 (a mixture of 20% biodiesel and 80% diesel fuel); B100 (100% biodiesel); hydrogen; and methanol.

^g Other types of energy used in facilities. Primarily includes chilled water, but

also includes small amounts of renewable energy such as wood and solar thermal. R=Revised.

Notes: • Data in this table are developed using conversion factors that often differ from those in Tables A1–A6. • Data include energy consumed at foreign installations and in foreign operations, including aviation and ocean bunkering, primarily by the U.S. Department of Defense. U.S. Government energy use for electricity generation and uranium enrichment is excluded. • Totals may not equal sum of components due to independent rounding.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#consumption> (Excel and CSV files) for all annual data beginning in 1975.

Source: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Federal Energy Management Program. See <http://ctsedweb.ee.doe.gov/Annual/Report/Report.aspx>, "A-5 Historical Federal Energy Consumption and Cost Data by Agency and Energy Type (FY 1975 to Present)" dataset.

Energy Consumption by Sector

Note 1. Electrical System Energy Losses. Electrical system energy losses are calculated as the difference between total primary consumption by the electric power sector (see Table 2.6) and the total energy content of electricity retail sales (see Tables 7.6 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, geothermal, solar thermal, photovoltaic, and wind energy sources. 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, about two thirds of total energy input is lost in conversion. Currently, of electricity generated, approximately 5% is lost in plant use and 7% is lost in transmission and distribution.

Note 2. Energy Consumption Data and Surveys. Most of the data in this section of the *Monthly Energy Review (MER)* are developed from a group of energy-related surveys, typically called "supply surveys," conducted by the U.S. Energy Information Administration (EIA). Supply surveys are directed to suppliers and marketers of specific energy sources. They measure the quantities of specific energy sources produced, or the quantities supplied to the market, or both. The data obtained from EIA's supply surveys are integrated to yield the summary consumption statistics published in this section (and in Section 1) of the MER.

Users of EIA's energy consumption statistics should be aware of a second group of energy-related surveys, typically called "consumption surveys." Consumption surveys gather information on the types of energy consumed by end users of energy, along with the characteristics of those end users that can be associated with energy use. For example, the "Manufacturing Energy Consumption Survey" belongs to the consumption survey group because it collects information directly from end users (the manufacturing establishments). There are important differences between the supply and consumption surveys that need to be taken into account in any analysis that uses both data sources. For information on those differences, see "Energy Consumption by End-Use Sector, A Comparison of Measures by Consumption and Supply Surveys," DOE/EIA-0533, U.S. Energy Information Administration, Washington, DC, April 6, 1990.

Table 2.2 Sources

Coal

1949–2007: Residential sector coal consumption data from Table 6.2 are converted to Btu by multiplying by the

residential and commercial sectors coal consumption heat content factors in Table A5.

Natural Gas

1949–1979: Residential sector natural gas (including supplemental gaseous fuels) consumption data from Table 4.3 are converted to Btu by multiplying by the natural gas end-use sectors consumption heat content factors in Table A4.

1980 forward: Residential sector natural gas (including supplemental gaseous fuels) consumption data from Table 4.3 are converted to Btu by multiplying by the natural gas end-use sectors consumption heat content factors in Table A4. The residential sector portion of supplemental gaseous fuels data in Btu is estimated using the method described in Note 3, "Supplemental Gaseous Fuels," at the end of Section 4. Residential sector natural gas (excluding supplemental gaseous fuels) consumption is equal to residential sector natural gas (including supplemental gaseous fuels) consumption minus the residential sector portion of supplemental gaseous fuels.

Petroleum

1949 forward: Table 3.8a.

Fossil Fuels Total

1949–2007: Residential sector total fossil fuels consumption is the sum of the residential sector consumption values for coal, natural gas, and petroleum.

2008 forward: Residential sector total fossil fuels consumption is the sum of the residential sector consumption values for natural gas and petroleum.

Renewable Energy

1949 forward: Table 10.2a.

Total Primary Energy Consumption

1949 forward: Residential sector total primary energy consumption is the sum of the residential sector consumption values for fossil fuels and renewable energy.

Electricity Retail Sales

1949 forward: Residential sector electricity retail sales from Table 7.6 are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electrical System Energy Losses

1949 forward: Total electrical system energy losses are equal to electric power sector total primary energy consumption from Table 2.6 minus total electricity retail sales from Table 7.6 (converted to Btu by multiplying by the electricity heat content factor in Table A6). Total electrical system energy losses are allocated to the residential sector in proportion to the residential sector's share of total electricity retail sales from Table 7.6. See Note 1, "Electrical System Energy Losses."

Total Energy Consumption

1949 forward: Residential sector total energy consumption is the sum of the residential sector consumption values for

total primary energy, electricity retail sales, and electrical system energy losses.

Table 2.3 Sources

Coal

1949 forward: Commercial sector coal consumption data from Table 6.2 are converted to Btu by multiplying by the residential and commercial sectors coal consumption heat content factors in Table A5.

Natural Gas

1949–1979: Commercial sector natural gas (including supplemental gaseous fuels) consumption data from Table 4.3 are converted to Btu by multiplying by the natural gas end-use sectors consumption heat content factors in Table A4.

1980 forward: Commercial sector natural gas (including supplemental gaseous fuels) consumption data from Table 4.3 are converted to Btu by multiplying by the natural gas end-use sectors consumption heat content factors in Table A4. The commercial sector portion of supplemental gaseous fuels data in Btu is estimated using the method described in Note 3, “Supplemental Gaseous Fuels,” at the end of Section 4. Commercial sector natural gas (excluding supplemental gaseous fuels) consumption is equal to commercial sector natural gas (including supplemental gaseous fuels) consumption minus the commercial sector portion of supplemental gaseous fuels.

Petroleum

1949–1992: Table 3.8a.

1993–2008: The commercial sector share of motor gasoline consumption is equal to commercial sector motor gasoline consumption from Table 3.7a divided by motor gasoline product supplied from Table 3.5. Commercial sector fuel ethanol (including denaturant) consumption is equal to total fuel ethanol (including denaturant) consumption from Table 10.3 multiplied by the commercial sector share of motor gasoline consumption. Commercial sector petroleum (excluding biofuels) consumption is equal to commercial sector petroleum (including biofuels) consumption from Table 3.8a minus commercial sector fuel ethanol (including denaturant) consumption.

2009 forward: Commercial sector fuel ethanol (minus denaturant) consumption is equal to total fuel ethanol (minus denaturant) consumption from Table 10.3 multiplied by the commercial sector share of motor gasoline consumption (see 1993–2008 sources above). Commercial sector petroleum (excluding biofuels) consumption is equal to commercial sector petroleum (including biofuels) consumption from Table 3.8a minus commercial sector fuel ethanol (minus denaturant) consumption.

Fossil Fuels Total

1949 forward: Commercial sector total fossil fuels consumption is the sum of the commercial sector consumption values for coal, natural gas, and petroleum.

Renewable Energy

1949 forward: Table 10.2a.

Total Primary Energy Consumption

1949 forward: Commercial sector total primary energy consumption is the sum of the commercial sector consumption values for fossil fuels and renewable energy.

Electricity Retail Sales

1949 forward: Commercial sector electricity retail sales from Table 7.6 are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electrical System Energy Losses

1949 forward: Total electrical system energy losses are equal to electric power sector total primary energy consumption from Table 2.6 minus total electricity retail sales from Table 7.6 (converted to Btu by multiplying by the electricity heat content factor in Table A6). Total electrical system energy losses are allocated to the commercial sector in proportion to the commercial sector’s share of total electricity retail sales from Table 7.6. See Note 1, “Electrical System Energy Losses.”

Total Energy Consumption

1949 forward: Commercial sector total energy consumption is the sum of the commercial sector consumption values for total primary energy, electricity retail sales, and electrical system energy losses.

Table 2.4 Sources

Coal

1949 forward: Coke plants coal consumption from Table 6.2 is converted to Btu by multiplying by the coke plants coal consumption heat content factors in Table A5. Other industrial coal consumption from Table 6.2 is converted to Btu by multiplying by the other industrial coal consumption heat content factors in Table A5. Industrial sector coal consumption is equal to coke plants coal consumption and other industrial coal consumption.

Natural Gas

1949–1979: Industrial sector natural gas (including supplemental gaseous fuels) consumption data from Table 4.3 are converted to Btu by multiplying by the natural gas end-use sectors consumption heat content factors in Table A4.

1980 forward: Industrial sector natural gas (including supplemental gaseous fuels) consumption data from Table 4.3 are converted to Btu by multiplying by the natural gas end-use sectors consumption heat content factors in Table A4. The industrial sector portion of supplemental gaseous fuels data in Btu is estimated using the method described in Note 3, “Supplemental Gaseous Fuels,” at the end of Section 4. Industrial sector natural gas (excluding supplemental gaseous fuels) consumption is equal to industrial sector natural gas (including supplemental gaseous fuels) consumption minus the industrial sector portion of supplemental gaseous fuels.

Petroleum

1949–1992: Table 3.8b.

1993–2008: The industrial sector share of motor gasoline consumption is equal to industrial sector motor gasoline consumption from Table 3.7b divided by motor gasoline product supplied from Table 3.5. Industrial sector fuel ethanol (including denaturant) consumption is equal to total fuel ethanol (including denaturant) consumption from Table 10.3 multiplied by the industrial sector share of motor gasoline consumption. Industrial sector petroleum (excluding biofuels) consumption is equal to industrial sector petroleum (including biofuels) consumption from Table 3.8b minus industrial sector fuel ethanol (including denaturant) consumption.

2009 forward: Industrial sector fuel ethanol (minus denaturant) consumption is equal to total fuel ethanol (minus denaturant) consumption from Table 10.3 multiplied by the industrial sector share of motor gasoline consumption (see 1993–2008 sources above). Industrial sector petroleum (excluding biofuels) consumption is equal to industrial sector petroleum (including biofuels) consumption from Table 3.8b minus industrial sector fuel ethanol (minus denaturant) consumption.

Coal Coke Net Imports

1949 forward: Coal coke net imports are equal to coal coke imports from Table 1.4a minus coal coke exports from Table 1.4b.

Fossil Fuels Total

1949 forward: Industrial sector total fossil fuels consumption is the sum of the industrial sector consumption values for coal, natural gas, and petroleum, plus coal coke net imports.

Renewable Energy

1949 forward: Table 10.2b.

Total Primary Energy Consumption

1949 forward: Industrial sector total primary energy consumption is the sum of the industrial sector consumption values for fossil fuels and renewable energy.

Electricity Retail Sales

1949 forward: Industrial sector electricity retail sales from Table 7.6 are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electrical System Energy Losses

1949 forward: Total electrical system energy losses are equal to electric power sector total primary energy consumption from Table 2.6 minus total electricity retail sales from Table 7.6 (converted to Btu by multiplying by the electricity heat content factor in Table A6). Total electrical system energy losses are allocated to the industrial sector in proportion to the industrial sector's share of total electricity retail sales from Table 7.6. See Note 1, "Electrical System Energy Losses."

Total Energy Consumption

1949 forward: Industrial sector total energy consumption is the sum of the industrial sector consumption values for total primary energy, electricity retail sales, and electrical system energy losses.

Table 2.5 Sources

Coal

1949–1977: Transportation sector coal consumption data from Table 6.2 are converted to Btu by multiplying by the other industrial sector coal consumption heat content factors in Table A5.

Natural Gas

1949 forward: Transportation sector natural gas consumption data from Table 4.3 are converted to Btu by multiplying by the natural gas end-use sectors consumption heat content factors in Table A4.

Petroleum

1949–1992: Table 3.8c.

1993–2008: The transportation sector share of motor gasoline consumption is equal to transportation sector motor gasoline consumption from Table 3.7c divided by motor gasoline product supplied from Table 3.5. Transportation sector fuel ethanol (including denaturant) consumption is equal to total fuel ethanol (including denaturant) consumption from Table 10.3 multiplied by the transportation sector share of motor gasoline consumption. Transportation sector petroleum (excluding biofuels) consumption is equal to transportation sector petroleum (including biofuels) consumption from Table 3.8c minus transportation sector fuel ethanol (including denaturant) consumption.

2009 forward: Transportation sector fuel ethanol (minus denaturant) consumption is equal to total fuel ethanol (minus denaturant) consumption from Table 10.3 multiplied by the transportation sector share of motor gasoline consumption (see 1993–2008 sources above). Transportation sector petroleum (excluding biofuels) consumption is equal to: transportation sector petroleum (including biofuels) consumption from Table 3.8c; minus transportation sector fuel ethanol (minus denaturant) consumption; minus refinery and blender net inputs of renewable fuels (excluding fuel ethanol) from U.S. Energy Information Administration, *Petroleum Supply Annual/Petroleum Supply Monthly*, Table 1 (for biomass-based diesel fuel, the data are converted to Btu by multiplying by the biodiesel heat content factor in Table A1; for other renewable diesel fuel, the data are converted to Btu by multiplying by the other renewable diesel fuel heat content factor in Table A1).

Fossil Fuels Total

1949–1977: Transportation sector total fossil fuels consumption is the sum of the transportation sector consumption values for coal, natural gas, and petroleum.

1978 forward: Transportation sector total fossil fuels consumption is the sum of the transportation sector consumption values for natural gas and petroleum.

Renewable Energy

1981 forward: Table 10.2b.

Total Primary Energy Consumption

1949–1980: Transportation sector total primary energy consumption is equal to transportation sector fossil fuels consumption.

1981 forward: Transportation sector total primary energy consumption is the sum of the transportation sector consumption values for fossil fuels and renewable energy.

Electricity Retail Sales

1949 forward: Transportation sector electricity retail sales from Table 7.6 are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electrical System Energy Losses

1949 forward: Total electrical system energy losses are equal to electric power sector total primary energy consumption from Table 2.6 minus total electricity retail sales from Table 7.6 (converted to Btu by multiplying by the electricity heat content factor in Table A6). Total electrical system energy losses are allocated to the transportation sector in proportion to the transportation sector's share of total electricity retail sales from Table 7.6. See Note 1, "Electrical System Energy Losses."

Total Energy Consumption

1949 forward: Transportation sector total energy consumption is the sum of the transportation sector consumption values for total primary energy, electricity retail sales, and electrical system energy losses.

Table 2.6 Sources

Coal

1949 forward: Electric power sector coal consumption data from Table 6.2 are converted to Btu by multiplying by the electric power sector coal consumption heat content factors in Table A5.

Natural Gas

1949–1979: Electric power sector natural gas (including supplemental gaseous fuels) consumption data from Table 4.3 are converted to Btu by multiplying by the natural gas electric power sector consumption heat content factors in Table A4.

1980 forward: Electric power sector natural gas (including supplemental gaseous fuels) consumption data from Table 4.3 are converted to Btu by multiplying by the natural gas electric power sector consumption heat content factors in Table A4. The electric power sector portion of supplemental gaseous fuels data in Btu is estimated using the method described in Note 3, "Supplemental Gaseous Fuels," at the end of Section 4. Electric power sector natural gas (excluding supplemental gaseous fuels) consumption is equal to electric power sector natural gas (including supplemental gaseous fuels) consumption minus the electric power sector portion of supplemental gaseous fuels.

Petroleum

1949 forward: Table 3.8c.

Fossil Fuels Total

1949 forward: Electric power sector total fossil fuels consumption is the sum of the electric power sector consumption values for coal, natural gas, and petroleum.

Nuclear Electric Power

1949 forward: Nuclear electricity net generation data from Table 7.2a are converted to Btu by multiplying by the nuclear heat rate factors in Table A6.

Renewable Energy

1949 forward: Table 10.2c.

Electricity Net Imports

1949 forward: Electricity net imports are equal to electricity imports from Table 1.4a minus electricity exports from Table 1.4b.

Total Primary Energy Consumption

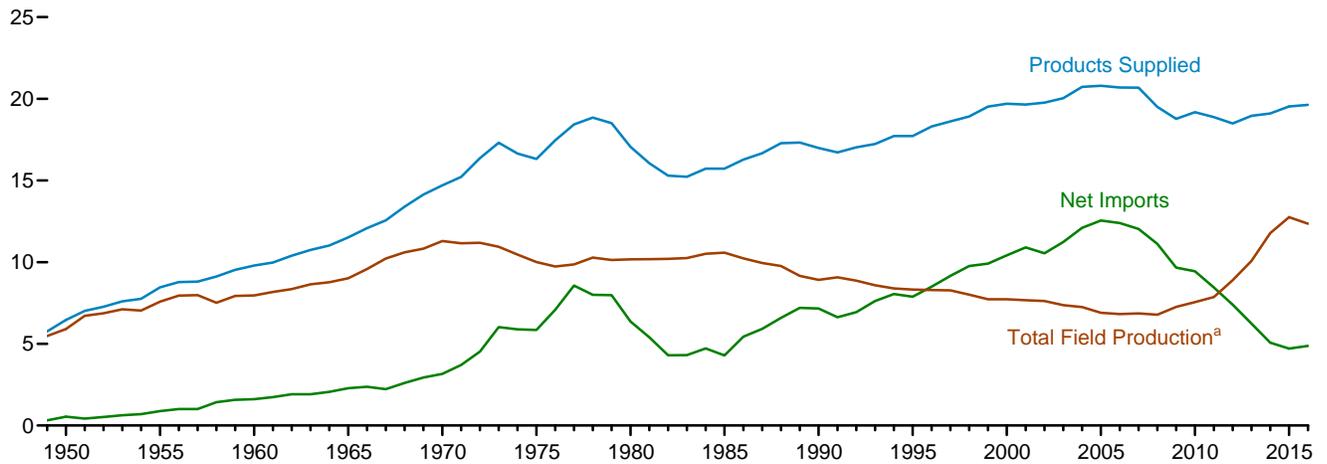
1949 forward: Electric power sector total primary energy consumption is the sum of the electric power sector consumption values for fossil fuels, nuclear electric power, and renewable energy, plus electricity net imports.

THIS PAGE INTENTIONALLY LEFT BLANK

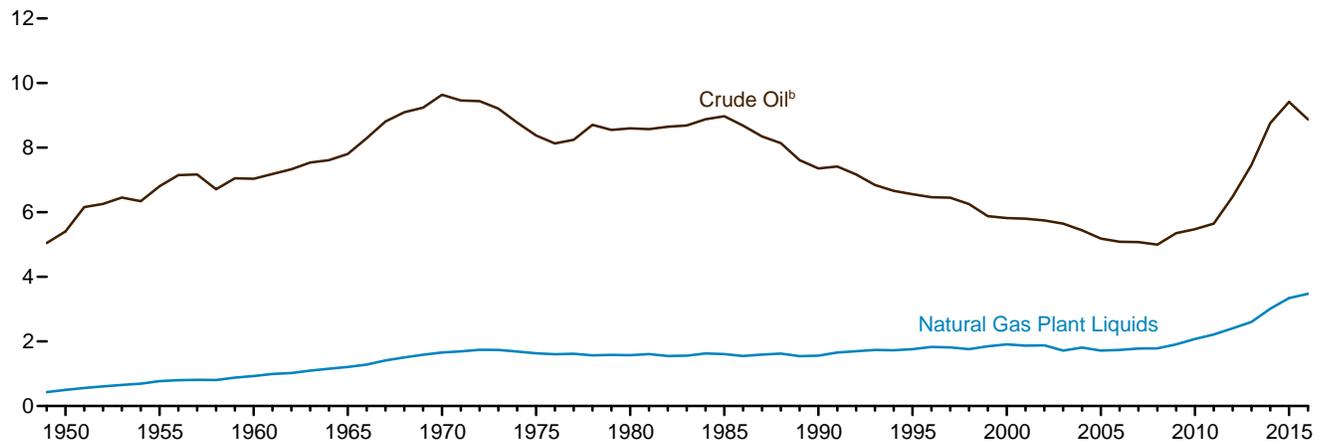
3. Petroleum

Figure 3.1 Petroleum Overview
(Million Barrels per Day)

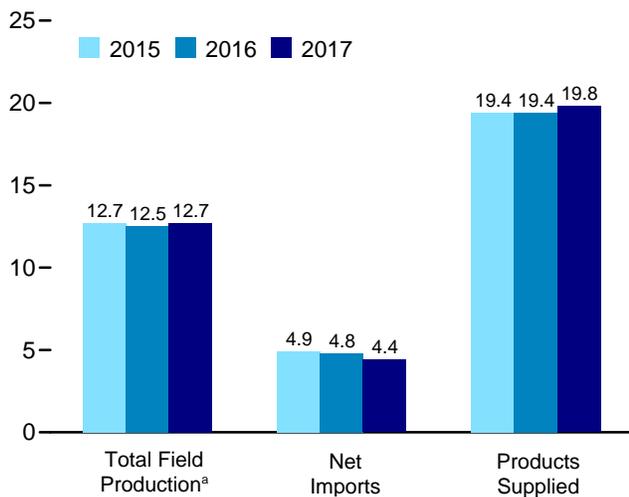
Overview, 1949–2016



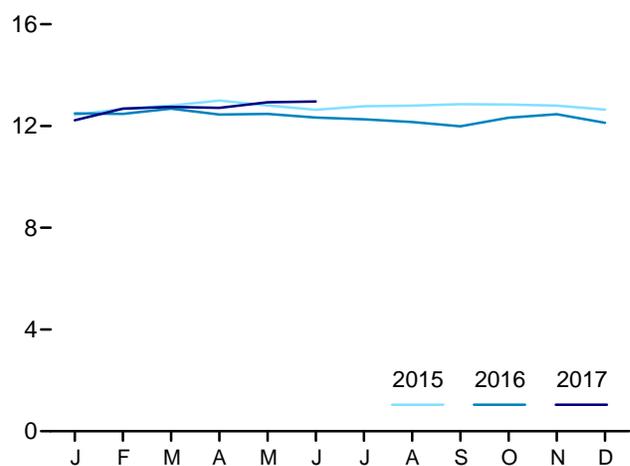
Crude Oil and Natural Gas Plant Liquids Field Production, 1949–2016



Overview, January–June



Total Field Production,^a Monthly



^a Crude oil, including lease condensate, and natural gas plant liquids field production.

^b Includes lease condensate.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.
Source: Table 3.1.

Table 3.1 Petroleum Overview
(Thousand Barrels per Day)

	Field Production ^a					Renewable Fuels and Oxygenates ^f	Processing Gain ^g	Trade			Stock Change ⁱ	Adjustments ^{c,k}	Petroleum Products Supplied
	Crude Oil ^{b,c}			NGPL ^e	Total ^c			Im-ports ^h	Ex-ports	Net Imports ⁱ			
	48 States ^d	Alaska	Total										
1950 Average	5,407	0	5,407	499	5,906	NA	2	850	305	545	-56	-51	6,458
1955 Average	6,807	0	6,807	771	7,578	NA	34	1,248	368	880	(s)	-37	8,455
1960 Average	7,034	2	7,035	929	7,965	NA	146	1,815	202	1,613	-83	-8	9,797
1965 Average	7,774	30	7,804	1,210	9,014	NA	220	2,468	187	2,281	-10	-10	11,512
1970 Average	9,408	229	9,637	1,660	11,297	NA	359	3,419	259	3,161	103	-16	14,697
1975 Average	8,183	191	8,375	1,633	10,007	NA	460	6,056	209	5,846	32	41	16,322
1980 Average	6,980	1,617	8,597	1,573	10,170	NA	597	6,909	544	6,365	140	64	17,056
1985 Average	7,146	1,825	8,971	1,609	10,581	NA	557	5,067	781	4,286	-103	200	15,726
1990 Average	5,582	1,773	7,355	1,559	8,914	NA	683	8,018	857	7,161	107	338	16,988
1995 Average	5,076	1,484	6,560	1,762	8,322	NA	774	8,835	949	7,886	-246	496	17,725
2000 Average	4,851	970	5,822	1,911	7,733	NA	948	11,459	1,040	10,419	-69	532	19,701
2001 Average	4,839	963	5,801	1,868	7,670	NA	903	11,871	971	10,900	325	501	19,649
2002 Average	4,759	985	5,744	1,880	7,624	NA	957	11,530	984	10,546	-105	529	19,761
2003 Average	4,675	974	5,649	1,719	7,369	NA	974	12,264	1,027	11,238	56	509	20,034
2004 Average	4,533	908	5,441	1,809	7,250	NA	1,051	13,145	1,048	12,097	209	542	20,731
2005 Average	4,320	864	5,184	1,717	6,901	NA	989	13,714	1,165	12,549	146	509	20,802
2006 Average	4,345	741	5,086	1,739	6,825	NA	994	13,707	1,317	12,390	59	537	20,687
2007 Average	4,355	722	5,077	1,783	6,860	NA	996	13,468	1,433	12,036	-152	637	20,680
2008 Average	4,317	683	5,000	1,784	6,784	NA	993	12,915	1,802	11,114	195	803	19,498
2009 Average	4,708	645	5,353	1,910	7,263	746	979	11,691	2,024	9,667	107	224	18,771
2010 Average	4,875	600	5,475	2,074	7,549	907	1,068	11,793	2,353	9,441	39	256	19,180
2011 Average	5,085	561	5,646	2,216	7,862	1,016	1,076	11,436	2,986	8,450	-124	353	18,882
2012 Average	5,961	526	6,487	2,408	8,895	964	1,059	10,598	3,205	7,393	143	323	18,490
2013 Average	6,953	515	7,468	2,606	10,073	1,002	1,087	9,859	3,621	6,237	-133	428	18,961
2014 Average	8,267	496	8,764	3,015	11,778	1,055	1,081	9,241	4,176	5,065	262	389	19,106
2015 January	8,879	500	9,379	3,055	12,434	1,055	1,075	9,461	4,575	4,886	752	521	19,218
February	9,029	488	9,517	3,162	12,678	1,048	1,021	9,272	4,640	4,632	3	300	19,677
March	9,060	506	9,566	3,237	12,802	1,052	1,013	9,619	4,092	5,527	1,060	17	19,352
April	9,117	510	9,627	3,375	13,002	1,065	1,068	9,374	4,938	4,436	856	548	19,263
May	8,999	473	9,472	3,337	12,808	1,107	1,083	9,502	4,853	4,649	704	357	19,301
June	8,873	447	9,320	3,319	12,638	1,148	1,028	9,605	4,657	4,948	350	429	19,841
July	8,968	450	9,418	3,355	12,773	1,124	1,092	9,571	4,960	4,611	-63	462	20,126
August	8,977	408	9,384	3,419	12,803	1,103	1,099	9,858	4,507	5,351	720	294	19,930
September	8,950	472	9,423	3,437	12,860	1,090	1,046	9,358	4,851	4,507	326	241	19,418
October	8,861	497	9,358	3,489	12,847	1,104	1,040	8,842	4,617	4,225	234	519	19,500
November	8,782	523	9,304	3,498	12,803	1,117	1,065	9,151	4,903	4,248	449	361	19,144
December	8,703	522	9,225	3,417	12,642	1,124	1,108	9,742	5,266	4,476	-244	6	19,600
Average	8,932	483	9,415	3,342	12,757	1,095	1,062	9,449	4,738	4,711	432	338	19,531
2016 January	E 8,678	E 516	E 9,194	3,303	E 12,497	1,105	1,106	9,734	4,878	4,857	855	346	19,055
February	E 8,639	E 507	E 9,147	3,329	E 12,476	1,124	1,058	10,020	4,948	5,072	141	92	19,680
March	E 8,663	E 511	E 9,174	3,509	E 12,683	1,140	1,041	10,002	5,002	5,000	264	16	19,616
April	E 8,458	E 489	E 8,947	3,504	E 12,451	1,088	1,066	9,829	5,154	4,674	353	337	19,264
May	E 8,377	E 505	E 8,882	3,593	E 12,476	1,141	1,140	10,183	5,658	4,525	505	427	19,202
June	E 8,241	E 470	E 8,711	3,618	E 12,329	1,174	1,106	10,076	5,240	4,836	-28	327	19,799
July	E 8,253	E 438	E 8,691	3,573	E 12,264	1,174	1,184	10,507	5,209	5,298	503	296	19,712
August	E 8,300	E 459	E 8,759	3,399	E 12,158	1,184	1,142	10,311	5,114	5,196	11	462	20,131
September	E 8,115	E 452	E 8,567	3,420	E 11,987	1,159	1,117	10,194	5,250	4,944	-506	151	19,864
October	E 8,290	E 495	E 8,785	3,541	E 12,326	1,145	1,079	9,723	4,942	4,781	85	375	19,622
November	E 8,350	E 513	E 8,863	3,598	E 12,461	1,190	1,110	10,312	5,392	4,921	114	88	19,655
December	E 8,261	E 519	E 8,780	3,344	E 12,125	1,204	1,146	9,814	5,460	4,355	-743	407	19,979
Average	E 8,385	E 490	E 8,875	3,478	E 12,352	1,152	1,108	10,058	5,188	4,871	131	279	19,631
2017 January	E 8,342	E 516	E 8,858	3,365	E 12,223	1,166	1,125	10,698	5,691	5,007	710	424	19,234
February	RE 8,562	E 513	RE 9,075	3,604	RE 12,680	1,153	1,045	10,053	6,443	3,610	-120	R 580	19,188
March	RE 8,581	E 526	RE 9,107	3,644	RE 12,751	1,172	1,108	10,059	5,886	4,174	-542	R 286	20,033
April	RE 8,557	RE 525	RE 9,083	R 3,633	RE 12,716	R 1,138	R 1,128	R 10,244	R 6,066	R 4,178	R 31	R 399	R 19,527
May	RE 8,811	E 510	E 9,320	E 3,612	E 12,932	E 1,087	E 1,180	E 10,451	E 5,624	E 4,827	E 95	RE 245	E 20,177
June	E 8,859	E 461	E 9,320	E 3,644	E 12,964	E 1,077	E 1,178	E 9,961	E 5,207	E 4,753	E -323	E 254	E 20,549
6-Month Average	E 8,619	E 509	E 9,127	E 3,583	E 12,710	E 1,132	E 1,128	E 10,249	E 5,811	E 4,438	E -22	E 361	E 19,792
2016 6-Month Average	E 8,510	E 500	E 9,010	3,477	E 12,486	1,129	1,086	9,974	5,148	4,825	353	258	19,432
2015 6-Month Average	8,992	487	9,479	3,248	12,727	1,079	1,048	9,475	4,624	4,852	631	362	19,437

^a Crude oil production on leases, and natural gas liquids (liquefied petroleum gases, pentanes plus, and a small amount of finished petroleum products) production at natural gas processing plants. Excludes what was previously classified as "Field Production" of finished motor gasoline, motor gasoline blending components, and other hydrocarbons and oxygenates; these are now included in "Adjustments."

^b Includes lease condensate.

^c Once a month, data for crude oil production, total field production, and adjustments are revised going back as far as the data year of the U.S. Energy Information Administration's (EIA) last published *Petroleum Supply Annual (PSA)*—these revisions are released at the same time as EIA's *Petroleum Supply Monthly*. Once a year, data for these series are revised going back as far as 10 years—these revisions are released at the same time as the PSA.

^d United States excluding Alaska and Hawaii.

^e Natural gas plant liquids.

^f Renewable fuels and oxygenate plant net production.

^g Refinery and blender net production minus refinery and blender net inputs. See Table 3.2.

^h Includes Strategic Petroleum Reserve imports. See Table 3.3b.

ⁱ Net imports equal imports minus exports.

^j A negative value indicates a decrease in stocks and a positive value indicates an increase. The current month stock change estimate is based on the change from the previous month's estimate, rather than the stocks values shown in Table 3.4. Includes crude oil stocks in the Strategic Petroleum Reserve, but excludes distillate fuel oil stocks in the Northeast Home Heating Oil Reserve. See Table 3.4.

^k An adjustment for crude oil, hydrogen, oxygenates, renewable fuels, other hydrocarbons, motor gasoline blending components, finished motor gasoline, and distillate fuel oil. See EIA's *Petroleum Supply Monthly*, Appendix B, "PSM Explanatory Notes," for further information.

^l Derived from the 2004 petroleum stocks value that excludes crude oil stocks on leases (1,628 million barrels), not the 2004 petroleum stocks value that includes crude oil stocks on leases (1,645 million barrels).

R=Revised. E=Estimate. NA=Not available. (s)=Less than 500 barrels per day and greater than -500 barrels per day.

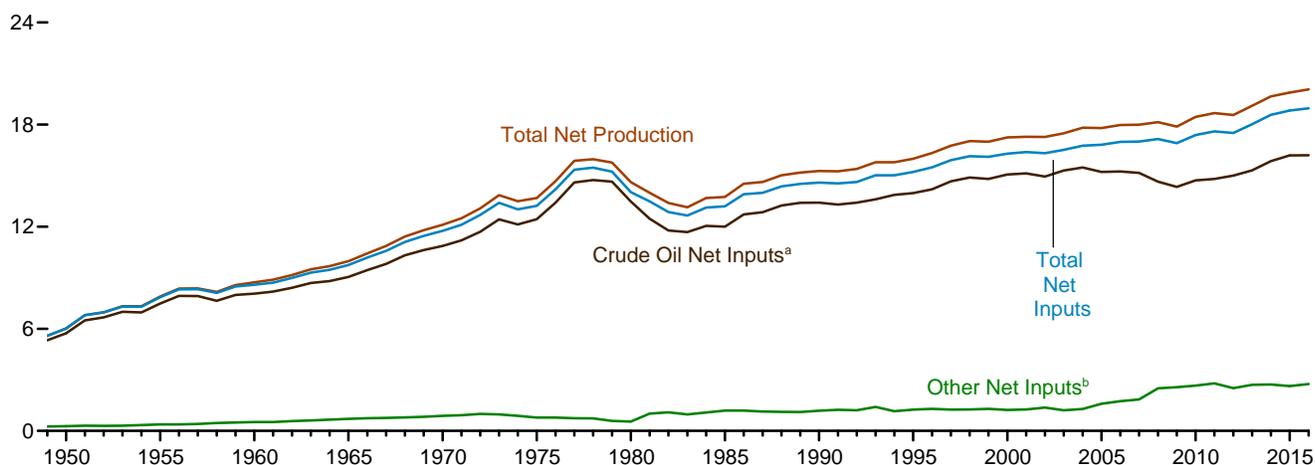
Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

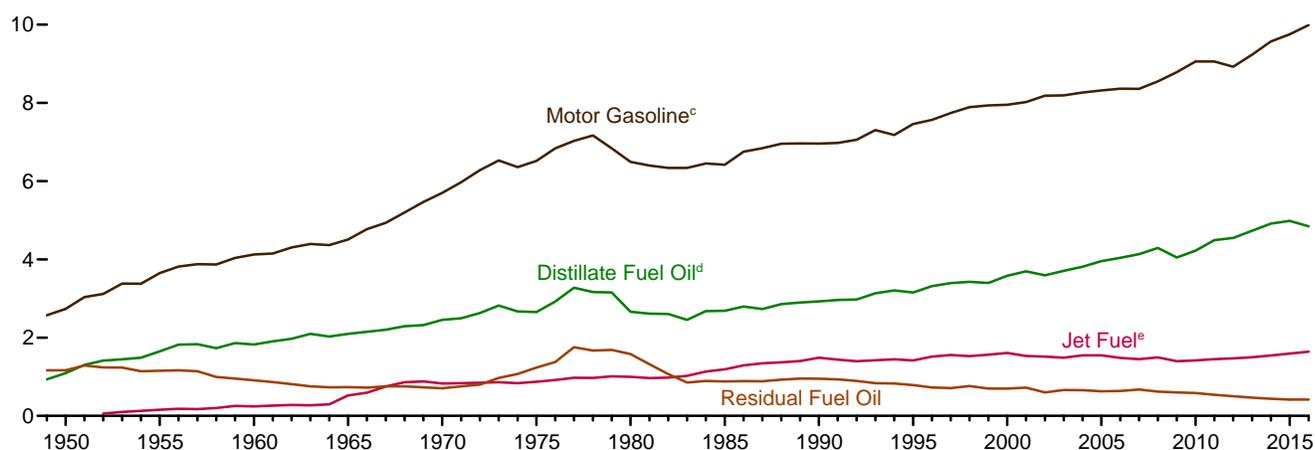
Sources: See end of section.

Figure 3.2 Refinery and Blender Net Inputs and Net Production
(Million Barrels per Day)

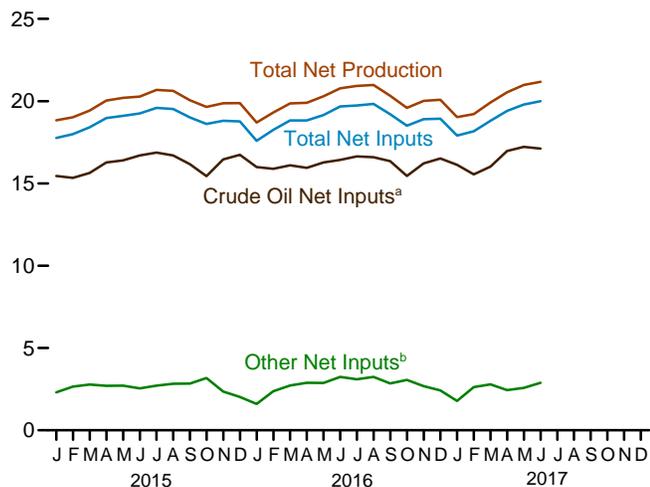
Net Inputs and Net Production, 1949–2016



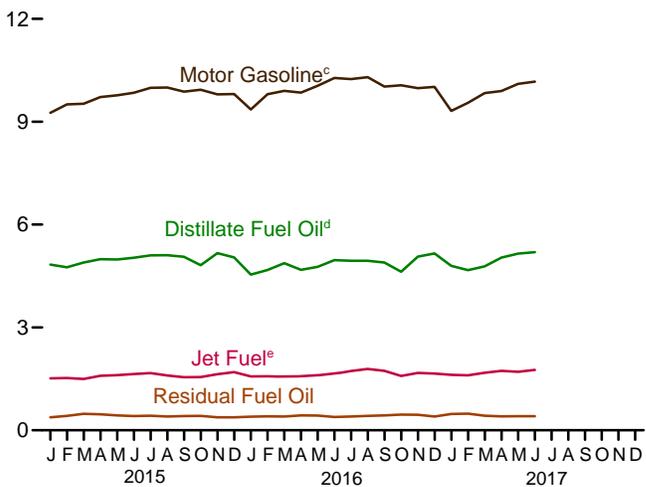
Net Production, Selected Products, 1949–2016



Net Inputs and Net Production, Monthly



Net Production, Selected Products, Monthly



^a Includes lease condensate.

^b Natural gas plant liquids and other liquids.

^c Beginning in 1993, includes fuel ethanol blended into motor gasoline.

^d Beginning in 2009, includes renewable diesel fuel (including biodie-

sel) blended into distillate fuel oil.

^e Beginning in 2005, includes kerosene-type jet fuel only.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.

Source: Table 3.2.

Table 3.2 Refinery and Blender Net Inputs and Net Production
(Thousand Barrels per Day)

	Refinery and Blender Net Inputs ^a				Refinery and Blender Net Production ^b							
	Crude Oil ^d	NGL ^e	Other Liquids ^f	Total	Distillate Fuel Oil ^g	Jet Fuel ^h	LPG ^c		Motor Gasoline ⁱ	Residual Fuel Oil	Other Products ^k	Total
							Propane ^l	Total				
1950 Average	5,739	259	19	6,018	1,093	(^h)	NA	80	2,735	1,165	947	6,019
1955 Average	7,480	345	32	7,857	1,651	155	NA	119	3,648	1,152	1,166	7,891
1960 Average	8,067	455	61	8,583	1,823	241	NA	212	4,126	908	1,420	8,729
1965 Average	9,043	618	88	9,750	2,096	523	NA	293	4,507	736	1,814	9,970
1970 Average	10,870	763	121	11,754	2,454	827	229	345	5,699	706	2,082	12,113
1975 Average	12,442	710	72	13,225	2,653	871	239	311	6,518	1,235	2,097	13,685
1980 Average	13,481	462	81	14,025	2,661	999	269	330	6,492	1,580	2,559	14,622
1985 Average	12,002	509	681	13,192	2,686	1,189	295	391	6,419	882	2,183	13,750
1990 Average	13,409	467	713	14,589	2,925	1,488	404	499	6,959	950	2,452	15,272
1995 Average	13,973	471	775	15,220	3,155	1,416	503	654	7,459	788	2,522	15,994
2000 Average	15,067	380	849	16,295	3,580	1,606	583	705	7,951	696	2,705	17,243
2001 Average	15,128	429	825	16,382	3,695	1,530	556	667	8,022	721	2,651	17,285
2002 Average	14,947	429	941	16,316	3,592	1,514	572	671	8,183	601	2,712	17,273
2003 Average	15,304	419	791	16,513	3,707	1,488	570	658	8,194	660	2,710	17,487
2004 Average	15,475	422	866	16,762	3,814	1,547	584	645	8,265	655	2,887	17,814
2005 Average	15,220	441	1,149	16,811	3,954	1,546	540	573	8,318	628	2,782	17,900
2006 Average	15,242	501	1,238	16,981	4,040	1,481	543	627	8,364	635	2,827	17,975
2007 Average	15,156	505	1,337	16,999	4,133	1,448	562	655	8,358	673	2,728	17,994
2008 Average	14,648	485	2,019	17,153	4,294	1,493	519	630	8,548	620	2,561	18,146
2009 Average	14,336	485	2,082	16,904	4,048	1,396	537	623	8,786	598	2,431	17,882
2010 Average	14,724	442	2,219	17,385	4,229	1,418	560	659	9,059	585	2,509	18,452
2011 Average	14,806	490	2,300	17,596	4,492	1,449	552	619	9,058	537	2,518	18,673
2012 Average	14,999	509	1,997	17,505	4,550	1,471	530	630	8,926	501	2,487	18,564
2013 Average	15,312	496	2,211	18,019	4,733	1,499	564	623	9,234	467	2,550	19,106
2014 Average	15,848	511	2,214	18,574	4,916	1,541	587	653	9,570	435	2,537	19,654
2015												
January	15,456	589	1,721	17,766	4,835	1,513	561	392	9,260	377	2,464	18,841
February	15,342	545	2,112	17,998	4,752	1,525	529	401	9,504	420	2,418	19,019
March	15,640	494	2,281	18,415	4,894	1,498	536	610	9,524	478	2,424	19,428
April	16,273	406	2,292	18,971	4,991	1,591	589	815	9,720	467	2,455	20,039
May	16,402	394	2,317	19,112	4,983	1,608	582	885	9,771	436	2,513	20,195
June	16,701	418	2,131	19,250	5,032	1,640	569	864	9,846	413	2,483	20,278
July	16,879	432	2,280	19,591	5,101	1,670	580	853	9,989	426	2,644	20,683
August	16,700	449	2,377	19,526	5,107	1,600	574	839	9,998	404	2,677	20,625
September	16,168	546	2,294	19,008	5,061	1,547	529	583	9,878	414	2,572	20,054
October	15,440	600	2,573	18,613	4,817	1,554	520	442	9,935	419	2,487	19,653
November	16,458	683	1,669	18,810	5,169	1,634	559	343	9,799	377	2,554	19,876
December	16,742	649	1,377	18,768	5,042	1,698	578	333	9,806	376	2,621	19,775
Average	16,188	517	2,119	18,824	4,983	1,590	559	615	9,754	417	2,527	19,886
2016												
January	15,994	668	930	17,592	4,541	1,572	581	346	9,355	397	2,487	18,698
February	15,884	567	1,803	18,254	4,677	1,575	566	418	9,804	405	2,433	19,312
March	16,105	487	2,232	18,824	4,873	1,562	586	655	9,900	401	2,473	19,865
April	15,942	450	2,439	18,830	4,680	1,585	591	821	9,849	436	2,525	19,896
May	16,276	426	2,453	19,155	4,768	1,603	609	889	10,049	428	2,557	20,294
June	16,432	430	2,812	19,674	4,963	1,654	590	879	10,275	389	2,620	20,780
July	16,640	423	2,678	19,741	4,943	1,729	584	861	10,243	401	2,749	20,925
August	16,592	423	2,822	19,837	4,945	1,789	571	828	10,301	422	2,693	20,979
September	16,356	545	2,305	19,205	4,894	1,731	576	644	10,025	436	2,594	20,323
October	15,454	630	2,429	18,513	4,626	1,583	556	476	10,065	457	2,386	19,592
November	16,219	695	1,989	18,902	5,065	1,674	590	347	9,979	450	2,497	20,012
December	16,514	669	1,753	18,936	5,157	1,652	594	324	10,015	401	2,532	20,082
Average	16,202	534	2,221	18,957	4,845	1,643	583	625	9,989	419	2,546	20,065
2017												
January	16,129	650	1,131	17,910	4,797	1,615	564	353	9,316	473	2,479	19,035
February	15,546	586	2,034	18,167	4,672	1,604	543	412	9,552	484	2,487	19,212
March	16,028	518	2,266	18,813	4,781	1,677	586	679	9,834	427	2,524	19,921
April	R 16,970	R 477	R 1,963	R 19,411	R 5,036	R 1,734	R 601	R 857	R 9,897	R 405	R 2,610	R 20,538
May	F 17,219	F 432	RE 2,147	RF 19,799	E 5,151	E 1,703	RE 585	RF 871	E 10,103	E 411	RE 2,740	RE 20,979
June	E 17,118	F 444	E 2,438	F 20,000	E 5,195	E 1,760	E 640	F 880	E 10,170	E 413	E 2,759	E 21,178
6-Month Average	E 16,512	E 518	E 1,994	E 19,023	E 4,941	E 1,683	E 587	E 677	E 9,814	E 435	E 2,601	E 20,151
2016 6-Month Average	16,107	505	2,109	18,721	4,750	1,592	587	669	9,871	409	2,516	19,807
2015 6-Month Average	15,974	474	2,142	18,590	4,916	1,563	561	664	9,604	432	2,460	19,638

^a See "Refinery and Blender Net Inputs" in Glossary.

^b See "Refinery and Blender Net Production" in Glossary.

^c Liquefied petroleum gases.

^d Includes lease condensate.

^e Natural gas plant liquids (liquefied petroleum gases and pentanes plus).

^f Unfinished oils (net), other hydrocarbons, and hydrogen. Beginning in 1981, also includes aviation and motor gasoline blending components (net). Beginning in 1993, also includes oxygenates (net), including fuel ethanol. Beginning in 2009, also includes renewable diesel fuel (including biodiesel).

^g Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^h Beginning in 1965, includes kerosene-type jet fuel. (Through 1964, kerosene-type jet fuel is included with kerosene in "Other Products.") For 1952–2004, also includes naphtha-type jet fuel. (Through 1951, naphtha-type jet fuel is included in the products from which it was blended—gasoline, kerosene, and distillate fuel oil. Beginning in 2005, naphtha-type jet fuel is included in "Other Products.")

ⁱ Includes propylene.

^j Finished motor gasoline. Through 1963, also includes aviation gasoline and special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor

gasoline.

^k Asphalt and road oil, kerosene, lubricants, petrochemical feedstocks, petroleum coke, still gas (refinery gas), waxes, and miscellaneous products. Through 1964, also includes kerosene-type jet fuel. Beginning in 1964, also includes finished aviation gasoline and special naphthas. Beginning in 2005, also includes naphtha-type jet fuel.

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

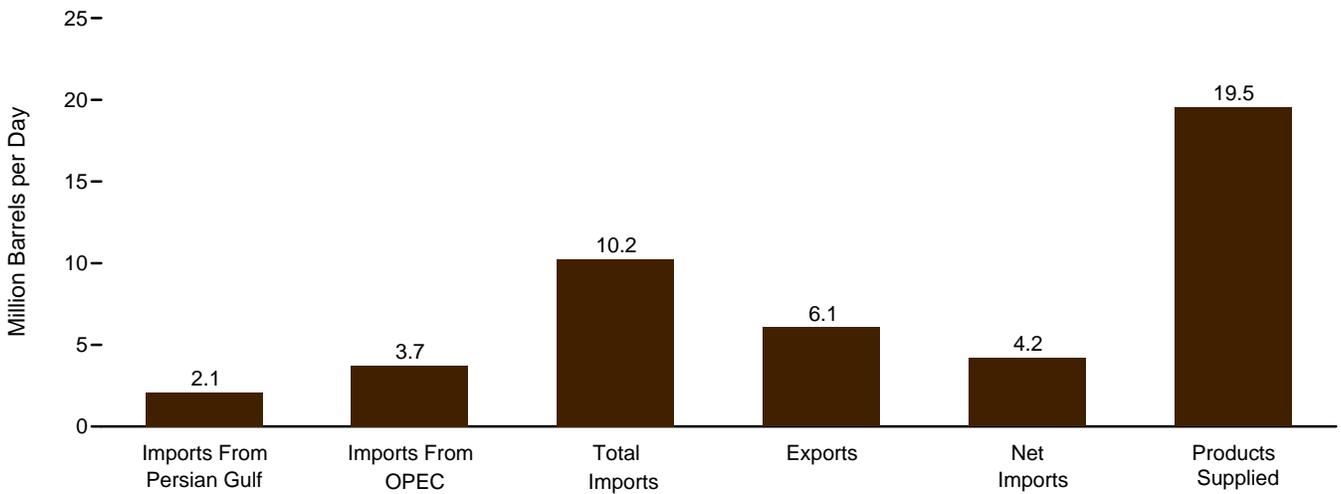
Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

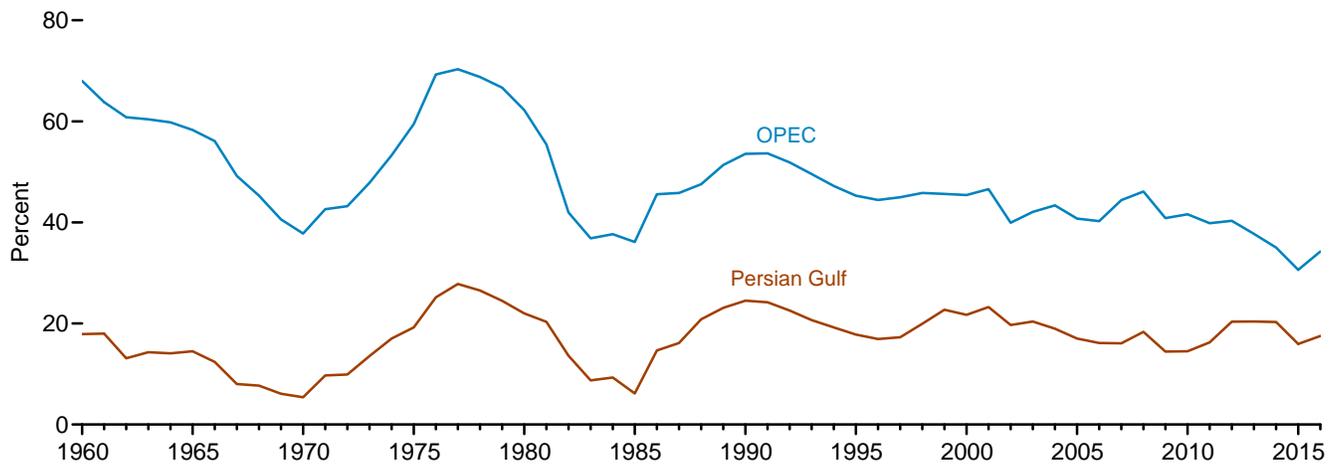
Sources: • **1949–1975:** Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976–1980:** U.S. Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • **1981–2015:** EIA, *Petroleum Supply Annual*, annual reports. • **2016 and 2017:** EIA, *Petroleum Supply Monthly*, monthly reports; and, for the current two months, *Weekly Petroleum Status Report* data system, Short-Term Integrated Forecasting System, and *Monthly Energy Review* data system calculations.

Figure 3.3a Petroleum Trade: Overview

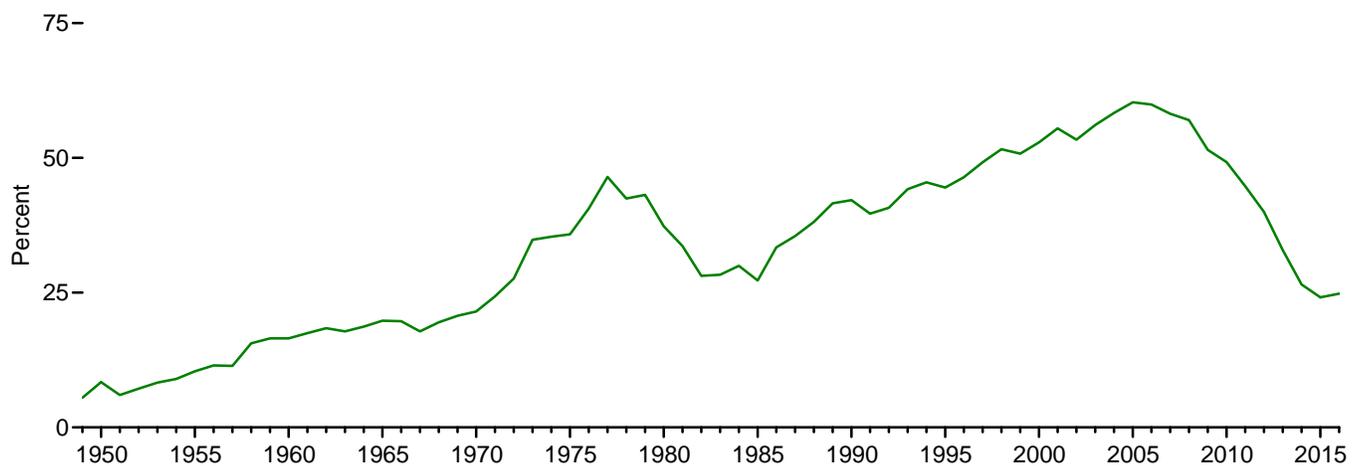
Overview, April 2017



Imports From OPEC and Persian Gulf as Share of Total Imports, 1960–2016



Net Imports as Share of Products Supplied, 1949–2016



Note: OPEC=Organization of the Petroleum Exporting Countries.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.
 Source: Table 3.3a.

Table 3.3a Petroleum Trade: Overview

	Imports From Persian Gulf ^a	Imports From OPEC ^b	Imports	Exports	Net Imports	Products Supplied	As Share of Products Supplied				As Share of Total Imports	
							Imports From Persian Gulf ^a	Imports From OPEC ^b	Imports	Net Imports	Imports From Persian Gulf ^a	Imports From OPEC ^b
							Thousand Barrels per Day						Percent
1950 Average	NA	NA	850	305	545	6,458	NA	NA	13.2	8.4	NA	NA
1955 Average	NA	NA	1,248	368	880	8,455	NA	NA	14.8	10.4	NA	NA
1960 Average	326	1,233	1,815	202	1,613	9,797	3.3	12.6	18.5	16.5	17.9	68.0
1965 Average	359	1,439	2,468	187	2,281	11,512	3.1	12.5	21.4	19.8	14.5	58.3
1970 Average	184	1,294	3,419	259	3,161	14,697	1.3	8.8	23.3	21.5	5.4	37.8
1975 Average	1,165	3,601	6,056	209	5,846	16,322	7.1	22.1	37.1	35.8	19.2	59.5
1980 Average	1,519	4,300	6,909	544	6,365	17,056	8.9	25.2	40.5	37.3	22.0	62.2
1985 Average	311	1,830	5,067	781	4,286	15,726	2.0	11.6	32.2	27.3	6.1	36.1
1990 Average	1,966	4,296	8,018	857	7,161	16,988	11.6	25.3	47.2	42.2	24.5	53.6
1995 Average	1,573	4,002	8,835	949	7,886	17,725	8.9	22.6	49.8	44.5	17.8	45.3
2000 Average	2,488	5,203	11,459	1,040	10,419	19,701	12.6	26.4	58.2	52.9	21.7	45.4
2001 Average	2,761	5,528	11,871	971	10,900	19,649	14.1	28.1	60.4	55.5	23.3	46.6
2002 Average	2,269	4,605	11,530	984	10,546	19,761	11.5	23.3	58.3	53.4	19.7	39.9
2003 Average	2,501	5,162	12,264	1,027	11,238	20,034	12.5	25.8	61.2	56.1	20.4	42.1
2004 Average	2,493	5,701	13,145	1,048	12,097	20,731	12.0	27.5	63.4	58.4	19.0	43.4
2005 Average	2,334	5,587	13,714	1,165	12,549	20,802	11.2	26.9	65.9	60.3	17.0	40.7
2006 Average	2,211	5,517	13,707	1,317	12,390	20,687	10.7	26.7	66.3	59.9	16.1	40.2
2007 Average	2,163	5,980	13,468	1,433	12,036	20,680	10.5	28.9	65.1	58.2	16.1	44.4
2008 Average	2,370	5,954	12,915	1,802	11,114	19,498	12.2	30.5	66.2	57.0	18.4	46.1
2009 Average	1,689	4,776	11,691	2,024	9,667	18,771	9.0	25.4	62.3	51.5	14.4	40.9
2010 Average	1,711	4,906	11,793	2,353	9,441	19,180	8.9	25.6	61.5	49.2	14.5	41.6
2011 Average	1,861	4,555	11,436	2,986	8,450	18,882	9.9	24.1	60.6	44.8	16.3	39.8
2012 Average	2,156	4,271	10,598	3,205	7,393	18,490	11.7	23.1	57.3	40.0	20.3	40.3
2013 Average	2,009	3,720	9,859	3,621	6,237	18,961	10.6	19.6	52.0	32.9	20.4	37.7
2014 Average	1,875	3,237	9,241	4,176	5,065	19,106	9.8	16.9	48.4	26.5	20.3	35.0
2015												
January	1,334	2,538	9,461	4,575	4,886	19,218	6.9	13.2	49.2	25.4	14.1	26.8
February	1,433	2,794	9,272	4,640	4,632	19,677	7.3	14.2	47.1	23.5	15.5	30.1
March	1,466	2,801	9,619	4,092	5,527	19,352	7.6	14.5	49.7	28.6	15.2	29.1
April	1,532	2,734	9,374	4,938	4,436	19,263	8.0	14.2	48.7	23.0	16.3	29.2
May	1,724	3,133	9,502	4,853	4,649	19,301	8.9	16.2	49.2	24.1	18.1	33.0
June	1,617	2,869	9,605	4,657	4,948	19,841	8.1	14.5	48.4	24.9	16.8	29.9
July	1,479	2,911	9,571	4,960	4,611	20,126	7.3	14.5	47.6	22.9	15.5	30.4
August	1,247	2,750	9,858	4,507	5,351	19,930	6.3	13.8	49.5	26.8	12.7	27.9
September	1,290	2,854	9,358	4,851	4,507	19,418	6.6	14.7	48.2	23.2	13.8	30.5
October	1,519	2,899	8,842	4,617	4,225	19,500	7.8	14.9	45.3	21.7	17.2	32.8
November	1,662	3,169	9,151	4,903	4,248	19,144	8.7	16.6	47.8	22.2	18.2	34.6
December	1,773	3,274	9,742	5,266	4,476	19,600	9.0	16.7	49.7	22.8	18.2	33.6
Average	1,507	2,894	9,449	4,738	4,711	19,531	7.7	14.8	48.4	24.1	15.9	30.6
2016												
January	1,520	3,052	9,734	4,878	4,857	19,055	8.0	16.0	51.1	25.5	15.6	31.4
February	1,574	3,210	10,020	4,948	5,072	19,680	8.0	16.3	50.9	25.8	15.7	32.0
March	1,820	3,576	10,002	5,002	5,000	19,616	9.3	18.2	51.0	25.5	18.2	35.8
April	1,709	3,351	9,829	5,154	4,674	19,264	8.9	17.4	51.0	24.3	17.4	34.1
May	1,933	3,642	10,183	5,658	4,525	19,202	10.1	19.0	53.0	23.6	19.0	35.8
June	1,716	3,303	10,076	5,240	4,836	19,799	8.7	16.7	50.9	24.4	17.0	32.8
July	1,793	3,803	10,507	5,209	5,298	19,712	9.1	19.3	53.3	26.9	17.1	36.2
August	1,815	3,422	10,311	5,114	5,196	20,131	9.0	17.0	51.2	25.8	17.6	33.2
September	1,982	3,572	10,194	5,250	4,944	19,864	10.0	18.0	51.3	24.9	19.4	35.0
October	1,698	3,329	9,723	4,942	4,781	19,622	8.7	17.0	49.6	24.4	17.5	34.2
November	1,703	3,567	10,312	5,392	4,921	19,655	8.7	18.1	52.5	25.0	16.5	34.6
December	1,885	3,498	9,814	5,460	4,355	19,979	9.4	17.5	49.1	21.8	19.2	35.6
Average	1,763	3,445	10,058	5,188	4,871	19,631	9.0	17.5	51.2	24.8	17.5	34.2
2017												
January	2,085	3,793	10,698	5,691	5,007	19,234	10.8	19.7	55.6	26.0	19.5	35.5
February	2,013	3,445	10,053	6,443	3,610	19,188	10.5	18.0	52.4	18.8	20.0	34.3
March	1,955	3,592	10,059	5,886	4,174	20,033	9.8	17.9	50.2	20.8	19.4	35.7
April	R 2,094	R 3,737	R 10,244	R 6,066	R 4,178	R 19,527	R 10.7	R 19.1	R 52.5	R 21.4	R 20.4	R 36.5
May	NA	NA	E 10,451	E 5,624	E 4,827	E 20,177	NA	NA	E 51.8	E 23.9	NA	NA
June	NA	NA	E 9,961	E 5,207	E 4,753	E 20,549	NA	NA	E 48.5	E 23.1	NA	NA
6-Month Average	NA	NA	E 10,249	E 5,811	E 4,438	E 19,792	NA	NA	E 51.8	E 22.4	NA	NA
2016 6-Month Average	1,714	3,358	9,974	5,148	4,825	19,432	8.8	17.3	51.3	24.8	17.2	33.7
2015 6-Month Average	1,518	2,812	9,475	4,624	4,852	19,437	7.8	14.5	48.7	25.0	16.0	29.7

^a Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, and the Neutral Zone (between Kuwait and Saudi Arabia).

^b See "Organization of the Petroleum Exporting Countries (OPEC)" in Glossary. See Table 3.3c for notes on which countries are included in the data.

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

Notes: • For the feature article "Measuring Dependence on Imported Oil," published in the August 1995 *Monthly Energy Review*, see http://www.eia.gov/totalenergy/data/monthly/pdf/historical/imported_oil.pdf.

• Beginning in October 1977, data include Strategic Petroleum Reserve imports. See Table 3.3b. • Annual averages may not equal average of months due to independent rounding. • U.S. geographic coverage is the 50 states and the District of Columbia. U.S. exports include shipments to U.S. territories, and imports include

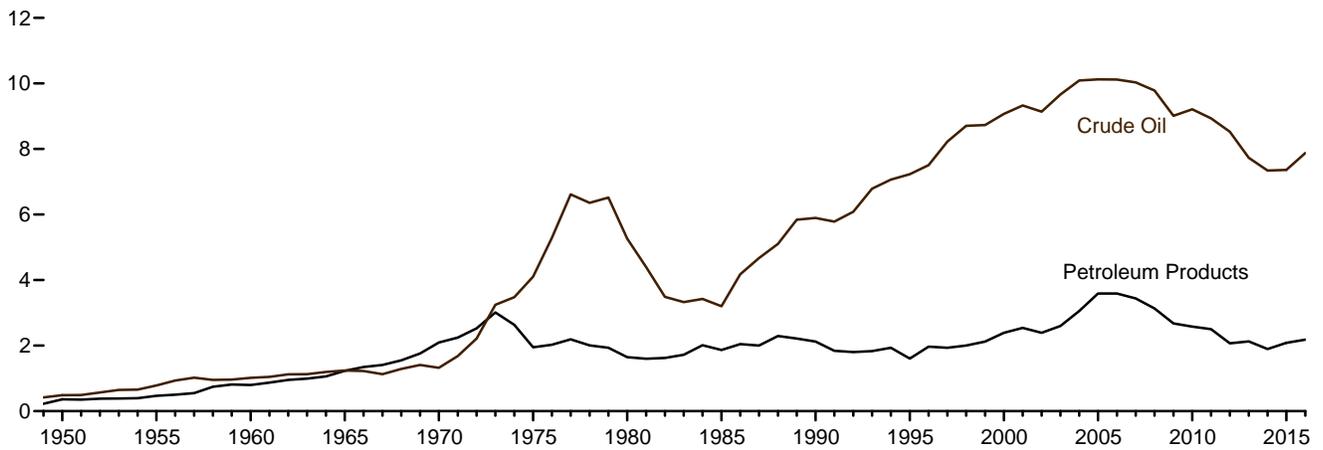
receipts from U.S. territories.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

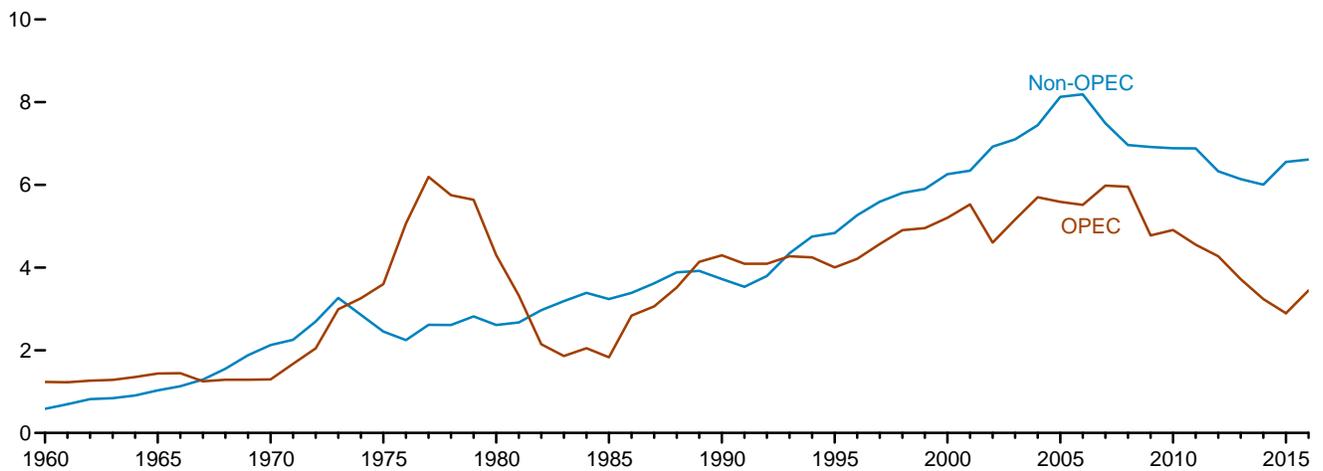
Sources: • **1949–1975:** Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976–1980:** U.S. Energy Information Administration (EIA), *Energy Data Reports, Petroleum Statement, Annual*, annual reports. • **1981–2015:** EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • **2016 and 2017:** EIA, *Petroleum Supply Monthly*, monthly reports; and, for the current two months, *Weekly Petroleum Status Report* data system and *Monthly Energy Review* data system calculations.

Figure 3.3b Petroleum Trade: Imports
(Million Barrels per Day)

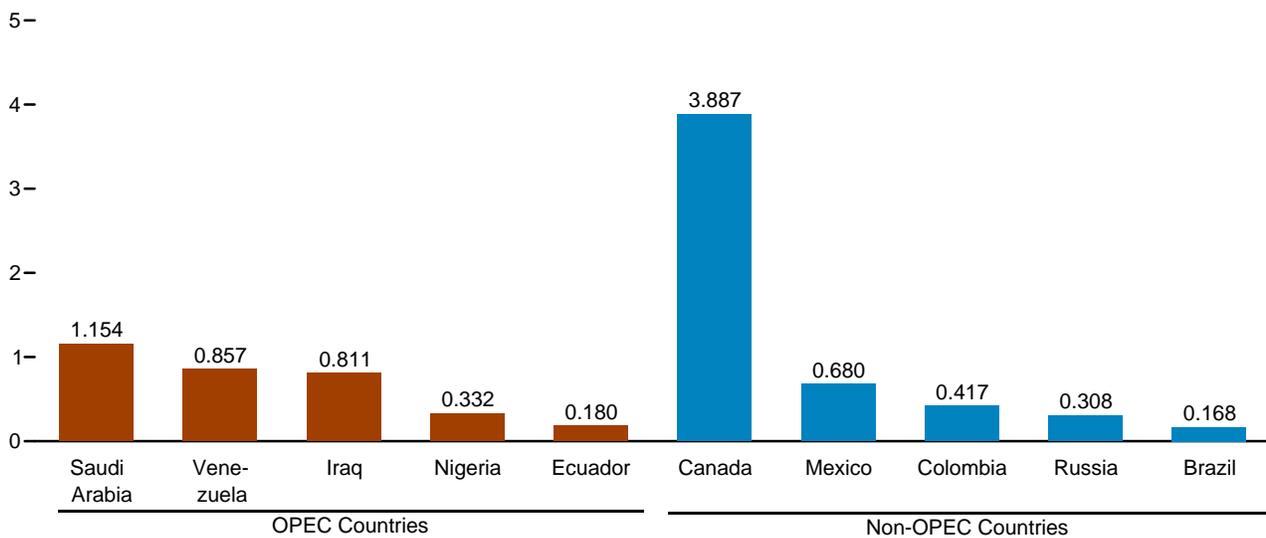
Overview, 1949–2016



OPEC and Non-OPEC, 1960–2016



From Selected Countries, April 2017



Note: OPEC=Organization of the Petroleum Exporting Countries.
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.
Sources: Tables 3.3b–3.3d.

Table 3.3b Petroleum Trade: Imports and Exports by Type
(Thousand Barrels per Day)

	Imports									Exports			
	Crude Oil ^a		Distillate Fuel Oil	Jet Fuel ^d	LPG ^b		Motor Gasoline ^f	Residual Fuel Oil	Other ^g	Total	Crude Oil ^a	Petroleum Products	Total
	SPR ^c	Total			Propane ^e	Total							
1950 Average	--	487	7	(^d)	--	--	(s)	329	27	850	95	210	305
1955 Average	--	782	12	(^d)	--	--	13	417	24	1,248	32	336	368
1960 Average	--	1,015	35	34	NA	4	27	637	62	1,815	8	193	202
1965 Average	--	1,238	36	81	NA	21	28	946	119	2,468	3	184	187
1970 Average	--	1,324	147	144	26	52	67	1,528	157	3,419	14	245	259
1975 Average	--	4,105	155	133	60	112	184	1,223	144	6,056	6	204	209
1980 Average	44	5,263	142	80	69	216	140	939	130	6,909	287	258	544
1985 Average	118	3,201	200	39	67	187	381	510	550	5,067	204	577	781
1990 Average	27	5,894	278	108	115	188	342	504	705	8,018	109	748	857
1995 Average	--	7,230	193	106	102	146	265	187	708	8,835	95	855	949
2000 Average	8	9,071	295	162	161	215	427	352	938	11,459	50	990	1,040
2001 Average	11	9,328	344	148	145	206	454	295	1,095	11,871	20	951	971
2002 Average	16	9,140	267	107	145	183	498	249	1,085	11,530	9	975	984
2003 Average	--	9,665	333	109	168	225	518	327	1,087	12,264	12	1,014	1,027
2004 Average	77	10,088	325	127	209	263	496	426	1,419	13,145	27	1,021	1,048
2005 Average	52	10,126	329	190	233	328	603	530	1,609	13,714	32	1,133	1,165
2006 Average	8	10,118	365	186	228	332	475	350	1,881	13,707	25	1,292	1,317
2007 Average	7	10,031	304	217	182	247	413	372	1,885	13,468	27	1,405	1,433
2008 Average	19	9,783	213	103	185	253	302	349	1,913	12,915	29	1,773	1,802
2009 Average	56	9,013	225	81	147	182	223	331	1,635	11,691	44	1,980	2,024
2010 Average	--	9,213	228	98	121	153	134	366	1,600	11,793	42	2,311	2,353
2011 Average	--	8,935	179	69	110	135	105	328	1,686	11,436	47	2,939	2,986
2012 Average	--	8,527	126	55	116	141	44	256	1,450	10,598	67	3,137	3,205
2013 Average	--	7,730	155	84	127	148	45	225	1,471	9,859	134	3,487	3,621
2014 Average	--	7,344	195	94	108	128	49	173	1,257	9,241	351	3,824	4,176
2015 January	--	7,171	349	132	156	176	74	218	1,341	9,461	495	4,080	4,575
February	--	7,100	388	127	163	182	51	225	1,199	9,272	442	4,198	4,640
March	--	7,592	324	163	147	161	61	146	1,173	9,619	438	3,654	4,092
April	--	7,208	243	134	127	145	75	179	1,390	9,374	599	4,339	4,938
May	--	7,245	191	170	91	111	109	239	1,436	9,502	527	4,326	4,853
June	--	7,321	132	204	96	116	100	174	1,557	9,605	445	4,211	4,657
July	--	7,360	143	160	107	129	33	144	1,603	9,571	546	4,414	4,960
August	--	7,717	140	132	111	130	33	177	1,529	9,858	461	4,047	4,507
September	--	7,228	103	66	92	114	63	243	1,541	9,358	410	4,441	4,851
October	--	7,102	101	83	120	148	103	136	1,168	8,842	500	4,116	4,617
November	--	7,371	150	102	129	153	70	198	1,108	9,151	320	4,584	4,903
December	--	7,902	155	108	145	171	84	222	1,100	9,742	392	4,874	5,266
Average	--	7,363	200	132	124	145	71	192	1,346	9,449	465	4,273	4,738
2016 January	--	7,675	175	154	147	189	60	291	1,190	9,734	364	4,514	4,878
February	--	7,910	231	117	190	210	65	173	1,314	10,020	374	4,573	4,948
March	--	8,042	150	155	122	144	66	277	1,168	10,002	508	4,495	5,002
April	--	7,637	177	122	103	116	78	211	1,488	9,829	591	4,563	5,154
May	--	7,946	123	180	101	116	44	152	1,621	10,183	662	4,996	5,658
June	--	7,611	88	132	96	116	76	270	1,784	10,076	383	4,857	5,240
July	--	8,092	123	174	104	127	82	275	1,636	10,507	474	4,735	5,209
August	--	8,035	164	147	117	138	34	259	1,534	10,311	657	4,457	5,114
September	--	8,057	150	138	121	136	71	170	1,470	10,194	692	4,558	5,250
October	--	7,607	75	155	136	162	44	159	1,521	9,723	491	4,451	4,942
November	--	8,054	145	156	160	190	63	258	1,447	10,312	597	4,795	5,392
December	--	7,860	167	130	172	205	29	196	1,227	9,814	442	5,018	5,460
Average	--	7,877	147	147	131	154	59	225	1,450	10,058	520	4,668	5,188
2017 January	--	8,435	204	140	242	263	33	176	1,446	10,698	746	4,945	5,691
February	--	7,890	199	147	214	241	36	225	1,315	10,053	1,116	5,327	6,443
March	--	8,048	108	123	166	195	51	221	1,312	10,059	834	5,052	5,886
April	--	R 8,131	R 116	R 183	R 112	R 139	R 42	R 146	R 1,488	R 10,244	R 1,001	R 5,065	R 6,066
May	--	E 8,213	E 127	E 144	E 113	NA	E 33	E 248	NA	E 10,451	E 878	E 4,746	E 5,624
June	--	E 7,919	E 101	E 114	E 96	NA	E 45	E 152	NA	E 9,961	E 641	E 4,566	E 5,207
6-Month Average	--	E 8,110	E 142	E 142	E 157	NA	E 40	E 195	NA	E 10,249	E 866	E 4,945	E 5,811
2016 6-Month Average	--	7,804	157	144	126	148	65	230	1,427	9,974	481	4,667	5,148
2015 6-Month Average	--	7,276	270	155	130	148	79	197	1,350	9,475	491	4,132	4,624

^a Includes lease condensate.

^b Liquefied petroleum gases.

^c "SPR" is the Strategic Petroleum Reserve, which began in October 1977. Through 2003, includes crude oil imports by SPR only; beginning in 2004, includes crude oil imports by SPR, and crude oil imports into SPR by others.

^d Beginning in 1965, includes kerosene-type jet fuel. (Through 1964, kerosene-type jet fuel is included with kerosene in "Other.") For 1956-2004, also includes naphtha-type jet fuel. (Through 1955, naphtha-type jet fuel is included in "Motor Gasoline." Beginning in 2005, naphtha-type jet fuel is included in "Other.")

^e Includes propylene.

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

^g Asphalt and road oil, aviation gasoline blending components, kerosene, lubricants, pentanes plus, petrochemical feedstocks, petroleum coke, unfinished oils, waxes, other hydrocarbons and oxygenates, and miscellaneous products. Through 1964, also includes kerosene-type jet fuel. Beginning in 1964, also

includes finished aviation gasoline and special naphthas. Beginning in 1981, also includes motor gasoline blending components. Beginning in 2005, also includes naphtha-type jet fuel.

R=Revised. E=Estimate. NA=Not available. -- =Not applicable. - =No data reported. (s)=Less than 500 barrels per day.

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

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: • 1949-1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976-1980: U.S. Energy Information Administration (EIA), *Energy Data Reports, Petroleum Statement, Annual*, annual reports. • 1981-2015: EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • 2016 and 2017: EIA, *Petroleum Supply Monthly*, monthly reports; and, for the current two months, *Weekly Petroleum Status Report* data system and *Monthly Energy Review* data system calculations.

Table 3.3c Petroleum Trade: Imports From OPEC Countries
(Thousand Barrels per Day)

	Algeria ^a	Angola ^b	Ecuador ^c	Iraq	Kuwait ^d	Libya ^e	Nigeria ^f	Saudi Arabia ^d	Venezuela	Other ^g	Total OPEC
1960 Average	{ a }	{ b }	{ c }	22	182	{ e }	{ f }	84	911	34	1,233
1965 Average	{ a }	{ b }	{ c }	16	74	42	{ f }	158	994	155	1,439
1970 Average	8	{ b }	{ c }	—	48	47	{ f }	30	989	172	1,294
1975 Average	282	{ b }	57	2	16	232	762	715	702	832	3,601
1980 Average	488	{ b }	27	28	27	554	857	1,261	481	577	4,300
1985 Average	187	{ b }	67	46	21	4	293	168	605	439	1,830
1990 Average	280	{ b }	49	518	86	—	800	1,339	1,025	199	4,296
1995 Average	234	{ b }	{ c }	—	218	—	627	1,344	1,480	98	4,002
2000 Average	225	{ b }	{ c }	620	272	R 0	896	1,572	1,546	72	5,203
2001 Average	278	{ b }	{ c }	795	250	R 0	885	1,662	1,553	105	5,528
2002 Average	264	{ b }	{ c }	459	228	—	621	1,552	1,398	83	4,605
2003 Average	382	{ b }	{ c }	481	220	—	867	1,774	1,376	61	5,162
2004 Average	452	{ b }	{ c }	656	250	20	1,140	1,558	1,554	70	5,701
2005 Average	478	{ b }	{ c }	531	243	56	1,166	1,537	1,529	47	5,587
2006 Average	657	{ b }	{ c }	553	185	87	1,114	1,463	1,419	38	5,517
2007 Average	670	508	{ c }	484	181	117	1,134	1,485	1,361	39	5,980
2008 Average	548	513	221	627	210	103	988	1,529	1,189	26	5,954
2009 Average	493	460	185	450	182	79	809	1,004	1,063	50	4,776
2010 Average	510	393	212	415	197	70	1,023	1,096	988	3	4,906
2011 Average	358	346	206	459	191	15	818	1,195	951	16	4,555
2012 Average	242	233	180	476	305	61	441	1,365	960	9	4,271
2013 Average	115	216	236	341	328	59	281	1,329	806	10	3,720
2014 Average	110	154	215	369	311	6	92	1,166	789	23	3,237
2015 January	82	54	331	227	266	20	51	820	670	17	2,538
February	112	181	245	222	241	4	38	945	783	24	2,794
March	76	93	244	122	277	—	78	1,047	849	15	2,801
April	106	102	114	139	186	3	54	1,205	824	—	2,734
May	150	119	176	283	222	12	58	1,210	898	7	3,133
June	126	113	237	214	314	—	21	1,077	757	10	2,869
July	109	108	281	133	144	—	130	1,187	808	11	2,911
August	121	102	256	117	113	4	86	1,005	934	11	2,750
September	145	182	264	203	211	5	114	863	855	11	2,854
October	76	193	230	375	150	17	65	983	802	7	2,899
November	124	231	191	269	140	6	114	1,236	843	17	3,169
December	74	166	197	447	193	12	155	1,122	899	10	3,274
Average	108	136	231	229	204	7	81	1,059	827	12	2,894
2016 January	126	166	334	252	205	10	132	1,054	702	72	3,052
February	174	133	246	245	289	5	274	1,011	773	61	3,210
March	147	172	264	365	123	—	290	1,309	846	59	3,576
April	137	242	182	349	199	10	243	1,154	788	45	3,351
May	102	161	230	555	177	75	297	1,171	787	87	3,642
June	183	128	223	434	135	—	252	1,104	748	97	3,303
July	191	299	234	390	323	5	299	1,053	933	75	3,803
August	169	159	253	488	156	22	181	1,142	773	78	3,422
September	155	157	213	448	275	4	168	1,211	825	116	3,572
October	296	122	203	508	154	—	232	1,025	741	48	3,329
November	300	174	250	434	228	27	247	1,003	845	59	3,567
December	202	102	236	593	254	32	246	1,014	789	29	3,498
Average	182	168	239	423	210	16	238	1,105	796	69	3,445
2017 January	232	118	247	622	105	31	332	1,345	749	10	3,793
February	234	64	141	413	251	22	223	1,338	751	9	3,445
March	193	30	278	544	219	30	342	1,173	764	20	3,592
April	153	84	180	811	101	45	332	1,154	857	21	3,737
4-Month Average	203	74	214	600	168	32	309	1,251	780	15	3,646
2016 4-Month Average	146	178	257	303	203	6	234	1,134	777	59	3,298
2015 4-Month Average	94	105	234	177	243	7	56	1,004	781	14	2,714

^a Algeria joined OPEC in 1969. For 1960–1968, Algeria is included in "Total Non-OPEC" on Table 3.3d.

^b Angola joined OPEC in January 2007. For 1960–2006, Angola is included in "Total Non-OPEC" on Table 3.3d.

^c Ecuador was a member of OPEC from 1973–1992, and rejoined OPEC in November 2007. For 1960–1972 and 1993–2007, Ecuador is included in "Total Non-OPEC" on Table 3.3d.

^d Through 1970, includes half the imports from the Neutral Zone between Kuwait and Saudi Arabia. Beginning in 1971, imports from the Neutral Zone are reported as originating in either Kuwait or Saudi Arabia depending on the country reported to U.S. Customs.

^e Libya joined OPEC in 1962. For 1960 and 1961, Libya is included in "Total Non-OPEC" on Table 3.3d.

^f Nigeria joined OPEC in 1971. For 1960–1970, Nigeria is included in "Total Non-OPEC" on Table 3.3d.

^g Includes these countries for the dates indicated: Gabon (1975–1994 and July 2016 forward), Indonesia (1962–2008 and 2016), Iran (1960 forward), Qatar (1961 forward), and United Arab Emirates (1967 forward).

— =No data reported.

Notes: • See "Organization of the Petroleum Exporting Countries (OPEC)" in Glossary. Petroleum imports not classified as "OPEC" on this table are included on Table 3.3d. • The country of origin for petroleum products may not be the country of origin for the crude oil from which the products were produced. For example, refined products imported from West European refining areas may have been produced from Middle East crude oil. • Includes imports for the Strategic Petroleum Reserve, which began in October 1977. • Totals may not equal sum of components due to independent rounding. • U.S. geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1960 and monthly data beginning in 1973.

Sources: • **1960–1972:** Bureau of Mines, *Minerals Yearbook*, annual reports. • **1973–1975:** Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976–1980:** U.S. Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • **1981–2015:** EIA, *Petroleum Supply Annual*, annual reports. • **2016 and 2017:** EIA, *Petroleum Supply Monthly*, monthly reports.

Table 3.3d Petroleum Trade: Imports From Non-OPEC Countries
(Thousand Barrels per Day)

	Brazil	Canada	Colombia	Mexico	Nether-lands	Norway	Russia ^a	United Kingdom	U.S. Virgin Islands	Other	Total Non-OPEC
1960 Average	1	120	42	16	NA	NA	-	(s)	NA	NA	581
1965 Average	-	323	51	48	1	-	-	(s)	-	606	1,029
1970 Average	2	766	46	42	39	-	3	11	189	1,027	2,126
1975 Average	5	846	9	71	19	17	14	14	406	1,052	2,454
1980 Average	3	455	4	533	2	144	1	176	388	903	2,609
1985 Average	61	770	23	816	58	32	8	310	247	913	3,237
1990 Average	49	934	182	755	55	102	45	189	282	1,128	3,721
1995 Average	8	1,332	219	1,068	15	273	25	383	278	1,233	4,833
2000 Average	51	1,807	342	1,373	30	343	72	366	291	1,581	6,257
2001 Average	82	1,828	296	1,440	43	341	90	324	268	1,631	6,343
2002 Average	116	1,971	260	1,547	66	393	210	478	236	1,649	6,925
2003 Average	108	2,072	195	1,623	87	270	254	440	288	1,766	7,103
2004 Average	104	2,138	176	1,665	101	244	298	380	330	2,008	7,444
2005 Average	156	2,181	196	1,662	151	233	410	396	328	2,413	8,127
2006 Average	193	2,353	155	1,705	174	196	369	272	328	2,446	8,190
2007 Average	200	2,455	155	1,532	128	142	414	277	346	1,839	7,489
2008 Average	258	2,493	200	1,302	168	102	465	236	320	1,416	6,961
2009 Average	309	2,479	276	1,210	140	108	563	245	277	1,307	6,915
2010 Average	272	2,535	365	1,284	108	89	612	256	253	1,112	6,887
2011 Average	253	2,729	433	1,206	100	113	624	159	186	1,077	6,881
2012 Average	226	2,946	433	1,035	99	75	477	149	12	874	6,327
2013 Average	151	3,142	389	919	89	54	460	147	-	786	6,138
2014 Average	160	3,388	318	842	85	45	330	117	-	720	6,004
2015 January	236	4,010	417	831	78	11	401	140	-	799	6,923
February	138	3,942	353	784	81	58	300	88	-	733	6,478
March	170	3,899	525	875	110	52	376	83	-	727	6,818
April	232	3,849	442	714	78	37	358	111	-	820	6,640
May	108	3,562	535	663	80	108	337	138	-	838	6,369
June	255	3,625	377	856	23	66	500	134	-	898	6,736
July	222	3,488	441	755	54	87	445	142	-	1,027	6,661
August	396	3,932	339	731	22	138	509	154	-	887	7,108
September	276	3,807	292	647	53	48	369	178	-	835	6,504
October	229	3,411	221	756	32	44	307	99	-	842	5,942
November	99	3,621	402	721	39	37	320	92	-	651	5,982
December	208	4,043	390	760	38	39	219	112	-	660	6,469
Average	215	3,765	395	758	57	61	371	123	-	811	6,554
2016 January	168	4,111	509	710	57	58	384	115	-	569	6,683
February	148	4,201	507	539	73	61	436	71	-	773	6,810
March	112	3,882	561	657	30	143	329	141	-	571	6,426
April	160	3,558	386	788	54	89	509	149	-	784	6,478
May	110	3,571	570	676	62	44	435	106	-	967	6,541
June	194	3,485	583	739	59	113	472	168	1	958	6,773
July	158	3,436	536	733	43	108	531	92	-	1,066	6,704
August	274	3,823	534	672	31	49	479	141	-	884	6,888
September	154	3,794	500	595	67	124	406	132	-	851	6,622
October	199	3,618	346	614	107	75	483	89	-	862	6,394
November	189	4,054	368	697	74	38	419	137	-	770	6,746
December	126	4,061	397	606	60	11	318	121	-	617	6,316
Average	166	3,798	483	669	60	76	433	122	(s)	806	6,613
2017 January	219	4,282	345	730	75	134	348	141	-	631	6,905
February	254	4,182	401	607	81	34	319	96	-	633	6,607
March	229	4,065	338	630	47	12	379	120	-	648	6,467
April	168	3,887	417	680	62	86	308	123	-	777	6,507
4-Month Average	217	4,104	374	663	66	67	339	120	-	672	6,623
2016 4-Month Average	147	3,937	491	675	53	88	413	120	-	672	6,597
2015 4-Month Average	195	3,926	436	802	87	39	360	106	-	770	6,722

^a Through 1992, may include imports from republics other than Russia in the former U.S.S.R. See "Union of Soviet Socialist Republics (U.S.S.R.," in Glossary.

NA=Not available. - =No data reported. (s)=Less than 500 barrels per day.
Notes: • See "Organization of the Petroleum Exporting Countries (OPEC)" in Glossary. Petroleum imports not classified as "OPEC" on Table 3.3c are included on this table. • The country of origin for petroleum products may not be the country of origin for the crude oil from which the products were produced. For example, refined products imported from West European refining areas may have been produced from Middle East crude oil. • Includes imports for the Strategic Petroleum Reserve, which began in October 1977. • Totals may not equal sum of components due to independent rounding. • U.S. geographic coverage is the 50

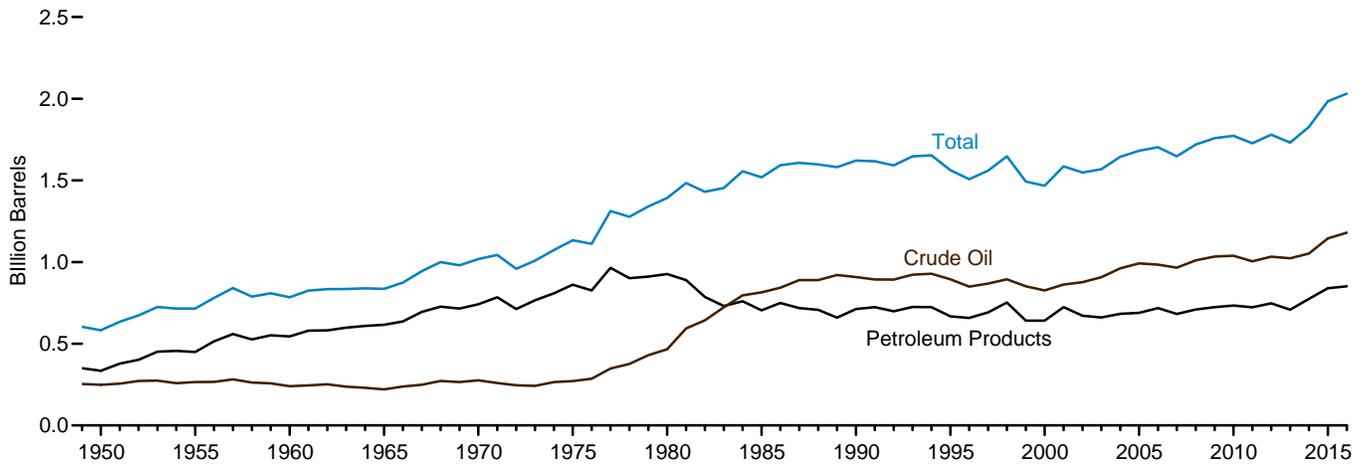
states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1960 and monthly data beginning in 1973.

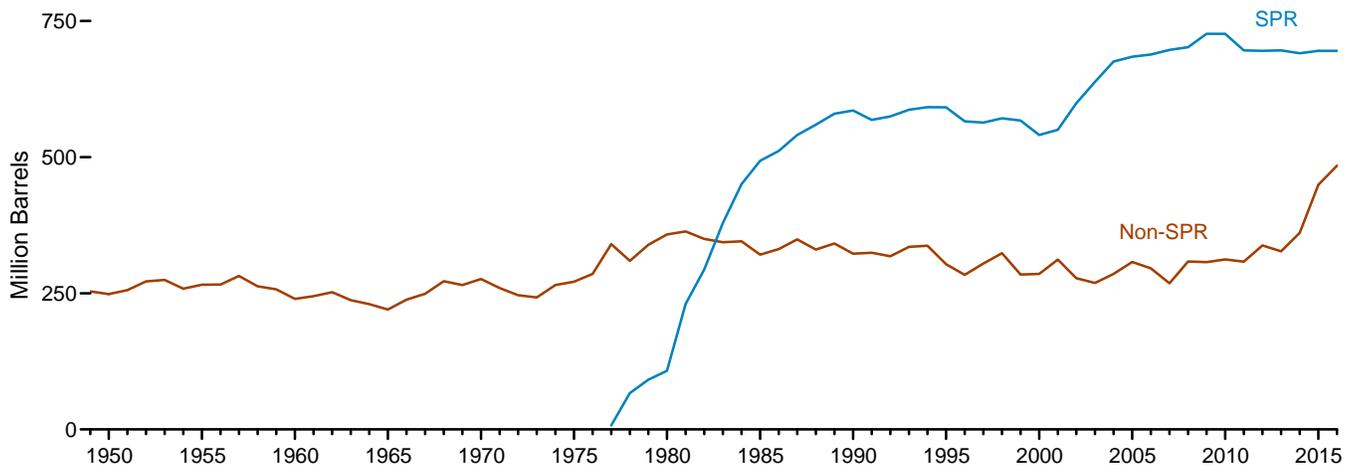
Sources: • **1960-1972:** Bureau of Mines, *Minerals Yearbook*, annual reports. • **1973-1975:** Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976-1980:** U.S. Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • **1981-2015:** EIA, *Petroleum Supply Annual*, annual reports. • **2016 and 2017:** EIA, *Petroleum Supply Monthly*, monthly reports.

Figure 3.4 Petroleum Stocks

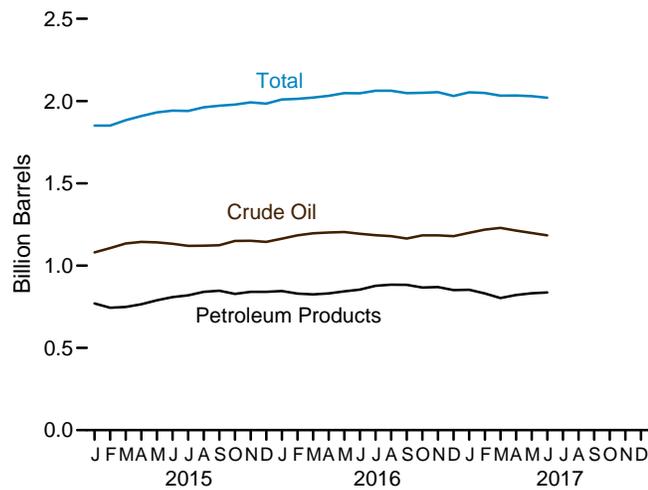
Overview, 1949–2016



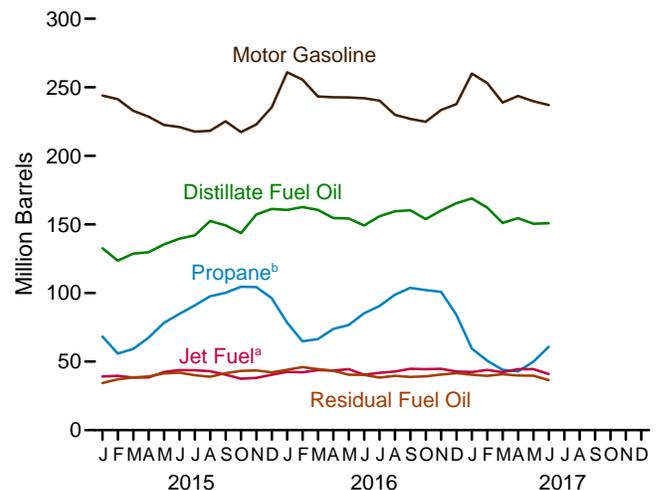
SPR and Non-SPR Crude Oil Stocks, 1949–2016



Overview, Monthly



Selected Products, Monthly



^a Includes kerosene-type jet fuel only.

^b Includes propylene.

Notes: • SPR=Strategic Petroleum Reserve. • Stocks are at end of

period.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.

Source: Table 3.4.

Table 3.4 Petroleum Stocks
(Million Barrels)

	Crude Oil ^a			Distillate Fuel Oil ^e	Jet Fuel ^f	LPG ^b		Motor Gasoline ^h	Residual Fuel Oil	Other ⁱ	Total
	SPR ^c	Non-SPR ^d	Total			Propane ^g	Total				
1950 Year	--	248	248	72	(^f)	NA	2	116	41	104	583
1955 Year	--	266	266	111	3	NA	7	165	39	123	715
1960 Year	--	240	240	138	7	NA	23	195	45	137	785
1965 Year	--	220	220	155	19	NA	30	175	56	181	836
1970 Year	--	276	276	195	28	NA	67	209	54	188	1,018
1975 Year	--	271	271	209	30	82	125	235	74	188	1,133
1980 Year	108	358	466	205	42	65	120	261	92	205	1,392
1985 Year	493	321	814	144	40	39	74	223	50	174	1,519
1990 Year	586	323	908	132	52	49	98	220	49	162	1,621
1995 Year	592	303	895	130	40	43	93	202	37	165	1,563
2000 Year	541	286	826	118	45	41	83	196	36	164	1,468
2001 Year	550	312	862	145	42	66	121	210	41	166	1,586
2002 Year	599	278	877	134	39	53	106	209	31	152	1,548
2003 Year	638	269	907	137	39	50	94	207	38	147	1,568
2004 Year	676	286	961	126	40	55	104	218	42	153	1,645
2005 Year	685	308	992	136	42	57	109	208	37	157	1,682
2006 Year	689	296	984	144	39	62	113	212	42	169	1,703
2007 Year	697	268	965	134	39	52	96	218	39	156	1,648
2008 Year	702	308	1,010	146	38	55	113	214	36	162	1,719
2009 Year	727	307	1,034	166	43	50	102	223	37	153	1,758
2010 Year	727	312	1,039	164	43	49	108	219	41	158	1,773
2011 Year	696	308	1,004	149	41	55	112	223	34	164	1,728
2012 Year	695	338	1,033	135	40	68	141	231	34	167	1,780
2013 Year	696	327	1,023	128	37	45	114	228	38	163	1,732
2014 Year	691	361	1,052	136	38	78	155	240	34	172	1,827
2015 January	691	389	1,080	133	39	68	135	244	34	185	1,850
February	691	415	1,106	124	40	56	116	241	37	187	1,850
March	691	443	1,134	129	38	59	123	233	38	187	1,883
April	691	453	1,144	130	38	68	141	229	39	188	1,909
May	692	449	1,141	135	42	78	161	223	41	187	1,931
June	694	439	1,133	140	44	85	175	221	42	187	1,941
July	695	425	1,120	142	44	91	188	218	40	188	1,939
August	695	426	1,121	153	43	98	205	218	39	183	1,962
September	695	429	1,124	149	40	100	210	225	42	180	1,971
October	695	455	1,150	144	37	105	209	217	43	177	1,979
November	695	456	1,151	157	38	104	197	223	44	182	1,992
December	695	449	1,144	161	40	96	177	235	42	184	1,985
2016 January	695	469	1,164	161	42	78	145	261	44	192	2,009
February	695	488	1,184	163	42	65	127	256	46	196	2,013
March	695	502	1,197	161	44	66	134	243	45	199	2,021
April	695	506	1,201	155	43	74	150	243	43	197	2,032
May	695	509	1,204	154	45	77	167	243	40	195	2,048
June	695	498	1,193	149	40	85	191	242	40	191	2,047
July	695	490	1,185	156	42	91	208	240	38	193	2,062
August	695	484	1,179	160	43	99	224	230	40	188	2,063
September	695	469	1,164	160	45	104	227	227	39	186	2,048
October	695	489	1,184	154	45	102	219	225	39	184	2,050
November	695	489	1,184	160	45	101	209	233	41	182	2,054
December	695	484	1,179	165	43	84	178	238	42	185	2,031
2017 January	695	504	1,200	169	42	59	145	260	40	197	2,053
February	695	524	1,218	162	44	51	134	253	40	198	2,049
March	692	538	1,229	151	42	44	130	239	41	200	2,033
April	689	^R 524	^R 1,213	^R 155	^R 45	^R 43	^R 138	^R 244	^R 40	^R 200	^R 2,033
May	^E 685	^E 513	^E 1,198	^E 150	^E 45	^E 50	^{RF} 158	^E 240	^E 40	^{RE} 199	^E 2,030
June	^E 682	^E 502	^E 1,183	^E 151	^E 41	^E 61	^F 178	^E 237	^E 36	^E 193	^E 2,020

^a Includes lease condensate.

^b Liquefied petroleum gases.

^c "SPR" is the Strategic Petroleum Reserve, which began in October 1977. Crude oil stocks in the SPR include non-U.S. stocks held under foreign or commercial storage agreements.

^d Crude oil stocks at (or in) refineries, pipelines, tank farms, and bulk terminals. Through 2004, also includes crude oil stocks on leases. Beginning in 1981, also includes stocks of Alaskan crude oil in transit by water.

^e Excludes stocks in the Northeast Home Heating Oil Reserve. Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^f Beginning in 1965, includes kerosene-type jet fuel. (Through 1964, kerosene-type jet fuel is included with kerosene in "Other.") For 1952–2004, also includes naphtha-type jet fuel. (Through 1951, naphtha-type jet fuel is included in the products from which it was blended—gasoline, kerosene, and distillate fuel oil. Beginning in 2005, naphtha-type jet fuel is included in "Other.")

^g Includes propylene.

^h Includes finished motor gasoline and motor gasoline blending components; excludes oxygenates. Through 1963, also includes aviation gasoline and special naphthas.

ⁱ Asphalt and road oil, aviation gasoline blending components, kerosene, lubricants, pentanes plus, petrochemical feedstocks, petroleum coke, unfinished oils, waxes, miscellaneous products, oxygenates, renewable fuels, and other hydrocarbons. Through 1964, also includes kerosene-type jet fuel. Beginning in 1964, also includes finished aviation gasoline and special naphthas. Beginning in 2005, also includes naphtha-type jet fuel.

R=Revised. E=Estimate. F=Forecast. NA=Not available. --=Not applicable.

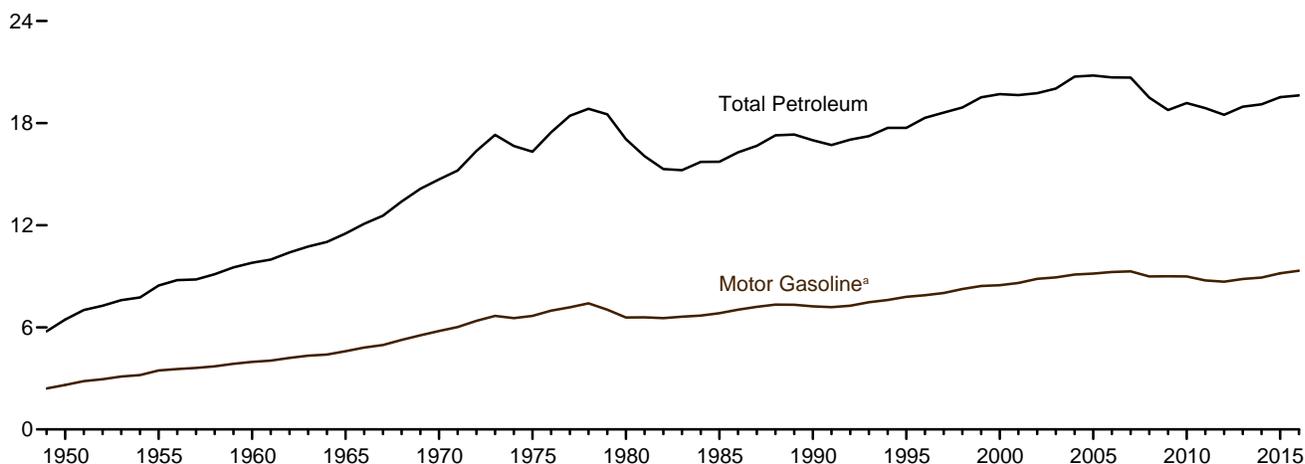
Notes: • Stocks are at end of period. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

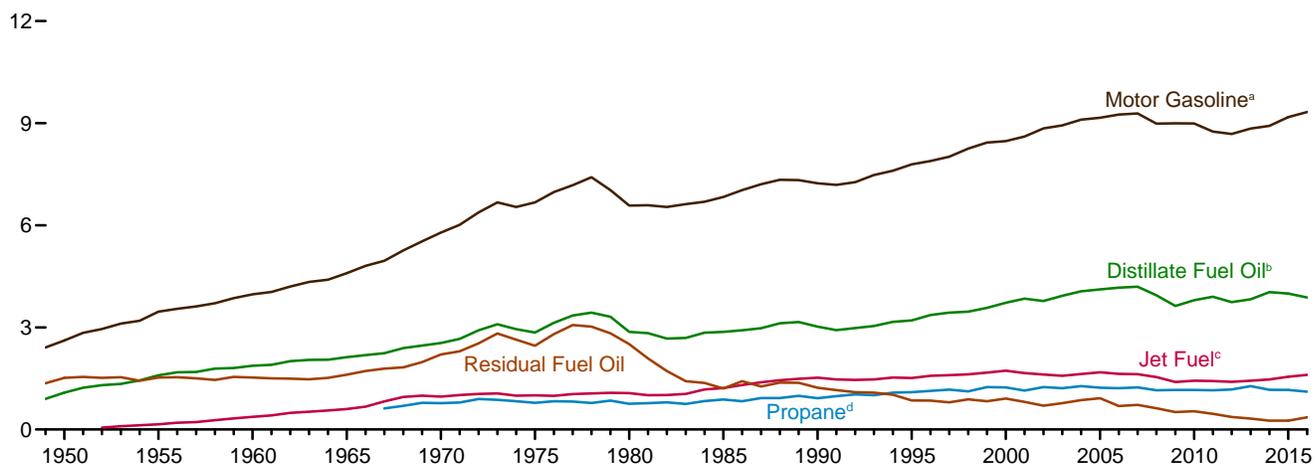
Sources: • 1949–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976–1980: U.S. Energy Information Administration (EIA), *Energy Data Reports, Petroleum Statement, Annual*, annual reports. • 1981–2015: EIA, *Petroleum Supply Annual*, annual reports. • 2016 and 2017: EIA, *Petroleum Supply Monthly*, monthly reports; and, for the current two months, *Weekly Petroleum Status Report* data system, Short-Term Integrated Forecasting System, and *Monthly Energy Review* data system calculations.

Figure 3.5 Petroleum Products Supplied by Type
(Million Barrels per Day)

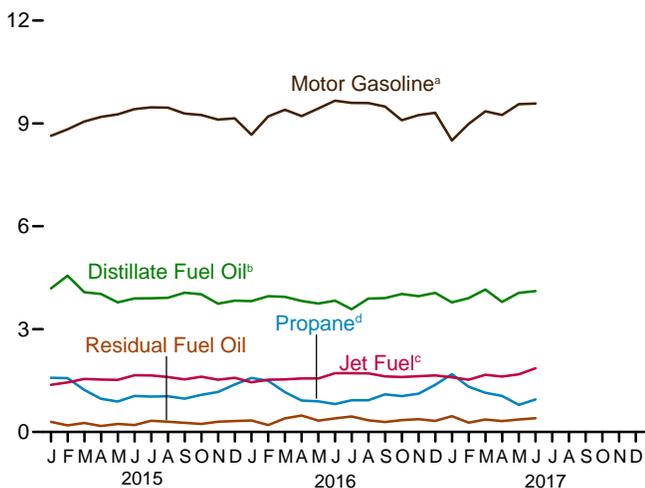
Total Petroleum and Motor Gasoline, 1949–2016



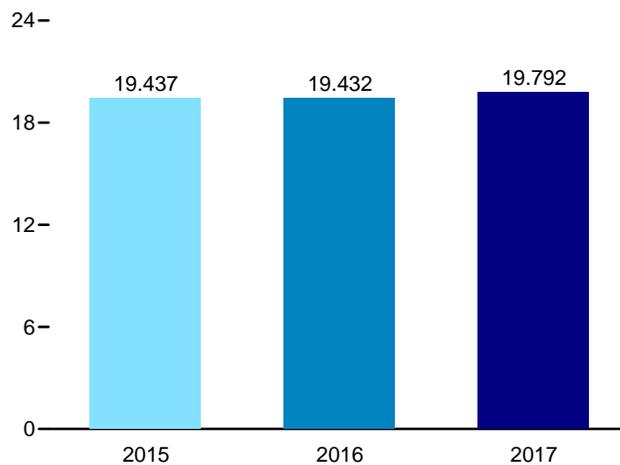
Selected Products, 1949–2016



Selected Products, Monthly



Total, January–June



^a Beginning in 1993, includes fuel ethanol blended into motor gasoline.
^b Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.
^c Beginning in 2005, includes kerosene-type jet fuel only.

^d Includes propylene.
 Note: SPR=Strategic Petroleum Reserve.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.
 Source: Table 3.5.

Table 3.5 Petroleum Products Supplied by Type
(Thousand Barrels per Day)

	Asphalt and Road Oil	Aviation Gasoline	Distillate Fuel Oil ^b	Jet Fuel ^c	Kerosene	LPG ^a		Lubricants	Motor Gasoline ^e	Petroleum Coke	Residual Fuel Oil	Other ^f	Total
						Propane ^d	Total						
1950 Average	180	108	1,082	(^c)	323	NA	234	106	2,616	41	1,517	250	6,458
1955 Average	254	192	1,592	154	320	NA	404	116	3,463	67	1,526	366	8,455
1960 Average	302	161	1,872	371	271	NA	621	117	3,969	149	1,529	435	9,797
1965 Average	368	120	2,126	602	267	NA	841	129	4,593	202	1,608	657	11,512
1970 Average	447	55	2,540	967	263	776	1,224	136	5,785	212	2,204	866	14,697
1975 Average	419	39	2,851	1,001	159	783	1,333	137	6,675	247	2,462	1,001	16,322
1980 Average	396	35	2,866	1,068	158	754	1,469	159	6,579	237	2,508	1,581	17,056
1985 Average	425	27	2,868	1,218	114	883	1,599	145	6,831	264	1,202	1,032	15,726
1990 Average	483	24	3,021	1,522	43	917	1,556	164	7,235	339	1,229	1,373	16,988
1995 Average	486	21	3,207	1,514	54	1,096	1,899	156	7,789	365	852	1,381	17,725
2000 Average	525	20	3,722	1,725	67	1,235	2,231	166	8,472	406	909	1,458	19,701
2001 Average	519	19	3,847	1,655	72	1,142	2,044	153	8,610	437	811	1,481	19,649
2002 Average	512	18	3,776	1,614	43	1,248	2,163	151	8,848	463	700	1,474	19,761
2003 Average	503	16	3,927	1,578	55	1,215	2,074	140	8,935	455	772	1,579	20,034
2004 Average	537	17	4,058	1,630	64	1,276	2,132	141	9,105	524	865	1,657	20,731
2005 Average	546	19	4,118	1,679	70	1,229	2,030	141	9,159	515	920	1,605	20,802
2006 Average	521	18	4,169	1,633	54	1,215	2,052	137	9,253	522	689	1,640	20,687
2007 Average	494	17	4,196	1,622	32	1,235	2,085	142	9,286	490	723	1,593	20,680
2008 Average	417	15	3,945	1,539	14	1,154	1,954	131	8,989	464	622	1,408	19,498
2009 Average	360	14	3,631	1,393	18	1,160	2,051	118	8,997	427	511	1,251	18,771
2010 Average	362	15	3,800	1,432	20	1,160	2,173	131	8,993	376	535	1,343	19,180
2011 Average	355	15	3,899	1,425	12	1,153	2,204	125	8,753	361	461	1,272	18,882
2012 Average	340	14	3,741	1,398	5	1,175	2,251	114	8,682	360	369	1,215	18,490
2013 Average	323	12	3,827	1,434	5	1,275	2,440	121	8,843	354	319	1,282	18,961
2014 Average	327	12	4,037	1,470	9	1,167	2,396	126	8,921	347	257	1,204	19,106
2015 January	200	8	4,186	1,375	3	1,580	2,814	153	8,639	404	294	1,142	19,218
February	215	8	4,559	1,445	9	1,572	2,822	123	8,829	217	195	1,255	19,677
March	222	9	4,078	1,548	11	1,228	2,419	152	9,057	377	263	1,215	19,352
April	303	14	4,027	1,527	1	966	2,261	148	9,189	377	172	1,243	19,263
May	343	13	3,778	1,519	20	890	2,238	159	9,262	383	235	1,351	19,301
June	472	12	3,897	1,654	(s)	1,053	2,326	132	9,417	407	200	1,324	19,841
July	480	18	3,901	1,650	1	1,030	2,382	156	9,470	399	325	1,343	20,126
August	510	11	3,915	1,601	2	1,042	2,291	121	9,460	412	298	1,309	19,930
September	469	11	4,063	1,534	1	970	2,196	127	9,289	283	267	1,179	19,418
October	400	14	4,014	1,614	3	1,084	2,411	145	9,245	329	236	1,090	19,500
November	287	9	3,740	1,524	1	1,169	2,557	104	9,112	306	300	1,203	19,144
December	212	9	3,831	1,578	25	1,384	2,751	130	9,148	283	317	1,317	19,600
Average	343	11	3,995	1,548	6	1,162	2,454	138	9,178	349	259	1,248	19,531
2016 January	200	7	3,816	1,449	-3	1,577	2,898	134	8,670	349	339	1,195	19,055
February	219	11	3,959	1,525	1	1,490	2,723	141	9,206	362	200	1,333	19,680
March	262	10	3,941	1,536	12	1,160	2,444	145	9,399	362	398	1,108	19,616
April	304	14	3,823	1,560	5	918	2,255	128	9,213	292	481	1,189	19,264
May	392	11	3,745	1,562	4	894	2,230	134	9,436	271	333	1,083	19,202
June	479	12	3,830	1,714	8	815	2,144	147	9,663	247	398	1,156	19,799
July	475	12	3,578	1,715	9	927	2,299	113	9,597	314	454	1,145	19,712
August	527	14	3,890	1,710	1	924	2,248	121	9,595	429	342	1,255	20,131
September	438	11	3,905	1,624	11	1,096	2,442	127	9,492	289	290	1,236	19,864
October	415	10	4,024	1,605	14	1,047	2,414	131	9,095	310	345	1,259	19,622
November	312	12	3,961	1,627	3	1,116	2,402	113	9,243	489	375	1,118	19,655
December	194	10	4,059	1,649	21	1,375	2,628	121	9,310	393	322	1,271	19,979
Average	352	11	3,877	1,606	7	1,111	2,427	130	9,327	342	357	1,195	19,631
2017 January	192	9	3,781	1,593	14	1,687	2,943	105	8,503	412	460	1,221	19,234
February	241	9	3,905	1,525	6	1,321	2,614	123	8,988	262	270	1,244	19,188
March	265	10	4,154	1,669	2	1,143	2,509	133	9,353	175	362	1,402	20,033
April	R 318	R 10	R 3,791	R 1,617	R 7	R 1,051	R 2,376	R 105	R 9,248	R 322	R 320	R 1,413	R 19,527
May	RF 400	F 12	E 4,057	E 1,682	RF 5	E 791	RF 2,218	RF 152	E 9,561	RF 337	E 365	RE 1,388	E 20,177
June	F 483	F 12	E 4,108	E 1,860	F 5	E 951	F 2,333	F 133	E 9,580	F 331	E 400	E 1,304	E 20,549
6-Month Average	E 317	E 11	E 3,967	E 1,659	E 6	E 1,156	E 2,498	E 125	E 9,207	E 307	E 364	E 1,330	E 19,792
2016 6-Month Average	310	11	3,851	1,557	5	1,141	2,449	138	9,263	314	359	1,176	19,432
2015 6-Month Average	293	11	4,081	1,512	7	1,211	2,476	145	9,067	363	227	1,255	19,437

^a Liquefied petroleum gases.

^b Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^c Beginning in 1957, includes kerosene-type jet fuel. For 1952–2004, also includes naphtha-type jet fuel. (Through 1951, naphtha-type jet fuel is included in the products from which it was blended—gasoline, kerosene, and distillate fuel oil. Beginning in 2005, naphtha-type jet fuel is included in "Other.")

^d Includes propylene.

^e Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

^f Pentanes plus, petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1981, also includes negative barrels per day of distillate and residual fuel oil reclassified as unfinished oils, and other products (from both primary and secondary supply) reclassified as gasoline blending components. Beginning in 1983, also includes crude oil burned as fuel. Beginning in 2005, also includes naphtha-type jet fuel.

R=Revised. E=Estimate. F=Forecast. NA=Not available. (s)=Less than 500

barrels per day and greater than -500 barrels per day.

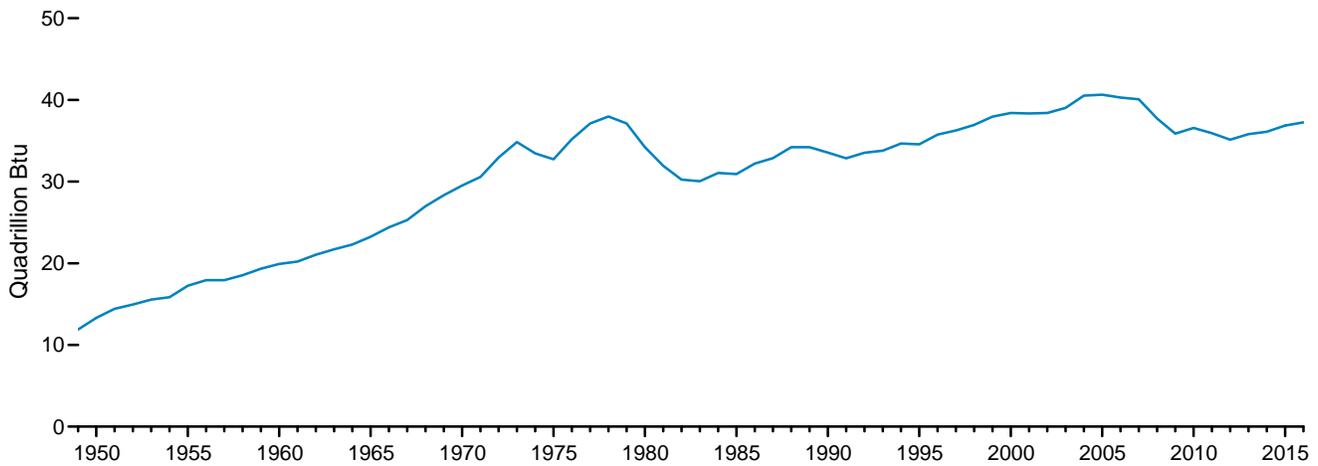
Notes: • Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

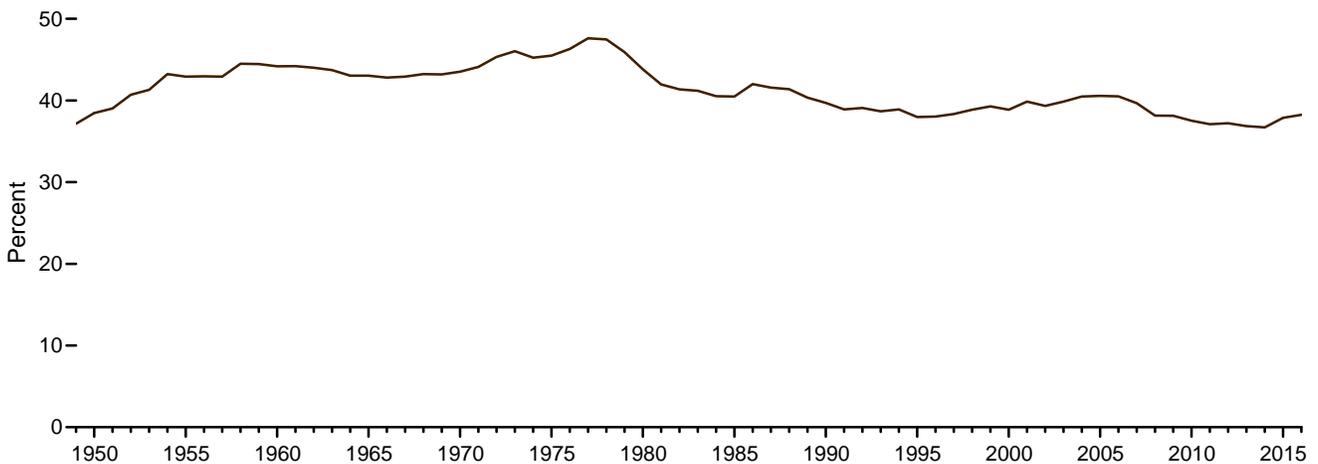
Sources: • 1949–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976–1980: U.S. Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • 1981–2015: EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • 2016 and 2017: EIA, *Petroleum Supply Monthly*, monthly reports; and, for the current two months, *Weekly Petroleum Status Report* data system, Short-Term Integrated Forecasting System, and *Monthly Energy Review* data system calculations.

Figure 3.6 Heat Content of Petroleum Products Supplied by Type

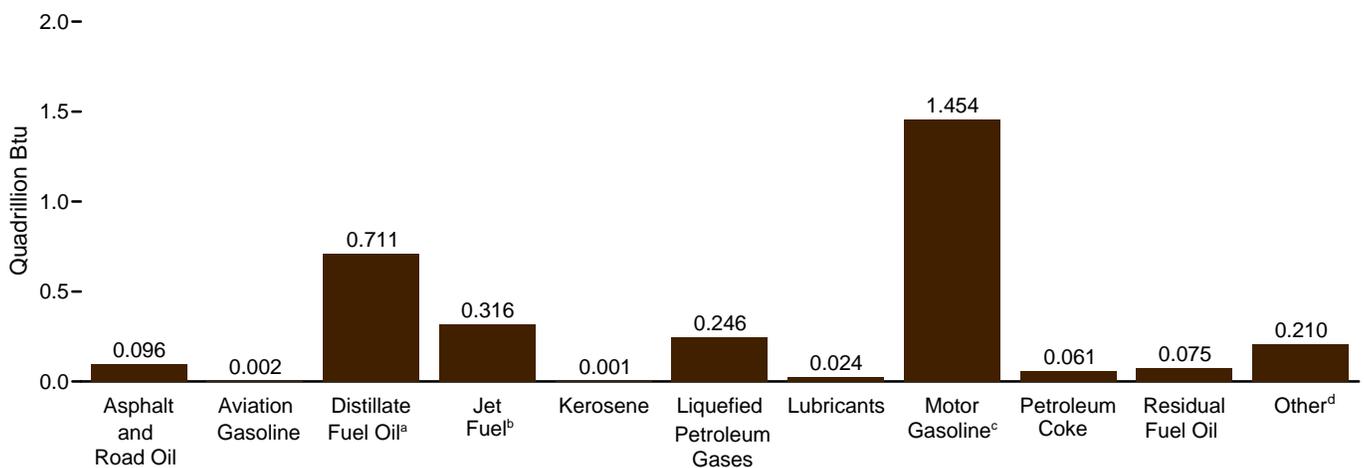
Total, 1949–2016



Petroleum Products Supplied as Share of Total Energy Consumption, 1949–2016



By Product, June 2017



^a Includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^b Includes kerosene-type jet fuel only.

^c Includes fuel ethanol blended into motor gasoline.

^d All petroleum products not separately displayed.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.

Sources: Tables 1.1 and 3.6.

Table 3.6 Heat Content of Petroleum Products Supplied by Type
(Trillion Btu)

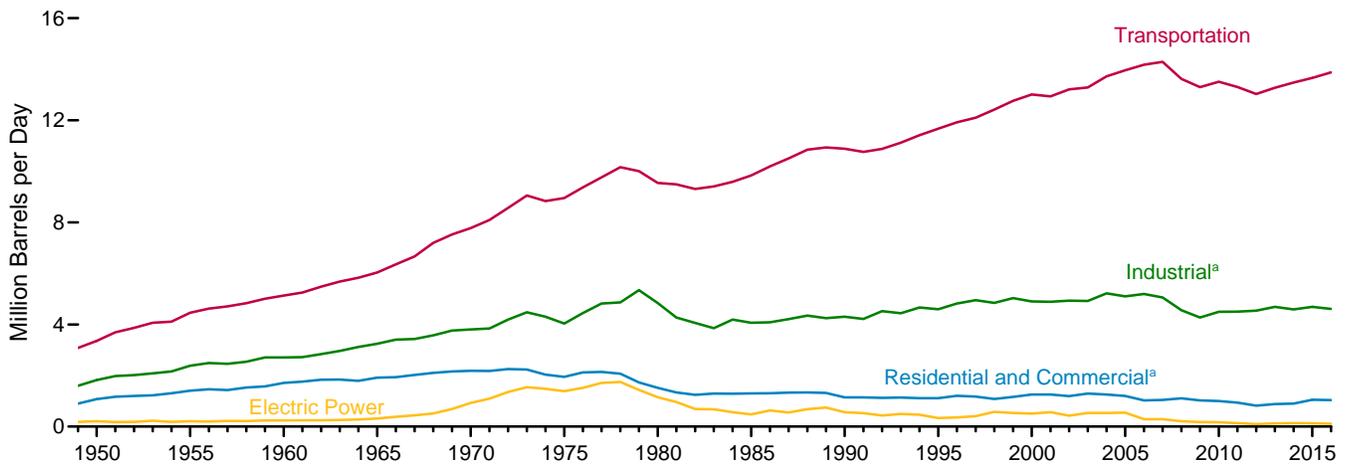
	Asphalt and Road Oil	Aviation Gasoline	Distillate Fuel Oil ^b	Jet Fuel ^c	Kerosene	LPG ^a		Lubricants	Motor Gasoline ^e	Petroleum Coke	Residual Fuel Oil	Other ^f	Total
						Propane ^d	Total						
1950 Total	435	199	2,300	(c)	668	NA	343	236	5,015	90	3,482	546	13,315
1955 Total	615	354	3,385	301	662	NA	592	258	6,640	147	3,502	798	17,255
1960 Total	734	298	3,992	739	563	NA	912	259	7,631	328	3,517	947	19,919
1965 Total	890	222	4,519	1,215	553	NA	1,232	286	8,806	444	3,691	1,390	23,246
1970 Total	1,082	100	5,401	1,973	544	1,086	1,689	301	11,091	465	5,057	1,817	29,521
1975 Total	1,014	71	6,061	2,047	329	1,097	1,807	304	12,798	542	5,649	2,109	32,732
1980 Total	962	64	6,110	2,190	329	1,059	1,976	354	12,648	522	5,772	3,278	34,205
1985 Total	1,029	50	6,098	2,497	236	1,236	2,103	322	13,098	582	2,759	2,152	30,925
1990 Total	1,170	45	6,422	3,129	88	1,284	2,059	362	13,872	745	2,820	2,839	33,552
1995 Total	1,178	40	6,812	3,132	112	1,534	2,512	346	14,834	802	1,955	2,837	34,558
2000 Total	1,276	36	7,927	3,580	140	1,734	2,945	369	16,167	895	2,091	2,979	38,406
2001 Total	1,257	35	8,170	3,426	150	1,598	2,697	338	16,386	961	1,861	3,056	38,337
2002 Total	1,240	34	8,020	3,340	90	1,747	2,852	334	16,829	1,018	1,605	3,040	38,401
2003 Total	1,220	30	8,341	3,265	113	1,701	2,748	309	16,968	1,000	1,772	3,264	39,030
2004 Total	1,304	31	8,642	3,383	133	1,791	2,824	313	17,333	1,148	1,990	3,428	40,528
2005 Total	1,323	35	8,745	3,475	144	1,721	2,682	312	17,378	1,125	2,111	3,318	40,647
2006 Total	1,261	33	8,831	3,379	111	1,701	2,700	303	17,531	1,141	1,581	3,416	40,289
2007 Total	1,197	32	8,858	3,358	67	1,729	2,733	313	17,472	1,072	1,659	3,313	40,073
2008 Total	1,012	28	8,346	3,193	30	1,620	2,574	291	16,865	1,017	1,432	2,941	37,728
2009 Total	873	27	7,661	2,883	36	1,624	2,664	262	16,750	937	1,173	2,611	35,877
2010 Total	878	27	8,014	2,963	41	1,624	2,821	291	16,668	831	1,228	2,800	36,561
2011 Total	859	27	8,217	2,950	25	1,614	2,839	276	16,191	801	1,058	2,676	35,920
2012 Total	827	25	7,903	2,901	11	1,649	2,912	254	16,089	802	849	2,558	35,130
2013 Total	783	22	8,059	2,969	11	1,785	3,167	268	16,339	786	731	2,677	35,812
2014 Total	793	22	8,499	3,042	19	1,634	3,090	280	16,476	772	590	2,518	36,101
2015 January	41	1	749	242	(s)	188	313	29	1,355	76	57	202	3,065
February	40	1	736	229	1	169	281	21	1,251	37	34	200	2,832
March	46	1	729	272	2	146	266	29	1,421	71	51	213	3,101
April	60	2	697	260	(s)	111	238	27	1,395	69	32	212	2,992
May	70	2	675	267	4	106	245	30	1,453	72	46	241	3,105
June	94	2	674	281	(s)	121	247	24	1,430	74	38	227	3,091
July	99	3	697	290	(s)	123	262	29	1,486	75	63	239	3,244
August	105	2	700	281	(s)	124	252	23	1,484	78	58	229	3,212
September	93	2	703	261	(s)	112	230	23	1,410	52	50	202	3,026
October	82	2	718	284	1	129	263	27	1,450	62	46	190	3,125
November	57	1	647	259	(s)	135	270	19	1,383	56	57	207	2,956
December	44	1	685	277	4	165	302	24	1,435	53	62	233	3,121
Total	832	21	8,411	3,204	13	1,627	3,168	305	16,952	776	595	2,595	36,870
2016 January	41	1	682	255	(s)	188	321	25	1,360	66	66	218	3,035
February	42	2	662	251	(s)	166	280	25	1,351	64	36	230	2,943
March	54	2	705	270	2	138	266	27	1,474	68	78	203	3,148
April	61	2	661	265	1	106	238	23	1,398	53	91	211	3,005
May	81	2	670	275	1	106	242	25	1,480	51	65	199	3,090
June	95	2	663	292	1	94	225	27	1,467	45	75	206	3,097
July	98	2	640	301	2	110	248	21	1,505	60	89	209	3,174
August	109	2	695	300	(s)	110	243	23	1,505	81	67	230	3,256
September	87	2	676	276	2	126	261	23	1,441	53	55	218	3,092
October	85	2	719	282	2	124	263	25	1,426	59	67	227	3,158
November	62	2	685	277	(s)	128	252	21	1,403	90	71	197	3,059
December	40	1	726	290	4	164	287	23	1,460	74	63	230	3,199
Total	855	20	8,184	3,334	15	1,560	3,127	287	17,269	765	821	2,579	37,256
2017 January	39	1	676	280	2	201	324	20	1,333	78	90	222	3,066
February	45	1	631	242	1	142	255	21	1,273	45	48	203	2,764
March	54	2	743	293	(s)	136	273	25	1,467	33	71	253	3,214
April	R 63	2	R 656	R 275	R 1	R 121	R 249	R 19	R 1,404	59	60	R 248	R 3,036
May	RF 82	F 2	E 725	E 296	F 1	E 94	F 242	RF 29	E 1,499	RF 64	E 71	RE 232	E 3,243
June	F 96	F 2	E 711	E 316	F 1	E 109	F 246	F 24	E 1,454	F 61	E 75	E 210	E 3,196
6-Month Total	E 380	E 10	E 4,141	E 1,703	E 6	E 803	E 1,589	E 138	E 8,430	E 339	E 415	E 1,368	E 18,519
2016 6-Month Total	374	10	4,043	1,607	5	797	1,572	152	8,529	349	411	1,267	18,318
2015 6-Month Total	352	10	4,261	1,551	8	841	1,589	159	8,304	400	259	1,295	18,186

^a Liquefied petroleum gases.
^b Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.
^c Beginning in 1957, includes kerosene-type jet fuel. For 1952–2004, also includes naphtha-type jet fuel. (Through 1951, naphtha-type jet fuel is included in the products from which it was blended—gasoline, kerosene, and distillate fuel oil. Beginning in 2005, naphtha-type jet fuel is included in "Other.")
^d Includes propylene.
^e Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.
^f Pentanes plus, petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1981, also includes negative barrels per day of distillate and residual fuel oil reclassified as unfinished oils, and other products (from both primary and secondary supply) reclassified as gasoline blending components.

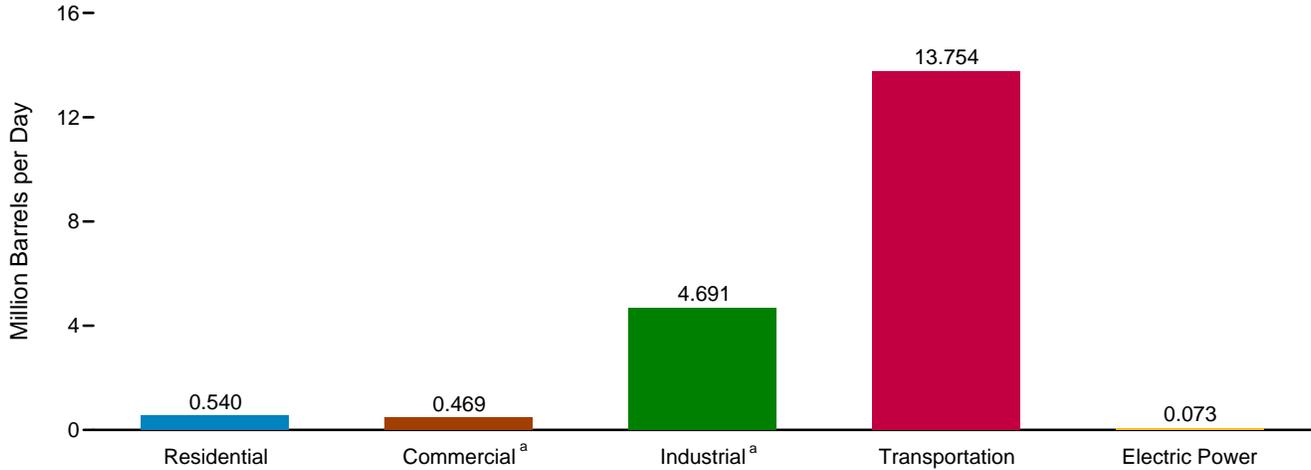
Beginning in 1983, also includes crude oil burned as fuel. Beginning in 2005, also includes naphtha-type jet fuel.
R=Revised. E=Estimate. F=Forecast. NA=Not available. (s)=Less than 0.5 trillion Btu and greater than -0.5 trillion Btu.
Notes: • Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: See end of section.

Figure 3.7 Petroleum Consumption by Sector

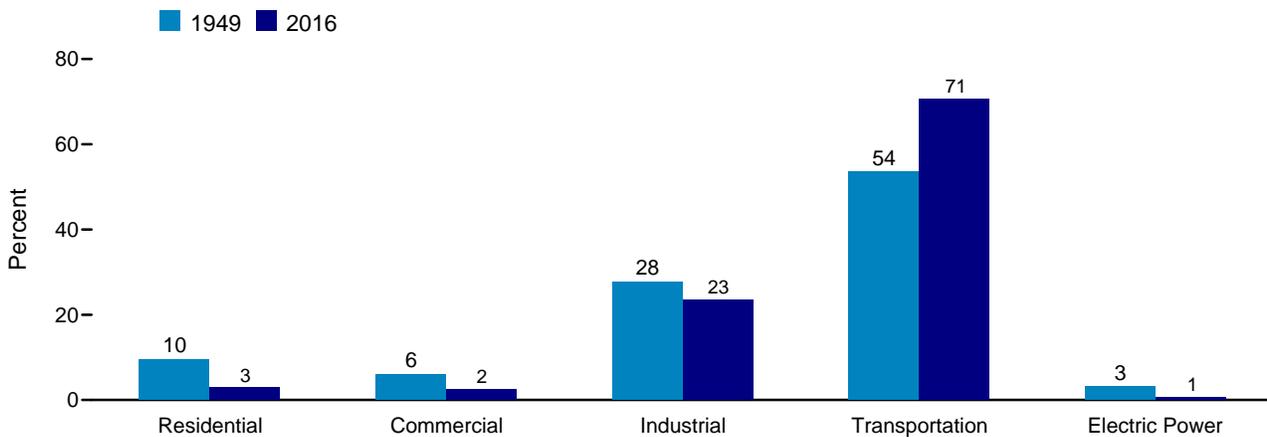
By Sector, 1949–2016



By Sector, April 2017



Sector Shares 1949 and 2016



^a Includes combined-heat-and-power plants and a small number of electricity-only plants.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.
Sources: Tables 3.7a–3.7c.

Table 3.7a Petroleum Consumption: Residential and Commercial Sectors
(Thousand Barrels per Day)

	Residential Sector				Commercial Sector ^a						
	Distillate Fuel Oil	Kero-sene	Liquefied Petroleum Gases	Total	Distillate Fuel Oil	Kero-sene	Liquefied Petroleum Gases	Motor Gasoline ^{b,c}	Petro-leum Coke	Residual Fuel Oil	Total
1950 Average	390	168	104	662	123	23	28	52	NA	185	411
1955 Average	562	179	144	885	177	24	38	69	NA	209	519
1960 Average	736	171	217	1,123	232	23	58	35	NA	243	590
1965 Average	805	161	275	1,242	251	26	74	40	NA	281	672
1970 Average	883	144	392	1,419	276	30	102	45	NA	311	764
1975 Average	850	78	365	1,293	276	24	92	46	NA	214	653
1980 Average	617	51	222	890	243	20	63	56	NA	245	626
1985 Average	514	77	224	815	297	16	68	50	NA	99	530
1990 Average	460	31	252	742	252	6	73	58	0	100	489
1995 Average	426	36	282	743	225	11	78	10	(s)	62	385
2000 Average	424	46	395	865	230	14	107	23	(s)	40	415
2001 Average	427	46	375	849	239	15	102	20	(s)	30	406
2002 Average	404	29	384	817	209	8	101	24	(s)	35	376
2003 Average	438	34	389	861	233	9	112	32	(s)	48	434
2004 Average	433	41	364	839	221	10	108	23	(s)	53	416
2005 Average	402	40	366	809	210	10	94	24	(s)	50	389
2006 Average	335	32	318	685	189	7	88	26	(s)	33	343
2007 Average	342	21	345	708	181	4	87	32	(s)	33	337
2008 Average	354	10	394	758	181	2	113	24	(s)	31	351
2009 Average	276	13	391	680	187	2	99	28	(s)	31	348
2010 Average	266	14	379	659	185	2	100	28	(s)	27	343
2011 Average	248	9	347	604	186	2	100	24	(s)	23	335
2012 Average	228	4	286	518	168	1	98	21	(s)	14	301
2013 Average	233	4	336	573	163	(s)	110	22	(s)	11	306
2014 Average	253	7	330	589	169	1	108	29	(s)	3	311
2015 January	424	2	345	771	277	(s)	115	^c 195	(s)	3	590
February	405	7	346	758	265	1	115	200	(s)	3	583
March	290	9	296	595	190	1	98	205	(s)	2	496
April	181	1	277	458	118	(s)	92	208	(s)	1	419
May	175	16	274	465	114	2	91	209	(s)	1	418
June	106	(s)	285	391	69	(s)	95	213	0	1	378
July	118	1	292	411	77	(s)	97	214	0	1	389
August	147	1	281	428	96	(s)	93	214	(s)	1	404
September	144	(s)	269	414	94	(s)	89	210	(s)	1	395
October	353	2	295	650	230	(s)	98	209	(s)	2	540
November	391	1	313	706	256	(s)	104	206	(s)	3	569
December	412	19	337	768	269	3	112	207	(s)	3	593
Average	262	5	301	567	171	1	100	208	(s)	2	481
2016 January	378	NM	355	731	247	(s)	118	196	(s)	4	565
February	395	1	334	729	258	(s)	111	208	(s)	4	581
March	261	9	299	569	170	1	99	213	(s)	3	487
April	237	4	276	517	155	1	92	208	(s)	2	458
May	208	3	273	484	136	(s)	91	213	0	2	442
June	147	6	263	416	96	1	87	219	(s)	1	404
July	151	7	282	440	99	1	94	217	(s)	2	412
August	118	1	275	394	77	(s)	92	217	0	1	387
September	185	8	299	492	121	1	99	215	0	2	438
October	253	11	296	559	165	1	98	206	0	3	473
November	282	2	294	578	184	(s)	98	209	(s)	3	494
December	442	16	322	781	289	2	107	211	(s)	5	613
Average	254	6	297	557	166	1	99	211	(s)	3	479
2017 January	423	10	361	794	276	1	120	192	(s)	4	594
February	348	5	320	673	227	1	106	203	(s)	4	541
March	295	1	307	604	193	(s)	102	212	(s)	3	510
April	244	5	291	540	159	1	97	209	(s)	2	469
4-Month Average	328	5	320	653	214	1	106	204	(s)	3	529
2016 4-Month Average	317	3	316	636	207	(s)	105	206	(s)	3	522
2015 4-Month Average	324	4	316	644	212	1	105	202	(s)	2	522

^a Commercial sector fuel use, including that at commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

^b Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

^c There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of motor gasoline consumption are larger than in 2014, while the transportation sector share is smaller.

NA=Not available. NM=Not meaningful. (s)=Less than 500 barrels per day and greater than -500 barrels per day.

Notes: • Data are estimates. • For total petroleum consumption by all sectors, see petroleum products supplied data in Table 3.5. Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 3.7b Petroleum Consumption: Industrial Sector
(Thousand Barrels per Day)

	Industrial Sector ^a									
	Asphalt and Road Oil	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Lubricants	Motor Gasoline ^{b,c}	Petroleum Coke	Residual Fuel Oil	Other ^d	Total
1950 Average	180	328	132	100	43	131	41	617	250	1,822
1955 Average	254	466	116	212	47	173	67	686	366	2,387
1960 Average	302	476	78	333	48	198	149	689	435	2,708
1965 Average	368	541	80	470	62	179	202	689	657	3,247
1970 Average	447	577	89	699	70	150	203	708	866	3,808
1975 Average	419	630	58	844	68	116	246	658	1,001	4,038
1980 Average	396	621	87	1,172	82	82	234	586	1,581	4,842
1985 Average	425	526	21	1,285	75	114	261	326	1,032	4,065
1990 Average	483	541	6	1,215	84	97	325	179	1,373	4,304
1995 Average	486	532	7	1,527	80	105	328	147	1,381	4,594
2000 Average	525	563	8	1,720	86	79	361	105	1,458	4,903
2001 Average	519	611	11	1,557	79	155	390	89	1,481	4,892
2002 Average	512	566	7	1,668	78	163	383	83	1,474	4,934
2003 Average	503	551	12	1,560	72	171	375	96	1,579	4,918
2004 Average	537	570	14	1,646	73	195	423	108	1,657	5,222
2005 Average	546	594	19	1,549	72	187	404	123	1,605	5,100
2006 Average	521	594	14	1,627	71	198	425	104	1,640	5,193
2007 Average	494	595	6	1,637	73	161	412	84	1,593	5,056
2008 Average	417	637	2	1,419	67	131	394	84	1,408	4,559
2009 Average	360	509	2	1,541	61	128	363	57	1,251	4,272
2010 Average	362	547	4	1,673	68	140	310	52	1,343	4,500
2011 Average	355	586	2	1,733	64	138	295	59	1,272	4,503
2012 Average	340	602	1	1,841	59	136	319	30	1,215	4,543
2013 Average	323	601	1	1,962	62	142	295	21	1,282	4,690
2014 Average	327	648	1	1,924	65	114	290	18	1,204	4,591
2015 January	200	714	(s)	2,322	79	^c 132	342	17	1,142	4,948
February	215	826	1	2,329	63	135	146	8	1,255	4,977
March	222	658	1	1,996	78	138	334	16	1,215	4,660
April	303	650	(s)	1,865	76	140	330	11	1,243	4,619
May	343	466	3	1,847	82	141	330	14	1,351	4,576
June	472	543	(s)	1,919	68	144	357	12	1,324	4,838
July	480	515	(s)	1,965	80	144	335	18	1,343	4,880
August	510	486	(s)	1,890	62	144	350	17	1,309	4,769
September	469	662	(s)	1,812	65	142	222	15	1,179	4,566
October	400	444	(s)	1,989	75	141	281	14	1,090	4,434
November	287	328	(s)	2,110	54	139	264	17	1,203	4,401
December	212	396	3	2,270	67	139	239	18	1,317	4,662
Average	343	555	1	2,025	71	140	295	15	1,248	4,693
2016 January	200	583	(s)	2,391	69	132	296	22	1,195	4,888
February	219	634	(s)	2,247	72	140	306	12	1,333	4,965
March	262	651	2	2,017	74	143	304	25	1,108	4,586
April	304	515	1	1,861	66	140	229	30	1,189	4,336
May	392	451	1	1,841	69	144	214	21	1,083	4,214
June	479	504	1	1,769	76	147	185	25	1,156	4,342
July	475	326	1	1,897	58	146	251	28	1,145	4,328
August	527	535	(s)	1,855	62	146	363	21	1,255	4,765
September	438	571	1	2,015	65	145	227	17	1,236	4,715
October	415	585	2	1,992	67	139	271	21	1,259	4,751
November	312	598	(s)	1,982	58	141	440	23	1,118	4,673
December	194	532	3	2,169	62	142	340	20	1,271	4,733
Average	352	540	1	2,003	67	142	286	22	1,195	4,607
2017 January	192	521	2	2,429	54	130	355	29	1,221	4,932
February	241	601	1	2,157	64	137	215	16	1,244	4,676
March	265	741	(s)	2,070	68	143	132	23	1,402	4,844
April	318	487	1	1,960	54	141	297	20	1,413	4,691
4-Month Average	254	588	1	2,156	60	137	250	22	1,321	4,789
2016 4-Month Average	246	596	1	2,129	70	139	284	22	1,204	4,692
2015 4-Month Average	235	710	1	2,125	74	136	291	13	1,213	4,798

^a Industrial sector fuel use, including that at industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

^b Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

^c There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of motor gasoline consumption are larger than in 2014, while the transportation sector share is smaller.

^d Pentanes plus, petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1981, also includes negative barrels per day of distillate and residual fuel oil reclassified as unfinished oils, and other products (from both primary and secondary supply) reclassified as gasoline blending components.

Beginning in 1983, also includes crude oil burned as fuel. Beginning in 2005, also includes naphtha-type jet fuel.

(s)=Less than 500 barrels per day and greater than -500 barrels per day.

Notes: • Data are estimates. • For total petroleum consumption by all sectors, see petroleum products supplied data in Table 3.5. Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 3.7c Petroleum Consumption: Transportation and Electric Power Sectors
(Thousand Barrels per Day)

	Transportation Sector								Electric Power Sector ^a			
	Aviation Gasoline	Distillate Fuel Oil ^b	Jet Fuel ^c	Liquefied Petroleum Gases	Lubricants	Motor Gasoline ^{d,e}	Residual Fuel Oil	Total	Distillate Fuel Oil ^f	Petroleum Coke	Residual Fuel Oil ^g	Total
1950 Average	108	226	(^c)	2	64	2,433	524	3,356	15	NA	192	207
1955 Average	192	372	154	9	70	3,221	440	4,458	15	NA	191	206
1960 Average	161	418	371	13	68	3,736	367	5,135	10	NA	231	241
1965 Average	120	514	602	23	67	4,374	336	6,036	14	NA	302	316
1970 Average	55	738	967	32	66	5,589	332	7,778	66	9	853	928
1975 Average	39	998	992	31	70	6,512	310	8,951	107	1	1,280	1,388
1980 Average	35	1,311	1,062	13	77	6,441	608	9,546	79	2	1,069	1,151
1985 Average	27	1,491	1,218	21	71	6,667	342	9,838	40	3	435	478
1990 Average	24	1,722	1,522	16	80	7,080	443	10,888	45	14	507	566
1995 Average	21	1,973	1,514	13	76	7,674	397	11,668	51	37	247	334
2000 Average	20	2,422	1,725	8	81	8,370	386	13,012	82	45	378	505
2001 Average	19	2,489	1,655	10	74	8,435	255	12,938	80	47	437	564
2002 Average	18	2,536	1,614	10	73	8,662	295	13,208	60	80	287	427
2003 Average	16	2,629	1,578	13	68	8,733	249	13,286	76	79	379	534
2004 Average	17	2,783	1,630	14	69	8,867	321	13,720	52	101	382	535
2005 Average	19	2,858	1,679	20	68	8,948	365	13,957	54	111	382	547
2006 Average	18	3,017	1,633	20	67	9,029	395	14,178	35	97	157	289
2007 Average	17	3,037	1,622	16	69	9,093	433	14,287	42	78	173	293
2008 Average	15	2,738	1,539	29	64	8,834	402	13,621	34	70	104	209
2009 Average	14	2,626	1,393	20	57	8,841	344	13,297	33	63	79	175
2010 Average	15	2,764	1,432	21	64	8,824	389	13,508	38	65	67	170
2011 Average	15	2,849	1,425	24	61	8,591	338	13,303	30	66	41	137
2012 Average	14	2,719	1,398	26	56	8,525	291	13,029	25	41	33	99
2013 Average	12	2,804	1,434	32	59	8,679	253	13,274	26	59	34	119
2014 Average	12	2,928	1,470	34	61	8,778	195	13,477	39	57	41	137
2015 January	8	2,729	1,375	33	74	^e 8,312	218	12,749	41	61	57	159
February	8	2,931	1,445	33	60	8,494	35	13,006	132	71	149	352
March	9	2,913	1,548	28	74	8,714	217	13,503	27	43	28	97
April	14	3,058	1,527	26	72	8,842	133	13,672	21	47	27	95
May	13	2,996	1,519	26	77	8,912	194	13,738	26	53	25	105
June	12	3,153	1,654	27	64	9,061	158	14,130	26	50	29	105
July	18	3,168	1,650	28	76	9,112	269	14,320	23	65	38	126
August	11	3,165	1,601	26	59	9,102	247	14,211	22	61	33	116
September	11	3,142	1,534	25	62	8,937	221	13,932	21	61	30	112
October	14	2,967	1,614	28	70	8,895	193	13,781	20	47	27	94
November	9	2,740	1,524	30	51	8,767	250	13,370	26	42	30	99
December	9	2,731	1,578	32	63	8,801	270	13,484	24	43	26	93
Average	11	2,974	1,548	28	67	8,831	202	13,662	33	54	41	128
2016 January	7	2,571	1,449	33	65	8,342	280	12,747	38	53	34	124
February	11	2,644	1,525	31	68	8,858	145	13,282	28	55	39	123
March	10	2,838	1,536	28	70	9,043	349	13,875	21	58	21	100
April	14	2,896	1,560	26	62	8,864	425	13,848	20	63	22	105
May	11	2,925	1,562	26	65	9,079	286	13,955	25	57	24	106
June	12	3,061	1,714	25	72	9,298	344	14,525	23	61	28	112
July	12	2,977	1,715	27	55	9,234	383	14,401	26	63	43	131
August	14	3,135	1,710	26	59	9,232	279	14,454	25	66	41	132
September	11	3,008	1,624	28	62	9,133	242	14,107	20	62	29	111
October	10	3,002	1,605	28	64	8,751	291	13,750	19	39	30	88
November	12	2,871	1,627	28	55	8,894	325	13,810	25	49	24	99
December	10	2,768	1,649	30	59	8,957	270	13,743	29	53	28	109
Average	11	2,892	1,606	28	63	8,973	302	13,876	25	57	30	112
2017 January	9	2,529	1,593	34	51	8,181	399	12,797	32	57	28	117
February	9	2,701	1,525	30	60	8,648	224	13,197	27	47	26	100
March	10	2,898	1,669	29	64	8,999	313	13,982	26	43	24	93
April	10	2,877	1,617	27	51	8,898	273	13,754	24	25	24	73
4-Month Average ...	10	2,752	1,603	30	56	8,680	304	13,436	27	43	25	96
2016 4-Month Average ...	10	2,737	1,517	30	66	8,775	301	13,437	27	57	29	113
2015 4-Month Average ...	10	2,906	1,474	30	70	8,591	154	13,235	53	55	63	172

^a 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.

^b Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^c Beginning in 1957, includes kerosene-type jet fuel. For 1952–2004, also includes naphtha-type jet fuel. (Through 1951, naphtha-type jet fuel is included in the products from which it was blended—gasoline, kerosene, and distillate fuel oil. Beginning in 2005, naphtha-type jet fuel is included in "Other" on Table 3.7b.)

^d Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

^e There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of motor gasoline consumption are larger than in 2014, while the transportation sector share is smaller.

^f Fuel oil nos. 1, 2, and 4. Through 1979, data are for gas turbine and internal combustion plant use of petroleum. Through 2000, electric utility data also include

small amounts of kerosene and jet fuel.

^g Fuel oil nos. 5 and 6. Through 1979, data are for steam plant use of petroleum. Through 2000, electric utility data also include a small amount of fuel oil no. 4.

NA=Not available.

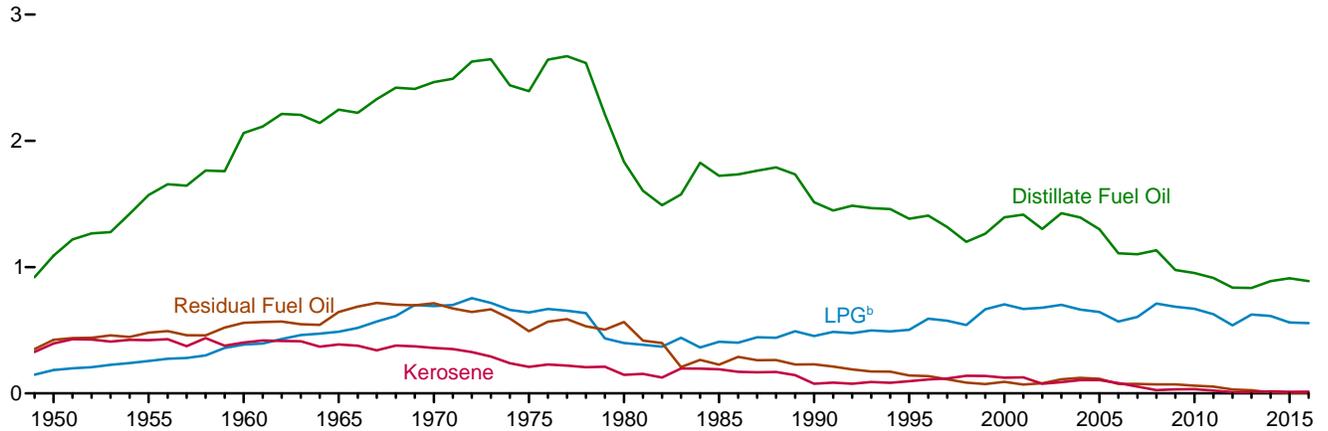
Notes: • Transportation sector data are estimates. • For total petroleum consumption by all sectors, see petroleum products supplied data in Table 3.5. Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. Other measurements of consumption by fuel type or sector may differ. For example, jet fuel product supplied may not equal jet fuel consumed by U.S.-flagged aircraft. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding.

• Geographic coverage is the 50 states and the District of Columbia. Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

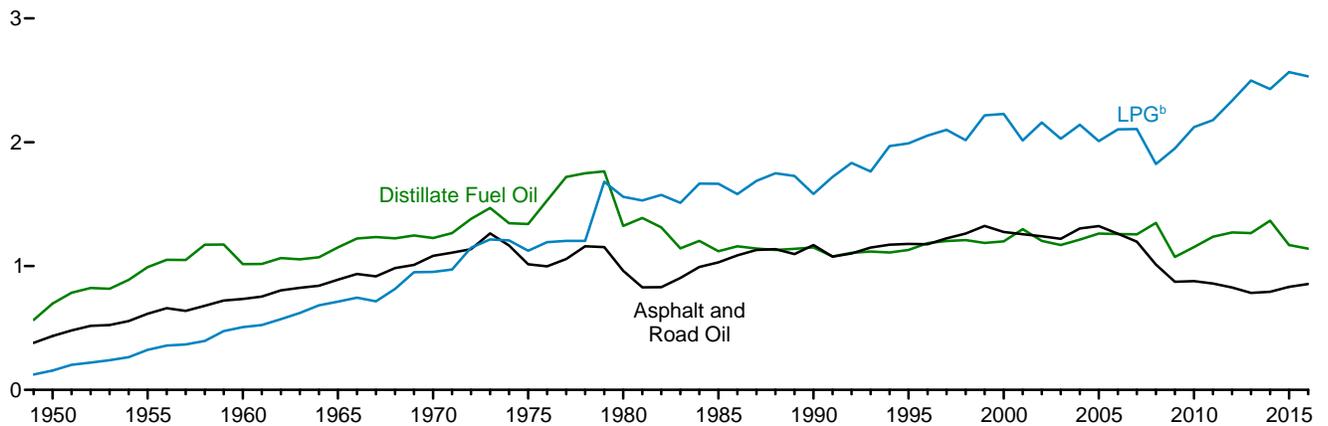
Sources: See end of section.

Figure 3.8a Heat Content of Petroleum Consumption by End-Use Sector, 1949–2016
(Quadrillion Btu)

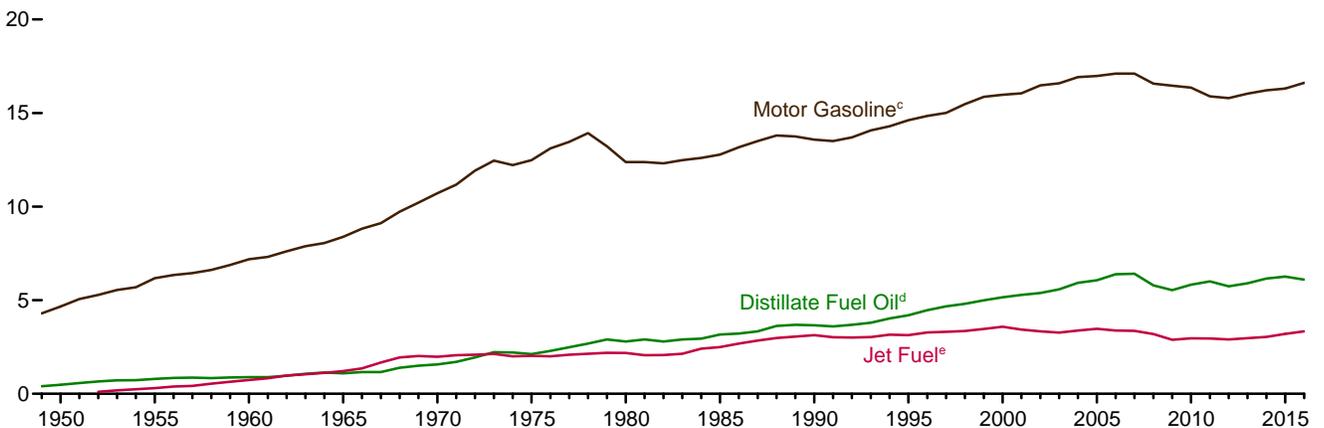
Residential and Commercial^a Sectors, Selected Products



Industrial^a Sector, Selected Products



Transportation Sector, Selected Products



^a Includes combined-heat-and-power plants and a small number of electricity-only plants.

^b Liquefied petroleum gases.

^c Beginning in 1993, includes fuel ethanol blended into motor gasoline.

^d Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^e Beginning in 2005, includes kerosene-type jet fuel only.

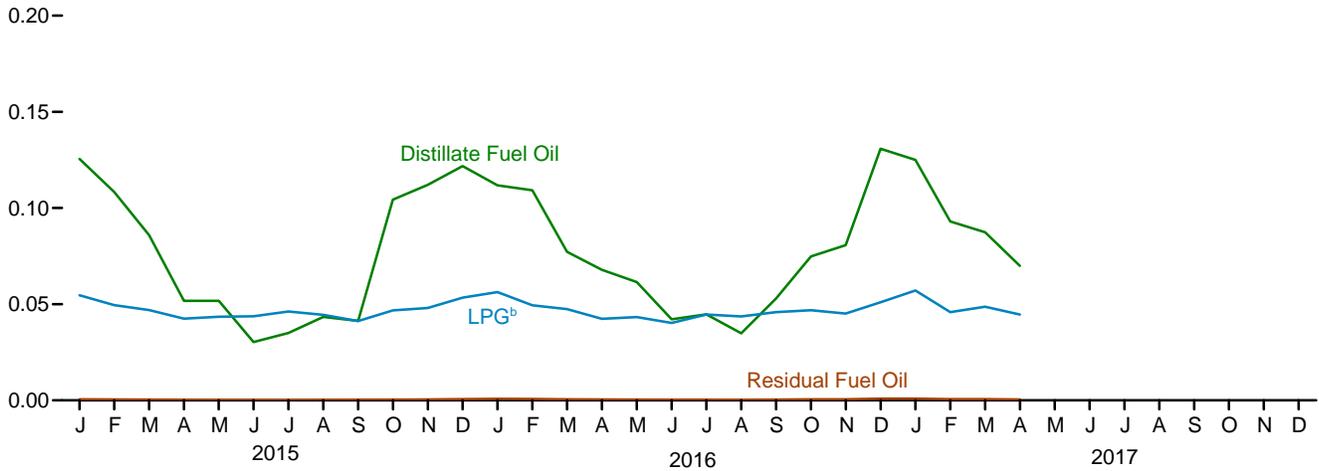
Note: Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. Other measurements of consumption by fuel type or sector may differ. For example, jet fuel product supplied may not equal jet fuel consumed by U.S.-flagged aircraft.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.

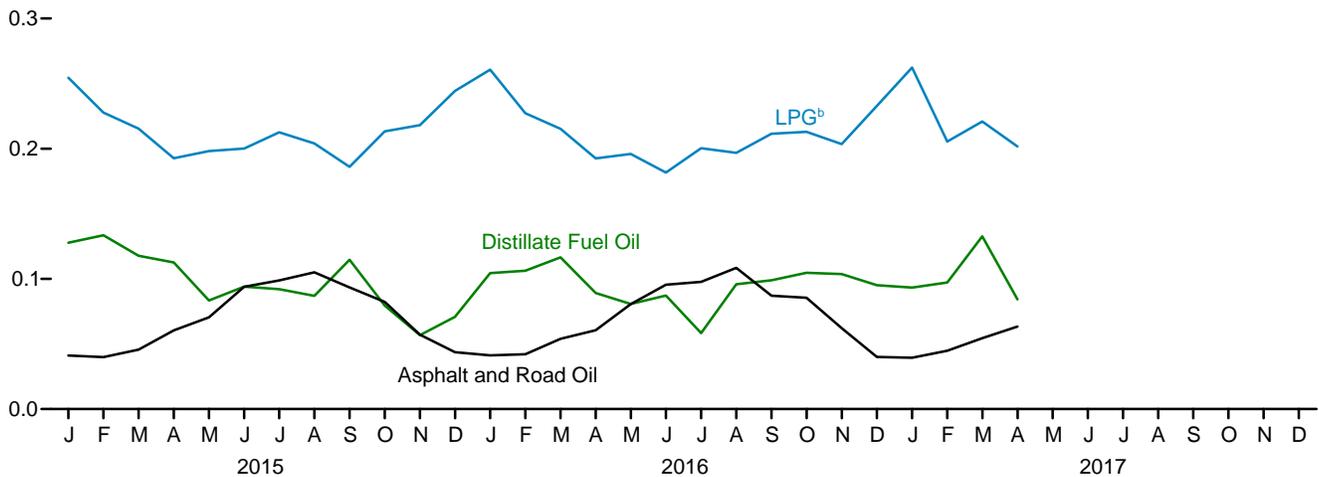
Sources: Tables 3.8a–3.8c.

Figure 3.8b Heat Content of Petroleum Consumption by End-Use Sector, Monthly
(Quadrillion Btu)

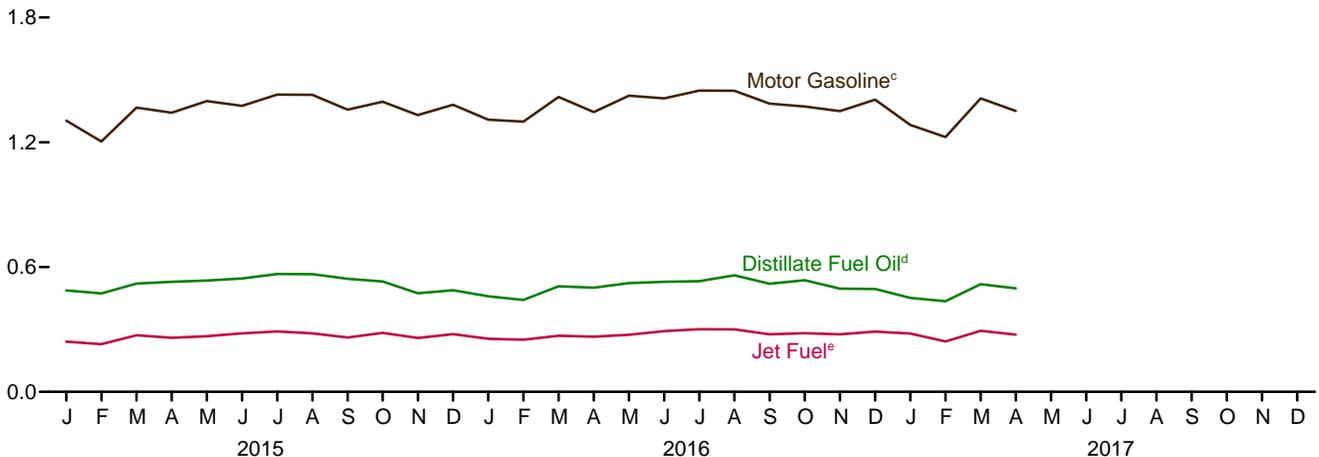
Residential and Commercial^a Sectors, Selected Products



Industrial^a Sector, Selected Products



Transportation Sector, Selected Products



^a Includes combined-heat-and-power plants and a small number of electricity-only plants.

^b Liquefied petroleum gases.

^c Includes fuel ethanol blended into motor gasoline.

^d Includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^e Includes kerosene-type jet fuel only.

Note: Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. Other measurements of consumption by fuel type or sector may differ. For example, jet fuel product supplied may not equal jet fuel consumed by U.S.-flagged aircraft.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.

Sources: Tables 3.8a–3.8c.

Table 3.8a Heat Content of Petroleum Consumption: Residential and Commercial Sectors
(Trillion Btu)

	Residential Sector				Commercial Sector ^a						
	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Total	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Motor Gasoline ^{b,c}	Petroleum Coke	Residual Fuel Oil	Total
1950 Total	829	347	146	1,322	262	47	39	100	NA	424	872
1955 Total	1,194	371	202	1,767	377	51	54	133	NA	480	1,095
1960 Total	1,568	354	305	2,227	494	48	81	67	NA	559	1,248
1965 Total	1,713	334	385	2,432	534	54	103	77	NA	645	1,413
1970 Total	1,878	298	549	2,725	587	61	143	86	NA	714	1,592
1975 Total	1,807	161	512	2,479	587	49	129	89	NA	492	1,346
1980 Total	1,316	107	311	1,734	518	41	88	107	NA	565	1,318
1985 Total	1,092	159	314	1,565	631	33	95	96	NA	228	1,083
1990 Total	978	64	352	1,394	536	12	102	111	0	230	991
1995 Total	904	74	395	1,373	478	22	109	18	(s)	141	769
2000 Total	904	95	555	1,553	490	30	150	45	(s)	92	807
2001 Total	907	95	526	1,528	508	31	143	37	(s)	70	789
2002 Total	859	60	537	1,456	444	16	141	45	(s)	80	726
2003 Total	931	70	544	1,546	496	19	157	60	(s)	111	842
2004 Total	923	85	512	1,519	470	20	152	45	(s)	122	810
2005 Total	853	84	513	1,450	447	22	131	46	(s)	116	762
2006 Total	709	66	446	1,221	400	15	123	48	(s)	75	662
2007 Total	721	44	484	1,249	381	9	121	60	(s)	75	648
2008 Total	750	21	553	1,324	384	4	158	45	(s)	71	663
2009 Total	582	28	547	1,157	395	4	139	52	(s)	71	662
2010 Total	562	29	530	1,121	391	5	140	52	(s)	62	650
2011 Total	523	19	486	1,027	391	3	141	44	(s)	54	633
2012 Total	482	8	402	892	355	1	138	39	(s)	31	564
2013 Total	491	8	470	970	344	1	154	40	(s)	24	563
2014 Total	533	14	462	1,009	357	2	151	54	1	8	572
2015 January	76	(s)	41	117	50	(s)	14	^c 31	(s)	1	95
February	66	1	37	104	43	(s)	12	28	(s)	(s)	84
March	52	2	35	89	34	(s)	12	32	(s)	(s)	78
April	31	(s)	32	63	20	(s)	11	32	(s)	(s)	63
May	31	3	33	67	20	(s)	11	33	(s)	(s)	65
June	18	(s)	33	51	12	(s)	11	32	0	(s)	55
July	21	(s)	35	56	14	(s)	12	34	0	(s)	59
August	26	(s)	33	60	17	(s)	11	34	(s)	(s)	62
September	25	(s)	31	56	16	(s)	10	32	(s)	(s)	59
October	63	(s)	35	99	41	(s)	12	33	(s)	(s)	86
November	68	(s)	36	104	44	(s)	12	31	(s)	(s)	88
December	74	3	40	117	48	(s)	13	32	(s)	1	95
Total	551	10	421	982	360	1	140	383	1	4	889
2016 January	68	(s)	42	110	44	(s)	14	31	(s)	1	90
February	66	(s)	37	103	43	(s)	12	31	(s)	1	87
March	47	2	36	84	31	(s)	12	33	(s)	1	76
April	41	1	32	74	27	(s)	11	32	(s)	(s)	70
May	37	1	33	70	24	(s)	11	33	0	(s)	69
June	25	1	30	57	17	(s)	10	33	(s)	(s)	60
July	27	1	34	62	18	(s)	11	34	(s)	(s)	63
August	21	(s)	33	54	14	(s)	11	34	0	(s)	59
September	32	1	34	68	21	(s)	11	33	0	(s)	65
October	45	2	35	82	30	(s)	12	32	0	1	74
November	49	(s)	34	83	32	(s)	11	32	(s)	1	75
December	79	3	38	120	52	(s)	13	33	(s)	1	99
Total	538	11	418	967	351	2	139	391	(s)	6	888
2017 January	76	2	43	120	49	(s)	14	30	(s)	1	95
February	56	1	34	91	37	(s)	11	29	(s)	1	78
March	53	(s)	37	90	35	(s)	12	33	(s)	1	81
April	42	1	34	77	28	(s)	11	32	(s)	(s)	71
4-Month Total	227	4	147	378	148	(s)	49	124	(s)	3	324
2016 4-Month Total	221	2	147	370	145	(s)	49	126	(s)	2	323
2015 4-Month Total	225	3	145	373	147	(s)	48	123	(s)	2	320

^a Commercial sector fuel use, including that at commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

^b Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

^c There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of motor gasoline consumption are larger than in 2014, while the transportation sector share is smaller.

NA=Not available. (s)=Less than 0.5 trillion Btu and greater than -0.5 trillion Btu. Notes: • Data are estimates. • For total heat content of petroleum consumption

by all sectors, see data for heat content of petroleum products supplied in Table 3.6. Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a-3.8c. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 3.8b Heat Content of Petroleum Consumption: Industrial Sector
(Trillion Btu)

	Industrial Sector ^a									
	Asphalt and Road Oil	Distillate Fuel Oil	Kerosene	Liquefied Petroleum Gases	Lubricants	Motor Gasoline ^{b,c}	Petroleum Coke	Residual Fuel Oil	Other ^d	Total
1950 Total	435	698	274	156	94	251	90	1,416	546	3,960
1955 Total	615	991	241	323	103	332	147	1,573	798	5,123
1960 Total	734	1,016	161	507	107	381	328	1,584	947	5,766
1965 Total	890	1,150	165	712	137	342	444	1,582	1,390	6,813
1970 Total	1,082	1,226	185	953	155	288	446	1,624	1,817	7,776
1975 Total	1,014	1,339	119	1,123	149	223	540	1,509	2,109	8,127
1980 Total	962	1,324	181	1,559	182	158	516	1,349	3,278	9,509
1985 Total	1,029	1,119	44	1,664	166	218	575	748	2,152	7,714
1990 Total	1,170	1,150	12	1,582	186	185	714	411	2,839	8,251
1995 Total	1,178	1,130	15	1,990	178	200	721	337	2,837	8,587
2000 Total	1,276	1,199	16	2,228	190	150	796	241	2,979	9,075
2001 Total	1,257	1,299	23	2,014	174	295	858	203	3,056	9,179
2002 Total	1,240	1,203	14	2,160	172	309	842	190	3,040	9,170
2003 Total	1,220	1,169	24	2,028	159	324	825	220	3,264	9,233
2004 Total	1,304	1,213	28	2,141	161	371	937	249	3,428	9,832
2005 Total	1,323	1,262	39	2,009	160	355	894	281	3,318	9,641
2006 Total	1,261	1,258	30	2,104	156	374	938	239	3,416	9,777
2007 Total	1,197	1,256	13	2,106	161	302	910	193	3,313	9,452
2008 Total	1,012	1,348	4	1,823	150	246	870	194	2,941	8,588
2009 Total	873	1,073	4	1,950	135	238	805	130	2,611	7,819
2010 Total	878	1,153	7	2,121	149	260	694	120	2,800	8,183
2011 Total	859	1,236	4	2,179	142	255	663	135	2,676	8,148
2012 Total	827	1,271	2	2,335	130	252	717	70	2,558	8,163
2013 Total	783	1,266	1	2,498	138	263	663	48	2,677	8,339
2014 Total	793	1,366	3	2,430	144	210	653	41	2,518	8,157
2015 January	41	128	(s)	254	15	^c 21	65	3	202	729
February	40	134	(s)	228	11	19	26	1	200	658
March	46	118	(s)	215	15	22	63	3	213	695
April	60	113	(s)	193	14	21	61	2	212	675
May	70	83	(s)	198	15	22	63	3	241	696
June	94	94	(s)	200	12	22	66	2	227	718
July	99	92	(s)	213	15	23	64	4	239	748
August	105	87	(s)	204	12	23	67	3	229	730
September	93	115	(s)	186	12	21	41	3	202	673
October	82	80	(s)	213	14	22	54	3	190	658
November	57	57	(s)	218	10	21	49	3	207	621
December	44	71	1	244	13	22	46	4	233	676
Total	832	1,170	2	2,567	157	258	663	34	2,595	8,277
2016 January	41	104	(s)	261	13	21	57	4	218	719
February	42	106	(s)	227	13	21	55	2	230	696
March	54	116	(s)	215	14	22	58	5	203	688
April	61	89	(s)	192	12	21	43	6	211	635
May	81	81	(s)	196	13	23	41	4	199	637
June	95	87	(s)	182	14	22	35	5	206	645
July	98	58	(s)	200	11	23	48	5	209	653
August	109	96	(s)	197	12	23	69	4	230	740
September	87	99	(s)	212	12	22	42	3	218	695
October	85	105	(s)	213	13	22	52	4	227	721
November	62	104	(s)	203	11	21	81	4	197	684
December	40	95	(s)	233	12	22	65	4	230	702
Total	855	1,141	2	2,531	148	263	646	51	2,579	8,216
2017 January	39	93	(s)	262	10	20	68	6	222	721
February	45	97	(s)	206	11	19	37	3	203	621
March	54	133	(s)	221	13	22	25	4	253	726
April	63	84	(s)	202	10	21	55	4	248	687
4-Month Total	202	407	1	890	44	83	185	17	926	2,755
2016 4-Month Total	198	416	(s)	896	52	85	212	17	862	2,738
2015 4-Month Total	187	492	1	890	54	83	215	10	827	2,758

^a Industrial sector fuel use, including that at industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

^b Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

^c There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of motor gasoline consumption are larger than in 2014, while the transportation sector share is smaller.

^d Pentanes plus, petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1981, also includes negative barrels per day of distillate and residual fuel oil reclassified as unfinished oils, and other products (from both primary and secondary supply) reclassified as gasoline blending components.

Beginning in 1983, also includes crude oil burned as fuel. Beginning in 2005, also includes naphtha-type jet fuel.

(s)=Less than 0.5 trillion Btu and greater than -0.5 trillion Btu.

Notes: • Data are estimates. • For total heat content of petroleum consumption by all sectors, see data for heat content of petroleum products supplied in Table 3.6. Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding.

• Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 3.8c Heat Content of Petroleum Consumption: Transportation and Electric Power Sectors (Trillion Btu)

	Transportation Sector							Electric Power Sector ^a				
	Aviation Gasoline	Distillate Fuel Oil ^b	Jet Fuel ^c	Liquefied Petroleum Gases	Lubricants	Motor Gasoline ^{d,e}	Residual Fuel Oil	Total	Distillate Fuel Oil ^f	Petroleum Coke	Residual Fuel Oil ^g	Total
1950 Total	199	480	(^c)	3	141	4,664	1,201	6,690	32	NA	440	472
1955 Total	354	791	301	13	155	6,175	1,009	8,799	32	NA	439	471
1960 Total	298	892	739	19	152	7,183	844	10,125	22	NA	530	553
1965 Total	222	1,093	1,215	32	149	8,386	770	11,866	29	NA	693	722
1970 Total	100	1,569	1,973	44	147	10,716	761	15,310	141	19	1,958	2,117
1975 Total	71	2,121	2,029	43	155	12,485	711	17,615	226	2	2,937	3,166
1980 Total	64	2,795	2,179	18	172	12,383	1,398	19,009	169	5	2,459	2,634
1985 Total	50	3,170	2,497	30	156	12,784	786	19,472	85	7	998	1,080
1990 Total	45	3,661	3,129	23	176	13,575	1,016	21,626	97	30	1,163	1,289
1995 Total	40	4,191	3,132	18	168	14,616	911	23,075	108	81	566	755
2000 Total	36	5,159	3,580	12	179	15,973	888	25,827	175	99	871	1,144
2001 Total	35	5,286	3,426	14	164	16,053	586	25,564	170	103	1,003	1,276
2002 Total	34	5,387	3,340	14	162	16,474	677	26,089	127	175	659	961
2003 Total	30	5,584	3,265	18	150	16,585	571	26,203	161	175	869	1,205
2004 Total	31	5,925	3,383	19	152	16,917	740	27,166	111	211	879	1,201
2005 Total	35	6,068	3,475	28	151	16,977	837	27,573	114	231	876	1,222
2006 Total	33	6,390	3,379	27	147	17,108	906	27,991	73	203	361	637
2007 Total	32	6,411	3,358	22	152	17,109	994	28,077	89	163	397	648
2008 Total	28	5,792	3,193	40	141	16,574	926	26,695	73	146	240	459
2009 Total	27	5,541	2,883	28	127	16,460	791	25,857	70	132	181	382
2010 Total	27	5,828	2,963	29	141	16,356	892	26,236	80	137	154	370
2011 Total	27	6,003	2,950	34	134	15,892	776	25,817	64	138	93	295
2012 Total	25	5,741	2,901	37	123	15,798	671	25,297	52	85	77	214
2013 Total	22	5,902	2,969	44	130	16,036	581	25,685	55	123	77	255
2014 Total	22	6,162	3,042	47	136	16,212	447	26,067	82	118	95	295
2015 January	1	488	242	4	14	^e 1,304	42	2,095	7	11	11	29
February	1	473	229	4	10	1,203	6	1,927	21	11	26	59
March	1	521	272	3	14	1,367	42	2,221	5	8	5	18
April	2	529	260	3	13	1,342	25	2,174	4	8	5	17
May	2	535	267	3	15	1,398	38	2,258	5	9	5	19
June	2	545	281	3	12	1,375	30	2,249	4	9	6	19
July	3	566	290	3	14	1,429	52	2,358	4	11	7	23
August	2	566	281	3	11	1,428	48	2,339	4	11	6	21
September	2	543	261	3	11	1,357	42	2,218	4	10	6	20
October	2	530	284	3	13	1,395	38	2,266	4	8	5	17
November	1	474	259	3	9	1,331	47	2,125	5	7	6	18
December	1	488	277	4	12	1,381	53	2,216	4	8	5	17
Total	21	6,259	3,204	40	148	16,310	463	26,445	70	112	94	276
2016 January	1	460	255	4	12	1,308	54	2,094	7	9	7	23
February	2	442	251	3	12	1,300	26	2,036	5	9	7	21
March	2	507	270	3	13	1,418	68	2,282	4	10	4	18
April	2	501	265	3	11	1,345	80	2,208	3	11	4	18
May	2	523	275	3	12	1,424	56	2,294	5	10	5	19
June	2	529	292	3	13	1,411	65	2,315	4	11	5	20
July	2	532	301	3	10	1,448	75	2,371	5	11	8	24
August	2	560	300	3	11	1,448	54	2,379	4	12	8	24
September	2	520	276	3	11	1,386	46	2,244	4	11	5	20
October	2	536	282	3	12	1,372	57	2,264	3	7	6	16
November	2	496	277	3	10	1,350	61	2,199	4	8	5	17
December	1	495	290	4	11	1,405	53	2,258	5	9	6	20
Total	20	6,102	3,334	39	140	16,615	695	26,945	53	118	69	240
2017 January	1	452	280	4	10	1,283	78	2,108	6	10	5	21
February	1	436	242	3	10	1,225	39	1,957	4	8	5	16
March	2	518	293	3	12	1,411	61	2,301	5	8	5	17
April	2	498	275	3	9	1,350	51	2,189	4	4	5	13
4-Month Total	6	1,903	1,091	14	41	5,270	230	8,554	19	30	19	68
2016 4-Month Total	6	1,910	1,041	14	49	5,371	229	8,620	19	40	22	80
2015 4-Month Total	6	2,011	1,003	14	51	5,216	116	8,417	37	38	48	123

^a 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.

^b Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^c Beginning in 1957, includes kerosene-type jet fuel. For 1952–2004, also includes naphtha-type jet fuel. (Through 1951, naphtha-type jet fuel is included in the products from which it was blended—gasoline, kerosene, and distillate fuel oil. Beginning in 2005, naphtha-type jet fuel is included in "Other" on Table 3.8b.)

^d Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

^e There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of motor gasoline consumption are larger than in 2014, while the transportation sector share is smaller.

^f Fuel oil nos. 1, 2, and 4. Through 1979, data are for gas turbine and internal combustion plant use of petroleum. Through 2000, electric utility data also include

small amounts of kerosene and jet fuel.

^g Fuel oil nos. 5 and 6. Through 1979, data are for steam plant use of petroleum. Through 2000, electric utility data also include a small amount of fuel oil no. 4.

NA=Not available.

Notes: • Transportation sector data are estimates. • For total heat content of petroleum consumption by all sectors, see data for heat content of petroleum products supplied in Table 3.6. Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. Other measurements of consumption by fuel type or sector may differ. For example, jet fuel product supplied may not equal jet fuel consumed by U.S.-flagged aircraft. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Petroleum

Note 1. Petroleum Products Supplied and Petroleum Consumption. Total petroleum products supplied is the sum of the products supplied for each petroleum product, crude oil, unfinished oils, and gasoline blending components. For each of these except crude oil, product supplied is calculated by adding refinery production, natural gas plant liquids production, new supply of other liquids, imports, and stock withdrawals, and subtracting stock additions, refinery inputs, and exports. Crude oil product supplied is the sum of crude oil burned on leases and at pipeline pump stations as reported on Form EIA-813, “Monthly Crude Oil Report.” Prior to 1983, crude oil burned on leases and used 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 Tables 3.5 and 3.6) is an approximation of petroleum consumption and is synonymous with the term “Petroleum Consumption” in Tables 3.7a–3.8c.

Note 2. Petroleum Survey Respondents. The U.S. Energy Information Administration (EIA) uses a number of sources and methods to maintain the survey respondent lists. On a regular basis, survey managers review such industry publications as the *Oil & Gas Journal* and *Oil Daily* for information on facilities or companies starting up or closing down operations. Those sources are augmented by articles in newspapers, communications from respondents indicating changes in status, and information received from survey systems.

To supplement routine frames maintenance and to provide more thorough coverage, a comprehensive frames investigation is conducted every 3 years. This investigation results in the reassessment and recompilation of the complete frame for each survey. The effort also includes the evaluation of the impact of potential frame changes on the historical time series of data from these respondents. The results of this frame study are usually implemented in January to provide a full year under the same frame.

Note 3. Historical Petroleum Data. Detailed information on petroleum data through 1993 can be found in Notes 1–6 on pages 60 and 61 in the July 2013 *Monthly Energy Review (MER)* at

<http://www.eia.gov/totalenergy/data/monthly/archive/00351307.pdf>.

The notes discuss:

Note 1, “Petroleum Survey Respondents”: In 1993, EIA added numerous companies that produce, blend, store, or import oxygenates to the monthly surveys.

Note 2, “Motor Gasoline”: In 1981, EIA expanded its universe to include nonrefinery blenders and separated blending components from finished motor gasoline as a reporting category. In 1993, EIA made adjustments to finished motor gasoline product supplied data to more accurately account for fuel ethanol and motor gasoline blending components blended into finished motor gasoline.

Note 3, “Distillate and Residual Fuel Oils”: In 1981, EIA eliminated the requirement to report crude oil in pipelines or burned on leases as either distillate or residual fuel oil.

Note 4, “Petroleum New Stock Basis”: In 1975, 1979, 1981, and 1983, EIA added numerous respondents to bulk terminal and pipeline surveys; in 1984, EIA made changes in the reporting of natural gas liquids; and in 1993, EIA changed how it collected bulk terminal and pipeline stocks of oxygenates. These changes affected stocks reported and stock change calculations.

Note 5, “Stocks of Alaskan Crude Oil”: In 1981, EIA began to include data for stocks of Alaskan crude oil in transit.

Note 6, “Petroleum Data Discrepancies”: In 1976, 1978, and 1979, there are some small discrepancies between data in the MER and the *Petroleum Supply Annual*.

Table 3.1 Sources

1949–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports.

1976–1980: U.S. Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports.

1981–2001: EIA, *Petroleum Supply Annual (PSA)*, annual reports.

2002 forward: EIA, PSA, annual reports, and unpublished revisions; *Petroleum Supply Monthly*, monthly reports; revisions to crude oil production, total field production, and adjustments (based on crude oil production data from: Form EIA-914, “Monthly Crude Oil, Lease Condensate, and Natural Gas Production Report”; state government agencies; U.S. Department of the Interior, Bureau of Safety and Environmental Enforcement, and predecessor agencies; and Form EIA-182, “Domestic Crude Oil First Purchase Report”); and, for the current two months, *Weekly Petroleum Status Report* data system and *Monthly Energy Review* data system calculations.

Table 3.6 Sources

Asphalt and Road Oil

Product supplied data in thousand barrels per day for asphalt and road oil are from Table 3.5, and are converted to trillion Btu by multiplying by the asphalt and road oil heat content factors in Table A1.

Aviation Gasoline

Product supplied data in thousand barrels per day for aviation gasoline are from Table 3.5, and are converted to trillion Btu by multiplying by the aviation gasoline (finished) heat content factor in Table A1.

Distillate Fuel Oil

1949–2008: Product supplied data in thousand barrels per day for distillate fuel oil are from Table 3.5, and are

converted to trillion Btu by multiplying by the distillate fuel oil heat content factors in Table A3.

2009 forward: Data for refinery and blender net inputs of renewable diesel fuel are from U.S. Energy Information Administration (EIA), *Petroleum Supply Annual (PSA)/Petroleum Supply Monthly (PSM)*, Table 1 (for biomass-based diesel fuel, the data are converted to Btu by multiplying by the biodiesel heat content factor in Table A1; for other renewable diesel fuel, the data are converted to Btu by multiplying by the other renewable diesel fuel heat content factor in Table A1). Product supplied data for distillate fuel oil from Table 3.5, minus data for renewable diesel fuel from the PSA/PSM, are converted to Btu by multiplying by the distillate fuel oil heat content factors in Table A3. Total distillate fuel oil product supplied is the sum of distillate fuel oil (excluding renewable diesel fuel) and renewable diesel fuel.

Jet Fuel

Product supplied data in thousand barrels per day for kerosene-type jet fuel and, through 2004, naphtha-type jet fuel are from EIA's PSA, PSM, and earlier publications (see sources for Table 3.5). These data are converted to trillion Btu by multiplying by the appropriate heat content factors in Table A1. Total jet fuel product supplied is the sum of the data in trillion Btu for kerosene-type and naphtha-type jet fuel.

Kerosene

Product supplied data in thousand barrels per day for kerosene are from Table 3.5, and are converted to trillion Btu by multiplying by the kerosene heat content factor in Table A1.

Liquefied Petroleum Gases (LPG) Total

Prior to the current two months, product supplied data in thousand barrels per day for the component products of LPG (ethane/ethylene, propane/propylene, normal butane/butylene, and isobutane/isobutylene) are from the PSA, PSM, and earlier publications (see sources for Table 3.5). These data are converted to trillion Btu by multiplying by the appropriate heat content factors in Table A1. Total LPG product supplied is the sum of the data in trillion Btu for the LPG component products.

For the current two months, product supplied data in thousand barrels per day for total LPG are from Table 3.5, and are converted to trillion Btu by multiplying by the LPG heat content factors in Table A3.

Lubricants

Product supplied data in thousand barrels per day for lubricants are from Table 3.5, and are converted to trillion Btu by multiplying by the lubricants heat content factor in Table A1.

Motor Gasoline

Product supplied data in thousand barrels per day for motor gasoline are from Table 3.5, and are converted to trillion Btu by multiplying by the motor gasoline heat content factors in Table A3.

Other Petroleum Products

Prior to the current two months, product supplied data in thousand barrels per day for "other" petroleum products are from the PSA, PSM, and earlier publications (see sources for Table 3.5). "Other" petroleum products include pentanes plus, petrochemical feedstocks, special naphthas, still gas (refinery gas), waxes, and miscellaneous products; 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; and beginning in 2005, also includes naphtha-type jet fuel. These data are converted to trillion Btu by multiplying by the appropriate heat content factors in MER Table A1. Total "Other" petroleum product supplied is the sum of the data in trillion Btu for the individual products.

For the current two months, total "Other" petroleum products supplied is calculated by first estimating total petroleum products supplied (product supplied data in thousand barrels per day for total petroleum from Table 3.5 are converted to trillion Btu by multiplying by the total petroleum consumption heat content factor in Table A3), and then subtracting data in trillion Btu (from Table 3.6) for asphalt and road oil, aviation gasoline, distillate fuel oil, jet fuel, kerosene, total LPG, lubricants, motor gasoline, petroleum coke, and residual fuel oil.

Petroleum Coke

Product supplied data in thousand barrels per day for petroleum coke are from Table 3.5, and are converted to trillion Btu by multiplying by the petroleum coke heat content factors in Table A3.

Propane

Product supplied data in thousand barrels per day for propane are from Table 3.5, and are converted to trillion Btu by multiplying by the propane/propylene heat content factor in Table A1.

Residual Fuel Oil

Product supplied data in thousand barrels per day for residual fuel oil are from Table 3.5, and are converted to trillion Btu by multiplying by the residual fuel oil heat content factor in Table A1.

Total Petroleum

Total petroleum products supplied is the sum of the data in trillion Btu for the products (except "Propane") shown in Table 3.6.

Tables 3.7a–3.7c Sources

Petroleum consumption data for 1949–1972 are from the following sources:

1949–1959: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports, and U.S. Energy Information Administration (EIA) estimates.

1960–1972: EIA, State Energy Data System.

Petroleum consumption data beginning in 1973 are derived from data for “petroleum products supplied” from the following sources:

1973–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement Annual*, annual reports.

1976–1980: EIA, Energy Data Reports, *Petroleum Statement Annual*, annual reports.

1981–2015: EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions.

2016 and 2017: EIA, *Petroleum Supply Monthly*, monthly reports.

Beginning in 1973, energy-use allocation procedures by individual product are as follows:

Asphalt and Road Oil

All consumption of asphalt and road oil is assigned to the industrial sector.

Aviation Gasoline

All consumption of aviation gasoline is assigned to the transportation sector.

Distillate Fuel Oil

Distillate fuel oil consumption is assigned to the sectors as follows:

Distillate Fuel Oil, Electric Power Sector

See sources for Table 7.4b. For 1973–1979, electric utility consumption of distillate fuel oil is assumed to be the amount of petroleum (minus small amounts of kerosene and kerosene-type jet fuel deliveries) consumed in gas turbine and internal combustion plants. For 1980–2000, electric utility consumption of distillate fuel oil is assumed to be the amount of light oil (fuel oil nos. 1 and 2, plus small amounts of kerosene and jet fuel) consumed.

Distillate Fuel Oil, End-Use Sectors, Annual Data

The aggregate end-use amount is total distillate fuel oil supplied minus the amount consumed by the electric power sector. The end-use total consumed annually is allocated to the individual end-use sectors (residential, commercial, industrial, and transportation) in proportion to each sector’s share of sales as reported in EIA’s *Fuel Oil and Kerosene Sales (Sales)* report series (DOE/EIA-0535), which is based primarily on data collected by Form EIA-821, “Annual Fuel Oil and Kerosene Sales Report” (previously Form EIA-172). Shares for the current year are based on the most recent Sales report.

Following are notes on the individual sector groupings:

Beginning in 1979, the residential sector sales total is directly from the Sales reports. Through 1978, each year’s sales subtotal of the heating plus industrial category is split into residential, commercial, and industrial (including farm) in proportion to the 1979 shares.

Beginning in 1979, the commercial sector sales total is directly from the Sales reports. Through 1978, each year’s sales subtotal of the heating plus industrial category is split into residential, commercial, and industrial (including farm) in proportion to the 1979 shares.

Beginning in 1979, the industrial sector sales total is the sum of the sales for industrial, farm, oil company, off-highway diesel, and all other uses. Through 1978, each year’s sales subtotal of the heating plus industrial category is split into residential, commercial, and industrial (including farm) in proportion to the 1979 shares, and this estimated industrial portion is added to oil company, off-highway diesel, and all other uses.

The transportation sector sales total is the sum of the sales for railroad, vessel bunkering, on-highway diesel, and military uses for all years.

Distillate Fuel Oil, End-Use Sectors, Monthly Data

Residential sector and commercial sector monthly consumption is estimated by allocating the annual estimates, which are described above, into the months in proportion to each month’s share of the year’s sales of No. 2 heating oil. (For each month of the current year, the residential and commercial consumption increase from the same month in the previous year is based on the percent increase in that month’s No. 2 heating oil sales from the same month in the previous year.) The years’ No. 2 heating oil sales totals are from the following sources: for 1973–1980, the Ethyl Corporation, *Monthly Report of Heating Oil Sales*; for 1981 and 1982, the American Petroleum Institute, *Monthly Report of Heating Oil Sales*; and for 1983 forward, EIA, Form EIA-782A, “Refiners/Gas Plant Operators’ Monthly Petroleum Product Sales Report,” No. 2 Fuel Oil Sales to End Users and for Resale.

The transportation highway use portion is allocated into the months in proportion to each month’s share of the year’s total sales for highway use as reported by the Federal Highway Administration’s Table MF-25, “Private and Commercial Highway Use of Special Fuels by Months.” Beginning in 1994, the sales-for-highway-use data are no longer available as a monthly series; the 1993 data are used for allocating succeeding year’s totals into months.

A distillate fuel oil “balance” is calculated as total distillate fuel oil supplied minus the amount consumed by the electric power sector, residential sector, commercial sector, and for highway use.

Industrial sector monthly consumption is estimated by multiplying each month's distillate fuel oil "balance" by the annual industrial consumption share of the annual distillate fuel oil "balance."

Total transportation sector monthly consumption is estimated as total distillate fuel oil supplied minus the amount consumed by the residential, commercial, industrial, and electric power sectors.

Jet Fuel

Through 1982, small amounts of kerosene-type jet fuel were consumed by the electric power sector. Kerosene-type jet fuel deliveries to the electric power sector as reported on Form FERC-423 (formerly Form FPC-423) were used as estimates of this consumption. Through 2004, all remaining jet fuel (kerosene-type and naphtha-type) is assigned to the transportation sector. Beginning in 2005, kerosene-type jet fuel is assigned to the transportation sector, while naphtha-type jet fuel is classified under "Other Petroleum Products," which is assigned to the industrial sector. (*Note:* Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. Other measurements of consumption by fuel type or sector may differ. For example, jet fuel product supplied may not equal jet fuel consumed by U.S.-flagged aircraft.)

Kerosene

Kerosene product supplied is allocated to the individual end-use sectors (residential, commercial, and industrial) in proportion to each sector's share of sales as reported in EIA's *Fuel Oil and Kerosene Sales (Sales)* report series (DOE/EIA-0535), which is based primarily on data collected by Form EIA-821, "Annual Fuel Oil and Kerosene Sales Report" (previously Form EIA-172).

Beginning in 1979, the residential sector sales total is directly from the Sales reports. Through 1978, each year's sales category called "heating" is allocated to the residential, commercial, and industrial sectors in proportion to the 1979 shares.

Beginning in 1979, the commercial sector sales total is directly from the Sales reports. Through 1978, each year's sales category called "heating" is allocated to the residential, commercial, and industrial sectors in proportion to the 1979 shares.

Beginning in 1979, the industrial sector sales total is the sum of the sales for industrial, farm, and all other uses. Through 1978, each year's sales category called "heating" is allocated to the residential, commercial and industrial sectors in proportion to the 1979 shares, and the estimated industrial (including farm) portion is added to all other uses.

Liquefied Petroleum Gases (LPG)

The annual shares of LPG's total consumption that are estimated to be used by each sector are applied to each month's total LPG consumption to create monthly sector consumption estimates. The annual sector shares are calculated as described below.

Sales of LPG to the residential and commercial sectors combined are converted from thousand gallons per year to thousand barrels per year and are assumed to be the annual consumption of LPG by the combined sectors. Beginning in 2003, residential sector LPG consumption is assumed to equal propane retail sales, with the remainder of the combined residential and commercial LPG consumption being assigned to the commercial sector. Through 2002, residential sector LPG consumption is based on the average of the state residential shares for 2003–2008, with the remainder of the combined residential and commercial LPG consumption being assigned to the commercial sector.

The quantity of LPG sold each year for consumption in internal combustion engines is allocated between the transportation and industrial sectors on the basis of data for special fuels used on highways published by the U.S. Department of Transportation, Federal Highway Administration, in *Highway Statistics*.

LPG consumed annually by the industrial sector is estimated as the difference between LPG total product supplied and the sum of the estimated LPG consumption by the residential, commercial, and transportation sectors. The industrial sector LPG consumption includes LPG used by chemical plants as raw materials or solvents and used in the production of synthetic rubber; refinery fuel use; use as synthetic natural gas feedstock and use in secondary recovery projects; all farm use; LPG sold to gas utility companies for distribution through the mains; and a portion of the use of LPG as an internal combustion engine fuel.

Sources of the annual sales data for creating annual energy shares are:

1973–1982: EIA's "Sales of Liquefied Petroleum Gases and Ethane" reports, based primarily on data collected by Form EIA-174, "Sales of Liquefied Petroleum Gases."

1983: End-use consumption estimates for 1983 are based on 1982 end-use consumption because the collection of data under Form EIA-174 was discontinued after data year 1982.

1984 forward: American Petroleum Institute (API), "Sales of Natural Gas Liquids and Liquefied Refinery Gases," which is based on an LPG sales survey jointly sponsored by API, the Gas Processors Association, and the National Liquefied Petroleum Gas Association. EIA adjusts the data to remove quantities of pentanes plus and to estimate withheld values.

Lubricants

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

Motor Gasoline

The total monthly consumption of motor gasoline is allocated to the sectors in proportion to aggregations of annual sales categories created on the basis of the U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics*, Tables MF-21, MF-24, and MF-25, as follows:

Through 2014, commercial sales are the sum of sales for public non-highway use and miscellaneous use. Beginning in 2015, commercial sales are the sum of sales for public non-highway use, lawn and garden use, and miscellaneous use.

For all years, industrial sales are the sum of sales for agriculture, construction, and "industrial and commercial" use (as classified in the *Highway Statistics*).

Through 2014, transportation sales are the sum of sales for highway use (minus the sales of special fuels, which are primarily diesel fuel and are accounted for in the transportation sector of distillate fuel) and sales for marine use. Beginning in 2015, transportation sales are the sum of sales for highway use (minus the sales of special fuels, which are primarily diesel fuel and are accounted for in the transportation sector of distillate fuel) and sales for boating use and recreational vehicle use.

Petroleum Coke

Portions of petroleum coke are consumed by the electric power sector (see sources for Table 7.4b) and the commercial sector (see sources for Table 7.4c). The remaining petroleum coke is assigned to the industrial sector.

Residual Fuel Oil

Residual fuel oil consumption is assigned to the sectors as follows:

Residual Fuel Oil, Electric Power Sector

See sources for Table 7.4b. For 1973–1979, electric utility consumption of residual fuel oil is assumed to be the amount of petroleum consumed in steam-electric power plants. For 1980–2000, electric utility consumption of residual fuel oil is assumed to be the amount of heavy oil (fuel oil nos. 4, 5, and 6) consumed.

Residual Fuel Oil, End-Use Sectors, Annual Data

The aggregate end-use amount is total residual fuel oil supplied minus the amount consumed by the electric

power sector. The end-use total consumed annually is allocated to the individual end-use sectors (commercial, industrial, and transportation) in proportion to each sector's share of sales as reported in EIA's *Fuel Oil and Kerosene Sales (Sales)* report series (DOE/EIA-535), which is based primarily on data collected by Form EIA-821, "Annual Fuel Oil and Kerosene Sales Report" (previously Form EIA-172). Shares for the current year are based on the most recent Sales report.

Following are notes on the individual sector groupings:

Beginning in 1979, commercial sales data are directly from the Sales reports. Through 1978, each year's sales subtotal of the heating plus industrial category is allocated to the commercial and industrial sectors in proportion to the 1979 shares.

Beginning in 1979, industrial sales data are the sum of sales for industrial, oil company, and all other uses. Through 1978, each year's sales subtotal of the heating plus industrial category is allocated to the commercial and industrial sectors in proportion to the 1979 shares, and the estimated industrial portion is added to oil company and all other uses.

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

Residual Fuel Oil, End-Use Sectors, Monthly Data

Commercial sector monthly consumption is estimated by allocating the annual estimates, which are described above, into the months in proportion to each month's share of the year's sales of No. 2 heating oil. (For each month of the current year, the consumption increase from the same month in the previous year is based on the percent increase in that month's No. 2 heating oil sales from the same month in the previous year.) The years' No. 2 heating oil sales totals are from the following sources: for 1973–1980, the Ethyl Corporation, *Monthly Report of Heating Oil Sales*; for 1981 and 1982, the American Petroleum Institute, *Monthly Report of Heating Oil Sales*; and for 1983 forward, EIA, Form EIA-782A, "Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report," No. 2 Fuel Oil Sales to End Users and for Resale.

A residual fuel oil "balance" is calculated as total residual fuel oil supplied minus the amount consumed by the electric power sector, commercial sector, and by industrial combined-heat-and-power plants (see sources for Table 7.4c).

Transportation sector monthly consumption is estimated by multiplying each month's residual fuel oil "balance" by the annual transportation consumption share of the annual residual fuel oil "balance."

Total industrial sector monthly consumption is estimated as total residual fuel oil supplied minus the amount consumed by the commercial, transportation, and electric power sectors.

Other Petroleum Products

Consumption of all remaining petroleum products is assigned to the industrial sector. Other petroleum products include pentanes plus, petrochemical feedstocks, special naphthas, still gas (refinery gas), waxes, and miscellaneous products. 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. Beginning in 2005, also includes naphtha-type jet fuel.

Table 3.8a Sources

Distillate Fuel Oil

Residential and commercial sector consumption data in thousand barrels per day for distillate fuel oil are from Table 3.7a, and are converted to trillion Btu by multiplying by the distillate fuel oil heat content factors in Table A3.

Kerosene

Residential and commercial sector consumption data in thousand barrels per day for kerosene are from Table 3.7a, and are converted to trillion Btu by multiplying by the kerosene heat content factor in Table A1.

Liquefied Petroleum Gases (LPG)

Residential and commercial sector consumption data in thousand barrels per day for LPG are from Table 3.7a, and are converted to trillion Btu by multiplying by the propane/propylene heat content factor in Table A1.

Motor Gasoline

Commercial sector consumption data in thousand barrels per day for motor gasoline are from Table 3.7a, and are converted to trillion Btu by multiplying by the motor gasoline heat content factors in Table A3.

Petroleum Coke

1949–2003: Commercial sector consumption data in thousand barrels per day for petroleum coke are from Table 3.7a, and are converted to trillion Btu by multiplying by the total petroleum coke heat content factor in Table A1.

2004 forward: Commercial sector consumption data in thousand barrels per day for petroleum coke are from Table 3.7a, and are converted to trillion Btu by multiplying by the marketable petroleum coke heat content factor in Table A1.

Residual Fuel Oil

Commercial sector consumption data in thousand barrels per day for residual fuel oil are from Table 3.7a, and are converted to trillion Btu by multiplying by the residual fuel oil heat content factor in Table A1.

Total Petroleum

Residential sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown

under “Residential Sector” in Table 3.8a. Commercial sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under “Commercial Sector” in Table 3.8a.

Table 3.8b Sources

Asphalt and Road Oil

Industrial sector consumption data in thousand barrels per day for asphalt and road oil are from Table 3.7b, and are converted to trillion Btu by multiplying by the asphalt and road oil heat content factor in Table A1.

Distillate Fuel Oil

Industrial sector consumption data in thousand barrels per day for distillate fuel oil are from Table 3.7b, and are converted to trillion Btu by multiplying by the distillate fuel oil heat content factors in Table A3.

Kerosene

Industrial sector consumption data in thousand barrels per day for kerosene are from Table 3.7b, and are converted to trillion Btu by multiplying by the kerosene heat content factor in Table A1.

Liquefied Petroleum Gases (LPG)

Industrial sector consumption data for LPG are calculated by subtracting LPG consumption data in trillion Btu for the residential (Table 3.8a), commercial (Table 3.8a), and transportation (Table 3.8c) sectors from total LPG consumption (Table 3.6).

Lubricants

Industrial sector consumption data in thousand barrels per day for lubricants are from Table 3.7b, and are converted to trillion Btu by multiplying by the lubricants heat content factor in Table A1.

Motor Gasoline

Industrial sector consumption data in thousand barrels per day for motor gasoline are from Table 3.7b, and are converted to trillion Btu by multiplying by the motor gasoline heat content factors in Table A3.

Other Petroleum Products

Industrial sector “Other” petroleum data are equal to the “Other” petroleum data in Table 3.6.

Petroleum Coke

1949–2003: Industrial sector consumption data in thousand barrels per day for petroleum coke are from Table 3.7b, and are converted to trillion Btu by multiplying by the total petroleum coke heat content factor in Table A1.

2004 forward: Industrial sector consumption data for petroleum coke are calculated by subtracting petroleum coke consumption data in trillion Btu for the commercial (Table 3.8a) and electric power (Table 3.8c) sectors from total petroleum coke consumption (Table 3.6).

Residual Fuel Oil

Industrial sector consumption data in thousand barrels per day for residual fuel oil are from Table 3.7b, and are converted to trillion Btu by multiplying by the residual fuel oil heat content factor in Table A1.

Total Petroleum

Industrial sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown in Table 3.8b.

Table 3.8c Sources

Aviation Gasoline

Transportation sector consumption data in thousand barrels per day for aviation gasoline are from Table 3.7c, and are converted to trillion Btu by multiplying by the aviation gasoline (finished) heat content factor in Table A1.

Distillate Fuel Oil, Electric Power Sector

Electric power sector consumption data in thousand barrels per day for distillate fuel oil are from Table 3.7c, and are converted to trillion Btu by multiplying by the distillate fuel oil heat content factors in Table A3.

Distillate Fuel Oil, Transportation Sector

1949–2008: Transportation sector consumption data in thousand barrels per day for distillate fuel oil are from Table 3.7c, and are converted to trillion Btu by multiplying by the distillate fuel oil heat content factors in Table A3.

2009 forward: Data for refinery and blender net inputs of renewable diesel fuel are from U.S. Energy Information Administration (EIA), *Petroleum Supply Annual (PSA)/Petroleum Supply Monthly (PSM)*, Table 1 (for biomass-based diesel fuel, the data are converted to Btu by multiplying by the biodiesel heat content factor in Table A1; for other renewable diesel fuel, the data are converted to Btu by multiplying by the other renewable diesel fuel heat content factor in Table A1). Transportation sector consumption data from Table 3.7c, minus data for renewable diesel fuel from the PSA/PSM, are converted to Btu by multiplying by the distillate fuel oil heat content factors in Table A3. Total transportation sector distillate fuel oil consumption is the sum of distillate fuel oil (excluding renewable diesel fuel) and renewable diesel fuel.

Jet Fuel

Transportation sector consumption data in thousand barrels per day for kerosene-type jet fuel and, through 2004, naphtha-type jet fuel (see sources for Table 3.7c) are converted to trillion Btu by multiplying by the appropriate

heat content factors in Table A1. Total transportation sector jet fuel consumption is the sum of the data in trillion Btu for kerosene-type and naphtha-type jet fuel. (*Note:* Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term “petroleum consumption” in Tables 3.7a–3.8c. Other measurements of consumption by fuel type or sector may differ. For example, jet fuel product supplied may not equal jet fuel consumed by U.S.-flagged aircraft.)

Liquefied Petroleum Gases (LPG)

Transportation sector consumption data in thousand barrels per day for LPG are from Table 3.7c, and are converted to trillion Btu by multiplying by the propane/propylene heat content factor in Table A1.

Lubricants

Transportation sector consumption data in thousand barrels per day for lubricants are from Table 3.7c, and are converted to trillion Btu by multiplying by the lubricants heat content factor in Table A1.

Motor Gasoline

Transportation sector consumption data in thousand barrels per day for motor gasoline are from Table 3.7c, and are converted to trillion Btu by multiplying by the motor gasoline heat content factors in Table A3.

Petroleum Coke

1949–2003: Electric power sector consumption data in thousand barrels per day for petroleum coke are from Table 3.7c, and are converted to trillion Btu by multiplying by the total petroleum coke heat content factor in Table A1. 2004 forward: Electric power sector consumption data in thousand barrels per day for petroleum coke are from Table 3.7c, and are converted to trillion Btu by multiplying by the marketable petroleum coke heat content factor in Table A1.

Residual Fuel Oil

Transportation and electric power consumption data in thousand barrels per day for residual fuel oil are from Table 3.7c, and are converted to trillion Btu by multiplying by the residual fuel oil heat content factor in Table A1.

Total Petroleum

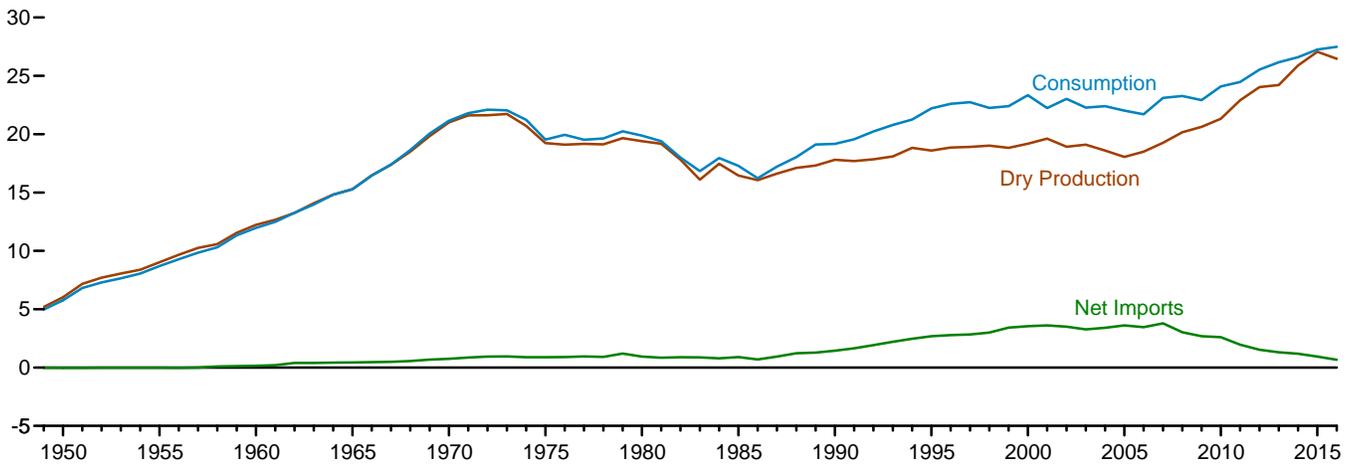
Transportation sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under “Transportation Sector” in Table 3.8c. Electric power sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under “Electric Power Sector” in Table 3.8c.

THIS PAGE INTENTIONALLY LEFT BLANK

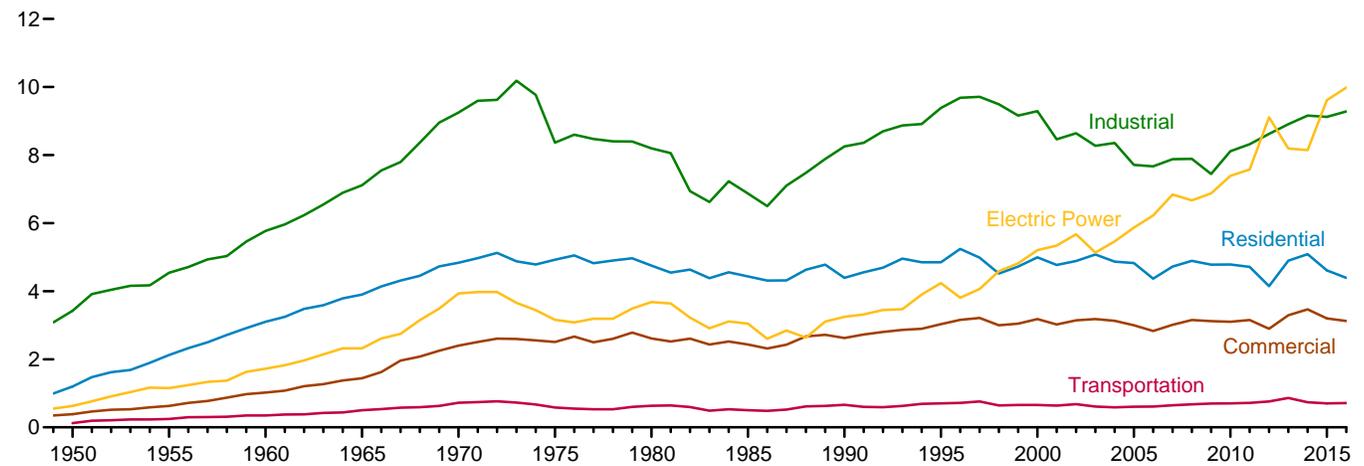
4. Natural Gas

Figure 4.1 Natural Gas
(Trillion Cubic Feet)

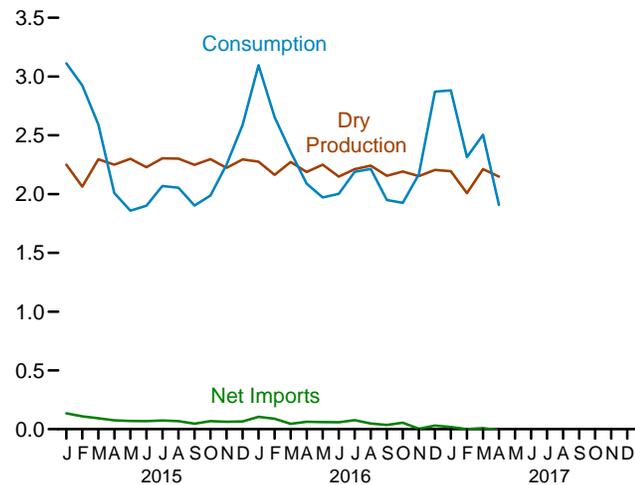
Overview, 1949–2016



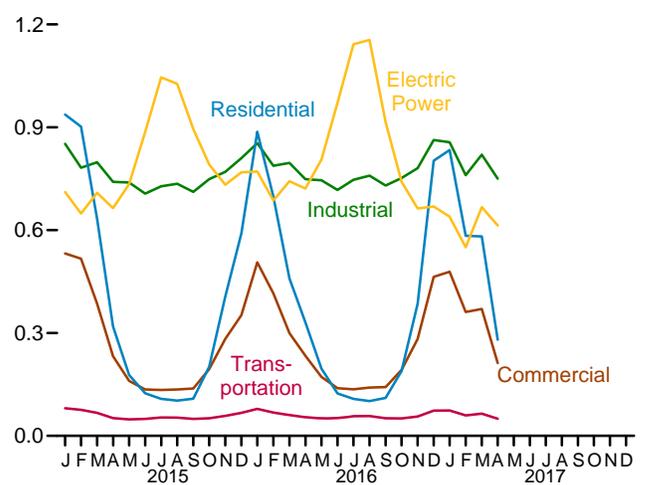
Consumption by Sector, 1949–2016



Overview, Monthly



Consumption by Sector, Monthly



Web Page: <http://www.eia.gov/totalenergy/data/monthly/#naturalgas>.
Sources: Tables 4.1 and 4.3.

Table 4.1 Natural Gas Overview
(Billion Cubic Feet)

	Gross Withdrawals ^a	Marketed Production (Wet) ^b	NGPL Production ^c	Dry Gas Production ^d	Supplemental Gaseous Fuels ^e	Trade			Net Storage Withdrawals ^f	Balancing Item ^g	Consumption ^h
						Imports	Exports	Net Imports			
1950 Total	8,480	i 6,282	260	i 6,022	NA	0	26	-26	-54	-175	5,767
1955 Total	11,720	i 9,405	377	i 9,029	NA	11	31	-20	-68	-247	8,694
1960 Total	15,088	i 12,771	543	i 12,228	NA	156	11	144	-132	-274	11,967
1965 Total	17,963	i 16,040	753	i 15,286	NA	456	26	430	-118	-319	15,280
1970 Total	23,786	i 21,921	906	i 21,014	NA	821	70	751	-398	-228	21,139
1975 Total	21,104	i 20,109	872	i 19,236	NA	953	73	880	-344	-235	19,538
1980 Total	21,870	20,180	777	19,403	155	985	49	936	23	-640	19,877
1985 Total	19,607	17,270	816	16,454	126	950	55	894	235	-428	17,281
1990 Total	21,523	18,594	784	17,810	123	1,532	86	1,447	-513	307	i 19,174
1995 Total	23,744	19,506	908	18,599	110	2,841	154	2,687	415	396	22,207
2000 Total	24,174	20,198	1,016	19,182	90	3,782	244	3,538	829	-306	23,333
2001 Total	24,501	20,570	954	19,616	86	3,977	373	3,604	-1,166	99	22,239
2002 Total	23,941	19,885	957	18,928	68	4,015	516	3,499	467	65	23,027
2003 Total	24,119	19,974	876	19,099	68	3,944	680	3,264	-197	44	22,277
2004 Total	23,970	19,517	927	18,591	60	4,259	854	3,404	-114	461	22,403
2005 Total	23,457	18,927	876	18,051	64	4,341	729	3,612	52	236	22,014
2006 Total	23,535	19,410	906	18,504	66	4,186	724	3,462	-436	103	21,699
2007 Total	24,664	20,196	930	19,266	63	4,608	822	3,785	192	-203	23,104
2008 Total	25,636	21,112	953	20,159	61	3,984	963	3,021	34	2	23,277
2009 Total	26,057	21,648	1,024	20,624	65	3,751	1,072	2,679	-355	-103	22,910
2010 Total	26,816	22,382	1,066	21,316	65	3,741	1,137	2,604	-13	115	24,087
2011 Total	28,479	24,036	1,134	22,902	60	3,469	1,506	1,963	-354	-94	24,477
2012 Total	29,542	25,283	1,250	24,033	61	3,138	1,619	1,519	-9	-66	25,538
2013 Total	29,523	25,562	1,357	24,206	55	2,883	1,572	1,311	546	38	26,155
2014 Total	31,405	27,498	1,608	25,890	60	2,695	1,514	1,181	-254	-283	26,593
2015 January	2,771	2,391	141	2,250	5	279	145	135	741	-18	3,113
February	2,516	2,193	129	2,063	4	254	145	109	757	-10	2,924
March	2,824	2,439	144	2,296	5	257	164	93	201	-3	2,592
April	2,750	2,391	141	2,251	5	205	130	75	-329	8	2,009
May	2,791	2,444	144	2,300	5	204	134	70	-508	-8	1,859
June	2,669	2,368	139	2,229	5	206	138	68	-370	-30	1,901
July	2,758	2,448	144	2,304	5	217	144	73	-291	-23	2,069
August	2,742	2,446	144	2,302	5	214	145	69	-317	-6	2,053
September	2,727	2,390	141	2,249	5	209	163	46	-381	-17	1,903
October	2,801	2,441	144	2,298	5	226	159	68	-339	-44	1,988
November	2,731	2,362	139	2,223	5	218	156	63	17	-57	2,250
December	2,814	2,438	144	2,295	5	227	162	66	272	-49	2,588
Total	32,895	28,753	1,693	27,060	59	2,718	1,784	935	-546	-258	27,249
2016 January	E 2,819	E 2,424	148	E 2,275	5	274	169	105	729	R -18	R 3,096
February	E 2,668	E 2,304	140	E 2,164	5	252	163	89	403	R -7	2,655
March	E 2,823	E 2,431	157	E 2,274	5	241	195	46	57	R -23	R 2,358
April	E 2,682	E 2,340	151	E 2,188	5	241	R 178	R 63	-164	R -3	2,089
May	E 2,779	E 2,411	160	E 2,250	5	248	R 188	R 60	R -327	R -17	1,971
June	E 2,635	E 2,304	156	E 2,148	2	242	R 183	R 59	-222	R 16	R 2,003
July	E 2,710	E 2,372	160	E 2,213	5	265	R 189	R 76	-133	R 29	2,190
August	E 2,742	E 2,394	152	E 2,242	5	R 262	R 214	R 48	-124	43	2,214
September	E 2,640	E 2,303	147	E 2,155	5	R 238	R 202	37	-262	R 15	1,950
October	E 2,718	E 2,352	160	E 2,192	5	R 231	R 176	R 55	-308	R -18	R 1,925
November	E 2,684	E 2,308	155	E 2,153	5	231	R 228	R 3	35	R -29	2,168
December	E 2,748	E 2,354	149	E 2,205	5	R 281	R 251	R 30	676	R -45	R 2,872
Total	E 32,647	E 28,295	1,836	E 26,459	59	R 3,006	R 2,335	R 671	R 359	R -57	R 27,490
2017 January	E 2,732	E 2,345	151	E 2,194	5	R 290	R 272	R 18	675	R -11	R 2,882
February	RE 2,508	RE 2,153	146	RE 2,007	5	R 255	R 255	R -1	285	R 19	R 2,315
March	E 2,771	RE 2,375	163	RE 2,212	5	R 281	R 272	R 9	275	R 3	R 2,504
April	E 2,678	E 2,305	157	E 2,148	5	238	247	-9	-230	-6	1,907
4-Month Total	E 10,690	E 9,178	617	E 8,562	20	1,064	1,046	18	1,005	4	9,608
2016 4-Month Total	E 10,993	E 9,498	597	E 8,901	21	1,007	704	303	1,024	-51	10,198
2015 4-Month Total	10,861	9,414	554	8,860	19	996	584	412	1,370	-24	10,637

^a Gases withdrawn from natural gas, crude oil, coalbed, and shale gas wells. Includes natural gas, natural gas plant liquids, and nonhydrocarbon gases; but excludes lease condensate.

^b Gross withdrawals minus repressuring, nonhydrocarbon gases removed, and vented and flared. See Note 1, "Natural Gas Production," at end of section.

^c Natural gas plant liquids (NGPL) production, gaseous equivalent. This data series was previously called "Extraction Loss." See Note 2, "Natural Gas Plant Liquids Production," at end of section.

^d Marketed production (wet) minus NGPL production.

^e See Note 3, "Supplemental Gaseous Fuels," at end of section.

^f Net withdrawals from underground storage. For 1980–2014, also includes net withdrawals of liquefied natural gas in above-ground tanks. See Note 4, "Natural Gas Storage," at end of section.

^g See Note 5, "Natural Gas Balancing Item," at end of section. Beginning in 1980, excludes transit shipments that cross the U.S.–Canada border (i.e., natural gas delivered to its destination via the other country).

^h See Note 6, "Natural Gas Consumption," at end of section.

ⁱ Through 1979, may include unknown quantities of nonhydrocarbon gases.

^j 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 4.3. See Note 7, "Natural Gas Consumption, 1989–1992," at end of section. R=Revised. E=Estimate. (s)=Less than 0.5 billion cubic feet and greater than -0.5 billion cubic feet. NA=Not available.

Notes: • See Note 8, "Natural Gas Data Adjustments, 1993–2000," at end of section. • Through 1964, all volumes are shown on a pressure base of 14.65 psia (pounds per square inch absolute) at 60° Fahrenheit; beginning in 1965, the pressure base is 14.73 psia at 60° Fahrenheit. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia (except Alaska, for which underground storage is excluded from "Net Storage Withdrawals" through 2012).

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#naturalgas> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: • Imports and Exports: Table 4.2. • Consumption: Table 4.3. • Balancing Item: Calculated as consumption minus dry gas production, supplemental gaseous fuels, net imports, and net storage withdrawals. • All Other Data: 1949–2014—U.S. Energy Information Administration (EIA), *Natural Gas Annual*, annual reports. 2015 forward—EIA, *Natural Gas Monthly*, June 2017, Table 1.

Table 4.2 Natural Gas Trade by Country
(Billion Cubic Feet)

	Imports									Exports ^a				
	Algeria ^b	Canada ^c	Egypt ^b	Mexico ^c	Nigeria ^b	Qatar ^b	Trinidad and Tobago ^b	Other ^{b,d}	Total	Canada ^c	Japan ^b	Mexico ^c	Other ^{b,e}	Total
1950 Total	0	0	0	0	0	0	0	0	0	3	0	23	0	26
1955 Total	0	11	0	(s)	0	0	0	0	11	11	0	20	0	31
1960 Total	0	109	0	47	0	0	0	0	156	6	0	6	0	11
1965 Total	0	405	0	52	0	0	0	0	456	18	0	8	0	26
1970 Total	1	779	0	(s)	0	0	0	0	821	11	44	15	0	70
1975 Total	5	948	0	0	0	0	0	0	953	10	53	9	0	73
1980 Total	86	797	0	102	0	0	0	0	985	(s)	45	4	0	49
1985 Total	24	926	0	0	0	0	0	0	950	(s)	53	2	0	55
1990 Total	84	1,448	0	0	0	0	0	0	1,532	17	53	16	0	86
1995 Total	18	2,816	0	7	0	0	0	0	2,841	28	65	61	0	154
2000 Total	47	3,544	0	12	13	46	99	21	3,782	73	66	106	0	244
2001 Total	65	3,729	0	10	38	23	98	14	3,977	167	66	141	0	373
2002 Total	27	3,785	0	2	8	35	151	8	4,015	189	63	263	0	516
2003 Total	53	3,437	0	0	50	14	378	11	3,944	271	66	343	0	680
2004 Total	120	3,607	0	0	12	12	462	46	4,259	395	62	397	0	854
2005 Total	97	3,700	73	9	8	3	439	11	4,341	358	65	305	0	729
2006 Total	17	3,590	120	13	57	0	389	0	4,186	341	61	322	0	724
2007 Total	77	3,783	115	54	95	18	448	18	4,608	482	47	292	2	822
2008 Total	0	3,589	55	43	12	3	267	15	3,984	559	39	365	0	963
2009 Total	0	3,271	160	28	13	13	236	29	3,751	701	31	338	3	1,072
2010 Total	0	3,280	73	30	42	46	190	81	3,741	739	33	333	32	1,137
2011 Total	0	3,117	35	3	2	91	129	92	3,469	937	18	499	52	1,506
2012 Total	0	2,963	3	(s)	0	34	112	26	3,138	971	14	620	14	1,619
2013 Total	0	2,786	0	1	3	7	70	17	2,883	911	0	661	0	1,572
2014 Total	0	2,635	0	1	0	0	43	16	2,695	770	13	729	3	1,514
2015 January	0	268	0	(s)	0	0	9	2	279	73	0	69	3	145
February	0	242	0	(s)	0	0	10	2	254	78	0	65	3	145
March	0	243	0	(s)	0	0	12	3	257	90	0	74	0	164
April	0	202	0	(s)	0	0	3	0	205	53	0	77	0	130
May	0	203	0	(s)	0	0	2	0	204	45	0	87	3	134
June	0	204	0	(s)	0	0	3	0	206	45	0	91	3	138
July	0	210	0	(s)	0	0	7	0	217	40	3	101	0	144
August	0	203	0	(s)	0	0	11	0	214	41	3	101	0	145
September	0	203	0	(s)	0	0	6	0	209	60	0	100	3	163
October	0	218	0	(s)	0	0	3	6	226	57	3	98	0	159
November	0	211	0	(s)	0	0	4	3	218	61	0	92	3	156
December	0	222	0	(s)	0	0	2	3	227	59	0	100	3	162
Total	0	2,626	0	1	0	0	71	20	2,718	701	8	1,054	20	1,784
2016 January	0	262	0	(s)	0	0	12	0	274	70	0	99	0	169
February	0	242	0	(s)	0	0	10	0	252	62	0	97	3	163
March	0	232	0	(s)	0	0	9	0	241	81	0	103	10	195
April	0	237	0	(s)	0	0	5	0	241	63	0	R 105	10	R 178
May	0	243	0	(s)	0	0	5	0	248	63	0	R 116	10	R 188
June	0	234	0	(s)	0	0	8	0	242	51	0	R 116	16	R 183
July	0	259	0	(s)	0	0	6	0	265	50	0	R 123	16	R 189
August	0	R 254	0	(s)	0	0	8	0	R 262	55	0	R 136	23	R 214
September	0	R 236	0	(s)	0	0	3	0	R 238	61	0	R 127	13	R 202
October	0	R 226	0	(s)	0	0	6	0	R 231	43	0	R 130	3	R 176
November	0	R 222	0	(s)	0	0	6	3	231	75	0	R 134	20	R 228
December	0	R 272	0	(s)	0	0	9	0	R 281	97	11	R 119	23	R 251
Total	0	R 2,918	0	1	0	0	84	3	R 3,006	771	11	R 1,405	148	R 2,335
2017 January	0	R 277	0	(s)	3	0	10	0	R 290	99	11	R 136	27	R 272
February	0	R 246	0	(s)	0	0	8	0	R 255	88	4	R 130	34	R 255
March	0	R 276	0	(s)	0	0	5	0	R 281	100	0	R 140	33	R 272
April	0	233	0	(s)	0	0	5	0	238	81	7	130	29	247
4-Month Total	0	1,032	0	(s)	3	0	29	0	1,064	367	22	535	123	1,046
2016 4-Month Total	0	972	0	(s)	0	0	35	0	1,007	276	0	404	23	704
2015 4-Month Total	0	954	0	(s)	0	0	34	7	996	293	0	285	6	584

^a Includes re-exports.

^b As liquefied natural gas.

^c By pipeline, except for small amounts of: liquefied natural gas (LNG) imported from Canada in 1973, 1977, 1981, and 2013 forward; LNG exported to Canada in 2007 and 2012 forward; compressed natural gas (CNG) imported from Canada in 2014 forward; CNG exported to Canada in 2013 forward; and LNG exported to Mexico beginning in 1998. See Note 9, "Natural Gas Imports and Exports," at end of section.

^d Australia in 1997–2001 and 2004; Brunei in 2002; Equatorial Guinea in 2007; Indonesia in 1986 and 2000; Malaysia in 1999 and 2002–2005; Norway in 2008–2016; Oman in 2000–2005; Peru in 2010 and 2011; United Arab Emirates in 1996–2000; Yemen in 2010–2015; and Other (unassigned) in 2004–2015.

^e Argentina in 2016; Barbados in 2016 and 2017; Brazil in 2010–2012, and 2014–2016; Chile in 2011, 2016, and 2017; China in 2011, 2016, and 2017; Dominican Republic in 2016 and 2017; Egypt in 2015 and 2016; India in 2010–2012, 2016, and 2017; Italy in 2016; Jordan in 2016 and 2017; Kuwait in 2016 and 2017; Malta in 2017; Pakistan in 2017; Portugal in 2012, 2016, and 2017; Russia in 2007; South Korea in 2009–2011, 2016, and 2017; Spain in 2010–2011, 2016, and 2017; Taiwan in 2015; Thailand in 2017; Turkey in 2015–2017; United

Arab Emirates in 2016; and United Kingdom in 2010 and 2011.

R=Revised. (s)=Less than 500 million cubic feet.

Notes: • See Note 9, "Natural Gas Imports and Exports," at end of section.

• Through 1964, all volumes are shown on a pressure base of 14.65 psia (pounds per square inch absolute) at 60° Fahrenheit; beginning in 1965, the pressure base is 14.73 psia at 60° Fahrenheit. • Totals may not equal sum of components due to independent rounding. • U.S. geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#naturalgas> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: • 1949–1954: U.S. Energy Information Administration (EIA) estimates based on Bureau of Mines, Minerals Yearbook, "Natural Gas" chapter. • 1955–1971: Federal Power Commission data. • 1972–1987: EIA, Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas." • 1988–2014: EIA, *Natural Gas Annual*, annual reports. • 2015 forward: EIA, *Natural Gas Monthly*, June 2017, Tables 4 and 5; and U.S. Department of Energy, Office of Fossil Energy, "Natural Gas Imports and Exports."

Table 4.3 Natural Gas Consumption by Sector
(Billion Cubic Feet)

	End-Use Sectors										Electric Power Sector ^{f,g}	Total
	Residential	Commercial ^a	Lease and Plant Fuel	Industrial			Transportation					
				Other Industrial		Total	Pipelines ^d and Distribution ^e	Vehicle Fuel	Total			
				CHP ^b	Non-CHP ^c					Total		
1950 Total	1,198	388	928	(h)	2,498	2,498	3,426	126	NA	126	629	5,767
1955 Total	2,124	629	1,131	(h)	3,411	3,411	4,542	245	NA	245	1,153	8,694
1960 Total	3,103	1,020	1,237	(h)	4,535	4,535	5,771	347	NA	347	1,725	11,967
1965 Total	3,903	1,444	1,156	(h)	5,955	5,955	7,112	501	NA	501	2,321	15,280
1970 Total	4,837	2,399	1,399	(h)	7,851	7,851	9,249	722	NA	722	3,932	21,139
1975 Total	4,924	2,508	1,396	(h)	6,968	6,968	8,365	583	NA	583	3,158	19,538
1980 Total	4,752	2,611	1,026	(h)	7,172	7,172	8,198	635	NA	635	3,682	19,877
1985 Total	4,433	2,432	966	(h)	5,901	5,901	6,867	504	NA	504	3,044	17,281
1990 Total	4,391	2,623	1,236		5,963	5,963	7,018	660	(s)	660	3,245	19,174
1995 Total	4,850	3,031	1,220		6,906	6,906	8,164	700	5	705	4,237	22,207
2000 Total	4,996	3,182	1,151		6,757	6,757	8,142	9,293	642	13	655	23,333
2001 Total	4,771	3,023	1,119		6,035	6,035	7,344	8,463	625	15	640	22,239
2002 Total	4,889	3,144	1,113		6,287	6,287	7,527	8,640	667	15	682	23,027
2003 Total	5,079	3,179	1,122		6,007	6,007	7,150	8,273	591	18	610	22,277
2004 Total	4,869	3,129	1,098		6,066	6,066	7,256	8,354	566	21	587	22,403
2005 Total	4,827	2,999	1,112		5,518	5,518	6,601	7,713	584	23	607	22,014
2006 Total	4,368	2,832	1,142		5,412	5,412	6,527	7,669	584	24	608	21,699
2007 Total	4,722	3,013	1,226		5,604	5,604	6,655	7,881	621	25	646	23,104
2008 Total	4,892	3,153	1,220		5,715	5,715	6,670	7,890	648	26	674	23,277
2009 Total	4,779	3,119	1,275		5,990	5,990	6,167	7,443	670	27	697	22,910
2010 Total	4,782	3,103	1,286		5,797	5,797	6,826	8,112	674	29	703	24,087
2011 Total	4,714	3,155	1,323		5,931	5,931	6,994	8,317	688	30	718	24,577
2012 Total	4,150	2,895	1,396		6,077	6,077	7,226	8,622	731	30	761	25,538
2013 Total	4,897	3,295	1,483		6,255	6,255	7,425	8,909	833	30	863	26,155
2014 Total	5,087	3,466	1,512		6,501	6,501	7,646	9,158	700	35	735	26,593
2015 January	937	532	132	103	616	720	852	77	3	81	711	3,113
February	902	517	121	92	569	661	782	73	3	76	648	2,924
March	633	385	135	99	564	663	798	64	3	67	709	2,592
April	319	232	132	93	516	609	741	49	3	52	664	2,009
May	177	160	135	95	509	604	739	45	3	48	734	1,859
June	124	135	131	101	475	576	706	46	3	49	886	1,901
July	108	134	135	109	483	593	728	50	3	54	1,046	2,069
August	103	135	135	110	490	601	735	50	3	53	1,027	2,053
September	108	138	132	102	477	580	712	46	3	49	895	1,903
October	201	195	135	102	512	614	749	48	3	52	792	1,988
November	406	283	130	103	536	639	770	55	3	58	732	2,250
December	591	352	135	110	565	675	810	64	3	67	769	2,588
Total	4,610	3,199	1,587	1,222	6,313	7,535	9,121	666	39	706	9,613	27,249
2016 January	887	506	E 134	107	613	720	854	E 76	E 3	E 79	771	R 3,096
February	698	416	E 127	100	561	661	788	E 65	E 3	E 68	686	2,655
March	459	R 299	E 134	103	559	662	796	E 68	E 3	E 61	743	R 2,358
April	331	234	E 129	100	520	620	749	E 61	E 3	E 54	721	2,089
May	196	172	E 133	102	510	R 612	R 745	E 48	E 3	E 51	806	1,971
June	R 123	139	E 127	104	486	590	717	E 49	E 3	E 52	971	R 2,003
July	108	136	E 131	108	508	616	747	E 53	E 4	E 57	1,142	2,190
August	R 101	141	E 132	109	518	627	759	E 54	E 4	E 58	1,155	2,214
September	111	R 142	E 127	104	499	603	R 730	E 48	E 4	E 51	915	2,150
October	189	192	E 130	102	520	622	752	E 47	E 4	E 51	741	R 1,925
November	385	R 282	E 127	106	548	R 653	781	E 53	E 4	E 56	664	2,168
December	R 803	R 464	E 130	112	621	733	863	E 70	E 4	E 74	669	R 2,872
Total	4,391	R 3,123	E 1,561	1,257	R 6,462	R 7,719	R 9,281	E 671	E 41	E 712	9,984	R 27,490
2017 January	R 834	R 479	E 129	114	613	727	856	E 70	E 4	E 74	639	R 2,882
February	584	361	E 119	102	R 539	R 641	R 760	E 66	E 3	E 60	550	R 2,315
March	582	370	E 131	108	582	689	R 820	E 61	E 4	E 65	667	R 2,504
April	281	212	E 127	103	520	623	750	E 47	E 4	E 50	614	1,907
4-Month Total	2,280	1,422	E 506	427	2,254	2,681	3,187	E 234	E 14	E 249	2,470	9,608
2016 4-Month Total	2,375	1,454	E 524	410	2,252	2,662	3,186	E 249	E 13	E 262	2,921	10,198
2015 4-Month Total	2,791	1,666	519	388	2,266	2,653	3,173	262	13	275	2,733	10,637

^a All commercial sector fuel use, including that at commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Table 7.4c for CHP fuel use.

^b Industrial combined-heat-and-power (CHP) and a small number of industrial electricity-only plants.

^c All industrial sector fuel use other than that in "Lease and Plant Fuel" and "CHP."

^d Natural gas consumed in the operation of pipelines, primarily in compressors. Beginning in 2009, includes line loss, which is known volumes of natural gas that are the result of leaks, damage, accidents, migration, and/or blow down.

^e Natural gas used as fuel in the delivery of natural gas to consumers. Beginning in 2009, includes line loss, which is known volumes of natural gas that are the result of leaks, damage, accidents, migration, and/or blow down.

^f 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.

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

^h Included in "Non-CHP."

ⁱ 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 7, "Natural Gas Consumption, 1989–1992," at end of section.

R=Revised. E=Estimate. NA=Not available. (s)=Less than 500 million cubic feet.

Notes: • Data are for natural gas, plus a small amount of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of section. • See Note 8, "Natural Gas Data Adjustments, 1993–2000," at end of section.

• See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7. • Through 1964, all volumes are shown on a pressure base of 14.65 psia (pounds per square inch absolute) at 60° Fahrenheit; beginning in 1965, the pressure base is 14.73 psia at 60° Fahrenheit. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#naturalgas> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: • Residential, Commercial, Lease and Plant Fuel, Other Industrial Total and Pipelines and Distribution: 1949–2014—U.S. Energy Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports and unpublished revisions. 2015 forward—EIA, *Natural Gas Monthly (NGM)*, June 2017, Table 2. • Other Industrial CHP: Table 7.4c. • Other Industrial Non-CHP: Calculated as other industrial total minus other industrial CHP. • Industrial Total: Calculated as lease and plant fuel plus other industrial total. • Vehicle Fuel: 1990 and 1991—EIA, NGA 2000, (November 2001), Table 95. 1992–1998—EIA, "Alternatives to Traditional Transportation Fuels 1999" (October 1999), Table 10, and "Alternatives to Traditional Transportation Fuels 2003" (February 2004), Table 10. Data for compressed natural gas and liquefied natural gas in gasoline-equivalent gallons were converted to cubic feet by multiplying by the motor gasoline conversion factor (see Table A3) and dividing by the natural gas end-use sectors conversion factor (see Table A4). 1999–2014—EIA, NGA, annual reports. 2015 forward—EIA, NGM, June 2017, Table 2. • Transportation Total: Calculated as pipelines and distribution plus vehicle fuel. • Electric Power Sector: Table 7.4b. • Total Consumption: Calculated as the sum of residential, commercial, industrial total, transportation total, and electric power sector.

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

	Natural Gas in Underground Storage, End of Period			Change in Working Gas From Same Period Previous Year		Storage Activity		
	Base Gas	Working Gas	Total ^a	Volume	Percent	Withdrawals	Injections	Net ^{b,c}
1950 Total	NA	NA	NA	NA	NA	175	230	-54
1955 Total	863	505	1,368	40	8.7	437	505	-68
1960 Total	NA	NA	2,184	NA	NA	713	844	-132
1965 Total	1,848	1,242	3,090	83	7.2	960	1,078	-118
1970 Total	2,326	1,678	4,004	257	18.1	1,459	1,857	-398
1975 Total	3,162	2,212	5,374	162	7.9	1,760	2,104	-344
1980 Total	3,642	2,655	6,297	-99	-3.6	1,910	1,896	14
1985 Total	3,842	2,607	6,448	-270	-9.4	2,359	2,128	231
1990 Total	3,868	3,068	6,936	555	22.1	1,934	2,433	-500
1995 Total	4,349	2,153	6,503	-453	-17.4	2,974	2,566	408
2000 Total	4,352	1,719	6,071	-806	-31.9	3,498	2,684	814
2001 Total	4,301	2,904	7,204	1,185	68.9	2,309	3,464	-1,156
2002 Total	4,340	2,375	6,715	-528	-18.2	3,138	2,670	468
2003 Total	4,303	2,563	6,866	187	7.9	3,099	3,292	-193
2004 Total	4,201	2,696	6,897	133	5.2	3,037	3,150	-113
2005 Total	4,200	2,635	6,835	-61	-2.3	3,057	3,002	55
2006 Total	4,211	3,070	7,281	435	16.5	2,493	2,924	-431
2007 Total	4,234	2,879	7,113	-191	-6.2	3,325	3,133	192
2008 Total	4,232	2,840	7,073	-39	-1.4	3,374	3,340	34
2009 Total	4,277	3,130	7,407	290	10.2	2,966	3,315	-349
2010 Total	4,301	3,111	7,412	-19	-6	3,274	3,291	-17
2011 Total	4,302	3,462	7,764	351	11.3	3,074	3,422	-348
2012 Total	4,372	3,413	7,785	-49	-1.4	2,818	2,825	-7
2013 Total	4,365	2,890	7,255	-523	-15.3	3,702	3,156	546
2014 Total	4,365	3,141	7,506	251	8.7	3,586	3,839	-253
2015 January	4,361	2,415	6,776	490	25.5	795	70	725
February	4,360	1,674	6,034	474	39.5	803	62	742
March	4,361	1,480	5,841	623	72.6	376	182	193
April	4,360	1,802	6,162	736	69.0	84	405	-321
May	4,363	2,296	6,659	748	48.3	44	542	-497
June	4,367	2,656	7,023	650	32.4	68	430	-362
July	4,372	2,933	7,305	533	22.2	96	379	-283
August	4,364	3,250	7,614	482	17.4	85	394	-309
September	4,365	3,622	7,987	435	13.7	63	435	-372
October	4,365	3,951	8,316	363	10.1	70	401	-331
November	4,368	3,935	8,303	508	14.8	214	201	12
December	4,363	3,675	8,038	534	17.0	403	138	264
Total	4,363	3,675	8,038	534	17.0	3,101	3,639	-538
2016 January	4,361	2,947	7,307	532	22.0	795	66	729
February	4,361	2,543	6,904	869	51.9	515	111	403
March	4,352	2,495	6,847	1,015	68.6	272	215	57
April	4,355	2,654	7,009	852	47.3	130	294	-164
May	4,357	2,975	7,332	679	29.5	R 75	402	R -327
June	4,360	3,194	7,554	539	20.3	94	316	-222
July	4,360	3,327	7,686	394	13.4	150	283	-133
August	4,360	3,450	7,810	200	6.2	162	286	-124
September	4,360	3,714	8,073	91	2.5	88	351	-262
October	4,362	4,021	8,383	71	1.8	78	387	-308
November	4,364	3,985	8,348	50	1.3	213	178	35
December	4,371	3,305	7,675	-370	-10.1	763	87	676
Total	4,371	3,305	7,675	-370	-10.1	R 3,335	2,977	R 359
2017 January	4,370	2,631	7,001	-316	-10.7	776	101	675
February	4,369	2,346	6,715	-197	-7.7	416	131	285
March	4,370	2,072	R 6,441	-423	R -17.0	R 443	R 167	275
April	4,371	2,301	6,671	-353	-13.3	111	341	-230
4-Month Total	---	---	---	---	---	1,746	741	1,005
2016 4-Month Total	---	---	---	---	---	1,711	687	1,024
2015 4-Month Total	---	---	---	---	---	2,058	719	1,339

^a For total underground storage capacity at the end of each calendar year, see Note 4, "Natural Gas Storage," at end of section.

^b For 1980–2015, data differ from those shown on Table 4.1, which includes liquefied natural gas storage for that period.

^c Positive numbers indicate that withdrawals are greater than injections. Negative numbers indicate that injections are greater than withdrawals. Net withdrawals or injections may not equal the difference between applicable ending stocks. See Note 4, "Natural Gas Storage," at end of section.

R=Revised. -- =Not applicable. NA=Not available.

Notes: • Through 1964, all volumes are shown on a pressure base of 14.65 psia (pounds per square inch absolute) at 60° Fahrenheit; beginning in 1965, the pressure base is 14.73 psia at 60° Fahrenheit. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia (except Alaska, which is excluded through 2012).

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#naturalgas> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data

beginning in 1973.

Sources: • **Storage Activity: 1949–1975**—U.S. Energy Information Administration (EIA), *Natural Gas Annual 1994, Volume 2*, Table 9. **1976–1979**—EIA, *Natural Gas Production and Consumption 1979*, Table 1. **1980–1995**—EIA, *Historical Natural Gas Annual 1930 Through 2000*, Table 11. **1996–2014**—EIA, *Natural Gas Monthly (NGM)*, monthly issues. **2015 forward**—EIA, NGM, June 2017, Table 8. • **All Other Data: 1954–1974**—American Gas Association, *Gas Facts*, annual issues. **1975 and 1976**—Federal Energy Administration (FEA), Form FEA-G318-M-0, "Underground Gas Storage Report," and Federal Power Commission (FPC), Form FPC-8, "Underground Gas Storage Report." **1977 and 1978**—EIA, Form FEA-G318-M-0, "Underground Gas Storage Report," and Federal Energy Regulatory Commission (FERC), Form FERC-8, "Underground Gas Storage Report." **1979–1995**—EIA, Form EIA-191, "Underground Gas Storage Report," and FERC, Form FERC-8, "Underground Gas Storage Report." **1996–2014**—EIA, NGA, annual reports. **2015 forward**—EIA, NGM, June 2017, Table 8.

Natural Gas

Note 1. Natural Gas Production. Final annual data are from the U.S. Energy Information Administration's (EIA) *Natural Gas Annual (NGA)*.

Data for the two most recent months presented are estimated. Some of the data for earlier months are also estimated or computed. For a discussion of computation and estimation procedures, see EIA's *Natural Gas Monthly (NGM)*.

Monthly data are considered preliminary until after publication of the NGA. Preliminary monthly data are gathered from reports to the Interstate Oil Compact Commission and the U.S. Minerals Management Service. Volumetric data are converted, as necessary, to a standard pressure base of 14.73 psia (pounds per square inch absolute) at 60° Fahrenheit. Unless there are major changes, data are not revised until after publication of the NGA.

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

Note 2. Natural Gas Plant Liquids Production. Natural gas plant liquids (NGPL) production is the reduction in volume of natural gas resulting from the removal of natural gas liquid constituents at natural gas processing plants—these natural gas plant liquids are transferred to petroleum supply.

Annual data are from EIA's *Natural Gas Annual (NGA)*, where they are estimated on the basis of the type and quantity of liquid products extracted from the gas stream and the calculated volume of such products at standard conditions. For a detailed explanation of the calculations used to derive estimated NGPL production, see the NGA.

Through 2006, preliminary monthly data are estimated on the basis of NGPL production as an annual percentage of marketed production. Beginning in 2007, preliminary monthly data are estimated on the basis of NGPL production reported on Form EIA-816, "Monthly Natural Gas Liquids Report."

Monthly data are revised and considered final after publication of the NGA. Final monthly data are estimated by allocating annual NGPL production data to the months on the basis of total natural gas marketed production data from the NGA.

Note 3. Supplemental Gaseous Fuels. Supplemental gaseous fuels are any substances that, introduced into or commingled with natural gas, increase the volume available for disposition. Such substances include, but are not limited to, propane-air, refinery gas, coke oven gas, still gas, manufactured gas, biomass gas, and air or inert gases added for Btu stabilization.

Annual data beginning with 1980 are from EIA's *Natural Gas Annual (NGA)*. Unknown quantities of supplemental gaseous fuels are included in consumption data for 1979 and earlier years. Monthly data are considered preliminary until after publication of the NGA. Monthly estimates are based on

the annual ratio of supplemental gaseous fuels to the sum of dry gas production, net imports, and net withdrawals from storage. The ratio is applied to the monthly sum of the three elements to compute a monthly supplemental gaseous fuels figure.

Although the total amount of supplemental gaseous fuels consumed is known for 1980 forward, the amount consumed by each energy-use sector is estimated by EIA. These estimates are used to create natural gas (without supplemental gaseous fuels) data for Tables 1.3, 2.2, 2.3, 2.4, and 2.6 (note: to avoid double-counting in these tables, supplemental gaseous fuels are accounted for in their primary energy category: "Coal," "Petroleum," or "Biomass"). It is assumed that supplemental gaseous fuels are commingled with natural gas consumed by the residential, commercial, other industrial, and electric power sectors, but are not commingled with natural gas used for lease and plant fuel, pipelines and distribution, or vehicle fuel. The estimated consumption of supplemental gaseous fuels by each sector (residential, commercial, other industrial, and electric power) is calculated as that sector's natural gas consumption (see Table 4.3) divided by the sum of natural gas consumption by the residential, commercial, other industrial, and electric power sectors (see Table 4.3), and then multiplied by total supplemental gaseous fuels consumption (see Table 4.1). For estimated sectoral consumption of supplemental gaseous fuels in Btu, the residential, commercial, and other industrial values in cubic feet are multiplied by the "End-Use Sectors" conversion factors (see Table A4), and the electric power values in cubic feet are multiplied by the "Electric Power Sector" conversion factors (see Table A4). Total supplemental gaseous fuels consumption in Btu is calculated as the sum of the Btu values for the sectors.

Note 4. Natural Gas Storage. Natural gas in storage at the end of a reporting period may not equal the quantity derived by adding or subtracting net injections or withdrawals from the quantity in storage at the end of the previous period. Injection and withdrawal data from the FERC-8/EIA-191 survey may be adjusted to correspond to data from Form EIA-176 for publication of EIA's *Natural Gas Annual (NGA)*.

Total underground storage capacity, which includes both active and inactive fields, at the end of each calendar year since 1975 (first year data were available), in billion cubic feet, was:

1975 ...	6,280	1989 ...	8,120	2003 ...	8,206
1976 ...	6,544	1990 ...	7,794	2004 ...	8,255
1977 ...	6,678	1991 ...	7,993	2005 ...	8,268
1978 ...	6,890	1992 ...	7,932	2006 ...	8,330
1979 ...	6,929	1993 ...	7,989	2007 ...	8,402
1980 ...	7,434	1994 ...	8,043	2008 ...	8,499
1981 ...	7,805	1995 ...	7,953	2009 ...	8,656
1982 ...	7,915	1996 ...	7,980	2010 ...	8,764
1983 ...	7,985	1997 ...	8,332	2011 ...	8,849
1984 ...	8,043	1998 ...	8,179	2012 ...	8,991
1985 ...	8,087	1999 ...	8,229	2013 ...	9,173
1986 ...	8,145	2000 ...	8,241	2014 ...	9,233
1987 ...	8,124	2001 ...	8,182	2015 ...	9,231
1988 ...	8,124	2002 ...	8,207	2016 ...	^P 9,239

P=Preliminary

Through 1990, monthly underground storage data are collected from the Federal Energy Regulatory Commission Form FERC-8 (interstate data) and EIA Form EIA-191 (intrastate data). Beginning in 1991, all data are collected on the revised Form EIA-191. Injection and withdrawal data from the EIA-191 survey may be adjusted to correspond to data from Form EIA-176 following publication of EIA's NGA.

The final monthly and annual storage and withdrawal data for 1980–2015 include both underground and liquefied natural gas (LNG) storage. Annual data on LNG additions and withdrawals are from Form EIA-176. Monthly data are estimated by computing the ratio of each month's underground storage additions and withdrawals to annual underground storage additions and withdrawals and applying the ratio to the annual LNG data.

Note 5. Natural Gas Balancing Item. The balancing item for natural gas represents the difference between the sum of the components of natural gas supply and the sum of components of natural gas disposition. The differences may be due to quantities lost or to the effects of data reporting problems. Reporting problems include differences due to the net result of conversions of flow data metered at varying temperature and pressure bases and converted to a standard temperature and pressure base; the effect of variations in company accounting and billing practices; differences between billing cycle and calendar period time frames; and imbalances resulting from the merger of data reporting systems that vary in scope, format, definitions, and type of respondents.

Note 6. Natural Gas Consumption. Natural gas consumption statistics include data for the following: "Residential Sector": residential deliveries; "Commercial Sector": commercial deliveries, including to commercial combined-heat-and-power (CHP) and commercial electricity-only plants; "Industrial Sector": lease and plant fuel use, and other industrial deliveries, including to industrial CHP and industrial electricity-only plants; "Transportation Sector": pipelines and distribution use, and vehicle fuel use; and "Electric Power Sector": electric utility and independent power producer use.

Final data for series other than "Other Industrial CHP" and "Electric Power Sector" are from EIA's *Natural Gas Annual* (NGA). Monthly data are considered preliminary until after publication of the NGA. For more detailed information on the methods of estimating preliminary and final monthly data, see EIA's *Natural Gas Monthly*.

Note 7. Natural Gas Consumption, 1989–1992. Prior to 1993, deliveries to nonutility generators were not separately collected from natural gas companies on Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition." As a result, for 1989–1992, those volumes are probably included in both the industrial and electric power sectors and double-counted in total consumption. In 1993, 0.28 trillion cubic feet was reported as delivered to nonutility generators.

Note 8. Natural Gas Data Adjustments, 1993–2000. For 1993–2000, the original data for natural gas delivered to industrial consumers (now "Other Industrial" in Table 4.3) included deliveries to both industrial users and independent power producers (IPPs). These data were adjusted to remove the estimated consumption at IPPs from "Other Industrial" and include it with electric utilities under "Electric Power Sector." (To estimate the monthly IPP consumption, the monthly pattern for Other Industrial CHP in Table 4.3 was used.)

For 1996–2000, monthly data for several natural gas series shown in EIA's Natural Gas Navigator (see http://www.eia.gov/dnav/ng/ng_cons_sum_dcu_nus_m.htm) were not reconciled and updated to be consistent with the final annual data in EIA's *Natural Gas Annual*. In the *Monthly Energy Review*, monthly data for these series were adjusted so that the monthly data sum to the final annual values. The Table 4.1 data series (and years) that were adjusted are: Gross Withdrawals (1996, 1997), Marketed Production (1997), NGPL Production (1997, 1998, 2000), Dry Gas Production (1996, 1997), Supplemental Gaseous Fuels (1997–2000), Balancing Item (1997–2000), and Total Consumption (1997–2000). The Table 4.3 data series (and years) that were adjusted are: Lease and Plant Fuel (1997–2000), Total Industrial (1997–2000), Pipelines and Distribution (2000), Total Transportation (2000), and Total Consumption (1997–2000).

Note 9. Natural Gas Imports and Exports. The United States imports natural gas via pipeline from Canada and Mexico; and imports liquefied natural gas (LNG) via tanker from Algeria, Australia, Brunei, Egypt, Equatorial Guinea, Indonesia, Malaysia, Nigeria, Norway, Oman, Peru, Qatar, Trinidad and Tobago, the United Arab Emirates, and Yemen. In addition, small amounts of LNG arrived from Canada in 1973 (667 million cubic feet), 1977 (572 million cubic feet), 1981 (6 million cubic feet), 2013 (555 million cubic feet), 2014 (132 million cubic feet), 2015 (437 million cubic feet), 2016 (924 million cubic feet), and 2017 (220 million cubic feet). Also, small amounts of compressed natural gas (CNG) were imported from Canada in 2014 forward. The United States exports natural gas via pipeline to Canada and Mexico; and exports LNG via tanker to Argentina, Barbados, Brazil, Chile, China, Dominican Republic, Egypt, India, Italy, Japan, Jordan, Kuwait, Malta, Parkistan, Portugal, Russia, South Korea, Spain, Taiwan, Thailand, Turkey, United Arab Emirates, and United Kingdom. Also, small amounts of LNG have gone to Mexico since 1998 and to Canada in 2007 and 2012 forward. Small amounts of CNG have been exported to Canada since 2013.

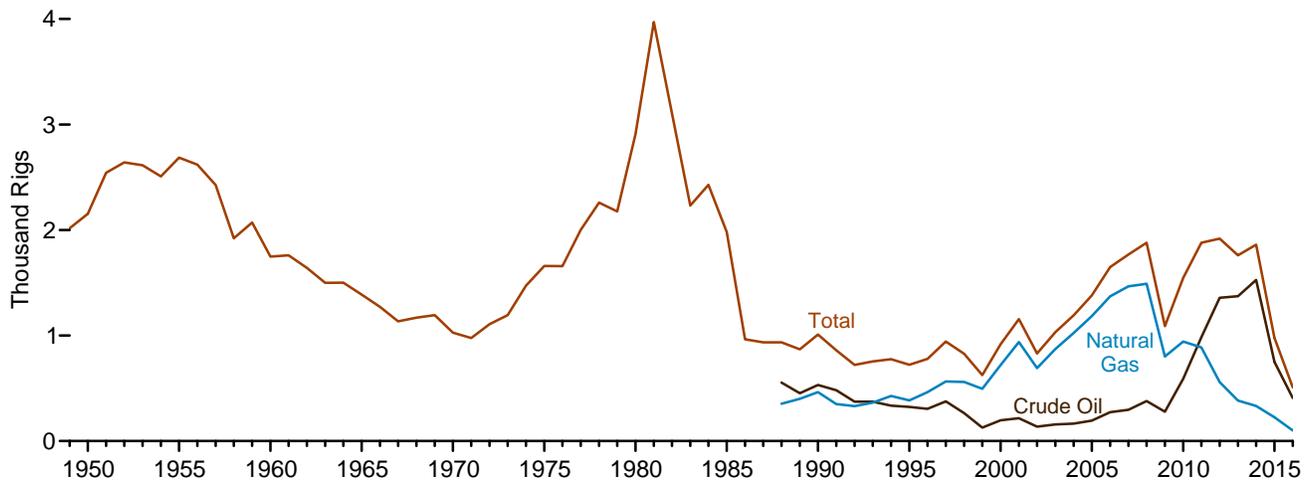
Annual and final monthly data are from the annual EIA Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas," which requires data to be reported by month for the calendar year.

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

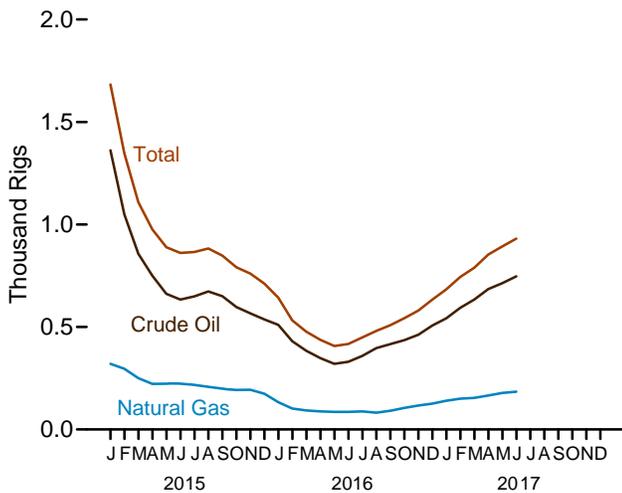
5. Crude Oil and Natural Gas Resource Development

Figure 5.1 Crude Oil and Natural Gas Resource Development Indicators

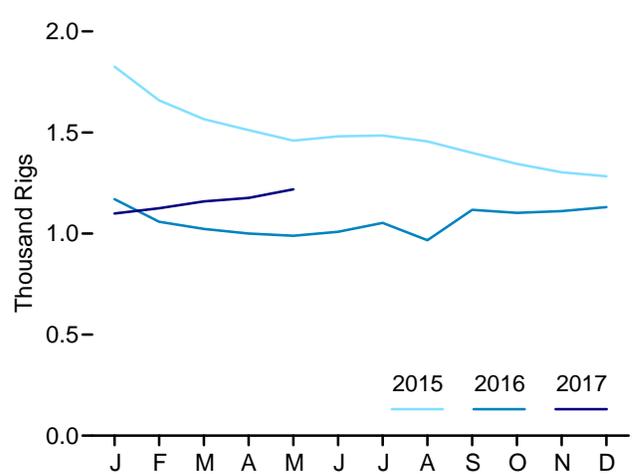
Rotary Rigs in Operation by Type, 1949–2016



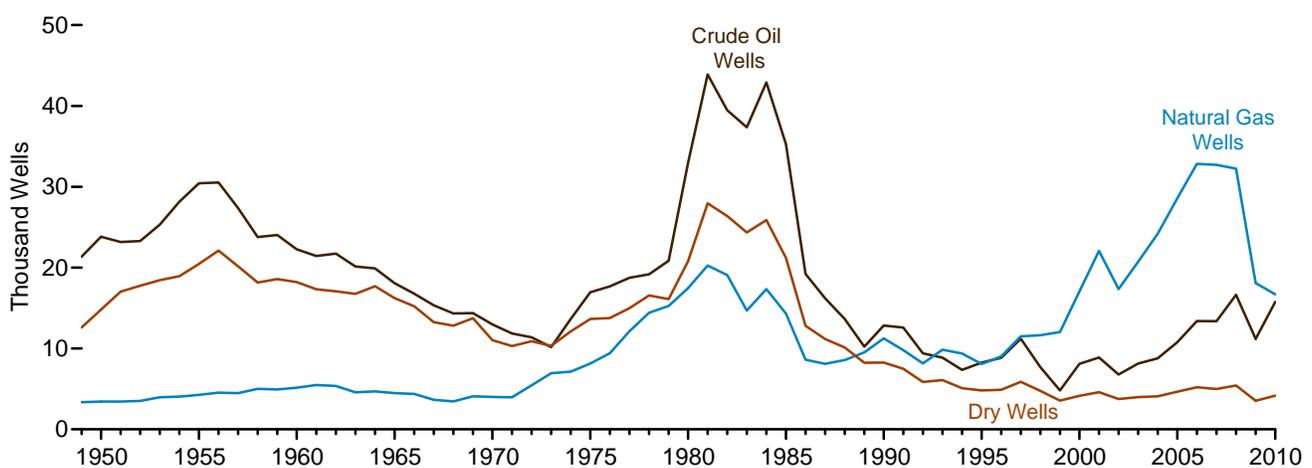
Rotary Rigs in Operation by Type, Monthly



Active Well Service Rig Count, Monthly



Total Wells Drilled by Type, 1949–2010



Web Page: <http://www.eia.gov/totalenergy/data/monthly/#crude>.
Sources: Tables 5.1 and 5.2.

Table 5.1 Crude Oil and Natural Gas Drilling Activity Measurements
(Number of Rigs)

	Rotary Rigs in Operation ^a					Active Well Service Rig Count ^c
	By Site		By Type		Total ^b	
	Onshore	Offshore	Crude Oil	Natural Gas		
1950 Average	NA	NA	NA	NA	2,154	NA
1955 Average	NA	NA	NA	NA	2,686	NA
1960 Average	NA	NA	NA	NA	1,748	NA
1965 Average	NA	NA	NA	NA	1,388	NA
1970 Average	NA	NA	NA	NA	1,028	NA
1975 Average	1,554	106	NA	NA	1,660	2,486
1980 Average	2,678	231	NA	NA	2,909	4,089
1985 Average	1,774	206	NA	NA	1,980	4,716
1990 Average	902	108	532	464	1,010	3,658
1995 Average	622	101	323	385	723	3,041
2000 Average	778	140	197	720	918	2,692
2001 Average	1,003	153	217	939	1,156	2,267
2002 Average	717	113	137	691	830	1,830
2003 Average	924	108	157	872	1,032	1,967
2004 Average	1,095	97	165	1,025	1,192	2,064
2005 Average	1,287	94	194	1,184	1,381	2,222
2006 Average	1,559	90	274	1,372	1,649	2,364
2007 Average	1,695	72	297	1,466	1,768	2,388
2008 Average	1,814	65	379	1,491	1,879	2,515
2009 Average	1,046	44	278	801	1,089	1,722
2010 Average	1,514	31	591	943	1,546	1,854
2011 Average	1,846	32	984	887	1,879	2,075
2012 Average	1,871	48	1,357	558	1,919	2,113
2013 Average	1,705	56	1,373	383	1,761	2,064
2014 Average	1,804	57	1,527	333	1,862	2,024
2015 January	1,629	53	1,362	320	1,683	1,826
February	1,296	52	1,050	296	1,348	1,659
March	1,066	43	857	250	1,109	1,566
April	943	33	750	222	976	1,512
May	857	32	662	223	889	1,460
June	833	28	634	224	861	1,481
July	835	31	649	216	866	1,485
August	849	34	673	209	883	1,456
September	816	32	650	198	848	1,399
October	758	33	597	193	791	1,345
November	729	31	566	194	760	1,303
December	686	24	537	174	711	1,283
Average	943	35	750	226	978	1,481
2016 January	615	28	510	133	643	1,170
February	506	26	430	102	532	1,058
March	451	27	384	93	477	1,023
April	411	26	348	88	437	1,000
May	384	24	320	86	407	989
June	396	21	330	86	417	1,009
July	429	20	359	88	449	1,053
August	464	17	397	82	481	967
September	491	18	416	91	509	1,117
October	521	23	436	105	543	1,102
November	558	22	462	117	580	1,111
December	611	23	507	126	634	1,131
Average	486	23	408	100	509	1,061
2017 January	659	24	542	140	683	1,099
February	724	20	593	150	744	1,125
March	770	19	634	154	789	1,159
April	833	20	685	166	853	1,176
May	871	22	714	178	893	1,219
June	909	22	747	184	931	NA
6-Month Average	798	21	656	162	819	NA
2016 6-Month Average	458	25	385	98	483	1,042
2015 6-Month Average	1,115	40	896	257	1,155	1,584

^a Rotary rigs in operation are reported weekly on Fridays. Monthly data are averages of 4- or 5-week reporting periods. Multi-month data are averages of the reported weekly data over the covered months. Annual data are averages of 52- or 53-week reporting periods. Published data are rounded to the nearest whole number.

^b 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. Therefore, "Total" values may not equal the sum of "Crude Oil" and "Natural Gas." "Total" values may not equal the sum of "Onshore" and "Offshore" due to independent rounding.

^c The number of rigs doing true workovers (where tubing is pulled from the well), or doing rod string and pump repair operations, and that are, on average, crewed and working every day of the month.

R=Revised. NA=Not available.
 Note: Geographic coverage is the 50 states and the District of Columbia.
 Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#crude> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
 Sources: • **Rotary Rigs in Operation:** Baker Hughes, Inc., Houston, TX, "North America Rig Count," used with permission. See <http://phx.corporate-ir.net/phoenix.zhtml?c=79687&p=irol-reportsother>. • **Active Well Service Rig Count:** Assoc. of Energy Service Companies, Friendswood, TX. See http://www.aesc.net/AESC/Industry_Resources/Rig_Counts/AESC/Industry_Resources/Well_Service_Rig_Count.aspx?hkey=0f7d9987-7819-421e-9c4c-7e7d9323ab3c.

Table 5.2 Crude Oil and Natural Gas Exploratory and Development Wells

	Wells Drilled												Total Footage Drilled Thousand Feet
	Exploratory				Development				Total				
	Crude Oil	Natural Gas	Dry	Total	Crude Oil	Natural Gas	Dry	Total	Crude Oil	Natural Gas	Dry	Total	
	Number												
1950 Total	1,583	431	8,292	10,306	22,229	3,008	6,507	31,744	23,812	3,439	14,799	42,050	157,358
1955 Total	2,236	874	11,832	14,942	28,196	3,392	8,620	40,208	30,432	4,266	20,452	55,150	226,182
1960 Total	1,321	868	9,515	11,704	20,937	4,281	8,697	33,915	22,258	5,149	18,212	45,619	192,176
1965 Total	946	515	8,005	9,466	17,119	3,967	8,221	29,307	18,065	4,482	16,226	38,773	174,882
1970 Total	757	477	6,162	7,396	12,211	3,534	4,869	20,614	12,968	4,011	11,031	28,010	138,556
1975 Total	982	1,248	7,129	9,359	15,966	6,879	6,517	29,362	16,948	8,127	13,646	38,721	180,494
1980 Total	1,777	2,099	9,081	12,957	31,182	15,362	11,704	58,248	32,959	17,461	20,785	71,205	316,943
1985 Total	1,680	1,200	8,954	11,834	33,581	13,124	12,257	58,962	35,261	14,324	21,211	70,796	314,409
1990 Total	778	811	3,652	5,241	12,061	10,435	4,593	27,089	12,839	11,246	8,245	32,330	156,044
1995 Total	570	558	2,024	3,152	7,678	7,524	2,790	17,992	8,248	8,082	4,814	21,144	117,156
2000 Total	288	657	1,341	2,286	7,802	16,394	2,805	27,001	8,090	17,051	4,146	29,287	144,425
2001 Total	357	1,052	1,733	3,142	8,531	21,020	2,865	32,416	8,888	22,072	4,598	35,558	180,141
2002 Total	258	844	1,282	2,384	6,517	16,498	2,472	25,487	6,775	17,342	3,754	27,871	145,159
2003 Total	350	997	1,297	2,644	7,779	19,725	2,685	30,189	8,129	20,722	3,982	32,833	177,239
2004 Total	383	1,671	1,350	3,404	8,406	22,515	2,732	33,653	8,789	24,186	4,082	37,057	204,279
2005 Total	539	2,141	1,462	4,142	10,240	26,449	3,191	39,880	10,779	28,590	4,653	44,022	240,307
2006 Total	646	2,456	1,547	4,649	12,739	30,382	3,659	46,780	13,385	32,838	5,206	51,429	282,675
2007 Total	808	2,794	1,582	5,184	12,563	29,925	3,399	45,887	13,371	32,719	4,981	51,071	301,515
2008 January	88	208	144	440	1,111	2,321	272	3,704	1,199	2,529	416	4,144	25,306
February	82	230	107	419	1,080	2,261	247	3,588	1,162	2,491	354	4,007	24,958
March	66	216	127	409	1,132	2,363	271	3,766	1,198	2,579	398	4,175	26,226
April	68	189	130	387	1,177	2,415	281	3,873	1,245	2,604	411	4,260	26,920
May	88	206	124	418	1,317	2,449	240	4,006	1,405	2,655	364	4,424	27,947
June	63	195	139	397	1,428	2,540	299	4,267	1,491	2,735	438	4,664	28,739
July	79	163	171	413	1,439	2,695	344	4,478	1,518	2,858	515	4,891	29,140
August	67	165	144	376	1,448	2,735	379	4,562	1,515	2,900	523	4,938	28,942
September	52	166	164	382	1,488	2,667	355	4,510	1,540	2,833	519	4,892	28,960
October	80	243	173	496	1,549	2,841	373	4,763	1,629	3,084	546	5,259	31,505
November	97	192	160	449	1,361	2,418	334	4,113	1,458	2,610	494	4,562	29,276
December	67	172	132	371	1,206	2,196	313	3,715	1,273	2,368	445	4,086	26,222
Total	897	2,345	1,715	4,957	15,736	29,901	3,708	49,345	16,633	32,246	5,423	54,302	334,141
2009 January	80	171	99	350	1,192	2,253	250	3,695	1,272	2,424	349	4,045	28,077
February	62	125	88	275	991	1,925	195	3,111	1,053	2,050	283	3,386	25,440
March	59	146	88	293	867	1,771	210	2,848	926	1,917	298	3,141	25,304
April	36	68	93	197	755	1,396	205	2,356	791	1,464	298	2,553	21,406
May	47	90	80	217	584	1,136	156	1,876	631	1,226	236	2,093	20,055
June	44	91	75	210	804	1,297	189	2,290	848	1,388	264	2,500	16,301
July	40	100	101	241	789	1,188	217	2,194	829	1,288	318	2,435	13,543
August	49	84	88	221	867	1,372	207	2,446	916	1,456	295	2,667	15,970
September	61	71	96	228	945	1,170	207	2,322	1,006	1,241	303	2,550	15,547
October	55	79	78	212	966	1,167	222	2,355	1,021	1,246	300	2,567	17,261
November	38	83	85	206	931	1,133	199	2,263	969	1,216	284	2,469	16,236
December	34	98	84	216	894	1,074	213	2,181	928	1,172	297	2,397	16,424
Total	605	1,206	1,055	2,866	10,585	16,882	2,470	29,937	11,190	18,088	3,525	32,803	231,562
2010 January	55	91	81	227	898	1,264	169	2,331	953	1,355	250	2,558	15,304
February	44	71	67	182	871	1,096	144	2,111	915	1,167	211	2,293	16,862
March	59	85	88	232	1,062	1,224	216	2,502	1,121	1,309	304	2,734	15,102
April	49	78	77	204	1,173	1,152	249	2,574	1,222	1,230	326	2,778	17,904
May	48	107	86	241	1,282	1,208	255	2,745	1,330	1,315	341	2,986	17,987
June	61	100	90	251	1,385	1,250	302	2,937	1,446	1,350	392	3,188	19,408
July	46	103	105	254	1,386	1,443	390	3,219	1,432	1,546	495	3,473	20,847
August	56	104	94	254	1,434	1,402	314	3,150	1,490	1,506	408	3,404	22,923
September	57	73	88	218	1,374	1,358	268	3,000	1,431	1,431	356	3,218	23,037
October	75	87	117	279	1,502	1,463	283	3,248	1,577	1,550	400	3,527	22,123
November	62	114	103	279	1,400	1,352	263	3,015	1,462	1,466	366	3,294	24,561
December	57	92	70	219	1,317	1,379	243	2,939	1,374	1,471	313	3,158	23,189
Total	669	1,105	1,066	2,840	15,084	15,591	3,096	33,771	15,753	16,696	4,162	36,611	239,247

Notes: • Data are estimates. • For 1960–1969, data are for well completion reports received by the American Petroleum Institute during the reporting year; for all other years, data are for well completions in a given year. • Through 1989, these well counts include only the original drilling of a hole intended to discover or further develop already discovered crude oil or natural gas resources. Other drilling activities, such as drilling an old well deeper, drilling of laterals from the original well, drilling of service and injection wells, and drilling for resources other than crude oil or natural gas are excluded. Beginning in 1990, a new well is defined as the first hole in the ground whether it is lateral or not. Due to the methodology used to estimate ultimate well counts from the available partially reported data, the counts shown on this page are frequently revised. See Note, "Crude Oil and

Natural Gas Exploratory and Development Wells," at end of section. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#crude> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

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. • **1970–1989:** U.S. Energy Information Administration (EIA) computations based on well reports submitted to the API. • **1990 forward:** EIA computations based on well reports submitted to IHS, Inc., Denver, CO.

Data for 2011 forward in this table have been removed while EIA evaluates the quality of the data and the estimation methodology.

Crude Oil and Natural Gas Resource Development

Note. Crude Oil and Natural Gas Exploratory and Development Wells. Three well types are considered in the *Monthly Energy Review (MER)* drilling statistics: “completed for crude oil,” “completed for natural gas,” and “dry hole.” Wells that productively encounter both crude oil and natural gas are categorized as “completed for crude oil.” Both development wells and exploratory wells (new field wildcats, new pool tests, and extension tests) are included in the statistics. All other classes of wells drilled in connection with the search for producible hydrocarbons are excluded. If a lateral is drilled at the same time as the original hole it is not counted separately, but its footage is included.

Prior to the March 1985 MER, drilling statistics consisted of

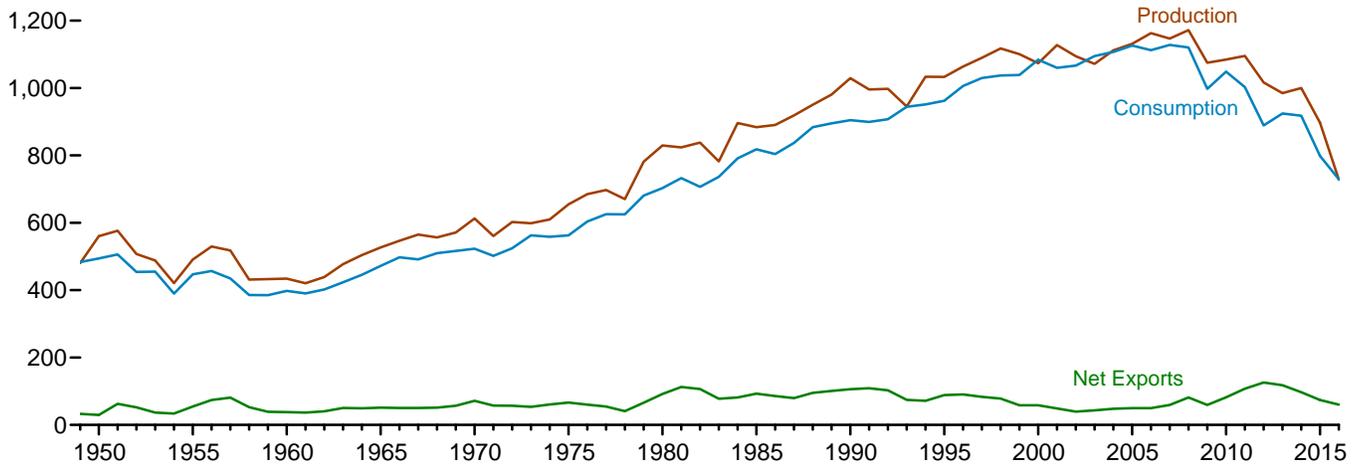
completion data for the above types and classes of wells as reported to the American Petroleum Institute (API) during a given month. Due to time lags between the date of well completion and the date of completion reporting to the API, as-reported well completions proved to be an inaccurate indicator of drilling activity. During 1982, for example, as-reported well completions rose, while the number of actual completions fell. Consequently, the drilling statistics published since the March 1985 MER are U.S. Energy Information Administration (EIA) estimates produced by statistically imputing well counts and footage based on the partial data available from the API. These estimates are subject to continuous revision as new data, some of which pertain to earlier months and years, become available. Additional information about the EIA estimation methodology may be found in “Estimating Well Completions,” a feature article published in the March 1985 MER.

THIS PAGE INTENTIONALLY LEFT BLANK

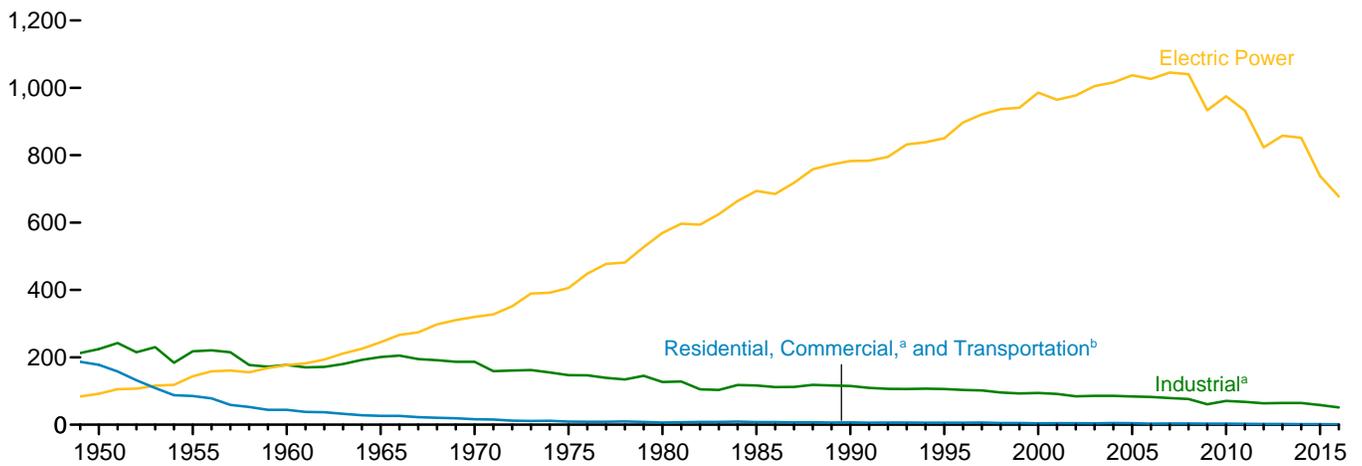
6. Coal

Figure 6.1 Coal
(Million Short Tons)

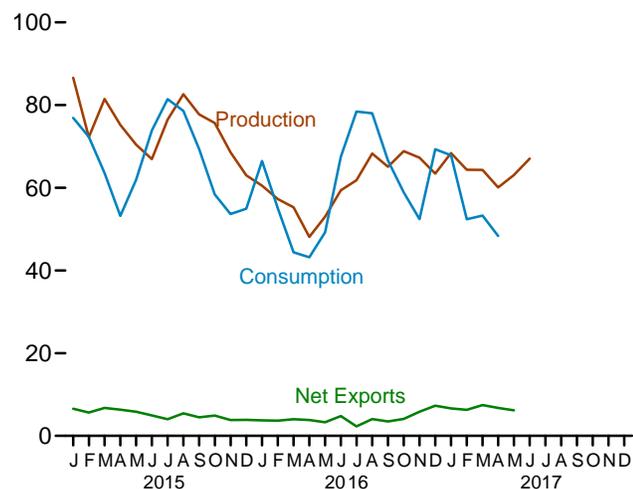
Overview, 1949–2016



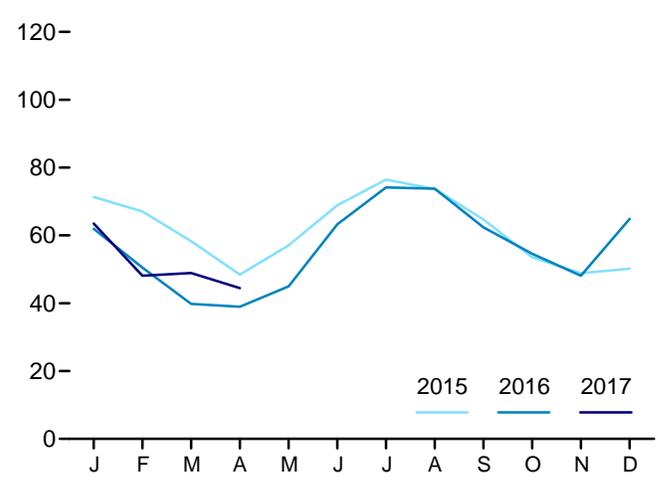
Consumption by Sector, 1949–2016



Overview, Monthly



Electric Power Sector Consumption, Monthly



^a Includes combined-heat-and-power (CHP) plants and a small number of electricity-only-plants.

^b For 1978 forward, small amounts of transportation sector use are included in "Industrial."

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#coal>.
Sources: Tables 6.1–6.2.

Table 6.1 Coal Overview
(Thousand Short Tons)

	Production ^a	Waste Coal Supplied ^b	Trade			Stock Change ^{d,e}	Losses and Unaccounted for ^{e,f}	Consumption
			Imports	Exports	Net Imports ^c			
1950 Total	560,388	NA	365	29,360	-28,995	27,829	9,462	494,102
1955 Total	490,838	NA	337	54,429	-54,092	-3,974	-6,292	447,012
1960 Total	434,329	NA	262	37,981	-37,719	-3,194	1,722	398,081
1965 Total	526,954	NA	184	51,032	-50,848	1,897	2,244	471,965
1970 Total	612,661	NA	36	71,733	-71,697	11,100	6,633	523,231
1975 Total	654,641	NA	940	66,309	-65,369	32,154	-5,522	562,640
1980 Total	829,700	NA	1,194	91,742	-90,548	25,595	10,827	702,730
1985 Total	883,638	NA	1,952	92,680	-90,727	-27,934	2,796	818,049
1990 Total	1,029,076	3,339	2,699	105,804	-103,104	26,542	-1,730	904,498
1995 Total	1,032,974	8,561	9,473	88,547	-79,074	-275	632	962,104
2000 Total	1,073,612	9,089	12,513	58,489	-45,976	-48,309	938	1,084,095
2001 Total	1,127,689	10,085	19,787	48,666	-28,879	41,630	7,120	1,060,146
2002 Total	1,094,283	9,052	16,875	39,601	-22,726	10,215	4,040	1,066,355
2003 Total	1,071,753	10,016	25,044	43,014	-17,970	-26,659	-4,403	1,094,861
2004 Total	1,112,099	11,299	27,280	47,998	-20,718	-11,462	6,887	1,107,255
2005 Total	1,131,498	13,352	30,460	49,942	-19,482	-9,702	9,092	1,125,978
2006 Total	1,162,750	14,409	36,246	49,647	-13,401	42,642	8,824	1,112,292
2007 Total	1,146,635	14,076	36,347	59,163	-22,816	5,812	4,085	1,127,998
2008 Total	1,171,809	14,146	34,208	81,519	-47,311	12,354	5,740	1,120,548
2009 Total	1,074,923	13,666	22,639	59,097	-36,458	39,668	14,985	997,478
2010 Total	1,084,368	13,651	19,353	81,716	-62,363	-13,039	182	1,048,514
2011 Total	1,095,628	13,209	13,088	107,259	-94,171	211	11,506	1,002,948
2012 Total	1,016,458	11,196	9,159	125,746	-116,586	6,902	14,980	889,185
2013 Total	984,842	11,279	8,906	117,659	-108,753	-38,525	1,451	924,442
2014 Total	1,000,049	12,090	11,350	97,257	-85,907	-2,601	11,101	917,731
2015 January	86,597	1,065	1,293	7,871	-6,579	2,390	1,799	76,895
February	72,251	1,001	866	6,496	-5,630	-4,929	233	72,318
March	81,476	755	850	7,612	-6,762	4,930	6,979	63,560
April	75,209	580	879	7,216	-6,337	13,571	2,673	53,207
May	70,415	756	919	6,761	-5,842	5,575	-2,169	61,923
June	66,933	872	842	5,789	-4,947	-6,552	-4,434	73,845
July	76,476	883	1,091	5,117	-4,026	-8,638	523	81,449
August	82,623	954	970	6,409	-5,439	-3,360	2,924	78,574
September	77,724	885	904	5,388	-4,485	5,283	-529	69,369
October	75,662	544	854	5,744	-4,889	13,278	-366	58,405
November	68,574	840	882	4,709	-3,827	13,061	-1,114	53,640
December	63,001	834	969	4,846	-3,877	6,094	-1,067	54,930
Total	896,941	9,969	11,318	73,958	-62,640	40,704	5,452	798,115
2016 January	60,500	938	693	4,433	-3,740	R -8,277	R -518	R 66,492
February	57,263	822	819	4,511	-3,693	R 532	R -1,175	R 55,036
March	55,265	719	1,186	5,208	-4,023	R 5,063	R 2,487	R 44,410
April	48,115	543	740	4,583	-3,843	R 2,155	R -536	R 43,196
May	53,012	609	910	4,209	-3,298	-889	R 1,980	R 49,231
June	59,388	747	641	5,432	-4,790	-10,676	R -1,504	R 67,525
July	61,796	861	990	3,276	-2,286	-14,699	R -3,384	R 78,454
August	68,261	851	943	5,003	-4,060	-10,656	R -2,322	R 78,029
September	65,083	685	800	4,273	-3,473	-3,433	R -853	R 66,582
October	68,851	483	768	4,863	-4,095	R 4,321	R 2,016	R 58,902
November	67,272	584	706	6,554	-5,847	R 9,365	R 216	R 52,429
December	63,427	886	652	7,926	-7,274	R -7,922	R -4,356	R 69,316
Total	728,232	8,727	9,850	60,271	-50,421	R -35,115	R -7,950	R 729,602
2017 January	R 68,378	R 875	743	7,385	-6,642	R -6,823	R 1,573	R 67,859
February	R 64,354	R 751	612	6,908	-6,296	R 4,963	R 1,449	R 52,398
March	R 64,301	R 777	560	8,013	-7,453	R 2,106	R 2,252	R 53,267
April	60,077	RF 835	493	7,236	-6,744	R 4,951	R 867	R 48,350
May	63,066	NA	R 1,053	R 7,243	R -6,190	NA	NA	NA
June	67,040	NA	NA	NA	NA	NA	NA	NA
6-Month Total	387,216	NA	NA	NA	NA	NA	NA	NA
2016 6-Month Total	333,543	4,376	4,989	28,376	-23,387	-12,092	734	325,890
2015 6-Month Total	452,880	5,030	5,649	41,745	-36,096	14,985	5,081	401,748

^a Beginning in 2001, includes a small amount of refuse recovery (coal recaptured from a refuse mine and cleaned to reduce the concentration of noncombustible materials).

^b Waste coal (including fine coal, coal obtained from a refuse bank or slurry dam, anthracite culm, bituminous gob, and lignite waste) consumed by the electric power and industrial sectors. Beginning in 1989, waste coal supplied is counted as a supply-side item to balance the same amount of waste coal included in "Consumption."

^c Net imports equal imports minus exports. A minus sign indicates exports are greater than imports.

^d A negative value indicates a decrease in stocks and a positive value indicates an increase. See Table 6.3 for stocks data coverage.

^e In 1949, stock change is included in "Losses and Unaccounted for."

^f The difference between calculated coal supply and disposition, due to coal

quantities lost or to data reporting problems.

R=Revised. NA=Not available. F=Forecast.

Notes: • For methodology used to calculate production, consumption, and stocks, see Note 1, "Coal Production," Note 2, "Coal Consumption," and Note 3, "Coal Stocks," at end of section. • Data values preceded by "F" are derived from the U.S. Energy Information Administration's Short-Term Integrated Forecasting System. See Note 4, "Coal Forecast Values," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#coal> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 6.2 Coal Consumption by Sector
(Thousand Short Tons)

	End-Use Sectors										Electric Power Sector ^{e,f}	Total
	Residential	Commercial			Coke Plants	Industrial			Total	Transportation		
		CHP ^a	Other ^b	Total		CHP ^c	Non-CHP ^d	Total				
1950 Total	51,562	(g)	63,021	63,021	104,014	(h)	120,623	120,623	224,637	63,011	91,871	494,102
1955 Total	35,590	(g)	32,852	32,852	107,743	(h)	110,096	110,096	217,839	16,972	143,759	447,012
1960 Total	24,159	(g)	16,789	16,789	81,385	(h)	96,017	96,017	177,402	3,046	176,685	398,081
1965 Total	14,635	(g)	11,041	11,041	95,286	(h)	105,560	105,560	200,846	655	244,788	471,965
1970 Total	9,024	(g)	7,090	7,090	96,481	(h)	90,156	90,156	186,637	298	320,182	523,231
1975 Total	2,823	(g)	6,587	6,587	83,598	(h)	63,646	63,646	147,244	24	405,962	562,640
1980 Total	1,355	(g)	5,097	5,097	66,657	(h)	60,347	60,347	127,004	(h)	569,274	702,730
1985 Total	1,711	(g)	6,068	6,068	41,056	(h)	75,372	75,372	116,429	(h)	693,841	818,049
1990 Total	1,345	(g)	4,189	5,379	38,877	27,781	48,549	76,330	115,207	(h)	782,567	904,498
1995 Total	755	1,419	3,633	5,052	33,011	29,363	43,693	73,055	106,067	(h)	850,230	962,104
2000 Total	454	1,547	2,126	3,673	28,939	28,031	37,177	65,208	94,147	(h)	985,821	1,084,095
2001 Total	481	1,448	2,441	3,888	26,075	25,755	39,514	65,268	91,344	(h)	964,433	1,060,146
2002 Total	533	1,405	2,506	3,912	23,656	26,232	34,515	60,747	84,403	(h)	977,507	1,066,355
2003 Total	551	1,816	1,869	3,685	24,248	24,846	36,415	61,261	85,509	(h)	1,005,116	1,094,861
2004 Total	512	1,917	2,693	4,610	23,670	26,613	35,582	62,195	85,865	(h)	1,016,268	1,107,255
2005 Total	378	1,922	2,420	4,342	23,434	25,875	34,465	60,340	83,774	(h)	1,037,485	1,125,978
2006 Total	290	1,886	1,050	2,936	22,957	25,262	34,210	59,472	82,429	(h)	1,026,636	1,112,292
2007 Total	353	1,927	1,247	3,173	22,715	22,537	34,078	56,615	79,331	(h)	1,045,141	1,127,998
2008 Total	(i)	2,021	1,485	3,506	22,070	21,902	32,491	54,393	76,463	(h)	1,040,580	1,120,548
2009 Total	(i)	1,798	1,412	3,210	15,326	19,766	25,549	45,314	60,641	(h)	933,627	997,478
2010 Total	(i)	1,720	1,361	3,081	21,092	24,638	24,650	49,289	70,381	(h)	975,052	1,048,514
2011 Total	(i)	1,668	1,125	2,793	21,434	22,319	23,919	46,238	67,671	(h)	932,484	1,002,948
2012 Total	(i)	1,450	595	2,045	20,751	20,065	22,773	42,838	63,589	(h)	823,551	889,185
2013 Total	(i)	1,356	595	1,951	21,474	19,761	23,294	43,055	64,529	(h)	857,962	924,442
2014 Total	(i)	1,063	824	1,887	21,297	19,076	23,870	42,946	64,243	(h)	851,602	917,731
2015 January	(i)	97	101	198	1,908	1,613	1,852	3,465	5,373	(h)	71,323	76,895
February	(i)	97	101	198	1,598	1,483	1,977	3,460	5,058	(h)	67,061	72,318
March	(i)	83	87	171	1,649	1,506	1,962	3,468	5,117	(h)	58,272	63,560
April	(i)	54	45	99	1,543	1,336	1,780	3,116	4,659	(h)	48,449	53,207
May	(i)	50	41	92	1,677	1,378	1,717	3,095	4,772	(h)	57,060	61,923
June	(i)	61	50	111	1,766	1,381	1,720	3,101	4,867	(h)	68,867	73,845
July	(i)	64	39	104	1,801	1,505	1,588	3,093	4,894	(h)	76,452	81,449
August	(i)	58	35	93	1,711	1,420	1,673	3,093	4,804	(h)	73,678	78,574
September	(i)	51	31	82	1,519	1,391	1,696	3,087	4,606	(h)	64,682	69,369
October	(i)	52	49	101	1,586	1,296	1,865	3,161	4,747	(h)	53,557	58,405
November	(i)	59	56	115	1,479	1,325	1,841	3,166	4,645	(h)	48,879	53,640
December	(i)	72	69	141	1,469	1,350	1,805	3,155	4,624	(h)	50,165	54,930
Total	(i)	798	706	1,503	19,708	16,984	21,475	38,459	58,167	(h)	738,444	798,115
2016 January	(i)	76	73	148	1,328	1,503	R 1,543	R 3,046	R 4,374	(h)	61,970	R 66,492
February	(i)	78	75	153	1,361	1,395	R 1,639	R 3,034	R 4,395	(h)	50,487	R 55,036
March	(i)	75	72	147	1,434	1,370	R 1,672	R 3,042	R 4,475	(h)	39,788	R 44,410
April	(i)	49	27	76	1,324	1,006	R 1,806	R 2,812	R 4,136	(h)	38,984	R 43,196
May	(i)	40	22	62	1,367	1,149	R 1,671	R 2,820	R 4,187	(h)	44,983	R 49,231
June	(i)	46	25	71	1,405	1,212	R 1,598	R 2,806	R 4,211	(h)	63,243	R 67,525
July	(i)	46	17	63	1,433	1,234	R 1,588	R 2,822	R 4,255	(h)	74,136	R 78,454
August	(i)	50	19	69	1,395	1,234	R 1,574	R 2,808	R 4,203	(h)	73,757	R 78,029
September	(i)	49	18	67	1,336	1,053	R 1,759	R 2,812	R 4,148	(h)	62,366	R 66,582
October	(i)	50	39	89	1,335	993	R 1,885	R 2,878	R 4,213	(h)	54,601	R 58,902
November	(i)	61	48	109	1,326	998	R 1,894	R 2,892	R 4,218	(h)	48,102	R 52,429
December	(i)	71	56	127	1,442	1,155	R 1,734	R 2,889	R 4,331	(h)	64,858	R 69,316
Total	(i)	692	490	1,182	16,485	14,302	R 20,359	R 34,661	R 51,146	(h)	677,275	R 729,602
2017 January	(i)	62	R 76	R 138	R 1,431	1,288	R 1,526	R 2,813	R 4,244	(h)	63,477	R 67,859
February	(i)	50	R 62	R 112	R 1,368	1,085	R 1,739	R 2,824	R 4,191	(h)	48,095	R 52,398
March	(i)	55	R 67	R 122	R 1,438	1,143	1,663	2,806	R 4,244	(h)	48,901	R 53,267
April	(i)	37	F 14	F 51	F 961	1,024	F 1,872	F 2,896	F 3,857	(h)	44,441	48,350
4-Month Total	(i)	204	E 219	E 424	E 5,198	4,539	E 6,799	E 11,339	E 16,536	(h)	204,914	221,874
2016 4-Month Total	(i)	278	247	525	5,448	5,274	6,660	11,933	17,381	(h)	191,228	209,134
2015 4-Month Total	(i)	331	335	666	6,700	5,938	7,571	13,509	20,209	(h)	245,105	265,980

^a Commercial combined-heat-and-power (CHP) and a small number of commercial electricity-only plants, such as those at hospitals and universities. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^b All commercial sector fuel use other than that in "Commercial CHP."

^c Industrial combined-heat-and-power (CHP) and a small number of industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^d All industrial sector fuel use other than that in "Coke Plants" and "Industrial CHP."

^e 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.

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

^g Included in "Commercial Other."

^h Included in "Industrial Non-CHP."

ⁱ Beginning in 2008, residential coal consumption data are no longer collected by the U.S. Energy Information Administration (EIA).
R=Revised. F=Forecast.

Notes: • CHP monthly values are from Table 7.4c; electric power sector monthly values are from Table 7.4b; all other monthly values are estimates derived from collected quarterly and annual data. See Note 2, "Coal Consumption," at end of section. • Data values preceded by "F" are derived from EIA's Short-Term Integrated Forecasting System. See Note 4, "Coal Forecast Values," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#coal> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: See end of section.

Table 6.3 Coal Stocks by Sector
(Thousand Short Tons)

	Producers and Distributors	End-Use Sectors					Electric Power Sector ^{c,d}	Total
		Residential ^a and Commercial	Industrial			Total		
			Coke Plants	Other ^b	Total			
1950 Year	NA	2,462	16,809	26,182	42,991	45,453	31,842	77,295
1955 Year	NA	998	13,422	15,880	29,302	30,300	41,391	71,691
1960 Year	NA	666	11,122	11,637	22,759	23,425	51,735	75,160
1965 Year	NA	353	10,640	13,122	23,762	24,115	54,525	78,640
1970 Year	NA	300	9,045	11,781	20,826	21,126	71,908	93,034
1975 Year	12,108	233	8,797	8,529	17,326	17,559	110,724	140,391
1980 Year	24,379	NA	9,067	11,951	21,018	21,018	183,010	228,407
1985 Year	33,133	NA	3,420	10,438	13,857	13,857	156,376	203,367
1990 Year	33,418	NA	3,329	8,716	12,044	12,044	156,166	201,629
1995 Year	34,444	NA	2,632	5,702	8,334	8,334	126,304	169,083
2000 Year	31,905	NA	1,494	4,587	6,081	6,081	102,296	140,282
2001 Year	35,900	NA	1,510	6,006	7,516	7,516	138,496	181,912
2002 Year	43,257	NA	1,364	5,792	7,156	7,156	141,714	192,127
2003 Year	38,277	NA	905	4,718	5,623	5,623	121,567	165,468
2004 Year	41,151	NA	1,344	4,842	6,186	6,186	106,669	154,006
2005 Year	34,971	NA	2,615	5,582	8,196	8,196	101,137	144,304
2006 Year	36,548	NA	2,928	6,506	9,434	9,434	140,964	186,946
2007 Year	33,977	NA	1,936	5,624	7,560	7,560	151,221	192,758
2008 Year	34,688	498	2,331	6,007	8,338	8,836	161,589	205,112
2009 Year	47,718	529	1,957	5,109	7,066	7,595	189,467	244,780
2010 Year	49,820	552	1,925	4,525	6,451	7,003	174,917	231,740
2011 Year	51,897	603	2,610	4,455	7,065	7,668	172,387	231,951
2012 Year	46,157	583	2,522	4,475	6,997	7,581	185,116	238,853
2013 Year	45,652	495	2,200	4,097	6,297	6,792	147,884	200,328
2014 Year	38,894	449	2,640	4,196	6,836	7,285	151,548	197,727
2015 January	38,817	429	2,471	4,010	6,482	6,911	154,390	200,117
February	39,581	408	2,303	3,825	6,128	6,536	149,071	195,189
March	39,610	388	2,135	3,639	5,775	6,162	154,347	200,119
April	40,226	387	2,299	3,714	6,013	6,400	167,063	213,690
May	39,817	386	2,463	3,789	6,252	6,639	172,809	219,265
June	39,399	386	2,627	3,864	6,491	6,877	166,437	212,713
July	38,993	388	2,756	3,999	6,755	7,143	157,938	204,074
August	37,353	390	2,884	4,135	7,019	7,410	155,952	200,714
September	36,213	392	3,013	4,271	7,284	7,676	162,109	205,997
October	36,233	393	2,754	4,308	7,062	7,455	175,588	219,276
November	36,509	394	2,495	4,345	6,840	7,233	188,595	232,337
December	35,871	394	2,236	4,382	6,618	7,012	195,548	238,431
2016 January	F 35,935	373	2,129	R 4,231	R 6,360	R 6,733	187,486	R 230,154
February	F 36,656	353	2,022	R 4,080	R 6,102	R 6,455	187,575	R 230,686
March	F 37,304	332	1,914	R 3,930	R 5,844	R 6,176	192,269	R 235,750
April	F 37,808	334	1,877	R 3,895	R 5,772	R 6,105	193,991	R 237,904
May	F 37,549	336	1,839	R 3,860	R 5,699	R 6,035	193,432	R 237,016
June	F 37,127	337	1,802	R 3,825	R 5,626	R 5,964	183,248	R 226,339
July	F 36,287	348	1,755	R 3,786	R 5,540	R 5,889	169,465	R 211,640
August	F 34,719	359	1,707	R 3,747	R 5,454	R 5,814	160,452	R 200,985
September	F 33,574	370	1,660	R 3,708	R 5,368	R 5,739	158,238	R 197,551
October	F 33,417	367	1,665	R 3,684	R 5,349	R 5,716	162,739	R 201,873
November	F 33,336	364	1,670	R 3,659	R 5,329	R 5,694	172,208	R 211,238
December	F 33,699	361	1,675	R 3,635	R 5,310	R 5,671	163,946	R 203,316
2017 January	F 33,706	R 352	R 1,579	R 3,497	R 5,076	R 5,428	157,359	R 196,493
February	F 34,286	R 344	R 1,483	R 3,358	R 4,842	R 5,185	161,985	R 201,456
March	F 34,719	R 335	R 1,388	R 3,220	R 4,607	R 4,942	163,900	R 203,561
April	F 35,115	F 482	F 1,648	F 5,031	F 6,680	F 7,161	166,236	208,513

^a Through 1979, data are for the residential and commercial sectors. Beginning in 2008, data are for the commercial sector only.

^b Through 1979, data are for manufacturing plants and the transportation sector. For 1980–2007, data are for manufacturing plants only. Beginning in 2008, data are for manufacturing plants and coal transformation/processing plants.

^c 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.

^d Excludes waste coal. Through 1998, data are for electric utilities only. Beginning in 1999, data are for electric utilities and independent power producers.

R=Revised. NA=Not available. F=Forecast.

Notes: • Stocks are at end of period. • Electric power sector monthly values

are from Table 7.5; producers and distributors monthly values are estimates derived from collected annual data; all other monthly values are estimates derived from collected quarterly values. • Data values preceded by "F" are derived from the U.S. Energy Information Administration's Short-Term Integrated Forecasting System. See Note 4, "Coal Forecast Values," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#coal> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Coal

Note 1. Coal Production. Preliminary monthly estimates of national coal production are the sum of weekly estimates developed by the U.S. Energy Information Administration (EIA) and published in the *Weekly Coal Production* report. When a week extends into a new month, production is allocated on a daily basis and added to the appropriate month. Weekly estimates are based on Association of American Railroads (AAR) data showing the number of railcars loaded with coal during the week by Class I and certain other railroads.

Through 2001, the weekly coal production model converted AAR data into short tons of coal by using the average number of short tons of coal per railcar loaded reported in the “Quarterly Freight Commodity Statistics” from the Surface Transportation Board. If an average coal tonnage per railcar loaded was not available for a specific railroad, the national average was used. To derive the estimate of total weekly production, the total rail tonnage for the week was divided by the ratio of quarterly production shipped by rail and total quarterly production. Data for the corresponding quarter of previous years were used to derive this ratio. This method ensured that the seasonal variations were preserved in the production estimates.

From 2002 through 2014, the weekly coal production model used statistical auto regressive methods to estimate national coal production as a function of railcar loadings of coal, heating degree-days, and cooling degree-days. On Thursday of each week, EIA received from the AAR data for the previous week. The latest weekly national data for heating degree-days and cooling degree-days were obtained from the National Oceanic and Atmospheric Administration’s Climate Prediction Center.

Beginning in 2015, the revised weekly coal production model uses statistical auto regressive methods to estimate national coal production as a function of railcar loadings of coal. EIA receives AAR data on Thursday of each week for prior week car loadings. The weekly coal model is run and a national level coal production estimate is obtained. From there, state-level estimates are calculated using historical state production share. The state estimates are then aggregated to various regional-level estimates. The weekly coal model is refit every quarter after preliminary coal data are available.

When preliminary quarterly data become available, the monthly and weekly estimates are adjusted to conform to the quarterly figures. The adjustment procedure uses historical state-level production data, the methodology for which can be seen in the documentation located at <http://www.eia.gov/coal/production/weekly/>. Initial estimates of annual production published in January of the following year are based on preliminary production data covering the first nine months (three quarters) and weekly/monthly estimates for the fourth quarter. All

quarterly, monthly, and weekly production figures are adjusted to conform to the final annual production data published in the *Monthly Energy Review* in the fall of the following year.

Note 2. Coal Consumption. Forecast data (designated by an “F”) are derived from forecasted values shown in EIA’s *Short-Term Energy Outlook* (DOE/EIA-0202) table titled “U.S. Coal Supply, Consumption, and Inventories.” The monthly estimates are based on the quarterly values, which are released in March, June, September, and December. The estimates are revised quarterly as collected data become available from the data sources. Sector-specific information follows.

Residential and Commercial—Through 2007, coal consumption by the residential and commercial sectors is reported to EIA for the two sectors combined; EIA estimates the amount consumed by the sectors individually. To create the estimates, 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 (1973–1981 and subsequent odd-numbered years), residential consumption of coal is estimated using the following steps: a ratio is created of the number of occupied housing units heated by coal to the number of occupied housing units heated by oil; that ratio is then multiplied by the Btu quantity of oil consumed by the residential sector to derive an estimate of the Btu quantity of coal consumed by the residential sector; and, finally, the amount estimated as the residential sector consumption is subtracted from the residential and commercial sectors’ combined consumption to derive the commercial sector’s estimated consumption. Beginning in 2008, residential coal consumption data are not collected by EIA, and commercial coal consumption data are taken directly from reported data.

Industrial Coke Plants—Through 1979, monthly coke plant consumption data were taken directly from reported data. For 1980–1987, coke plant consumption estimates were derived by proportioning reported quarterly data by using the ratios of monthly-to-quarterly consumption data in 1979, the last year in which monthly data were reported. Beginning in 1988, monthly coke plant consumption estimates are derived from the reported quarterly data by using monthly ratios of raw steel production data from the American Iron and Steel Institute. The ratios are the monthly raw steel production from open hearth and basic oxygen process furnaces as a proportion of the quarterly production from those kinds of furnaces.

Industrial Other—Through 1977, monthly consumption data for the other industrial sector (all industrial users minus coke plants) were derived by using reported data to modify baseline consumption figures from the most recent U.S. Census Bureau Annual Survey of Manufactures or Census of Manufactures. For 1978 and 1979, monthly estimates were derived from data reported on Forms EIA-3 and

EIA-6. For 1980–1987, monthly figures were estimated by proportioning quarterly data by using the ratios of monthly-to-quarterly consumption data in 1979, the last year in which monthly data were reported on Form EIA-3. Beginning in 1988, monthly consumption for the other industrial sector is estimated from reported quarterly data by using ratios derived from industrial production indices published by the Board of Governors of the Federal Reserve System. Indices for six major industry groups are used as the basis for calculating the ratios: food manufacturing, which is North American Industry Classification System (NAICS) code 311; paper manufacturing, NAICS 322; chemical manufacturing, NAICS 325; petroleum and coal products, NAICS 324; non-metallic mineral products manufacturing, NAICS 327; and primary metal manufacturing, NAICS 331. The monthly ratios are computed as the monthly sum of the weighted indices as a proportion of the quarterly sum of the weighted indices by using the 1977 proportion as the weights. Through 2007, quarterly consumption data for the other industrial sector were derived by adding beginning stocks at manufacturing plants to current receipts and subtracting ending stocks at manufacturing plants. In this calculation, current receipts are the greater of either reported receipts from manufacturing plants (Form EIA-3) or reported shipments to the other industrial sector (Form EIA-6), thereby ensuring that agriculture, forestry, fishing, and construction consumption data were included where appropriate. Beginning in 2008, quarterly consumption totals for other industrial coal include data for manufacturing and mining only. Over time, surveyed coal consumption data for agriculture, forestry, fishing, and construction dwindled to about 20–30 thousand short tons annually. Therefore, in 2008, EIA consolidated its programs by eliminating agriculture, forestry, fishing, and construction as surveyed sectors.

Electric Power Sector—Monthly consumption data for electric power plants are taken directly from reported data.

Note 3. Coal Stocks. Coal stocks data are reported by major end-use sector. Forecast data (designated by an “F”) are derived from forecasted values shown in EIA’s *Short-Term Energy Outlook* (DOE/EIA-0202) table titled “U.S. Coal Supply, Consumption, and Inventories.” The monthly estimates are based on the quarterly values (released in March, June, September, and December) or annual values. The estimates are revised as collected data become available from the data sources. Sector-specific information follows.

Producers and Distributors—Through 1997, quarterly stocks at producers and distributors were taken directly from reported data. Monthly data were estimated by using one-third of the current quarterly change to indicate the monthly change in stocks. Beginning in 1998,

end-of-year stocks are taken from reported data. Monthly stocks are estimated by a model.

Residential and Commercial—Through 1979, stock estimates for the residential and commercial sector were taken directly from reported data. For 1980–2007, stock estimates were not collected. Beginning in 2008, quarterly commercial (excluding residential) stocks data are collected on Form EIA-3 (data for “Commercial and Institutional Coal Users”).

Industrial Coke Plants—Through 1979, monthly stocks at coke plants were taken directly from reported data. Beginning in 1980, coke plant stocks are estimated by using one-third of the current quarterly change to indicate the monthly change in stocks. Quarterly stocks are taken directly from data reported on Form EIA-5.

Industrial Other—Through 1977, stocks for the other industrial sector were derived by using reported data to modify baseline figures from a one-time Bureau of Mines survey of consumers. For 1978–1982, monthly estimates were derived by judgmentally proportioning reported quarterly data based on representative seasonal patterns of supply and demand. Beginning in 1983, other industrial coal stocks are estimated as indicated above for coke plants. Quarterly stocks are taken directly from data reported on Form EIA-3 and therefore include only manufacturing industries; data for agriculture, forestry, fishing, mining, and construction stocks are not available.

Electric Power Sector—Monthly stocks data at electric power plants are taken directly from reported data.

Note 4. Coal Forecast Values. Data values preceded by “F” in this section are forecast values. They are derived from EIA’s Short-Term Integrated Forecasting System (STIFS). The model is driven primarily by data and assumptions about key macroeconomic variables, the world oil price, and weather. The coal forecast relies on other variables as well, such as alternative fuel prices (natural gas and oil) and power generation by sources other than fossil fuels, including nuclear and hydroelectric power. Each month, EIA staff review the model output and make adjustments, if appropriate, based on their knowledge of developments in the coal industry.

The STIFS model results are published monthly in EIA’s *Short-Term Energy Outlook*, which is accessible on the Web at <http://www.eia.gov/forecasts/steo/>.

Table 6.1 Sources

Production

1949–September 1977: U.S. Department of the Interior, Bureau of Mines, *Minerals Yearbook* and *Minerals Industry Surveys*.

October 1977 forward: U.S. Energy Information Administration (EIA), *Weekly Coal Production*.

Waste Coal Supplied

1989–1997: EIA, Form EIA-867, “Annual Nonutility Power Producer Report.”

1998–2000: EIA, Form EIA-860B, “Annual Electric Generator Report—Nonutility.”

2001–2003: EIA, Form EIA-906, “Power Plant Report,” and Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing Plants.”

2004–2007: EIA, Form EIA-906, “Power Plant Report,” Form EIA-920, “Combined Heat and Power Plant Report,” and Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing Plants.”

2008 forward: EIA, Form EIA-923, “Power Plant Operations Report,” and Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Coal Users”; and, for forecast values, EIA, Short-Term Integrated Forecasting System.

Imports and Exports

1949 forward: U.S. Department of Commerce, U.S. Census Bureau, Monthly Reports IM 145 (Imports) and EM 545 (Exports).

Stock Change

1950 forward: Calculated from data in Table 6.3.

Losses and Unaccounted for

1949 forward: Calculated as the sum of production, imports, and waste coal supplied, minus exports, stock change, and consumption.

Consumption

1949 forward: Table 6.2.

Table 6.2 Sources

Residential and Commercial Total

Through 2007, coal consumption by the residential and commercial sectors combined is reported to the U.S. Energy Information Administration (EIA). EIA estimates the sectors individually using the method described in Note 2, “Consumption,” at the end of Section 6. Data for the residential and commercial sectors combined are from:

1949–1976: U.S. Department of the Interior (DOI), Bureau of Mines (BOM), *Minerals Yearbook*.

January–September 1977: DOI, BOM, Form 6-1400, “Monthly Coal Report, Retail Dealers—Upper Lake Docks.” October 1977–1979: EIA, Form EIA-2, “Monthly Coal Report, Retail Dealers—Upper Lake Docks.”

1980–1997: EIA, Form EIA-6, “Coal Distribution Report,” quarterly.

1998–2007: DOI, Mine Safety and Health Administration, Form 7000-2, “Quarterly Coal Consumption and Quality Report—Coke Plants.”

Commercial Total

Beginning in 2008, coal consumption by the commercial (excluding residential) sector is reported to EIA. Data for total commercial consumption are from:

2008 forward: EIA, Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Coal Users” (data for “Commercial and Institutional Coal Users”); and, for forecast values, EIA, Short-Term Integrated Forecasting System (STIFS).

Commercial CHP

1989 forward: Table 7.4c.

Commercial Other

1949 forward: Calculated as “Commercial Total” minus “Commercial CHP.”

Industrial Coke Plants

1949–September 1977: DOI, BOM, *Minerals Yearbook* and *Minerals Industry Surveys*.

October 1977–1980: EIA, Form EIA-5/5A, “Coke and Coal Chemicals—Monthly/Annual Supplement.”

1981–1984: EIA, Form EIA-5/5A, “Coke Plant Report—Quarterly/Annual Supplement.”

1985 forward: EIA, Form EIA-5, “Quarterly Coal Consumption and Quality Report—Coke Plants”; and, for forecast values, EIA, STIFS.

Other Industrial Total

1949–September 1977: DOI, BOM, *Minerals Yearbook* and *Minerals Industry Surveys*.

October 1977–1979: EIA, Form EIA-3, “Monthly Coal Consumption Report—Manufacturing Plants.”

1980–1997: EIA, Form EIA-3, “Quarterly Coal Consumption Report—Manufacturing Plants,” and Form EIA-6, “Coal Distribution Report,” quarterly.

1998–2007: EIA, Form EIA-3, “Quarterly Coal Consumption Report—Manufacturing Plants,” Form EIA-6A, “Coal Distribution Report,” annual, and Form EIA-7A, “Coal Production Report,” annual.

2008 forward: EIA, Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Coal Users,” and Form EIA-7A, “Coal Production Report,” annual; and, for forecast values, EIA, STIFS.

Other Industrial CHP

1989 forward: Table 7.4c.

Other Industrial Non-CHP

1949 forward: Calculated as “Other Industrial Total” minus “Other Industrial CHP.”

Transportation

1949–1976: DOI, BOM, *Minerals Yearbook*.

January–September 1977: DOI, BOM, Form 6-1400, “Monthly Coal Report, Retail Dealers—Upper Lake Docks.”
October–December 1977: EIA, Form EIA-6, “Coal Distribution Report,” quarterly.

Electric Power

1949 forward: Table 7.4b.

Table 6.3 Sources

Producers and Distributors

1973–1979: U.S. Department of the Interior (DOI), Bureau of Mines (BOM), Form 6-1419Q, “Distribution of Bituminous Coal and Lignite Shipments.”

1980–1997: U.S. Energy Information Administration (EIA), Form EIA-6, “Coal Distribution Report,” quarterly.
1998–2007: EIA, Form EIA-6A, “Coal Distribution Report,” annual.

2008 forward: EIA, Form EIA-7A, “Coal Production Report,” annual, and Form EIA-8A, “Coal Stocks Report,” annual; and, for forecast values, EIA, Short-Term Integrated Forecasting System (STIFS).

Residential and Commercial

1949–1976: DOI, BOM, *Minerals Yearbook*.

January–September 1977: DOI, BOM, Form 6-1400, “Monthly Coal Report, Retail Dealers—Upper Lake Docks.”

October 1977–1979: EIA, Form EIA-2, “Monthly Coal Report, Retail Dealers—Upper Lake Docks.”

2008 forward: EIA, Form EIA-3, “Quarterly Coal Consumption and Quality Report, Manufacturing and

Transformation/Processing Coal Plants and Commercial and Institutional Coal Users” (data for “Commercial and Institutional Coal Users”); and, for forecast values, EIA, STIFS.

Industrial Coke Plants

1949–September 1977: DOI, BOM, *Minerals Yearbook* and *Minerals Industry Surveys*.

October 1977–1980: EIA, Form EIA-5/5A, “Coke and Coal Chemicals—Monthly/Annual.”

1981–1984: EIA, Form EIA 5/5A, “Coke Plant Report—Quarterly/Annual Supplement.”

1985 forward: EIA, Form EIA-5, “Quarterly Coal Consumption and Quality Report—Coke Plants” and, for forecast values, EIA, STIFS.

Industrial Other

1949–September 1977: DOI, BOM, *Minerals Yearbook* and *Minerals Industry Surveys*.

October 1977–1979: EIA, Form EIA-3, “Monthly Coal Consumption Report—Manufacturing Plants.”

1998–2007: EIA, Form EIA-3, “Quarterly Coal Consumption Report—Manufacturing Plants.”

2008 forward: EIA, Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Coal Users”; and, for forecast values, EIA, STIFS.

Electric Power

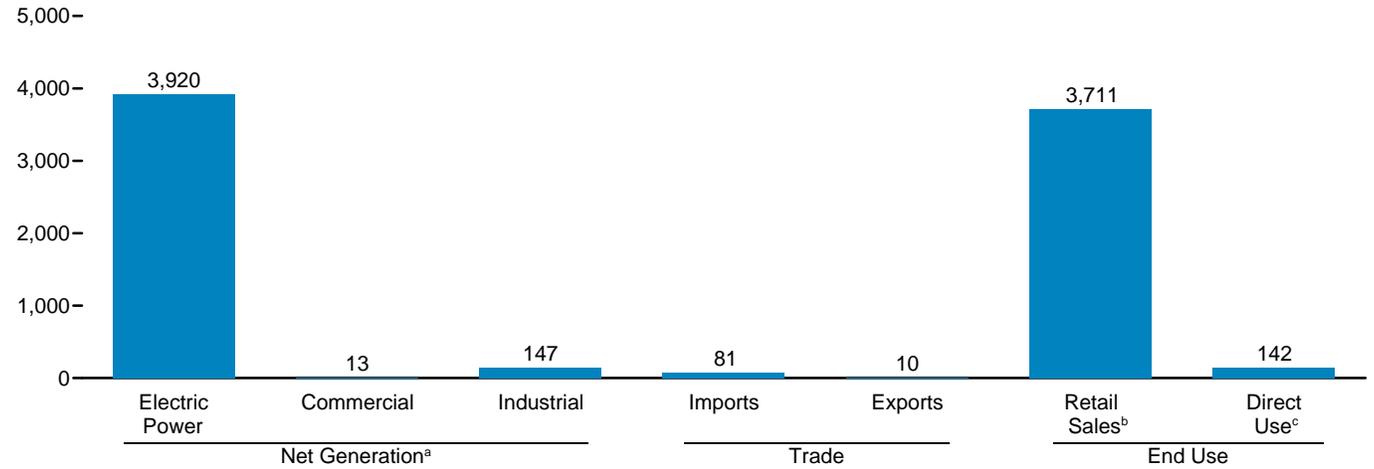
1949 forward: Table 7.5.

THIS PAGE INTENTIONALLY LEFT BLANK

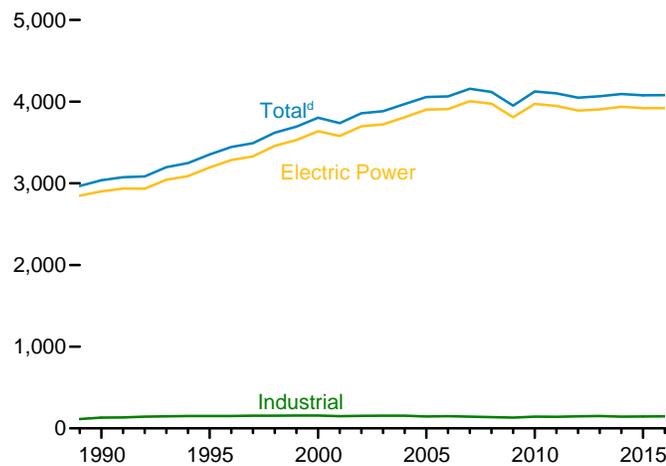
7. Electricity

Figure 7.1 Electricity Overview
(Billion Kilowatthours)

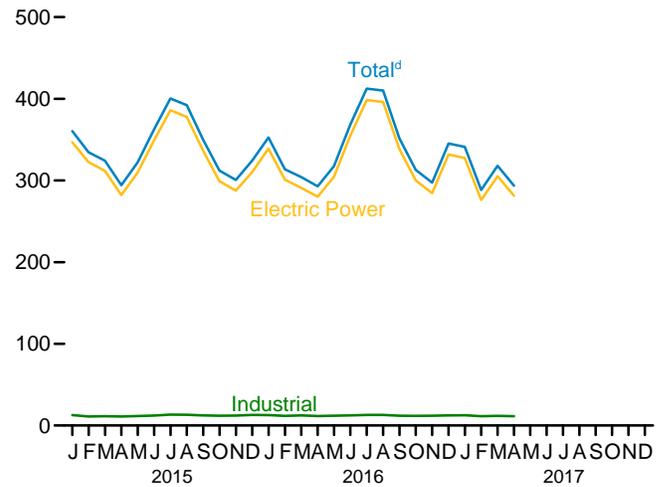
Overview, 2016



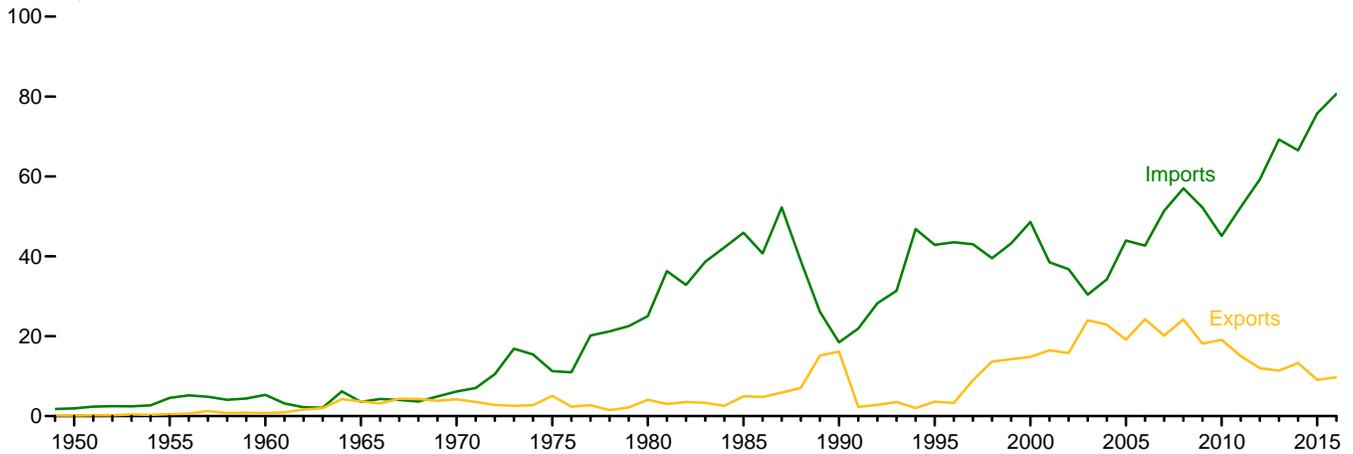
Net Generation^a by Sector, 1989–2016



Net Generation^a by Sector, Monthly



Trade, 1949–2016



^a Data are for utility-scale facilities.

^b Electricity retail sales to ultimate customers reported by electric utilities and other energy service providers.

^c See "Direct Use" in Glossary.

^d Includes commercial sector.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#electricity>.

Source: Table 7.1.

Table 7.1 Electricity Overview
(Billion Kilowatthours)

	Net Generation ^a				Trade			T&D Losses ^f and Unaccounted for ^g	End Use		
	Electric Power Sector ^b	Commercial Sector ^c	Industrial Sector ^d	Total	Imports ^e	Exports ^e	Net Imports ^e		Retail Sales ^h	Direct Use ⁱ	Total
1950 Total	329	NA	5	334	2	(s)	2	44	291	NA	291
1955 Total	547	NA	3	550	5	(s)	4	58	497	NA	497
1960 Total	756	NA	4	759	5	1	5	76	688	NA	688
1965 Total	1,055	NA	3	1,058	4	4	(s)	104	954	NA	954
1970 Total	1,532	NA	3	1,535	6	4	2	145	1,392	NA	1,392
1975 Total	1,918	NA	3	1,921	11	5	6	180	1,747	NA	1,747
1980 Total	2,286	NA	3	2,290	25	4	21	216	2,094	NA	2,094
1985 Total	2,470	NA	3	2,473	46	5	41	190	2,324	NA	2,324
1990 Total	2,901	6	^c 131	3,038	18	16	2	203	2,713	125	2,837
1995 Total	3,194	8	151	3,353	43	4	39	229	3,013	151	3,164
2000 Total	3,638	8	157	3,802	49	15	34	244	3,421	171	3,592
2001 Total	3,580	7	149	3,737	39	16	22	202	3,394	163	3,557
2002 Total	3,698	7	153	3,858	37	16	21	248	3,465	166	3,632
2003 Total	3,721	7	155	3,883	30	24	6	228	3,494	168	3,662
2004 Total	3,808	8	154	3,971	34	23	11	266	3,547	168	3,716
2005 Total	3,902	8	145	4,055	44	19	25	269	3,661	150	3,811
2006 Total	3,908	8	148	4,065	43	24	18	266	3,670	147	3,817
2007 Total	4,005	8	143	4,157	51	20	31	298	3,765	126	3,890
2008 Total	3,974	8	137	4,119	57	24	33	286	3,734	132	3,866
2009 Total	3,810	8	132	3,950	52	18	34	261	3,597	127	3,724
2010 Total	3,972	9	144	4,125	45	19	26	264	3,755	132	3,887
2011 Total	3,948	10	142	4,100	52	15	37	255	3,750	133	3,883
2012 Total	3,890	11	146	4,048	59	12	47	263	3,695	138	3,832
2013 Total	3,904	12	150	4,066	69	11	58	256	3,725	143	3,868
2014 Total	3,937	13	144	4,094	67	13	53	244	3,765	139	3,903
2015 January	347	1	13	360	6	1	5	24	330	^E 12	342
February	322	1	11	334	6	1	4	21	307	^E 11	317
March	312	1	11	324	7	1	6	13	305	^E 11	316
April	282	1	11	294	7	1	6	14	275	^E 11	286
May	310	1	12	322	7	1	6	29	288	^E 11	299
June	349	1	12	362	7	1	6	30	326	^E 12	338
July	386	1	13	400	7	1	6	31	363	^E 13	376
August	378	1	13	392	7	1	7	24	362	^E 13	375
September	337	1	12	350	7	1	6	11	333	^E 12	345
October	299	1	12	312	5	1	5	9	296	^E 12	308
November	288	1	12	301	6	1	5	18	276	^E 12	288
December	310	1	13	324	6	1	5	20	297	^E 12	310
Total	3,919	13	146	4,079	76	9	67	244	3,759	141	3,900
2016 January	339	1	13	353	7	1	6	30	317	^E 12	329
February	301	1	12	314	6	1	5	14	293	^E 11	305
March	291	1	12	304	6	1	5	16	282	^E 12	294
April	280	1	12	293	5	1	4	20	266	^E 11	277
May	304	1	12	317	6	1	5	30	281	^E 12	292
June	355	1	12	368	7	1	7	38	325	^E 12	337
July	398	1	13	412	8	1	7	40	367	^E 13	380
August	396	1	13	410	8	1	7	29	376	^E 13	388
September	339	1	12	352	7	1	6	13	332	^E 12	344
October	300	1	12	313	6	1	5	15	292	^E 11	303
November	284	1	12	297	7	1	6	19	273	^E 12	284
December	332	1	12	345	7	1	6	34	306	^E 12	318
Total	3,920	13	147	4,079	81	10	71	297	3,711	^E 142	3,853
2017 January	328	1	12	341	7	1	7	21	314	^E 12	327
February	276	1	11	288	6	1	5	10	273	^E 11	284
March	305	1	12	318	7	1	5	24	288	^E 12	299
April	281	1	11	294	7	1	5	20	269	^E 11	279
4-Month Total	1,190	4	47	1,241	27	4	23	74	1,144	^E 45	1,189
2016 4-Month Total	1,211	4	48	1,263	25	4	21	80	1,158	^E 47	1,205
2015 4-Month Total	1,263	4	46	1,313	25	4	21	72	1,217	^E 45	1,262

^a Electricity net generation at utility-scale facilities. Does not include distributed (small-scale) solar photovoltaic (PV) generation shown on Table 10.6. See Note 1, "Coverage of Electricity Statistics," at end of section.

^b 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.

^c Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

^d Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. Through 1988, data are for industrial hydroelectric power only.

^e Electricity transmitted across U.S. borders. Net imports equal imports minus exports.

^f Transmission and distribution losses (electricity losses that occur between the point of generation and delivery to the customer). See Note 1, "Electrical System Energy Losses," at end of Section 2.

^g Data collection frame differences and nonsampling error.

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

ⁱ Use of electricity that is 1) self-generated, 2) produced by either the same entity that consumes the power or an affiliate, and 3) used in direct support of a service or industrial process located within the same facility or group of facilities that house the generating equipment. Direct use is exclusive of station use.

^E=Estimate. NA=Not available. (s)=Less than 0.5 billion kilowatthours.

Notes: • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section.

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

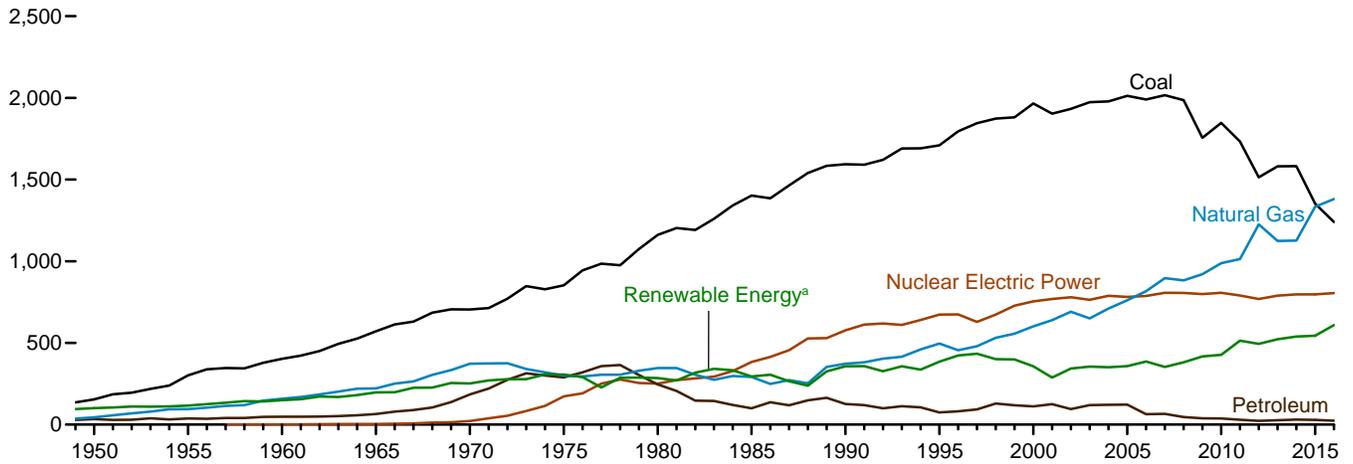
• Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

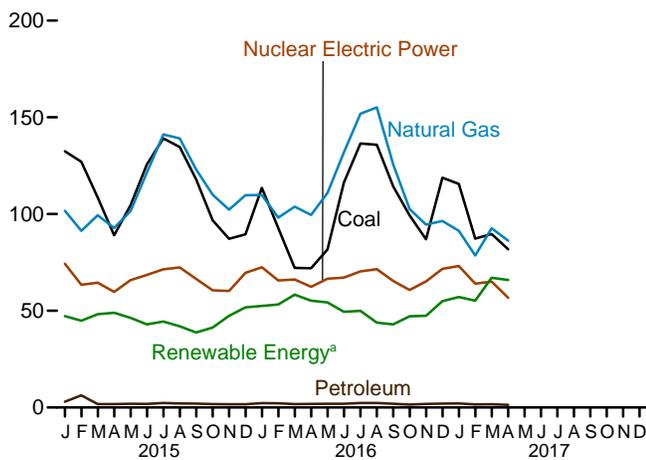
Sources: See end of section.

Figure 7.2 Electricity Net Generation
(Billion Kilowatthours)

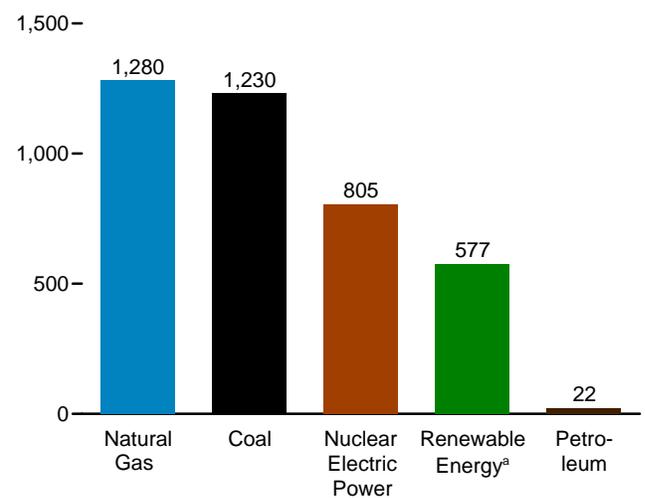
Total (All Sectors), Major Sources, 1949–2016



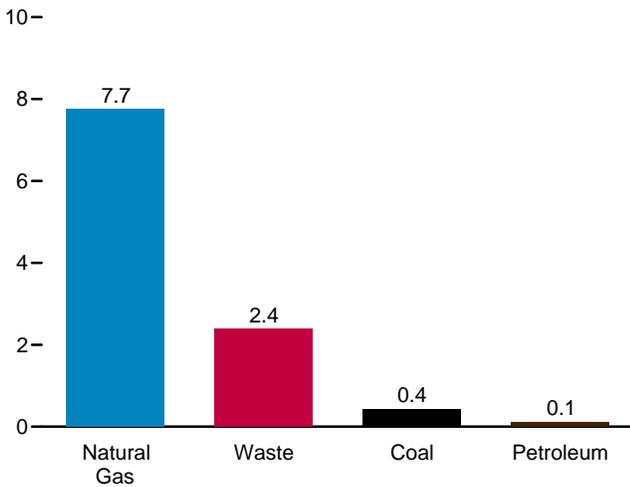
Total (All Sectors), Major Sources, Monthly



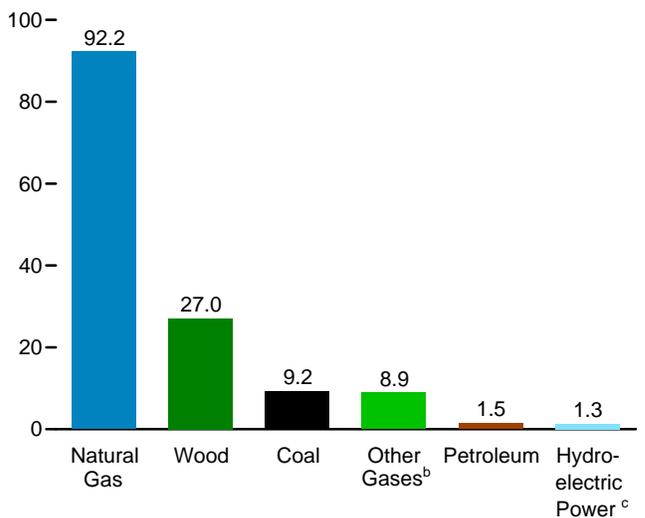
Electric Power Sector, Major Sources, 2016



Commercial Sector, Major Sources, 2016



Industrial Sector, Major Sources, 2016



^a Conventional hydroelectric power, wood, waste, geothermal, solar, and wind.

^b Blast furnace gas, and other manufactured and waste gases derived from fossil fuels.

^c Conventional hydroelectric power.

Note: Data are for utility-scale facilities.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#electricity>.

Sources: Tables 7.2a–7.2c.

Table 7.2a Electricity Net Generation: Total (All Sectors)
(Sum of Tables 7.2b and 7.2c; Million Kilowatthours)

	Fossil Fuels				Nuclear Electric Power	Hydro-electric Pumped Storage ^e	Renewable Energy					Total ^j	
	Coal ^a	Petroleum ^b	Natural Gas ^c	Other Gases ^d			Conventional Hydro-electric Power ^f	Biomass		Geo-thermal	Solar ⁱ		Wind
								Wood ^g	Waste ^h				
1950 Total	154,520	33,734	44,559	NA	0	{ }	100,885	390	NA	NA	NA	NA	334,088
1955 Total	301,363	37,138	95,285	NA	0	{ }	116,236	276	NA	NA	NA	NA	550,299
1960 Total	403,067	47,987	157,970	NA	518	{ }	149,440	140	NA	33	NA	NA	759,156
1965 Total	570,926	64,801	221,559	NA	3,657	{ }	196,984	269	NA	189	NA	NA	1,058,386
1970 Total	704,394	184,183	372,890	NA	21,804	{ }	250,957	136	220	525	NA	NA	1,535,111
1975 Total	852,786	289,095	299,778	NA	172,505	{ }	303,153	18	174	3,246	NA	NA	1,920,755
1980 Total	1,161,562	245,994	346,240	NA	251,116	{ }	279,182	275	158	5,073	NA	NA	2,289,600
1985 Total	1,402,128	100,202	291,946	NA	383,691	{ }	284,311	743	640	9,325	11	6	2,473,002
1990 Total^k	1,594,011	126,460	372,765	10,383	576,862	-3,508	292,866	32,522	13,260	15,434	367	2,789	3,037,827
1995 Total	1,709,426	74,554	496,058	13,870	673,402	-2,725	310,833	36,521	20,405	13,378	497	3,164	3,353,487
2000 Total	1,966,265	111,221	601,038	13,955	753,893	-5,539	275,573	37,595	23,131	14,093	493	5,593	3,802,105
2001 Total	1,903,956	124,880	639,129	9,039	768,826	-8,823	216,961	35,200	14,548	13,741	543	6,737	3,736,644
2002 Total	1,933,130	94,567	691,006	11,463	780,064	-8,743	264,329	38,665	15,044	14,491	555	10,354	3,858,452
2003 Total	1,973,737	119,406	649,908	15,600	763,733	-8,535	275,806	37,529	15,812	14,424	534	11,187	3,883,185
2004 Total	1,978,301	121,145	710,100	15,252	788,528	-8,488	268,417	38,117	15,421	14,811	575	14,144	3,970,555
2005 Total	2,012,823	122,225	760,960	13,464	781,986	-6,558	270,321	38,856	15,420	14,692	550	17,811	4,055,423
2006 Total	1,990,511	64,166	816,441	14,177	787,219	-6,558	289,246	38,762	16,099	14,568	508	26,589	4,064,702
2007 Total	2,016,456	65,739	896,590	13,453	806,425	-6,896	247,510	39,014	16,525	14,637	612	34,450	4,156,745
2008 Total	1,985,801	46,243	882,981	11,707	806,208	-6,288	254,831	37,300	17,734	14,840	864	55,363	4,119,388
2009 Total	1,755,904	38,937	920,979	10,632	798,855	-4,627	273,445	36,050	18,443	15,009	891	73,886	3,950,331
2010 Total	1,847,290	37,061	987,697	11,313	806,968	-5,501	260,203	37,172	18,917	15,219	1,212	94,652	4,125,060
2011 Total	1,733,430	30,182	1,013,689	11,566	790,204	-6,421	319,355	37,449	19,222	15,316	1,818	120,177	4,100,141
2012 Total	1,514,043	23,190	1,225,894	11,898	769,331	-4,950	276,240	37,799	19,823	15,562	4,327	140,822	4,047,765
2013 Total	1,581,115	27,164	1,124,836	12,853	789,016	-4,681	268,565	40,028	20,830	15,775	9,036	167,840	4,065,964
2014 Total	1,581,710	30,232	1,126,609	12,022	797,166	-6,174	259,367	42,340	21,650	15,877	17,691	181,655	4,093,606
2015 January	132,451	2,973	101,687	1,246	74,270	-551	24,138	3,717	1,725	1,362	1,155	15,162	360,455
February	126,977	6,321	91,315	1,025	63,461	-456	22,286	3,372	1,524	1,260	1,484	14,922	334,476
March	108,488	1,778	99,423	1,091	64,547	-409	24,281	3,457	1,712	1,394	2,072	15,308	324,192
April	88,989	1,728	92,806	979	59,784	-214	22,471	3,246	1,729	1,272	2,379	17,867	294,133
May	104,585	1,939	101,516	1,099	65,827	-370	20,125	3,338	1,799	1,390	2,504	17,151	322,087
June	125,673	1,860	121,478	1,118	68,516	-398	20,414	3,496	1,784	1,302	2,558	13,421	362,409
July	139,100	2,304	141,119	1,235	71,412	-513	21,014	3,806	1,989	1,357	2,627	13,675	400,419
August	134,670	2,133	139,084	1,196	72,415	-626	19,122	3,788	1,921	1,344	2,688	13,080	392,116
September	117,986	2,034	123,036	1,210	66,674	-544	16,094	3,450	1,805	1,203	2,217	13,972	350,122
October	96,759	1,771	110,005	906	60,571	-443	16,630	3,252	1,843	1,323	1,910	16,380	312,112
November	87,227	1,710	102,236	902	60,264	-285	19,338	3,418	1,902	1,334	1,730	19,682	300,653
December	89,495	1,697	109,777	1,110	69,634	-281	23,166	3,587	1,969	1,377	1,570	20,988	324,427
Total	1,352,398	28,249	1,333,482	13,117	797,178	-5,091	249,080	41,929	21,703	15,918	24,893	190,719	4,077,601
2016 January	113,551	2,296	109,787	1,263	72,525	-312	25,426	3,615	1,931	1,471	1,516	18,531	352,745
February	92,719	2,140	98,190	1,169	65,638	-399	24,150	3,394	1,713	1,372	2,443	20,204	313,749
March	72,138	1,766	103,791	1,241	66,149	-384	27,025	3,381	1,810	1,460	2,713	21,979	304,168
April	72,022	1,831	99,561	1,149	62,365	-452	25,475	2,909	1,819	1,340	2,949	20,745	292,836
May	81,728	1,924	110,901	977	66,576	-321	25,362	3,173	1,929	1,476	3,603	18,795	317,337
June	116,227	1,945	131,883	1,085	67,175	-497	22,902	3,414	1,829	1,364	3,610	16,318	368,418
July	136,504	2,318	151,860	1,066	70,349	-784	21,247	3,652	1,910	1,424	4,097	17,595	412,450
August	135,811	2,360	155,117	1,102	71,526	-902	19,359	3,650	1,908	1,444	3,948	13,561	410,113
September	114,282	1,924	125,639	1,050	65,448	-715	16,281	3,369	1,763	1,451	3,683	16,430	351,769
October	99,338	1,552	102,625	891	60,733	-561	17,249	3,105	1,752	1,489	3,193	20,380	312,828
November	87,000	1,839	94,529	1,001	65,179	-607	18,815	3,257	1,773	1,507	2,700	19,342	297,427
December	118,790	2,011	96,412	1,007	71,662	-753	22,538	3,584	1,932	1,620	2,299	22,991	345,238
Total	1,240,108	23,906	1,380,295	13,000	805,327	-6,686	265,829	40,504	22,068	17,417	36,754	226,872	4,079,079
2017 January	115,549	2,120	91,325	1,115	73,121	-418	27,704	3,451	1,891	1,541	2,206	20,350	341,072
February	87,267	1,623	78,581	1,152	64,053	-504	24,611	3,308	1,676	1,369	2,562	21,692	288,414
March	89,648	1,716	92,638	1,206	65,093	-517	30,198	3,504	1,763	1,533	4,474	25,599	317,934
April	81,789	1,332	86,234	1,084	56,743	-437	29,236	3,254	1,661	1,503	4,816	25,403	293,679
4-Month Total	374,253	6,790	348,778	4,557	259,010	-1,876	111,750	13,518	6,991	5,945	14,058	93,043	1,241,098
2016 4-Month Total	350,429	8,034	411,329	4,821	266,677	-1,546	102,076	13,299	7,273	5,643	9,620	81,459	1,263,498
2015 4-Month Total	456,904	12,800	385,231	4,341	262,063	-1,631	93,176	13,792	6,690	5,288	7,090	63,259	1,313,256

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.

^b Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

^c Natural gas, plus a small amount of supplemental gaseous fuels.

^d Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

^e Pumped storage facility production minus energy used for pumping.

^f Through 1989, hydroelectric pumped storage is included in "Conventional Hydroelectric Power."

^g Wood and wood-derived fuels.

^h Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

ⁱ Electricity net generation from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include distributed (small-scale) solar photovoltaic

generation. See Table 10.6.

^j Includes batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^k 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.

NA=Not available.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section, "Table 7.2b Sources" and "Table 7.2c Sources."

Table 7.2b Electricity Net Generation: Electric Power Sector
(Subset of Table 7.2a; Million Kilowatthours)

	Fossil Fuels				Nuclear Electric Power	Hydro-electric Pumped Storage ^e	Renewable Energy						Total ^j	
	Coal ^a	Petroleum ^b	Natural Gas ^c	Other Gases ^d			Conventional Hydro-electric Power ^f	Biomass		Geo-thermal	Solar ⁱ	Wind		
								Wood ^g	Waste ^h					
1950 Total	154,520	33,734	44,559	NA	0	()	95,938	390	NA	NA	NA	NA	NA	329,141
1955 Total	301,363	37,138	95,285	NA	0	()	112,975	276	NA	NA	NA	NA	NA	547,038
1960 Total	403,067	47,987	157,970	NA	518	()	145,833	140	NA	33	NA	NA	NA	755,549
1965 Total	570,926	64,801	221,559	NA	3,657	()	193,851	269	NA	189	NA	NA	NA	1,055,252
1970 Total	704,394	184,183	372,890	NA	21,804	()	247,714	136	220	525	NA	NA	NA	1,531,868
1975 Total	852,786	289,095	299,778	NA	172,505	()	300,047	18	174	3,246	NA	NA	NA	1,917,649
1980 Total	1,161,562	245,994	346,240	NA	251,116	()	276,021	275	158	5,073	NA	NA	NA	2,286,439
1985 Total	1,402,128	100,202	291,946	NA	383,691	()	281,149	743	640	9,325	11	6	6	2,469,841
1990 Total^k	1,572,109	118,864	309,486	621	576,862	-3,508	289,753	7,032	11,500	15,434	367	2,789	2,901,322	
1995 Total	1,686,056	68,146	419,179	1,927	673,402	-2,725	305,410	7,597	17,986	13,378	497	3,164	3,194,230	
2000 Total	1,943,111	105,192	517,978	2,028	753,893	-5,539	271,338	8,916	20,307	14,093	493	5,593	3,637,529	
2001 Total	1,882,826	119,149	554,940	586	768,826	-8,823	213,749	8,294	12,944	13,741	543	6,737	3,580,053	
2002 Total	1,910,613	89,733	607,683	1,970	780,064	-8,743	260,491	9,009	13,145	14,491	555	10,354	3,698,458	
2003 Total	1,952,714	113,697	567,303	2,647	763,733	-8,535	271,512	9,528	13,808	14,424	534	11,187	3,721,159	
2004 Total	1,957,188	114,678	627,172	3,568	788,528	-8,488	265,064	9,736	13,062	14,811	575	14,144	3,808,360	
2005 Total	1,992,054	116,482	683,829	3,777	781,986	-6,558	267,040	10,570	13,031	14,692	550	17,811	3,902,172	
2006 Total	1,969,737	99,708	734,417	4,254	787,219	-6,558	286,254	10,341	13,927	14,568	508	26,589	3,908,077	
2007 Total	1,998,390	61,306	814,752	4,042	806,425	-6,896	245,843	10,711	14,294	14,637	612	34,450	4,005,343	
2008 Total	1,968,838	42,881	802,372	3,200	806,208	-6,288	253,096	10,638	15,379	14,840	864	55,363	3,974,349	
2009 Total	1,741,123	35,811	841,006	3,058	798,855	-4,627	271,506	10,738	15,954	15,009	891	73,886	3,809,837	
2010 Total	1,827,738	34,679	901,389	2,967	806,968	-5,501	258,455	11,446	16,376	15,219	1,206	94,636	3,972,386	
2011 Total	1,717,891	28,202	926,290	2,939	790,204	-6,421	317,531	11,733	15,989	15,316	1,727	120,121	3,948,186	
2012 Total	1,500,557	20,072	1,132,791	2,984	769,331	-4,950	273,859	11,050	16,555	15,562	4,164	140,749	3,890,358	
2013 Total	1,567,722	24,510	1,028,949	4,322	789,016	-4,681	265,058	12,302	16,918	15,775	8,724	167,742	3,903,715	
2014 Total	1,568,774	28,043	1,033,172	3,358	797,166	-6,174	258,046	15,027	17,602	15,877	17,304	181,496	3,937,003	
2015 January	131,431	2,789	93,450	394	74,270	-551	24,014	1,307	1,411	1,362	1,134	15,146	346,758	
February	126,024	6,074	84,207	329	63,461	-456	22,179	1,234	1,261	1,260	1,459	14,908	322,473	
March	107,471	1,644	92,110	327	64,547	-409	24,148	1,227	1,393	1,394	2,037	15,293	311,741	
April	88,147	1,570	85,828	290	59,784	-214	22,331	1,025	1,402	1,272	2,338	17,850	282,197	
May	103,672	1,794	94,124	338	65,827	-370	19,995	1,093	1,483	1,390	2,456	17,136	309,552	
June	124,677	1,723	113,390	299	68,516	-398	20,297	1,244	1,473	1,302	2,512	13,410	349,067	
July	138,060	2,185	132,266	311	71,412	-513	20,896	1,365	1,639	1,357	2,579	13,666	385,889	
August	133,651	2,013	130,314	331	72,415	-626	19,030	1,410	1,587	1,344	2,639	13,070	377,856	
September	117,005	1,899	114,792	331	66,476	-544	16,015	1,201	1,481	1,203	2,178	13,961	336,618	
October	95,872	1,657	102,022	229	60,571	-443	16,513	1,047	1,509	1,323	1,875	16,364	299,168	
November	86,362	1,583	94,132	234	60,264	-285	19,202	1,157	1,565	1,334	1,702	19,663	287,551	
December	88,622	1,575	101,022	304	69,634	-281	23,017	1,254	1,620	1,377	1,545	20,080	310,423	
Total	1,340,993	26,505	1,237,656	3,715	797,178	-5,091	247,636	14,563	17,823	15,918	24,456	190,547	3,919,294	
2016 January	112,632	2,163	101,394	370	72,525	-312	25,285	1,235	1,603	1,471	1,491	18,513	339,004	
February	91,856	2,013	90,441	341	65,638	-399	24,014	1,200	1,423	1,372	2,395	20,184	301,047	
March	71,255	1,651	95,645	373	66,149	-384	26,873	1,148	1,461	1,460	2,664	21,957	290,840	
April	71,279	1,717	91,696	330	62,365	-452	25,339	859	1,501	1,340	2,903	20,724	280,203	
May	80,966	1,779	102,698	296	66,576	-321	25,226	953	1,629	1,476	3,547	18,776	304,263	
June	115,375	1,817	123,467	365	67,175	-497	22,791	1,139	1,558	1,364	3,545	16,301	355,036	
July	135,589	2,172	143,001	345	70,349	-784	21,140	1,289	1,595	1,424	4,024	17,578	398,363	
August	134,907	2,209	146,199	346	71,526	-902	19,266	1,315	1,610	1,444	3,886	13,548	396,003	
September	113,529	1,799	117,270	369	65,448	-715	16,217	1,160	1,502	1,451	3,624	16,415	338,670	
October	98,633	1,429	94,516	246	60,733	-561	17,166	920	1,474	1,489	3,145	20,362	300,141	
November	86,365	1,723	86,158	361	65,179	-607	18,744	973	1,498	1,507	2,660	19,324	284,484	
December	118,054	1,855	87,834	327	71,662	-753	22,411	1,235	1,643	1,620	2,273	22,969	331,793	
Total	1,230,442	22,325	1,280,317	4,066	805,327	-6,686	264,470	13,425	18,496	17,417	36,157	226,653	3,919,849	
2017 January	114,723	1,991	82,815	364	73,121	-418	27,569	1,098	1,583	1,541	2,182	20,333	327,533	
February	86,553	1,513	71,031	344	64,053	-504	24,488	1,076	1,397	1,369	2,533	21,675	276,093	
March	88,929	1,581	84,713	382	65,093	-517	30,047	1,230	1,463	1,533	4,425	25,576	305,033	
April	81,166	1,236	78,659	302	56,743	-437	29,090	1,082	1,388	1,503	4,764	25,382	281,440	
4-Month Total	371,371	6,321	317,218	1,392	259,010	-1,876	111,193	4,487	5,831	5,945	13,904	92,966	1,190,099	
2016 4-Month Total	347,022	7,543	379,176	1,413	266,677	-1,546	101,510	4,442	5,988	5,643	9,453	81,379	1,211,094	
2015 4-Month Total	453,072	12,077	355,595	1,340	262,063	-1,631	92,671	4,793	5,466	5,288	6,969	63,197	1,263,168	

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.

^b Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

^c Natural gas, plus a small amount of supplemental gaseous fuels.

^d Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

^e Pumped storage facility production minus energy used for pumping.

^f Through 1989, hydroelectric pumped storage is included in "Conventional Hydroelectric Power."

^g Wood and wood-derived fuels.

^h Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

ⁱ Electricity net generation from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include distributed (small-scale) solar photovoltaic

generation. See Table 10.6.

^j Includes batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

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

NA=Not available.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • 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. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 7.2c Electricity Net Generation: Commercial and Industrial Sectors
(Subset of Table 7.2a; Million Kilowatthours)

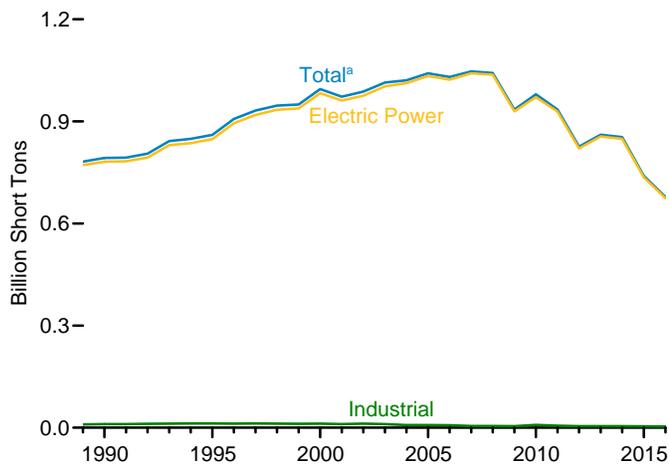
	Commercial Sector ^a					Industrial Sector ^b							
	Coal ^c	Petroleum ^d	Natural Gas ^e	Biomass	Total ^g	Coal ^c	Petroleum ^d	Natural Gas ^e	Other Gases ^h	Hydroelectric Power ⁱ	Biomass		Total ^k
				Waste ^f							Wood ^j	Waste ^f	
1950 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,946	NA	NA	4,946
1955 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,261	NA	NA	3,261
1960 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,607	NA	NA	3,607
1965 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,134	NA	NA	3,134
1970 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,244	NA	NA	3,244
1975 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,106	NA	NA	3,106
1980 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,161	NA	NA	3,161
1985 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,161	NA	NA	3,161
1990 Total	796	589	3,272	812	5,837	21,107	7,008	60,007	9,641	2,975	25,379	949	130,830
1995 Total	998	379	5,162	1,519	8,232	22,372	6,030	71,717	11,943	5,304	28,868	900	151,025
2000 Total	1,097	432	4,262	1,985	7,903	22,056	5,597	78,798	11,927	4,135	28,652	839	156,673
2001 Total	995	438	4,434	1,007	7,416	20,135	5,293	79,755	8,454	3,145	26,888	596	149,175
2002 Total	992	431	4,310	1,053	7,415	21,525	4,403	79,013	9,493	3,825	29,643	846	152,580
2003 Total	1,206	423	3,899	1,289	7,496	19,817	5,285	78,705	12,953	4,222	27,988	715	154,530
2004 Total	1,340	499	3,969	1,562	8,270	19,773	5,967	78,959	11,684	3,248	28,367	797	153,925
2005 Total	1,353	375	4,249	1,657	8,492	19,466	5,368	72,882	9,687	3,195	28,271	733	144,739
2006 Total	1,310	235	4,355	1,599	8,371	19,464	4,223	77,669	9,923	2,899	28,400	572	148,254
2007 Total	1,371	189	4,257	1,599	8,273	16,694	4,243	77,580	9,411	1,590	28,287	631	143,128
2008 Total	1,261	142	4,188	1,534	7,926	15,703	3,219	76,421	8,507	1,676	26,641	821	137,113
2009 Total	1,096	163	4,225	1,748	8,165	13,686	2,963	75,748	7,574	1,868	25,292	740	132,329
2010 Total	1,111	124	4,725	1,672	8,592	18,441	2,258	81,583	8,343	1,668	25,706	869	144,082
2011 Total	1,049	89	5,487	2,315	10,080	14,490	1,891	81,911	8,624	1,799	26,691	917	141,875
2012 Total	883	196	6,603	2,319	11,301	12,603	2,922	86,500	8,913	2,353	26,725	948	146,107
2013 Total	839	124	7,154	2,567	12,234	12,554	2,531	88,733	8,531	3,463	27,691	1,346	150,015
2014 Total	595	255	7,227	2,681	12,520	12,341	1,934	86,209	8,664	1,282	27,239	1,367	144,083
2015 January	56	24	564	209	981	964	161	7,674	852	121	2,404	105	12,717
February	59	73	499	183	932	894	174	6,609	696	105	2,132	80	11,071
March	52	12	560	213	977	965	123	6,753	764	130	2,226	106	11,475
April	38	9	513	216	931	804	149	6,465	690	138	2,218	112	11,005
May	32	11	583	221	1,013	881	135	6,809	761	127	2,239	95	11,522
June	45	10	662	222	1,098	951	128	7,426	819	114	2,251	89	12,244
July	44	12	769	242	1,238	995	107	8,084	925	115	2,434	108	13,292
August	39	12	760	234	1,206	980	108	8,010	864	90	2,377	101	13,054
September	33	8	716	230	1,145	947	127	7,528	879	77	2,245	94	12,359
October	34	7	643	218	1,049	853	107	7,340	678	114	2,201	116	11,894
November	35	6	583	222	992	830	121	7,521	668	133	2,259	115	12,110
December	41	7	617	226	1,033	832	115	8,137	806	145	2,331	122	12,970
Total	509	191	7,471	2,637	12,595	10,896	1,552	88,355	9,401	1,410	27,318	1,243	145,712
2016 January	43	12	648	216	1,057	876	122	7,746	893	136	2,373	112	12,684
February	47	14	550	188	944	817	113	7,198	828	131	2,187	101	11,758
March	44	6	595	230	1,043	839	108	7,551	868	147	2,230	119	12,284
April	29	8	615	206	1,022	713	106	7,250	819	131	2,045	112	11,611
May	26	8	650	202	1,055	736	138	7,554	681	130	2,219	98	12,018
June	28	7	694	181	1,079	824	122	7,723	720	105	2,266	90	12,303
July	30	10	763	209	1,204	884	136	8,095	721	101	2,356	105	12,883
August	33	14	781	203	1,212	870	137	8,137	756	87	2,323	94	12,898
September	34	7	675	182	1,065	718	118	7,695	681	60	2,201	78	12,034
October	36	8	583	191	969	669	115	7,526	646	80	2,181	87	11,718
November	39	8	591	184	961	595	109	7,781	641	68	2,281	91	11,982
December	45	11	605	189	981	691	145	7,973	680	123	2,343	101	12,464
Total	436	112	7,750	2,382	12,593	9,231	1,469	92,227	8,934	1,300	27,007	1,190	146,637
2017 January	40	19	662	208	1,060	786	111	7,848	751	132	2,344	100	12,479
February	31	10	576	186	931	683	100	6,975	808	120	2,224	92	11,389
March	35	13	638	197	1,045	684	122	7,287	825	136	2,272	103	11,856
April	22	8	529	180	903	601	87	7,046	781	131	2,167	93	11,335
4-Month Total	128	50	2,404	772	3,940	2,754	419	29,157	3,165	519	9,008	388	47,059
2016 4-Month Total	164	40	2,409	840	4,067	3,244	450	29,745	3,408	545	8,836	444	48,337
2015 4-Month Total	205	117	2,136	821	3,820	3,627	606	27,501	3,002	494	8,980	403	46,268

^a Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.
^b Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.
^c Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.
^d Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.
^e Natural gas, plus a small amount of supplemental gaseous fuels.
^f Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).
^g Includes a small amount of conventional hydroelectric power, other gases, solar photovoltaic (PV) energy, wind, wood, and other, which are not separately displayed. Does not include distributed (small-scale) solar photovoltaic generation, shown on Table 10.6.
^h Blast furnace gas, and other manufactured and waste gases derived from

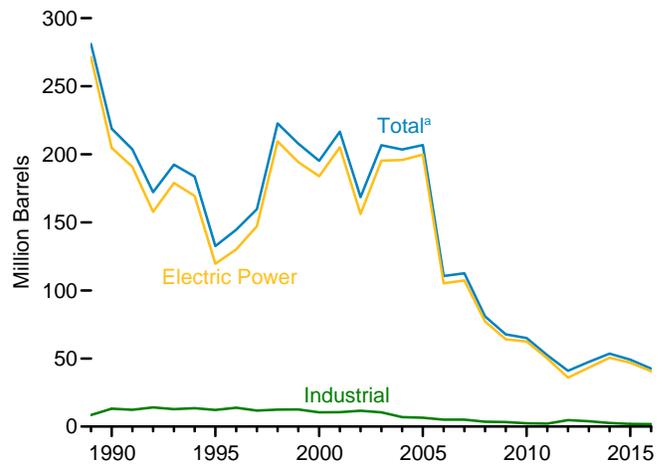
fossil fuels. Through 2010, also includes propane gas.
ⁱ Conventional hydroelectric power.
^j Wood and wood-derived fuels.
^k Includes photovoltaic (PV) energy, wind, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels). Does not include distributed (small-scale) solar photovoltaic generation shown on Table 10.6.
 NA=Not available.
 Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.
 Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
 Sources: See end of section.

Figure 7.3 Consumption of Selected Combustible Fuels for Electricity Generation

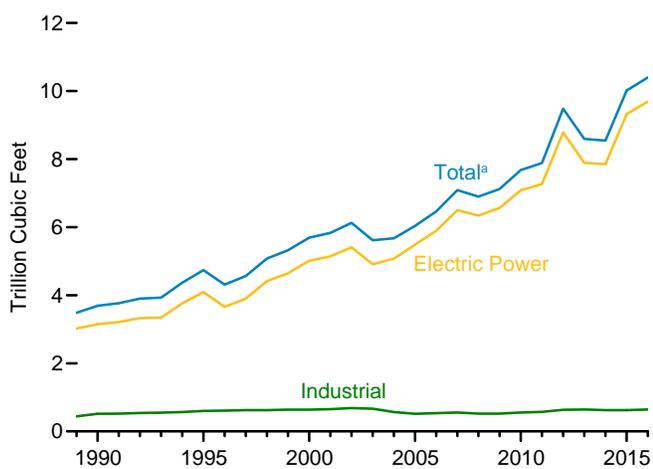
Coal by Sector, 1989–2016



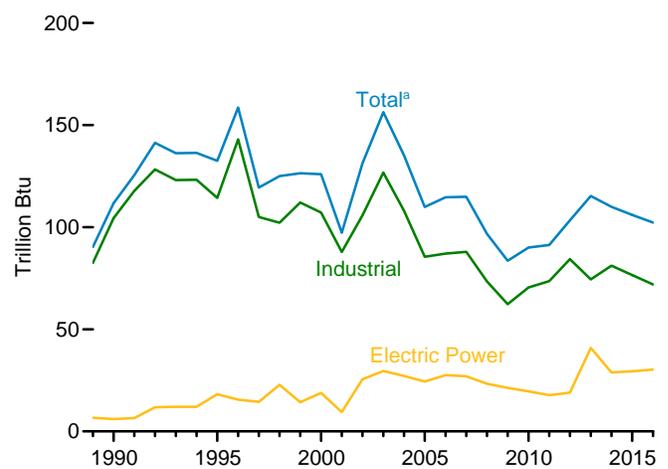
Petroleum by Sector, 1989–2016



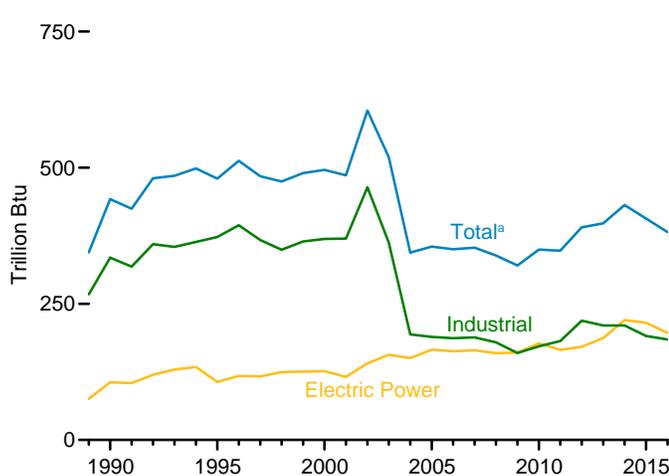
Natural Gas by Sector, 1989–2016



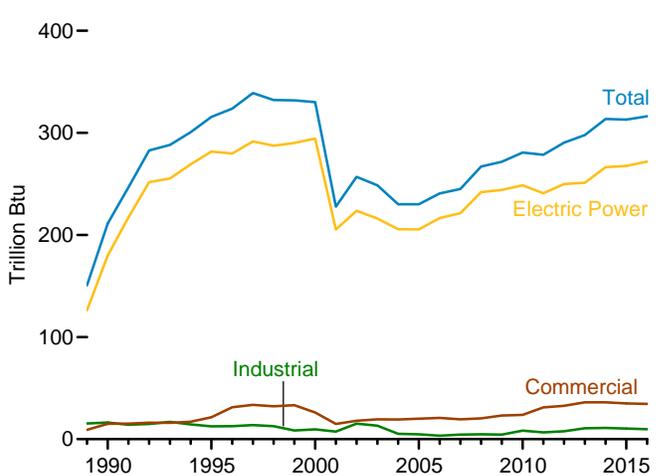
Other Gases^b by Sector, 1989–2016



Wood by Sector, 1989–2016



Waste by Sector, 1989–2016



^a Includes commercial sector.

^b Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

Note: Data are for utility-scale facilities.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#electricity>.

Sources: Tables 7.3a–7.3c.

Table 7.3a Consumption of Combustible Fuels for Electricity Generation: Total (All Sectors) (Sum of Tables 7.3b and 7.3c)

	Coal ^a Thousand Short Tons	Petroleum					Natural Gas ^f Billion Cubic Feet	Other Gases ^g	Biomass		Other ⁱ
		Distillate Fuel Oil ^b Thousand Barrels	Residual Fuel Oil ^c Thousand Barrels	Other Liquids ^d Thousand Barrels	Petroleum Coke ^e Thousand Short Tons	Total ^e Thousand Barrels			Wood ^h Trillion Btu	Waste ⁱ Trillion Btu	
1950 Total	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1955 Total	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1960 Total	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1965 Total	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1970 Total	320,182	24,123	311,381	NA	636	338,686	3,932	NA	1	2	NA
1975 Total	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1980 Total	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1985 Total	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1990 Total^k	792,457	18,143	190,652	437	1,914	218,800	3,692	112	442	211	36
1995 Total	860,594	19,615	95,507	680	3,355	132,578	4,738	133	480	316	42
2000 Total	994,933	31,675	143,381	1,450	3,744	195,228	5,691	126	496	330	46
2001 Total	972,691	31,150	165,312	855	3,871	216,672	5,832	97	486	228	160
2002 Total	987,583	23,286	109,235	1,894	6,836	168,597	6,126	131	605	257	191
2003 Total	1,014,058	29,672	142,518	2,947	6,303	206,653	5,616	156	519	249	193
2004 Total	1,020,523	20,163	142,088	2,856	7,677	203,494	5,675	135	344	230	183
2005 Total	1,041,448	20,651	141,518	2,968	8,330	206,785	6,036	110	355	230	173
2006 Total	1,030,556	13,174	58,473	2,174	7,363	110,634	6,462	115	350	241	172
2007 Total	1,046,795	15,683	63,833	2,917	6,036	112,615	7,089	115	353	245	168
2008 Total	1,042,335	12,832	38,191	2,822	5,417	80,932	6,896	97	339	267	172
2009 Total	934,683	12,658	28,576	2,328	4,821	67,668	7,121	84	320	272	170
2010 Total	979,684	14,050	23,997	2,056	4,994	65,071	7,680	90	350	281	184
2011 Total	934,938	11,231	14,251	1,844	5,012	52,387	7,884	91	348	279	205
2012 Total	825,734	9,285	11,755	1,565	3,675	40,977	9,485	103	390	290	204
2013 Total	860,729	9,784	11,766	1,681	4,852	47,492	8,596	115	398	298	200
2014 Total	853,634	14,465	14,704	2,363	4,412	53,593	8,544	110	431	314	200
2015 January	71,384	1,294	1,718	281	402	5,301	745	10	36	25	17
February	67,136	3,732	4,102	755	413	10,655	676	8	33	22	15
March	58,367	851	805	129	275	3,160	736	8	34	25	16
April	48,543	638	762	122	300	3,020	692	8	31	25	16
May	57,153	841	714	143	339	3,394	766	9	32	26	17
June	68,982	785	823	137	306	3,277	922	9	34	26	17
July	76,570	741	1,091	163	409	4,039	1,084	10	37	29	19
August	73,810	706	961	134	388	3,740	1,065	10	37	28	18
September	64,823	643	830	183	376	3,538	930	9	34	26	17
October	53,659	636	759	146	300	3,041	825	7	31	26	17
November	48,943	804	840	76	260	3,019	767	7	33	27	17
December	50,224	768	718	94	276	2,961	807	9	35	28	18
Total	739,594	12,438	14,124	2,363	4,044	49,145	10,017	106	407	313	204
2016 January	62,048	1,190	979	160	341	4,037	803	10	34	27	16
February	50,567	837	1,091	183	329	3,753	717	9	33	25	14
March	39,857	660	593	113	366	3,198	775	10	33	26	15
April	38,989	617	610	91	390	3,268	754	9	27	27	16
May	45,036	799	658	108	371	3,421	839	8	29	27	17
June	63,326	694	772	111	382	3,488	1,007	8	32	26	17
July	74,241	812	1,255	138	403	4,220	1,179	9	34	27	17
August	73,868	795	1,196	205	422	4,304	1,191	9	35	28	17
September	62,428	631	781	120	383	3,450	951	8	32	25	16
October	54,634	623	846	97	246	2,798	776	7	29	27	16
November	48,126	787	651	122	304	3,079	701	8	30	25	16
December	64,883	905	807	187	337	3,586	706	8	34	27	16
Total	678,005	9,351	10,238	1,636	4,275	42,601	10,400	102	382	316	193
2017 January	63,542	1,018	792	172	362	3,790	678	9	32	27	16
February	48,155	780	676	103	266	2,890	585	9	31	24	14
March	48,915	843	699	110	276	3,033	701	9	33	26	15
April	44,455	728	650	109	154	2,259	648	9	30	24	15
4-Month Total	205,067	3,369	2,817	493	1,059	11,972	2,611	36	126	101	60
2016 4-Month Total	191,461	3,305	3,274	548	1,426	14,256	3,049	38	127	104	62
2015 4-Month Total	245,430	6,515	7,387	1,287	1,390	22,137	2,850	35	134	97	63

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

^b 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.

^c 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.

^d Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

^e Petroleum coke is converted from short tons to barrels by multiplying by 5.

^f Natural gas, plus a small amount of supplemental gaseous fuels.

^g Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

^h Wood and wood-derived fuels.

ⁱ Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and

tire-derived fuels).

^j Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^k Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • 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. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See "Table 7.3b Sources" at end of section and sources for Table 7.3c.

Table 7.3b Consumption of Combustible Fuels for Electricity Generation: Electric Power Sector (Subset of Table 7.3a)

	Coal ^a Thousand Short Tons	Petroleum					Natural Gas ^f Billion Cubic Feet	Other Gases ^g	Biomass		Other ⁱ
		Distillate Fuel Oil ^b Thousand Barrels	Residual Fuel Oil ^c Thousand Barrels	Other Liquids ^d	Petroleum Coke ^e Thousand Short Tons	Total ^e Thousand Barrels			Wood ^h	Waste ⁱ	
1950 Total	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1955 Total	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1960 Total	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1965 Total	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1970 Total	320,182	24,123	311,381	NA	636	338,686	3,932	NA	1	2	NA
1975 Total	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1980 Total	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1985 Total	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1990 Total ^k	781,301	16,394	183,285	25	1,008	204,745	3,147	6	106	180	(s)
1995 Total	847,854	18,066	88,895	441	2,452	119,663	4,094	18	106	282	2
2000 Total	982,713	29,722	138,047	403	3,155	183,946	5,014	19	126	294	1
2001 Total	961,523	29,056	159,150	374	3,308	205,119	5,142	9	116	205	109
2002 Total	975,251	21,810	104,577	1,243	5,705	156,154	5,408	25	141	224	137
2003 Total	1,003,036	27,441	137,361	1,937	5,719	195,336	4,909	30	156	216	136
2004 Total	1,012,459	18,793	138,831	2,511	7,135	195,809	5,075	27	150	206	131
2005 Total	1,033,567	19,450	138,337	2,591	7,877	199,760	5,485	24	166	205	116
2006 Total	1,022,802	12,578	56,347	1,783	6,905	105,235	5,891	28	163	216	117
2007 Total	1,041,346	15,135	62,072	2,496	5,523	107,316	6,502	27	165	221	117
2008 Total	1,036,891	12,318	37,222	2,608	5,000	77,149	6,342	23	159	242	122
2009 Total	929,692	11,848	27,768	2,110	4,485	64,151	6,567	21	160	244	115
2010 Total	971,245	13,677	23,560	1,848	4,679	62,477	7,085	20	177	249	116
2011 Total	928,857	10,961	13,861	1,655	4,726	50,105	7,265	18	166	241	133
2012 Total	820,762	9,000	11,292	1,339	2,861	35,937	8,788	19	171	250	132
2013 Total	855,546	9,511	11,322	1,488	4,189	43,265	7,888	41	187	251	130
2014 Total	848,803	14,052	14,132	2,157	4,039	50,537	7,849	29	220	266	127
2015 January	71,028	1,253	1,685	258	369	5,040	686	3	19	21	10
February	66,799	3,610	4,052	730	388	10,333	625	2	18	19	10
March	57,999	824	778	113	255	2,988	684	2	18	21	10
April	48,230	615	742	96	271	2,811	642	2	16	21	10
May	56,820	818	699	110	320	3,225	712	3	17	22	11
June	68,609	763	807	106	288	3,115	863	2	18	22	11
July	76,179	715	1,077	142	392	3,894	1,019	2	20	25	12
August	73,431	682	947	112	369	3,589	1,001	3	20	24	11
September	64,452	624	822	162	355	3,383	870	3	17	22	11
October	53,331	616	749	123	284	2,907	768	2	15	23	11
November	48,636	787	829	57	240	2,872	709	2	17	23	11
December	49,919	749	706	76	258	2,821	744	3	19	24	11
Total	735,433	12,056	13,893	2,086	3,789	46,978	9,322	29	215	268	127
2016 January	61,716	1,162	962	146	319	3,863	744	3	18	23	11
February	50,256	811	1,076	163	311	3,605	662	3	18	21	10
March	39,538	643	583	103	346	3,060	717	3	17	21	10
April	38,725	596	599	82	369	3,123	698	2	13	23	11
May	44,767	777	649	72	348	3,239	781	2	14	23	11
June	63,007	674	762	88	360	3,326	946	3	17	23	11
July	73,902	786	1,244	108	381	4,043	1,116	3	18	23	11
August	73,526	763	1,185	179	399	4,123	1,127	3	19	24	11
September	62,149	610	774	97	361	3,287	891	3	17	22	10
October	54,376	598	836	58	233	2,658	719	2	14	23	10
November	47,898	761	641	101	286	2,934	641	2	14	22	10
December	64,620	876	795	148	317	3,402	645	2	18	24	11
Total	674,481	9,058	10,105	1,346	4,031	40,662	9,688	30	196	272	127
2017 January	63,226	977	777	149	345	3,629	615	3	16	23	11
February	47,876	756	665	81	253	2,768	529	3	16	21	9
March	48,644	813	685	92	257	2,876	643	3	18	22	10
April	44,222	704	639	94	143	2,150	592	2	15	21	10
4-Month Total	203,967	3,250	2,766	416	998	11,423	2,380	10	65	87	40
2016 4-Month Total	190,235	3,213	3,219	494	1,345	13,650	2,822	11	66	89	41
2015 4-Month Total	244,056	6,302	7,258	1,198	1,283	21,172	2,636	10	71	82	40

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

^b 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.

^c 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.

^d Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

^e Petroleum coke is converted from short tons to barrels by multiplying by 5.

^f Natural gas, plus a small amount of supplemental gaseous fuels.

^g Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

^h Wood and wood-derived fuels.

ⁱ Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^j Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

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

NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • Data are for fuels consumed to produce electricity. Data also include fuels consumed to produce useful thermal output at a small number of electric utility combined-heat-and-power (CHP) plants. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 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. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 7.3c Consumption of Selected Combustible Fuels for Electricity Generation: Commercial and Industrial Sectors (Subset of Table 7.3a)

	Commercial Sector ^a				Industrial Sector ^b						
	Coal ^c	Petroleum ^d	Natural Gas ^e	Biomass	Coal ^c	Petroleum ^d	Natural Gas ^e	Other Gases ^g	Biomass		Other ⁱ
				Waste ^f					Wood ^h	Waste ^f	
	Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu			
1990 Total	417	953	28	15	10,740	13,103	517	104	335	16	36
1995 Total	569	649	43	21	12,171	12,265	601	114	373	13	40
2000 Total	514	823	37	26	11,706	10,459	640	107	369	10	45
2001 Total	532	1,023	36	15	10,636	10,530	654	88	370	7	44
2002 Total	477	834	33	18	11,855	11,608	685	106	464	15	43
2003 Total	582	894	38	19	10,440	10,424	668	127	362	13	46
2004 Total	377	766	33	19	7,687	6,919	566	108	194	5	41
2005 Total	377	585	34	20	7,504	6,440	518	85	189	5	46
2006 Total	347	333	35	21	7,408	5,066	536	87	187	3	45
2007 Total	361	258	34	19	5,089	5,041	554	88	188	4	41
2008 Total	369	166	33	20	5,075	3,617	520	73	179	5	39
2009 Total	317	190	34	23	4,674	3,328	520	62	160	4	42
2010 Total	314	172	39	24	8,125	2,422	555	70	172	8	55
2011 Total	347	137	47	31	5,735	2,145	572	74	182	7	57
2012 Total	307	279	63	33	4,665	4,761	633	84	219	8	54
2013 Total	513	335	67	36	4,670	3,892	642	74	210	11	50
2014 Total	202	462	72	36	4,629	2,594	623	81	210	11	54
2015 January	18	34	5	3	338	227	54	7	17	1	5
February	19	95	5	3	318	228	46	6	15	1	4
March	17	19	5	3	351	153	48	6	15	1	4
April	12	15	5	3	302	194	45	6	15	1	4
May	10	15	6	3	323	154	49	6	16	1	5
June	14	14	6	3	359	148	53	7	16	1	5
July	14	16	7	3	376	129	57	8	17	1	6
August	12	18	7	3	368	133	57	7	17	1	5
September	10	9	7	3	360	146	54	7	16	1	5
October	11	8	6	3	317	127	51	5	16	1	5
November	12	8	5	3	295	139	53	5	16	1	5
December	14	9	6	3	292	131	57	6	16	1	5
Total	163	260	70	35	3,999	1,907	625	77	191	10	58
2016 January	14	14	6	3	319	160	53	7	16	1	4
February	15	15	5	3	296	133	50	7	15	1	3
March	14	8	5	3	304	131	52	7	15	1	4
April	11	10	5	3	254	135	50	7	14	1	4
May	9	11	6	3	260	171	53	5	15	1	4
June	10	9	6	3	310	153	54	6	16	1	4
July	11	11	7	3	328	165	57	6	16	1	4
August	12	15	7	3	330	166	57	6	16	1	4
September	12	10	6	3	267	153	54	6	15	1	4
October	13	11	5	3	246	129	52	5	15	1	4
November	13	11	5	3	215	134	55	5	16	1	4
December	15	14	6	3	249	169	56	6	16	1	4
Total	148	139	69	35	3,376	1,800	644	72	185	10	48
2017 January	16	31	6	3	300	130	56	6	16	1	4
February	12	16	5	3	267	106	50	7	15	1	3
March	12	22	6	3	259	135	52	7	15	1	4
April	8	14	5	3	225	96	51	6	15	1	4
4-Month Total	48	83	22	11	1,051	466	209	26	61	3	15
2016 4-Month Total	54	47	22	12	1,173	559	206	27	60	4	15
2015 4-Month Total	65	163	20	11	1,309	802	194	25	63	3	17

^a Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

^b Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

^c Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

^d Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

^e Natural gas, plus a small amount of supplemental gaseous fuels.

^f Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^g Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

^h Wood and wood-derived fuels.

ⁱ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

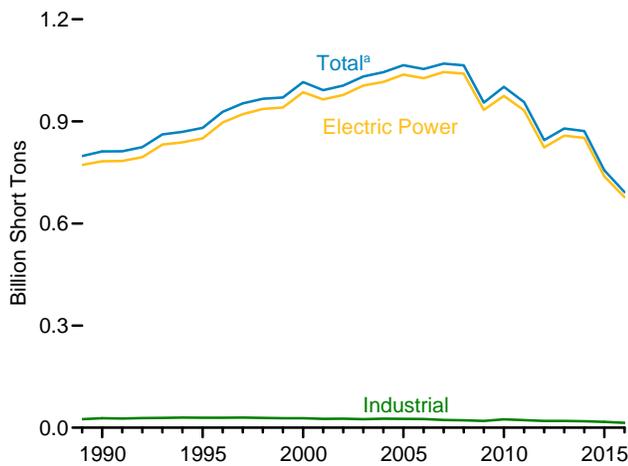
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Data are for fuels consumed to produce electricity. Through 1988, data are not available. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual and monthly data beginning in 1989.

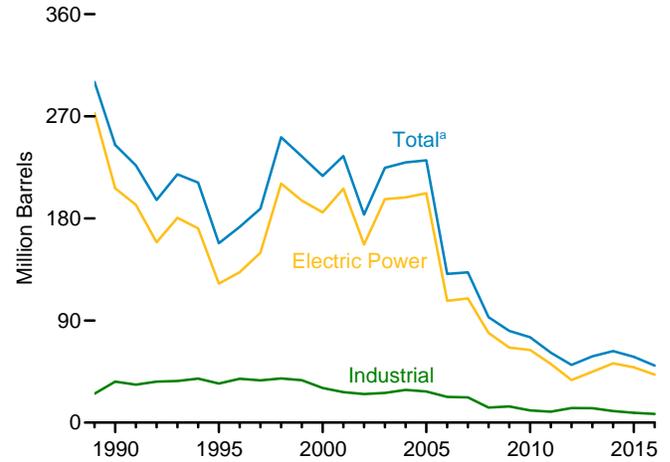
Sources: • **1989–1997:** U.S. Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • **1998–2000:** EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • **2001–2003:** EIA, Form EIA-906, "Power Plant Report." • **2004–2007:** EIA, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report." • **2008 forward:** EIA, Form EIA-923, "Power Plant Operations Report."

Figure 7.4 Consumption of Selected Combustible Fuels for Electricity Generation and Useful Thermal Output

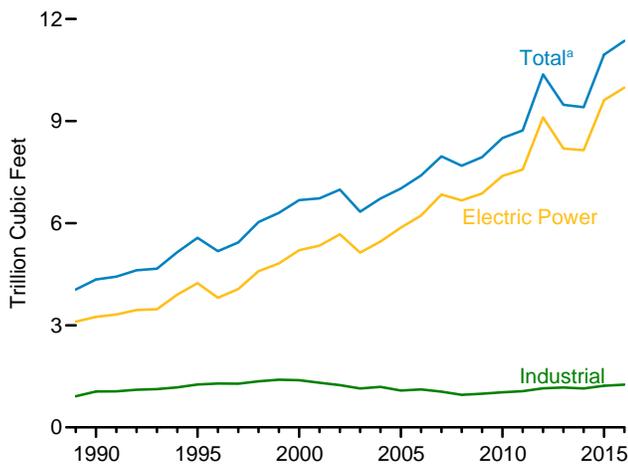
Coal by Sector, 1989–2016



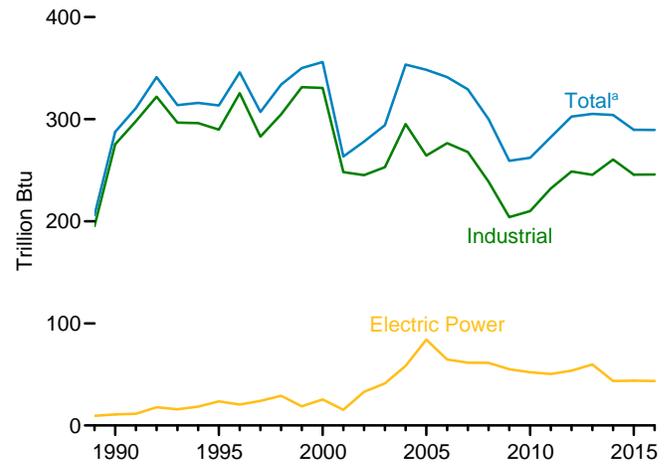
Petroleum by Sector, 1989–2016



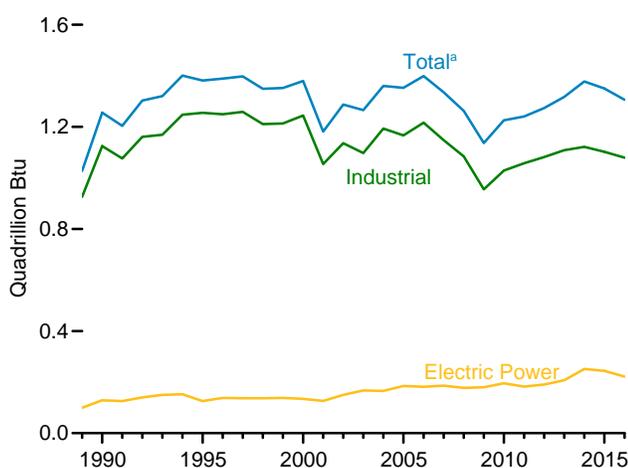
Natural Gas by Sector, 1989–2016



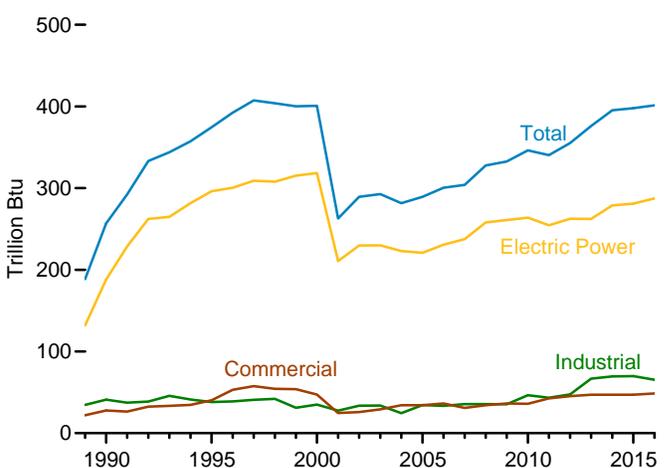
Other Gases^b by Sector, 1989–2016



Wood by Sector, 1989–2016



Waste by Sector, 1989–2016



^a Includes commercial sector.

^b Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

Note: Data are for utility-scale facilities.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#electricity>.

Sources: Tables 7.4a–7.4c.

Table 7.4a Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output: Total (All Sectors) (Sum of Tables 7.4b and 7.4c)

	Coal ^a	Petroleum					Natural Gas ^f	Other Gases ^g	Biomass		Other ^j
		Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e	Total ^e			Wood ^h	Waste ⁱ	
1950 Total	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1955 Total	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1960 Total	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1965 Total	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1970 Total	320,182	24,123	311,381	NA	636	338,686	3,932	NA	1	2	NA
1975 Total	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1980 Total	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1985 Total	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1990 Total ^k	811,538	20,194	209,081	1,332	2,832	244,765	4,346	288	1,256	257	86
1995 Total	881,012	21,697	112,168	1,322	4,590	158,140	5,572	313	1,382	374	97
2000 Total	1,015,398	34,572	156,673	2,904	4,669	217,494	6,677	356	1,380	401	109
2001 Total	991,635	33,724	177,137	1,418	4,532	234,940	6,731	263	1,182	263	229
2002 Total	1,005,144	24,749	118,637	3,257	7,353	183,409	6,986	278	1,287	289	252
2003 Total	1,031,778	31,825	152,859	4,576	7,067	224,593	6,337	294	1,266	293	262
2004 Total	1,044,798	23,520	157,478	4,764	8,721	229,364	6,727	353	1,360	282	254
2005 Total	1,065,281	24,446	156,915	4,270	9,113	231,193	7,021	348	1,353	289	237
2006 Total	1,053,783	14,655	69,846	3,396	8,622	131,005	7,404	341	1,399	300	247
2007 Total	1,069,606	17,042	74,616	4,237	7,299	132,389	7,962	329	1,336	304	239
2008 Total	1,064,503	14,137	43,477	3,765	6,314	92,948	7,689	300	1,263	328	212
2009 Total	955,190	14,800	33,672	3,218	5,828	80,830	7,938	259	1,137	333	228
2010 Total	1,001,411	15,247	26,944	2,777	6,053	75,231	8,502	262	1,226	346	237
2011 Total	956,470	11,735	16,877	2,540	6,092	61,610	8,724	282	1,241	340	261
2012 Total	845,066	9,945	13,571	2,185	5,021	50,805	10,371	302	1,273	355	252
2013 Total	879,078	10,277	14,199	2,212	6,338	58,378	9,479	305	1,318	376	236
2014 Total	871,741	15,107	16,615	2,908	5,695	63,106	9,410	304	1,378	395	236
2015 January	73,033	1,354	1,913	350	510	6,169	824	28	121	33	19
February	68,640	3,892	4,468	824	513	11,747	749	23	109	29	17
March	59,861	889	981	176	376	3,926	817	24	111	33	19
April	49,840	665	912	184	406	3,790	765	23	109	32	19
May	58,488	863	866	201	435	4,107	839	24	112	32	20
June	70,309	807	964	193	398	3,952	997	25	111	32	20
July	78,021	780	1,241	206	490	4,674	1,166	26	117	35	22
August	75,156	727	1,101	176	475	4,379	1,148	26	118	34	21
September	66,124	663	959	234	475	4,229	1,008	25	111	32	20
October	54,904	660	903	203	384	3,684	904	22	106	34	20
November	50,264	829	973	121	365	3,750	845	21	110	35	20
December	51,587	796	855	140	362	3,603	889	24	116	37	21
Total	756,226	12,924	16,136	3,008	5,188	58,009	10,952	290	1,351	398	237
2016 January	63,549	1,231	1,142	201	420	4,675	889	25	117	34	18
February	51,960	878	1,218	239	416	4,413	795	23	108	32	17
March	41,233	683	720	147	474	3,922	855	27	108	34	18
April	40,039	643	738	118	461	3,804	831	25	100	35	19
May	46,171	825	779	169	445	3,997	917	23	105	33	19
June	64,502	724	891	158	461	4,079	1,085	25	109	33	19
July	75,416	857	1,396	191	488	4,885	1,261	25	112	35	19
August	75,041	834	1,340	254	506	4,958	1,275	26	113	34	20
September	63,469	657	895	166	448	3,959	1,029	23	105	31	18
October	55,643	656	985	156	359	3,590	852	24	103	32	18
November	49,162	817	760	166	381	3,648	778	21	109	33	18
December	66,084	937	933	254	433	4,287	790	24	117	35	19
Total	692,269	9,743	11,798	2,219	5,291	50,216	11,357	289	1,306	401	222
2017 January	64,827	1,058	940	235	436	4,410	764	25	113	36	19
February	49,230	803	782	148	332	3,395	663	25	104	32	17
March	50,099	870	796	148	363	3,630	785	26	113	35	18
April	45,502	751	785	150	229	2,830	725	24	104	32	18
4-Month Total	209,657	3,481	3,303	681	1,360	14,266	2,937	100	434	135	72
2016 4-Month Total	196,780	3,435	3,817	704	1,771	16,813	3,370	99	434	134	72
2015 4-Month Total	251,374	6,799	8,274	1,535	1,805	25,632	3,156	98	449	126	74

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal symfuel.

^b 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.

^c 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.

^d Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

^e Petroleum coke is converted from short tons to barrels by multiplying by 5.

^f Natural gas, plus a small amount of supplemental gaseous fuels.

^g Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

^h Wood and wood-derived fuels.

ⁱ Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes

non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^j Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^k Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See "Table 7.4b Sources" at end of section and sources for Table 7.4c.

Table 7.4b Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output: Electric Power Sector (Subset of Table 7.4a)

	Coal ^a	Petroleum					Natural Gas ^f	Other Gases ^g	Biomass		Other ⁱ
		Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e	Total ^e			Wood ^h	Waste ^j	
1950 Total	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1955 Total	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1960 Total	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1965 Total	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1970 Total	320,182	24,123	311,381	NA	636	338,686	3,932	NA	1	2	NA
1975 Total	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1980 Total	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1985 Total	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1990 Total ^k	782,567	16,567	184,915	26	1,008	206,550	3,245	11	129	188	(s)
1995 Total	850,230	18,553	90,023	499	2,674	122,447	4,237	24	125	296	2
2000 Total	985,821	30,016	138,513	454	3,275	185,358	5,206	25	134	318	1
2001 Total	964,433	29,274	159,504	377	3,427	206,291	5,342	15	126	211	113
2002 Total	977,507	21,876	104,773	1,267	5,816	156,996	5,672	33	150	230	143
2003 Total	1,005,116	27,632	138,279	2,026	5,799	196,932	5,135	41	167	230	140
2004 Total	1,016,268	19,107	139,816	2,713	7,372	198,498	5,464	58	165	223	138
2005 Total	1,037,485	19,675	139,409	2,685	8,083	202,184	5,869	84	185	221	123
2006 Total	1,026,636	12,646	57,345	1,870	7,101	107,365	6,222	65	182	231	125
2007 Total	1,045,141	15,327	63,086	2,594	5,685	109,431	6,841	61	186	237	124
2008 Total	1,040,580	12,547	38,241	2,670	5,119	79,056	6,668	61	177	258	131
2009 Total	933,627	12,035	28,782	2,210	4,611	66,081	6,873	55	180	261	124
2010 Total	975,052	13,790	24,503	1,877	4,777	64,055	7,387	52	196	264	124
2011 Total	932,484	11,021	14,803	1,658	4,837	51,667	7,574	50	182	255	143
2012 Total	823,551	9,080	12,203	1,339	2,974	37,495	9,111	54	190	262	143
2013 Total	857,962	9,598	12,283	1,489	4,285	44,794	8,191	60	207	262	139
2014 Total	851,602	14,235	15,132	2,208	4,132	52,235	8,146	44	251	279	137
2015 January	71,323	1,272	1,754	276	379	5,198	711	4	22	23	11
February	67,061	3,683	4,182	748	397	10,599	648	4	21	20	10
March	58,272	831	857	117	264	3,126	709	3	21	22	11
April	48,449	619	819	97	281	2,941	664	3	18	22	11
May	57,060	821	777	111	330	3,360	734	4	18	23	11
June	68,867	766	883	106	298	3,248	886	3	21	23	12
July	76,452	727	1,167	142	402	4,044	1,046	3	22	26	12
August	73,678	685	1,033	113	378	3,723	1,027	4	23	25	12
September	64,682	626	910	162	363	3,516	895	4	20	23	11
October	53,557	618	845	124	292	3,049	792	3	17	24	11
November	48,879	790	911	57	252	3,020	732	3	19	25	11
December	50,165	753	792	77	268	2,964	769	4	21	25	12
Total	738,444	12,193	14,929	2,131	3,907	48,787	9,613	44	244	281	136
2016 January	61,970	1,169	1,042	147	329	4,002	771	4	21	25	12
February	50,487	821	1,130	174	321	3,729	686	3	21	23	11
March	39,788	647	662	108	357	3,201	743	4	20	23	11
April	38,984	600	675	83	376	3,235	721	3	15	25	12
May	44,983	781	730	72	354	3,356	806	3	16	24	12
June	63,243	679	836	89	368	3,446	971	4	19	24	12
July	74,136	792	1,324	109	389	4,172	1,142	4	20	24	12
August	73,757	769	1,274	179	408	4,263	1,155	4	21	25	12
September	62,366	614	858	98	370	3,421	915	4	18	23	11
October	54,601	603	919	58	244	2,798	741	3	15	24	11
November	48,102	764	716	101	295	3,058	664	4	17	23	11
December	64,858	886	877	155	326	3,549	669	4	20	25	12
Total	677,275	9,126	11,043	1,374	4,137	42,230	9,984	44	222	287	137
2017 January	63,477	985	861	162	354	3,778	639	4	19	25	12
February	48,095	759	731	85	262	2,888	550	4	18	22	10
March	48,901	816	730	92	267	2,974	667	4	20	24	11
April	44,441	707	718	94	152	2,279	614	4	18	22	10
4-Month Total	204,914	3,266	3,041	434	1,036	11,920	2,470	15	75	93	43
2016 4-Month Total	191,228	3,238	3,509	512	1,382	14,167	2,921	15	76	95	45
2015 4-Month Total	245,105	6,405	7,612	1,238	1,322	21,864	2,733	15	81	87	43

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.
^b 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.
^c 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.
^d Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.
^e Petroleum coke is converted from short tons to barrels by multiplying by 5.
^f Natural gas, plus a small amount of supplemental gaseous fuels.
^g Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.
^h Wood and wood-derived fuels.
ⁱ Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and

tire-derived fuels).
^j Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).
^k Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.
 NA=Not available. (s)=Less than 0.5 trillion Btu.
 Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • 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. • Geographic coverage is the 50 states and the District of Columbia.
 Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
 Sources: See end of section.

Table 7.4c Consumption of Selected Combustible Fuels for Electricity Generation and Useful Thermal Output: Commercial and Industrial Sectors (Subset of Table 7.4a)

	Commercial Sector ^a				Industrial Sector ^b						
	Coal ^c	Petroleum ^d	Natural Gas ^e	Biomass	Coal ^c	Petroleum ^d	Natural Gas ^e	Other Gases ^g	Biomass		Other ⁱ
				Waste ^f					Wood ^h	Waste ^f	
Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu				
1990 Total	1,191	2,056	46	28	27,781	36,159	1,055	275	1,125	41	86
1995 Total	1,419	1,245	78	40	29,363	34,448	1,258	290	1,255	38	95
2000 Total	1,547	1,615	85	47	28,031	30,520	1,386	331	1,244	35	108
2001 Total	1,448	1,832	79	25	25,755	26,817	1,310	248	1,054	27	101
2002 Total	1,405	1,250	74	26	26,232	25,163	1,240	245	1,136	34	92
2003 Total	1,816	1,449	58	29	24,846	26,212	1,144	253	1,097	34	103
2004 Total	1,917	2,009	72	34	26,613	28,857	1,191	295	1,193	24	94
2005 Total	1,922	1,630	68	34	25,875	27,380	1,084	264	1,166	34	94
2006 Total	1,886	935	68	36	25,262	22,706	1,115	277	1,216	33	102
2007 Total	1,927	752	70	31	22,537	22,207	1,050	268	1,148	36	98
2008 Total	2,021	671	66	34	21,902	13,222	955	239	1,084	35	60
2009 Total	1,798	521	76	36	19,766	14,228	990	204	955	35	82
2010 Total	1,720	437	86	36	24,638	10,740	1,029	210	1,029	47	91
2011 Total	1,668	333	87	43	22,319	9,610	1,063	232	1,057	43	94
2012 Total	1,450	457	111	45	20,065	12,853	1,149	249	1,082	47	81
2013 Total	1,356	887	118	47	19,761	12,697	1,170	246	1,109	67	69
2014 Total	1,063	758	119	47	19,076	10,112	1,145	260	1,122	70	72
2015 January	97	88	10	4	1,613	884	103	23	98	6	6
February	97	221	9	3	1,483	926	92	20	87	5	5
March	83	53	9	4	1,506	746	99	21	90	6	5
April	54	39	8	4	1,336	810	93	20	90	6	6
May	50	34	9	4	1,378	713	95	20	93	5	6
June	61	28	10	4	1,381	676	101	21	90	5	6
July	64	32	11	4	1,505	599	109	22	95	5	7
August	58	42	11	4	1,420	614	110	22	95	5	7
September	51	22	11	4	1,391	691	102	21	90	5	6
October	52	20	10	4	1,296	616	102	18	88	7	6
November	59	23	9	4	1,325	707	103	18	91	7	6
December	72	20	10	4	1,350	618	110	20	94	7	6
Total	798	622	116	47	16,984	8,600	1,222	246	1,103	70	73
2016 January	76	41	10	4	1,503	632	107	21	95	5	5
February	78	41	9	4	1,395	643	100	19	87	5	4
March	75	23	10	5	1,370	698	103	23	88	6	5
April	49	21	9	4	1,006	547	100	22	85	6	5
May	40	20	9	4	1,149	622	102	19	89	5	5
June	46	17	10	4	1,212	617	104	21	90	6	5
July	46	28	11	4	1,234	684	108	21	92	6	5
August	50	25	11	4	1,234	669	109	22	91	5	5
September	49	18	10	4	1,053	520	104	19	86	5	5
October	50	20	9	4	993	771	102	21	87	4	4
November	61	20	9	4	998	570	106	18	92	5	4
December	71	35	10	4	1,155	704	112	20	96	6	4
Total	692	310	117	49	14,302	7,676	1,257	246	1,080	65	56
2017 January	62	71	11	4	1,288	562	114	21	94	7	5
February	50	46	10	4	1,085	460	102	21	85	6	5
March	55	56	10	4	1,143	600	108	23	92	7	5
April	37	29	9	4	1,024	522	103	20	86	6	5
4-Month Total	204	202	40	16	4,539	2,144	427	85	357	27	19
2016 4-Month Total	278	126	39	17	5,274	2,520	410	85	356	22	18
2015 4-Month Total	331	401	35	15	5,938	3,366	388	83	366	24	22

^a Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

^b Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

^c Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.

^d Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

^e Natural gas, plus a small amount of supplemental gaseous fuels.

^f Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^g Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

^h Wood and wood-derived fuels.

ⁱ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

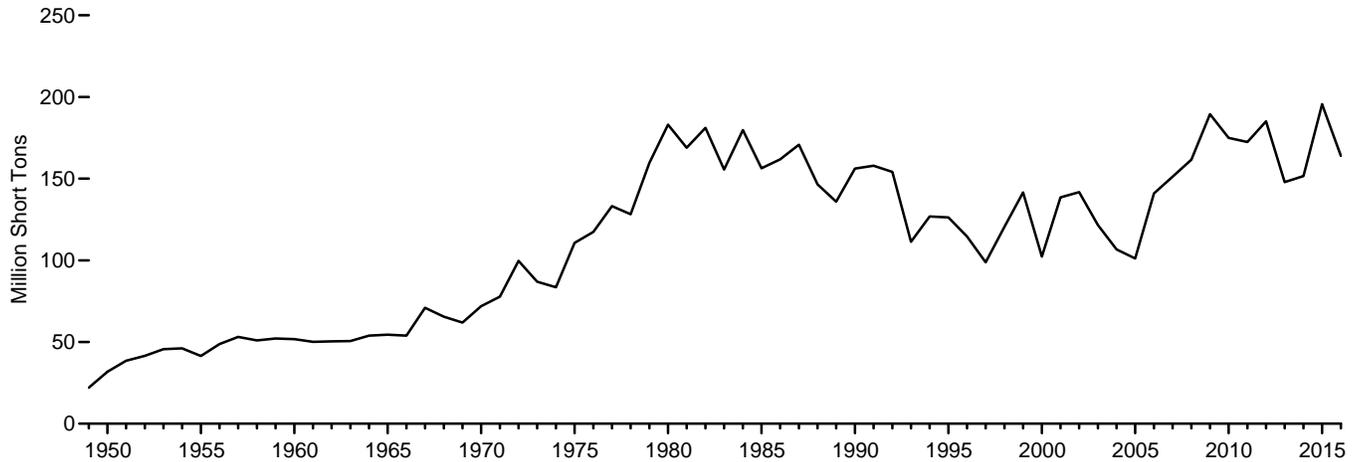
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual and monthly data beginning in 1989.

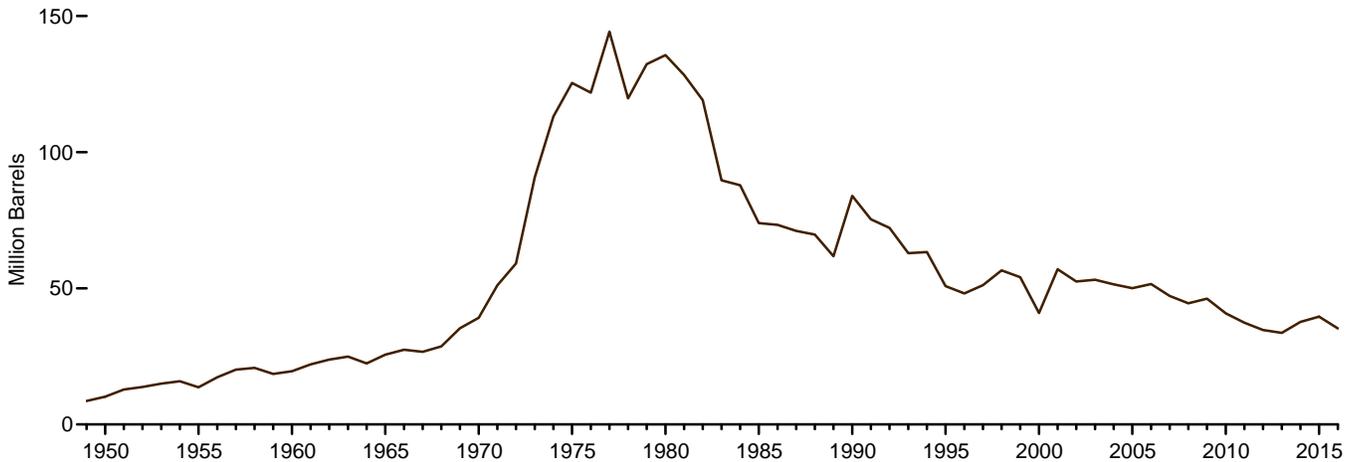
Sources: • **1989–1997:** U.S. Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • **1998–2000:** EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • **2001–2003:** EIA, Form EIA-906, "Power Plant Report." • **2004–2007:** EIA, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report." • **2008 forward:** EIA, Form EIA-923, "Power Plant Operations Report."

Figure 7.5 Stocks of Coal and Petroleum: Electric Power Sector

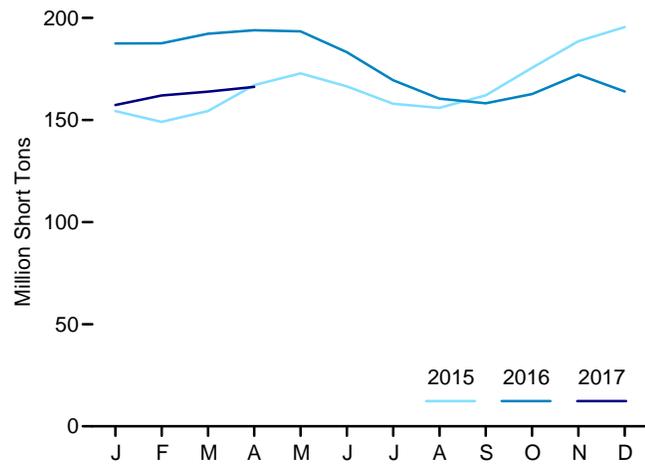
Coal, 1949–2016



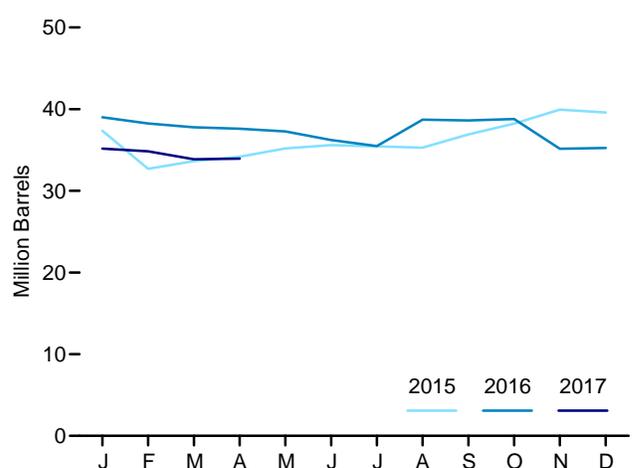
Total Petroleum, 1949–2016



Coal, Monthly



Total Petroleum, Monthly



Note: Data are for utility-scale facilities.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#electricity>.
 Source: Table 7.5.

Table 7.5 Stocks of Coal and Petroleum: Electric Power Sector

	Coal ^a		Petroleum				
	Thousand Short Tons	Thousand Short Tons	Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e	Total ^{e,f}
			Thousand Barrels			Thousand Short Tons	Thousand Barrels
1950 Year	31,842	NA	NA	NA	NA	NA	10,201
1955 Year	41,391	NA	NA	NA	NA	NA	13,671
1960 Year	51,735	NA	NA	NA	NA	NA	19,572
1965 Year	54,525	NA	NA	NA	NA	NA	25,647
1970 Year	71,908	NA	NA	NA	NA	239	39,151
1975 Year	110,724	16,432	108,825	NA	NA	31	125,413
1980 Year	183,010	30,023	105,351	NA	NA	52	135,635
1985 Year	156,376	16,386	57,304	NA	NA	49	73,933
1990 Year	156,166	16,471	67,030	NA	NA	94	83,970
1995 Year	126,304	15,392	35,102	NA	NA	65	50,821
2000 Year ^g	102,296	15,127	24,748	NA	NA	211	40,932
2001 Year	138,496	20,486	34,594	NA	NA	390	57,031
2002 Year	141,714	17,413	25,723	800	1,711	52,490	52,490
2003 Year	121,567	19,153	25,820	779	1,484	53,170	53,170
2004 Year	106,669	19,275	26,596	879	937	51,434	51,434
2005 Year	101,137	18,778	27,624	1,012	530	50,062	50,062
2006 Year	140,964	18,013	28,823	1,380	674	51,583	51,583
2007 Year	151,221	18,395	24,136	1,902	554	47,203	47,203
2008 Year	161,589	17,761	21,088	1,955	739	44,498	44,498
2009 Year	189,467	17,886	19,068	2,257	1,394	46,181	46,181
2010 Year	174,917	16,758	16,629	2,319	1,019	40,800	40,800
2011 Year	172,387	16,649	15,491	2,707	508	37,387	37,387
2012 Year	185,116	16,433	12,999	2,792	495	34,698	34,698
2013 Year	147,884	16,068	12,926	2,679	390	33,622	33,622
2014 Year	151,548	18,309	12,764	2,432	827	37,643	37,643
2015 January	154,390	18,216	12,207	2,473	892	37,355	37,355
February	149,071	16,459	9,798	2,188	850	32,697	32,697
March	154,347	16,996	10,251	2,289	818	33,626	33,626
April	167,063	17,167	10,152	2,294	912	34,173	34,173
May	172,809	17,357	10,518	2,309	999	35,180	35,180
June	166,437	17,513	10,570	2,358	1,031	35,598	35,598
July	157,938	17,519	10,263	2,337	1,064	35,442	35,442
August	155,952	17,712	10,087	2,345	1,029	35,286	35,286
September	162,109	18,286	10,766	2,339	1,102	36,898	36,898
October	175,588	18,596	11,492	2,375	1,151	38,217	38,217
November	188,595	18,738	12,310	2,440	1,290	39,937	39,937
December	195,548	17,955	12,566	2,363	1,340	39,586	39,586
2016 January	187,486	17,783	12,275	2,338	1,320	38,997	38,997
February	187,575	17,457	11,880	2,300	1,323	38,254	38,254
March	192,269	17,341	11,948	2,290	1,240	37,778	37,778
April	193,991	17,394	12,187	2,114	1,181	37,599	37,599
May	193,432	17,497	12,309	2,118	1,071	37,281	37,281
June	183,248	17,419	12,151	2,117	905	36,214	36,214
July	169,465	17,189	11,886	2,115	858	35,480	35,480
August	160,452	21,082	11,644	2,097	780	38,721	38,721
September	158,238	21,019	11,662	2,087	768	38,606	38,606
October	162,739	21,107	11,519	2,097	812	38,785	38,785
November	172,208	17,032	11,826	2,124	833	35,145	35,145
December	163,946	17,057	11,670	2,153	872	35,239	35,239
2017 January	157,359	17,065	11,839	2,125	827	35,164	35,164
February	161,985	16,767	11,701	2,081	859	34,844	34,844
March	163,900	15,561	12,036	1,852	882	33,858	33,858
April	166,236	15,492	11,825	1,852	952	33,931	33,931

^a Anthracite, bituminous coal, subbituminous coal, and lignite; excludes waste coal.

^b Fuel oil nos. 1, 2 and 4. For 1973–1979, 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.

^c Fuel oil nos. 5 and 6. For 1973–1979, data are for steam plant stocks of petroleum. For 1980–2000, electric utility data also include a small amount of fuel oil no. 4.

^d Jet fuel and kerosene. Through 2003, data also include a small amount of waste oil.

^e Petroleum coke is converted from short tons to barrels by multiplying by 5.

^f Distillate fuel oil and residual fuel oil. Beginning in 1970, also includes petroleum coke. Beginning in 2002, also includes other liquids.

^g Through 1998, data are for electric utilities only. Beginning in 1999, data are for electric utilities and independent power producers.

NA=Not available.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose

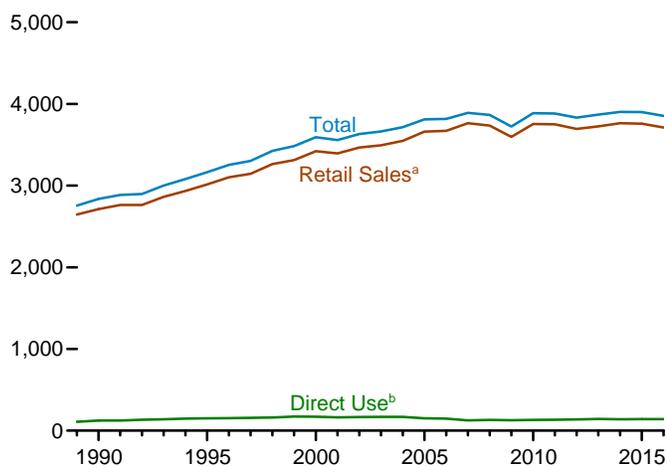
primary business is to sell electricity, or electricity and heat, to the public. • Stocks are at end of period. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

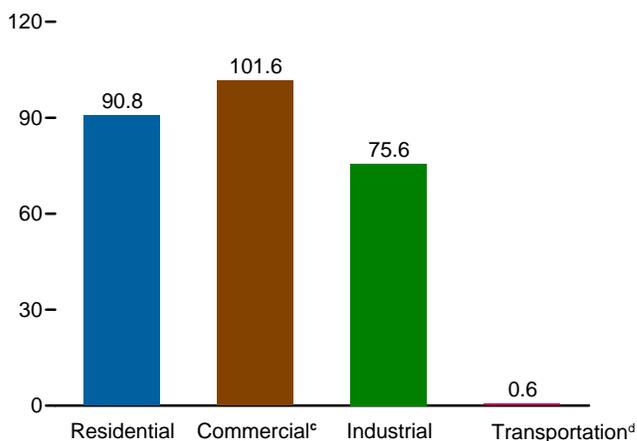
Sources: • **1949–September 1977:** Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • **October 1977–1981:** Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • **1982–1988:** U.S. Energy Information Administration (EIA), Form EIA-759, "Monthly Power 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." • **2001–2003:** EIA, Form EIA-906, "Power Plant Report." • **2004–2007:** EIA, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report." • **2008 forward:** EIA, Form EIA-923, "Power Plant Operations Report."

Figure 7.6 Electricity End Use
(Billion Kilowatthours)

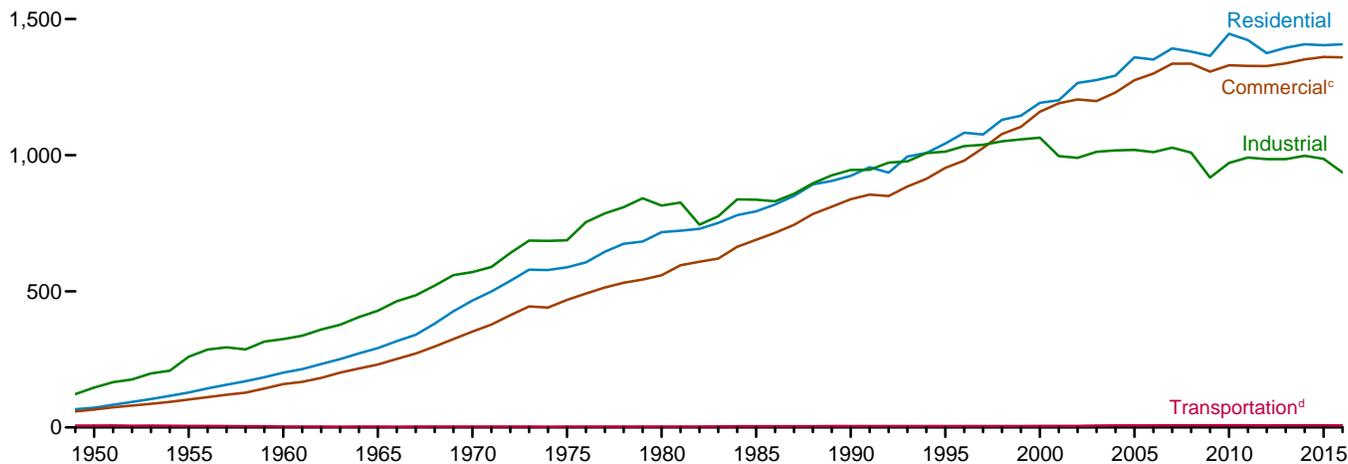
Electricity End Use Overview, 1989–2016



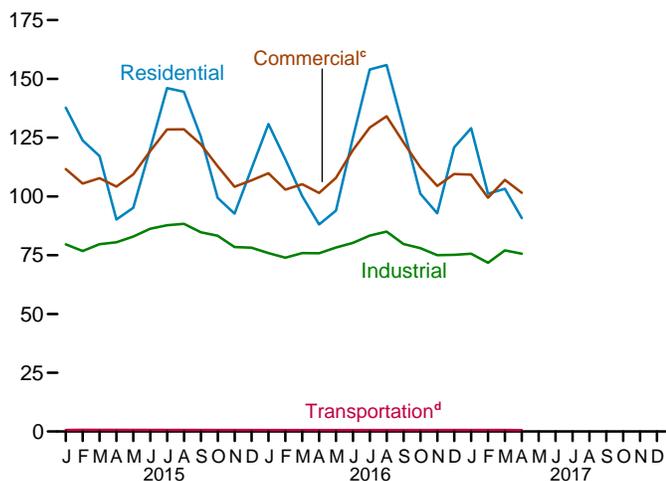
Retail Sales^a by Sector, April 2017



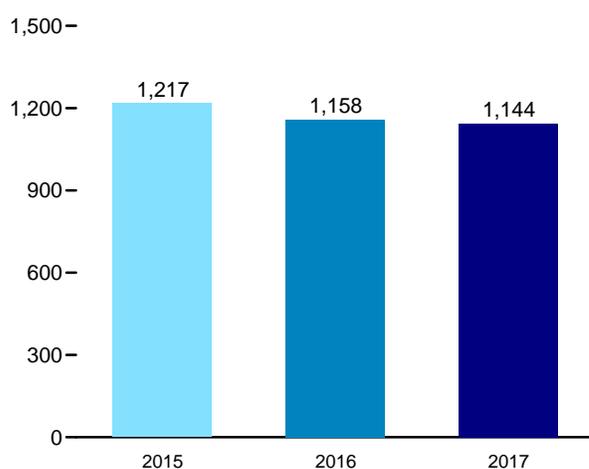
Retail Sales^a by Sector, 1949–2016



Retail Sales^a by Sector, Monthly



Retail Sales^a Total, January–April



^a Electricity retail sales to ultimate customers reported by utilities and other energy service providers.

^b See “Direct Use” in Glossary.

^c Commercial sector, including public street and highway lighting, inte-

departmental sales, and other sales to public authorities.

^d Transportation sector, including sales to railroads and railways.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#electricity>.

Source: Table 7.6.

Table 7.6 Electricity End Use
(Million Kilowatthours)

	Retail Sales ^a				Total Retail Sales ^e	Direct Use ^f	Total End Use ^g
	Residential	Commercial ^b	Industrial ^c	Transportation ^d			
1950 Total	72,200	E 65,971	146,479	E 6,793	291,443	NA	291,443
1955 Total	128,401	E 102,547	259,974	E 5,826	496,748	NA	496,748
1960 Total	201,463	E 159,144	324,402	E 3,066	688,075	NA	688,075
1965 Total	291,013	E 231,126	428,727	E 2,923	953,789	NA	953,789
1970 Total	466,291	E 352,041	570,854	E 3,115	1,392,300	NA	1,392,300
1975 Total	588,140	E 468,296	687,680	E 2,974	1,747,091	NA	1,747,091
1980 Total	717,495	558,643	815,067	3,244	2,094,449	NA	2,094,449
1985 Total	793,934	689,121	836,772	4,147	2,323,974	NA	2,323,974
1990 Total	924,019	838,263	945,522	4,751	2,712,555	124,529	2,837,084
1995 Total	1,042,501	953,117	1,012,693	4,975	3,013,287	150,677	3,163,963
2000 Total	1,192,446	1,159,347	1,064,239	5,382	3,421,414	170,943	3,592,357
2001 Total	1,201,607	1,190,518	996,609	5,724	3,394,458	162,649	3,557,107
2002 Total	1,265,180	1,204,531	990,238	5,517	3,465,466	166,184	3,631,650
2003 Total	1,275,824	1,198,728	1,012,373	6,810	3,493,734	168,295	3,662,029
2004 Total	1,291,982	1,230,425	1,017,850	7,224	3,547,479	168,470	3,715,949
2005 Total	1,359,227	1,275,079	1,019,156	7,506	3,660,969	150,016	3,810,984
2006 Total	1,351,520	1,299,744	1,011,298	7,358	3,669,919	146,927	3,816,845
2007 Total	1,392,241	1,336,315	1,027,832	8,173	3,764,561	125,670	3,890,231
2008 Total	1,380,662	1,336,133	1,009,516	7,653	3,733,965	132,197	3,866,161
2009 Total	1,364,758	1,306,853	977,416	7,768	3,596,795	126,938	3,723,733
2010 Total	1,445,708	1,330,199	911,221	7,712	3,754,841	131,910	3,886,752
2011 Total	1,422,801	1,328,057	991,316	7,672	3,749,846	132,754	3,882,600
2012 Total	1,374,515	1,327,101	985,714	7,320	3,694,650	137,657	3,832,306
2013 Total	1,394,812	1,337,079	985,352	7,625	3,724,868	143,462	3,868,330
2014 Total	1,407,208	1,352,158	997,576	7,758	3,764,700	138,574	3,903,274
2015 January	137,765	111,620	79,609	673	329,666	E 12,214	341,881
February	123,838	105,482	76,749	699	306,768	E 10,703	317,472
March	117,167	107,796	79,709	679	305,352	E 11,103	316,455
April	90,199	104,168	80,489	620	275,475	E 10,644	286,119
May	95,161	109,406	82,916	609	288,091	E 11,178	299,268
June	120,300	119,270	86,218	609	326,397	E 11,897	338,294
July	146,038	128,504	87,747	648	362,938	E 12,956	375,894
August	144,515	128,519	88,373	625	362,032	E 12,716	374,748
September	125,417	122,195	84,730	615	332,958	E 12,042	345,000
October	99,349	112,821	83,249	636	296,055	E 11,542	307,598
November	92,678	104,140	78,495	604	275,917	E 11,684	287,600
December	111,670	106,829	78,224	619	297,344	E 12,488	309,831
Total	1,404,096	1,360,752	986,508	7,637	3,758,992	141,168	3,900,160
2016 January	130,764	109,870	75,892	660	317,186	E 12,253	329,439
February	115,820	102,877	73,909	647	293,253	E 11,327	304,580
March	100,123	105,180	75,907	610	281,819	E 11,885	293,704
April	88,107	101,464	75,801	595	265,967	E 11,265	277,232
May	93,981	107,900	78,246	582	280,708	E 11,658	292,367
June	124,888	119,673	80,234	632	325,427	E 11,933	337,360
July	153,976	129,265	83,369	648	367,258	E 12,561	379,819
August	155,851	134,078	85,061	632	375,622	E 12,583	388,205
September	129,111	122,961	79,719	637	332,428	E 11,680	344,109
October	101,137	112,346	77,960	613	292,056	E 11,313	303,370
November	92,797	104,454	75,048	592	272,891	E 11,542	284,432
December	120,840	109,548	75,124	652	306,163	E 11,989	318,153
Total	1,407,394	1,359,617	936,269	7,499	3,710,779	E 141,990	3,852,769
2017 January	128,997	109,225	75,596	666	314,483	E 12,073	326,556
February	101,141	99,478	71,741	636	272,996	E 10,987	283,982
March	103,210	106,991	77,018	644	287,863	E 11,504	299,367
April	90,780	101,566	75,624	590	268,560	E 10,914	279,474
4-Month Total	424,128	417,259	299,978	2,536	1,143,901	E 45,477	1,189,379
2016 4-Month Total	434,814	419,391	301,509	2,512	1,158,225	E 46,730	1,204,955
2015 4-Month Total	468,969	429,066	316,556	2,671	1,217,262	E 44,665	1,261,926

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

^b Commercial sector, including public street and highway lighting, interdepartmental sales, and other sales to public authorities.

^c Industrial sector. Through 2002, excludes agriculture and irrigation; beginning in 2003, includes agriculture and irrigation.

^d Transportation sector, including sales to railroads and railways.

^e The sum of "Residential," "Commercial," "Industrial," and "Transportation."

^f Use of electricity that is 1) self-generated, 2) produced by either the same entity that consumes the power or an affiliate, and 3) used in direct support of a service or industrial process located within the same facility or group of facilities

that house the generating equipment. Direct use is exclusive of station use.

^g The sum of "Total Retail Sales" and "Direct Use."

E=Estimate. NA=Not available.

Notes: • See Note 1, "Coverage of Electricity Statistics," at end of section.

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

• Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Electricity

Note 1. Coverage of Electricity Statistics. Data in Section 7 cover the following:

Through 1984, data for electric utilities also include institutions (such as universities) and military facilities that generated electricity primarily for their own use; beginning in 1985, data for electric utilities exclude institutions and military facilities. Beginning in 1989, data for the commercial sector include institutions and military facilities.

The generation, consumption, and stocks data in Section 7 are for utility-scale facilities—those with a combined generation nameplate capacity of 1 megawatt or more. Data exclude distributed (small-scale) facilities—those with a combined generator nameplate capacity of less than 1 megawatt. For data on distributed solar photovoltaic (PV) generation in the residential, commercial, and industrial sectors, see Table 10.6.

Note 2. Classification of Power Plants Into Energy-Use Sectors. The U.S. 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 list at http://www.eia.gov/survey/form/eia_860/instructions.pdf.

Table 7.1 Sources

Net Generation, Electric Power Sector

1949 forward: Table 7.2b.

Net Generation, Commercial and Industrial Sectors

1949 forward: Table 7.2c.

Trade

1949–September 1977: Unpublished Federal Power Commission data.

October 1977–1980: Unpublished Economic Regulatory Administration (ERA) data.

1981: U.S. 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.”

1990–2000: National Energy Board of Canada; and DOE, Office of Electricity Delivery and Energy Reliability, Form FE-781R, “Annual Report of International Electrical Export/Import Data.”

2001–May 2011: National Energy Board of Canada; DOE, Office of Electricity Delivery and Energy Reliability, Form OE-781R, “Monthly Electricity Imports and Exports Report,” and predecessor form; and California Independent System Operator.

June 2011 forward: National Energy Board of Canada; California Independent System Operator; and EIA estimates for Texas transfers.

T&D Losses and Unaccounted for

1949 forward: Calculated as the sum of total net generation and imports minus end use and exports.

End Use

1949 forward: Table 7.6.

Table 7.2b 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: U.S. 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.”

2001–2003: EIA, Form EIA-906, “Power Plant Report.”

2004–2007: EIA, Form EIA-906, “Power Plant Report,” and Form EIA-920, “Combined Heat and Power Plant Report.”

2008 forward: EIA, Form EIA-923, “Power Plant Operations Report” as of June 27, 2017.

Table 7.2c Sources

Industrial Sector, Hydroelectric Power, 1949–1988

1949–September 1977: Federal Power Commission (FPC), Form FPC-4, “Monthly Power Plant Report,” for plants with generating capacity exceeding 10 megawatts, and FPC, Form FPC-12C, “Industrial Electric Generating Capacity,” for all other plants.

October 1977–1978: Federal Energy Regulatory Commission (FERC), Form FPC-4, “Monthly Power Plant Report,” for

plants with generating capacity exceeding 10 megawatts, and FERC, Form FPC-12C, "Industrial Electric Generating Capacity," for all other plants.

1979: FERC, Form FPC-4, "Monthly Power Plant Report," for plants with generating capacity exceeding 10 megawatts, and U.S. Energy Information Administration (EIA) estimates for all other plants.

1980–1988: Estimated by EIA as the average generation over the 6-year period of 1974–1979.

All Data, 1989 Forward

1989–1997: EIA, Form EIA-867, "Annual Nonutility Power Producer Report."

1998–2000: EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility."

2001–2003: EIA, Form EIA-906, "Power Plant Report."

2004–2007: EIA, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

2008 forward: EIA, Form EIA-923, "Power Plant Operations Report" as of June 27, 2017.

Table 7.3b 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: U.S. 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."

2001–2003: EIA, Form EIA-906, "Power Plant Report."

2004–2007: EIA, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

2008 forward: EIA, Form EIA-923, "Power Plant Operations Report" as of June 27, 2017.

Table 7.4b 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: U.S. 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."

2001–2003: EIA, Form EIA-906, "Power Plant Report."

2004–2007: EIA, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

2008 forward: EIA, Form EIA-923, "Power Plant Operations Report" as of June 27, 2017.

Table 7.6 Sources

Retail Sales, Residential and Industrial

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: U.S. Energy Information Administration (EIA), Form EIA-826, "Electric Utility Company Monthly Statement."

1984–2003: EIA, Form EIA-861, "Annual Electric Utility Report."

2004 forward: EIA, *Electric Power Monthly (EPM)*, June 2017, Table 5.1.

Retail Sales, Commercial

1949–2002: Data are estimates. See estimation methodology at http://www.eia.gov/state/seds/sep_use/notes/use_elec.pdf.

2003: EIA, Form EIA-861, "Annual Electric Utility Report."

2004 forward: EIA, EPM, June 2017, Table 5.1.

Retail Sales, Transportation

1949–2002: Data are estimates. See estimation methodology at http://www.eia.gov/state/seds/sep_use/notes/use_elec.pdf.

2003: EIA, Form EIA-861, "Annual Electric Utility Report."

2004 forward: EIA, EPM, June 2017, Table 5.1.

Direct Use, Annual

1989–1997: EIA, Form EIA-867, "Annual Nonutility Power Producer Report."

1998–2000: EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility."

2001–2015: EIA, *Electric Power Annual 2015*, November 2016, Table 2.2.

2016: Sum of monthly estimates.

Direct Use, Monthly

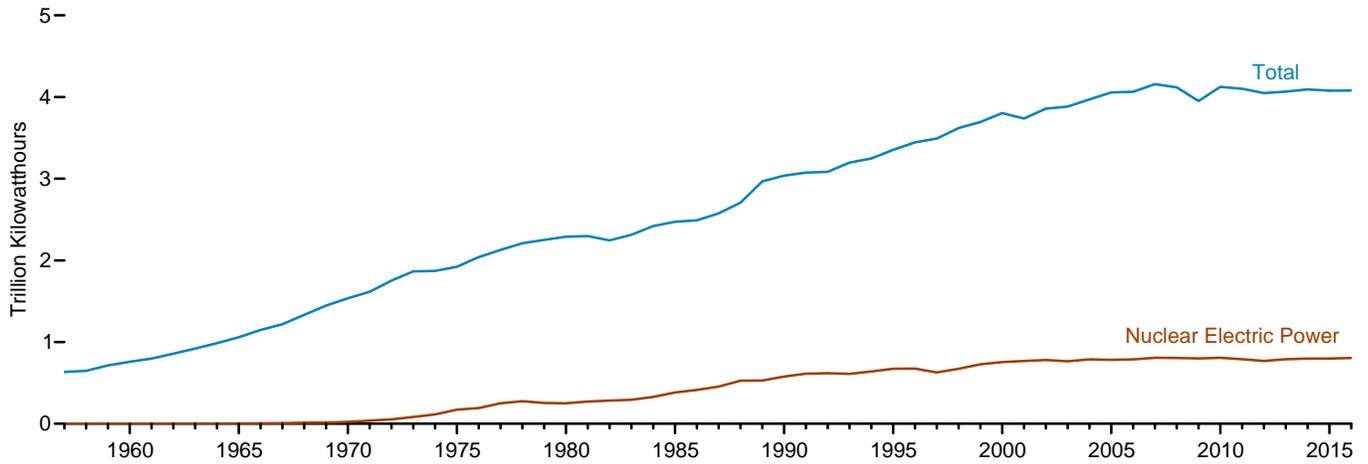
1989 forward: Annual shares are calculated as annual direct use divided by annual commercial and industrial net generation (on Table 7.1). Then monthly direct use estimates are calculated as the annual share multiplied by the monthly commercial and industrial net generation values. For 2016 and 2017, the 2015 annual share is used.

THIS PAGE INTENTIONALLY LEFT BLANK

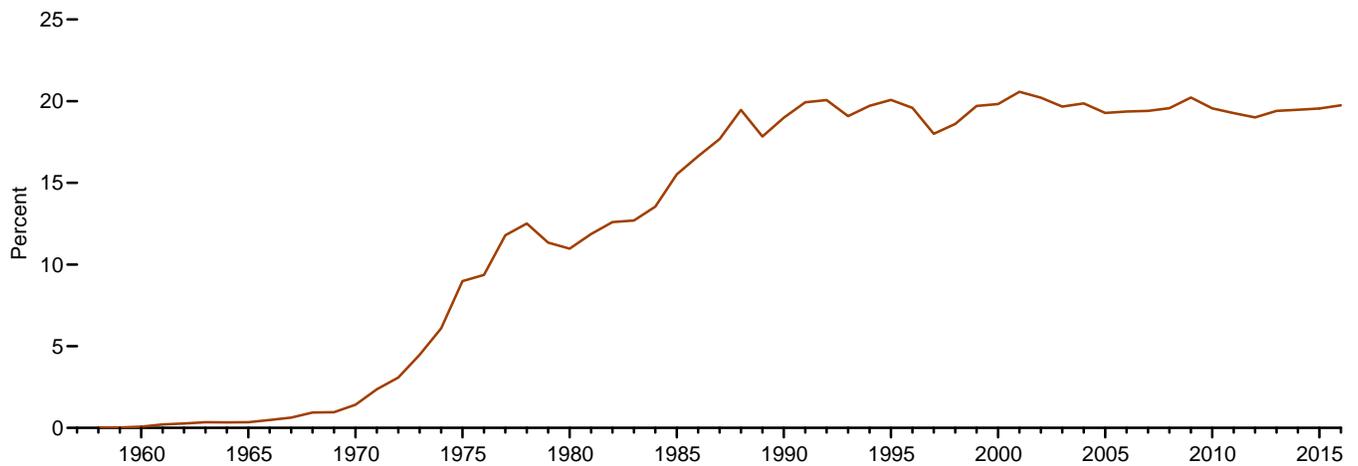
8. Nuclear Energy

Figure 8.1 Nuclear Energy Overview

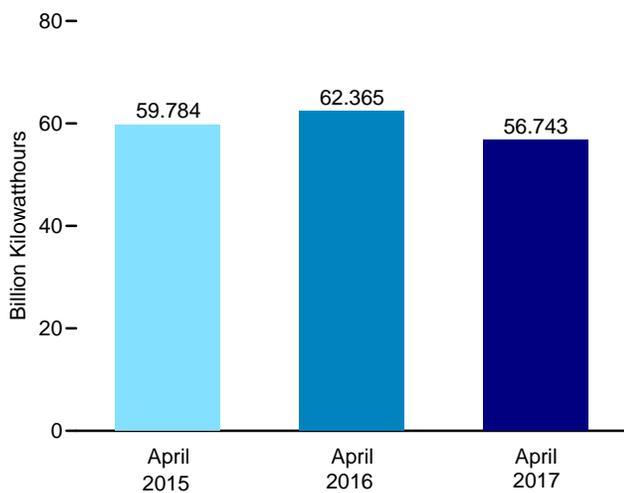
Electricity Net Generation, 1957–2016



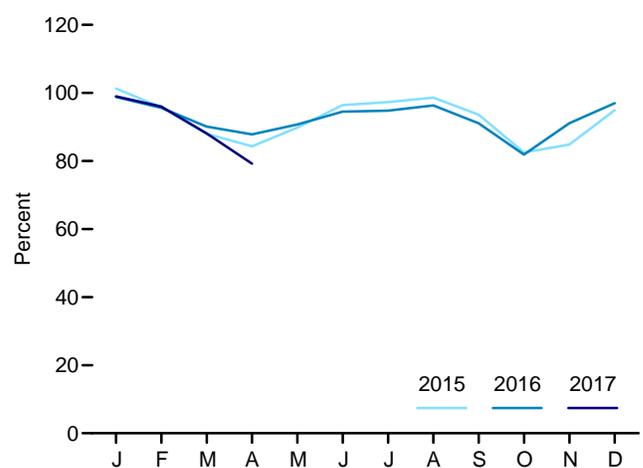
Nuclear Share of Electricity Net Generation, 1957–2016



Nuclear Electricity Net Generation



Capacity Factor, Monthly



Web Page: <http://www.eia.gov/totalenergy/data/monthly/#nuclear>.
Sources: Tables 7.2a and 8.1.

Table 8.1 Nuclear Energy Overview

	Total Operable Units ^{a,b}	Net Summer Capacity of Operable Units ^{b,c}	Nuclear Electricity Net Generation	Nuclear Share of Electricity Net Generation	Capacity Factor ^d
	Number	Million Kilowatts	Million Kilowatthours	Percent	
1957 Total	1	0.055	10	(s)	NA
1960 Total	3	.411	518	.1	NA
1965 Total	13	.793	3,657	.3	NA
1970 Total	20	7.004	21,804	1.4	NA
1975 Total	57	37.267	172,505	9.0	55.9
1980 Total	71	51.810	251,116	11.0	56.3
1985 Total	96	79.397	383,691	15.5	58.0
1990 Total	112	99.624	576,862	19.0	66.0
1995 Total	109	99.515	673,402	20.1	77.4
2000 Total	104	97.860	753,893	19.8	88.1
2001 Total	104	98.159	768,826	20.6	89.4
2002 Total	104	98.657	780,064	20.2	90.3
2003 Total	104	99.209	763,733	19.7	87.9
2004 Total	104	99.628	788,528	19.9	90.1
2005 Total	104	99.988	781,986	19.3	89.3
2006 Total	104	100.334	787,219	19.4	89.6
2007 Total	104	100.266	806,425	19.4	91.8
2008 Total	104	100.755	806,208	19.6	^d 91.1
2009 Total	104	101.004	798,855	20.2	90.3
2010 Total	104	101.167	806,968	19.6	91.1
2011 Total	104	^c 101.419	790,204	19.3	89.1
2012 Total	104	101.885	769,331	19.0	86.1
2013 Total	100	99.240	789,016	19.4	89.9
2014 Total	99	98.569	797,166	19.5	91.7
2015 January	99	98.533	74,270	20.6	101.3
February	99	98.533	63,461	19.0	95.8
March	99	98.533	64,547	19.9	88.0
April	99	98.533	59,784	20.3	84.3
May	99	98.533	65,827	20.4	89.8
June	99	98.672	68,516	18.9	96.4
July	99	98.672	71,412	17.8	97.3
August	99	98.672	72,415	18.5	98.6
September	99	98.672	66,476	19.0	93.6
October	99	98.672	60,571	19.4	82.5
November	99	98.672	60,264	20.0	84.8
December	99	98.672	69,634	21.5	94.9
Total	99	98.672	797,178	19.6	92.3
2016 January	99	^E 98.672	72,525	20.6	^E 98.8
February	99	^E 98.672	65,638	20.9	^E 95.6
March	99	^E 98.672	66,149	21.7	^E 90.1
April	99	^E 98.672	62,365	21.3	^E 87.8
May	99	^E 98.672	66,576	21.0	^E 90.7
June	99	^E 99.794	67,175	18.2	^E 94.5
July	100	^E 99.794	70,349	17.1	^E 94.8
August	100	^E 99.794	71,526	17.4	^E 96.3
September	100	^E 99.794	65,448	18.6	^E 91.1
October	99	^E 99.316	60,733	19.4	^E 81.9
November	99	^E 99.316	65,179	21.9	^E 91.1
December	99	^E 99.316	71,662	20.8	^E 97.0
Total	99	^E 99.316	805,327	19.7	^E 92.5
2017 January	99	^E 99.316	73,121	21.4	^E 99.0
February	99	^E 99.328	64,053	22.2	^E 96.0
March	99	^E 99.331	65,093	20.5	^E 88.1
April	99	^E 99.467	56,743	19.3	^E 79.2
4-Month Total	99	^E 99.467	259,010	20.9	^E 90.5
2016 4-Month Total	99	^E 98.672	266,677	21.1	^E 93.1
2015 4-Month Total	99	98.533	262,063	20.0	92.3

^a Total of nuclear generating units holding full-power licenses, or equivalent permission to operate, at end of period. See Note 1, "Operable Nuclear Reactors," at end of section.

^b At end of period.

^c For the definition of "Net Summer Capacity," see Note 2, "Nuclear Capacity," at end of section. Beginning in 2011, monthly capacity values are estimated in two steps: 1) uprates and derates reported on Form EIA-860M are added to specific months; and 2) the difference between the resulting year-end capacity (from data reported on Form EIA-860M) and final capacity (reported on Form EIA-860) is allocated to the month of January.

^d Beginning in 2008, capacity factor data are calculated using a new

methodology. For an explanation of the method of calculating the capacity factor, see Note 2, "Nuclear Capacity," at end of section.

^E=Estimate. NA=Not available. (s)=Less than 0.05%.

Notes: • For a discussion of nuclear reactor unit coverage, see Note 1, "Operable Nuclear Reactors," at end of section. • Nuclear electricity net generation totals may not equal sum of components due to independent rounding.

• Geographic coverage is the 50 states and the District of Columbia. Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#nuclear> (Excel and CSV files) for all available annual data beginning in 1957 and monthly data beginning in 1973.

Sources: See end of section.

Nuclear Energy

Note 1. Operable Nuclear Reactors. A reactor is defined as operable when it possesses 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 or month shown. The definition includes units retaining full-power licenses during long, non-routine shutdowns that for a time rendered them unable to generate electricity.

Year	Retirements	Openings and Restarts
2007		Browns Ferry 1 ^a (AL)
2008		
2009		
2010		
2011		
2012		
2013	Kewaunee (WI); San Onofre 2 and 3 (CA); Crystal River 3 ^b (FL)	
2014	Vermont Yankee (VT)	
2015		
2016	Fort Calhoun (NE)	Watts Bar 2 (TN)

^a Restarted after long-term shutdown from 1986 to 2006, but counted as operable for those years.

^b Official 2013 retirement for reactor closed in 2009.

Note: “Opening” refers to the plant’s commercial operations date.

Source: International Atomic Energy Agency, Power Reactor Information System database. See <https://www.iaea.org/PRIS/CountryStatistics/CountryDetails.aspx?current=US>.

Note 2. Nuclear Capacity. Nuclear generating units may have more than one type of net capacity rating, including the following:

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

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

Through 2007, the monthly capacity factors are calculated as the monthly nuclear electricity net generation divided by the maximum possible nuclear electricity net generation for that month. The maximum possible nuclear electricity net generation is the number of hours in the month (assuming 24-hour days, with no adjustment for changes to or from Daylight Savings Time) multiplied by the net summer capacity of operable nuclear generating units at the end of the month. That fraction is then multiplied by 100 to obtain a percentage. Annual capacity factors are calculated as the annual nuclear electricity net generation divided by the annual maximum possible nuclear electricity net generation (the sum of the monthly values for maximum possible nuclear electricity net generation). For the methodology used to calculate capacity factors beginning in 2008, see U.S. Energy Information Administration, *Electric Power Monthly*, Appendix C notes on “Average Capacity Factors.”

Table 8.1 Sources

Total Operable Units and Net Summer Capacity of Operable Units

1957–1982: Compiled from various sources, primarily U.S. Department of Energy, Office of Nuclear Reactor Programs, “U.S. Central Station Nuclear Electric Generating Units: Significant Milestones.”

1983 forward: U.S. Energy Information Administration (EIA), Form EIA-860, “Annual Electric Generator Report,” and predecessor forms; Form EIA-860M, “Monthly Update to the Annual Electric Generator Report”; and monthly updates as appropriate. See <https://www.eia.gov/nuclear/generation/index.html> for a list of operable units.

Nuclear Electricity Net Generation and Nuclear Share of Electricity Net Generation

1957 forward: Table 7.2a.

Capacity Factor

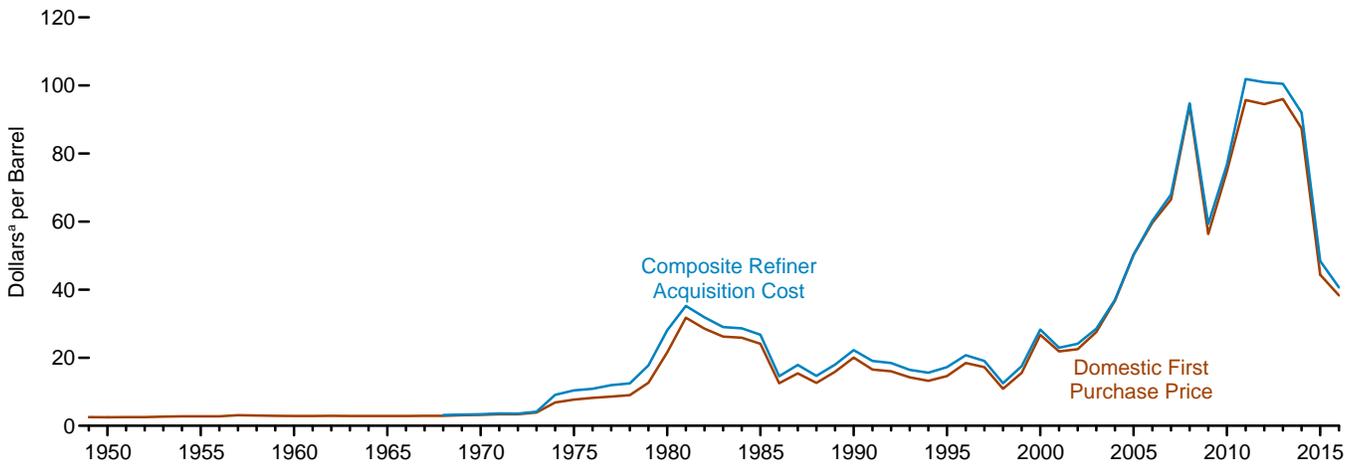
1973–2007: Calculated by EIA using the method described above in Note 2.

2008 forward: EIA, Form EIA-860, “Annual Electric Generator Report”; Form EIA-860M, “Monthly Update to the Annual Electric Generator Report”; and Form EIA-923, “Power Plant Operations Report.”

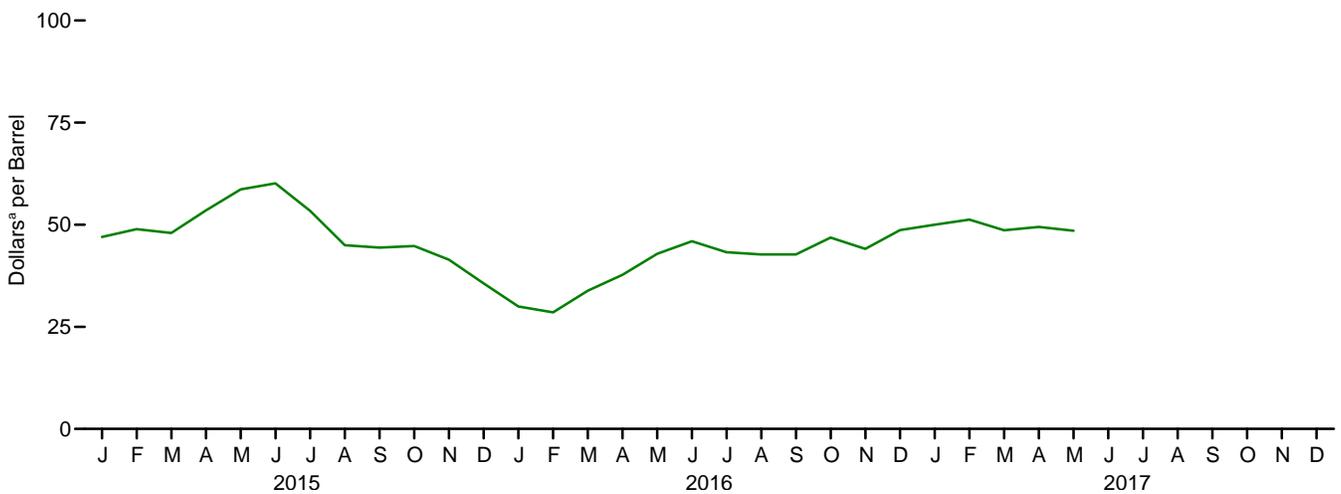
9. Energy Prices

Figure 9.1 Petroleum Prices

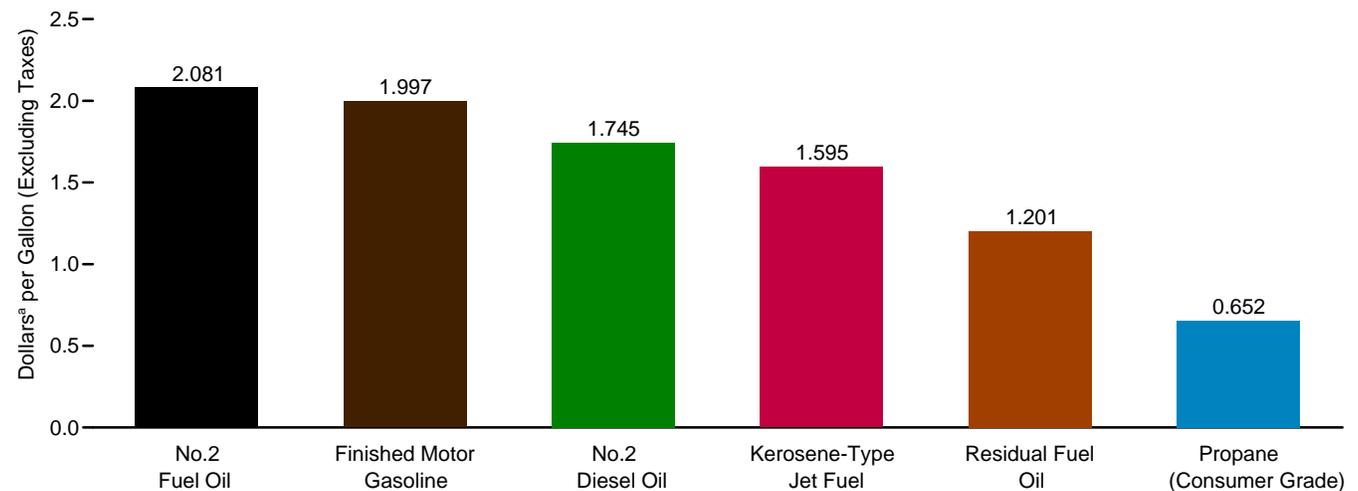
Crude Oil Prices, 1949–2016



Composite Refiner Acquisition Cost, Monthly



Refiner Prices to End Users: Selected Products, April 2017



^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#prices>.
Sources: Tables 9.1, 9.5, and 9.7.

Table 9.1 Crude Oil Price Summary
(Dollars^a per Barrel)

	Domestic First Purchase Price ^c	F.O.B. Cost of Imports ^d	Landed Cost of Imports ^e	Refiner Acquisition Cost ^b		
				Domestic	Imported	Composite
1950 Average	2.51	NA	NA	NA	NA	NA
1955 Average	2.77	NA	NA	NA	NA	NA
1960 Average	2.88	NA	NA	NA	NA	NA
1965 Average	2.86	NA	NA	NA	NA	NA
1970 Average	3.18	NA	NA	E 3.46	E 2.96	E 3.40
1975 Average	7.67	11.18	12.70	8.39	13.93	10.38
1980 Average	21.59	32.37	33.67	24.23	33.89	28.07
1985 Average	24.09	25.84	26.67	26.66	26.99	26.75
1990 Average	20.03	20.37	21.13	22.59	21.76	22.22
1995 Average	14.62	15.69	16.78	17.33	17.14	17.23
2000 Average	26.72	26.27	27.53	29.11	27.70	28.26
2001 Average	21.84	20.46	21.82	24.33	22.00	22.95
2002 Average	22.51	22.63	23.91	24.65	23.71	24.10
2003 Average	27.56	25.86	27.69	29.82	27.71	28.53
2004 Average	36.77	33.75	36.07	38.97	35.90	36.98
2005 Average	50.28	47.60	49.29	52.94	48.86	50.24
2006 Average	59.69	59.69	59.11	62.62	59.02	60.24
2007 Average	66.52	66.36	67.97	69.65	67.04	67.94
2008 Average	94.04	90.32	93.33	98.47	92.77	94.74
2009 Average	56.35	57.78	60.23	59.49	59.17	59.29
2010 Average	74.71	74.19	76.50	76.50	75.86	76.69
2011 Average	95.73	101.66	102.92	100.71	102.63	101.87
2012 Average	94.52	99.78	101.00	100.72	101.09	100.93
2013 Average	95.99	96.56	96.99	102.91	98.11	100.49
2014 Average	87.39	85.65	88.16	94.05	89.56	92.02
2015 January	43.06	40.16	44.42	48.90	44.74	47.00
February	44.35	43.94	47.32	50.23	47.18	48.92
March	42.66	43.64	47.25	48.60	47.22	47.99
April	49.30	48.42	52.00	54.86	51.62	53.51
May	54.38	54.05	57.17	59.48	57.51	58.65
June	55.88	53.83	56.73	61.06	58.89	60.12
July	47.70	45.88	49.79	54.15	52.42	53.40
August	39.98	37.17	41.39	46.30	43.23	44.97
September	41.60	36.90	40.02	46.68	41.12	44.38
October	42.34	37.21	40.38	47.02	42.03	44.77
November	38.19	33.56	37.13	43.30	39.05	41.43
December	32.26	28.23	31.56	37.76	33.16	35.63
Average	44.39	41.91	45.38	49.94	46.38	48.39
2016 January	27.02	23.67	27.36	32.17	27.48	29.99
February	25.52	24.68	27.04	30.28	26.66	28.53
March	31.87	29.74	32.06	35.29	32.24	33.82
April	35.59	32.73	35.43	39.30	35.90	37.71
May	41.02	38.31	40.73	44.77	40.88	42.88
June	43.96	41.92	43.55	47.57	44.13	45.96
July	40.71	38.76	41.05	44.88	41.48	43.26
August	40.46	38.26	40.40	44.18	41.21	42.70
September	40.55	38.28	40.81	44.47	40.86	42.73
October	45.00	42.36	43.97	48.66	44.76	46.85
November	41.65	40.12	42.59	46.10	41.80	44.06
December	47.12	44.52	46.74	50.45	46.72	48.66
Average	38.29	36.37	38.56	42.41	38.75	40.66
2017 January	48.19	44.63	47.05	51.81	48.12	49.99
February	49.41	R 45.88	48.10	53.15	49.38	51.24
March	46.39	R 44.06	R 46.06	R 50.60	R 46.53	R 48.65
April	R 47.23	R 43.77	R 45.67	R 51.34	R 47.47	R 49.47
May	NA	NA	NA	E 49.92	E 46.68	E 48.53

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

^b See Note 1, "Crude Oil Refinery Acquisition Costs," at end of section.

^c See Note 2, "Crude Oil Domestic First Purchase Prices," at end of section.

^d See Note 3, "Crude Oil F.O.B. Costs," at end of section.

^e See Note 4, "Crude Oil Landed Costs," at end of section.

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

Notes: • Domestic first purchase prices and refinery acquisition costs for the current two months are preliminary. F.O.B. and landed costs for the current three months are preliminary. • Through 1980, F.O.B. and landed costs reflect the

period of reporting; beginning in 1981, they reflect the period of loading. • Annual averages are the averages of the monthly prices, weighted by volume. • Geographic coverage is the 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, and all U.S. Territories and Possessions.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 9.2 F.O.B. Costs of Crude Oil Imports From Selected Countries
(Dollars^a per Barrel)

	Selected Countries							Persian Gulf Nations ^b	Total OPEC ^c	Total Non-OPEC ^c
	Angola	Colombia	Mexico	Nigeria	Saudi Arabia	United Kingdom	Venezuela			
1973 Average ^d	W	W	–	7.81	3.25	–	5.39	3.68	5.43	4.80
1975 Average	10.97	–	11.44	11.82	10.87	–	11.04	10.88	11.34	10.62
1980 Average	33.45	W	31.06	35.93	28.17	34.36	24.81	28.92	32.21	32.85
1985 Average	26.30	–	25.33	28.04	22.04	27.64	23.64	23.31	25.67	25.96
1990 Average	20.23	20.75	19.26	22.46	20.36	23.43	19.55	18.54	20.40	20.32
1995 Average	16.58	16.73	15.64	17.40	W	16.94	13.86	W	15.36	16.02
2000 Average	27.90	29.04	25.39	28.70	24.62	27.21	24.45	24.72	25.56	26.77
2001 Average	23.25	24.25	18.89	24.85	18.98	23.30	18.01	18.89	19.73	21.04
2002 Average	24.09	24.64	21.60	25.38	23.92	24.50	20.13	23.38	22.18	22.93
2003 Average	28.22	28.89	24.83	29.40	25.03	28.76	23.81	25.17	25.36	26.21
2004 Average	37.26	37.73	31.55	38.71	34.08	37.30	31.78	33.08	33.95	33.58
2005 Average	52.48	51.89	43.00	55.95	47.96	54.48	46.39	47.21	49.60	45.79
2006 Average	62.23	59.77	52.91	65.69	56.09	66.03	55.80	56.02	59.18	55.35
2007 Average	67.80	67.93	61.35	76.64	W	69.96	64.10	69.93	69.58	62.69
2008 Average	95.66	91.17	84.61	102.06	93.03	96.33	88.06	91.44	93.15	87.15
2009 Average	57.07	57.90	56.47	64.61	57.87	65.63	55.58	59.53	58.53	57.16
2010 Average	78.18	72.56	72.46	80.83	76.44	W	70.30	75.65	75.23	73.24
2011 Average	111.82	100.21	100.90	115.35	107.08	–	97.23	106.47	105.34	98.49
2012 Average	111.23	106.43	101.84	114.51	106.65	–	100.15	105.45	104.39	95.71
2013 Average	107.71	101.24	98.40	110.06	101.16	W	97.52	100.62	100.57	93.67
2014 Average	W	80.75	86.55	W	95.60	–	84.51	94.03	89.76	82.95
2015 January	–	42.49	41.19	–	48.14	–	37.99	52.21	42.64	38.89
February	W	50.79	48.12	W	47.92	–	45.85	47.70	47.31	42.43
March	W	47.25	46.89	–	50.64	–	43.51	49.75	45.54	42.63
April	W	54.95	50.49	–	58.95	–	49.03	53.33	50.55	47.41
May	W	56.30	56.80	–	61.80	–	51.99	59.55	54.95	53.59
June	W	56.42	56.78	–	58.31	–	50.34	58.57	54.06	53.70
July	W	46.62	50.71	–	W	–	44.44	50.42	46.61	45.55
August	W	42.35	40.40	–	43.38	–	35.47	43.01	38.21	36.62
September	W	W	40.50	–	44.50	–	36.23	43.87	39.81	35.06
October	W	41.56	40.18	–	42.51	–	37.77	40.68	39.33	36.02
November	–	W	36.16	–	39.87	–	31.68	38.17	33.98	33.30
December	W	28.98	30.12	W	34.75	–	24.91	33.79	29.35	27.57
Average	W	47.52	44.90	W	47.53	–	40.73	46.95	43.25	41.19
2016 January	W	W	24.12	W	26.24	–	20.73	25.73	25.05	22.66
February	W	24.91	24.50	37.83	27.46	–	22.57	26.58	27.01	23.35
March	35.33	30.47	29.01	W	34.14	–	27.31	32.32	31.37	28.35
April	W	33.57	30.79	W	37.13	–	29.07	35.67	34.08	31.92
May	W	39.00	39.04	W	42.44	W	36.65	40.55	40.51	37.04
June	49.56	41.64	42.27	48.79	45.16	–	39.33	43.77	43.73	40.22
July	45.00	36.91	39.99	W	42.11	–	35.69	40.91	39.61	38.09
August	W	36.80	38.73	W	42.48	–	37.56	40.44	40.44	36.78
September	W	40.36	38.44	W	42.31	–	36.95	40.37	40.01	37.18
October	W	40.59	42.91	W	47.10	–	40.38	45.17	44.66	40.37
November	W	39.80	39.55	W	42.50	W	38.39	41.40	42.31	38.33
December	W	45.27	45.34	W	48.79	W	44.75	47.95	47.44	42.34
Average	42.68	35.28	36.22	46.20	39.30	W	34.71	38.76	38.51	34.81
2017 January	–	47.92	45.50	W	W	–	45.94	47.61	47.30	43.27
February	W	46.97	45.91	W	^R 51.21	–	45.69	^R 50.06	^R 49.11	43.63
March	W	^R 46.05	^R 42.10	W	^R 48.50	–	^R 42.47	^R 47.80	^R 46.82	^R 41.73
April	W	46.76	44.32	W	49.91	–	44.27	48.77	47.28	41.62

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

^b Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, and the Neutral Zone (between Kuwait and Saudi Arabia).

^c See "Organization of the Petroleum Exporting Countries (OPEC)" in Glossary for exact years of each country's membership. On this table, "Total OPEC" for all years includes Algeria, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela; Angola is included in "Total OPEC" 2007 forward; Gabon is included in "Total OPEC" 1974–1995 and July 2016 forward; Ecuador is included in "Total OPEC" 1973–1992 and 2008 forward; Indonesia is included in "Total OPEC" 1973–2008 and 2016.

^d Based on October, November, and December data only.

^R=Revised. – =No data reported. W=Value withheld to avoid disclosure of individual company data.

Notes: • The Free on Board (F.O.B.) cost at the country of origin excludes all

costs related to insurance and transportation. See "F.O.B. (Free on Board)" in Glossary, and Note 3, "Crude Oil F.O.B. Costs," at end of section. • Values for the current two months are preliminary. • Through 1980, prices reflect the period of reporting; beginning in 1981, prices reflect the period of loading. • Annual averages are averages of the monthly prices, including prices not published, weighted by volume. • Cargoes that are purchased on a "netback" basis, or under similar contractual arrangements whereby the actual purchase price is not established at the time the crude oil is acquired for importation into the United States, are not included in the published data until the actual prices have been determined and reported. • U.S. geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

Table 9.3 Landed Costs of Crude Oil Imports From Selected Countries
(Dollars^a per Barrel)

	Selected Countries								Persian Gulf Nations ^b	Total OPEC ^c	Total Non-OPEC ^c
	Angola	Canada	Colombia	Mexico	Nigeria	Saudi Arabia	United Kingdom	Venezuela			
1973 Average ^d	W	5.33	W	–	9.08	5.37	–	5.99	5.91	6.85	5.64
1975 Average	11.81	12.84	–	12.61	12.70	12.50	–	12.36	12.64	12.70	12.70
1980 Average	34.76	30.11	W	31.77	37.15	29.80	35.68	25.92	30.59	33.56	33.99
1985 Average	27.39	25.71	–	25.63	28.96	24.72	28.36	24.43	25.50	26.86	26.53
1990 Average	21.51	20.48	22.34	19.64	23.33	21.82	22.65	20.31	20.55	21.23	20.98
1995 Average	17.66	16.65	17.45	16.19	18.25	16.84	17.91	14.81	16.78	16.61	16.95
2000 Average	29.57	26.69	29.68	26.03	30.04	26.58	29.26	26.05	26.77	27.29	27.80
2001 Average	25.13	20.72	25.88	19.37	26.55	20.98	25.32	19.81	20.73	21.52	22.17
2002 Average	25.43	22.98	25.28	22.09	26.45	24.77	26.35	21.93	24.13	23.83	23.97
2003 Average	30.14	26.76	30.55	25.48	31.07	27.50	30.62	25.70	27.54	27.70	27.68
2004 Average	39.62	34.51	39.03	32.25	40.95	37.11	39.28	33.79	36.53	36.84	35.29
2005 Average	54.31	44.73	53.42	43.47	57.55	50.31	55.28	47.87	49.68	51.36	47.31
2006 Average	64.85	53.90	62.13	53.76	68.26	59.19	67.44	57.37	58.92	61.21	57.14
2007 Average	71.27	60.38	70.91	62.31	78.01	70.78	72.47	66.13	69.83	71.14	63.96
2008 Average	98.18	90.00	93.43	85.97	104.83	94.75	96.95	90.76	93.59	95.49	90.59
2009 Average	61.32	57.60	58.50	57.35	68.01	62.14	63.87	57.78	62.15	61.90	58.58
2010 Average	80.61	72.80	74.25	72.86	83.14	79.29	80.29	72.43	78.60	78.28	74.68
2011 Average	114.05	89.92	102.57	101.21	116.43	108.83	118.45	100.14	108.01	107.84	98.64
2012 Average	114.95	84.24	107.07	102.45	116.88	108.15	W	101.58	107.74	107.56	95.05
2013 Average	110.81	84.41	103.00	99.06	112.87	102.60	111.23	99.34	102.53	102.98	91.99
2014 Average	99.25	81.30	88.29	87.48	102.16	94.91	W	86.88	95.30	93.10	84.67
2015 January	W	40.45	45.47	41.68	W	50.12	–	40.08	53.01	48.17	42.31
February	W	42.39	53.40	48.29	W	52.44	–	47.93	52.20	51.44	44.86
March	W	41.71	51.25	47.62	W	55.23	W	45.90	54.30	51.13	44.82
April	W	46.67	57.48	52.13	–	59.92	W	52.17	56.99	55.39	49.79
May	60.84	54.06	59.92	57.32	W	62.06	W	53.78	60.92	59.11	55.97
June	61.45	55.42	58.21	57.46	W	58.40	–	52.43	58.17	56.79	56.69
July	53.22	47.98	51.58	51.25	W	51.62	–	46.74	51.93	50.45	49.42
August	54.02	38.29	43.87	41.94	–	45.24	W	38.75	45.70	43.17	40.41
September	53.46	35.29	42.87	40.71	W	44.89	–	37.91	44.94	43.31	37.82
October	47.49	37.64	42.37	40.67	W	42.09	W	39.55	41.81	41.57	39.41
November	47.56	35.67	39.70	36.73	W	39.62	–	33.79	39.43	37.86	36.68
December	38.54	30.25	32.50	30.54	W	34.13	W	26.73	34.33	32.60	30.91
Average	51.73	41.99	49.53	45.51	54.70	49.78	W	42.87	49.43	47.44	44.09
2016 January	34.83	26.32	26.23	24.82	W	30.96	–	21.64	30.85	28.94	26.33
February	33.04	24.62	26.32	25.19	39.44	31.86	W	23.49	30.91	29.63	25.43
March	36.68	29.31	33.38	29.65	42.86	36.19	W	28.83	34.84	34.02	30.35
April	40.91	34.19	36.71	31.91	W	39.75	–	31.20	38.00	36.80	34.42
May	49.14	38.43	42.28	39.67	W	43.46	W	38.14	42.56	42.48	39.55
June	49.06	41.97	43.88	42.50	51.05	45.90	–	40.04	44.70	44.70	42.65
July	47.04	39.41	40.90	40.30	48.46	43.80	W	37.00	42.77	41.78	40.48
August	49.43	37.84	40.78	39.34	50.20	43.67	W	38.66	42.74	42.46	39.01
September	46.15	38.62	43.43	38.86	49.91	44.22	–	38.11	43.31	42.62	39.60
October	48.88	41.79	43.44	43.44	W	46.95	–	41.61	45.50	45.65	42.64
November	49.08	39.81	42.97	40.20	52.80	47.04	W	39.53	45.68	44.98	40.52
December	53.63	43.34	48.83	45.84	55.62	50.38	W	45.69	49.38	49.07	44.83
Average	44.65	36.27	38.86	36.64	48.11	42.14	W	35.50	41.20	40.54	37.09
2017 January	–	44.70	49.17	46.35	54.74	50.40	W	47.53	49.35	49.22	45.77
February	W	44.97	^R 49.66	46.57	54.42	^R 52.34	–	46.28	^R 51.09	^R 50.57	^R 46.26
March	W	^R 43.00	^R 48.29	^R 42.97	W	^R 50.31	^R W	^R 43.92	^R 49.59	^R 48.84	^R 43.96
April	W	42.94	48.91	44.75	W	50.77	–	45.27	49.33	48.70	43.93

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

^b Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, and the Neutral Zone (between Kuwait and Saudi Arabia).

^c See "Organization of the Petroleum Exporting Countries (OPEC)" in Glossary for exact years of each country's membership. On this table, "Total OPEC" for all years includes Algeria, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela; Angola is included in "Total OPEC" 2007 forward; Gabon is included in "Total OPEC" 1974–1995 and July 2016 forward; Ecuador is included in "Total OPEC" 1973–1992 and 2008 forward; Indonesia is included in "Total OPEC" 1973–2008 and 2016.

^d Based on October, November, and December data only.

^R=Revised. –=No data reported. W=Value withheld to avoid disclosure of individual company data.

Notes: • See "Landed Costs" in Glossary, and Note 4, "Crude Oil Landed Costs," at end of section. • Values for the current two months are preliminary. • Through 1980, prices reflect the period of reporting; beginning in 1981, prices

reflect the period of loading. • Annual averages are averages of the monthly prices, including prices not published, weighted by volume. • Cargoes that are purchased on a "netback" basis, or under similar contractual arrangements whereby the actual purchase price is not established at the time the crude oil is acquired for importation into the United States, are not included in the published data until the actual prices have been determined and reported. • U.S. geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: • **October 1973–September 1977:** Federal Energy Administration, Form FEA-F701-M-0, "Transfer Pricing Report." • **October 1977–December 1977:** U.S. Energy Information Administration (EIA), Form FEA-F701-M-0, "Transfer Pricing Report." • **1978–2007:** EIA, *Petroleum Marketing Annual 2008*, Table 22. • **2008 forward:** EIA, *Petroleum Marketing Monthly*, July 2017, Table 22.

Table 9.4 Retail Motor Gasoline and On-Highway Diesel Fuel Prices
(Dollars^a per Gallon, Including Taxes)

	Platt's / Bureau of Labor Statistics Data				U.S. Energy Information Administration Data			
	Motor Gasoline by Grade				Regular Motor Gasoline by Area Type			On-Highway Diesel Fuel
	Leaded Regular	Unleaded Regular	Unleaded Premium ^b	All Grades ^c	Conventional Gasoline Areas ^d	Reformulated Gasoline Areas ^e	All Areas	
1950 Average	0.268	NA	NA	NA	--	--	--	--
1955 Average	.291	NA	NA	NA	--	--	--	--
1960 Average	.311	NA	NA	NA	--	--	--	--
1965 Average	.312	NA	NA	NA	--	--	--	--
1970 Average	.357	NA	NA	NA	--	--	--	--
1975 Average	.567	NA	NA	NA	--	--	--	--
1980 Average	1.191	1.245	NA	1.221	--	--	--	--
1985 Average	1.115	1.202	1.340	1.196	--	--	--	--
1990 Average	1.149	1.164	1.349	1.217	NA	NA	NA	NA
1995 Average	--	1.147	1.336	1.205	1.103	1.163	1.111	1.109
2000 Average	--	1.510	1.693	1.563	1.462	1.543	1.484	1.491
2001 Average	--	1.461	1.657	1.531	1.384	1.498	1.420	1.401
2002 Average	--	1.358	1.556	1.441	1.313	1.408	1.345	1.319
2003 Average	--	1.591	1.777	1.638	1.516	1.655	1.561	1.509
2004 Average	--	1.880	2.068	1.923	1.812	1.937	1.852	1.810
2005 Average	--	2.295	2.491	2.338	2.240	2.335	2.270	2.402
2006 Average	--	2.589	2.805	2.635	2.533	2.654	2.572	2.705
2007 Average	--	2.801	3.033	2.849	2.767	2.857	2.796	2.885
2008 Average	--	3.266	3.519	3.317	3.213	3.314	3.246	3.803
2009 Average	--	2.350	2.607	2.401	2.315	2.433	2.353	2.467
2010 Average	--	2.788	3.047	2.836	2.742	2.864	2.782	2.992
2011 Average	--	3.527	3.792	3.577	3.476	3.616	3.521	3.840
2012 Average	--	3.644	3.922	3.695	3.552	3.757	3.618	3.968
2013 Average	--	3.526	3.843	3.584	3.443	3.635	3.505	3.922
2014 Average	--	3.367	3.713	3.425	3.299	3.481	3.358	3.825
2015 January	--	2.110	2.497	2.170	2.046	2.262	2.116	2.997
February	--	2.249	2.621	2.308	2.152	2.351	2.216	2.858
March	--	2.483	2.867	2.544	2.352	2.697	2.464	2.897
April	--	2.485	2.868	2.545	2.369	2.679	2.469	2.782
May	--	2.775	3.166	2.832	2.578	3.014	2.718	2.888
June	--	2.832	3.218	2.889	2.700	3.014	2.802	2.873
July	--	2.832	3.252	2.893	2.666	3.061	2.794	2.788
August	--	2.679	3.120	2.745	2.522	2.876	2.636	2.595
September	--	2.394	2.860	2.463	2.275	2.555	2.365	2.505
October	--	2.289	2.749	2.357	2.230	2.414	2.290	2.519
November	--	2.185	2.640	2.249	2.088	2.304	2.158	2.467
December	--	2.060	2.532	2.125	1.946	2.230	2.038	2.310
Average	--	2.448	2.866	2.510	2.334	2.629	2.429	2.707
2016 January	--	1.967	2.455	2.034	1.843	2.170	1.949	2.143
February	--	1.767	2.248	1.833	1.681	1.936	1.764	1.998
March	--	1.958	2.411	2.021	1.895	2.124	1.969	2.090
April	--	2.134	2.585	2.196	2.027	2.293	2.113	2.152
May	--	2.264	2.710	2.324	2.199	2.413	2.268	2.315
June	--	2.363	2.807	2.422	2.303	2.497	2.366	2.423
July	--	2.225	2.702	2.287	2.157	2.411	2.239	2.405
August	--	2.155	2.629	2.218	2.119	2.300	2.178	2.351
September	--	2.208	2.682	2.269	2.161	2.339	2.219	2.394
October	--	2.243	2.719	2.304	2.186	2.382	2.249	2.454
November	--	2.187	2.675	2.246	2.105	2.343	2.182	2.439
December	--	2.230	2.698	2.289	2.192	2.385	2.254	2.510
Average	--	2.142	2.610	2.204	2.070	2.296	2.143	2.304
2017 January	--	2.351	2.815	2.409	2.285	2.482	2.349	2.580
February	--	2.299	2.793	2.360	2.227	2.467	2.304	2.568
March	--	2.323	2.827	2.386	2.243	2.498	2.325	2.554
April	--	2.418	2.909	2.479	2.340	2.579	2.417	2.583
May	--	2.386	2.894	2.448	2.303	2.577	2.391	2.560
June	--	2.337	2.859	2.400	2.257	2.536	2.347	2.511

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

^b The 1981 average (available in Web file) is based on September through December data only.

^c Also includes grades of motor gasoline not shown separately.

^d Any area that does not require the sale of reformulated gasoline.

^e "Reformulated Gasoline Areas" are ozone nonattainment areas designated by the U.S. Environmental Protection Agency that require the use of reformulated gasoline (RFG). Areas are reclassified each time a shift in or out of an RFG program occurs due to federal or state regulations.

NA=Not available. -- =Not applicable.

Notes: • See Note 5, "Motor Gasoline Prices," at end of section. • See "Motor Gasoline Grades," "Motor Gasoline, Conventional," "Motor Gasoline, Oxygenated," and "Motor Gasoline, Reformulated" in Glossary. • Geographic coverage: for columns 1-4, current coverage is 85 urban areas; for columns 5-7, coverage is the 50 states and the District of Columbia; for column 8, coverage is the 48 contiguous

states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: • **Motor Gasoline by Grade, Monthly Data: October 1973 forward**—U.S. Department of Labor, Bureau of Labor Statistics (BLS), *U.S. City Average Gasoline Prices*. • **Motor Gasoline by Grade, Annual Data: 1949-1973**—*Platt's Oil Price Handbook and Oilmanac*, 1974, 51st Edition. **1974 forward**—calculated by the U.S. Energy Information Administration (EIA) as simple averages of the BLS monthly data. • **Regular Motor Gasoline by Area Type:** EIA, calculated as simple averages of weighted weekly estimates from "Weekly U.S. Retail Gasoline Prices, Regular Grade." • **On-Highway Diesel Fuel:** EIA, calculated as simple averages of weighted weekly estimates from "Weekly Retail On-Highway Diesel Prices."

Table 9.5 Refiner Prices of Residual Fuel Oil
(Dollars^a per Gallon, Excluding Taxes)

	Residual Fuel Oil Sulfur Content Less Than or Equal to 1%		Residual Fuel Oil Sulfur Content Greater Than 1%		Average	
	Sales for Resale	Sales to End Users	Sales for Resale	Sales to End Users	Sales for Resale	Sales to End Users
1978 Average	0.293	0.314	0.245	0.275	0.263	0.298
1980 Average .....	.608	.675	.479	.523	.528	.607
1985 Average .....	.610	.644	.560	.582	.577	.610
1990 Average .....	.472	.505	.372	.400	.413	.444
1995 Average .....	.383	.436	.338	.377	.363	.392
2000 Average .....	.627	.708	.512	.566	.566	.602
2001 Average .....	.523	.642	.428	.492	.476	.531
2002 Average .....	.546	.640	.508	.544	.530	.569
2003 Average .....	.728	.804	.588	.651	.661	.698
2004 Average .....	.764	.835	.601	.692	.681	.739
2005 Average	1.115	1.168	.842	.974	.971	1.048
2006 Average	1.202	1.342	1.085	1.173	1.136	1.218
2007 Average	1.406	1.436	1.314	1.350	1.350	1.374
2008 Average	1.918	2.144	1.843	1.889	1.866	1.964
2009 Average	1.337	1.413	1.344	1.306	1.342	1.341
2010 Average	1.756	1.920	1.679	1.619	1.697	1.713
2011 Average	2.389	2.736	2.316	2.257	2.336	2.401
2012 Average	2.548	3.025	2.429	2.433	2.457	2.592
2013 Average	2.363	2.883	2.249	2.353	2.278	2.482
2014 Average	2.153	2.694	1.996	2.221	2.044	2.325
2015 January .....	.936	NA	1.038	1.192	1.023	1.264
February	1.150	NA	1.124	1.342	1.126	1.376
March	1.093	NA	1.131	1.436	1.126	1.465
April	1.124	1.704	1.114	1.465	1.114	1.516
May	1.198	NA	1.242	1.443	1.234	1.543
June	1.175	W	1.239	1.474	1.233	1.549
July	1.080	W	1.130	1.245	1.122	1.363
August .....	.797	W	.928	1.150	.918	1.207
September .....	.819	W	.856	1.063	.852	1.107
October .....	.812	NA	.840	1.041	.836	1.094
November .....	.766	W	.791	1.001	.787	1.043
December .....	.552	W	.639	.861	.633	.919
Average .....	.971	1.529	.999	1.227	.996	1.285
2016 January .....	.477	W	.502	.641	.499	.710
February .....	.475	NA	.508	.606	.504	.632
March .....	.582	NA	.555	.672	.558	.693
April .....	.633	W	.614	.734	.616	.782
May .....	.729	W	.722	.868	.723	.922
June .....	.850	W	.823	.911	.825	.983
July .....	.876	W	.834	.948	.835	1.030
August .....	.842	W	.811	.924	.815	.990
September .....	.846	W	.855	1.059	.854	1.076
October .....	.961	W	.935	1.091	.938	1.115
November .....	.920	NA	.907	1.040	.908	1.106
December	1.024	W	1.031	1.206	1.030	1.230
Average .....	.736	1.138	.746	.897	.745	.945
2017 January	1.099	W	1.121	1.249	1.119	1.309
February	1.174	W	1.115	1.243	1.121	1.291
March	1.103	W	^R 1.075	1.186	^R 1.077	1.239
April	1.038	W	1.039	1.147	1.039	1.201

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
R=Revised. NA=Not available. W=Value withheld to avoid disclosure of individual company data.

Notes: • Sales for resale are those made to purchasers other than ultimate consumers. Sales to end users are those made directly to ultimate consumers, including bulk consumers (such as agriculture, industry, and electric utilities) and commercial consumers. • Values for the current month are preliminary.
• Through 1982, prices are U.S. Energy Information Administration (EIA)

estimates. See Note 6, "Historical Petroleum Prices," at end of section.

- Geographic coverage is the 50 states and the District of Columbia.
- Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1978 and monthly data beginning in 1982.
- Sources: • 1978–2007: EIA, *Petroleum Marketing Annual 2007*, Table 17.
- 2008 forward: EIA, *Petroleum Marketing Monthly*, July 2017, Table 16.

Table 9.6 Refiner Prices of Petroleum Products for Resale
(Dollars^a per Gallon, Excluding Taxes)

	Finished Motor Gasoline ^b	Finished Aviation Gasoline	Kerosene-Type Jet Fuel	Kerosene	No. 2 Fuel Oil	No. 2 Diesel Fuel	Propane (Consumer Grade)
1978 Average	0.434	0.537	0.386	0.404	0.369	0.365	0.237
1980 Average .....	.941	1.128	.868	.864	.803	.801	.415
1985 Average .....	.835	1.130	.794	.874	.776	.772	.398
1990 Average .....	.786	1.063	.773	.839	.697	.694	.386
1995 Average .....	.626	.975	.539	.580	.511	.538	.344
2000 Average .....	.963	1.330	.880	.969	.886	.898	.595
2001 Average .....	.886	1.256	.763	.821	.756	.784	.540
2002 Average .....	.828	1.146	.716	.752	.694	.724	.431
2003 Average	1.002	1.288	.871	.955	.881	.883	.607
2004 Average	1.288	1.627	1.208	1.271	1.125	1.187	.751
2005 Average	1.670	2.076	1.723	1.757	1.623	1.737	.933
2006 Average	1.969	2.490	1.961	2.007	1.834	2.012	1.031
2007 Average	2.182	2.758	2.171	2.249	2.072	2.203	1.194
2008 Average	2.586	3.342	3.020	2.851	2.745	2.994	1.437
2009 Average	1.767	2.480	1.719	1.844	1.657	1.713	.921
2010 Average	2.165	2.874	2.185	2.299	2.147	2.214	1.212
2011 Average	2.867	3.739	3.014	3.065	2.907	3.034	1.467
2012 Average	2.929	3.919	3.080	3.163	3.031	3.109	1.033
2013 Average	2.812	3.869	2.953	3.084	2.966	3.028	1.048
2014 Average	2.618	3.687	2.763	2.882	2.741	2.812	1.165
2015 January	1.366	2.324	1.612	1.900	1.669	1.616	.713
February	1.637	2.529	1.722	2.233	1.850	1.861	.748
March	1.770	2.801	1.731	2.098	1.847	1.815	.689
April	1.835	2.827	1.709	1.800	1.740	1.805	.566
May	2.080	3.050	1.933	1.929	1.852	1.973	.475
June	2.121	3.259	1.813	1.871	1.813	1.881	.404
July	2.072	3.217	1.655	1.701	1.654	1.729	.405
August	1.838	2.980	1.479	1.494	1.461	1.562	.402
September	1.609	2.586	1.443	1.509	1.438	1.551	.469
October	1.558	2.475	1.451	1.555	1.411	1.572	.524
November	1.426	2.385	1.400	1.554	1.356	1.456	.505
December	1.356	2.252	1.207	1.275	1.126	1.176	.499
Average	1.726	2.764	1.592	1.735	1.565	1.667	.555
2016 January	1.187	2.122	1.022	1.183	.976	1.015	.460
February	1.046	1.908	1.017	1.155	.948	1.043	.470
March	1.335	2.230	1.100	1.208	1.070	1.189	.497
April	1.476	2.457	1.155	1.193	1.113	1.251	.458
May	1.613	2.528	1.311	1.327	1.291	1.432	.511
June	1.643	2.591	1.428	1.445	1.404	1.531	.497
July	1.490	2.505	1.354	1.297	1.305	1.426	.476
August	1.508	2.405	1.313	1.408	1.307	1.440	.453
September	1.514	2.506	1.366	1.402	1.341	1.471	.494
October	1.568	2.551	1.471	1.580	1.443	1.592	.608
November	1.427	2.433	1.406	1.485	1.386	1.469	.588
December	1.585	2.462	1.511	1.685	1.507	1.606	.703
Average	1.454	2.404	1.295	1.383	1.239	1.378	.523
2017 January	1.627	2.614	1.561	1.761	1.560	1.636	.788
February	1.625	2.592	1.592	1.657	1.553	1.641	.792
March	1.634	2.618	R 1.520	1.580	1.495	1.581	R .671
April	1.723	2.741	1.545	1.572	1.499	1.627	.649

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

^b See Note 5, "Motor Gasoline Prices," at end of section.

R=Revised.

Notes: • Sales for resale are those made to purchasers other than ultimate consumers. Sales to end users are shown in Table 9.7; they are sales made directly to ultimate consumers, including bulk consumers (such as agriculture, industry, and electric utilities) and residential and commercial consumers. • Values for the current month are preliminary. • Through 1982, prices are U.S. Energy

Information Administration (EIA) estimates. See Note 6, "Historical Petroleum Prices," at end of section. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1978 and monthly data beginning in 1982.

Sources: • **1978–2007:** EIA, *Petroleum Marketing Annual 2007*, Table 4. • **2008 forward:** EIA, *Petroleum Marketing Monthly*, July 2017, Table 4.

Table 9.7 Refiner Prices of Petroleum Products to End Users
(Dollars^a per Gallon, Excluding Taxes)

	Finished Motor Gasoline ^b	Finished Aviation Gasoline	Kerosene-Type Jet Fuel	Kerosene	No. 2 Fuel Oil	No. 2 Diesel Fuel	Propane (Consumer Grade)
1978 Average	0.484	0.516	0.387	0.421	0.400	0.377	0.335
1980 Average	1.035	1.084	.868	.902	.788	.818	.482
1985 Average .....	.912	1.201	.796	1.030	.849	.789	.717
1990 Average .....	.883	1.120	.766	.923	.734	.725	.745
1995 Average .....	.765	1.005	.540	.589	.562	.560	.492
2000 Average	1.106	1.306	.899	1.123	.927	.935	.603
2001 Average	1.032	1.323	.775	1.045	.829	.842	.506
2002 Average .....	.947	1.288	.721	.990	.737	.762	.419
2003 Average	1.156	1.493	.872	1.224	.933	.944	.577
2004 Average	1.435	1.819	1.207	1.160	1.173	1.243	.839
2005 Average	1.829	2.231	1.735	1.957	1.705	1.786	1.089
2006 Average	2.128	2.682	1.998	2.244	1.982	2.096	1.358
2007 Average	2.345	2.849	2.165	2.263	2.241	2.267	1.489
2008 Average	2.775	3.273	3.052	3.283	2.986	3.150	1.892
2009 Average	1.888	2.442	1.704	2.675	1.962	1.834	1.220
2010 Average	2.301	3.028	2.201	3.063	2.462	2.314	1.481
2011 Average	3.050	3.803	3.054	3.616	3.193	3.117	1.709
2012 Average	3.154	3.971	3.104	3.843	3.358	3.202	1.139
2013 Average	3.049	3.932	2.979	3.842	3.335	3.122	1.028
2014 Average	2.855	3.986	2.772	W	3.329	2.923	1.097
2015 January	1.673	W	1.633	W	NA	1.819	.566
February	1.858	W	1.747	W	2.204	1.979	.671
March	2.054	W	1.766	W	2.141	1.962	.619
April	2.058	W	1.739	W	NA	1.939	.575
May	2.322	W	1.979	W	2.308	2.090	.465
June	2.374	W	1.855	W	2.321	2.021	.393
July	2.338	W	1.694	W	2.207	1.913	.405
August	2.218	W	1.516	W	2.046	1.737	.387
September	1.920	W	1.465	2.996	1.949	1.693	.468
October	1.849	W	1.473	W	NA	1.702	.479
November	1.711	W	1.424	W	1.814	1.603	.447
December	1.604	W	1.232	W	1.695	1.365	.422
Average	2.003	W	1.629	W	2.016	1.819	.481
2016 January	1.505	W	1.038	W	1.450	1.198	.377
February	1.332	W	1.032	W	1.407	1.185	.409
March	1.552	W	1.133	W	1.555	1.317	.481
April	1.725	W	1.187	W	1.631	1.386	.472
May	1.869	W	1.342	W	1.733	1.555	.533
June	1.961	W	1.464	W	1.861	1.661	.514
July	1.804	W	1.393	W	1.814	1.577	.491
August	1.754	W	1.330	W	NA	1.577	.460
September	1.788	W	1.394	W	1.805	1.601	.507
October	1.819	W	1.506	W	1.941	1.706	.599
November	1.759	W	1.426	W	1.787	1.599	.557
December	1.849	W	1.539	W	1.997	1.718	.666
Average	1.730	W	1.319	W	1.716	1.511	.498
2017 January	1.900	W	1.584	W	NA	1.747	.774
February	1.862	W	1.615	W	2.033	1.755	.814
March	1.904	W	^R 1.554	W	1.909	1.699	^R .657
April	1.997	W	1.595	W	2.081	1.745	.652

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

^b See Note 5, "Motor Gasoline Prices," at end of section.

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

Notes: • Sales to end users are those made directly to ultimate consumers, including bulk consumers (such as agriculture, industry, and electric utilities) and residential and commercial consumers. Sales for resale are shown in Table 9.6; they are sales made to purchasers other than ultimate consumers. • Values for the current month are preliminary. • Through 1982, prices are U.S. Energy

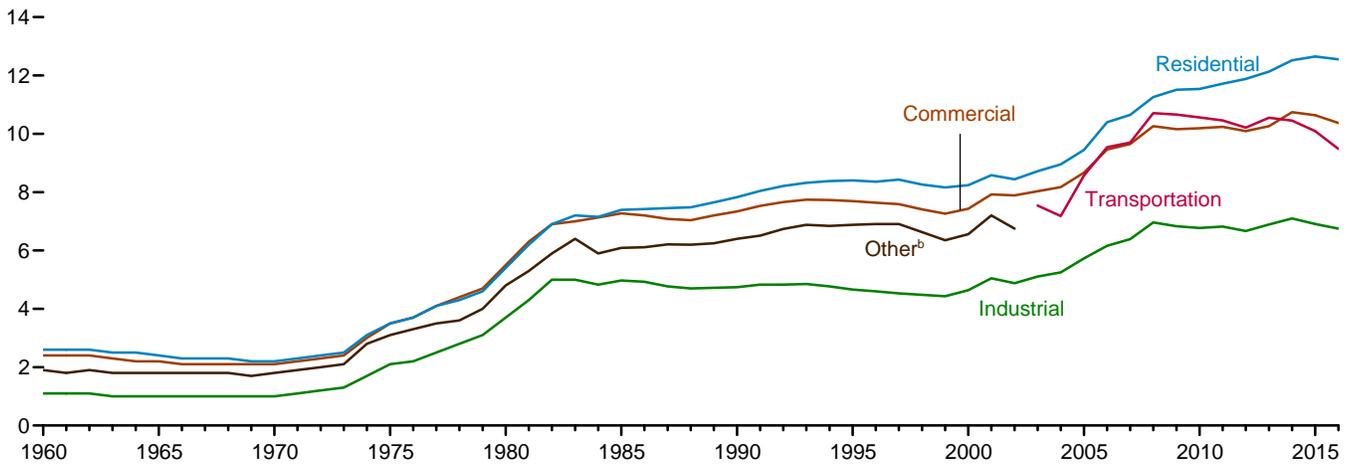
Information Administration (EIA) estimates. See Note 6, "Historical Petroleum Prices," at end of section. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1978 and monthly data beginning in 1982.

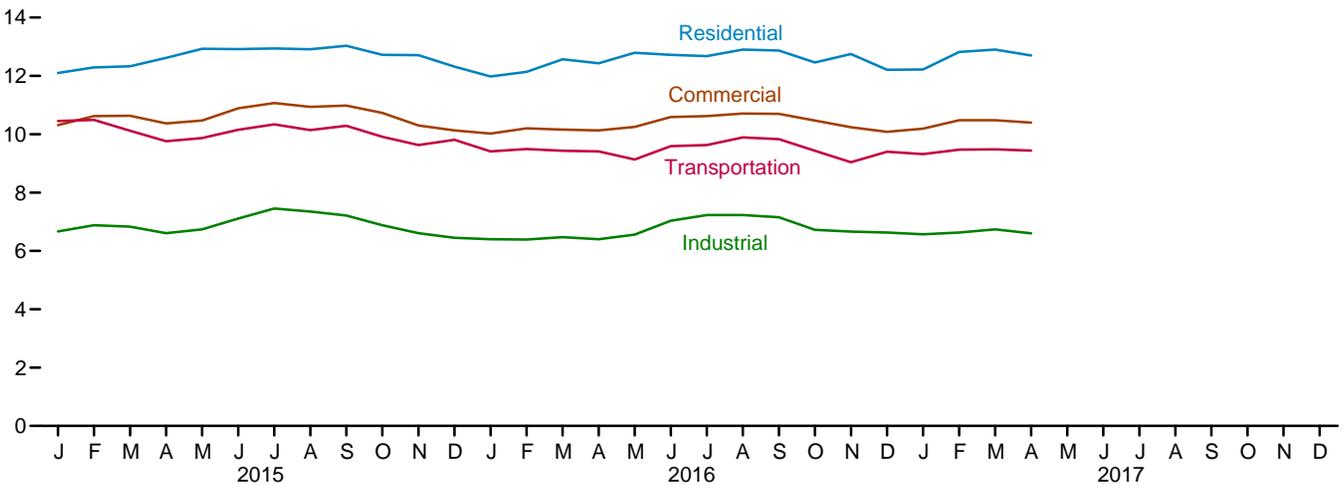
Sources: • **1978–2007:** EIA, *Petroleum Marketing Annual 2007*, Table 2. • **2008 forward:** EIA, *Petroleum Marketing Monthly*, July 2017, Table 2.

Figure 9.2 Average Retail Prices of Electricity
(Cents^a per Kilowatthour)

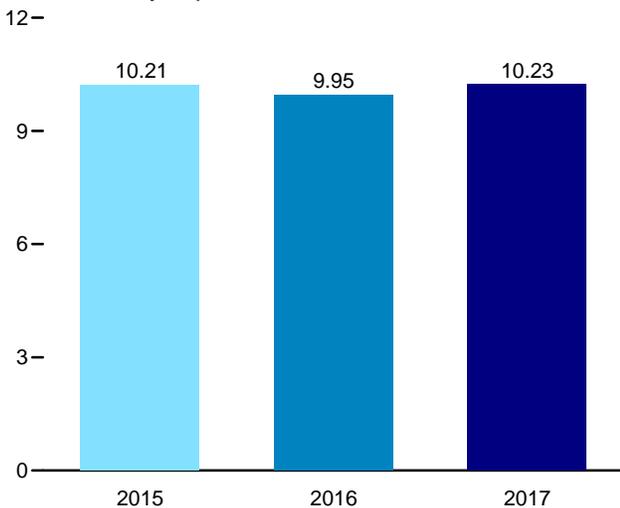
By Sector, 1960–2016



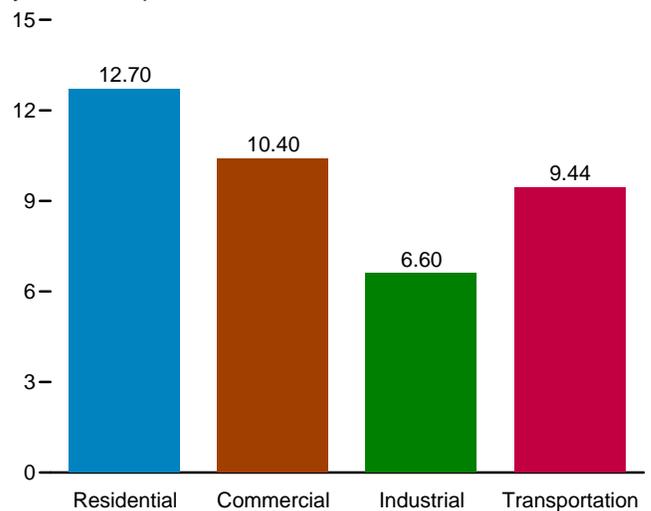
By Sector, Monthly



Total, January–April



By Sector, April 2017



^a Prices are not adjusted for inflation. See “Nominal Price” in Glossary.

^b Public street and highway lighting, interdepartmental sales, other sales to public authorities, agricultural and irrigation, and transportation including railroads and railways.

Note: Includes taxes.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#prices>.

Source: Table 9.8.

Table 9.8 Average Retail Prices of Electricity
(Cents^a per Kilowatthour, Including Taxes)

	Residential	Commercial ^b	Industrial ^c	Transportation ^d	Other ^e	Total
1960 Average	2.60	2.40	1.10	NA	1.90	1.80
1965 Average	2.40	2.20	1.00	NA	1.80	1.70
1970 Average	2.20	2.10	1.00	NA	1.80	1.70
1975 Average	3.50	3.50	2.10	NA	3.10	2.90
1980 Average	5.40	5.50	3.70	NA	4.80	4.70
1985 Average	7.39	7.27	4.97	NA	6.09	6.44
1990 Average	7.83	7.34	4.74	NA	6.40	6.57
1995 Average	8.40	7.69	4.66	NA	6.88	6.89
2000 Average	8.24	7.43	4.64	NA	6.56	6.81
2001 Average	8.58	7.92	5.05	NA	7.20	7.29
2002 Average	8.44	7.89	4.88	NA	6.75	7.20
2003 Average	8.72	8.03	5.11	7.54	--	7.44
2004 Average	8.95	8.17	5.25	7.18	--	7.61
2005 Average	9.45	8.67	5.73	8.57	--	8.14
2006 Average	10.40	9.46	6.16	9.54	--	8.90
2007 Average	10.65	9.65	6.39	9.70	--	9.13
2008 Average	11.26	10.26	6.96	10.71	--	9.74
2009 Average	11.51	10.16	6.83	10.66	--	9.82
2010 Average	11.54	10.19	6.77	10.56	--	9.83
2011 Average	11.72	10.24	6.82	10.46	--	9.90
2012 Average	11.88	10.09	6.67	10.21	--	9.84
2013 Average	12.13	10.26	6.89	10.55	--	10.07
2014 Average	12.52	10.74	7.10	10.45	--	10.44
2015 January	12.10	10.31	6.67	10.45	--	10.18
February	12.29	10.62	6.88	10.49	--	10.36
March	12.33	10.63	6.83	10.12	--	10.29
April	12.62	10.37	6.61	9.76	--	10.01
May	12.93	10.47	6.74	9.87	--	10.21
June	12.92	10.89	7.11	10.15	--	10.64
July	12.94	11.07	7.45	10.34	--	10.95
August	12.91	10.94	7.35	10.14	--	10.85
September	13.03	10.98	7.21	10.29	--	10.79
October	12.72	10.73	6.88	9.91	--	10.31
November	12.71	10.30	6.61	9.63	--	10.05
December	12.32	10.13	6.45	9.81	--	9.98
Average	12.65	10.64	6.91	10.09	--	10.41
2016 January	11.98	10.02	6.40	9.41	--	9.96
February	12.14	10.20	6.39	9.49	--	10.00
March	12.57	10.16	6.47	9.43	--	10.02
April	12.43	10.13	6.40	9.41	--	9.83
May	12.79	10.25	6.56	9.13	--	10.07
June	12.72	10.59	7.03	9.59	--	10.53
July	12.68	10.62	7.23	9.63	--	10.71
August	12.90	10.71	7.23	9.89	--	10.83
September	12.87	10.70	7.15	9.83	--	10.69
October	12.46	10.47	6.72	9.43	--	10.15
November	12.75	10.24	6.66	9.04	--	10.11
December	12.21	10.08	6.63	9.40	--	10.07
Average	12.55	10.37	6.75	9.48	--	10.28
2017 January	12.22	10.19	6.57	9.32	--	10.15
February	12.82	10.48	6.63	9.47	--	10.33
March	12.90	10.48	6.74	9.48	--	10.34
April	12.70	10.40	6.60	9.44	--	10.10
4-Month Average	12.63	10.38	6.63	9.43	--	10.23
2016 4-Month Average	12.25	10.12	6.41	9.44	--	9.95
2015 4-Month Average	12.31	10.48	6.74	10.22	--	10.21

^a Prices are not adjusted for inflation. See "Nominal Price" in Glossary.

^b Commercial sector. For 1960–2002, prices exclude public street and highway lighting, interdepartmental sales, and other sales to public authorities.

^c Industrial sector. For 1960–2002, prices exclude agriculture and irrigation.

^d Transportation sector, including railroads and railways.

^e Public street and highway lighting, interdepartmental sales, other sales to public authorities, agriculture and irrigation, and transportation including railroads and railways.

NA=Not available. -- =Not applicable.

Notes: • Beginning in 2003, the category "Other" has been replaced by "Transportation," and the categories "Commercial" and "Industrial" have been redefined. • Prices are calculated by dividing revenue by sales. Revenue may not correspond to sales for a particular month because of energy service provider billing and accounting procedures. That lack of correspondence could result in uncharacteristic increases or decreases in the monthly prices. • Prices include state and local taxes, energy or demand charges, customer service charges, environmental surcharges, franchise fees, fuel adjustments, and other miscellaneous charges applied to end-use customers during normal billing operations. Prices do not include deferred charges, credits, or other adjustments, such as fuel or revenue from purchased power, from previous reporting periods. • Through 1979, data are for Classes A and B privately owned electric utilities only.

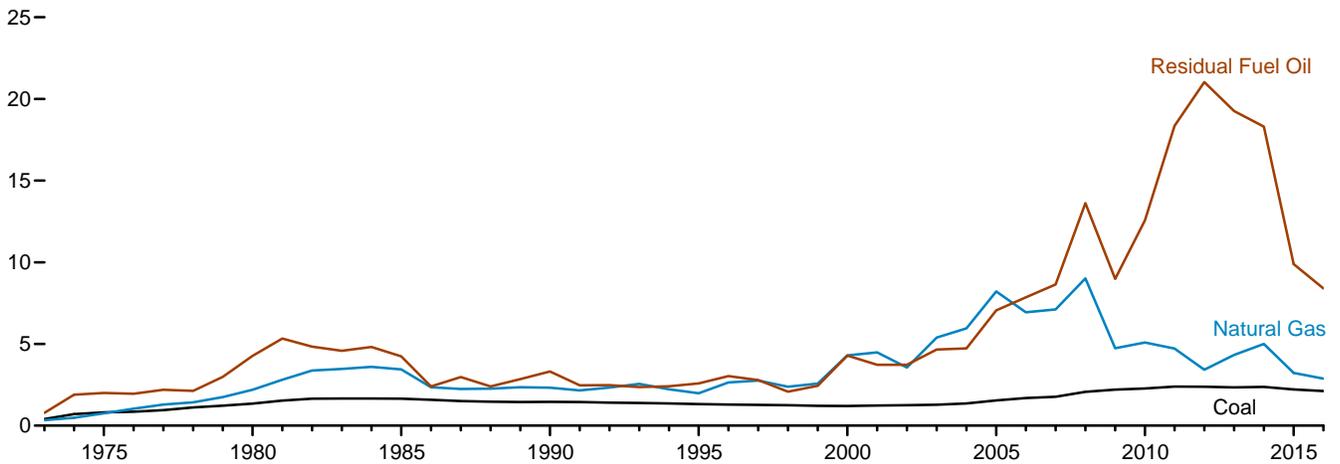
(Class A utilities are those with operating revenues of \$2.5 million or more; Class B utilities are those with operating revenues between \$1 million and \$2.5 million.) For 1980–1982, data are for selected Class A utilities whose electric operating revenues were \$100 million or more during the previous 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. • See Note 7, "Electricity Retail Prices," at end of section for plant coverage, and for information on preliminary and final values. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1960 and monthly data beginning in 1976.

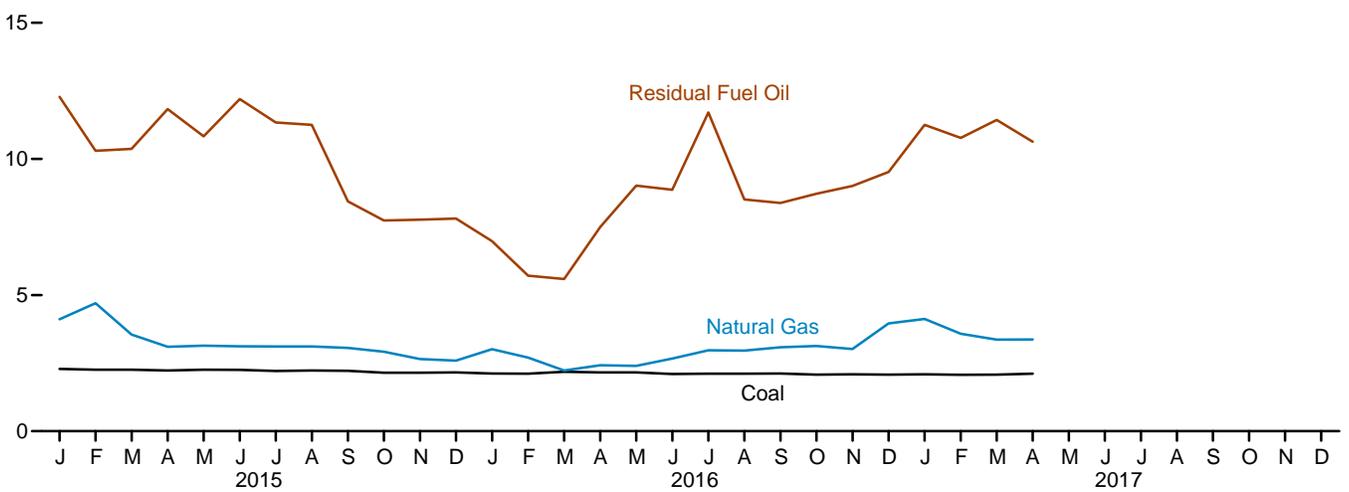
Sources: • **1960–September 1977:** Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • **October 1977–February 1980:** Federal Energy Regulatory Commission (FERC), Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • **March 1980–1982:** FERC, Form FERC-5, "Electric Utility Company Monthly Statement." • **1983:** U.S. Energy Information Administration (EIA), Form EIA-826, "Electric Utility Company Monthly Statement." • **1984–2010:** EIA, Form EIA-861, "Annual Electric Power Industry Report." • **2011 forward:** EIA, *Electric Power Monthly*, June 2017, Table 5.3.

Figure 9.3 Cost of Fossil-Fuel Receipts at Electric Generating Plants
(Dollars^a per Million Btu, Including Taxes)

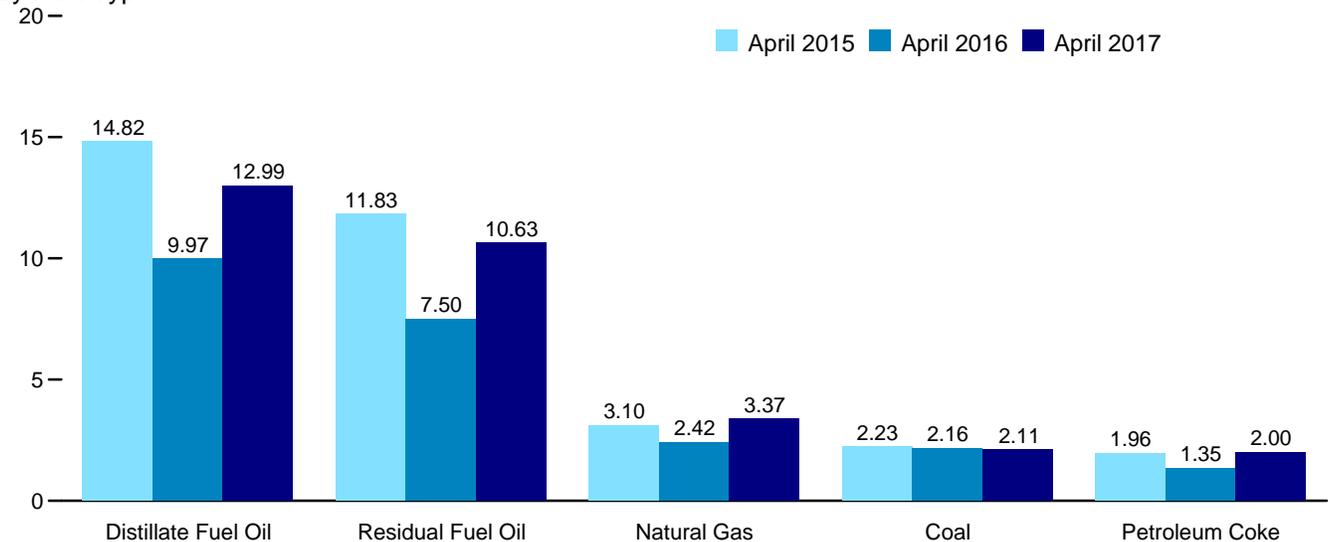
Costs, 1973–2016



Costs, Monthly



By Fuel Type



^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#prices>.
Source: Table 9.9.

Table 9.9 Cost of Fossil-Fuel Receipts at Electric Generating Plants
(Dollars^a per Million Btu, Including Taxes)

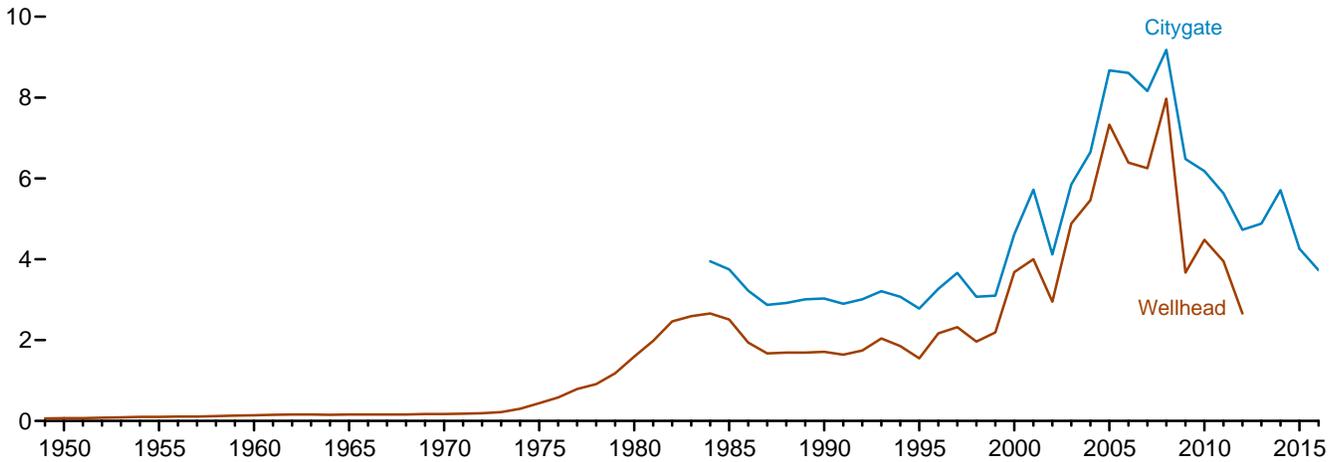
	Coal	Petroleum				Natural Gas ^e	All Fossil Fuels ^f
		Residual Fuel Oil ^b	Distillate Fuel Oil ^c	Petroleum Coke	Total ^d		
1973 Average	0.41	0.79	NA	NA	0.80	0.34	0.48
1975 Average .....	.81	2.01	NA	NA	2.02	.75	1.04
1980 Average	1.35	4.27	NA	NA	4.35	2.20	1.93
1985 Average	1.65	4.24	NA	NA	4.32	3.44	2.09
1990 Average	1.45	3.32	5.38	.80	3.35	2.32	1.69
1995 Average	1.32	2.59	3.99	.65	2.57	1.98	1.45
2000 Average	1.20	4.29	6.65	.58	4.18	4.30	1.74
2001 Average	1.23	3.73	6.30	.78	3.69	4.49	1.73
2002 Average ^g	1.25	3.73	5.34	.78	3.34	3.56	1.86
2003 Average	1.28	4.66	6.82	.72	4.33	5.39	2.28
2004 Average	1.36	4.73	8.02	.83	4.29	5.96	2.48
2005 Average	1.54	7.06	11.72	1.11	6.44	8.21	3.25
2006 Average	1.69	7.85	13.28	1.33	6.23	6.94	3.02
2007 Average	1.77	8.64	14.85	1.51	7.17	7.11	3.23
2008 Average	2.07	13.62	21.46	2.11	10.87	9.01	4.12
2009 Average	2.21	8.98	13.22	1.61	7.02	4.74	3.04
2010 Average	2.27	12.57	16.61	2.28	9.54	5.09	3.26
2011 Average	2.39	18.35	22.46	3.03	12.48	4.72	3.29
2012 Average	2.38	21.03	23.49	2.24	12.48	3.42	2.83
2013 Average	2.34	19.26	23.03	2.18	11.57	4.33	3.09
2014 Average	2.37	18.30	21.88	1.98	11.60	5.00	3.31
2015 January	2.29	12.28	13.37	2.00	7.07	4.11	2.92
February	2.26	10.30	16.46	1.76	8.97	4.70	3.19
March	2.26	10.37	15.60	2.00	8.20	3.55	2.78
April	2.23	11.83	14.82	1.96	6.85	3.10	2.58
May	2.26	10.83	15.34	2.02	7.17	3.14	2.64
June	2.25	12.20	15.29	1.87	7.78	3.12	2.66
July	2.21	11.34	14.37	1.90	6.03	3.11	2.63
August	2.23	11.25	13.05	1.82	6.38	3.11	2.62
September	2.22	8.44	12.02	1.74	5.68	3.06	2.57
October	2.15	7.74	12.44	1.83	5.75	2.92	2.47
November	2.15	7.77	12.38	1.59	5.55	2.65	2.38
December	2.16	7.81	10.57	1.57	4.97	2.59	2.36
Average	2.22	9.89	14.06	1.84	6.74	3.23	2.65
2016 January	2.12	6.98	8.90	1.38	4.51	3.01	2.52
February	2.11	5.71	8.78	1.30	3.63	2.70	2.37
March	2.18	5.59	9.46	1.41	3.60	2.23	2.22
April	2.16	7.50	9.97	1.35	4.51	2.42	2.31
May	2.16	9.02	10.75	1.32	5.67	2.40	2.31
June	2.10	8.87	12.22	1.41	6.09	2.67	2.40
July	2.11	11.71	12.08	1.47	6.36	2.97	2.56
August	2.11	8.51	11.41	1.75	5.21	2.96	2.53
September	2.12	8.38	11.36	2.04	5.20	3.08	2.56
October	2.08	8.72	11.99	1.98	5.80	3.13	2.51
November	2.09	9.01	12.11	2.26	6.17	3.02	2.47
December	2.08	9.52	12.26	2.07	5.89	3.96	W
Average	2.12	8.40	10.91	1.65	5.20	2.88	2.47
2017 January	2.09	11.25	12.95	2.14	7.68	4.12	2.83
February	2.07	10.77	12.92	2.00	6.29	3.58	2.60
March	2.08	11.43	12.34	2.06	7.62	3.36	2.62
April	2.11	10.63	12.99	2.00	6.95	3.37	2.61
4-Month Average	2.09	11.15	12.81	2.05	7.21	3.61	2.67
2016 4-Month Average	2.14	6.50	9.22	1.36	4.07	2.59	2.36
2015 4-Month Average	2.26	10.97	15.20	1.94	7.86	3.85	2.87

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
^b For 1973–2001, electric utility data are for heavy oil (fuel oil nos. 5 and 6, and small amounts of fuel oil no. 4).
^c For 1973–2001, electric utility data are for light oil (fuel oil nos. 1 and 2).
^d For all years, includes residual fuel oil and distillate fuel oil. For 1990 forward, also includes petroleum coke. For 1973–2012, also includes jet fuel, kerosene, and waste oil. For 1983–2012, also includes other petroleum, such as propane and refined motor oil.
^e Natural gas, plus a small amount of supplemental gaseous fuels. For 1973–2000, data also include a small amount of blast furnace gas and other gases derived from fossil fuels.
^f Weighted average of costs shown under "Coal," "Petroleum," and "Natural Gas."
^g Through 2001, data are for electric utilities only. Beginning in 2002, data also include independent power producers, and electric generating plants in the

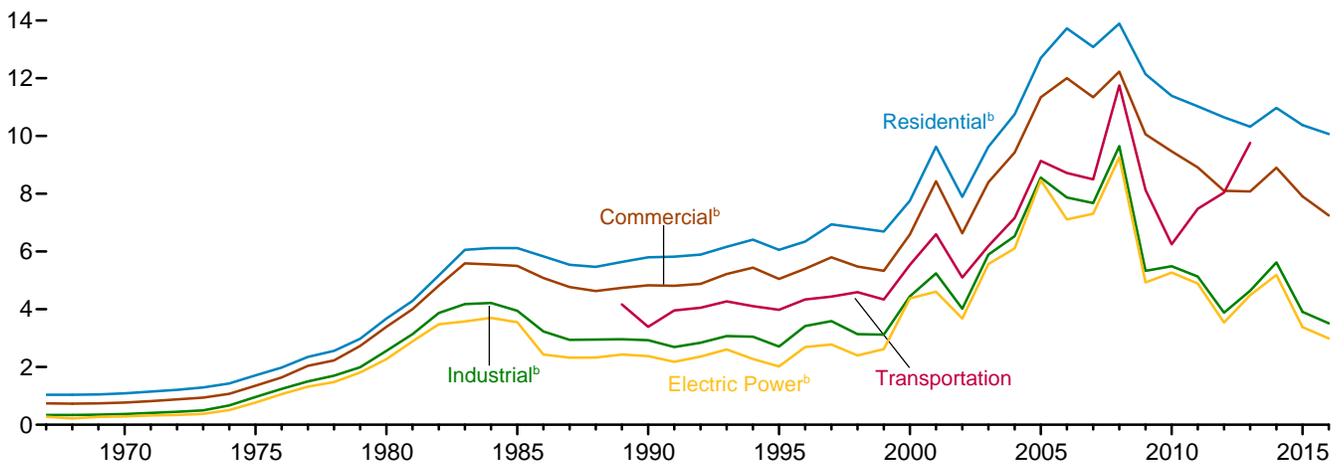
commercial and industrial sectors.
 NA=Not available. W=Value withheld to avoid disclosure of individual company data.
 Notes: • Receipts are purchases of fuel. • Yearly costs are averages of monthly values, weighted by quantities in Btu. • For this table, there are several breaks in the data series related to what plants and fuels are covered. Beginning in 2013, data cover all regulated generating plants; plus unregulated plants whose total fossil-fueled nameplate generating capacity is 50 megawatts or more for coal, and 200 megawatts or more for natural gas, residual fuel oil, distillate fuel oil, and petroleum coke. For data coverage before 2013, see EIA, *Electric Power Monthly*, Appendix C, Form EIA-923 notes, "Receipts and cost and quality of fossil fuels" section. • Geographic coverage is the 50 states and the District of Columbia.
 Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual and monthly data beginning in 1973.
 Sources: See end of section.

Figure 9.4 Natural Gas Prices
(Dollars^a per Thousand Cubic Feet)

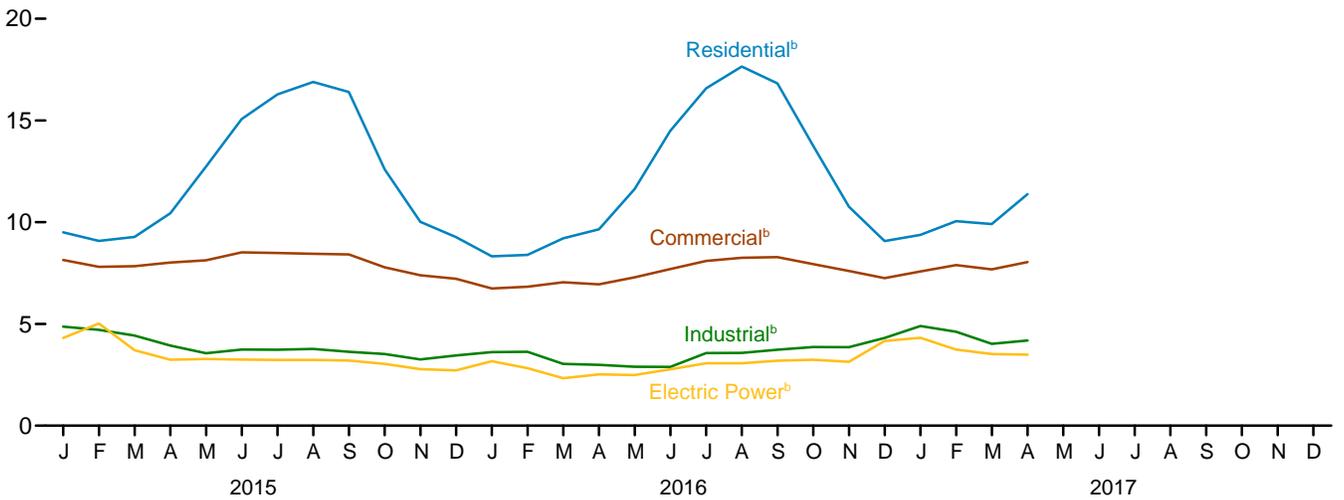
Wellhead and Citygate, 1949–2016



Consuming Sectors, 1967–2016



Consuming Sectors, Monthly



^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
^b Includes taxes.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#prices>.
Source: Table 9.10.

Table 9.10 Natural Gas Prices
(Dollars^a per Thousand Cubic Feet)

	Wellhead Price ^f	City-gate Price ^g	Consuming Sectors ^b									
			Residential		Commercial ^c		Industrial ^d		Transportation	Electric Power ^e		
			Price ^h	Percentage of Sector ⁱ	Price ^h	Percentage of Sector ⁱ	Price ^h	Percentage of Sector ⁱ	Vehicle Fuel ^j Price ^h	Price ^h	Percentage of Sector ^{i,k}	
1950 Average	0.07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1955 Average	.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1960 Average	.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1965 Average	.16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1970 Average	.17	NA	1.09	NA	.77	NA	.37	NA	NA	.29	NA	NA
1975 Average	.44	NA	1.71	NA	1.35	NA	.96	NA	NA	.77	96.1	
1980 Average	1.59	NA	3.68	NA	3.39	NA	2.56	NA	NA	2.27	96.9	
1985 Average	2.51	3.75	6.12	NA	5.50	NA	3.95	68.8	NA	3.55	94.0	
1990 Average	1.71	3.03	5.80	99.2	4.83	86.6	2.93	35.2	3.39	2.38	76.8	
1995 Average	1.55	2.78	6.06	99.0	5.05	76.7	2.71	24.5	3.98	2.02	71.4	
2000 Average	3.68	4.62	7.76	92.6	6.59	63.9	4.45	19.8	5.54	4.38	50.5	
2001 Average	4.00	5.72	9.63	92.4	8.43	66.0	5.24	20.8	6.60	4.61	40.2	
2002 Average	2.95	4.12	7.89	97.9	6.63	77.4	4.02	22.7	5.10	3.68	83.9	
2003 Average	4.88	5.85	9.63	97.5	8.40	78.2	5.89	22.1	6.19	5.57	91.2	
2004 Average	5.46	6.65	10.75	97.7	9.43	78.0	6.53	23.6	7.16	6.11	89.8	
2005 Average	7.33	8.67	12.70	98.1	11.34	82.1	8.56	24.0	9.14	8.47	91.3	
2006 Average	6.39	8.61	13.73	98.1	12.00	80.8	7.87	23.4	8.72	7.11	93.4	
2007 Average	6.25	8.16	13.08	98.0	11.34	80.4	7.68	22.2	8.50	7.31	92.2	
2008 Average	7.97	9.18	13.89	97.5	12.23	79.7	9.65	20.4	11.75	9.26	101.1	
2009 Average	3.67	6.48	12.14	97.4	10.06	77.8	5.33	18.8	8.13	4.93	101.1	
2010 Average	4.48	6.18	11.39	97.4	9.47	77.5	5.49	18.0	6.25	5.27	100.8	
2011 Average	3.95	5.63	11.03	96.3	8.91	67.3	5.13	16.3	7.48	4.89	101.2	
2012 Average	E 2.66	4.73	10.65	95.8	8.10	65.2	3.88	16.2	8.04	3.54	95.5	
2013 Average	NA	4.88	10.32	95.7	8.08	65.8	4.64	16.6	9.76	4.49	94.9	
2014 Average	NA	5.71	10.97	95.5	8.90	65.8	5.62	15.9	NA	5.19	94.6	
2015 January	NA	4.48	9.50	95.7	8.14	70.9	4.87	15.0	NA	4.31	93.6	
February	NA	4.57	9.08	95.6	7.81	71.0	4.71	15.4	NA	5.02	93.7	
March	NA	4.36	9.28	95.4	7.84	69.9	4.43	15.6	NA	3.71	94.4	
April	NA	3.93	10.44	95.4	8.02	64.8	3.94	14.9	NA	3.24	95.6	
May	NA	4.24	12.73	95.4	8.13	61.2	3.56	15.4	NA	3.28	95.5	
June	NA	4.44	15.07	95.5	8.52	57.9	3.74	14.9	NA	3.25	94.9	
July	NA	4.65	16.28	95.7	8.49	56.9	3.73	14.9	NA	3.23	94.9	
August	NA	4.59	16.89	95.4	8.45	55.6	3.77	14.6	NA	3.23	94.7	
September	NA	4.56	16.40	95.9	8.42	55.8	3.63	14.8	NA	3.20	94.4	
October	NA	4.00	12.60	95.5	7.78	59.5	3.52	14.9	NA	3.04	94.6	
November	NA	3.68	10.02	96.0	7.39	63.9	3.26	15.1	NA	2.78	94.8	
December	NA	3.75	9.27	96.1	7.22	67.6	3.45	15.2	NA	2.72	94.2	
Average	NA	4.26	10.38	95.7	7.91	65.9	3.91	15.1	NA	3.38	94.6	
2016 January	NA	3.40	8.32	96.0	6.74	70.5	3.62	15.3	NA	3.17	94.8	
February	NA	R 3.49	8.39	95.9	6.83	69.5	3.63	15.4	NA	2.83	95.3	
March	NA	3.49	R 9.21	95.6	R 7.05	66.8	3.04	15.3	NA	2.33	95.7	
April	NA	3.22	R 9.65	95.6	R 6.95	65.1	2.99	14.5	NA	2.52	95.6	
May	NA	R 3.46	R 11.63	95.4	R 7.29	60.4	2.90	14.6	NA	2.49	95.7	
June	NA	R 3.99	R 14.49	95.7	R 7.70	58.1	R 2.89	14.6	NA	2.77	95.4	
July	NA	4.45	R 16.58	95.9	8.10	57.0	3.57	14.3	NA	3.07	95.0	
August	NA	4.37	R 17.65	95.8	8.25	54.9	3.58	14.7	NA	3.07	95.1	
September	NA	R 4.61	R 16.82	96.1	R 8.28	56.2	3.73	14.6	NA	3.19	95.6	
October	NA	R 4.19	R 13.75	95.9	R 7.94	60.0	3.87	14.5	NA	3.24	95.3	
November	NA	R 3.90	10.76	96.0	7.60	63.6	3.86	14.5	NA	3.14	95.7	
December	NA	R 3.96	R 9.07	R 96.1	R 7.25	68.2	4.31	14.7	NA	4.16	95.7	
Average	NA	R 3.73	R 10.07	95.9	7.25	64.9	3.51	14.8	NA	2.99	95.4	
2017 January	NA	4.22	9.38	96.0	7.58	R 70.4	R 4.90	15.0	NA	4.32	83.0	
February	NA	4.10	10.05	95.9	7.89	69.0	4.62	15.1	NA	3.74	84.3	
March	NA	R 3.84	R 9.91	95.7	R 7.68	67.8	4.02	15.0	NA	3.52	81.5	
April	NA	4.18	11.38	95.2	8.04	65.0	4.19	14.5	NA	3.49	82.4	
4-Month Average	NA	4.09	9.97	95.8	7.76	68.5	4.44	14.9	NA	3.77	82.7	
2016 4-Month Average	NA	3.42	8.73	95.8	6.87	68.5	3.34	15.1	NA	2.71	95.4	
2015 4-Month Average	NA	4.42	9.43	95.6	7.95	69.7	4.51	15.2	NA	4.06	94.3	

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
^b See Note 8, "Natural Gas Prices," at end of section.
^c Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.
^d Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.
^e 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. Through 2001, data are for electric utilities only; beginning in 2002, data also include independent power producers.
^f See "Natural Gas Wellhead Price" in Glossary.
^g See "Citygate" in Glossary.
^h Includes taxes.
ⁱ The percentage of the sector's consumption in Table 4.3 for which price data are available. For details on how the percentages are derived, see Table 9.10 sources at end of section.

^j Much of the natural gas delivered for vehicle fuel represents deliveries to fueling stations that are used primarily or exclusively by fleet vehicles. Thus, the prices are often those associated with the cost of gas in the operation of fleet vehicles.
^k Percentages exceed 100% when reported natural gas receipts are greater than reported natural gas consumption—this can occur when combined-heat-and-power plants report fuel receipts related to non-electric generating activities.
R=Revised. NA=Not available. E=Estimate.
Notes: • Prices are for natural gas, plus a small amount of supplemental gaseous fuels. • Prices are intended to include all taxes. See Note 8, "Natural Gas Prices," at end of section. • Wellhead annual and year-to-date prices are simple averages of the monthly prices; all other annual and year-to-date prices are volume-weighted averages of the monthly prices. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1976.
Sources: See end of section.

Energy Prices

Note 1. Crude Oil Refinery Acquisition Costs. Beginning with January 1981, refiner acquisition costs of crude oil are from data collected on U.S. Energy Information Administration (EIA) Form EIA-14, “Refiners’ Monthly Cost Report.” Those costs were previously published from data collected on Economic Regulatory Administration (ERA) Form ERA-49, “Domestic Crude Oil Entitlements Program Refiners Monthly Report.” Form ERA-49 was discontinued with the decontrol of crude oil on January 28, 1981. Crude oil purchases and costs are defined for Form EIA-14 in accordance with conventions used for Form ERA-49. The respondents for the two forms are also essentially the same. However, due to possible different interpretations of the filing requirements and a different method for handling prior period adjustments, care must be taken when comparing the data collected on the two forms.

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

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

Note 2. Crude Oil Domestic First Purchase Prices. The average domestic first purchase price represents the average price at which all domestic crude oil is purchased. Crude oil domestic first purchase prices were derived as follows: for 1949–1973, weighted average domestic first purchase values as reported by state agencies and calculated by the Bureau of Mines; for 1974 and 1975, weighted averages of a sample survey of major first purchasers’ purchases; for 1976 forward, weighted averages of all first purchasers’ purchases. The data series was previously called “Actual Domestic Wellhead Price.”

Note 3. Crude Oil F.O.B. Costs. F.O.B. literally means “Free on Board.” It denotes a transaction whereby the seller makes the product available with an agreement on a given port at a given price; it is the responsibility of the buyer to arrange for the transportation and insurance.

Note 4. Crude Oil Landed Costs. The landed cost of imported crude oil from selected countries does not represent the total cost of all imported crude. Prior to April 1975, imported crude costs to U.S. company-owned refineries in the Caribbean were not included in the landed cost, and costs of crude oil from countries that export only small amounts to the United States were also excluded. Beginning in April 1975, however, coverage was expanded to include U.S. company-owned refineries in the Caribbean. Landed costs do not include supplemental fees.

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

Regular motor gasoline prices by area type are determined by EIA in a weekly survey of retail motor gasoline outlets (Form EIA-878, “Motor Gasoline Price Survey”). Prices include all federal, state, and local taxes paid at the time of sale. A representative sample of outlets by geographic area and size is randomly selected from a sampling frame of approximately 115,000 retail motor gasoline outlets. Monthly and annual prices are simple averages of weighted weekly estimates from “Weekly U.S. Retail Gasoline Prices, Regular Grade.” For more information on the survey methodology, see EIA, *Weekly Petroleum Status Report*, Appendix B, “Weekly Petroleum Price Surveys” section.

Refiner prices of finished motor gasoline for resale and to end users are determined by EIA in a monthly survey of refiners and gas plant operators (Form EIA-782A). The prices do not include any federal, state, or local taxes paid at the time of sale. Estimates of prices prior to January 1983 are based on Form FEA-P302-M-1/EIA-460, “Petroleum Industry Monthly Report for Product Prices,” and also exclude all federal, state, or local taxes paid at the time of sale. Sales for resale are those made to purchasers who are other-than-ultimate consumers. Sales to end users are sales made directly to the consumer of the product, including bulk consumers (such as agriculture, industry, and utilities) and residential and commercial consumers.

Note 6. Historical Petroleum Prices. Starting in January 1983, Form EIA-782, “Monthly Petroleum Product Sales Report,” replaced 10 previous surveys. Every attempt was made to continue the most important price series. However, prices published through December 1982 and those

published since January 1983 do not necessarily form continuous data series due to changes in survey forms, definitions, instructions, populations, samples, processing systems, and statistical procedures. To provide historical data, continuous series were generated for annual data 1978–1982 and for monthly data 1981 and 1982 by estimating the prices that would have been published had Form EIA-782 survey and system been in operation at that time. This form of estimation was performed after detailed adjustment was made for product and sales type matching and for discontinuity due to other factors. An important difference between the previous and present prices is the distinction between wholesale and resale and between retail and end user. The resale category continues to include sales among resellers. However, sales to bulk consumers, such as utility, industrial, and commercial accounts previously included in the wholesale category, are now counted as made to end users. The end-user category continues to include retail sales through company-owned and operated outlets but also includes sales to the bulk consumers such as agriculture, industry, and electric utilities. Additional information may be found in “Estimated Historic Time Series for the EIA-782,” a feature article by Paula Weir, printed in the December 1983 [3] *Petroleum Marketing Monthly*, published by EIA.

Note 7. Electricity Retail Prices. Average annual retail prices of electricity have the following plant coverage: Through 1979, annual data are for Classes A and B privately owned electric utilities only. For 1980–1982, annual data are for selected Class A utilities whose electric operating revenues were \$100 million or more during the previous year. For 1983, annual data are for a selected sample of electric utilities. Beginning in 1984, data are for a census of electric utilities. Beginning in 1996, annual data also include energy service providers selling to retail customers.

Average monthly retail prices of electricity have the following plant coverage: Through 1985, monthly data are derived from selected privately owned electric utilities and, therefore, are not national averages. Beginning in 1986, monthly data are based on a sample of publicly and privately owned electric utilities. Beginning in 1996, monthly data also include energy service providers selling to retail customers.

Preliminary monthly data are from Form EIA-826, “Monthly Electric Sales and Revenue Report With State Distributions Report,” which is a monthly collection of data from approximately 450 of the largest publicly and privately owned electric utilities as well as a census of energy service providers with retail sales in deregulated states; a model is then applied to the collected data to estimate for the entire universe of U.S. electric utilities. Preliminary annual data are the sum of the monthly revenues divided by the sum of the monthly sales. When final annual data become available each year from Form EIA-861, “Annual Electric Power Industry Report,” their ratios

to the preliminary Form EIA-826 values are used to derive adjusted final monthly values.

Note 8. Natural Gas Prices. Natural gas prices are intended to include all taxes. Instructions on the data collection forms specifically direct that all federal, state, and local taxes, surcharges, and/or adjustments billed to consumers are to be included. However, sales and other taxes itemized on more than 3,000 consumers’ bills are sometimes excluded by the reporting utilities. Delivered-to-consumers prices for 1987 forward represent natural gas delivered and sold to residential, commercial, industrial, vehicle fuel, and electric power consumers. They do not include the price of natural gas delivered on behalf of third parties to residential, commercial, industrial, and vehicle fuel customers except for certain states in the residential and commercial sectors for 2002 forward. Volumes of natural gas delivered on behalf of third parties are included in the consumption data shown in Table 4.3. Additional information is available in EIA, *Natural Gas Monthly*, Appendix C.

Table 9.1 Sources

Domestic First Purchase Price

1949–1976: U.S. Department of the Interior (DOI), Bureau of Mines (BOM), *Minerals Yearbook*, “Crude Petroleum and Petroleum Products” chapter.

1977: Federal Energy Administration, based on Form FEA-P124, “Domestic Crude Oil Purchaser’s Monthly Report.”

1978–2009: U.S. Energy Information Administration (EIA), *Petroleum Marketing Annual 2009*, Table 1.

2010 forward: EIA, *Petroleum Marketing Monthly*, July 2017, Table 1.

F.O.B. and Landed Cost of Imports

October 1973–September 1977: Federal Energy Administration, Form FEA-F701-M-0, “Transfer Pricing Report.”

October–December 1977: EIA, Form FEA-F701-M-0, “Transfer Pricing Report.”

1978–2009: EIA, *Petroleum Marketing Annual 2009*, Table 1.

2010 forward: EIA, *Petroleum Marketing Monthly*, July 2017, Table 1.

Refiner Acquisition Cost

1968–1973: EIA estimates. The cost of domestic crude oil was derived by adding estimated transportation costs to the reported average domestic first purchase price. 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. Census Bureau.

1974–1976: DOI, BOM, *Minerals Yearbook*, “Crude Petroleum and Petroleum Products” chapter.

1977: January–September, FEA, based on Form FEA-P110-M-1, “Refiners’ Monthly Cost Allocation Report.”

1977: October–December, EIA, based on Form FEA-P110-M-1, “Refiners’ Monthly Cost Allocation Report.”

1978–2009: EIA, *Petroleum Marketing Annual 2009*, Table 1.
2010 forward: EIA, *Petroleum Marketing Monthly*, July 2017, Table 1.

Table 9.2 Sources

October 1973–September 1977: Federal Energy Administration, Form FEA-F701-M-0, “Transfer Pricing Report.”
October 1977–December 1977: U.S. Energy Information Administration (EIA), Form FEA-F701-M-0, “Transfer Pricing Report.”
1978–2009: EIA, *Petroleum Marketing Annual 2009*, Table 21.
2010 forward: EIA, *Petroleum Marketing Monthly*, July 2017, Table 21.

Table 9.9 Sources

1973–September 1977: Federal Power Commission, Form FPC-423, “Monthly Report of Cost and Quality of Fuels for Electric Utility Plants.”
October 1977–December 1977: Federal Energy Regulatory Commission, Form FERC-423, “Monthly Report of Cost and Quality of Fuels for Electric Utility Plants.”
1978 and 1979: U.S. Energy Information Administration (EIA), Form FERC-423, “Monthly Report of Cost and Quality of Fuels for Electric Utility Plants.”
1980–1989: EIA, *Electric Power Monthly*, May issues.
1990–2000: EIA, *Electric Power Monthly*, March 2003, Table 26.
2001–2007: EIA, *Electric Power Monthly*, October 2008, Table 4.1; Federal Energy Regulatory Commission, Form FERC-423, “Monthly Report of Cost and Quality of Fuels for Electric Utility Plants”; and EIA, Form EIA-423, “Monthly Cost and Quality of Fuels for Electric Plants Report.”
2008 forward: EIA, *Electric Power Monthly*, June 2017, Table 4.1; and Form EIA-923, “Power Plant Operations Report.”

Table 9.10 Sources

All Prices Except Vehicle Fuel and Electric Power

1949–2014: U.S. Energy Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports and unpublished revisions.
2015 forward: EIA, *Natural Gas Monthly (NGM)*, June 2017, Table 3.

Vehicle Fuel Price

1989–2015: EIA, NGA, annual reports.

Electric Power Sector Price

1967–1972: EIA, NGA, annual reports.

1973–1998: EIA, NGA 2000, Table 96.

1999–2002: EIA, NGM, October 2004, Table 4.

2003–2007: Federal Energy Regulatory Commission, Form FERC-423, “Monthly Report of Cost and Quality of Fuels for Electric Utility Plants,” and EIA, Form EIA-423 “Monthly Cost and Quality of Fuels for Electric Plants Report.”

2008 forward: Form EIA-923, “Power Plant Operations Report.”

Percentage of Residential Sector

1989–2013: EIA, Form EIA-176, “Annual Report of Natural and Supplemental Gas Supply and Disposition.” Calculated as the total amount of natural gas delivered to residential consumers minus the amount delivered for the account of others, and then divided by the total amount delivered to residential consumers.

2014 forward: EIA, Form EIA-857, “Monthly Report of Natural Gas Purchases and Deliveries to Consumers.”

Percentage of Commercial Sector

1987–2014: EIA, NGA, annual reports. Calculated as the total amount of natural gas delivered to commercial consumers minus the amount delivered for the account of others, and then divided by the total amount delivered to commercial consumers.

2015 forward: EIA, NGM, June 2017, Table 3.

Percentage of Industrial Sector

1982–2014: EIA, NGA, annual reports. Calculated as the total amount of natural gas delivered to industrial consumers minus the amount delivered for the account of others, and then divided by the total amount delivered to industrial consumers.

2015 forward: EIA, NGM, June 2017, Table 3.

Percentage of Electric Power Sector

1973–2001: Calculated by EIA as the quantity of natural gas receipts by electric utilities reported on Form FERC-423, “Monthly Report of Cost and Quality of Fuels for Electric Utility Plants” (and predecessor forms) divided by the quantity of natural gas consumed by the electric power sector (for 1973–1988, see *Monthly Energy Review (MER)*, Table 7.3b; for 1989–2001, see MER, Table 7.4b).

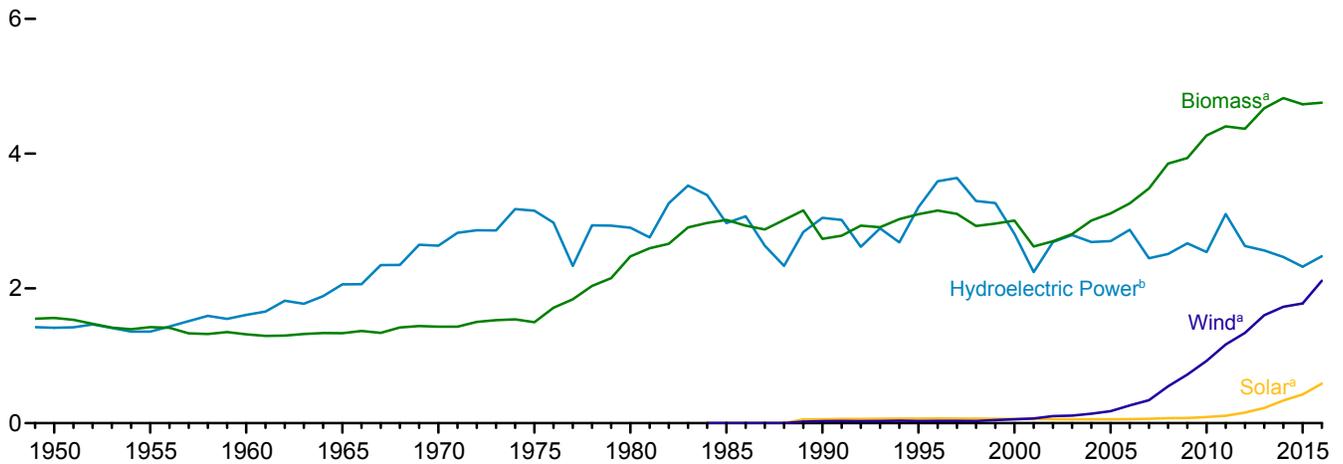
2002–2007: Calculated by EIA as the quantity of natural gas receipts by electric utilities and independent power producers reported on Form FERC-423, “Monthly Report of Cost and Quality of Fuels for Electric Utility Plants,” and EIA-423, “Monthly Cost and Quality of Fuels for Electric Plants Report,” divided by the quantity of natural gas consumed by the electric power sector (see MER, Table 7.4b).

2008 forward: Calculated by EIA as the quantity of natural gas receipts by electric utilities and independent power producers reported on Form EIA-923, “Power Plant Operations Report,” divided by the quantity of natural gas consumed by the electric power sector (see MER, Table 7.4b).

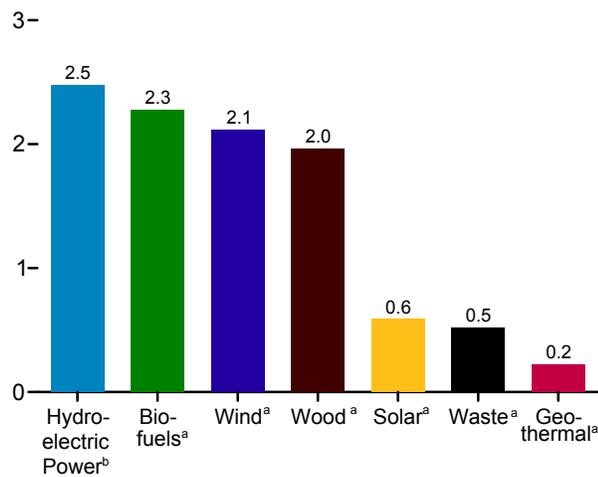
10. Renewable Energy

Figure 10.1 Renewable Energy Consumption
(Quadrillion Btu)

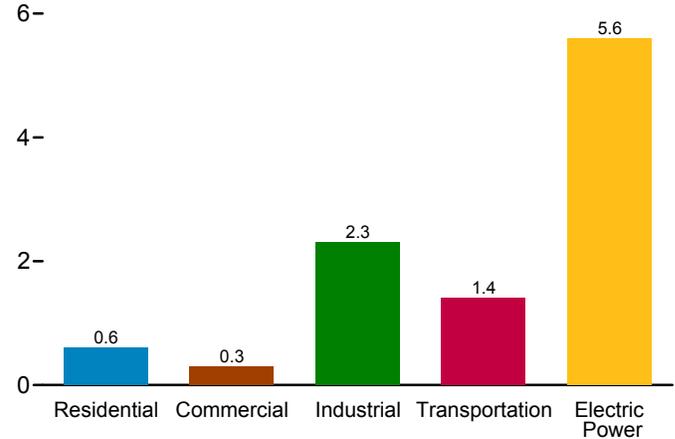
Major Sources, 1949–2016



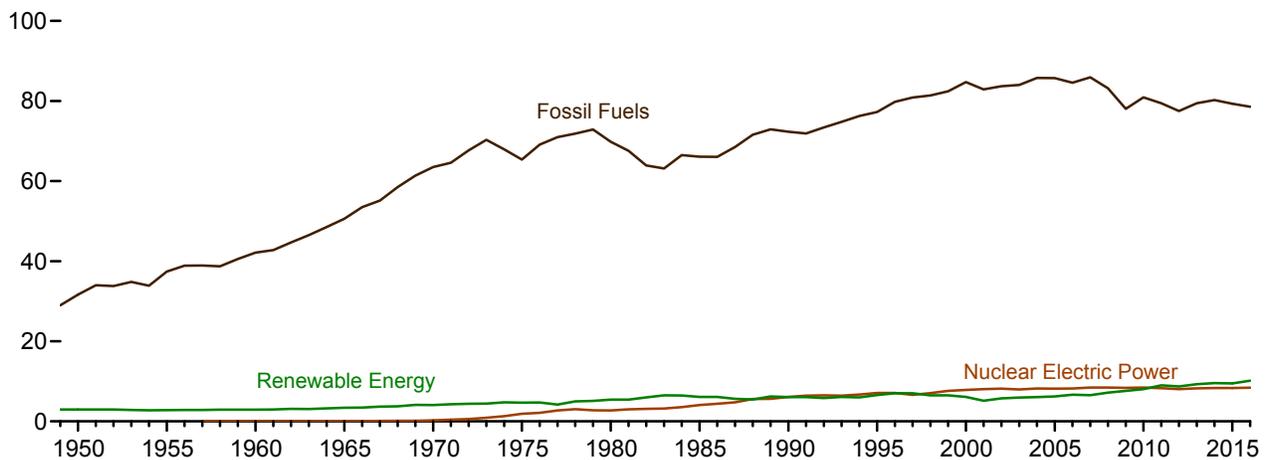
By Source, 2016



By Sector, 2016



Compared With Other Resources, 1949–2016



^a See Table 10.1 for definition.
^b Conventional hydroelectric power.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#renewable>.
Sources: Tables 1.3 and 10.1–10.2c.

Table 10.1 Renewable Energy Production and Consumption by Source
(Trillion Btu)

	Production ^a			Consumption								
	Biomass		Total Renewable Energy ^d	Hydroelectric Power ^e	Geothermal ^f	Solar ^g	Wind ^h	Biomass				Total Renewable Energy
	Bio-fuels ^b	Total ^c						Wood ⁱ	Waste ^j	Bio-fuels ^k	Total	
1950 Total	NA	1,562	2,978	1,415	NA	NA	NA	1,562	NA	NA	1,562	2,978
1955 Total	NA	1,424	2,784	1,360	NA	NA	NA	1,424	NA	NA	1,424	2,784
1960 Total	NA	1,320	2,928	1,608	(s)	NA	NA	1,320	NA	NA	1,320	2,928
1965 Total	NA	1,335	3,396	2,059	2	NA	NA	1,335	NA	NA	1,335	3,396
1970 Total	NA	1,431	4,070	2,634	6	NA	NA	1,429	2	NA	1,431	4,070
1975 Total	NA	1,499	4,687	3,155	34	NA	NA	1,497	2	NA	1,499	4,687
1980 Total	NA	2,475	5,428	2,900	53	NA	NA	2,474	2	NA	2,475	5,428
1985 Total	93	3,016	6,084	2,970	97	(s)	(s)	2,687	236	93	3,016	6,084
1990 Total	111	2,735	6,040	3,046	171	59	29	2,216	408	111	2,735	6,040
1995 Total	198	3,099	6,557	3,205	152	68	33	2,370	531	200	3,101	6,559
2000 Total	233	3,006	6,102	2,811	164	63	57	2,262	511	236	3,008	6,104
2001 Total	254	2,624	5,162	2,242	164	62	70	2,006	364	253	2,622	5,160
2002 Total	308	2,705	5,731	2,689	171	60	105	1,995	402	303	2,701	5,726
2003 Total	401	2,805	5,942	2,793	173	58	113	2,002	401	403	2,806	5,944
2004 Total	486	2,996	6,063	2,688	178	58	142	2,121	389	498	3,008	6,075
2005 Total	561	3,101	6,221	2,703	181	58	178	2,137	403	574	3,114	6,233
2006 Total	716	3,212	6,586	2,869	181	61	264	2,099	397	766	3,262	6,637
2007 Total	970	3,472	6,510	2,446	186	65	341	2,089	413	983	3,485	6,523
2008 Total	1,374	3,868	7,191	2,511	192	74	546	2,059	435	1,357	3,851	7,174
2009 Total	1,570	3,953	7,620	2,669	200	78	721	1,931	452	1,553	3,936	7,604
2010 Total	1,868	4,316	8,077	2,539	208	90	923	1,981	468	1,821	4,270	8,030
2011 Total	2,029	4,501	9,095	3,103	212	111	1,168	2,010	462	1,933	4,405	8,999
2012 Total	1,929	4,406	8,743	2,629	212	157	1,340	2,010	467	1,892	4,369	8,706
2013 Total	1,981	4,647	9,250	2,562	214	225	1,601	2,170	496	2,007	4,673	9,276
2014 Total	2,103	4,861	9,607	2,467	214	337	1,728	2,242	516	2,067	4,825	9,570
2015 January	178	403	808	225	18	21	141	182	43	163	388	793
February	162	364	753	208	17	25	139	164	38	158	360	748
March	180	395	817	226	18	35	143	172	43	176	391	813
April	172	381	814	209	17	40	167	168	42	170	380	812
May	183	398	807	188	18	43	160	173	42	185	400	808
June	184	397	773	190	17	43	125	171	42	186	399	775
July	187	411	798	196	18	45	127	179	46	189	413	799
August	185	408	772	178	18	45	122	179	44	189	413	776
September	175	387	723	150	16	39	130	170	42	182	394	730
October	183	395	755	155	18	34	153	167	45	184	396	755
November	182	396	807	180	18	30	183	170	45	179	393	804
December	190	414	862	216	18	27	187	177	47	185	408	857
Total	2,161	4,751	9,487	2,321	212	426	1,777	2,071	518	2,145	4,734	9,471
2016 January	184	406	861	237	19	27	173	172	44	172	388	844
February	175	383	852	225	18	38	188	160	41	174	375	844
March	189	403	924	252	19	45	205	164	44	188	395	916
April	174	377	875	237	18	50	193	154	44	173	372	870
May	188	398	887	236	19	58	175	160	43	191	395	883
June	188	403	845	213	18	59	152	163	43	191	397	839
July	195	412	856	198	19	64	164	168	45	201	414	858
August	197	416	804	180	19	62	126	168	45	204	417	804
September	186	392	773	152	19	57	153	159	41	192	391	772
October	192	399	819	161	19	50	190	158	43	193	394	813
November	191	401	817	175	19	42	180	162	43	196	400	817
December	202	427	908	210	20	37	214	172	45	201	419	900
Total	2,262	4,816	10,220	2,477	226	587	2,114	1,959	522	2,275	4,756	10,161
2017 January	193	416	920	258	20	36	190	170	47	177	393	897
February	174	376	866	229	18	41	202	155	42	165	362	852
March	196	417	1,023	281	20	66	239	169	45	190	404	1,010
April	182	388	988	272	19	72	237	158	42	183	383	983
4-Month Total	746	1,597	3,797	1,041	76	215	867	652	175	715	1,542	3,741
2016 4-Month Total	723	1,568	3,512	951	74	159	759	649	174	707	1,531	3,474
2015 4-Month Total	692	1,543	3,192	868	70	121	590	686	166	666	1,518	3,167

^a For hydroelectric power, geothermal, solar, wind, and biomass waste, production equals consumption. For biofuels, production equals total biomass inputs to the production of fuel ethanol and biodiesel. For wood, through 2015, production equals consumption; beginning in 2016, production equals consumption plus densified biomass exports.

^b Total biomass inputs to the production of fuel ethanol and biodiesel.
^c Wood and wood-derived fuels, biomass waste, and total biomass inputs to the production of fuel ethanol and biodiesel.

^d Hydroelectric power, geothermal, solar, wind, and biomass.
^e Conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^f Geothermal electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6), and geothermal heat pump and direct use energy.

^g Solar photovoltaic (PV) and solar thermal electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6), and solar thermal direct use energy.

^h Wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

ⁱ Wood and wood-derived fuels.

^j Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^k Fuel ethanol (minus denaturant) and biodiesel consumption, plus losses and co-products from the production of fuel ethanol and biodiesel.

NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Most data for the residential, commercial, industrial, and transportation sectors are estimates. See notes and sources for Tables 10.2a and 10.2b. • See Note, "Renewable Energy Production and Consumption," at end of section.

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

• Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: • **Production:** Tables 10.2a–10.4 and U.S. Energy Information Administration, Form EIA-63C, "Densified Biomass Fuel Report."

• **Consumption:** Tables 10.2a–10.2c.

Table 10.2a Renewable Energy Consumption: Residential and Commercial Sectors
(Trillion Btu)

	Residential Sector				Commercial Sector ^a								
	Geo-thermal ^b	Solar ^c	Biomass		Hydro-electric Power ^e	Geo-thermal ^b	Solar ^f	Wind ^g	Biomass			Total	Total
			Wood ^d	Total					Wood ^d	Waste ^h	Fuel Ethanol ^{i,j}		
1950 Total	NA	NA	1,006	1,006	NA	NA	NA	NA	19	NA	NA	19	19
1955 Total	NA	NA	775	775	NA	NA	NA	NA	15	NA	NA	15	15
1960 Total	NA	NA	627	627	NA	NA	NA	NA	12	NA	NA	12	12
1965 Total	NA	NA	468	468	NA	NA	NA	NA	9	NA	NA	9	9
1970 Total	NA	NA	401	401	NA	NA	NA	NA	8	NA	NA	8	8
1975 Total	NA	NA	425	425	NA	NA	NA	NA	8	NA	NA	8	8
1980 Total	NA	NA	850	850	NA	NA	NA	NA	21	NA	NA	21	21
1985 Total	NA	NA	1,010	1,010	NA	NA	NA	NA	24	NA	(s)	24	24
1990 Total	6	55	580	640	1	3	(s)	-	66	28	(s)	94	98
1995 Total	7	63	520	589	1	5	(s)	-	72	40	(s)	113	119
2000 Total	9	58	420	486	1	8	1	-	71	47	(s)	119	128
2001 Total	9	55	370	435	1	8	1	-	67	25	(s)	92	101
2002 Total	10	53	380	444	(s)	9	1	-	69	26	(s)	95	105
2003 Total	13	52	400	465	1	11	1	-	71	29	1	101	114
2004 Total	14	51	410	475	1	12	1	-	70	34	1	105	120
2005 Total	16	50	430	496	1	14	2	-	70	34	1	105	121
2006 Total	18	53	380	451	1	14	2	-	65	36	1	103	120
2007 Total	22	55	420	497	1	14	4	-	70	31	2	103	121
2008 Total	26	58	470	555	1	15	6	-	73	34	2	109	130
2009 Total	33	60	500	593	1	17	7	(s)	73	36	3	112	137
2010 Total	37	65	440	541	1	19	11	(s)	72	36	3	111	142
2011 Total	40	71	450	560	(s)	20	19	(s)	69	43	3	115	154
2012 Total	40	79	420	539	(s)	20	32	1	61	45	3	108	161
2013 Total	40	92	580	711	(s)	20	41	1	70	47	3	120	182
2014 Total	40	109	590	739	(s)	20	52	1	75	47	4	126	199
2015 January	3	6	37	47	(s)	2	3	(s)	7	4	2	13	18
February	3	7	34	44	(s)	2	4	(s)	6	3	2	12	17
March	3	10	37	51	(s)	2	5	(s)	7	4	2	13	20
April	3	11	36	51	(s)	2	5	(s)	7	4	2	13	20
May	3	12	37	53	(s)	2	6	(s)	7	4	2	13	21
June	3	13	36	52	(s)	2	6	(s)	7	4	2	13	20
July	3	13	37	54	(s)	2	6	(s)	7	4	2	14	21
August	3	13	37	54	(s)	2	6	(s)	7	4	2	13	21
September	3	12	36	52	(s)	2	5	(s)	7	4	2	13	20
October	3	11	37	52	(s)	2	5	(s)	7	4	2	13	19
November	3	9	36	49	(s)	2	4	(s)	7	4	2	13	18
December	3	8	37	49	(s)	2	3	(s)	7	4	2	13	18
Total	40	128	440	607	(s)	20	57	1	81	47	26	154	232
2016 January	3	8	32	43	(s)	2	4	(s)	7	4	2	13	19
February	3	10	30	42	(s)	2	5	(s)	7	4	2	12	19
March	3	13	32	48	(s)	2	6	(s)	7	5	2	14	22
April	3	14	31	48	(s)	2	7	(s)	7	4	2	13	21
May	3	16	32	51	(s)	2	7	(s)	7	4	2	13	22
June	3	17	31	50	(s)	2	7	(s)	7	4	2	13	22
July	3	17	32	52	(s)	2	8	(s)	7	4	2	13	23
August	3	17	32	52	(s)	2	7	(s)	7	4	2	13	22
September	3	15	31	49	(s)	2	7	(s)	7	4	2	13	21
October	3	13	32	48	(s)	2	6	(s)	7	4	2	13	21
November	3	11	31	45	(s)	2	5	(s)	7	4	2	13	19
December	3	10	32	45	(s)	2	4	(s)	7	4	2	14	20
Total	40	161	373	573	1	20	72	1	82	49	27	157	251
2017 January	3	10	32	46	(s)	2	5	(s)	7	4	2	14	20
February	3	11	29	43	(s)	2	5	(s)	6	4	2	12	19
March	3	16	32	51	(s)	2	7	(s)	7	4	2	13	22
April	3	18	31	52	(s)	2	8	(s)	7	4	2	13	22
4-Month Total	13	54	125	192	(s)	6	24	(s)	27	16	8	51	83
2016 4-Month Total	13	45	123	181	(s)	7	21	(s)	27	17	9	53	81
2015 4-Month Total	13	35	145	193	(s)	6	17	(s)	27	15	8	50	74

^a Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^b Geothermal heat pump and direct use energy.
^c Distributed (small-scale) solar photovoltaic (PV) electricity generation in the residential sector (converted to Btu by multiplying by the fossil fuels heat rate factors in Table A6) and distributed solar thermal energy in the residential, commercial, and industrial sectors. See Table 10.5.

^d Wood and wood-derived fuels.
^e Conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^f Solar photovoltaic (PV) electricity net generation in the commercial sector (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6), both utility-scale and distributed (small-scale). See Table 10.5.

^g Wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^h Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes

non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

ⁱ The fuel ethanol (minus denaturant) portion of motor fuels, such as E10, consumed by the commercial sector.

^j There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share is smaller.

NA=Not available. - =No data reported. (s)=Less than 0.5 trillion Btu.

Notes: • Data are estimates, except for commercial sector hydroelectric power, wind, and waste. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 10.2b Renewable Energy Consumption: Industrial and Transportation Sectors
(Trillion Btu)

	Industrial Sector ^a									Transportation Sector			
	Hydro-electric Power ^b	Geo-thermal ^c	Solar ^d	Wind ^e	Biomass				Total	Biomass			
					Wood ^f	Waste ^g	Fuel Ethanol ^{h,i}	Losses and Co-products ^j		Total	Fuel Ethanol ^{l,k}	Bio-diesel ^l	Total ^m
1950 Total	69	NA	NA	NA	532	NA	NA	NA	532	602	NA	NA	NA
1955 Total	38	NA	NA	NA	631	NA	NA	NA	631	669	NA	NA	NA
1960 Total	39	NA	NA	NA	680	NA	NA	NA	680	719	NA	NA	NA
1965 Total	33	NA	NA	NA	855	NA	NA	NA	855	888	NA	NA	NA
1970 Total	34	NA	NA	NA	1,019	NA	NA	NA	1,019	1,053	NA	NA	NA
1975 Total	32	NA	NA	NA	1,063	NA	NA	NA	1,063	1,096	NA	NA	NA
1980 Total	33	NA	NA	NA	1,600	NA	NA	NA	1,600	1,633	NA	NA	NA
1985 Total	33	NA	NA	NA	1,645	230	1	42	1,918	1,951	50	NA	50
1990 Total	31	2	(s)	—	1,442	192	1	49	1,684	1,717	60	NA	60
1995 Total	55	3	(s)	—	1,652	195	2	86	1,934	1,992	112	NA	112
2000 Total	42	4	(s)	—	1,636	145	1	99	1,881	1,928	135	NA	135
2001 Total	33	5	(s)	—	1,443	129	3	108	1,681	1,719	141	1	142
2002 Total	39	5	(s)	—	1,396	146	3	130	1,676	1,720	168	2	170
2003 Total	43	3	(s)	—	1,363	142	4	168	1,678	1,725	228	2	230
2004 Total	33	4	(s)	—	1,476	132	6	201	1,815	1,852	286	3	290
2005 Total	32	4	(s)	—	1,452	148	7	227	1,834	1,871	327	12	339
2006 Total	29	4	1	—	1,472	130	10	280	1,892	1,926	442	33	475
2007 Total	16	5	1	—	1,413	145	10	369	1,937	1,958	557	45	602
2008 Total	17	5	1	—	1,339	143	12	519	2,012	2,035	786	39	825
2009 Total	18	4	2	—	1,178	154	13	603	1,948	1,972	894	41	935
2010 Total	16	4	3	—	1,273	168	17	727	2,185	2,208	1,041	33	1,075
2011 Total	17	4	4	(s)	1,309	165	17	756	2,246	2,272	1,045	113	1,158
2012 Total	22	4	7	(s)	1,339	159	17	711	2,226	2,259	1,045	115	1,162
2013 Total	33	4	9	(s)	1,312	187	18	709	2,226	2,272	1,072	182	1,278
2014 Total	12	4	11	1	1,325	190	14	757	2,286	2,314	1,093	181	1,292
2015 January	1	(s)	1	(s)	115	17	1	65	199	201	88	6	94
February	1	(s)	1	(s)	103	15	1	59	178	180	83	11	95
March	1	(s)	1	(s)	107	17	1	65	190	193	92	13	107
April	1	(s)	1	(s)	107	16	1	61	186	189	88	15	105
May	1	(s)	1	(s)	110	15	2	65	192	195	97	18	116
June	1	(s)	1	(s)	107	15	1	65	189	192	94	21	117
July	1	(s)	1	(s)	112	16	2	67	196	199	97	18	118
August	1	(s)	1	(s)	112	15	2	66	195	197	98	20	120
September	1	(s)	1	(s)	107	15	1	63	186	189	94	20	116
October	1	(s)	1	(s)	106	17	1	66	190	193	94	17	114
November	1	(s)	1	(s)	108	16	1	65	191	193	92	14	110
December	1	(s)	1	(s)	111	17	1	68	198	201	93	17	113
Total	13	4	14	(s)	1,306	190	18	776	2,290	2,321	1,109	191	1,325
2016 January	1	(s)	1	(s)	113	16	1	66	196	198	88	13	102
February	1	(s)	1	(s)	103	15	1	62	182	184	91	15	108
March	1	(s)	1	(s)	106	16	2	67	190	194	98	16	117
April	1	(s)	2	(s)	102	16	1	61	180	183	90	17	109
May	1	(s)	2	(s)	106	16	2	66	189	193	97	22	121
June	1	(s)	2	(s)	107	16	2	66	190	193	97	27	121
July	1	(s)	2	(s)	109	17	2	68	195	199	100	27	129
August	1	(s)	2	(s)	109	16	2	69	195	198	101	28	131
September	1	(s)	2	(s)	103	15	1	65	184	187	94	26	123
October	1	(s)	1	(s)	104	14	1	67	187	190	94	26	122
November	1	(s)	1	(s)	108	15	2	67	192	194	95	26	125
December	1	(s)	1	(s)	113	16	2	71	202	205	99	26	126
Total	12	4	17	1	1,283	186	18	796	2,283	2,318	1,145	263	1,434
2017 January	1	(s)	1	(s)	111	17	1	70	200	203	89	13	104
February	1	(s)	1	(s)	101	16	1	62	180	183	85	13	100
March	1	(s)	2	(s)	110	17	2	70	198	202	95	19	117
April	1	(s)	2	(s)	103	16	1	64	184	188	93	21	115
4-Month Total	5	1	7	(s)	424	67	6	265	762	775	361	66	436
2016 4-Month Total	5	1	5	(s)	423	62	6	257	748	759	367	62	436
2015 4-Month Total	5	1	4	(s)	433	64	6	251	753	763	351	46	402

^a Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^b Conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^c Geothermal heat pump and direct use energy.

^d Solar photovoltaic (PV) electricity net generation in the industrial sector (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6), both utility-scale and distributed (small-scale). See Table 10.5.

^e Wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^f Wood and wood-derived fuels.

^g Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^h The fuel ethanol (minus denaturant) portion of motor fuels, such as E10, consumed by the industrial sector.

ⁱ There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share

is smaller.

^j Losses and co-products from the production of fuel ethanol and biodiesel. Does not include natural gas, electricity, and other non-biomass energy used in the production of fuel ethanol and biodiesel—these are included in the industrial sector consumption statistics for the appropriate energy source.

^k The fuel ethanol (minus denaturant) portion of motor fuels, such as E10 and E85, consumed by the transportation sector.

^l Although there is biodiesel use in other sectors, all biodiesel consumption is assigned to the transportation sector.

^m Beginning in 2009, includes imports minus stock change of other renewable diesel fuel and other renewable fuels. See "Renewable Diesel Fuel (Other)" and "Renewable Fuels (Other)" in Glossary.

NA=Not available. —=No data reported. (s)=Less than 0.5 trillion Btu.

Notes: • Data are estimates, except for industrial sector hydroelectric power in 1949–1978 and 1989 forward, and wind. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 10.2c Renewable Energy Consumption: Electric Power Sector
(Trillion Btu)

	Hydro-electric Power ^a	Geo-thermal ^b	Solar ^c	Wind ^d	Biomass			Total
					Wood ^e	Waste ^f	Total	
1950 Total	1,346	NA	NA	NA	5	NA	5	1,351
1955 Total	1,322	NA	NA	NA	3	NA	3	1,325
1960 Total	1,569	(s)	NA	NA	2	NA	2	1,571
1965 Total	2,026	2	NA	NA	3	NA	3	2,031
1970 Total	2,600	6	NA	NA	1	2	4	2,609
1975 Total	3,122	34	NA	NA	(s)	2	2	3,158
1980 Total	2,867	53	NA	NA	3	2	4	2,925
1985 Total	2,937	97	(s)	(s)	8	7	14	3,049
1990 Total ^g	3,014	161	4	29	129	188	317	3,524
1995 Total	3,149	138	5	33	125	296	422	3,747
2000 Total	2,768	144	5	57	134	318	453	3,427
2001 Total	2,209	142	6	70	126	211	337	2,763
2002 Total	2,650	147	6	105	150	230	380	3,288
2003 Total	2,749	146	5	113	167	230	397	3,411
2004 Total	2,655	148	6	142	165	223	388	3,339
2005 Total	2,670	147	6	178	185	221	406	3,406
2006 Total	2,839	145	5	264	182	231	412	3,665
2007 Total	2,430	145	6	341	186	237	423	3,345
2008 Total	2,494	146	9	546	177	258	435	3,630
2009 Total	2,650	146	9	721	180	261	441	3,967
2010 Total	2,521	148	12	923	196	264	459	4,064
2011 Total	3,085	149	17	1,167	182	255	437	4,855
2012 Total	2,606	148	40	1,339	190	262	453	4,586
2013 Total	2,529	151	83	1,600	207	262	470	4,833
2014 Total	2,454	151	165	1,726	251	279	530	5,026
2015 January	224	13	11	141	22	23	45	433
February	207	12	14	139	21	20	41	412
March	225	13	19	143	21	22	43	443
April	208	12	22	166	18	22	40	448
May	186	13	23	160	18	23	41	423
June	189	12	23	125	21	23	44	393
July	195	13	24	127	22	26	48	407
August	177	13	25	122	23	25	48	384
September	149	11	20	130	20	23	43	354
October	154	12	17	152	17	24	41	378
November	179	12	16	183	19	25	44	434
December	214	13	14	187	21	25	47	476
Total	2,308	148	228	1,776	244	281	525	4,985
2016 January	236	14	14	173	21	25	45	481
February	224	13	22	188	21	23	43	490
March	250	14	25	205	20	23	43	536
April	236	12	27	193	15	25	40	508
May	235	14	33	175	16	24	40	496
June	212	13	33	152	19	24	42	452
July	197	13	38	164	20	24	45	456
August	180	13	36	126	21	25	46	401
September	151	14	34	153	18	23	41	393
October	160	14	29	190	15	24	39	432
November	175	14	25	180	17	23	40	433
December	209	15	21	214	20	25	46	505
Total	2,465	162	337	2,112	222	287	509	5,585
2017 January	257	14	20	189	19	25	44	525
February	228	13	24	202	18	22	41	507
March	280	14	41	238	20	24	44	618
April	271	14	44	237	18	22	39	605
4-Month Total	1,036	55	130	866	75	93	168	2,255
2016 4-Month Total	946	53	88	758	76	95	171	2,016
2015 4-Month Total	864	49	65	589	81	87	169	1,736

^a Conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^b Geothermal electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^c Solar photovoltaic (PV) and solar thermal electricity net generation in the electric power sector (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6). See Table 10.5.

^d Wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^e Wood and wood-derived fuels.

^f Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and

tire-derived fuels).

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

NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • 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. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: Tables 7.2b, 7.4b, and A6.

Table 10.3 Fuel Ethanol Overview

	Feed-stock ^a	Losses and Co-products ^b	Denaturant ^c	Production ^d			Trade ^d	Stocks ^{d,f}	Stock Change ^{d,g}	Consumption ^d			Consumption Minus Denaturant ^h
							Net Imports ^e						
							TBtu						
1981 Total	13	6	40	1,978	83	7	NA	NA	NA	1,978	83	7	7
1985 Total	93	42	294	14,693	617	52	NA	NA	NA	14,693	617	52	51
1990 Total	111	49	356	17,802	748	63	NA	NA	NA	17,802	748	63	62
1995 Total	198	86	647	32,325	1,358	115	387	2,186	-207	32,919	1,383	117	114
2000 Total	233	99	773	38,627	1,622	138	116	3,400	-624	39,367	1,653	140	137
2001 Total	253	108	841	42,028	1,765	150	315	4,298	898	41,445	1,741	148	144
2002 Total	307	130	1,019	50,956	2,140	182	306	6,200	1,902	49,360	2,073	176	171
2003 Total	400	168	1,335	66,772	2,804	238	292	5,978	-222	67,286	2,826	240	233
2004 Total	482	201	1,621	81,058	3,404	289	3,542	6,002	24	84,576	3,552	301	293
2005 Total	550	227	1,859	92,961	3,904	331	3,234	5,563	-439	96,634	4,059	344	335
2006 Total	683	280	2,326	116,294	4,884	414	17,408	8,760	3,197	130,505	5,481	465	453
2007 Total	907	368	3,105	155,263	6,521	553	10,457	10,535	1,775	163,945	6,886	584	569
2008 Total	1,286	518	4,433	221,637	9,309	790	12,610	14,226	3,691	230,556	9,683	821	800
2009 Total	1,503	602	5,688	260,424	10,938	928	4,720	16,594	2,368	262,776	11,037	936	910
2010 Total	1,823	726	6,506	316,617	13,298	1,127	-9,115	17,941	1,347	306,155	12,858	1,090	1,061
2011 Total	1,904	754	6,649	331,646	13,929	1,181	-24,365	18,238	297	306,984	12,893	1,093	1,065
2012 Total	1,801	709	6,264	314,714	13,218	1,120	-5,891	20,350	2,112	306,711	12,882	1,092	1,064
2013 Total	1,805	707	6,181	316,493	13,293	1,126	-5,761	16,424	-3,926	314,658	13,216	1,120	1,092
2014 Total	1,938	755	6,476	340,781	14,313	1,212	-18,371	18,739	2,315	320,995	13,444	1,139	1,111
2015 January	169	65	589	29,770	1,250	106	-1,633	20,647	1,908	26,229	1,102	93	91
February	152	59	534	26,814	1,126	95	-1,623	21,057	410	24,781	1,041	88	86
March	167	65	567	29,485	1,238	105	-2,050	20,878	-179	27,614	1,160	98	96
April	158	61	527	27,910	1,172	99	-1,504	20,854	-24	26,430	1,110	94	92
May	168	65	545	29,666	1,246	106	-1,489	20,154	-700	28,877	1,213	103	100
June	168	65	528	29,684	1,247	106	-1,490	20,128	-26	28,220	1,185	100	98
July	172	66	539	30,249	1,270	108	-1,675	19,701	-427	29,001	1,218	103	101
August	169	65	524	29,762	1,250	106	-905	19,390	-311	29,168	1,225	104	101
September	162	63	519	28,571	1,200	102	-987	18,944	-446	28,030	1,177	100	97
October	169	66	560	29,886	1,255	106	-1,579	18,984	40	28,267	1,187	101	98
November	168	65	580	29,675	1,246	106	-929	20,099	1,115	27,631	1,161	98	96
December	176	68	624	31,081	1,305	111	-1,767	21,596	1,497	27,817	1,168	99	96
Total	1,998	774	6,636	352,553	14,807	1,254	-17,632	21,596	2,857	332,064	13,947	1,181	1,153
2016 January	171	66	615	30,319	1,273	108	-2,073	23,168	ⁱ 1,730	26,516	1,114	94	92
February	162	62	583	28,678	1,204	102	-1,595	23,004	-164	27,247	1,144	97	94
March	174	67	600	30,812	1,294	110	-2,268	22,301	-703	29,247	1,228	104	101
April	158	61	554	28,059	1,178	100	-2,273	20,992	-1,309	27,095	1,138	96	94
May	171	66	584	30,228	1,270	108	-1,327	20,792	-200	29,101	1,222	104	101
June	171	66	564	30,258	1,271	108	-858	21,199	407	28,993	1,218	103	101
July	177	68	565	31,251	1,313	111	-1,338	21,167	-32	29,945	1,258	107	104
August	179	69	560	31,669	1,330	113	-1,601	21,042	-125	30,193	1,268	107	105
September	169	65	542	29,876	1,255	106	-2,342	20,605	-437	27,971	1,175	100	97
October	174	67	560	30,797	1,293	110	-3,135	20,005	-600	28,262	1,187	101	98
November	173	66	556	30,565	1,284	109	-2,904	19,136	-869	28,530	1,198	102	99
December	183	71	602	32,467	1,364	116	-2,334	19,531	395	29,738	1,249	106	103
Total	2,061	794	6,885	364,979	15,329	1,299	-24,049	19,531	ⁱ -1,907	342,837	14,399	1,220	1,190
2017 January	182	69	593	32,241	1,354	115	-2,507	22,633	3,102	26,632	1,119	95	93
February	162	62	541	28,747	1,207	102	-2,972	23,028	395	25,380	1,066	90	88
March	181	69	597	32,161	1,351	114	-3,044	23,759	731	28,386	1,192	101	99
April	166	64	540	29,500	1,239	105	-1,981	23,593	-166	27,685	1,163	99	96
4-Month Total ...	690	264	2,271	122,649	5,151	436	-10,505	23,593	4,062	108,082	4,539	385	375
2016 4-Month Total ...	665	256	2,352	117,868	4,950	419	-8,209	20,992	-446	110,105	4,624	392	382
2015 4-Month Total ...	646	250	2,217	113,979	4,787	406	-6,811	20,854	2,115	105,053	4,412	374	365

^a Total corn and other biomass inputs to the production of undenatured ethanol used for fuel ethanol.

^b Losses and co-products from the production of fuel ethanol. Does not include natural gas, electricity, and other non-biomass energy used in the production of fuel ethanol—these are included in the industrial sector consumption statistics for the appropriate energy source.

^c The amount of denaturant in fuel ethanol produced.

^d Includes denaturant.

^e Through 2009, data are for fuel ethanol imports only; data for fuel ethanol exports are not available. Beginning in 2010, data are for fuel ethanol imports minus fuel ethanol (including industrial alcohol) exports.

^f Stocks are at end of period.

^g A negative value indicates a decrease in stocks and a positive value indicates an increase.

^h Consumption of fuel ethanol minus denaturant. Data for fuel ethanol minus denaturant are used to develop data for "Renewable Energy/Biomass" in Tables 10.1–10.2b, as well as in Sections 1 and 2.

ⁱ Derived from the preliminary 2015 stocks value (21,438 thousand barrels), not the final 2015 value (21,596 thousand barrels) that is shown under "Stocks."

NA=Not available.

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Fuel ethanol data in thousand barrels are converted to million gallons by multiplying by 0.042, and are converted to Btu by multiplying by the approximate heat content of fuel ethanol—see Table A3. • Through 1980, data are not available. For 1981–1992, data are estimates. For 1993–2008, only data for feedstock, losses and co-products, and denaturant are estimates. Beginning in 2009, only data for feedstock, and losses and co-products, are estimates. • See "Denaturant," "Ethanol," "Fuel Ethanol," and "Fuel Ethanol Minus Denaturant" in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> (Excel and CSV files) for all available annual and monthly data beginning in 1981.

Sources: See end of section.

Table 10.4 Biodiesel and Other Renewable Fuels Overview

	Biodiesel													Other Renewable Fuels ^f	
	Feed-stock ^a	Losses and Co-products ^b	Production			Trade			Stocks ^d	Stock Change ^e	Consumption				
						Imports	Exports	Net Imports ^c							
			TBtu	TBtu	Mbbl	MMgal	TBtu	Mbbl			Mbbl	Mbbl	Mbbl		Mbbl	Mbbl	MMgal	TBtu	TBtu
2001 Total	1	(s)	204	9	1	81	41	40	NA	NA	244	10	1	NA	
2002 Total	1	(s)	250	10	1	197	57	140	NA	NA	390	16	2	NA	
2003 Total	2	(s)	338	14	2	97	113	-17	NA	NA	322	14	2	NA	
2004 Total	4	(s)	666	28	4	101	128	-27	NA	NA	639	27	3	NA	
2005 Total	12	(s)	2,162	91	12	214	213	1	NA	NA	2,163	91	12	NA	
2006 Total	32	(s)	5,963	250	32	1,105	856	250	NA	NA	6,213	261	33	NA	
2007 Total	63	1	11,662	490	62	3,455	6,696	-3,241	NA	NA	8,422	354	45	NA	
2008 Total	88	1	16,145	678	87	7,755	16,673	-8,918	NA	NA	7,228	304	39	NA	
2009 Total	67	1	12,281	516	66	1,906	6,546	-4,640	711	711	^g 7,663	322	41	(s)	
2010 Total	44	1	8,177	343	44	564	2,588	-2,024	672	-39	6,192	260	33	(s)	
2011 Total	125	2	23,035	967	123	890	1,799	-908	2,005	^h 1,028	21,099	886	113	(s)	
2012 Total	128	2	23,588	991	126	853	3,056	-2,203	1,984	-20	21,406	899	115	3	
2013 Total	176	2	32,368	1,359	173	8,152	4,675	3,477	3,810	1,825	34,020	1,429	182	24	
2014 Total	165	2	30,452	1,279	163	4,578	1,974	2,604	3,131	-679	33,735	1,417	181	18	
2015															
January	9	(s)	1,727	73	9	372	22	350	4,032	902	1,176	49	6	(s)	
February	10	(s)	1,851	78	10	526	23	503	4,245	212	2,141	90	11	1	
March	13	(s)	2,326	98	12	340	191	149	4,244	(s)	2,475	104	13	2	
April	14	(s)	2,568	108	14	330	240	90	4,071	-173	2,831	119	15	2	
May	15	(s)	2,784	117	15	336	255	81	3,599	-471	3,337	140	18	2	
June	16	(s)	2,901	122	16	673	260	413	3,063	-536	3,850	162	21	2	
July	16	(s)	2,883	121	15	1,157	255	902	3,404	341	3,444	145	18	3	
August	16	(s)	2,933	123	16	961	275	686	3,333	-71	3,690	155	20	2	
September	13	(s)	2,479	104	13	1,062	200	862	3,021	-312	3,652	153	20	3	
October	14	(s)	2,535	106	14	863	161	702	3,070	48	3,189	134	17	3	
November	14	(s)	2,521	106	14	701	76	625	3,600	530	2,616	110	14	3	
December	14	(s)	2,573	108	14	1,078	133	945	3,943	343	3,174	133	17	3	
Total	163	2	30,080	1,263	161	8,399	2,091	6,308	3,943	813	35,575	1,494	191	25	
2016															
January	14	(s)	2,490	105	13	211	42	169	4,036	ⁱ 221	2,437	102	13	1	
February	14	(s)	2,503	105	13	287	55	232	3,937	-99	2,834	119	15	2	
March	15	(s)	2,829	119	15	437	234	203	3,923	-14	3,046	128	16	3	
April	15	(s)	2,827	119	15	891	246	645	4,175	253	3,219	135	17	1	
May	17	(s)	3,169	133	17	1,117	334	783	4,062	-113	4,065	171	22	2	
June	17	(s)	3,205	135	17	1,575	220	1,355	4,735	672	3,888	163	21	3	
July	18	(s)	3,330	140	18	1,681	250	1,431	4,444	-291	5,053	212	27	1	
August	18	(s)	3,385	142	18	1,829	234	1,595	4,267	-177	5,157	217	28	2	
September	17	(s)	3,131	132	17	1,793	150	1,643	4,212	-54	4,829	203	26	3	
October	18	(s)	3,380	142	18	1,824	95	1,729	4,560	347	4,762	200	26	2	
November	18	(s)	3,388	142	18	2,184	152	2,032	5,078	518	4,902	206	26	4	
December	18	(s)	3,400	143	18	2,668	80	2,588	6,217	1,140	4,847	204	26	1	
Total	201	3	37,037	1,556	198	16,497	2,093	14,404	6,217	^j 2,403	49,038	2,060	263	26	
2017															
January	12	(s)	2,204	93	12	241	43	198	6,259	41	2,361	99	13	2	
February	12	(s)	2,232	94	12	549	57	492	6,466	207	2,516	106	13	1	
March	15	(s)	2,757	116	15	650	136	514	6,194	-272	3,542	149	19	3	
April	16	(s)	3,014	127	16	681	283	398	5,713	-481	3,893	163	21	2	
4-Month Total	55	1	10,207	429	55	2,121	520	1,601	5,713	-504	12,313	517	66	9	
2016 4-Month Total	58	1	10,648	447	57	1,826	577	1,249	4,175	360	11,537	485	62	7	
2015 4-Month Total	46	1	8,472	356	45	1,568	476	1,092	4,071	940	8,623	362	46	5	

^a Total vegetable oil and other biomass inputs to the production of biodiesel—calculated by multiplying biodiesel production by 5.433 million Btu per barrel. See "Biodiesel Feedstock" entry in the "Thermal Conversion Factor Source Documentation" at the end of Appendix A.

^b Losses and co-products from the production of biodiesel. Does not include natural gas, electricity, and other non-biomass energy used in the production of biodiesel—these are included in the industrial sector consumption statistics for the appropriate energy source.

^c Net imports equal imports minus exports.

^d Stocks are at end of period. Includes biodiesel stocks at (or in) refineries, pipelines, and bulk terminals. Beginning in 2011, also includes stocks at biodiesel production plants.

^e A negative value indicates a decrease in stocks and a positive value indicates an increase.

^f Imports minus stock change of other renewable diesel fuel and other renewable fuels. See "Renewable Diesel Fuel (Other)" and "Renewable Fuels (Other)" in Glossary.

^g In 2009, because of incomplete data coverage and differing data sources, a "Balancing Item" amount of 733 thousand barrels (653 thousand barrels in January

2009; 80 thousand barrels in February 2009) is used to balance biodiesel supply and disposition.

^h Derived from the final 2010 stocks value for bulk terminals and biodiesel production plants (977 thousand barrels), not the final 2010 value for bulk terminals only (672 thousand barrels) that is shown under "Stocks."

ⁱ Derived from the preliminary 2015 stocks value (3,815 thousand barrels), not the final 2015 value (3,943 thousand barrels) that is shown under "Stocks."

NA=Not available. (s)=Less than 0.5 trillion Btu and greater than -0.5 trillion Btu.

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Biodiesel data in thousand barrels are converted to million gallons by multiplying by 0.042, and are converted to Btu by multiplying by 5.359 million Btu per barrel (the approximate heat content of biodiesel—see Table A1). • Through 2000, data are not available. Beginning in 2001, data not from U.S. Energy Information Administration (EIA) surveys are estimates. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> (Excel and CSV files) for all available annual and monthly data beginning in 2001.

Sources: See end of section.

Table 10.5 Solar Energy Consumption
(Trillion Btu)

	Distributed ^a Solar Energy ^b					Utility-Scale ^c Solar Energy ^d				Total ^k
	Heat ^f	Electricity ^d			Total ^g	Electricity ^e				
		Residential Sector	Commercial Sector	Industrial Sector		Total	Commercial Sector ^h	Industrial Sector ⁱ	Electric Power Sector ^j		Total
1985 Total	NA	NA	NA	NA	NA	NA	NA	(s)	(s)	(s)
1990 Total	55	(s)	(s)	(s)	55	—	—	4	4	59
1995 Total	63	(s)	(s)	(s)	63	—	—	5	5	68
2000 Total	57	(s)	1	(s)	58	—	—	5	5	63
2001 Total	55	(s)	1	(s)	56	—	—	6	6	62
2002 Total	53	1	1	(s)	54	—	—	6	6	60
2003 Total	51	1	1	(s)	53	—	—	5	5	58
2004 Total	50	1	1	(s)	53	—	—	6	6	58
2005 Total	49	1	2	(s)	52	—	—	6	6	58
2006 Total	51	2	2	1	56	—	—	5	5	61
2007 Total	53	2	4	1	59	—	—	6	6	65
2008 Total	54	4	6	1	65	(s)	—	9	9	74
2009 Total	55	5	7	2	69	(s)	—	9	9	78
2010 Total	56	9	11	3	79	(s)	(s)	12	12	90
2011 Total	58	13	19	4	93	1	(s)	17	18	111
2012 Total	59	20	30	7	116	1	(s)	40	41	157
2013 Total	61	31	38	9	139	3	(s)	83	86	225
2014 Total	62	47	49	11	169	4	(s)	165	168	337
2015										
January	3	3	3	1	7	10	(s)	(s)	11	21
February	4	3	3	1	8	11	(s)	(s)	14	25
March	5	5	4	1	11	16	(s)	(s)	19	35
April	6	6	5	1	12	17	(s)	(s)	22	40
May	6	6	5	1	13	19	(s)	(s)	23	43
June	6	6	5	1	13	19	(s)	(s)	23	43
July	7	7	6	1	14	20	(s)	(s)	24	45
August	7	7	5	1	14	20	(s)	(s)	25	45
September	6	6	5	1	12	18	(s)	(s)	20	39
October	5	6	4	1	11	16	(s)	(s)	17	34
November	4	5	3	1	9	14	(s)	(s)	16	30
December	4	4	3	1	9	13	(s)	(s)	14	27
Total	63	65	53	14	132	194	4	(s)	228	426
2016										
January	3	5	4	1	10	13	(s)	(s)	14	27
February	4	6	4	1	11	15	(s)	(s)	22	38
March	5	8	6	1	15	20	(s)	(s)	25	45
April	6	9	6	2	16	22	(s)	(s)	27	50
May	6	10	7	2	18	24	1	(s)	33	58
June	6	10	7	2	19	25	1	(s)	33	59
July	7	11	7	2	19	26	1	(s)	38	64
August	7	10	7	2	19	25	1	(s)	36	62
September	6	9	6	2	17	22	1	(s)	34	57
October	5	8	5	1	15	20	(s)	(s)	29	50
November	4	7	4	1	12	16	(s)	(s)	25	42
December	4	6	4	1	11	15	(s)	(s)	21	37
Total	63	98	67	17	181	245	5	(s)	337	587
2017										
January	3	6	4	1	12	15	(s)	(s)	20	36
February	4	7	5	1	14	17	(s)	(s)	24	41
March	5	11	7	2	19	24	(s)	(s)	41	66
April	6	12	7	2	21	27	(s)	(s)	44	72
4-Month Total	18	36	23	6	66	84	1	(s)	130	215
2016 4-Month Total	18	27	20	5	52	70	1	(s)	88	159
2015 4-Month Total	18	17	16	4	37	54	1	(s)	65	121

^a Data are estimates for distributed (small-scale) facilities (combined generator nameplate capacity less than 1 megawatt).

^b See "Photovoltaic Energy" and "Solar Thermal Energy" in Glossary.

^c Data are for utility-scale facilities (combined generator nameplate capacity of 1 megawatt or more).

^d Solar photovoltaic (PV) electricity generation at distributed (small-scale) facilities connected to the electric power grid (converted to Btu by multiplying by the fossil fuels heat rate factors in Table A6).

^e Solar photovoltaic (PV) and solar thermal electricity net generation at utility-scale facilities (converted to Btu by multiplying by the fossil fuels heat rate factors in Table A6).

^f Solar thermal direct use energy in the residential, commercial, and industrial sectors for all end uses, such as pool heating, hot water heating, and space heating.

^g Data are the sum of "Distributed Solar Energy Heat" and "Distributed Solar Energy Electricity."

^h Commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at

end of Section 7.

ⁱ Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^j 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.

^k Data are the sum of "Distributed Solar Energy Total" and "Utility-Scale Solar Energy Total."

NA=Not available. —=No data reported. (s)=Less than 0.5 trillion Btu.

Notes: • Distributed (small-scale) solar energy data for all years, and utility-scale solar energy data for the current two years, are estimates. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> (Excel and CSV files) for all available annual and monthly data beginning in 1984.

Sources: See end of section.

Table 10.6 Solar Electricity Net Generation
(Million Kilowatthours)

	Distributed ^a Solar Generation ^b				Utility-Scale ^c Solar Generation ^b				Total
	Residential Sector	Commercial Sector	Industrial Sector	Total	Commercial Sector ^d	Industrial Sector ^e	Electric Power Sector ^f	Total	
1985 Total	NA	NA	NA	NA	NA	NA	11	11	11
1990 Total	12	17	4	32	—	—	367	367	399
1995 Total	20	29	6	56	—	—	497	497	553
2000 Total	39	55	12	107	—	—	493	493	600
2001 Total	47	67	15	129	—	—	543	543	672
2002 Total	56	79	18	153	—	—	555	555	708
2003 Total	66	93	21	179	—	—	534	534	713
2004 Total	81	115	25	222	—	—	575	575	797
2005 Total	122	172	38	333	—	—	550	550	883
2006 Total	178	252	56	485	—	—	508	508	993
2007 Total	251	355	79	685	—	—	612	612	1,297
2008 Total	404	571	126	1,101	(s)	—	864	864	1,965
2009 Total	543	767	170	1,480	(s)	—	891	891	2,371
2010 Total	897	1,172	259	2,328	5	2	1,206	1,212	3,540
2011 Total	1,330	1,913	424	3,667	84	7	1,727	1,818	5,485
2012 Total	2,071	3,173	703	5,947	148	14	4,164	4,327	10,274
2013 Total	3,264	4,029	892	8,185	294	17	8,724	9,036	17,221
2014 Total	4,947	5,146	1,139	11,233	371	16	17,304	17,691	28,924
2015									
January	340	327	80	746	20	1	1,134	1,155	1,902
February	375	356	85	816	23	1	1,459	1,484	2,299
March	536	479	119	1,134	33	2	2,037	2,072	3,206
April	609	525	129	1,264	39	2	2,338	2,379	3,643
May	676	574	144	1,394	46	2	2,456	2,504	3,898
June	693	571	144	1,408	43	2	2,512	2,558	3,966
July	741	596	150	1,487	45	2	2,579	2,627	4,114
August	746	575	147	1,468	46	2	2,639	2,688	4,156
September	679	515	135	1,330	37	2	2,178	2,217	3,547
October	618	455	125	1,198	32	2	1,875	1,910	3,107
November	515	367	100	982	27	1	1,702	1,730	2,712
December	471	349	93	914	24	1	1,545	1,570	2,484
Total	6,999	5,689	1,451	14,139	416	21	24,456	24,893	39,032
2016									
January	513	409	98	1,021	23	NM	1,491	1,516	2,536
February	614	468	108	1,189	45	3	2,395	2,443	3,632
March	824	608	150	1,582	47	NM	2,664	2,713	4,295
April	939	661	164	1,763	44	NM	2,903	2,949	4,712
May	1,044	719	181	1,945	54	NM	3,547	3,603	5,548
June	1,086	723	183	1,991	62	NM	3,545	3,610	5,601
July	1,133	743	190	2,066	69	NM	4,024	4,097	6,163
August	1,100	718	186	2,004	59	NM	3,886	3,948	5,952
September	977	643	170	1,790	56	3	3,624	3,683	5,473
October	874	578	156	1,607	45	3	3,145	3,193	4,801
November	717	467	123	1,307	38	2	2,660	2,700	4,007
December	644	443	114	1,202	24	NM	2,273	2,299	3,500
Total	10,465	7,180	1,823	19,467	565	32	36,157	36,754	56,221
2017									
January	682	481	120	1,282	23	NM	2,182	2,206	3,488
February	784	526	139	1,449	27	NM	2,533	2,562	4,011
March	1,142	703	210	2,054	47	2	4,425	4,474	6,529
April	1,282	760	226	2,268	50	NM	4,764	4,816	7,084
4-Month Total	3,889	2,469	695	7,054	147	NM	13,904	14,058	21,112
2016 4-Month Total	2,889	2,146	520	5,556	158	9	9,453	9,620	15,176
2015 4-Month Total	1,859	1,687	413	3,959	116	6	6,969	7,090	11,050

^a Data are estimates for solar photovoltaic (PV) electricity generation at small-scale facilities (combined generator nameplate capacity less than 1 megawatt) connected to the electric power grid.

^b See "Photovoltaic Energy" and "Solar Thermal Energy" in Glossary.

^c Solar photovoltaic (PV) and solar thermal electricity net generation at utility-scale facilities (combined generator nameplate capacity of 1 megawatt or more).

^d Commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^e Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^f 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.

NA=Not available. NM=Not meaningful due to large standard error. —=No data reported. (s)=Less than 0.5 million kilowatthours.

Notes: • Distributed (small-scale) solar generation data for all years, and utility-scale solar energy data for the current two years, are estimates. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> (Excel and CSV files) for all available annual and monthly data beginning in 1984.

Sources: • **Distributed Solar Generation: 1989–2013**—Calculated as distributed solar energy consumption (see Table 10.5) divided by the total fossil fuels heat rate factors (see Table A6). **2014 forward**—U.S. Energy Information Administration (EIA), *Electric Power Monthly*, monthly reports, Tables 1.1, 1.2.C, 1.2.D, and 1.2.E. • **Utility-Scale Solar Generation: 1984–1988**—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." **2001–2003**: EIA, Form EIA-906, "Power Plant Report." **2004–2007**: EIA, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report." **2008 forward**: EIA, Form EIA-923, "Power Plant Operations Report." • **Total**: Calculated as distributed solar generation plus utility-scale solar generation.

Renewable Energy

Note. Renewable Energy Production and Consumption.

In Tables 1.1, 1.3, and 10.1, renewable energy consumption consists of: conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6); geothermal electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6), and geothermal heat pump and geothermal direct use energy; solar thermal and photovoltaic electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6), and solar thermal direct use energy; wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6); wood and wood-derived fuels consumption; biomass waste (municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass) consumption; fuel ethanol (minus denaturant) and biodiesel consumption; and losses and co-products from the production of fuel ethanol and biodiesel. In Tables 1.1, 1.2, and 10.1, renewable energy production is assumed to equal consumption for all renewable energy sources except biofuels and wood. Biofuels production comprises biomass inputs to the production of fuel ethanol and biodiesel. Wood production is the sum of wood consumption and densified biomass exports.

Table 10.2a Sources

Residential Sector, Geothermal

1989–2011: Annual estimates by the U.S. Energy Information Administration (EIA) based on data from Oregon Institute of Technology, Geo-Heat Center.

2012 forward: Annual estimates assumed by EIA to be equal to that of 2011.

(For 1989 forward, monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month.)

Residential Sector, Solar

1989 forward: Residential sector solar consumption is the sum of the values for “Distributed Solar Energy Consumption: Heat” (which includes solar thermal direct use energy in the residential, commercial, and industrial sectors) from Table 10.5 and “Distributed Solar Energy Consumption: Electricity, Residential Sector” from Table 10.5.

Residential Sector, Wood

1949–1979: Annual estimates are from EIA, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2.

1980–2013: Annual estimates are based on EIA, Form EIA-457, “Residential Energy Consumption Survey”; and National Oceanic and Atmospheric Administration regional heating degree-day data.

2014 forward: Annual estimates based on residential wood consumption growth rates from EIA’s *Annual Energy Outlook* data system.

(For 1973 forward, monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month.)

Residential Sector, Total Renewable Energy

1949–1988: Residential sector total renewable energy consumption is equal to residential sector wood consumption.

1989 forward: Residential sector total renewable energy consumption is the sum of the residential sector consumption values for geothermal, solar, and wood.

Commercial Sector, Hydroelectric Power

1989 forward: Commercial sector conventional hydroelectricity net generation data from EIA, Form EIA-923, “Power Plant Operations Report,” and predecessor forms, are converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6.

Commercial Sector, Geothermal

1989–2011: Annual estimates by EIA based on data from Oregon Institute of Technology, Geo-Heat Center.

2012 forward: Annual estimates assumed by EIA to be equal to that of 2011.

(For 1989 forward, monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month.)

Commercial Sector, Solar

1989 forward: Commercial sector solar consumption is the sum of the values for “Distributed Solar Energy Consumption: Electricity, Commercial Sector” from Table 10.5 and “Utility-Scale Solar Energy Consumption: Electricity, Commercial Sector” from Table 10.5.

Commercial Sector, Wind

2009 forward: Commercial sector wind electricity net generation data from EIA, Form EIA-923, “Power Plant Operations Report,” are converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6.

Commercial Sector, Wood

1949–1979: Annual estimates are from EIA, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2.

1980–1983: Annual estimates are from EIA, *Estimates of U.S. Wood Energy Consumption 1980–1983*, Table ES1.

1984: Annual estimate assumed by EIA to be equal to that of 1983.

1985–1988: Annual estimates interpolated by EIA.

(For 1973–1988, monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month.)

1989 forward: Monthly/annual commercial sector combined-heat-and-power (CHP) wood consumption data are from EIA, Form EIA-923, “Power Plant Operations Report,” and predecessor forms. Annual estimates for commercial sector non-CHP wood consumption are based on EIA, Form

EIA-871, “Commercial Buildings Energy Consumption Survey” (for 2014 forward, the annual estimates are based on commercial sector wood consumption growth rates from EIA’s *Annual Energy Outlook* data system). For 1989 forward, monthly estimates for commercial sector non-CHP wood consumption are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month. Commercial sector total wood consumption is the sum of commercial sector CHP and non-CHP wood consumption.

Commercial Sector, Biomass Waste

1989 forward: Table 7.4c.

Commercial Sector, Fuel Ethanol (Minus Denaturant)

1981 forward: The commercial sector share of motor gasoline consumption is equal to commercial sector motor gasoline consumption from Table 3.7a divided by motor gasoline product supplied from Table 3.5. Commercial sector fuel ethanol (minus denaturant) consumption is equal to fuel ethanol (minus denaturant) consumption from Table 10.3 multiplied by the commercial sector share of motor gasoline consumption. Note that there is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors; beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share is smaller.

Commercial Sector, Total Biomass

1949–1980: Commercial sector total biomass consumption is equal to commercial sector wood consumption.

1981–1988: Commercial sector total biomass consumption is the sum of the commercial sector consumption values for wood and fuel ethanol (minus denaturant).

1989 forward: Commercial sector total biomass consumption is the sum of the commercial sector consumption values for wood, waste, and fuel ethanol (minus denaturant).

Commercial Sector, Total Renewable Energy

1949–1988: Commercial sector total renewable energy consumption is equal to commercial sector total biomass consumption.

1989–2007: Commercial sector total renewable energy consumption is the sum of the commercial sector consumption values for conventional hydroelectric power, geothermal, and total biomass.

2008: Commercial sector total renewable energy consumption is the sum of the commercial sector consumption values for conventional hydroelectric power, geothermal, solar, and total biomass.

2009 forward: Commercial sector total renewable energy is the sum of the commercial sector consumption values for conventional hydroelectric power, geothermal, solar, wind, and total biomass.

Table 10.2b Sources

Industrial Sector, Hydroelectric Power

1949 forward: Industrial sector conventional hydroelectricity net generation data from Table 7.2c are converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6.

Industrial Sector, Geothermal

1989–2009: Annual estimates by the U.S. Energy Information Administration (EIA) based on data from Oregon Institute of Technology, Geo-Heat Center.

2010 forward: Annual estimates assumed by EIA to be equal to that of 2009.

(For 1989 forward, monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month.)

Industrial Sector, Solar

1989 forward: Industrial sector solar consumption is the sum of the values for “Distributed Solar Energy Consumption: Electricity, Industrial Sector” from Table 10.5 and “Utility-Scale Solar Energy Consumption: Electricity, Industrial Sector” from Table 10.6.

Industrial Sector, Wind

2011 forward: Industrial sector wind electricity net generation data from EIA, Form EIA-923, “Power Plant Operations Report,” are converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6.

Industrial Sector, Wood

1949–1979: Annual estimates are from EIA, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2.

1980–1983: Annual estimates are from EIA, *Estimates of U.S. Wood Energy Consumption 1980–1983*, Table ES1.

1984: Annual estimate is from EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 1.

1985 and 1986: Annual estimates interpolated by EIA.

1987: Annual estimate is from EIA, *Estimates of Biofuels Consumption in the United States During 1987*, Table 2.

1988: Annual estimate interpolated by EIA.

(For 1973–1988, monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month.)

1989 forward: Monthly/annual industrial sector combined-heat-and-power (CHP) wood consumption data are from EIA, Form EIA-923, “Power Plant Operations Report,” and predecessor forms. Annual estimates for industrial sector non-CHP wood consumption are based on EIA, Form EIA-846, “Manufacturing Energy Consumption Survey” (for 2014 forward, the annual estimates are assumed by EIA to be equal to that of 2013). For 1989 forward, monthly estimates for industrial sector non-CHP wood consumption are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month. Industrial sector total wood consumption

is the sum of industrial sector CHP and non-CHP wood consumption.

Industrial Sector, Biomass Waste

1981: Annual estimate is calculated as total waste consumption (from EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8) minus electric power sector waste consumption (from MER Table 10.2c).

1982 and 1983: Annual estimates are calculated as total waste consumption (based on *Estimates of U.S. Biofuels Consumption 1990*, Table 8) minus electric power sector waste consumption (from MER, Table 10.2c).

1984: Annual estimate is calculated as total waste consumption (from EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8) minus electric power sector waste consumption (from MER, Table 10.2c).

1985 and 1986: Annual estimates interpolated by EIA.

1987: Annual estimate is calculated as total waste consumption (from EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8) minus electric power sector waste consumption (from MER, Table 10.2c).

1988: Annual estimate interpolated by EIA.

(For 1973–1988, monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month.)

1989 forward: Monthly/annual industrial sector combined-heat-and-power (CHP) consumption data are from Table 7.4c. Annual estimates for industrial sector non-CHP waste consumption are based on information presented in Government Advisory Associates, *Resource Recovery Yearbook* and *Methane Recovery Yearbook*, and information provided by the U.S. Environmental Protection Agency, Landfill Methane Outreach Program (for 2014 forward, the annual estimates are assumed by EIA to be equal to that of 2013). For 1989 forward, monthly estimates for industrial sector non-CHP waste consumption are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month. Industrial sector total waste consumption is the sum of industrial sector CHP and non-CHP waste consumption.

Industrial Sector, Fuel Ethanol (Minus Denaturant)

1981 forward: The industrial sector share of motor gasoline consumption is equal to industrial sector motor gasoline consumption from Table 3.7b divided by motor gasoline product supplied from Table 3.5. Industrial sector fuel ethanol (minus denaturant) consumption is equal to fuel ethanol (minus denaturant) consumption from Table 10.3 multiplied by the industrial sector share of motor gasoline consumption. Note that there is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors; beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share is smaller.

Industrial Sector, Biomass Losses and Co-products

1981 forward: Calculated as fuel ethanol losses and co-products from Table 10.3 plus biodiesel losses and co-products from Table 10.4.

Industrial Sector, Total Biomass

1949–1980: Industrial sector total biomass consumption is equal to industrial sector wood consumption.

1981 forward: Industrial sector total biomass consumption is the sum of the industrial sector consumption values for wood, waste, fuel ethanol (minus denaturant), and biomass losses and co-products.

Industrial Sector, Total Renewable Energy

1949–1988: Industrial sector total renewable energy consumption is the sum of the industrial sector consumption values for conventional hydroelectric power and total biomass.

1989–2009: Industrial sector total renewable energy consumption is the sum of the industrial sector consumption values for conventional hydroelectric power, geothermal, and total biomass.

2010: Industrial sector total renewable energy consumption is the sum of the industrial sector consumption values for conventional hydroelectric power, geothermal, solar, and total biomass.

2011 forward: Industrial sector total renewable energy consumption is the sum of the industrial sector consumption values for conventional hydroelectric power, geothermal, solar, wind, and total biomass.

Transportation Sector, Fuel Ethanol (Minus Denaturant)

1981 forward: The transportation sector share of motor gasoline consumption is equal to transportation sector motor gasoline consumption from Table 3.7c divided by motor gasoline product supplied from Table 3.5. Transportation sector fuel ethanol (minus denaturant) consumption is equal to fuel ethanol (minus denaturant) consumption from Table 10.3 multiplied by the transportation sector share of motor gasoline consumption. Note that there is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors; beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share is smaller.

Transportation Sector, Biodiesel

2001 forward: Table 10.4. Transportation sector biodiesel consumption is assumed to equal total biodiesel consumption.

Transportation Sector, Other Renewable Fuels

2009 forward: Table 10.4.

Transportation Sector, Total Renewable Energy

1981–2000: Transportation sector total renewable energy consumption is equal to transportation sector fuel ethanol (minus denaturant) consumption.

2001–2008: Transportation sector total renewable energy consumption is the sum of the transportation sector consumption values for fuel ethanol (minus denaturant) and biodiesel.

2009 forward: Transportation sector total renewable energy consumption is the sum of the transportation sector consumption values for fuel ethanol (minus denaturant), biodiesel, and other renewable fuels.

Table 10.3 Sources

Feedstock

1981 forward: Calculated as fuel ethanol production (in thousand barrels) minus denaturant, and then multiplied by the fuel ethanol feedstock factor—see Table A3.

Losses and Co-products

1981 forward: Calculated as fuel ethanol feedstock plus denaturant minus fuel ethanol production.

Denaturant

1981–2008: Data in thousand barrels for petroleum denaturant in fuel ethanol produced are estimated as 2% of fuel ethanol production; these data are converted to Btu by multiplying by 4.645 million Btu per barrel (the estimated quantity-weighted factor of pentanes plus and conventional motor gasoline used as denaturant).

2009–2015: U.S. Energy Information Administration (EIA), *Petroleum Supply Annual (PSA)*, annual reports, Table 1. Data in thousand barrels for net production of pentanes plus at renewable fuels and oxygenate plants are multiplied by -1; these data are converted to Btu by multiplying by 4.620 million Btu per barrel (the approximate heat content of pentanes plus). Data in thousand barrels for net production of conventional motor gasoline and motor gasoline blending components at renewable fuels and oxygenate plants are multiplied by -1; these data are converted to Btu by multiplying by 5.253 million Btu per barrel (the approximate heat content of conventional motor gasoline). Total denaturant is the sum of the values for pentanes plus, conventional motor gasoline, and motor gasoline blending components.

2016 and 2017: EIA, *Petroleum Supply Monthly (PSM)*, monthly reports, Table 1. Data in thousand barrels for net production of pentanes plus at renewable fuels and oxygenate plants are multiplied by -1; these data are converted to Btu by multiplying by 4.620 million Btu per barrel (the approximate heat content of pentanes plus). Data in thousand barrels for net production of conventional motor gasoline and motor gasoline blending components at renewable fuels and oxygenate plants are multiplied by -1; these data are converted to Btu by multiplying by 5.253 million Btu per barrel (the approximate heat content of conventional motor gasoline). Total denaturant is the sum of the values for pentanes plus,

conventional motor gasoline, and motor gasoline blending components.

Production

1981–1992: Fuel ethanol production is assumed to equal fuel ethanol consumption—see sources for "Consumption."

1993–2004: Calculated as fuel ethanol consumption plus fuel ethanol stock change minus fuel ethanol net imports. These data differ slightly from the original production data from EIA, Form EIA-819, "Monthly Oxygenate Report," and predecessor form, which were not reconciled and updated to be consistent with the final balance.

2005–2008: EIA, Form EIA-819, "Monthly Oxygenate Report."

2009–2015: EIA, PSA, annual reports, Table 1, data for net production of fuel ethanol at renewable fuels and oxygenate plants.

2016 and 2017: EIA, PSM, monthly reports, Table 1, data for net production of fuel ethanol at renewable fuels and oxygenate plants.

Trade, Stocks, and Stock Change

1992–2015: EIA, PSA, annual reports, Table 1.

2016 and 2017: EIA, PSM, monthly reports, Table 1.

Consumption

1981–1989: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10; and interpolated values for 1982, 1983, 1985, 1986, and 1988.

1990–1992: EIA, *Estimates of U.S. Biomass Energy Consumption 1992*, Table D2; and interpolated value for 1991.

1993–2004: EIA, PSA, annual reports, Tables 2 and 16. Calculated as 10% of oxygenated finished motor gasoline field production (Table 2), plus fuel ethanol refinery input (Table 16).

2005–2008: EIA, PSA, annual reports, Tables 1 and 15. Calculated as motor gasoline blending components adjustments (Table 1), plus finished motor gasoline adjustments (Table 1), plus fuel ethanol refinery and blender net inputs (Table 15).

2009–2015: EIA, PSA, annual reports, Table 1. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments.

2016 and 2017: EIA, PSM, monthly reports, Table 1. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments.

Consumption Minus Denaturant

1981 forward: Calculated as fuel ethanol consumption minus the amount of denaturant in fuel ethanol consumed. Denaturant in fuel ethanol consumed is estimated by multiplying denaturant in fuel ethanol produced by the fuel ethanol consumption-to-production ratio.

Table 10.4 Sources

Biodiesel Feedstock

2001 forward: Calculated as biodiesel production in thousand barrels multiplied by 5.433 million Btu per barrel

(the biodiesel feedstock factor—see “Biodiesel Feedstock” entry in the “Thermal Conversion Factor Source Documentation” at the end of Appendix A).

Biodiesel Losses and Co-products

2001 forward: Calculated as biodiesel feedstock minus biodiesel production.

Biodiesel Production

2001–2005: U.S. Department of Agriculture, Commodity Credit Corporation, Bioenergy Program records. Annual data are derived from quarterly data. Monthly data are estimated by dividing the annual data by the number of days in the year and then multiplying by the number of days in the month.

2006: U.S. Department of Commerce, U.S. Census Bureau, “M311K—Fats and Oils: Production, Consumption, and Stocks,” data for soybean oil consumed in methyl esters (biodiesel). In addition, the U.S. Energy Information Administration (EIA) estimates that 14.4 million gallons of yellow grease were consumed in methyl esters (biodiesel).

2007: U.S. Department of Commerce, U.S. Census Bureau, “M311K—Fats and Oils: Production, Consumption, and Stocks,” data for all fats and oils consumed in methyl esters (biodiesel).

2008: EIA, *Monthly Biodiesel Production Report*, December 2009 (release date October 2010), Table 11. Monthly data for 2008 are estimated based on U.S. Department of Commerce, U.S. Census Bureau, M311K data, multiplied by the EIA 2008 annual value’s share of the M311K 2008 annual value.

2009 and 2010: EIA, *Monthly Biodiesel Production Report*, monthly reports, Table 1.

2011–2015: EIA, *Petroleum Supply Annual (PSA)*, annual reports, Table 1, data for renewable fuels except fuel ethanol.

2016 and 2017: EIA, *Petroleum Supply Monthly (PSM)*, monthly reports, Table 1, data for renewable fuels except fuel ethanol.

Biodiesel Trade

2001–2011: For imports, U.S. Department of Agriculture, data for the following Harmonized Tariff Schedule codes: 3824.90.40.20, “Fatty Esters Animal/Vegetable Mixture” (data through June 2010); and 3824.90.40.30, “Biodiesel/Mixes” (data for July 2010–2011). For exports, U.S. Department of Agriculture, data for the following Schedule B codes: 3824.90.40.00, “Fatty Substances Animal/Vegetable/Mixture” (data through 2010); and 3824.90.40.30, “Biodiesel <70%” (data for 2011). (The data above are converted from pounds to gallons by dividing by 7.4.) Although these categories include products other than biodiesel (such as biodiesel coprocessed with petroleum feedstocks; and products destined for soaps, cosmetics, and other items), biodiesel is the largest component. In the absence of other reliable data for biodiesel trade, EIA sees these data as good substitutes.

2012–2015: EIA, PSA, annual reports, Tables 25 and 31, data for biomass-based diesel fuel.

2016 and 2017: EIA, PSM, monthly reports, Tables 37 and 49, data for biomass-based diesel fuel.

Biodiesel Stocks and Stock Change

2009 forward: EIA, biodiesel data from EIA-22M, “Monthly Biodiesel Production Survey”; and biomass-based diesel fuel data from EIA-810, “Monthly Refinery Report,” EIA-812, “Monthly Product Pipeline Report,” and EIA-815, “Monthly Bulk Terminal and Blender Report.”

Biodiesel Consumption

2001–2008: Calculated as biodiesel production plus biodiesel net imports.

January and February 2009: EIA, PSA, Table 1, data for refinery and blender net inputs of renewable fuels except fuel ethanol.

March 2009 forward: Calculated as biodiesel production plus biodiesel net imports minus biodiesel stock change.

Other Renewable Fuels

2009 forward: Imports data for “Other Renewable Diesel Fuel” are from EIA, PSA Table 25 and PSM Table 37 (data are converted to Btu by multiplying by the other renewable diesel fuel heat content factor in Table A1). Imports data for “Other Renewable Fuels” are from EIA, PSA Table 25 and PSM Table 37 (data are converted to Btu by multiplying by the biodiesel heat content factor in Table A1). Stock change data for “Other Renewable Diesel Fuel” are from EIA, EIA-810, “Monthly Refinery Report,” EIA-812, “Monthly Product Pipeline Report,” and EIA-815, “Monthly Bulk Terminal and Blender Report” (data are converted to Btu by multiplying by the other renewable diesel heat content factor in Table A1). “Other Renewable Fuels” in Table 10.4 is calculated as other renewable diesel fuel imports plus other renewable fuels imports minus other renewable diesel fuel stock change.

Table 10.5 Sources

Distributed Solar Energy Consumption: Heat Annual Data

1989–2009: Annual estimates by the U.S. Energy Information Administration (EIA) based on EIA, Form EIA-63A, “Annual Solar Thermal Collector/Reflector Shipments Report.” Solar energy consumption by solar thermal non-electric applications (mainly in the residential sector, but with some in the commercial and industrial sectors) is based on assumptions about the stock of equipment in place and other factors.

2010 forward: Annual estimates based on commercial sector solar thermal growth rates from EIA’s *Annual Energy Outlook (AEO)* data system. (Annual estimates are subject to revision when a new AEO is released.)

Monthly Data

1989–2013: Monthly estimates for each year are obtained by allocating a given year’s annual value to the months in that year. Each month’s allocator is the average of that month’s “Distributed Solar Energy Consumption: Electricity, Total” values in 2014 and 2015. The allocators, when rounded, are as follows: January—5%; February—6%; March—8%; April—9%; May—10%; June—10%; July—10%; August—10%; September—9%; October—9%; November—7%; and December—7%.

2014 forward: Initial monthly estimates for each year are obtained as described above. Once all 12 months of “Distributed Solar Energy Consumption: Electricity, Total” data are available for a given year, they are used as allocators and applied to the annual estimate in order to revise the initial monthly estimates.

Distributed Solar Energy Consumption: Electricity, Residential Sector

Beginning in 2014, monthly and annual data for residential sector distributed (small-scale) solar photovoltaic generation are from EIA, *Electric Power Monthly*, Table 1.2.E. Those data are converted to consumption data in Btu by multiplying by the total fossil fuels heat rate factors in MER Table A6.

Backcasts for earlier periods are developed as follows:

Annual Data

1989–2003: Annual growth rates are calculated based on distributed (small-scale) solar electricity consumption in all sectors. Consumption is estimated using information on shipments of solar panels from EIA, Form EIA-63B, “Annual Photovoltaic Cell/Module Shipments Report,” and assumptions about the stock of equipment in place and other factors. The growth rates are applied to more recent data to create historical annual estimates.

2004–2008: Annual growth rates based on commercial sector solar photovoltaic growth rates from EIA’s *Annual Energy Outlook (AEO)* data system are applied to more recent data to create historical annual estimates. (Annual estimates are subject to revision when a new AEO is released.)

2009–2013: Annual growth rates based on residential sector solar photovoltaic growth rates from EIA’s *Annual Energy Outlook (AEO)* data system are applied to more recent data to create historical annual estimates. (Annual estimates are subject to revision when a new AEO is released.)

Monthly Data

1989–2013: See “Distributed Solar Energy Consumption: Heat, Monthly Data.”

Distributed Solar Energy Consumption: Electricity, Commercial Sector

Beginning in 2014, monthly and annual data for commercial sector distributed (small-scale) solar photovoltaic generation are from EIA, *Electric Power Monthly*, Table 1.2.C. Those data are converted to consumption data in Btu by multiplying by the total fossil fuels heat rate factors in MER Table A6.

Backcasts for earlier periods are developed as follows:

Annual Data

1989–2003: Annual growth rates based on EIA, Form EIA-63B, “Annual Photovoltaic Cell/Module Shipments Report,” are applied to more recent data to create historical annual estimates. (See “Distributed Solar Energy Consumption: Electricity, Residential Sector” sources above for details.)

2004–2013: Annual growth rates based on commercial sector solar photovoltaic growth rates from EIA’s *Annual Energy Outlook (AEO)* data system are applied to more recent data to create historical annual estimates. (Annual estimates are subject to revision when a new AEO is released.)

Monthly Data

1989–2013: See “Distributed Solar Energy Consumption: Heat, Monthly Data.”

Distributed Solar Energy Consumption: Electricity, Industrial Sector

Beginning in 2014, monthly and annual data for industrial sector distributed (small-scale) solar photovoltaic generation are from EIA, *Electric Power Monthly*, Table 1.2.D. Those data are converted to consumption data in Btu by multiplying by the total fossil fuels heat rate factors in MER Table A6.

Backcasts for earlier periods are developed as follows:

Annual Data

1989–2003: Annual growth rates based on EIA, Form EIA-63B, “Annual Photovoltaic Cell/Module Shipments Report,” are applied to more recent data to create historical annual estimates. (See “Distributed Solar Energy Consumption: Electricity, Residential Sector” sources above for details.)

2004–2013: Annual growth rates based on commercial sector solar photovoltaic growth rates from EIA’s *Annual Energy Outlook (AEO)* data system are applied to more recent data to create historical annual estimates. (Annual estimates are subject to revision when a new AEO is released.)

Monthly Data

1989–2013: See “Distributed Solar Energy Consumption: Heat, Monthly Data.”

Distributed Solar Energy Consumption: Electricity, Total

1989 forward: Distributed (small-scale) solar energy consumption for total electricity is the sum of the distributed solar energy consumption (for electricity) values for the residential, commercial, and industrial sectors.

Distributed Solar Energy Consumption: Total

1989 forward: Distributed (small-scale) solar energy consumption total is the sum of distributed solar energy consumption values for heat and total electricity.

Utility-Scale Solar Energy Consumption: Electricity, Commercial Sector

2008 forward: Commercial sector solar photovoltaic and solar thermal electricity net generation data from EIA, Form

EIA-923, "Power Plant Operations Report," are converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6.

Utility-Scale Solar Energy Consumption: Electricity, Industrial Sector

2010 forward: Industrial sector solar photovoltaic and solar thermal electricity net generation data from EIA, Form EIA-923, "Power Plant Operations Report," are converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6.

Utility-Scale Solar Energy Consumption: Electricity, Electric Power Sector

1984 forward: Electric power sector solar photovoltaic and solar thermal electricity net generation data from Table 7.2b

are converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6.

Utility-Scale Solar Energy Consumption: Electricity, Total

1984 forward: Utility-scale solar energy consumption for total electricity is the sum of the utility-scale solar energy consumption (for electricity) values for the commercial, industrial, and electric power sectors.

Solar Energy Consumption: Total

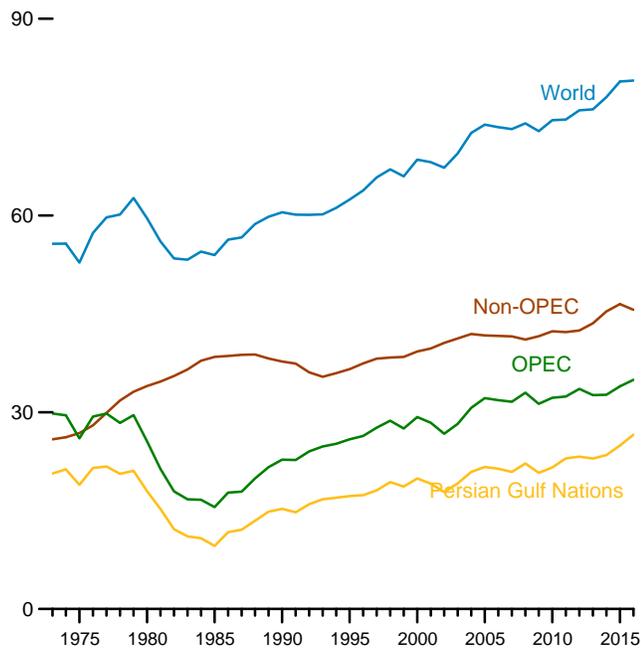
1984 forward: Total solar energy consumption is the sum of the values for total distributed solar energy consumption and total utility-scale solar energy consumption.

THIS PAGE INTENTIONALLY LEFT BLANK

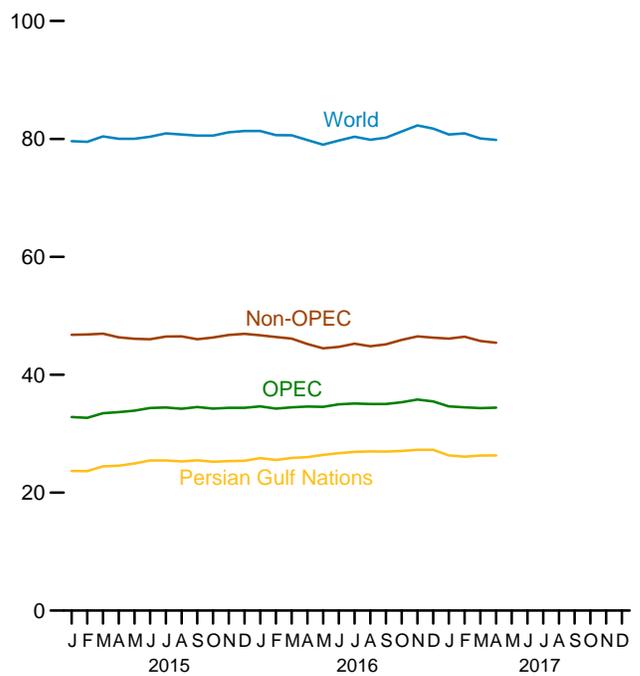
11. International Petroleum

Figure 11.1a World Crude Oil Production Overview
(Million Barrels per Day)

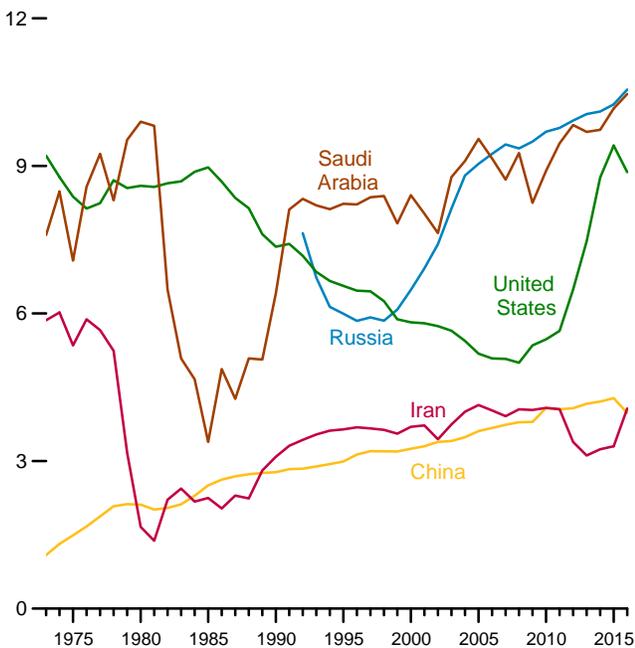
World Production, 1973–2016



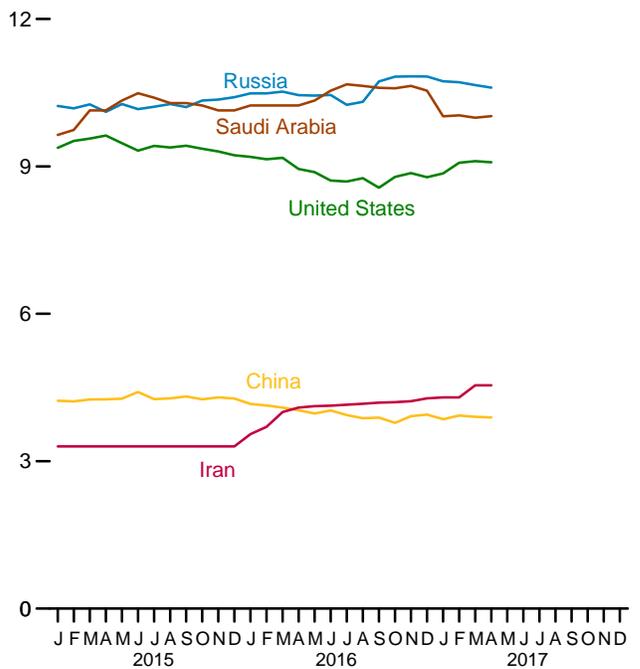
World Production, Monthly



Selected Producers, 1973–2016



Selected Producers, Monthly



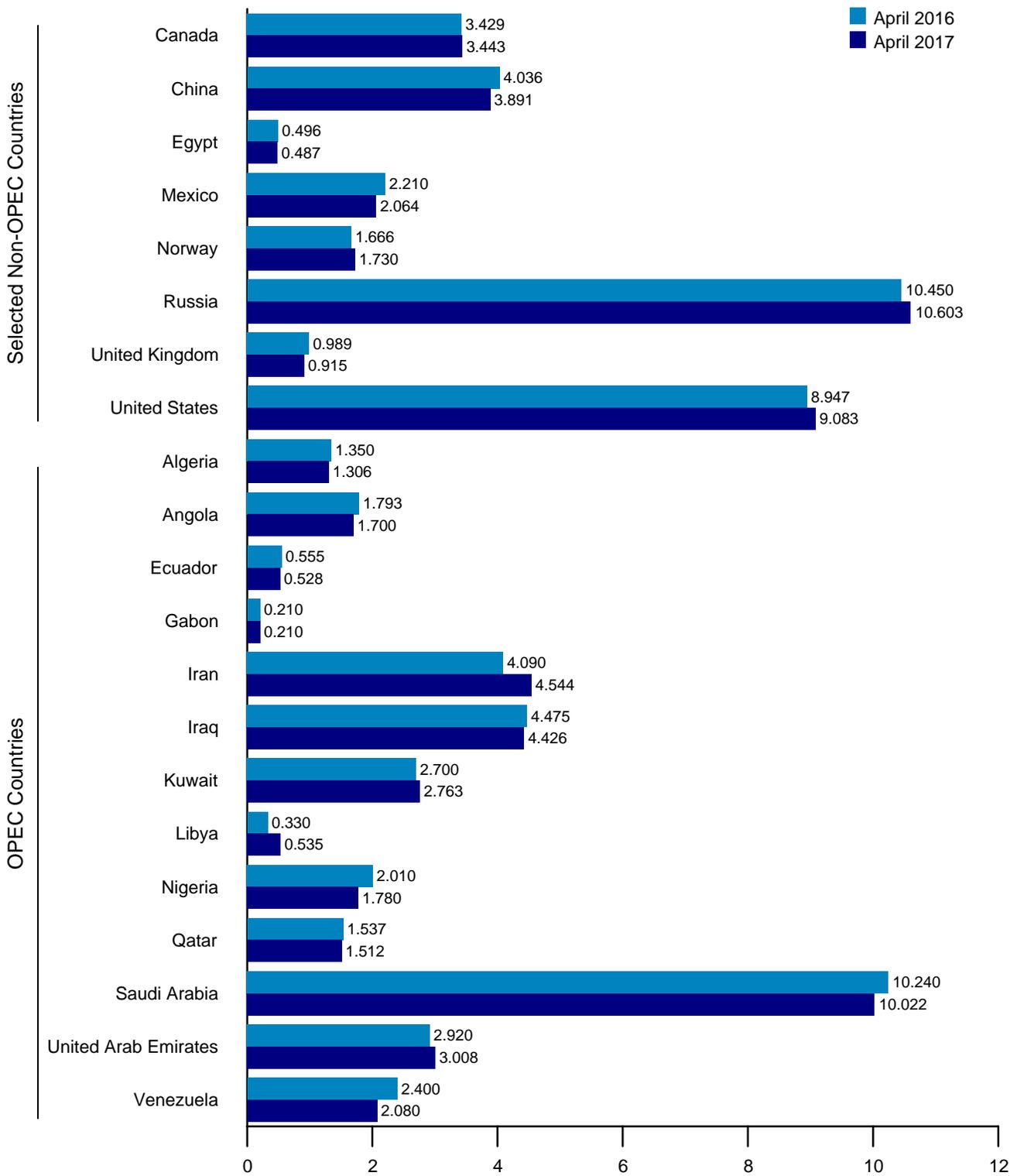
Notes: • OPEC is the Organization of the Petroleum Exporting Countries. • The Persian Gulf Nations are Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates. Production from the Neutral Zone between Kuwait and Saudi Arabia is included in “Per-

sian Gulf Nations.”

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#international>.

Sources: Tables 11.1a and 11.1b.

Figure 11.1b World Crude Oil Production by Selected Countries
(Million Barrels per Day)



Note: OPEC is the Organization of the Petroleum Exporting Countries.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#international>.
 Sources: Tables 11.1a and 11.1b.

Table 11.1a World Crude Oil Production: OPEC Members
(Thousand Barrels per Day)

	Algeria	Angola	Ecuador	Gabon	Iran	Iraq	Kuwait ^a	Libya	Nigeria	Qatar	Saudi Arabia ^a	United Arab Emirates	Venezuela	Total OPEC ^b
1973 Average	1,097	162	209	150	5,861	2,018	3,020	2,175	2,054	570	7,596	1,533	3,366	29,811
1975 Average	983	165	161	223	5,350	2,262	2,084	1,480	1,783	438	7,075	1,664	2,346	26,013
1980 Average	1,106	150	204	175	1,662	2,514	1,656	1,787	2,055	472	9,900	1,709	2,168	25,558
1985 Average	1,036	231	281	172	2,250	1,433	1,023	1,059	1,495	301	3,388	1,193	1,677	15,539
1990 Average	1,180	475	285	270	3,088	2,040	1,175	1,375	1,810	406	6,410	2,117	2,137	22,768
1995 Average	1,162	646	392	365	3,643	560	2,057	1,390	1,993	442	8,231	2,233	2,750	25,865
1996 Average	1,227	709	396	368	3,686	579	2,062	1,401	2,001	510	8,218	2,278	2,938	26,372
1997 Average	1,259	714	388	370	3,664	1,155	2,007	1,446	2,132	550	8,362	2,316	3,280	27,644
1998 Average	1,226	735	375	352	3,634	2,150	2,085	1,390	2,153	696	8,389	2,345	3,167	28,698
1999 Average	1,177	745	373	331	3,557	2,508	1,898	1,319	2,130	665	7,833	2,169	2,826	27,530
2000 Average	1,214	746	395	315	3,696	2,571	2,079	1,410	2,165	742	8,404	2,368	3,155	29,259
2001 Average	1,265	742	412	270	3,724	2,390	1,998	1,367	2,256	730	8,031	2,205	3,010	28,399
2002 Average	1,349	896	393	251	3,444	2,023	1,894	1,319	2,118	709	7,634	2,082	2,604	26,716
2003 Average	1,516	903	411	241	3,743	1,308	2,136	1,421	2,275	807	8,775	2,348	2,335	28,219
2004 Average	1,582	1,052	528	239	4,001	2,011	2,376	1,515	2,329	901	9,101	2,478	2,557	30,671
2005 Average	1,692	1,239	532	266	4,139	1,878	2,529	1,633	2,627	978	9,550	2,535	2,565	32,163
2006 Average	1,699	1,398	536	237	4,028	1,996	2,535	1,681	2,440	996	9,152	2,636	2,511	31,844
2007 Average	1,708	1,724	511	244	3,912	2,086	2,464	1,702	2,350	1,083	8,722	2,603	2,490	31,598
2008 Average	1,705	1,951	505	248	4,050	2,375	2,586	1,736	2,165	1,198	9,261	2,681	2,510	32,971
2009 Average	1,585	1,877	486	242	4,037	2,391	2,350	1,650	2,208	1,279	8,250	2,413	2,520	31,287
2010 Average	1,540	1,909	486	246	4,080	2,399	2,300	1,650	2,408	1,459	8,900	2,415	2,410	32,202
2011 Average	1,540	1,756	500	241	4,054	2,626	2,530	465	2,474	1,571	9,458	2,679	2,500	32,394
2012 Average	1,532	1,787	504	230	3,387	2,983	2,635	1,367	2,457	1,551	9,832	2,804	2,500	33,569
2013 Average	1,462	1,803	526	220	3,113	3,054	2,650	918	2,307	1,553	9,693	2,820	2,500	32,620
2014 Average	1,420	1,742	556	220	3,239	3,368	2,642	471	2,347	1,540	9,735	2,894	2,500	32,675
2015														
January	1,429	1,820	558	215	3,300	3,475	2,750	370	2,294	1,514	9,640	2,960	2,500	32,825
February	1,429	1,770	553	215	3,300	3,325	2,750	360	2,269	1,520	9,740	2,970	2,500	32,701
March	1,429	1,720	553	215	3,300	3,725	2,750	475	2,152	1,525	10,140	2,980	2,500	33,464
April	1,429	1,790	548	205	3,300	3,775	2,770	505	2,165	1,531	10,140	3,010	2,500	33,668
May	1,429	1,770	543	205	3,300	3,925	2,780	430	2,139	1,532	10,340	3,020	2,500	33,913
June	1,429	1,820	541	215	3,300	4,275	2,780	410	2,025	1,537	10,490	3,030	2,500	34,352
July	1,429	1,850	538	215	3,300	4,325	2,810	400	2,122	1,537	10,400	3,030	2,500	34,456
August	1,429	1,870	537	215	3,300	4,225	2,850	360	2,088	1,537	10,290	3,040	2,500	34,241
September	1,429	1,800	539	215	3,300	4,425	2,850	375	2,225	1,537	10,290	3,040	2,500	34,525
October	1,429	1,770	538	215	3,300	4,275	2,800	415	2,198	1,537	10,240	3,050	2,500	34,267
November	1,429	1,820	537	215	3,300	4,425	2,850	375	2,226	1,537	10,140	3,040	2,500	34,394
December	1,429	1,820	533	215	3,300	4,425	2,900	370	2,159	1,537	10,140	3,060	2,500	34,388
Average	1,429	1,802	543	213	3,300	4,054	2,804	404	2,171	1,532	10,168	3,019	2,500	33,940
2016														
January	1,350	1,798	534	210	3,550	4,475	2,950	370	2,159	1,497	10,240	3,105	2,400	34,638
February	1,350	1,793	540	210	3,700	4,225	2,910	360	2,120	1,517	10,240	2,885	2,400	34,250
March	1,350	1,798	552	210	4,000	4,225	2,930	320	1,993	1,537	10,240	2,910	2,400	34,465
April	1,350	1,793	555	210	4,090	4,475	2,700	330	2,010	1,537	10,240	2,920	2,400	34,610
May	1,350	1,818	556	210	4,120	4,355	2,910	285	1,673	1,537	10,340	3,100	2,300	34,554
June	1,330	1,823	550	210	4,130	4,405	2,910	330	1,811	1,537	10,540	3,135	2,280	34,991
July	1,350	1,829	545	210	4,150	4,415	2,950	310	1,764	1,537	10,670	3,156	2,220	35,106
August	1,350	1,833	549	210	4,170	4,460	2,960	250	1,694	1,537	10,640	3,186	2,210	35,049
September	1,350	1,768	560	210	4,190	4,480	2,960	310	1,726	1,477	10,600	3,216	2,200	35,047
October	1,350	1,618	552	200	4,200	4,565	2,960	550	1,854	1,507	10,590	3,196	2,190	35,332
November	1,350	1,698	544	220	4,220	4,645	2,970	580	1,984	1,527	10,640	3,226	2,180	35,784
December	1,350	1,668	544	220	4,280	4,685	2,970	620	1,684	1,527	10,540	3,226	2,150	35,464
Average	1,348	1,770	548	211	4,068	4,452	2,924	385	1,871	1,523	10,461	3,106	2,277	34,943
2017														
January	1,340	1,658	536	200	4,300	4,565	2,830	680	1,849	1,487	10,020	3,067	2,100	34,632
February	1,340	1,688	535	185	4,300	4,445	2,770	690	1,869	1,467	10,040	3,047	2,090	34,466
March	1,316	1,630	531	190	4,544	4,431	2,763	590	1,730	1,507	9,992	3,028	2,090	34,342
April	1,306	1,700	528	210	4,544	4,426	2,763	535	1,780	1,512	10,022	3,008	2,080	34,414
4-Month Average	1,325	1,668	532	196	4,424	4,468	2,782	623	1,806	1,494	10,018	3,038	2,090	34,464
2016 4-Month Average	1,350	1,796	545	210	3,835	4,351	2,873	345	2,070	1,522	10,240	2,956	2,400	34,494
2015 4-Month Average	1,429	1,775	553	213	3,300	3,580	2,755	429	2,219	1,522	9,918	2,980	2,500	33,172

^a Except for the period from August 1990 through May 1991, includes about one-half of the production in the Kuwait-Saudi Arabia Neutral Zone. Kuwaiti Neutral Zone output was discontinued following Iraq's invasion of Kuwait on August 2, 1990, but was resumed in June 1991. As of July 2015 all Neutral Zone production is offline. Data for Saudi Arabia include approximately 150 thousand barrels per day from the Abu Safah field produced on behalf of Bahrain.

^b See "Organization of the Petroleum Exporting Countries (OPEC)" in Glossary. On Tables 11.1a and 11.1b, countries are classified as "OPEC" or "Non-OPEC" in all years based on their status in the most current year. For example, Ecuador

rejoined OPEC in 2007 and is thus included in "Total OPEC" for all years.

R=Revised.

Notes: • Data are for crude oil and lease condensate; they exclude natural gas plant liquids. • Monthly data are often preliminary figures and may not average to the annual totals because of rounding or because updates to the preliminary monthly data are not available.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#international> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

Table 11.1b World Crude Oil Production: Persian Gulf Nations, Non-OPEC, and World
(Thousand Barrels per Day)

	Persian Gulf Nations ^b	Selected Non-OPEC ^a Producers								Total Non-OPEC ^a	World	
		Canada	China	Egypt	Mexico	Norway	Former U.S.S.R.	Russia	United Kingdom			United States
1973 Average	20,668	1,798	1,090	165	465	32	8,324	NA	2	9,208	25,868	55,679
1975 Average	18,934	1,430	1,490	235	705	189	9,523	NA	12	8,375	26,816	52,828
1980 Average	17,961	1,435	2,114	595	1,936	486	11,706	NA	1,622	8,597	34,000	59,558
1985 Average	9,630	1,471	2,505	887	2,745	773	11,585	NA	2,530	8,971	38,426	53,965
1990 Average	15,278	1,553	2,774	873	2,553	1,630	10,975	NA	1,820	7,355	37,729	60,497
1995 Average	17,208	1,805	2,990	920	2,711	2,766	--	5,995	2,489	6,560	36,569	62,434
1996 Average	17,367	1,837	3,131	922	2,944	3,091	--	5,850	2,568	6,465	37,446	63,818
1997 Average	18,095	1,922	3,200	856	3,104	3,142	--	5,920	2,518	6,452	38,161	65,806
1998 Average	19,337	1,981	3,198	834	3,160	3,011	--	5,854	2,616	6,252	38,333	67,032
1999 Average	18,667	1,907	3,195	852	2,998	3,019	--	6,079	2,684	5,881	38,437	65,967
2000 Average	19,897	1,977	3,249	768	3,104	3,222	--	6,479	2,275	5,822	39,268	68,527
2001 Average	19,114	2,029	3,300	720	3,218	3,226	--	6,917	2,282	5,801	39,733	68,132
2002 Average	17,824	2,171	3,390	715	3,263	3,131	--	7,408	2,292	5,744	40,574	67,290
2003 Average	19,154	2,306	3,409	713	3,459	3,042	--	8,132	2,093	5,649	41,242	69,460
2004 Average	20,906	2,398	3,485	673	3,476	2,954	--	8,805	1,845	5,441	41,924	72,595
2005 Average	21,644	2,369	3,609	623	3,423	2,698	--	9,043	1,649	5,184	41,702	73,866
2006 Average	21,377	2,525	3,673	535	3,345	2,491	--	9,247	1,490	5,086	41,633	73,476
2007 Average	20,904	2,628	3,736	530	3,143	2,270	--	9,437	1,498	5,077	41,578	73,175
2008 Average	22,186	2,579	3,790	566	2,839	2,182	--	9,357	1,391	5,000	41,078	74,048
2009 Average	20,754	2,579	3,796	587	2,646	2,067	--	9,495	1,328	5,353	41,583	72,869
2010 Average	21,589	2,741	4,078	568	2,621	1,871	--	9,694	1,233	5,475	42,341	74,543
2011 Average	22,953	2,901	4,052	551	2,600	1,760	--	9,774	1,026	5,646	42,230	74,624
2012 Average	23,233	3,138	4,074	539	2,593	1,612	--	9,922	888	6,487	42,463	76,032
2013 Average	22,932	3,325	4,164	524	2,562	1,533	--	10,054	801	7,468	43,557	76,177
2014 Average	23,469	3,613	4,208	517	2,469	1,562	--	10,107	787	8,764	45,381	78,056
2015 January	23,689	3,885	4,232	508	2,290	1,579	--	10,231	872	9,379	46,786	79,611
February	23,655	3,906	4,218	516	2,370	1,589	--	10,181	812	9,517	46,818	79,519
March	24,470	3,775	4,256	525	2,356	1,586	--	10,264	867	9,566	46,959	80,422
April	24,576	3,463	4,258	503	2,235	1,614	--	10,111	925	9,627	46,349	80,017
May	24,947	3,212	4,271	512	2,263	1,555	--	10,270	1,016	9,472	46,095	80,009
June	25,462	3,457	4,408	504	2,283	1,596	--	10,166	870	9,320	46,022	80,374
July	25,452	3,821	4,263	524	2,308	1,611	--	10,213	839	9,418	46,470	80,926
August	25,292	3,922	4,278	523	2,291	1,599	--	10,268	788	9,384	46,512	80,753
September	25,492	3,422	4,317	501	2,306	1,581	--	10,209	862	9,423	46,026	80,551
October	25,252	3,582	4,259	517	2,314	1,685	--	10,341	912	9,358	46,305	80,572
November	25,342	3,819	4,297	494	2,310	1,644	--	10,361	972	9,304	46,736	81,130
December	25,412	3,866	4,275	509	2,308	1,682	--	10,407	979	9,225	46,947	81,335
Average	24,927	3,677	4,278	511	2,302	1,610	--	10,253	893	9,415	46,502	80,442
2016 January	25,867	3,877	4,166	498	2,294	1,657	--	10,485	1,003	E 9,194	R 46,705	R 81,343
February	25,527	3,797	4,133	497	2,247	1,675	--	10,485	1,014	E 9,147	R 46,387	R 80,637
March	25,892	3,767	4,091	497	2,249	1,632	--	10,522	987	E 9,174	R 46,140	R 80,605
April	26,012	3,429	4,036	496	2,210	1,666	--	10,450	989	E 8,947	R 45,200	R 79,810
May	26,412	2,811	3,973	495	2,207	1,608	--	10,440	991	E 8,882	R 44,471	R 79,025
June	26,707	3,112	4,034	495	2,213	1,480	--	10,453	897	E 8,711	R 44,728	R 79,719
July	26,928	3,657	3,938	494	2,192	1,762	--	10,254	980	E 8,691	R 45,257	R 80,363
August	27,003	3,855	3,874	493	2,179	1,603	--	10,316	841	E 8,759	R 44,820	R 79,869
September	26,973	3,849	3,887	493	2,146	1,430	--	10,729	826	E 8,567	R 45,161	R 80,208
October	27,068	3,893	3,780	492	2,135	1,766	--	10,826	760	E 8,785	R 45,920	R 81,252
November	27,278	4,135	3,915	491	2,105	1,785	--	10,832	948	E 8,863	R 46,494	R 82,278
December	27,278	3,968	3,949	491	2,067	1,706	--	10,830	961	E 8,780	R 46,280	R 81,744
Average	26,583	3,679	3,981	494	2,187	1,648	--	10,551	933	E 8,875	R 45,629	R 80,571
2017 January	26,312	4,097	3,855	490	2,054	1,660	--	10,733	970	E 8,858	R 46,120	R 80,752
February	26,111	4,128	3,929	489	2,051	1,709	--	10,713	944	RE 9,075	R 46,460	R 80,926
March	R 26,306	3,607	3,903	489	2,053	R 1,750	--	10,654	945	RE 9,107	R 45,729	R 80,071
April	26,316	3,443	3,891	487	2,064	1,730	--	10,603	915	E 9,083	45,425	79,839
4-Month Average	26,265	3,814	3,894	489	2,056	1,712	--	10,675	944	E 9,029	45,925	80,389
2016 4-Month Average	25,828	3,719	4,107	497	2,250	1,657	--	10,486	998	E 9,116	46,111	80,605
2015 4-Month Average	24,105	3,756	4,241	513	2,312	1,592	--	10,198	870	9,521	46,729	79,901

^a See "Organization of the Petroleum Exporting Countries (OPEC)" in Glossary. On Tables 11.1a and 11.1b, countries are classified as "OPEC" or "Non-OPEC" in all years based on their status in the most current year. For example, Ecuador rejoined OPEC in 2007 and is thus included in "Total OPEC" for all years.

^b Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, and the Neutral Zone (between Kuwait and Saudi Arabia).

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

Notes: • Data are for crude oil and lease condensate; they exclude natural gas

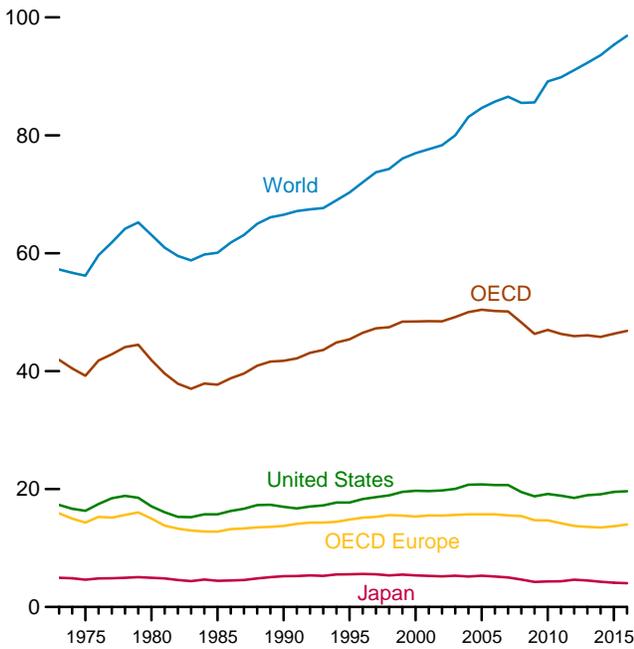
plant liquids. • Monthly data are often preliminary figures and may not average to the annual totals because of rounding or because updates to the preliminary monthly data are not available. • Data for countries may not sum to World totals due to independent rounding. • U.S. geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#international> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

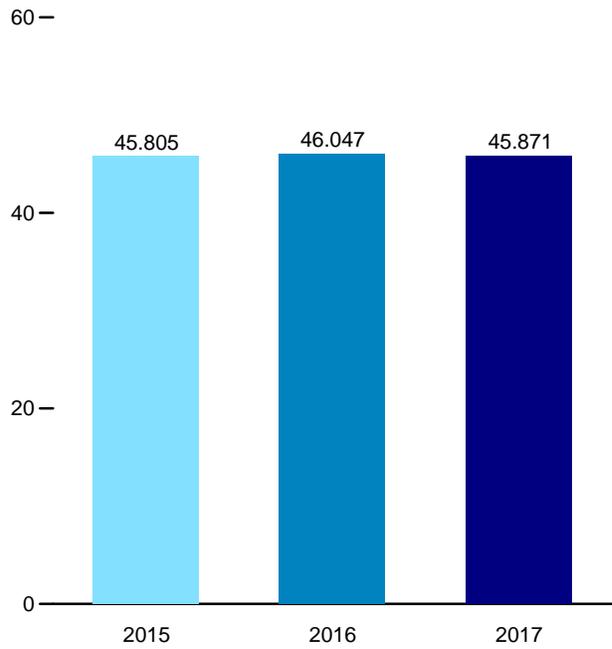
Sources: See end of section.

Figure 11.2 Petroleum Consumption in OECD Countries
(Million Barrels per Day)

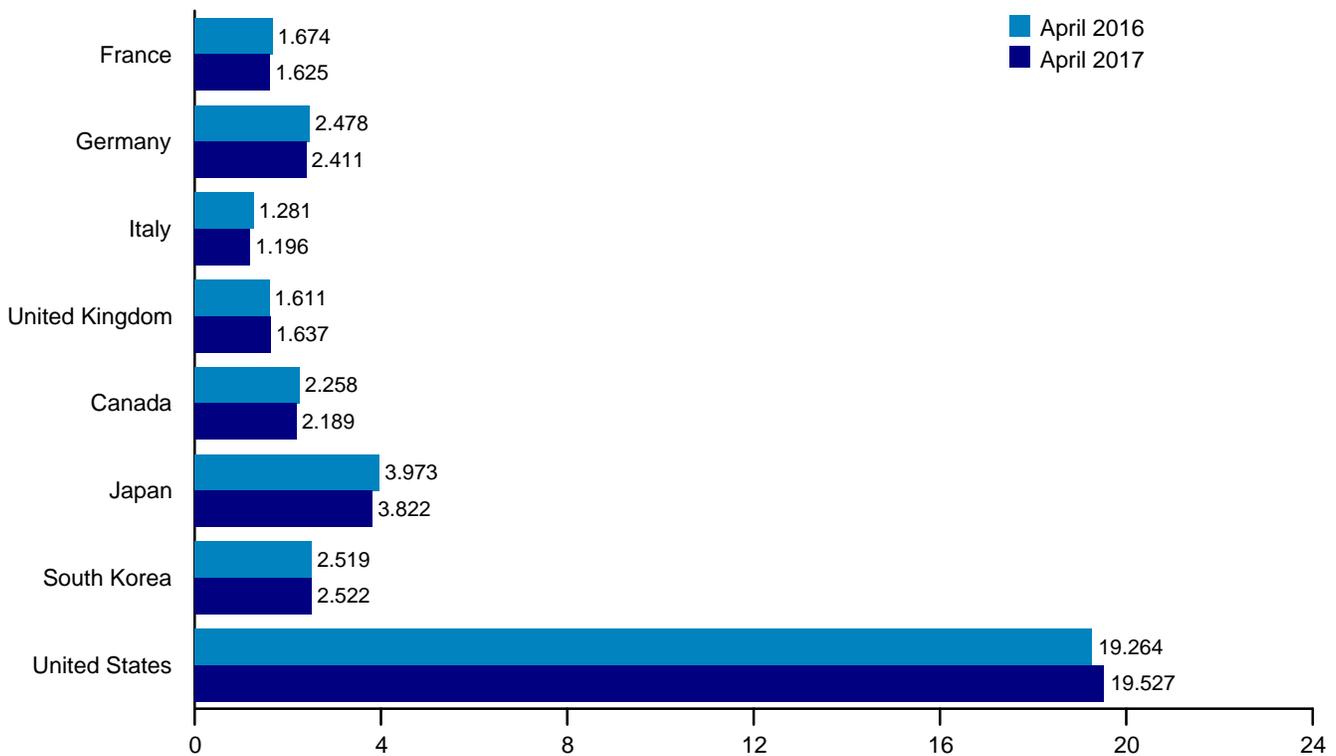
Overview, 1973–2016



OECD Total, April



By Selected OECD Countries



Note: OECD is the Organization for Economic Cooperation and Development.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#international>.
Source: Table 11.2.

Table 11.2 Petroleum Consumption in OECD Countries
(Thousand Barrels per Day)

	France	Germany ^a	Italy	United Kingdom	OECD Europe ^b	Canada	Japan	South Korea	United States	Other OECD ^c	OECD ^d	World
1973 Average	2,601	3,324	2,068	2,341	15,879	1,729	4,949	281	17,308	1,768	41,913	57,237
1975 Average	2,252	2,957	1,855	1,911	14,314	1,779	4,621	311	16,322	1,885	39,232	56,198
1980 Average	2,256	3,082	1,934	1,725	14,995	1,873	4,960	537	17,056	2,449	41,870	63,113
1985 Average	1,753	2,651	1,705	1,617	12,769	1,514	4,436	552	15,726	2,699	37,696	60,082
1990 Average	1,827	2,682	1,868	1,776	13,759	1,722	5,217	1,048	16,988	3,030	41,764	66,539
1995 Average	1,915	2,882	1,942	1,816	14,832	1,799	5,546	2,008	17,725	3,478	45,388	70,315
1996 Average	1,943	2,922	1,920	1,852	15,144	1,853	5,591	2,101	18,309	3,513	46,511	72,038
1997 Average	1,962	2,917	1,934	1,810	15,292	1,940	5,549	2,255	18,620	3,604	47,261	73,734
1998 Average	2,040	2,923	1,943	1,792	15,592	1,931	5,348	1,917	18,917	3,739	47,444	74,305
1999 Average	2,034	2,836	1,891	1,811	15,503	2,016	5,486	2,084	19,519	3,775	48,384	76,058
2000 Average	2,001	2,767	1,854	1,765	15,352	2,008	5,357	2,135	19,701	3,871	48,424	76,957
2001 Average	2,054	2,807	1,835	1,747	15,533	2,029	5,265	2,132	19,649	3,873	48,480	77,642
2002 Average	1,991	2,710	1,870	1,739	15,491	2,040	5,187	2,149	19,761	3,825	48,453	78,332
2003 Average	2,001	2,679	1,860	1,759	15,616	2,155	5,298	2,175	20,034	3,897	49,174	79,986
2004 Average	2,008	2,648	1,829	1,789	15,718	2,233	5,163	2,155	20,731	4,001	50,002	83,126
2005 Average	1,990	2,624	1,781	1,819	15,714	2,296	5,298	2,191	20,802	4,114	50,416	84,633
2006 Average	1,991	2,636	1,777	1,806	15,718	2,294	5,168	2,180	20,687	4,150	50,197	85,702
2007 Average	1,978	2,407	1,729	1,751	15,534	2,389	5,009	2,240	20,680	4,268	50,121	86,545
2008 Average	1,940	2,533	1,667	1,730	15,424	2,342	4,664	2,142	19,498	4,191	48,261	85,509
2009 Average	1,863	2,434	1,544	1,649	14,711	2,283	4,257	2,188	18,771	4,105	46,316	85,569
2010 Average	1,822	2,467	1,544	1,626	14,694	2,375	4,328	2,269	19,180	4,153	46,998	89,137
2011 Average	1,779	2,392	1,494	1,582	14,215	2,405	4,345	2,259	18,882	4,216	46,322	89,846
2012 Average	1,739	2,389	1,370	1,535	13,741	2,470	4,630	2,322	18,490	4,274	45,928	91,059
2013 Average	1,714	2,435	1,260	1,527	13,582	2,455	4,504	2,328	18,961	4,240	46,069	92,284
2014 Average	1,692	2,374	1,266	1,520	13,484	2,407	4,267	2,348	19,106	4,191	45,801	93,598
2015 January	1,642	2,291	1,123	1,432	12,983	2,443	4,547	2,466	19,218	4,045	45,702	NA
February	1,782	2,431	1,227	1,655	13,871	2,528	5,062	2,506	19,677	4,215	47,858	NA
March	1,691	2,388	1,219	1,478	13,484	2,339	4,530	2,403	19,352	4,213	46,321	NA
April	1,720	2,360	1,307	1,570	13,691	2,282	4,154	2,377	19,263	4,038	45,805	NA
May	1,540	2,189	1,224	1,486	13,005	2,321	3,589	2,201	19,301	4,123	44,540	NA
June	1,773	2,317	1,293	1,559	13,955	2,393	3,669	2,304	19,841	4,185	46,346	NA
July	1,809	2,390	1,391	1,495	14,143	2,441	3,791	2,289	20,126	4,278	47,069	NA
August	1,675	2,415	1,240	1,579	13,901	2,457	3,909	2,442	19,930	4,190	46,828	NA
September	1,792	2,530	1,328	1,624	14,358	2,460	3,851	2,355	19,418	4,183	46,625	NA
October	1,663	2,431	1,285	1,529	13,812	2,441	3,828	2,407	19,500	4,258	46,246	NA
November	1,497	2,393	1,250	1,580	13,415	2,405	3,969	2,522	19,144	4,211	45,666	NA
December	1,716	2,345	1,303	1,570	13,801	2,368	4,607	2,618	19,600	4,274	47,268	NA
Average	1,691	2,372	1,266	1,545	13,698	2,406	4,120	2,407	19,531	4,184	46,347	95,334
2016 January	R 1,564	R 2,300	R 1,108	R 1,492	R 12,877	R 2,371	R 4,345	R 2,695	19,055	R 4,089	R 45,432	NA
February	R 1,695	R 2,468	R 1,243	R 1,641	R 13,914	R 2,328	R 4,629	R 2,752	19,680	R 4,276	R 47,578	NA
March	R 1,732	R 2,475	R 1,251	R 1,538	R 13,911	R 2,304	R 4,356	R 2,533	19,616	R 4,304	R 47,023	NA
April	R 1,674	R 2,478	R 1,281	R 1,611	R 13,979	R 2,258	R 3,973	R 2,519	19,264	R 4,054	R 46,047	NA
May	R 1,681	R 2,285	R 1,246	R 1,549	R 13,639	R 2,304	R 3,579	R 2,574	19,202	R 4,133	R 45,431	NA
June	R 1,553	R 2,313	R 1,302	R 1,654	R 13,974	R 2,389	R 3,561	R 2,544	19,799	R 4,210	R 46,477	NA
July	R 1,690	R 2,398	R 1,305	R 1,551	R 14,057	R 2,401	R 3,779	R 2,472	19,712	R 4,101	R 46,521	NA
August	R 1,698	R 2,451	R 1,250	R 1,608	R 14,547	R 2,532	R 3,860	R 2,684	20,131	R 4,224	R 47,977	NA
September	R 1,742	R 2,426	R 1,319	R 1,646	R 14,521	R 2,455	R 3,723	R 2,642	19,864	R 4,078	R 47,282	NA
October	R 1,672	R 2,457	R 1,236	R 1,594	R 14,270	R 2,347	R 3,777	R 2,532	19,622	R 4,137	R 46,684	NA
November	R 1,566	R 2,502	R 1,206	R 1,596	R 14,057	R 2,386	R 4,158	R 2,780	19,655	R 4,211	R 47,246	NA
December	R 1,660	R 2,373	R 1,287	R 1,564	R 14,055	R 2,467	R 4,596	R 2,843	19,979	R 4,251	R 48,190	NA
Average	R 1,661	R 2,410	R 1,253	R 1,586	R 13,982	R 2,379	R 4,026	R 2,630	19,631	R 4,172	R 46,820	R 96,892
2017 January	R 1,738	R 2,273	R 1,178	R 1,445	R 13,378	R 2,350	R 4,176	R 2,665	19,234	R 3,994	R 45,798	NA
February	R 1,706	R 2,367	R 1,234	R 1,652	R 13,797	R 2,325	R 4,565	R 2,739	19,188	R 4,284	R 46,897	NA
March	R 1,709	R 2,569	R 1,280	R 1,492	R 14,054	R 2,376	R 4,279	R 2,668	20,033	R 4,326	R 47,736	NA
April	1,625	2,411	1,196	1,637	13,780	2,189	3,822	2,522	19,527	4,030	45,871	NA
4-Month Average	1,695	2,406	1,222	1,553	13,751	2,311	4,205	2,647	19,503	4,156	46,573	NA
2016 4-Month Average	1,666	2,429	1,220	1,569	13,664	2,315	4,324	2,623	19,401	4,180	46,506	NA
2015 4-Month Average	1,706	2,366	1,218	1,530	13,497	2,396	4,565	2,437	19,371	4,126	46,391	NA

^a Data are for unified Germany, i.e., the former East Germany and West Germany.

^b "OECD Europe" consists of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and the United Kingdom; for 1984 forward, Czech Republic, Hungary, Poland, and Slovakia; and, for 2000 forward, Slovenia.

^c "Other OECD" consists of Australia, New Zealand, and the U.S. Territories; for 1984 forward, Mexico; and, for 2000 forward, Chile, Estonia, and Israel.

^d The Organization for Economic Cooperation and Development (OECD) consists of "OECD Europe," Canada, Japan, South Korea, the United States, and "Other OECD."

R=Revised. NA=Not available.

Notes: • Totals may not equal sum of components due to independent

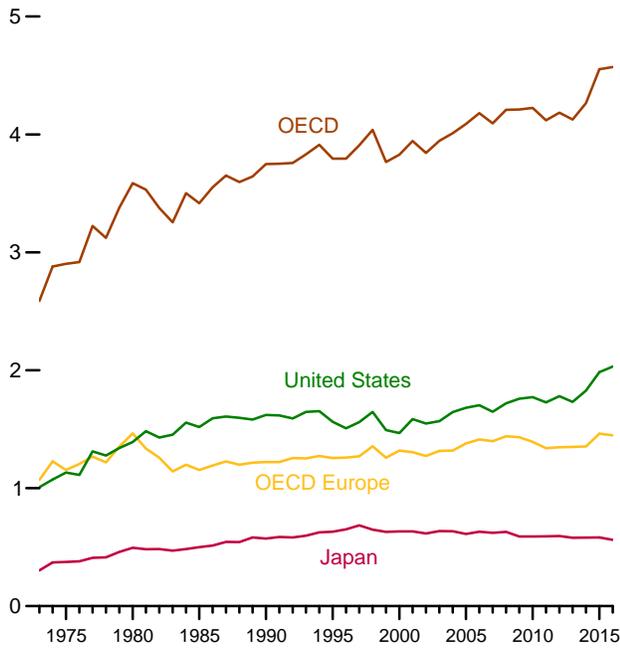
rounding. • U.S. geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#international> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

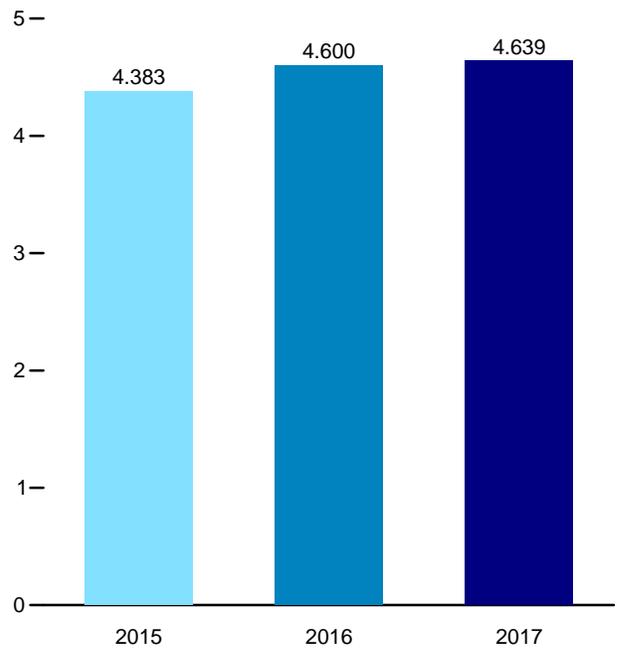
Sources: • **United States:** Table 3.1. • **Chile, East Germany, Former Czechoslovakia, Hungary, Mexico, Poland, South Korea, Non-OECD Countries, U.S. Territories, and World: 1973–1979**—U.S. Energy Information Administration (EIA), International Energy Database. • **Countries Other Than United States: 1980–2008**—EIA, International Energy Statistics (IES). • **OECD Countries, and U.S. Territories: 2009 forward**—EIA, IES. • **World: 2009 forward**—EIA, International Energy Statistics Database. • **All Other Data**—International Energy Agency (IEA), *Quarterly Oil Statistics and Energy Balances in OECD Countries*, various issues.

Figure 11.3 Petroleum Stocks in OECD Countries
(Billion Barrels)

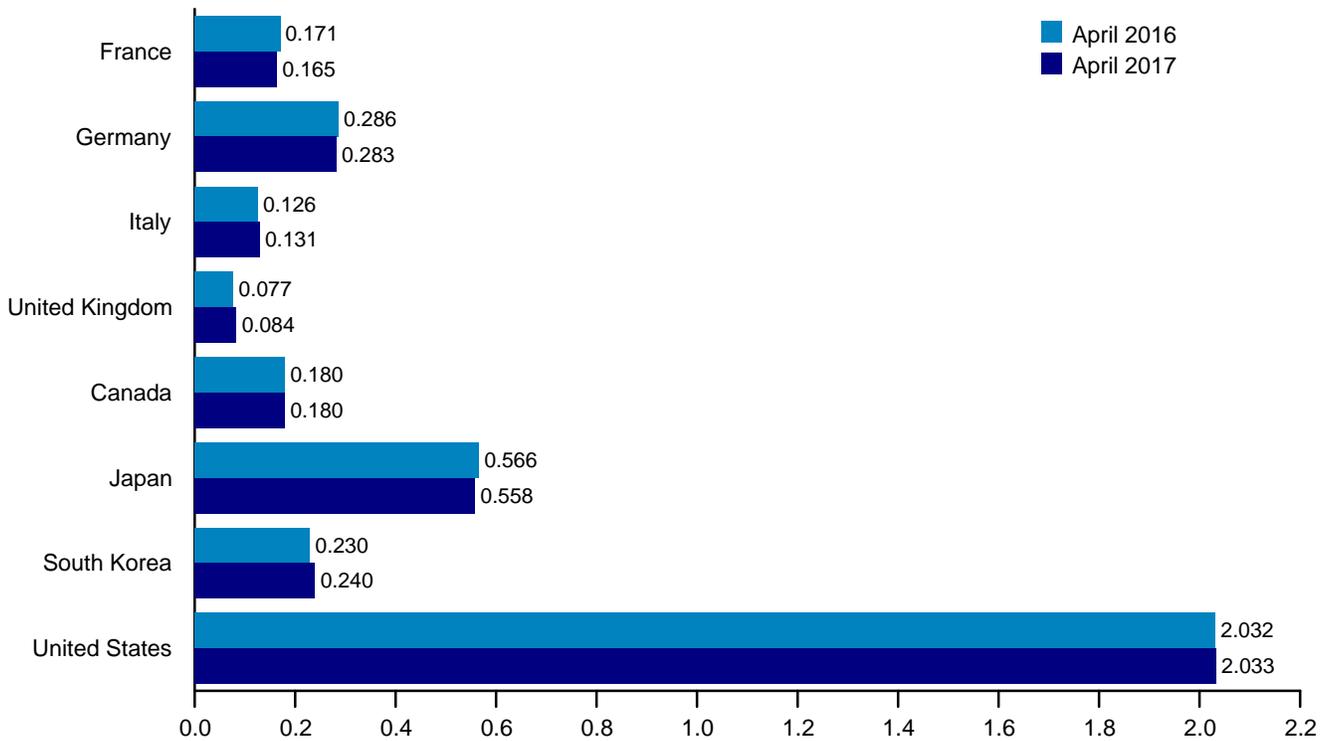
Overview, End of Year, 1973–2016



OECD Stocks, End of Month, April



Selected OECD Countries, End of Month



Note: OECD is the Organization for Economic Cooperation and Development.
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#international>.
Source: Table 11.3.

Table 11.3 Petroleum Stocks in OECD Countries
(Million Barrels)

	France	Germany ^a	Italy	United Kingdom	OECD Europe ^b	Canada	Japan	South Korea	United States	Other OECD ^c	OECD ^d
1973 Year	201	181	152	156	1,070	140	303	NA	1,008	67	2,588
1975 Year	225	187	143	165	1,154	174	375	NA	1,133	67	2,903
1980 Year	243	319	170	168	1,464	164	495	NA	1,392	72	3,587
1985 Year	139	277	156	131	1,154	112	500	13	1,519	119	3,417
1990 Year	143	280	171	103	1,222	143	572	64	1,621	126	3,749
1995 Year	155	302	162	101	1,256	132	631	92	1,563	122	3,795
1996 Year	154	303	152	103	1,259	127	651	123	1,507	127	3,794
1997 Year	161	299	147	100	1,271	144	685	124	1,560	123	3,907
1998 Year	169	323	153	104	1,355	139	649	129	1,647	120	4,039
1999 Year	160	290	148	101	1,258	141	629	132	1,493	114	3,766
2000 Year	170	272	157	100	1,318	143	634	140	1,468	126	3,829
2001 Year	165	273	151	113	1,306	154	634	143	1,586	120	3,944
2002 Year	170	253	156	104	1,273	155	615	140	1,548	112	3,843
2003 Year	179	273	153	100	1,316	165	636	155	1,568	105	3,945
2004 Year	177	267	154	101	1,319	154	635	149	1,645	108	4,010
2005 Year	185	283	151	95	1,380	168	612	135	1,682	112	4,088
2006 Year	182	283	153	103	1,413	169	631	152	1,703	113	4,180
2007 Year	180	275	152	92	1,398	163	621	143	1,648	121	4,094
2008 Year	179	279	148	93	1,441	162	629	135	1,719	124	4,209
2009 Year	175	284	146	89	1,432	157	591	155	1,758	118	4,212
2010 Year	168	287	143	83	1,393	184	590	165	1,773	119	4,224
2011 Year	165	281	135	80	1,338	178	592	167	1,728	117	4,120
2012 Year	162	288	126	80	1,347	174	594	181	1,780	107	4,184
2013 Year	167	290	125	78	1,350	170	580	185	1,732	111	4,127
2014 Year	168	284	119	78	1,354	193	581	197	1,827	114	4,266
2015 January	170	284	116	73	1,371	192	574	197	1,850	114	4,298
February	170	286	113	75	1,383	184	568	198	1,850	112	4,295
March	173	284	121	76	1,407	183	568	201	1,883	110	4,352
April	170	284	124	85	1,411	185	558	210	1,909	110	4,383
May	175	288	122	78	1,419	181	582	224	1,931	107	4,444
June	170	286	117	77	1,409	176	578	225	1,941	114	4,443
July	168	281	116	74	1,400	184	589	223	1,939	114	4,449
August	167	283	123	77	1,429	185	594	227	1,962	111	4,508
September	167	281	117	79	1,433	182	590	226	1,971	111	4,513
October	165	280	118	80	1,436	183	588	223	1,979	107	4,515
November	164	281	117	83	1,446	187	582	222	1,992	104	4,533
December	168	285	117	81	1,462	188	582	228	1,985	109	4,553
2016 January	171	287	120	83	1,486	187	580	219	2,009	112	4,593
February	169	289	123	81	1,493	183	564	233	2,013	109	4,595
March	166	289	120	77	1,478	184	560	236	2,021	111	4,590
April	171	286	126	77	1,479	180	566	230	2,032	112	4,600
May	167	289	123	81	1,487	169	574	235	2,048	115	4,626
June	167	288	121	82	1,478	175	573	238	2,047	118	4,629
July	169	290	125	75	1,498	186	577	238	2,062	121	4,681
August	167	287	130	80	1,484	186	585	233	2,063	116	4,667
September	167	285	127	78	1,467	185	587	239	2,048	115	4,640
October	163	287	128	77	1,449	190	587	238	2,050	114	4,627
November	166	283	126	80	1,454	190	573	238	2,054	107	4,616
December	162	285	124	82	1,448	183	562	230	2,031	116	4,571
2017 January	166	286	129	82	1,501	185	562	238	2,053	117	4,656
February	166	286	131	82	1,505	187	556	236	2,049	115	4,647
March	168	281	134	81	1,498	^R 185	546	238	2,033	120	^R 4,619
April	165	283	131	84	1,505	180	558	240	2,033	121	4,639

^a Through December 1983, the data for Germany are for the former West Germany only. Beginning with January 1984, the data for Germany are for the unified Germany, i.e., the former East Germany and West Germany.

^b "OECD Europe" consists of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and the United Kingdom; for 1984 forward, Czech Republic, Hungary, Poland, and Slovakia; and, for 2000 forward, Slovenia.

^c "Other OECD" consists of Australia, New Zealand, and the U.S. Territories; for 1984 forward, Mexico; and, for 2000 forward, Chile, Estonia, and Israel.

^d The Organization for Economic Cooperation and Development (OECD) consists of "OECD Europe," Canada, Japan, South Korea, the United States, and "Other OECD."

R=Revised. NA=Not available.

Notes: • Stocks are at end of period. • Petroleum stocks include crude oil

(including strategic reserves), unfinished oils, natural gas plant liquids, and refined products. • In the United States in January 1975, 1981, and 1983, numerous respondents were added to bulk terminal and pipeline surveys, thereby affecting subsequent stocks reported. New-basis end-of-year U.S. stocks, in million barrels, would have been 1,121 in 1974, 1,425 in 1980, and 1,461 in 1982. • Totals may not equal sum of components due to independent rounding. • U.S. geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#international> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: • **United States:** Table 3.4. • **U.S. Territories:** 1983 forward—U.S. Energy Information Administration, International Energy Database. • **All Other Data:** 1973–1982—International Energy Agency (IEA), *Quarterly Oil Statistics and Energy Balances*, various issues. 1983—IEA, Monthly Oil and Gas Statistics Database. 1984 forward—IEA, Monthly Oil Data Service, July 13, 2017.

International Petroleum

Tables 11.1a and 11.1b Sources

United States

Table 3.1.

All Other Countries and World, Annual Data

1973–1979: U.S. Energy Information Administration (EIA), *International Energy Annual 1981*, Table 8.

1980 forward: EIA, International Energy Statistics Database, July 2017.

All Other Countries and World, Monthly Data

1973–1980: *Petroleum Intelligence Weekly (PIW)*, *Oil & Gas Journal (OGJ)*, and EIA adjustments.

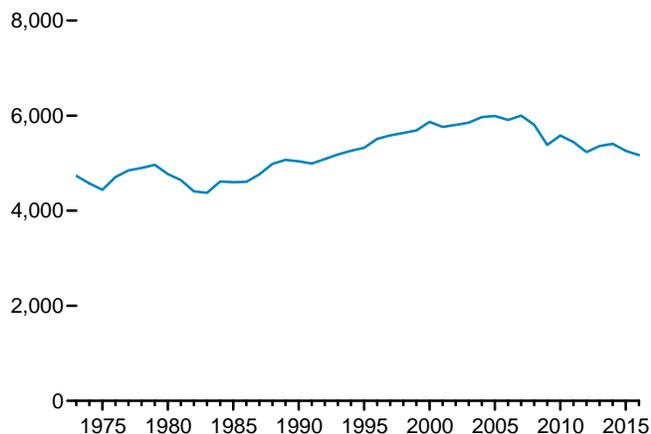
1981–1993: *PIW*, *OGJ*, and other industry sources.

1994 forward: EIA, International Energy Statistics Database, July 2017.

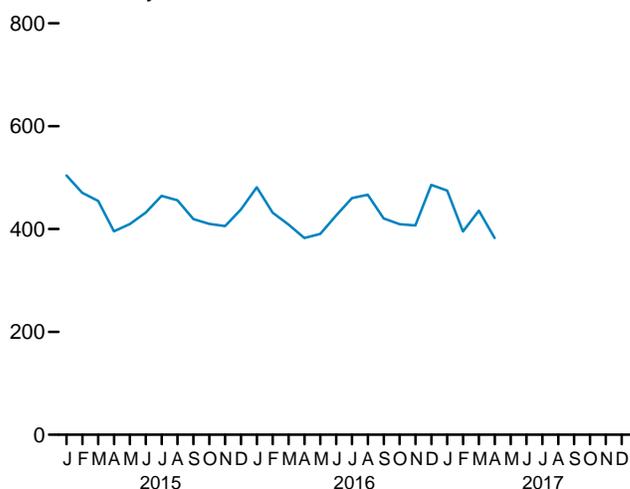
12. Environment

Figure 12.1 Carbon Dioxide Emissions From Energy Consumption by Source
(Million Metric Tons of Carbon Dioxide)

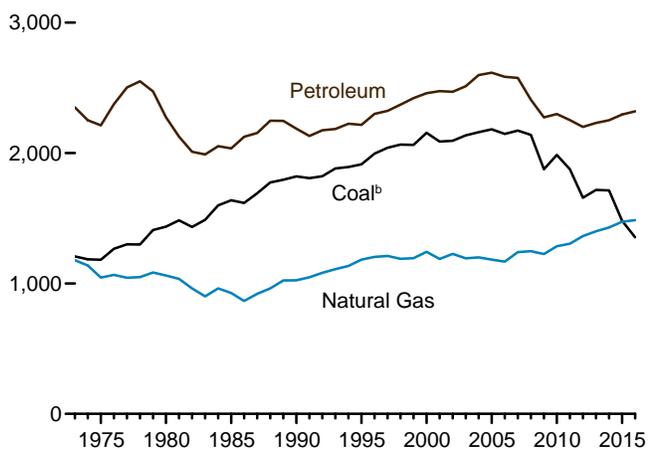
Total,^a 1973–2016



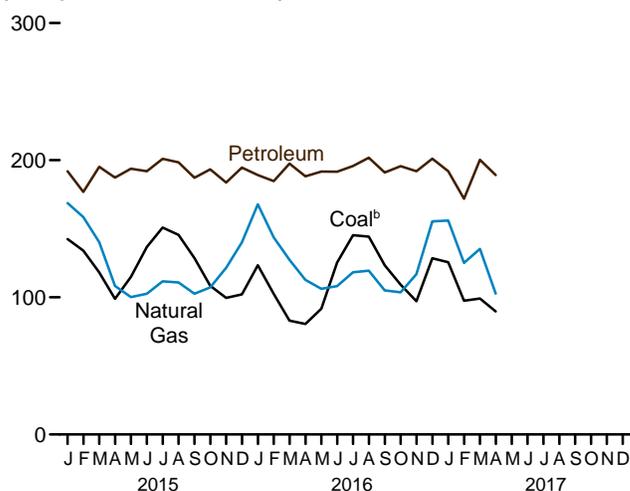
Total,^a Monthly



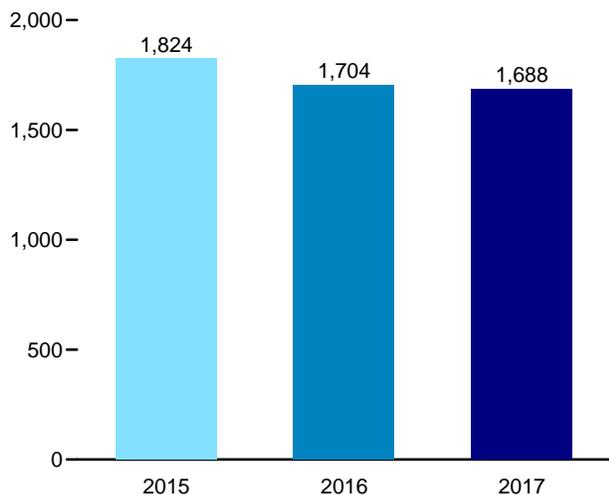
By Major Source, 1973–2016



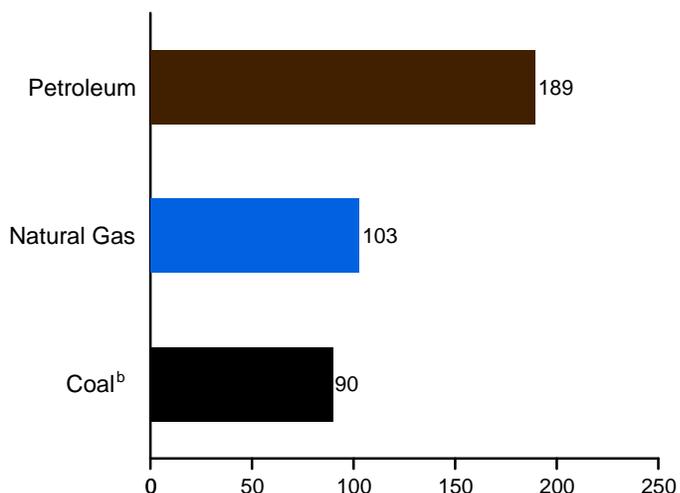
By Major Source, Monthly



Total,^a January–April



By Major Source, April 2017



^aExcludes emissions from biomass energy consumption.
^bIncludes coal coke net imports.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#environment>.
Source: Table 12.1.

Table 12.1 Carbon Dioxide Emissions From Energy Consumption by Source
(Million Metric Tons of Carbon Dioxide^a)

	Coal ^b	Natural Gas ^c	Petroleum										Total ^{h,i}	
			Aviation Gasoline	Distillate Fuel Oil ^d	Jet Fuel	Kero-sene	LPG ^e	Lubri-cants	Motor Gasoline ^f	Petroleum Coke	Residual Fuel Oil	Other ^g		Total
1973 Total	1,207	1,178	6	480	155	32	92	13	911	54	508	100	2,350	4,735
1975 Total	1,181	1,046	5	443	146	24	82	11	911	51	443	97	2,212	4,439
1980 Total	1,436	1,061	4	446	156	24	87	13	900	49	453	142	2,275	4,771
1985 Total	1,638	926	3	445	178	17	87	12	930	54	216	93	2,036	4,600
1990 Total	1,821	1,024	3	470	223	6	67	13	988	70	220	127	2,187	5,039
1995 Total	1,913	1,183	3	498	222	8	80	13	1,045	76	152	121	2,216	5,323
1996 Total	1,995	1,204	3	524	232	9	86	12	1,063	79	152	139	2,300	5,510
1997 Total	2,040	1,210	3	534	234	10	87	13	1,075	80	142	145	2,323	5,584
1998 Total	2,064	1,189	2	537	238	12	82	14	1,107	93	158	128	2,272	5,635
1999 Total	2,062	1,193	3	555	245	11	90	14	1,128	96	148	133	2,422	5,688
2000 Total	2,155	1,243	3	579	254	10	97	14	1,136	86	163	118	2,459	5,868
2001 Total	2,088	1,188	2	597	243	11	88	13	1,152	89	144	135	2,474	5,761
2002 Total	2,095	1,227	2	586	237	6	91	12	1,183	96	125	130	2,470	5,804
2003 Total	2,136	1,193	2	610	231	8	87	11	1,187	96	138	142	2,513	5,853
2004 Total	2,160	1,200	2	632	240	10	87	12	1,210	107	155	144	2,598	5,970
2005 Total	2,182	1,183	2	639	246	10	84	12	1,209	106	165	143	2,617	5,993
2006 Total	2,147	1,167	2	645	240	8	80	11	1,217	106	122	152	2,584	5,910
2007 Total	2,172	1,241	2	647	238	5	83	12	1,211	100	128	150	2,576	6,000
2008 Total	2,140	1,248	2	610	226	2	79	11	1,143	93	110	132	2,409	5,809
2009 Total	1,876	1,225	2	559	204	3	78	10	1,129	87	90	112	2,273	5,386
2010 Total	1,986	1,286	2	585	210	3	79	11	1,112	82	93	122	2,299	5,582
2011 Total	1,876	1,305	2	599	209	2	78	10	1,078	79	79	117	2,252	5,445
2012 Total	1,657	1,363	2	574	206	1	81	9	1,071	79	65	113	2,200	5,232
2013 Total	1,718	1,400	2	581	210	1	88	10	1,087	77	56	119	2,231	5,360
2014 Total	1,713	1,430	2	614	216	1	83	10	1,095	76	45	110	2,252	5,406
2015 January	143	169	(s)	54	17	(s)	9	1	90	7	4	8	192	504
February	134	159	(s)	53	16	(s)	8	1	83	4	3	9	177	470
March	118	140	(s)	53	19	(s)	7	1	94	7	4	9	195	455
April	99	108	(s)	50	18	(s)	6	1	93	7	2	9	187	395
May	115	100	(s)	49	19	(s)	6	1	96	7	4	12	194	410
June	137	103	(s)	49	20	(s)	6	1	95	7	3	11	192	432
July	151	112	(s)	50	21	(s)	7	1	99	7	5	11	201	465
August	145	111	(s)	50	20	(s)	7	1	99	8	4	10	198	456
September	129	103	(s)	51	18	(s)	6	1	94	5	4	9	187	419
October	108	107	(s)	52	20	(s)	7	1	96	6	4	7	193	410
November	100	122	(s)	47	18	(s)	7	1	92	5	4	9	184	406
December	102	140	(s)	49	20	(s)	8	1	95	5	5	10	195	438
Total	1,480	1,473	1	607	227	1	85	11	1,126	76	46	115	2,295	5,259
2016 January	123	168	(s)	49	18	(s)	9	1	90	6	5	10	189	481
February	102	144	(s)	48	18	(s)	8	1	90	6	3	11	185	432
March	83	127	(s)	51	19	(s)	7	1	98	7	6	9	198	409
April	81	113	(s)	48	19	(s)	6	1	93	5	7	9	188	382
May	92	106	(s)	48	19	(s)	6	1	98	5	5	9	192	391
June	125	108	(s)	48	21	(s)	5	1	97	4	6	9	192	426
July	145	118	(s)	46	21	(s)	6	1	100	6	7	9	196	460
August	144	R 119	(s)	50	21	(s)	6	1	100	8	5	11	202	467
September	123	105	(s)	49	20	(s)	7	1	96	5	4	10	191	420
October	109	104	(s)	52	20	(s)	7	1	95	6	5	10	196	410
November	97	117	(s)	49	20	(s)	7	1	93	9	5	8	192	407
December	128	155	(s)	52	21	(s)	8	1	97	7	5	10	201	486
Total	1,354	1,485	1	589	236	1	82	11	1,146	75	63	115	2,320	R 5,170
2017 January	126	156	(s)	49	20	(s)	9	1	88	8	7	10	192	475
February	R 97	125	(s)	45	17	(s)	7	1	84	4	4	9	172	395
March	99	135	(s)	54	21	(s)	7	1	98	3	5	12	200	436
April	90	103	(s)	47	19	(s)	7	1	93	6	5	11	189	383
4-Month Total	412	519	(s)	195	77	(s)	30	3	364	21	21	42	753	1,688
2016 4-Month Total	389	552	(s)	196	74	(s)	30	4	371	25	21	39	760	1,704
2015 4-Month Total	494	576	(s)	210	71	(s)	31	4	360	25	14	36	751	1,824

^a Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

^b Includes coal coke net imports.

^c Natural gas, excluding supplemental gaseous fuels.

^d Distillate fuel oil, excluding biodiesel.

^e Liquefied petroleum gases.

^f Finished motor gasoline, excluding fuel ethanol.

^g Aviation gasoline blending components, crude oil, motor gasoline blending components, pentanes plus, petrochemical feedstocks, special naphthas, still gas, unfinished oils, waxes, and miscellaneous petroleum products.

^h Includes electric power sector use of geothermal energy and non-biomass waste. See Table 12.6.

ⁱ Excludes emissions from biomass energy consumption. See Table 12.7.

R=Revised. (s)=Less than 0.5 million metric tons.

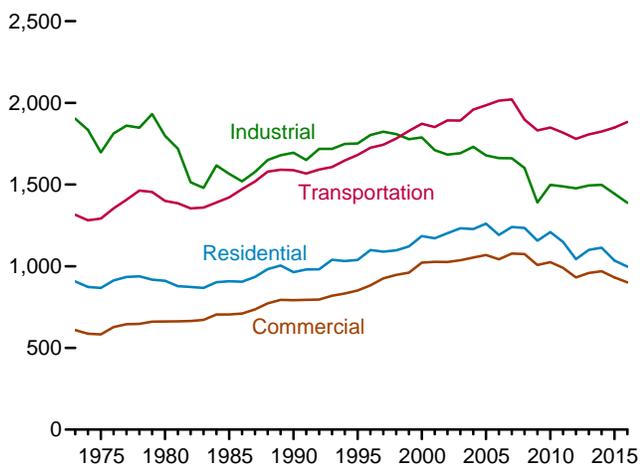
Notes: • Data are estimates for carbon dioxide emissions from energy consumption, including the nonfuel use of fossil fuels. See "Section 12 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 12.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#environment> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

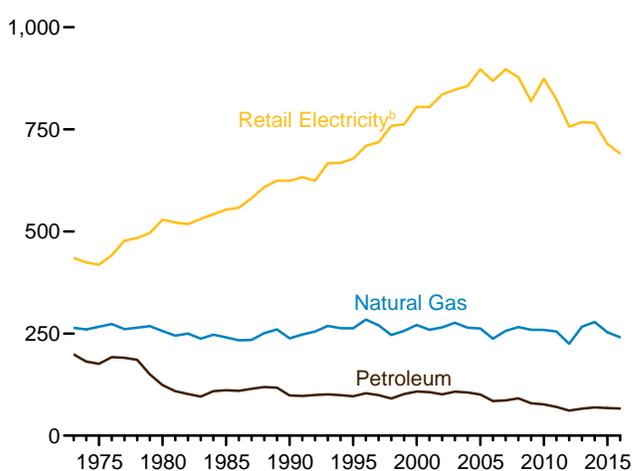
Sources: See end of section.

Figure 12.2 Carbon Dioxide Emissions From Energy Consumption by Sector
(Million Metric Tons of Carbon Dioxide)

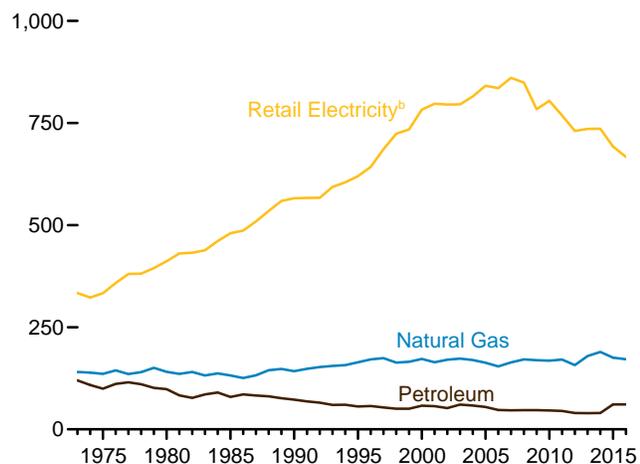
Total^a by End-Use Sector,^b 1973–2016



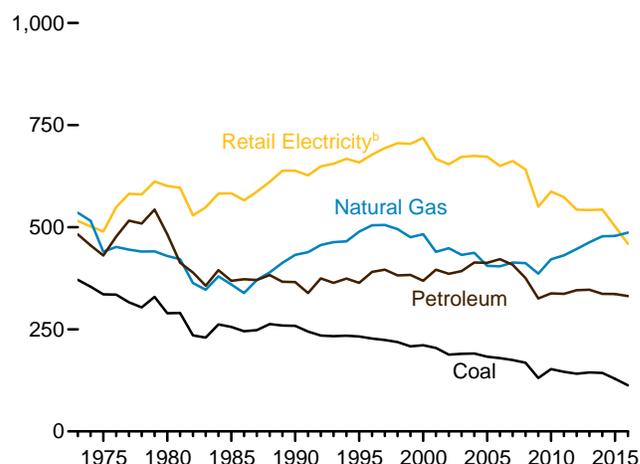
Residential Sector by Major Source, 1973–2016



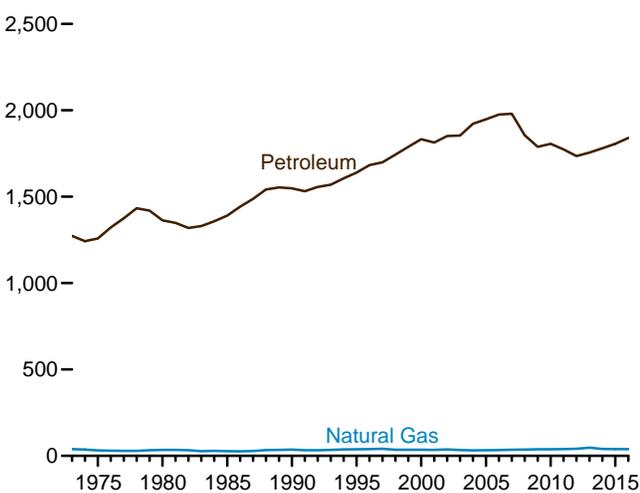
Commercial Sector by Major Source, 1973–2016



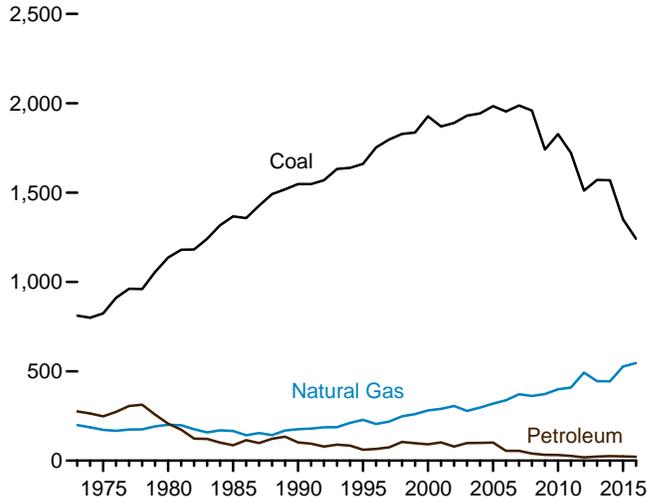
Industrial Sector by Major Source, 1973–2016



Transportation Sector by Major Source, 1973–2016



Electric Power Sector by Major Source, 1973–2016



^a Excludes emissions from biomass energy consumption.

^b Emissions from energy consumption in the electric power sector are allocated to the end-use sectors in proportion to each sector's share of

total electricity retail sales.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#environment>.
Sources: Tables 12.2–12.6.

Table 12.2 Carbon Dioxide Emissions From Energy Consumption: Residential Sector
(Million Metric Tons of Carbon Dioxide^a)

	Coal	Natural Gas ^b	Petroleum				Retail Electricity ^e	Total ^f
			Distillate Fuel Oil ^c	Kerosene	LPG ^d	Total		
1973 Total	9	264	147	16	36	199	435	907
1975 Total	6	266	132	12	32	176	419	867
1980 Total	3	256	96	8	20	124	529	911
1985 Total	4	241	80	11	20	111	553	909
1990 Total	3	238	72	5	22	98	624	963
1995 Total	2	263	66	5	25	96	678	1,039
1996 Total	2	284	68	6	30	104	710	1,099
1997 Total	2	270	64	7	29	99	719	1,090
1998 Total	1	247	56	8	27	91	759	1,097
1999 Total	1	257	60	8	33	102	762	1,122
2000 Total	1	271	66	7	35	108	805	1,185
2001 Total	1	259	66	7	33	106	805	1,171
2002 Total	1	265	63	4	34	101	835	1,203
2003 Total	1	276	68	5	34	108	847	1,232
2004 Total	1	264	67	6	32	106	856	1,227
2005 Total	1	262	62	6	32	101	897	1,261
2006 Total	1	237	52	5	28	85	869	1,191
2007 Total	1	257	53	3	31	86	897	1,241
2008 Total	NA	266	55	2	35	91	877	1,234
2009 Total	NA	259	43	2	35	79	819	1,157
2010 Total	NA	259	41	2	33	77	874	1,210
2011 Total	NA	255	38	1	31	70	823	1,148
2012 Total	NA	225	35	1	25	61	757	1,043
2013 Total	NA	267	36	1	30	66	768	1,100
2014 Total	NA	278	39	1	29	69	766	1,113
2015 January	NA	51	6	(s)	3	8	72	132
February	NA	50	5	(s)	2	7	66	123
March	NA	35	4	(s)	2	6	57	98
April	NA	18	2	(s)	2	4	42	64
May	NA	10	2	(s)	2	5	49	63
June	NA	7	1	(s)	2	3	65	75
July	NA	6	2	(s)	2	4	81	90
August	NA	6	2	(s)	2	4	77	87
September	NA	6	2	(s)	2	4	64	74
October	NA	11	5	(s)	2	7	48	66
November	NA	22	5	(s)	2	7	44	74
December	NA	32	5	(s)	3	8	51	92
Total	NA	253	40	1	27	68	714	1,035
2016 January	NA	49	5	(s)	3	8	65	122
February	NA	38	5	(s)	2	7	52	98
March	NA	25	3	(s)	2	6	41	72
April	NA	18	3	(s)	2	5	38	61
May	NA	11	3	(s)	2	5	43	59
June	NA	7	2	(s)	2	4	66	77
July	NA	6	2	(s)	2	4	84	95
August	NA	6	2	(s)	2	4	84	93
September	NA	6	2	(s)	2	5	65	76
October	NA	10	3	(s)	2	6	50	66
November	NA	21	4	(s)	2	6	43	70
December	NA	44	6	(s)	2	8	62	115
Total	NA	241	39	1	26	66	690	998
2017 January	NA	46	6	(s)	3	8	63	117
February	NA	32	4	(s)	2	6	45	83
March	NA	32	4	(s)	2	6	46	84
April	NA	15	3	(s)	2	5	40	60
4-Month Total	NA	125	17	(s)	9	26	194	345
2016 4-Month Total	NA	130	16	(s)	9	26	197	353
2015 4-Month Total	NA	153	16	(s)	9	26	237	416

^a Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

^d Liquefied petroleum gases.

^e 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. See Tables 7.6 and 12.6.

^f Excludes emissions from biomass energy consumption. See Table 12.7.

NA=Not available. (s)=Less than 0.5 million metric tons.

Notes: • Data are estimates for carbon dioxide emissions from energy consumption. See "Section 12 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 12.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#environment> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

Table 12.3 Carbon Dioxide Emissions From Energy Consumption: Commercial Sector
(Million Metric Tons of Carbon Dioxide^a)

	Coal	Natural Gas ^b	Petroleum						Retail Electricity ^f	Total ^g	
			Distillate Fuel Oil ^c	Kerosene	LPG ^d	Motor Gasoline ^e	Petroleum Coke	Residual Fuel Oil			Total
1973 Total	15	141	47	5	9	6	NA	52	120	334	609
1975 Total	14	136	43	4	8	6	NA	39	100	333	583
1980 Total	11	141	38	3	6	8	NA	44	98	412	662
1985 Total	13	132	46	2	6	7	NA	18	79	480	704
1990 Total	12	142	39	1	6	8	0	18	73	566	793
1995 Total	11	164	35	2	7	1	(s)	11	56	620	851
1996 Total	12	171	35	2	8	2	(s)	11	57	643	883
1997 Total	12	174	32	2	8	3	(s)	9	54	686	926
1998 Total	9	164	31	2	7	3	(s)	7	50	724	947
1999 Total	10	165	32	2	9	2	(s)	6	51	735	960
2000 Total	9	173	36	2	9	3	(s)	7	58	783	1,022
2001 Total	9	164	37	2	9	3	(s)	6	57	797	1,027
2002 Total	9	170	32	1	9	3	(s)	6	52	795	1,026
2003 Total	8	173	36	1	10	4	(s)	9	60	796	1,037
2004 Total	10	170	34	1	10	3	(s)	10	58	815	1,053
2005 Total	9	163	33	2	8	3	(s)	9	55	841	1,069
2006 Total	6	154	29	1	8	3	(s)	6	47	835	1,043
2007 Total	7	164	28	1	8	4	(s)	6	46	861	1,078
2008 Total	8	171	28	(s)	10	3	(s)	6	47	849	1,075
2009 Total	7	169	29	(s)	9	4	(s)	6	47	784	1,007
2010 Total	7	168	29	(s)	9	3	(s)	5	46	804	1,025
2011 Total	6	171	29	(s)	9	3	(s)	4	45	768	990
2012 Total	4	157	26	(s)	9	3	(s)	2	40	731	932
2013 Total	4	179	25	(s)	10	3	(s)	2	40	736	959
2014 Total	4	190	26	(s)	10	4	(s)	1	40	736	970
2015 January	(s)	29	4	(s)	1	2	(s)	(s)	7	59	95
February	(s)	28	3	(s)	1	2	(s)	(s)	6	56	91
March	(s)	21	2	(s)	1	2	(s)	(s)	5	52	79
April	(s)	13	1	(s)	1	2	(s)	(s)	4	48	65
May	(s)	9	1	(s)	1	2	(s)	(s)	4	56	69
June	(s)	7	1	(s)	1	2	0	(s)	4	65	76
July	(s)	7	1	(s)	1	2	0	(s)	4	71	82
August	(s)	7	1	(s)	1	2	(s)	(s)	4	69	81
September	(s)	8	1	(s)	1	2	(s)	(s)	4	62	74
October	(s)	11	3	(s)	1	2	(s)	(s)	6	55	72
November	(s)	16	3	(s)	1	2	(s)	(s)	6	50	72
December	(s)	19	4	(s)	1	2	(s)	(s)	7	49	75
Total	3	176	26	(s)	9	25	(s)	(s)	61	692	932
2016 January	(s)	28	3	(s)	1	2	(s)	(s)	6	55	89
February	(s)	23	3	(s)	1	2	(s)	(s)	6	47	76
March	(s)	16	2	(s)	1	2	(s)	(s)	5	43	65
April	(s)	13	2	(s)	1	2	(s)	(s)	5	43	61
May	(s)	9	2	(s)	1	2	0	(s)	5	50	64
June	(s)	8	1	(s)	1	2	(s)	(s)	4	63	75
July	(s)	7	1	(s)	1	2	(s)	(s)	4	71	83
August	(s)	8	1	(s)	1	2	0	(s)	4	72	84
September	(s)	8	2	(s)	1	2	0	(s)	4	62	74
October	(s)	11	2	(s)	1	2	0	(s)	5	55	71
November	(s)	^R 15	2	(s)	1	2	(s)	(s)	5	49	69
December	(s)	^R 25	4	(s)	1	2	(s)	(s)	7	57	89
Total	2	^R 171	26	(s)	9	26	(s)	(s)	61	667	902
2017 January	(s)	26	4	(s)	1	2	(s)	(s)	7	54	87
February	(s)	20	3	(s)	1	2	(s)	(s)	5	44	69
March	(s)	20	3	(s)	1	2	(s)	(s)	6	48	74
April	(s)	12	2	(s)	1	2	(s)	(s)	5	44	61
4-Month Total	1	78	11	(s)	3	8	(s)	(s)	22	190	291
2016 4-Month Total	1	80	11	(s)	3	8	(s)	(s)	22	188	291
2015 4-Month Total	1	92	11	(s)	3	8	(s)	(s)	22	215	330

^a Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

^d Liquefied petroleum gases.

^e Finished motor gasoline, excluding fuel ethanol.

^f 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. See Tables 7.6 and 12.6.

^g Excludes emissions from biomass energy consumption. See Table 12.7.

R=Revised. NA=Not available. (s)=Less than 0.5 million metric tons.

Notes: • Data are estimates for carbon dioxide emissions from energy consumption. See "Section 12 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 12.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#environment> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

Table 12.4 Carbon Dioxide Emissions From Energy Consumption: Industrial Sector
(Million Metric Tons of Carbon Dioxide^a)

	Coal	Coal Coke Net Imports	Natural Gas ^b	Petroleum									Retail Elec- tricity ^g	Total ^h
				Distillate Fuel Oil ^c	Kero- sene	LPG ^d	Lubri- cants	Motor Gasoline ^e	Petroleum Coke	Residual Fuel Oil	Other ^f	Total		
1973 Total	371	-1	536	106	11	44	7	18	52	144	100	483	515	1,904
1975 Total	336	2	440	97	9	39	6	16	51	117	97	431	490	1,697
1980 Total	289	-4	429	96	13	61	7	11	48	105	142	483	601	1,798
1985 Total	256	-2	360	81	3	59	6	15	54	57	93	369	583	1,566
1990 Total	258	1	432	84	1	37	7	13	67	31	127	366	638	1,695
1995 Total	233	7	489	82	1	47	7	14	67	25	121	364	659	1,751
1996 Total	227	3	505	86	1	48	6	14	71	24	139	391	678	1,803
1997 Total	224	5	505	88	1	50	7	15	70	21	145	396	694	1,824
1998 Total	219	8	495	88	2	47	7	14	80	16	128	382	706	1,809
1999 Total	208	7	475	86	1	47	7	11	85	14	133	383	704	1,778
2000 Total	211	7	483	87	1	52	7	11	76	17	118	369	719	1,788
2001 Total	204	3	440	95	2	45	6	21	79	14	135	396	667	1,711
2002 Total	188	7	448	88	1	47	6	22	79	13	130	386	654	1,683
2003 Total	190	6	432	85	2	41	6	23	78	16	142	392	672	1,692
2004 Total	191	16	437	88	2	44	6	26	85	18	144	413	674	1,731
2005 Total	183	5	405	92	3	42	6	25	82	20	143	413	672	1,678
2006 Total	179	7	404	91	2	43	6	26	85	16	152	422	650	1,662
2007 Total	175	3	414	91	1	43	6	21	83	13	150	408	662	1,661
2008 Total	168	5	412	98	(s)	32	6	17	78	13	132	376	642	1,602
2009 Total	131	-3	386	78	(s)	33	5	16	73	8	112	325	550	1,390
2010 Total	153	-1	421	84	1	35	6	17	68	6	122	338	587	1,498
2011 Total	146	1	431	90	(s)	36	5	17	65	6	117	337	574	1,489
2012 Total	141	(s)	447	93	(s)	45	5	17	70	3	113	346	543	1,477
2013 Total	144	-2	463	92	(s)	46	5	17	65	2	119	347	542	1,495
2014 Total	143	-2	478	100	(s)	42	5	14	64	2	110	337	543	1,498
2015 January	12	(s)	45	9	(s)	5	1	1	6	(s)	8	31	42	130
February	11	(s)	41	10	(s)	5	(s)	1	2	(s)	9	28	41	121
March	11	(s)	42	9	(s)	4	1	1	6	(s)	9	30	39	122
April	10	(s)	39	8	(s)	3	1	1	6	(s)	9	29	37	115
May	11	(s)	39	6	(s)	3	1	1	6	(s)	12	29	42	121
June	11	(s)	37	7	(s)	4	(s)	1	6	(s)	11	30	47	124
July	11	(s)	38	7	(s)	4	1	2	6	(s)	11	30	48	127
August	11	(s)	39	6	(s)	4	(s)	2	7	(s)	10	28	47	125
September	10	(s)	37	8	(s)	3	(s)	1	4	(s)	9	26	43	117
October	11	(s)	39	6	(s)	4	1	1	5	(s)	7	24	40	114
November	10	(s)	40	4	(s)	4	(s)	1	5	(s)	9	24	38	112
December	10	(s)	42	5	(s)	5	(s)	1	4	(s)	10	27	36	115
Total	129	-2	478	85	(s)	47	6	17	65	2	115	337	502	1,444
2016 January	10	(s)	45	8	(s)	5	(s)	1	6	(s)	10	30	38	122
February	10	(s)	41	8	(s)	5	(s)	1	5	(s)	11	31	33	R 116
March	10	(s)	42	8	(s)	4	1	1	6	(s)	9	29	31	112
April	9	(s)	39	7	(s)	3	(s)	1	4	(s)	9	25	32	106
May	9	(s)	39	6	(s)	3	(s)	1	4	(s)	9	24	36	108
June	9	(s)	38	6	(s)	3	1	1	3	(s)	9	24	42	113
July	9	(s)	39	4	(s)	3	(s)	2	5	(s)	9	23	46	117
August	9	(s)	40	7	(s)	3	(s)	2	7	(s)	11	30	46	124
September	9	(s)	38	7	(s)	4	(s)	1	4	(s)	10	27	40	114
October	9	(s)	39	8	(s)	4	(s)	1	5	(s)	10	29	38	115
November	9	(s)	41	8	(s)	4	(s)	1	8	(s)	8	29	35	114
December	10	(s)	45	7	(s)	5	(s)	1	6	(s)	10	30	39	123
Total	113	-2	487	83	(s)	45	5	17	63	2	115	331	459	1,388
2017 January	R 9	(s)	45	7	(s)	6	(s)	1	7	(s)	10	31	37	R 122
February	9	(s)	40	7	(s)	4	(s)	1	4	(s)	9	25	32	106
March	9	(s)	43	10	(s)	4	(s)	1	2	(s)	12	30	34	116
April	8	(s)	39	6	(s)	4	(s)	1	5	(s)	11	29	33	109
4-Month Total	36	-1	167	30	(s)	17	2	6	18	1	42	115	136	453
2016 4-Month Total	38	(s)	167	30	(s)	17	2	6	21	1	39	116	135	456
2015 4-Month Total	45	-1	166	36	(s)	17	2	5	21	(s)	36	118	159	487

^a Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

^d Liquefied petroleum gases.

^e Finished motor gasoline, excluding fuel ethanol.

^f Aviation gasoline blending components, crude oil, motor gasoline blending components, pentanes plus, petrochemical feedstocks, special naphthas, still gas, unfinished oils, waxes, and miscellaneous petroleum products.

^g 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. See Tables 7.6 and 12.6.

^h Excludes emissions from biomass energy consumption. See Table 12.7.

R=Revised. (s)=Less than 0.5 million metric tons and greater than -0.5 million metric tons.

Notes: • Data are estimates for carbon dioxide emissions from energy consumption, including the nonfuel use of fossil fuels. See "Section 12 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 12.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#environment> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

Table 12.5 Carbon Dioxide Emissions From Energy Consumption: Transportation Sector
(Million Metric Tons of Carbon Dioxide^a)

	Coal	Natural Gas ^b	Petroleum							Retail Elec- tricity ^f	Total ^g	
			Aviation Gasoline	Distillate Fuel Oil ^c	Jet Fuel	LPG ^d	Lubri- cants	Motor Gasoline ^e	Residual Fuel Oil			Total
1973 Total	(s)	39	6	163	152	3	6	886	57	1,273	2	1,315
1975 Total	(s)	32	5	155	145	3	6	889	56	1,258	2	1,292
1980 Total	(h)	34	4	204	155	1	6	881	110	1,363	2	1,400
1985 Total	(h)	28	3	232	178	2	6	908	62	1,391	3	1,421
1990 Total	(h)	36	3	268	223	1	7	967	80	1,548	3	1,588
1995 Total	(h)	38	3	307	222	1	6	1,029	72	1,640	3	1,681
1996 Total	(h)	39	3	327	232	1	6	1,047	67	1,683	3	1,725
1997 Total	(h)	41	3	341	234	1	6	1,057	56	1,700	3	1,744
1998 Total	(h)	35	2	352	238	1	7	1,090	53	1,743	3	1,782
1999 Total	(h)	36	3	365	245	1	7	1,115	52	1,789	3	1,828
2000 Total	(h)	36	3	377	254	1	7	1,122	70	1,833	4	1,873
2001 Total	(h)	35	2	387	243	1	6	1,128	46	1,813	4	1,852
2002 Total	(h)	37	2	394	237	1	6	1,158	53	1,852	4	1,892
2003 Total	(h)	33	2	408	231	1	6	1,161	45	1,854	5	1,892
2004 Total	(h)	32	2	433	240	1	6	1,181	58	1,922	5	1,959
2005 Total	(h)	33	2	444	246	2	6	1,182	66	1,948	5	1,986
2006 Total	(h)	33	2	467	240	2	5	1,188	71	1,976	5	2,014
2007 Total	(h)	35	2	469	238	1	6	1,186	78	1,980	5	2,021
2008 Total	(h)	37	2	424	226	3	5	1,124	73	1,856	5	1,898
2009 Total	(h)	38	2	405	204	2	5	1,109	62	1,789	5	1,832
2010 Total	(h)	38	2	426	210	2	5	1,091	70	1,806	5	1,849
2011 Total	(h)	39	2	437	209	2	5	1,058	61	1,774	4	1,818
2012 Total	(h)	41	2	416	206	2	5	1,051	53	1,735	4	1,780
2013 Total	(h)	47	2	424	210	3	5	1,066	46	1,756	4	1,807
2014 Total	(h)	40	2	443	216	3	5	1,077	35	1,781	4	1,825
2015 January	(h)	4	(s)	35	17	(s)	1	87	3	143	(s)	148
February	(h)	4	(s)	34	16	(s)	(s)	80	(s)	131	(s)	136
March	(h)	4	(s)	37	19	(s)	1	91	3	152	(s)	156
April	(h)	3	(s)	38	18	(s)	(s)	89	2	148	(s)	152
May	(h)	3	(s)	38	19	(s)	1	93	3	154	(s)	157
June	(h)	3	(s)	39	20	(s)	(s)	91	2	153	(s)	157
July	(h)	3	(s)	41	21	(s)	1	95	4	161	(s)	164
August	(h)	3	(s)	41	20	(s)	(s)	95	4	160	(s)	163
September	(h)	3	(s)	39	18	(s)	(s)	90	3	151	(s)	154
October	(h)	3	(s)	38	20	(s)	(s)	93	3	155	(s)	158
November	(h)	3	(s)	34	18	(s)	(s)	88	4	145	(s)	149
December	(h)	4	(s)	35	20	(s)	(s)	92	4	151	(s)	155
Total	(h)	39	1	449	227	3	5	1,083	37	1,806	4	1,848
2016 January	(h)	4	(s)	33	18	(s)	(s)	87	4	143	(s)	148
February	(h)	4	(s)	32	18	(s)	(s)	86	2	139	(s)	143
March	(h)	3	(s)	36	19	(s)	(s)	94	5	156	(s)	159
April	(h)	3	(s)	36	19	(s)	(s)	89	6	151	(s)	154
May	(h)	3	(s)	38	19	(s)	(s)	95	4	157	(s)	160
June	(h)	3	(s)	38	21	(s)	(s)	94	5	158	(s)	161
July	(h)	3	(s)	38	21	(s)	(s)	96	6	162	(s)	166
August	(h)	3	(s)	40	21	(s)	(s)	96	4	162	(s)	166
September	(h)	3	(s)	37	20	(s)	(s)	92	4	153	(s)	156
October	(h)	3	(s)	38	20	(s)	(s)	91	4	155	(s)	158
November	(h)	3	(s)	35	20	(s)	(s)	89	5	150	(s)	153
December	(h)	4	(s)	35	21	(s)	(s)	93	4	154	(s)	158
Total	(h)	39	1	437	236	2	5	1,102	55	1,840	4	1,883
2017 January	(h)	4	(s)	32	20	(s)	(s)	85	6	144	(s)	149
February	(h)	3	(s)	31	17	(s)	(s)	81	3	133	(s)	137
March	(h)	4	(s)	37	21	(s)	(s)	94	5	157	(s)	161
April	(h)	3	(s)	36	19	(s)	(s)	90	4	149	(s)	152
4-Month Total	(h)	14	(s)	136	77	1	2	350	18	584	1	599
2016 4-Month Total	(h)	14	(s)	137	74	1	2	357	18	589	1	604
2015 4-Month Total	(h)	15	(s)	145	71	1	2	347	9	575	1	591

^a Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

^d Liquefied petroleum gases.

^e Finished motor gasoline, excluding fuel ethanol.

^f 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. See Tables 7.6 and 12.6.

^g Excludes emissions from biomass energy consumption. See Table 12.7.

^h Beginning in 1978, the small amounts of coal consumed for transportation are reported as industrial sector consumption.

(s)=Less than 0.5 million metric tons.

Notes: • Data are estimates for carbon dioxide emissions from energy consumption, including the nonfuel use of fossil fuels. See "Section 12 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 12.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#environment> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

Table 12.6 Carbon Dioxide Emissions From Energy Consumption: Electric Power Sector
(Million Metric Tons of Carbon Dioxide^a)

	Coal	Natural Gas ^b	Petroleum				Geo-thermal	Non-Biomass Waste ^d	Total ^e
			Distillate Fuel Oil ^c	Petroleum Coke	Residual Fuel Oil	Total			
1973 Total	812	199	20	2	254	276	NA	NA	1,286
1975 Total	824	172	17	(s)	231	248	NA	NA	1,244
1980 Total	1,137	200	12	1	194	207	NA	NA	1,544
1985 Total	1,367	166	6	1	79	86	NA	NA	1,619
1990 Total	1,548	176	7	3	92	102	(s)	6	1,831
1995 Total	1,661	228	8	8	45	61	(s)	10	1,960
1996 Total	1,752	205	8	8	50	66	(s)	10	2,033
1997 Total	1,797	219	8	10	56	75	(s)	10	2,101
1998 Total	1,828	248	10	13	82	105	(s)	10	2,192
1999 Total	1,836	260	10	11	76	97	(s)	10	2,204
2000 Total	1,927	281	13	10	69	91	(s)	10	2,310
2001 Total	1,870	290	12	11	79	102	(s)	11	2,273
2002 Total	1,890	306	9	18	52	79	(s)	13	2,288
2003 Total	1,931	278	12	18	69	98	(s)	11	2,319
2004 Total	1,943	297	8	22	69	99	(s)	11	2,350
2005 Total	1,984	319	8	24	69	101	(s)	11	2,416
2006 Total	1,954	338	5	21	28	55	(s)	12	2,358
2007 Total	1,987	372	6	17	31	54	(s)	11	2,425
2008 Total	1,959	362	5	15	19	39	(s)	12	2,373
2009 Total	1,741	373	5	13	14	33	(s)	11	2,158
2010 Total	1,828	399	6	14	12	32	(s)	11	2,270
2011 Total	1,723	409	5	14	7	26	(s)	11	2,170
2012 Total	1,511	493	4	9	6	19	(s)	11	2,034
2013 Total	1,571	444	4	13	6	23	(s)	11	2,050
2014 Total	1,569	444	6	12	7	26	(s)	11	2,050
2015 January	130	39	1	1	1	3	(s)	1	173
February	123	36	2	1	2	5	(s)	1	164
March	107	39	(s)	1	(s)	2	(s)	1	148
April	89	36	(s)	1	(s)	1	(s)	1	127
May	104	40	(s)	1	(s)	2	(s)	1	147
June	126	49	(s)	1	(s)	2	(s)	1	177
July	140	57	(s)	1	1	2	(s)	1	200
August	135	56	(s)	1	1	2	(s)	1	194
September	118	49	(s)	1	(s)	2	(s)	1	170
October	98	43	(s)	1	(s)	2	(s)	1	144
November	89	40	(s)	1	(s)	2	(s)	1	132
December	92	42	(s)	1	(s)	1	(s)	1	136
Total	1,350	527	5	11	7	24	(s)	11	1,913
2016 January	114	42	(s)	1	1	2	(s)	1	159
February	93	38	(s)	1	1	2	(s)	1	133
March	73	41	(s)	1	(s)	2	(s)	1	116
April	71	39	(s)	1	(s)	2	(s)	1	114
May	82	44	(s)	1	(s)	2	(s)	1	129
June	116	53	(s)	1	(s)	2	(s)	1	172
July	136	63	(s)	1	1	2	(s)	1	201
August	135	63	(s)	1	1	2	(s)	1	201
September	114	50	(s)	1	(s)	2	(s)	1	167
October	100	41	(s)	1	(s)	1	(s)	1	143
November	88	36	(s)	1	(s)	2	(s)	1	127
December	119	37	(s)	1	(s)	2	(s)	1	158
Total	1,241	546	4	12	5	21	(s)	11	1,821
2017 January	116	35	(s)	1	(s)	2	(s)	1	154
February	88	30	(s)	1	(s)	1	(s)	1	121
March	90	37	(s)	1	(s)	1	(s)	1	129
April	81	34	(s)	(s)	(s)	1	(s)	1	117
4-Month Total	376	135	1	3	2	6	(s)	4	520
2016 4-Month Total	350	160	1	4	2	7	(s)	4	521
2015 4-Month Total	448	150	3	4	4	10	(s)	4	612

^a Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

^d Municipal solid waste from non-biogenic sources, and tire-derived fuels. Through 1994, also includes blast furnace gas, and other manufactured and waste gases derived from fossil fuels.

^e Excludes emissions from biomass energy consumption. See Table 12.7.

NA=Not available. (s)=Less than 0.5 million metric tons.

Notes: • Data are estimates for carbon dioxide emissions from energy

consumption. See "Section 12 Methodology and Sources" at end of section.

• See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 12.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#environment> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

Table 12.7 Carbon Dioxide Emissions From Biomass Energy Consumption
(Million Metric Tons of Carbon Dioxide^a)

	By Source					By Sector					
	Wood ^b	Biomass Waste ^c	Fuel Ethanol ^d	Bio-diesel	Total	Residential	Commercial ^e	Industrial ^f	Transportation	Electric Power ^g	Total
1973 Total	143	(s)	NA	NA	143	33	1	109	NA	(s)	143
1975 Total	140	(s)	NA	NA	141	40	1	100	NA	(s)	141
1980 Total	232	(s)	NA	NA	232	80	2	150	NA	(s)	232
1985 Total	252	14	3	NA	270	95	2	168	3	1	270
1990 Total	208	24	4	NA	237	54	8	147	4	23	237
1995 Total	222	30	8	NA	260	49	9	166	8	28	260
1996 Total	229	32	6	NA	266	51	10	170	6	30	266
1997 Total	222	30	7	NA	259	40	10	172	7	30	259
1998 Total	205	30	8	NA	242	36	9	160	8	30	242
1999 Total	208	29	8	NA	245	37	9	161	8	30	245
2000 Total	212	27	9	NA	248	39	9	161	9	29	248
2001 Total	188	33	10	(s)	231	35	9	147	10	31	231
2002 Total	187	36	12	(s)	235	36	9	144	12	35	235
2003 Total	188	36	16	(s)	240	38	9	141	16	37	240
2004 Total	199	35	20	(s)	255	38	10	151	20	36	255
2005 Total	200	37	23	1	261	40	10	150	23	37	261
2006 Total	197	36	31	2	266	36	9	151	33	38	266
2007 Total	196	37	39	3	276	39	9	146	41	39	276
2008 Total	193	39	55	3	290	44	10	139	57	40	290
2009 Total	181	41	62	3	287	47	10	125	64	41	287
2010 Total	186	42	73	2	303	41	10	136	74	42	303
2011 Total	189	42	73	8	312	42	11	139	80	40	312
2012 Total	189	42	73	8	312	39	10	141	80	42	312
2013 Total	204	45	75	13	337	54	11	141	87	43	337
2014 Total	210	47	76	13	346	55	12	142	88	49	346
2015 January	17	4	6	(s)	28	4	1	12	6	4	28
February	15	3	6	1	26	3	1	11	7	4	26
March	16	4	7	1	28	4	1	12	7	4	28
April	16	4	6	1	27	3	1	12	7	4	27
May	16	4	7	1	28	4	1	12	8	4	28
June	16	4	7	2	28	3	1	12	8	4	28
July	17	4	7	1	29	4	1	12	8	4	29
August	17	4	7	1	29	4	1	12	8	4	29
September	16	4	7	1	28	3	1	11	8	4	28
October	16	4	7	1	28	4	1	12	8	4	28
November	16	4	7	1	28	3	1	12	7	4	28
December	17	4	7	1	29	4	1	12	8	4	29
Total	194	47	79	14	334	41	14	141	90	48	334
2016 January	16	4	6	1	27	3	1	12	7	4	27
February	15	4	6	1	26	3	1	11	7	4	26
March	15	4	7	1	28	3	1	11	8	4	28
April	14	4	6	1	26	3	1	11	7	4	26
May	15	4	7	2	28	3	1	11	8	4	28
June	15	4	7	2	28	3	1	12	8	4	28
July	16	4	7	2	29	3	1	12	9	4	29
August	16	4	7	2	29	3	1	12	9	4	29
September	15	4	7	2	27	3	1	11	8	4	27
October	15	4	7	2	27	3	1	11	8	4	27
November	15	4	7	2	28	3	1	12	8	4	28
December	16	4	7	2	29	3	1	12	9	4	29
Total	184	47	81	19	332	35	14	138	98	47	332
2017 January	16	4	6	1	27	3	1	12	7	4	27
February	15	4	6	1	25	3	1	11	7	4	25
March	16	4	7	1	28	3	1	12	8	4	28
April	15	4	7	2	27	3	1	11	8	4	27
4-Month Total	61	16	26	5	108	12	5	46	30	15	108
2016 4-Month Total	61	16	26	5	107	12	5	46	30	16	107
2015 4-Month Total	64	15	25	3	108	14	4	47	27	16	108

^a Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

^b Wood and wood-derived fuels.

^c Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass.

^d Fuel ethanol minus denaturant.

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

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

^g 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.

NA=Not available. (s)=Less than 0.5 million metric tons.

Notes: • Carbon dioxide emissions from biomass energy consumption are excluded from the energy-related carbon dioxide emissions reported in Tables 12.1–12.6. See Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Data are estimates. See "Section 12 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#environment> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

Environment

Note 1. Emissions of Carbon Dioxide and Other Greenhouse Gases. Greenhouse gases are those gases—such as water vapor, carbon dioxide (CO₂), methane, nitrous oxide, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride—that are transparent to solar (short-wave) radiation but opaque to long-wave (infrared) radiation, thus preventing long-wave radiant energy from leaving Earth's atmosphere. The net effect is a trapping of absorbed radiation and a tendency to warm the planet's surface.

Energy-related carbon dioxide emissions account for about 98% of U.S. CO₂ emissions. The vast majority of CO₂ emissions come from fossil fuel combustion, with smaller amounts from the nonfuel use of fossil fuels, as well as from electricity generation using geothermal energy and non-biomass waste. Other sources of CO₂ emissions include industrial processes, such as cement and limestone production. Data in the U.S. Energy Information Administration's (EIA) *Monthly Energy Review (MER)* Tables 12.1–12.6 are estimates for U.S. CO₂ emissions from energy consumption, including the nonfuel use of fossil fuels (excluded are estimates for CO₂ emissions from biomass energy consumption, which appear in MER Table 12.7).

For annual U.S. estimates for emissions of CO₂ from all sources, as well as for emissions of other greenhouse gases, see EIA's *Emissions of Greenhouse Gases Report* at http://www.eia.gov/environment/emissions/ghg_report/.

Note 2. Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion. Carbon dioxide (CO₂) emissions from the combustion of biomass to produce energy are excluded from the energy-related CO₂ emissions reported in MER Tables 12.1–12.6, but appear in MER Table 12.7. According to current international convention (see the Intergovernmental Panel on Climate Change's "2006 IPCC Guidelines for National Greenhouse Gas Inventories"), carbon released through biomass combustion is excluded from reported energy-related emissions. The release of carbon from biomass combustion is assumed to be balanced by the uptake of carbon when the feedstock is grown, resulting in zero net emissions over some period of time. (This is not to say that biomass energy is carbon-neutral. Energy inputs are required in order to grow, fertilize, and harvest the feedstock and to produce and process the biomass into fuels.)

However, analysts have debated whether increased use of biomass energy may result in a decline in terrestrial carbon stocks, leading to a net positive release of carbon rather than the zero net release assumed by its exclusion from reported energy-related emissions. For example, the clearing of forests for biofuel crops could result in an initial release of carbon that is not fully recaptured in subsequent use of the land for agriculture.

To reflect the potential net emissions, the international convention for greenhouse gas inventories is to report

biomass emissions in the category "agriculture, forestry, and other land use," usually based on estimates of net changes in carbon stocks over time.

This indirect accounting of CO₂ emissions from biomass can potentially lead to confusion in accounting for and understanding the flow of CO₂ emissions within energy and non-energy systems. In recognition of this issue, reporting of CO₂ emissions from biomass combustion alongside other energy-related CO₂ emissions offers an alternative accounting treatment. It is important, however, to avoid misinterpreting emissions from fossil energy and biomass energy sources as necessarily additive. Instead, the combined total of direct CO₂ emissions from biomass and energy-related CO₂ emissions implicitly assumes that none of the carbon emitted was previously or subsequently reabsorbed in terrestrial sinks or that other emissions sources offset any such sequestration.

Section 12 Methodology and Sources

To estimate carbon dioxide emissions from energy consumption for the *Monthly Energy Review (MER)*, Tables 12.1–12.7, the U.S. Energy Information Administration (EIA) uses the following methodology and sources:

Step 1. Determine Fuel Consumption

Coal—Coal sectoral (residential, commercial, coke plants, other industrial, transportation, electric power) consumption data in thousand short tons are from MER Table 6.2. Coal sectoral consumption data are converted to trillion Btu by multiplying by the coal heat content factors in MER Table A5.

Coal Coke Net Imports—Coal coke net imports data in trillion Btu are derived from coal coke imports and exports data in MER Tables 1.4a and 1.4b.

Natural Gas (excluding supplemental gaseous fuels)—Natural gas sectoral consumption data in trillion Btu are from MER Tables 2.2–2.6.

Petroleum—Total and sectoral consumption (product supplied) data in thousand barrels per day for asphalt and road oil, aviation gasoline, distillate fuel oil, jet fuel, kerosene, liquefied petroleum gases (LPG), lubricants, motor gasoline, petroleum coke, and residual fuel oil are from MER Tables 3.5 and 3.7a–3.7c. For the component products of LPG (ethane/ethylene, propane/propylene, normal butane/butylene, and isobutane/isobutylene) and "other petroleum" (aviation gasoline blending components, crude oil, motor gasoline blending components, naphthas for petrochemical feedstock use, other oils for petrochemical feedstock use, pentanes plus, special naphthas, still gas, unfinished oils, waxes, and miscellaneous petroleum products), consumption (product supplied) data in thousand barrels per day are from EIA's *Petroleum Supply Annual (PSA)*, *Petroleum Supply Monthly (PSM)*, and earlier

publications (see sources for MER Table 3.5). Petroleum consumption data by product are converted to trillion Btu by multiplying by the petroleum heat content factors in MER Tables A1 and A3.

Biomass—Sectoral consumption data in trillion Btu for wood, biomass waste, fuel ethanol (minus denaturant), and biodiesel are from MER Tables 10.2a–10.2c.

Step 2. Remove Biofuels From Petroleum

Distillate Fuel Oil—Beginning in 2009, the distillate fuel oil data (for total and transportation sector) in Step 1 include biodiesel, a non-fossil renewable fuel. To remove the biodiesel portion from distillate fuel oil, data in thousand barrels per day for refinery and blender net inputs of renewable diesel fuel (from the PSA/PSM) are converted to trillion Btu by multiplying by the biodiesel heat content factor in MER Table A1, and then subtracted from the distillate fuel oil consumption values.

Motor Gasoline—Beginning in 1993, the motor gasoline data (for total, commercial sector, industrial sector, and transportation sector) in Step 1 include fuel ethanol, a non-fossil renewable fuel. To remove the fuel ethanol portion from motor gasoline, data in trillion Btu for fuel ethanol consumption (from MER Tables 10.2a, 10.2b, and 10.3) are subtracted from the motor gasoline consumption values. (Note that about 2% of fuel ethanol is fossil-based petroleum denaturant, to make the fuel ethanol undrinkable. For 1993–2008, petroleum denaturant is double counted in the PSA product supplied statistics, in both the original product category—e.g., pentanes plus—and also in the finished motor gasoline category; for this time period for MER Section 12, petroleum denaturant is removed along with the fuel ethanol from motor gasoline, but left in the original product. Beginning in 2009, petroleum denaturant is counted only in the PSA/PSM product supplied statistics for motor gasoline; for this time period for MER Section 12, petroleum denaturant is left in motor gasoline.)

Step 3. Remove Carbon Sequestered by Nonfuel Use

The following fuels have industrial nonfuel uses as chemical feedstocks and other products: coal, natural gas, asphalt and road oil, distillate fuel oil, liquefied petroleum gases (ethane/ethylene, propane/propylene, normal butane/butylene, and isobutane/isobutylene), lubricants (which have industrial and transportation nonfuel uses), naphthas for petrochemical feedstock use, other oils for petrochemical feedstock use, pentanes plus, petroleum coke, residual fuel oil, special naphthas, still gas, waxes, and miscellaneous petroleum products. In the nonfuel use of these fuels, some of the carbon is sequestered, and is thus subtracted from the fuel consumption values in Steps 1 and 2.

Estimates of annual nonfuel use and associated carbon sequestration are developed by EIA using the methodology

detailed in “Documentation for *Emissions of Greenhouse Gases in the United States 2008*” at [http://www.eia.gov/environment/archive/1605/ggrpt/documentation/pdf/0638\(2008\).pdf](http://www.eia.gov/environment/archive/1605/ggrpt/documentation/pdf/0638(2008).pdf).

To obtain monthly estimates of nonfuel use and associated carbon sequestration, monthly patterns for industrial consumption and product supplied data series are used. For coal nonfuel use, the monthly pattern for coke plants coal consumption from MER Table 6.2 is used. For natural gas, the monthly pattern for other industrial non-CHP natural gas consumption from MER Table 4.3 is used. For distillate fuel oil, petroleum coke, and residual fuel oil, the monthly patterns for industrial consumption from MER Table 3.7b are used. For the other petroleum products, the monthly patterns for product supplied from the PSA and PSM are used.

Step 4. Determine Carbon Dioxide Emissions From Energy Consumption

Carbon dioxide (CO₂) emissions data in million metric tons are calculated by multiplying consumption values in trillion Btu from Steps 1 and 2 (minus the carbon sequestered in nonfuel use in Step 3) by the CO₂ emissions factors at http://www.eia.gov/environment/archive/1605/ggrpt/excel/CO2_coeffs_09_v2.xls.

Coal—CO₂ emissions for coal are calculated for each sector (residential, commercial, coke plants, other industrial, transportation, electric power). Total coal emissions are the sum of the sectoral coal emissions.

Coal Coke Net Imports—CO₂ emissions for coal coke net imports are calculated.

Natural Gas—CO₂ emissions for natural gas are calculated for each sector (residential, commercial, industrial, transportation, electric power). Total natural gas emissions are the sum of the sectoral natural gas emissions.

Petroleum—CO₂ emissions are calculated for each petroleum product. Total petroleum emissions are the sum of the product emissions. Total LPG emissions are the sum of the emissions for the component products (ethane/ethylene, propane/propylene, normal butane/butylene, and isobutane/isobutylene); residential, commercial, and transportation sector LPG emissions are estimated by multiplying consumption values in trillion Btu from MER Tables 3.8a and 3.8c by the propane emissions factor; industrial sector LPG emissions are estimated as total LPG emissions minus emissions by the other sectors.

Geothermal and Non-Biomass Waste—Annual CO₂ emissions data for geothermal and non-biomass waste are EIA estimates based on Form EIA-923, “Power Plant Operations Report” (and predecessor forms). Monthly estimates are created by dividing the annual data by the number of days in the year and then multiplying by the number of days in the month. (Annual estimates for the current year are set equal to those of the previous year.)

Biomass—CO₂ emissions for wood, biomass waste, fuel ethanol (minus denaturant), and biodiesel are calculated for each sector. Total emissions for each biomass fuel are the sum of the sectoral emissions. The following factors, in million metric tons CO₂ per quadrillion Btu, are used: wood—93.80; biomass waste—90.70; fuel ethanol—68.44; and biodiesel—73.84. For 1973–1988, the biomass portion

of waste in MER Tables 10.2a–10.2c is estimated as 67%; for 1989–2000, the biomass portion of waste is estimated as 67% in 1989 to 58% in 2000, based on the biogenic shares of total municipal solid waste shown in EIA’s “Methodology for Allocating Municipal Solid Waste to Biogenic and Non-Biogenic Energy,” Table 1 at <http://www.eia.gov/totalenergy/data/monthly/pdf/historical/msw.pdf>.

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix A

British Thermal Unit 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 higher or upper) energy content of the fuels. Gross heat content rates are applied in all Btu calculations for the *Monthly 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% to 10%, depending on the specific fuel and its hydrogen content. Some fuels, such as unseasoned wood, can be more than 40% different in their gross and net heat content rates. See “Heat Content” and “British Thermal Unit (Btu)” in the Glossary for more information.

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 labeled “preliminary.” Often, the current year’s factors are labeled “estimate,” and are set equal to the previous year’s values until data become available to calculate the factors. 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 and Other Liquids
(Million Btu per Barrel, Except as Noted)

Commodity	Heat Content	Commodity	Heat Content
Asphalt and Road Oil	6.636	Motor Gasoline Blending Components (MGBC)	
Aviation Gasoline (Finished)	5.048	Through 2006	5.253
Aviation Gasoline Blending Components	5.048	Beginning in 2007	5.222
Biodiesel	5.359	Oxygenates (excluding Fuel Ethanol)	4.247
Crude Oil—see Table A2		Petrochemical Feedstocks	
Distillate Fuel Oil—see Table A3 for averages		Naphtha Less Than 401°F	5.248
15 ppm sulfur and under	5.770	Other Oils Equal to or Greater Than 401°F	5.825
Greater than 15 ppm to 500 ppm sulfur	5.817	Petroleum Coke—see Table A3 for averages	
Greater than 500 ppm sulfur	5.825	Total, through 2003	6.024
Fuel Ethanol—see Table A3		Catalyst, beginning in 2004	^a 6.287
Hydrocarbon Gas Liquids		Marketable, beginning in 2004	5.719
Ethane/Ethylene	3.082	Plant Condensate	5.418
Propane/Propylene	3.836	Renewable Fuels Except Fuel Ethanol	^b 5.359; ^b 5.494
Normal Butane/Butylene	4.326	Residual Fuel Oil	6.287
Isobutane/Isobutylene	3.974	Special Naphthas	5.248
Natural Gasoline (Pentanes Plus)	4.620	Still Gas	^c 6.287; ^c 6.000
Hydrogen	^a 6.287	Unfinished Oils	5.825
Jet Fuel, Kerosene Type	5.670	Unfractionated Stream	5.418
Jet Fuel, Naphtha Type	5.355	Waxes	5.537
Kerosene	5.670	Miscellaneous Products	5.796
Lubricants	6.065	Other Hydrocarbons	5.825
Motor Gasoline (Finished)—see Tables A2/A3			

^a Per residual fuel oil equivalent barrel (6.287 million Btu per barrel).

^b The biodiesel heat content factor, 5.359 million Btu per barrel, is used for “Biomass-Based Diesel Fuel” and “Other Renewable Fuels”; however, a factor of 5.494 million Btu per barrel is used for “Other Renewable Diesel Fuel.”

^c Through 2015, the still gas heat content factor is 6.000 million Btu per fuel oil equivalent barrel; beginning in 2016, the factor is 6.287 million Btu per residual fuel oil equivalent barrel.

Note: The values in this table are for gross heat contents. See “Heat Content” in Glossary.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#appendices>.

Sources: See “Thermal Conversion Factor Source Documentation,” which follows Table A6.

Table A2. Approximate Heat Content of Petroleum Production, Imports, and Exports
(Million Btu per Barrel)

	Production		Imports				Exports			
			Crude Oil ^a	Natural Gas Plant Liquids	Crude Oil ^a	Petroleum Products		Total	Crude Oil ^a	Petroleum Products		Total
	Motor Gasoline ^b	Total Products				Motor Gasoline ^c	Total Products			
1950	5.800	4.522	5.943	5.253	6.263	6.080	5.800	5.253	5.751	5.766
1955	5.800	4.406	5.924	5.253	6.234	6.040	5.800	5.253	5.765	5.768
1960	5.800	4.295	5.911	5.253	6.161	6.021	5.800	5.253	5.835	5.834
1965	5.800	4.264	5.872	5.253	6.123	5.997	5.800	5.253	5.742	5.743
1970	5.800	4.146	5.822	5.253	6.088	5.985	5.800	5.253	5.811	5.810
1975	5.800	3.984	5.821	5.253	5.935	5.858	5.800	5.253	5.747	5.748
1980	5.800	3.914	5.812	5.253	5.748	5.796	5.800	5.253	5.841	5.820
1981	5.800	3.930	5.818	5.253	5.659	5.775	5.800	5.253	5.837	5.821
1982	5.800	3.872	5.826	5.253	5.664	5.775	5.800	5.253	5.829	5.820
1983	5.800	3.839	5.825	5.253	5.677	5.774	5.800	5.253	5.800	5.800
1984	5.800	3.812	5.823	5.253	5.613	5.745	5.800	5.253	5.867	5.850
1985	5.800	3.815	5.832	5.253	5.572	5.736	5.800	5.253	5.819	5.814
1986	5.800	3.797	5.903	5.253	5.624	5.808	5.800	5.253	5.839	5.832
1987	5.800	3.804	5.901	5.253	5.599	5.820	5.800	5.253	5.860	5.858
1988	5.800	3.800	5.900	5.253	5.618	5.820	5.800	5.253	5.842	5.840
1989	5.800	3.826	5.906	5.253	5.641	5.833	5.800	5.253	5.869	5.857
1990	5.800	3.822	5.934	5.253	5.614	5.849	5.800	5.253	5.838	5.833
1991	5.800	3.807	5.948	5.253	5.636	5.873	5.800	5.253	5.827	5.823
1992	5.800	3.804	5.953	5.253	5.623	5.877	5.800	5.253	5.774	5.777
1993	5.800	3.801	5.954	5.253	5.539	5.866	5.800	5.253	5.681	5.693
1994	5.800	3.794	5.950	5.253	5.416	5.835	5.800	5.253	5.693	5.704
1995	5.800	3.796	5.938	5.253	5.345	5.830	5.800	5.253	5.692	5.703
1996	5.800	3.777	5.947	5.253	5.373	5.828	5.800	5.253	5.663	5.678
1997	5.800	3.762	5.954	5.253	5.333	5.836	5.800	5.253	5.663	5.678
1998	5.800	3.769	5.953	5.253	5.314	5.833	5.800	5.253	5.505	5.539
1999	5.800	3.744	5.942	5.253	5.291	5.815	5.800	5.253	5.530	5.564
2000	5.800	3.733	5.959	5.253	5.309	5.823	5.800	5.253	5.529	5.542
2001	5.800	3.735	5.976	5.253	5.330	5.838	5.800	5.253	5.637	5.641
2002	5.800	3.729	5.971	5.253	5.362	5.845	5.800	5.253	5.517	5.519
2003	5.800	3.739	5.970	5.253	5.381	5.845	5.800	5.253	5.628	5.630
2004	5.800	3.724	5.981	5.253	5.429	5.853	5.800	5.253	5.532	5.539
2005	5.800	3.724	5.977	5.253	5.436	5.835	5.800	5.253	5.504	5.513
2006	5.800	3.712	5.980	5.253	5.431	5.836	5.800	5.219	5.415	5.423
2007	5.800	3.701	5.985	5.222	5.483	5.857	5.800	5.188	5.465	5.471
2008	5.800	3.706	5.990	5.222	5.459	5.861	5.800	5.215	5.587	5.591
2009	5.800	3.692	5.988	5.222	5.509	5.878	5.800	5.221	5.674	5.677
2010	5.800	3.674	5.989	5.222	5.545	5.892	5.800	5.214	5.601	5.604
2011	5.800	3.672	6.008	5.222	5.538	5.905	5.800	5.216	5.526	5.530
2012	5.800	3.683	6.165	5.222	5.501	6.035	5.800	5.217	5.520	5.526
2013	5.800	3.714	6.010	5.222	5.497	5.899	5.800	5.216	5.470	5.482
2014	5.800	3.723	6.035	5.222	5.518	5.929	5.800	5.218	5.369	5.406
2015	5.717	3.744	6.065	5.222	5.504	5.941	5.682	5.218	5.279	5.319
2016	P 5.722	P 3.720	P 6.052	P 5.222	P 5.505	P 5.933	P 5.726	P 5.218	P 5.191	P 5.244
2017	E 5.722	E 3.720	E 6.052	E 5.222	E 5.505	E 5.933	E 5.726	E 5.218	E 5.191	E 5.244

^a Includes lease condensate.

^b Excludes fuel ethanol, methyl tertiary butyl ether (MTBE), and other oxygenates blended into motor gasoline.

^c Through 2005, excludes fuel ethanol, MTBE, and other oxygenates blended into motor gasoline. Beginning in 2006, includes MTBE, but excludes fuel ethanol and other oxygenates blended into motor gasoline.

P=Preliminary. E=Estimate.

Note: The values in this table are for gross heat contents. See "Heat Content" in Glossary.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949.

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A3. Approximate Heat Content of Petroleum Consumption and Fuel Ethanol
(Million Btu per Barrel)

	Total Petroleum ^a Consumption by Sector						Distillate Fuel Oil Consumption ^f	Liquefied Petroleum Gases Consumption ^g	Motor Gasoline (Finished) Consumption ^h	Petroleum Coke Consumption ⁱ	Fuel Ethanol ^j	Fuel Ethanol Feed-stock Factor ^k
	Residential	Commercial ^b	Industrial ^b	Transportation ^{b,c}	Electric Power ^{d,e}	Total ^{b,c}						
1950	5.473	5.817	5.953	5.461	6.254	5.649	5.825	4.011	5.253	6.024	NA	NA
1955	5.469	5.781	5.881	5.407	6.254	5.591	5.825	4.011	5.253	6.024	NA	NA
1960	5.417	5.781	5.818	5.387	6.267	5.555	5.825	4.011	5.253	6.024	NA	NA
1965	5.364	5.760	5.748	5.386	6.267	5.532	5.825	4.011	5.253	6.024	NA	NA
1970	5.260	5.708	5.595	5.393	6.252	5.503	5.825	^g 3.779	5.253	6.024	NA	NA
1975	5.253	5.649	5.513	5.392	6.250	5.494	5.825	3.715	5.253	6.024	NA	NA
1980	5.321	5.751	5.366	5.441	6.254	5.479	5.825	3.674	5.253	6.024	3.563	6.586
1981	5.283	5.693	5.299	5.433	6.258	5.448	5.825	3.643	5.253	6.024	3.563	6.562
1982	5.266	5.698	5.247	5.423	6.258	5.415	5.825	3.615	5.253	6.024	3.563	6.539
1983	5.140	5.591	5.254	5.416	6.255	5.406	5.825	3.614	5.253	6.024	3.563	6.515
1984	5.307	5.657	5.207	5.418	6.251	5.395	5.825	3.599	5.253	6.024	3.563	6.492
1985	5.263	5.598	5.199	5.423	6.247	5.387	5.825	3.603	5.253	6.024	3.563	6.469
1986	5.268	5.632	5.269	5.426	6.257	5.418	5.825	3.640	5.253	6.024	3.563	6.446
1987	5.239	5.594	5.233	5.429	6.249	5.403	5.825	3.659	5.253	6.024	3.563	6.423
1988	5.257	5.597	5.228	5.433	6.250	5.410	5.825	3.652	5.253	6.024	3.563	6.400
1989	5.194	5.549	5.219	5.438	^d 6.240	5.410	5.825	3.683	5.253	6.024	3.563	6.377
1990	5.145	5.553	5.253	5.442	6.244	5.411	5.825	3.625	5.253	6.024	3.563	6.355
1991	5.094	5.528	5.167	5.441	6.246	5.384	5.825	3.614	5.253	6.024	3.563	6.332
1992	5.124	5.513	5.168	5.443	6.238	5.378	5.825	3.624	5.253	6.024	3.563	6.309
1993	5.102	^b 5.504	^b 5.177	^b 5.422	6.230	^b 5.370	5.825	3.606	^h 5.232	6.024	3.563	6.287
1994	5.095	5.512	5.149	5.424	6.213	5.360	^f 5.820	3.635	5.231	6.024	3.563	6.264
1995	5.060	5.475	5.121	5.418	6.187	5.342	5.820	3.623	5.218	6.024	3.563	6.242
1996	4.995	5.430	5.114	5.420	6.194	5.336	5.820	3.613	5.218	6.024	3.563	6.220
1997	4.986	5.388	5.119	5.416	6.198	5.336	5.820	3.616	5.215	6.024	3.563	6.198
1998	4.972	5.362	5.136	5.414	6.210	5.349	5.819	3.614	5.215	6.024	3.563	6.176
1999	4.899	5.288	5.091	5.413	6.204	5.328	5.819	3.616	5.213	6.024	3.563	6.167
2000	4.905	5.313	5.056	5.423	6.188	5.326	5.819	3.607	5.214	6.024	3.563	6.159
2001	4.934	5.322	5.141	5.413	6.199	5.346	5.819	3.614	5.214	6.024	3.563	6.151
2002	4.883	5.290	5.092	5.411	6.172	5.324	5.819	3.613	5.211	6.024	3.563	6.143
2003	4.918	5.312	5.143	5.404	6.182	5.338	5.819	3.629	5.203	6.024	3.563	6.106
2004	4.949	5.323	5.144	5.410	6.134	5.341	5.818	3.618	5.201	ⁱ 5.982	3.563	6.069
2005	4.913	5.359	5.179	5.412	6.126	5.353	5.818	3.620	5.198	5.982	3.563	6.032
2006	4.883	5.296	5.159	5.409	6.038	5.336	5.803	3.605	5.191	5.987	3.563	5.995
2007	4.830	5.270	5.122	5.384	6.064	5.309	5.784	3.591	5.155	5.996	3.563	5.959
2008	4.769	5.156	5.147	5.355	6.013	5.287	5.780	3.600	5.126	5.992	3.563	5.922
2009	4.661	5.216	5.014	^c 5.328	5.987	^c 5.236	5.781	3.558	5.101	6.017	3.563	5.901
2010	4.660	5.193	4.983	5.321	5.956	5.222	5.778	3.557	5.078	6.059	3.561	5.880
2011	4.660	5.180	4.957	5.317	5.900	5.212	5.776	3.528	5.068	6.077	3.560	5.859
2012	4.703	5.117	4.909	5.305	5.925	5.191	5.774	3.534	5.063	6.084	3.560	5.838
2013	4.637	5.045	4.871	5.301	5.892	5.175	5.774	3.556	5.062	6.089	3.559	5.817
2014	4.688	5.038	4.868	5.299	5.906	5.177	5.773	3.534	5.060	6.100	3.558	5.797
2015	4.745	5.065	4.832	5.303	5.915	5.172	5.773	3.536	5.060	6.085	3.558	5.776
2016	^E 4.738	^E 5.062	^E 4.872	^E 5.306	^P 5.885	^P 5.185	^P 5.773	^P 3.520	^P 5.059	^P 6.106	^P 3.558	^P 5.755
2017	^E 4.738	^E 5.062	^E 4.872	^E 5.306	^E 5.885	^E 5.185	^E 5.773	^E 3.520	^E 5.059	^E 6.106	^E 3.558	^E 5.735

^a Petroleum products supplied, including natural gas plant liquids and crude oil burned directly as fuel. Quantity-weighted averages of the petroleum products included in each category are calculated by using heat content values for individual products shown in Tables A1 and A3.

^b Beginning in 1993, includes fuel ethanol blended into motor gasoline.

^c Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^d 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.

^e Electric power sector factors are weighted average heat contents for distillate fuel oil, petroleum coke, and residual fuel oil; they exclude other liquids.

^f There is a discontinuity in this time series between 1993 and 1994; beginning in 1994, the single constant factor is replaced by a quantity-weighted factor.

Quantity-weighted averages of the sulfur-content categories of distillate fuel oil are calculated by using heat content values shown in Table A1. Excludes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^g 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 factor.

Quantity-weighted averages of the major components of liquefied petroleum gases are calculated by using heat content values shown in Table A1.

^h Through 1992, excludes oxygenates. Beginning in 1993, includes fuel ethanol blended into motor gasoline; and for 1993–2006, also includes methyl tertiary butyl ether (MTBE) and other oxygenates blended into motor gasoline.

ⁱ There is a discontinuity in this time series between 2003 and 2004; beginning in 2004, the single constant factor is replaced by a quantity-weighted factor.

Quantity-weighted averages of the two categories of petroleum coke are calculated by using heat content values shown in Table A1.

^j Includes denaturant (petroleum added to ethanol to make it undrinkable). Fuel ethanol factors are weighted average heat contents for undenatured ethanol (3.539 million Btu per barrel) and products used as denaturant (pentanes plus, finished motor gasoline, and motor gasoline blending components—see Tables A1 and A3 for factors). The factor for 2009 is used as the estimated factor for 1980–2008.

^k Corn input to the production of undenatured ethanol (million Btu corn per barrel undenatured ethanol), used as the factor to estimate total biomass inputs to the production of undenatured ethanol. Observed ethanol yields (gallons undenatured ethanol per bushel of corn) are 2.5 in 1980, 2.666 in 1998, 2.68 in 2002, 2.78 in 2008, and 2.82 in 2012; yields in other years are estimated. Corn is assumed to have a gross heat content of 0.392 million Btu per bushel. Undenatured ethanol is assumed to have a gross heat content of 3.539 million Btu per barrel.

^P—Preliminary. ^E—Estimate. NA=Not available.

Note: The heat content values in this table are for gross heat contents. See "Heat Content" in Glossary.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949.

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A4. Approximate Heat Content of Natural Gas
(Btu per Cubic Foot)

	Production		Consumption ^a			Imports	Exports
	Marketed	Dry	End-Use Sectors ^b	Electric Power Sector ^c	Total		
1950	1,119	1,035	1,035	1,035	1,035	--	1,035
1955	1,120	1,035	1,035	1,035	1,035	1,035	1,035
1960	1,107	1,035	1,035	1,035	1,035	1,035	1,035
1965	1,101	1,032	1,032	1,032	1,032	1,032	1,032
1970	1,102	1,031	1,031	1,031	1,031	1,031	1,031
1975	1,095	1,021	1,020	1,026	1,021	1,026	1,014
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	^o 1,028	1,031	1,004	1,019
1990	1,105	1,029	1,030	1,027	1,029	1,012	1,018
1991	1,108	1,030	1,031	1,025	1,030	1,014	1,022
1992	1,110	1,030	1,031	1,025	1,030	1,011	1,018
1993	1,106	1,027	1,028	1,025	1,027	1,020	1,016
1994	1,105	1,028	1,029	1,025	1,028	1,022	1,011
1995	1,106	1,026	1,027	1,021	1,026	1,021	1,011
1996	1,109	1,026	1,027	1,020	1,026	1,022	1,011
1997	1,107	1,026	1,027	1,020	1,026	1,023	1,011
1998	1,109	1,031	1,033	1,024	1,031	1,023	1,011
1999	1,107	1,027	1,028	1,022	1,027	1,022	1,006
2000	1,107	1,025	1,026	1,021	1,025	1,023	1,006
2001	1,105	1,028	1,029	1,026	1,028	1,023	1,010
2002	1,103	1,024	1,025	1,020	1,024	1,022	1,008
2003	1,103	1,028	1,029	1,025	1,028	1,025	1,009
2004	1,104	1,026	1,026	1,027	1,026	1,025	1,009
2005	1,104	1,028	1,028	1,028	1,028	1,025	1,009
2006	1,103	1,028	1,028	1,028	1,028	1,025	1,009
2007	1,102	1,027	1,027	1,027	1,027	1,025	1,009
2008	1,100	1,027	1,027	1,027	1,027	1,025	1,009
2009	1,101	1,025	1,025	1,025	1,025	1,025	1,009
2010	1,098	1,023	1,023	1,022	1,023	1,025	1,009
2011	1,142	1,022	1,022	1,021	1,022	1,025	1,009
2012	1,091	1,024	1,025	1,022	1,024	1,025	1,009
2013	1,101	1,027	1,028	1,025	1,027	1,025	1,009
2014	1,116	1,032	1,033	1,029	1,032	1,025	1,009
2015	1,124	1,037	1,037	1,035	1,037	1,025	1,009
2016	^E 1,124	^E 1,036	^E 1,037	^P 1,034	^E 1,036	^E 1,025	^E 1,009
2017	^E 1,124	^E 1,036	^E 1,037	^E 1,034	^E 1,036	^E 1,025	^E 1,009

^a Consumption factors are for natural gas, plus a small amount of supplemental gaseous fuels.

^b Residential, commercial, industrial, and transportation sectors.

^c 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.

P=Preliminary. E=Estimate. -- =Not applicable.

Note: The values in this table are for gross heat contents. See "Heat Content" in Glossary.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949.

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A5. Approximate Heat Content of Coal and Coal Coke
(Million Btu per Short Ton)

	Coal								Coal Coke	
	Production ^a	Waste Coal Supplied ^b	Consumption				Imports	Exports	Imports and Exports	
			Residential and Commercial Sectors ^c	Industrial Sector		Electric Power Sector ^{e,f}				
			Coke Plants	Other ^d		Total				
1950	25.090	NA	24.461	26.798	24.820	23.937	24.989	25.020	26.788	24.800
1955	25.201	NA	24.373	26.794	24.821	24.056	24.982	25.000	26.907	24.800
1960	24.906	NA	24.226	26.791	24.609	23.927	24.713	25.003	26.939	24.800
1965	24.775	NA	24.028	26.787	24.385	23.780	24.537	25.000	26.973	24.800
1970	23.842	NA	23.203	26.784	22.983	22.573	23.440	25.000	26.982	24.800
1975	22.897	NA	22.261	26.782	22.436	21.642	22.506	25.000	26.562	24.800
1980	22.415	NA	22.543	26.790	22.690	21.295	21.947	25.000	26.384	24.800
1981	22.308	NA	22.474	26.794	22.585	21.085	21.713	25.000	26.160	24.800
1982	22.239	NA	22.695	26.797	22.712	21.194	21.674	25.000	26.223	24.800
1983	22.052	NA	22.775	26.798	22.691	21.133	21.576	25.000	26.291	24.800
1984	22.010	NA	22.844	26.799	22.543	21.101	21.573	25.000	26.402	24.800
1985	21.870	NA	22.646	26.798	22.020	20.959	21.366	25.000	26.307	24.800
1986	21.913	NA	22.947	26.798	22.198	21.084	21.462	25.000	26.292	24.800
1987	21.922	NA	23.404	26.799	22.381	21.136	21.517	25.000	26.291	24.800
1988	21.823	NA	23.571	26.799	22.360	20.900	21.328	25.000	26.299	24.800
1989	21.765	^b 10.391	23.650	26.800	22.347	^e 20.898	21.307	25.000	26.160	24.800
1990	21.822	9.303	23.137	26.799	22.457	20.779	21.197	25.000	26.202	24.800
1991	21.681	10.758	23.114	26.799	22.460	20.730	21.120	25.000	26.188	24.800
1992	21.682	10.396	23.105	26.799	22.250	20.709	21.068	25.000	26.161	24.800
1993	21.418	10.638	22.994	26.800	22.123	20.677	21.010	25.000	26.335	24.800
1994	21.394	11.097	23.112	26.800	22.068	20.589	20.929	25.000	26.329	24.800
1995	21.326	11.722	23.118	26.800	21.950	20.543	20.880	25.000	26.180	24.800
1996	21.322	12.147	23.011	26.800	22.105	20.547	20.870	25.000	26.174	24.800
1997	21.296	12.158	22.494	26.800	22.172	20.518	20.830	25.000	26.251	24.800
1998	21.418	12.639	21.620	27.426	23.164	20.516	20.881	25.000	26.800	24.800
1999	21.070	12.552	23.880	27.426	22.489	20.490	20.818	25.000	26.081	24.800
2000	21.072	12.360	25.020	27.426	22.433	20.511	20.828	25.000	26.117	24.800
2001	^a 20.772	12.169	24.909	27.426	22.622	20.337	20.671	25.000	25.998	24.800
2002	20.673	12.165	22.962	27.426	22.562	20.238	20.541	25.000	26.062	24.800
2003	20.499	12.360	22.242	27.425	22.468	20.082	20.387	25.000	25.972	24.800
2004	20.424	12.266	22.324	27.426	22.473	19.980	20.290	25.000	26.108	24.800
2005	20.348	12.093	22.342	26.279	22.178	19.988	20.246	25.000	25.494	24.800
2006	20.310	12.080	22.066	26.271	22.050	19.931	20.181	25.000	25.453	24.800
2007	20.340	12.090	22.069	26.239	22.371	19.909	20.168	25.000	25.466	24.800
2008	20.208	12.121	^c 23.035	26.281	22.304	19.713	19.979	25.000	25.399	24.800
2009	19.963	12.076	22.852	26.334	21.823	19.521	19.741	25.000	25.633	24.800
2010	20.173	11.960	22.611	26.295	21.846	19.623	19.870	25.000	25.713	24.800
2011	20.142	11.604	22.099	26.299	21.568	19.341	19.600	25.000	25.645	24.800
2012	20.215	11.539	21.300	28.636	21.449	19.211	19.544	23.128	24.551	24.800
2013	20.182	11.103	21.233	28.705	21.600	19.174	19.513	22.379	24.605	24.800
2014	20.146	11.474	21.307	28.458	21.525	19.290	19.611	22.187	25.032	24.800
2015	19.880	11.527	20.699	28.526	21.258	19.146	19.482	22.633	25.048	24.800
2016	^E 19.880	^E 11.527	^E 20.699	^E 28.526	^E 21.258	^P 19.187	^E 19.499	^E 22.633	^E 25.048	^E 24.800
2017	^E 19.880	^E 11.527	^E 20.699	^E 28.526	^E 21.258	^E 19.187	^E 19.499	^E 22.633	^E 25.048	^E 24.800

^a Beginning in 2001, includes a small amount of refuse recovery (coal recaptured from a refuse mine, and cleaned to reduce the concentration of noncombustible materials).

^b Waste coal (including fine coal, coal obtained from a refuse bank or slurry dam, anthracite culm, bituminous gob, and lignite waste) consumed by the electric power and industrial sectors. Beginning in 1989, waste coal supplied is counted as a supply-side item to balance the same amount of waste coal included in "Consumption."

^c Through 2007, used as the thermal conversion factor for coal consumption by the residential and commercial sectors. Beginning in 2008, used as the thermal conversion factor for coal consumption by the commercial sector only.

^d Includes transportation. Excludes coal synfuel plants.

^e 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.

^f Electric power sector factors are for anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and, beginning in 1998, coal synfuel.

P=Preliminary. E=Estimate. NA=Not available.

Note: The values in this table are for gross heat contents. See "Heat Content" in Glossary.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949.

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A6. Approximate Heat Rates for Electricity, and Heat Content of Electricity
(Btu per Kilowatthour)

	Approximate Heat Rates ^a for Electricity Net Generation						Heat Content ^j of Electricity ^k
	Fossil Fuels ^b				Nuclear ^h	Noncombustible Renewable Energy ^{g,i}	
	Coal ^c	Petroleum ^d	Natural Gas ^e	Total Fossil Fuels ^{f,g}			
1950	NA	NA	NA	14,030	--	14,030	3,412
1955	NA	NA	NA	11,699	--	11,699	3,412
1960	NA	NA	NA	10,760	11,629	10,760	3,412
1965	NA	NA	NA	10,453	11,804	10,453	3,412
1970	NA	NA	NA	10,494	10,977	10,494	3,412
1975	NA	NA	NA	10,406	11,013	10,406	3,412
1980	NA	NA	NA	10,388	10,908	10,388	3,412
1981	NA	NA	NA	10,453	11,030	10,453	3,412
1982	NA	NA	NA	10,454	11,073	10,454	3,412
1983	NA	NA	NA	10,520	10,905	10,520	3,412
1984	NA	NA	NA	10,440	10,843	10,440	3,412
1985	NA	NA	NA	10,447	10,622	10,447	3,412
1986	NA	NA	NA	10,446	10,579	10,446	3,412
1987	NA	NA	NA	10,419	10,442	10,419	3,412
1988	NA	NA	NA	10,324	10,602	10,324	3,412
1989	NA	NA	NA	10,432	10,583	10,432	3,412
1990	NA	NA	NA	10,402	10,582	10,402	3,412
1991	NA	NA	NA	10,436	10,484	10,436	3,412
1992	NA	NA	NA	10,342	10,471	10,342	3,412
1993	NA	NA	NA	10,309	10,504	10,309	3,412
1994	NA	NA	NA	10,316	10,452	10,316	3,412
1995	NA	NA	NA	10,312	10,507	10,312	3,412
1996	NA	NA	NA	10,340	10,503	10,340	3,412
1997	NA	NA	NA	10,213	10,494	10,213	3,412
1998	NA	NA	NA	10,197	10,491	10,197	3,412
1999	NA	NA	NA	10,226	10,450	10,226	3,412
2000	NA	NA	NA	10,201	10,429	10,201	3,412
2001	10,378	10,742	10,051	^b 10,333	10,443	10,333	3,412
2002	10,314	10,641	9,533	10,173	10,442	10,173	3,412
2003	10,297	10,610	9,207	10,125	10,422	10,125	3,412
2004	10,331	10,571	8,647	10,016	10,428	10,016	3,412
2005	10,373	10,631	8,551	9,999	10,436	9,999	3,412
2006	10,351	10,809	8,471	9,919	10,435	9,919	3,412
2007	10,375	10,794	8,403	9,884	10,489	9,884	3,412
2008	10,378	11,015	8,305	9,854	10,452	9,854	3,412
2009	10,414	10,923	8,160	9,760	10,459	9,760	3,412
2010	10,415	10,984	8,185	9,756	10,452	9,756	3,412
2011	10,444	10,829	8,152	9,716	10,464	9,716	3,412
2012	10,498	10,991	8,039	9,516	10,479	9,516	3,412
2013	10,459	10,713	7,948	9,541	10,449	9,541	3,412
2014	10,428	10,814	7,907	9,510	10,459	9,510	3,412
2015	10,495	10,687	7,878	9,319	10,458	9,319	3,412
2016	^E 10,495	^E 10,687	^E 7,878	^E 9,319	^E 10,458	^E 9,319	3,412
2017	^E 10,495	^E 10,687	^E 7,878	^E 9,319	^E 10,458	^E 9,319	3,412

^a The values in columns 1–6 of this table are for net heat rates. See "Heat Rate" in Glossary.

^b Through 2000, heat rates are for fossil-fueled steam-electric plants at electric utilities. Beginning in 2001, heat rates are for all fossil-fueled plants at electric utilities and electricity-only independent power producers.

^c Includes anthracite, bituminous coal, subbituminous coal, lignite, and, beginning in 2002, waste coal and coal synfuel.

^d Includes distillate fuel oil, residual fuel oil, jet fuel, kerosene, petroleum coke, and waste oil.

^e Includes natural gas and supplemental gaseous fuels.

^f Includes coal, petroleum, natural gas, and, beginning in 2001, other gases (blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels).

^g The fossil-fuels heat rate is used as the thermal conversion factor for electricity net generation from noncombustible renewable energy (hydro, geothermal, solar thermal, photovoltaic, and wind) to approximate the quantity of fossil fuels replaced by these sources. Through 2000, also used as the thermal conversion factor for wood and waste electricity net generation at electric utilities; beginning in 2001, Btu data for wood and waste at electric utilities are available from surveys.

^h Used as the thermal conversion factor for nuclear electricity net generation.

ⁱ Technology-based geothermal heat rates are no longer used in Btu calculations in this report. For technology-based geothermal heat rates for 1960–2010, see the *Annual Energy Review 2010*, Table A6.

^j See "Heat Content" in Glossary.

^k The value of 3,412 Btu per kilowatthour is a constant. It is used as the thermal conversion factor for electricity retail sales, and electricity imports and exports.

^E=Estimate. NA=Not available. -- =Not applicable.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949.

Sources: See "Thermal Conversion Factor Source Documentation," which follows this table.

Thermal Conversion Factor Source Documentation

Approximate Heat Content of Petro- leum and Natural Gas Plant Liquids

Asphalt. The U.S. 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 Blending Components. Assumed by EIA to be 5.048 million Btu per barrel or equal to the thermal conversion factor for **Aviation Gasoline (Finished)**.

Aviation Gasoline (Finished). 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-Propane Mixture. EIA adopted the Bureau of Mines calculation of 4.130 million Btu per barrel based on an assumed mixture of 60% normal butane and 40% propane. See **Normal Butane/Butylene and Propane/Propylene**.

Crude Oil Exports. • 1949–2014: 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.** • 2015 forward: Calculated annually by EIA based on conversion of American Petroleum Institute (API) gravity ranges of crude oil exports as reported in trade data from the U.S. Census Bureau. Specific gravity (SG) = $141.5 / (131.5 + \text{API gravity})$. The higher heating value (HHV) in million Btu per barrel = $\text{SG} * (7.801796 - 1.3213 * \text{SG}^2)$.

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

Crude Oil Production. • 1949–2014: 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.” • 2015 forward: Calculated annually by EIA based on conversion of American Petroleum Institute (API) gravity ranges of crude oil

production as reported on Form EIA-914, “Monthly Crude Oil, Lease Condensate, and Natural Gas Production Report.” Specific gravity (SG) = $141.5 / (131.5 + \text{API gravity})$. The higher heating value (HHV) in million Btu per barrel = $\text{SG} * (7.801796 - 1.3213 * \text{SG}^2)$.

Distillate Fuel Oil Consumption. • 1949–1993: 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.” • 1994 forward: Calculated by EIA as the annual quantity-weighted average of the conversion factors for **Distillate Fuel Oil, 15 ppm Sulfur and Under** (5.770 million Btu per barrel), **Distillate Fuel Oil, Greater Than 15 ppm to 500 ppm Sulfur** (5.817 million Btu per barrel), and **Distillate Fuel Oil, Greater Than 500 ppm Sulfur** (5.825 million Btu per barrel).

Distillate Fuel Oil, 15 ppm Sulfur and Under. EIA adopted the thermal conversion factor of 5.770 million Btu per barrel (137,380 Btu per gallon) for U.S. conventional diesel from U.S. Department of Energy, Argonne National Laboratory, “The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model” (GREET), version GREET1_2013, October 2013.

Distillate Fuel Oil, Greater Than 15 ppm to 500 ppm Sulfur. EIA adopted the thermal conversion factor of 5.817 million Btu per barrel (138,490 Btu per gallon) for low-sulfur diesel from U.S. Department of Energy, Argonne Laboratory, “The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model” (GREET), version GREET1_2013, October 2013.

Distillate Fuel Oil, Greater Than 500 ppm Sulfur. 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/Ethylene. 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% ethane and 30% propane. See **Ethane/Ethylene and Propane/Propylene**.

Hydrogen. Assumed by EIA to be 6.287 million Btu per barrel or equal to the thermal conversion factor for **Residual Fuel Oil**.

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

Jet Fuel, Kerosene-Type. EIA adopted the Bureau of Mines thermal conversion factor of 5.670 million Btu per barrel for “Jet Fuel, Commercial” as published by the Texas Eastern Transmission Corporation in the report *Competition and Growth in American Energy Markets 1947–1985*, a 1968 release of historical and projected statistics.

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

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

Liquefied Petroleum Gases Consumption. • 1949–1966: U.S. Department of the Interior, Bureau of Mines, Mineral Industry Surveys, “Crude Petroleum and Petroleum Products, 1956,” Table 4 footnote, constant value of 4.011 million Btu per barrel. • 1967 forward: Calculated annually by EIA as the average of the thermal conversion factors for all liquefied petroleum gases consumed (see Table A1) weighted by the quantities consumed. The component products of liquefied petroleum gases are ethane (including ethylene), propane (including propylene), normal butane (including butylene), butane-propane mixtures, ethane-propane mixtures, and isobutane. For 1967–1980, quantities consumed are from EIA, Energy Data Reports, “Petroleum Statement, Annual,” Table 1. For 1981 forward, quantities consumed are from EIA, *Petroleum Supply Annual*, Table 2.

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

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

Motor Gasoline Blending Components. • 1949–2006: 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 Markets 1947–1985*, a 1968 release of historical and projected statistics. • 2007 forward: EIA adopted the thermal conversion factor of 5.222 million Btu per barrel (124,340 Btu per gallon) for gasoline blendstock from U.S. Department of Energy, Argonne National Laboratory, “The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model” (GREET), version GREET1_2013, October 2013.

Motor Gasoline Exports. • 1949–2005: 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. • 2006 forward: Calculated by EIA as the annual quantity-weighted average of the conversion factors for gasoline blendstock and the methyl tertiary butyl ether (MTBE) blended into motor gasoline exports. The factor for gasoline blendstock is 5.253 million Btu per barrel in 2006 and 5.222 million Btu per barrel beginning in 2007 (see **Motor Gasoline Blending Components**). For MTBE, EIA adopted the thermal conversion factor of 4.247 million Btu per barrel (101,130 Btu per gallon) from U.S. Department of Energy, Argonne National Laboratory, “The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model” (GREET), version GREET1_2013, October 2013.

Motor Gasoline (Finished) Consumption. • 1949–1992: 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 Markets 1947–1985*, a 1968 release of historical and projected statistics. • 1993–2006: Calculated by EIA as the annual quantity-weighted average of the conversion factors for gasoline blendstock and the oxygenates blended into motor gasoline. The factor for gasoline blendstock is 5.253 million Btu per barrel (the motor gasoline factor used for previous years). The factors for fuel ethanol are shown in Table A3 (see **Fuel Ethanol, Denatured**). The following factors for other oxygenates are from U.S. Department of Energy, Argonne National Laboratory, “The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model” (GREET), version GREET1_2013, October 2013—methyl tertiary butyl ether (MTBE): 4.247 million Btu per barrel (101,130 Btu per gallon); tertiary amyl methyl ether (TAME): 4.560 million Btu per barrel (108,570 Btu per gallon); ethyl tertiary butyl ether (ETBE): 4.390 million Btu per barrel (104,530 Btu per gallon); methanol: 2.738 million Btu per barrel (65,200 Btu per gallon); and butanol: 4.555 million Btu per barrel (108,458 Btu per gallon). • 2007 forward: Calculated by EIA as the annual quantity-weighted average of the conversion factors for gasoline blendstock and fuel ethanol blended into motor gasoline. The factor for gasoline blendstock is 5.222 million Btu per barrel (124,340 Btu per gallon), which is from the GREET model (see above). The factors for fuel ethanol are shown in Table A3 (see **Fuel Ethanol, Denatured**).

Motor Gasoline Imports. • 1949–2006: 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. • 2007 forward: EIA adopted the thermal conversion factor of 5.222 million Btu per barrel (124,340 Btu per

gallon) for gasoline blendstock from U.S. Department of Energy, Argonne National Laboratory, “The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model” (GREET), version GREET1_2013, October 2013.

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

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

Normal Butane/Butylene. 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.

Other Hydrocarbons. Assumed by EIA to be 5.825 million Btu per barrel or equal to the thermal conversion factor for **Unfinished Oils**.

Oxygenates (Excluding Fuel Ethanol). EIA adopted the thermal conversion factor of 4.247 million Btu per barrel (101,130 Btu per gallon) for methyl tertiary butyl ether (MTBE) from U.S. Department of Energy, Argonne National Laboratory, “The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model” (GREET), version GREET1_2013, October 2013.

Pentanes Plus. Assumed by EIA to be 4.620 million Btu per barrel or equal to the thermal conversion factor for **Natural Gasoline**.

Petrochemical Feedstocks, Naphtha Less Than 401 Degrees Fahrenheit. Assumed by EIA to be 5.248 million Btu per barrel or equal to the thermal conversion factor for **Special Naphthas**.

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

Petrochemical Feedstocks, Still Gas. Assumed by EIA to be 6.000 million Btu per barrel or equal to the thermal conversion factor for **Still Gas**.

Petroleum Coke, Catalyst. Assumed by EIA to be 6.287 million Btu per barrel or equal to the thermal conversion factor for **Residual Fuel Oil**.

Petroleum Coke, Marketable. EIA adopted the thermal conversion factor of 5.719 million Btu per barrel, calculated by dividing 28,595,925 Btu per short ton for petroleum coke (from U.S. Department of Energy, Argonne National Laboratory, “The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model”

(GREET), version GREET1_October 2013) by 5.0 barrels per short ton (as given in the Bureau of Mines Form 6-1300-M and successor EIA forms).

Petroleum Coke, Total. • 1949–2003: 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. • 2004 forward: Calculated by EIA as the annual quantity-weighted average of the conversion factors for **Petroleum Coke, Catalyst** (6.287 million Btu per barrel) and **Petroleum Coke, Marketable** (5.719 million Btu per barrel).

Petroleum Consumption, Commercial Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the commercial sector weighted by the estimated quantities consumed by the commercial sector. The quantities of petroleum products consumed by the commercial sector are estimated in the State Energy Data System—see documentation at http://www.eia.gov/state/seds/sep_use/notes/use_petrol.pdf.

Petroleum Consumption, Electric Power Sector. Calculated annually by EIA as the average of the thermal conversion factors for distillate fuel oil, petroleum coke, and residual fuel oil consumed by the electric power sector weighted by the quantities consumed by the electric power sector. Data are from Form EIA-923, “Power Plant Operations Report,” and predecessor forms.

Petroleum Consumption, Industrial Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the industrial sector weighted by the estimated quantities consumed by the industrial sector. The quantities of petroleum products consumed by the industrial sector are estimated in the State Energy Data System—see documentation at http://www.eia.gov/state/seds/sep_use/notes/use_petrol.pdf.

Petroleum Consumption, Residential Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the residential sector weighted by the estimated quantities consumed by the residential sector. The quantities of petroleum products consumed by the residential sector are estimated in the State Energy Data System—see documentation at http://www.eia.gov/state/seds/sep_use/notes/use_petrol.pdf.

Petroleum Consumption, Total. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed weighted by the quantities consumed.

Petroleum Consumption, Transportation Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the transportation sector weighted by the estimated quantities consumed by the transportation sector. The quantities of petroleum products consumed by the transportation sector are estimated in the State Energy Data System—see documentation at http://www.eia.gov/state/seds/sep_use/notes/use_petrol.pdf.

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

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

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

Propane/Propylene. 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.

Renewable Fuels Except Fuel Ethanol. For “Biomass-Based Diesel Fuel” and “Other Renewable Fuels,” EIA assumed the thermal conversion factor to be 5.359 million Btu per barrel or equal to the thermal conversion factor for **Biodiesel**. For “Other Renewable Diesel Fuel,” EIA adopted the thermal conversion factor of 5.494 million Btu per barrel (130,817 Btu per gallon) for renewable diesel II (UOP-HDO) from U.S. Department of Energy, Argonne National Laboratory, “The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model” (GREET), version GREET1_2013, October 2013.

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** 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. • 1949–2015: 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*. • 2016 forward: Assumed by EIA to be 6.287 million Btu per barrel or equal to the thermal conversion factor for **Residual Fuel Oil**.

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

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

Unfinished Oils. EIA assumed the thermal conversion factor to be 5.825 million Btu per barrel or equal to that for **Distillate Fuel Oil** 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** 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 Biofuels

Biodiesel. EIA estimated the thermal conversion factor for biodiesel to be 5.359 million Btu per barrel, or 17,253 Btu per pound.

Biodiesel Feedstock. EIA used soybean oil input to the production of biodiesel (million Btu soybean oil per barrel biodiesel) as the factor to estimate total biomass inputs to the production of biodiesel. EIA assumed that 7.65 pounds of soybean oil are needed to produce one gallon of biodiesel, and 5.433 million Btu of soybean oil are needed to produce one barrel of biodiesel. EIA also assumed that soybean oil has a gross heat content of 16,909 Btu per pound, or 5.483 million Btu per barrel.

Ethanol (Undenatured). 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, DC, October 1991.

Fuel Ethanol (Denatured). • 1981–2008: EIA used the 2009 factor. • 2009 forward: Calculated by EIA as the annual quantity-weighted average of the thermal conversion factors for undenatured ethanol (3.539 million Btu per barrel), pentanes plus used as denaturant (4.620 million Btu per barrel), and conventional motor gasoline and motor gasoline blending components used as denaturant (5.253 million Btu per barrel). The quantity of ethanol consumed is from EIA's *Petroleum Supply Annual (PSA)* and *Petroleum Supply Monthly (PSM)*, Table 1, data for renewable fuels and oxygenate plant net production of fuel ethanol. The quantity of pentanes plus used as denaturant is from PSA/PSM, Table 1, data for renewable fuels and oxygenate plant net production of pentanes plus, multiplied by -1. The quantity of conventional motor gasoline and motor gasoline blending components used as denaturant is from PSA/PSM, Table 1, data for renewable fuels and oxygenate plant net production of conventional motor gasoline and motor gasoline blending components, multiplied by -1.

Fuel Ethanol Feedstock. EIA used corn input to the production of undenatured ethanol (million Btu corn per barrel undenatured ethanol) as the annual factor to estimate total biomass inputs to the production of undenatured ethanol. EIA used the following observed ethanol yields (in gallons undenatured ethanol per bushel of corn) from U.S. Department of Agriculture: 2.5 in 1980, 2.666 in 1998, 2.68 in 2002; and from University of Illinois at Chicago, Energy Resources Center, "2012 Corn Ethanol: Emerging Plant Energy and Environmental Technologies": 2.78 in 2008, and 2.82 in 2012. EIA estimated the ethanol yields in other years. EIA also assumed that corn has a gross heat content of 0.392 million Btu per bushel.

Approximate Heat Content of Natural Gas

Natural Gas Consumption, Electric Power Sector. Calculated annually by EIA by dividing the heat content of natural gas consumed by the electric power sector by the quantity consumed. Data are from Form EIA-923, "Power Plant Operations Report," and predecessor forms.

Natural Gas Consumption, End-Use Sectors. Calculated annually by EIA by dividing the heat content of natural gas consumed by the end-use sectors (residential, commercial, industrial, and transportation) by the quantity consumed. Data are from Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition."

Natural Gas Consumption, Total. • 1949–1962: EIA adopted the thermal conversion factor of 1,035 Btu per cubic foot as estimated by the Bureau of Mines and first published in the *Petroleum Statement, Annual, 1956*. • 1963–1979: EIA adopted the thermal conversion factor calculated annually by the American Gas Association (AGA)

and published in *Gas Facts*, an AGA annual publication. • 1980 forward: Calculated annually by EIA by dividing the total heat content of natural gas consumed by the total quantity consumed.

Natural Gas Exports. • 1949–1972: Assumed by EIA to be equal to the thermal conversion factor for dry natural gas consumed (see **Natural Gas Consumption, Total**). • 1973 forward: Calculated annually by EIA by dividing the heat content of natural gas exported by the quantity exported. For 1973–1995, data are from Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas." Beginning in 1996, data are from U.S. Department of Energy, Office of Fossil Energy, *Natural Gas Imports and Exports*.

Natural Gas Imports. • 1949–1972: Assumed by EIA to be equal to the thermal conversion factor for dry natural gas consumed (see **Natural Gas Consumption, Total**). • 1973 forward: Calculated annually by EIA by dividing the heat content of natural gas imported by the quantity imported. For 1973–1995, data are from Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas." Beginning in 1996, data are from U.S. Department of Energy, Office of Fossil Energy, *Natural Gas Imports and Exports*.

Natural Gas Production, Dry. Assumed by EIA to be equal to the thermal conversion factor for dry natural gas consumed. See **Natural Gas Consumption, Total**.

Natural Gas Production, Marketed. Calculated annually by EIA by dividing the heat content of dry natural gas produced (see **Natural Gas Production, Dry**) and natural gas plant liquids produced (see **Natural Gas Plant Liquids Production**) by the total quantity of marketed natural gas produced.

Approximate Heat Content of Coal and Coal Coke

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

Coal Consumption, Electric Power Sector. Calculated annually by EIA by dividing the heat content of coal consumed by the electric power sector by the quantity consumed. Data are from Form EIA-923, "Power Plant Operations Report," and predecessor forms.

Coal Consumption, Industrial Sector, Coke Plants. • 1949–2011: Calculated annually by EIA based on the reported volatility (low, medium, or high) of coal received by coke plants. (For 2011, EIA used the following volatility factors, in million Btu per short ton: low volatile—26.680; medium volatile—27.506; and high volatile—25.652.) Data are from Form EIA-5, "Quarterly Coal Consumption and Quality Report—Coke Plants," and predecessor forms. • 2012 forward: Calculated annually by EIA by dividing

the heat content of coal received by coke plants by the quantity received. Through June 2014, data are from Form EIA-5, “Quarterly Coal Consumption and Quality Report—Coke Plants”; beginning in July 2014, data are from Form EIA-3, “Quarterly Survey of Non-Electric Sector Coal Data.”

Coal Consumption, Industrial Sector, Other.

• 1949–2007: Calculated annually by EIA by dividing the heat content of coal received by manufacturing plants by the quantity received. Data are from Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing Plants,” and predecessor forms. • 2008 forward: Calculated annually by EIA by dividing the heat content of coal received by manufacturing, gasification, and liquefaction plants by the quantity received. Data are from Form EIA-3, “Quarterly Survey of Non-Electric Sector Coal Data” (formerly called “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Users”).

Coal Consumption, Residential and Commercial Sectors.

• 1949–1999: Calculated annually by EIA by dividing the heat content of coal received by the residential and commercial sectors by the quantity received. Data are from Form EIA-6, “Coal Distribution Report,” and predecessor forms. • 2000–2007: Calculated annually by EIA by dividing the heat content of coal consumed by commercial combined-heat-and-power (CHP) plants by the quantity consumed. Data are from Form EIA-923, “Power Plant Operations Report,” and predecessor forms. • 2008 forward: Calculated annually by EIA by dividing the heat content of coal received by commercial and institutional users by the quantity received. Data are from Form EIA-3, “Quarterly Survey of Non-Electric Sector Coal Data” (formerly called “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Users”).

Coal Consumption, Total. Calculated annually by EIA by dividing the total heat content of coal consumed by all sectors by the total quantity consumed.

Coal Exports. • 1949–2011: Calculated annually by EIA by dividing the heat content of steam coal and metallurgical coal exported by the quantity exported. Data are from U.S. Department of Commerce, U.S. Census Bureau, “Monthly Report EM 545,” and predecessor forms. • 2012 forward: Calculated annually by EIA by dividing the heat content of steam coal and metallurgical coal exported by the quantity exported. The average heat content of steam coal is derived from receipts data from Form EIA-3, “Quarterly Survey on Non-Electric Sector Coal Data” (formerly called “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Users”), and Form EIA-923, “Power Plant Operations Report.” Through June 2014, the average heat content of metallurgical coal is derived from receipts data from Form EIA-5, “Quarterly

Coal Consumption and Quality Report—Coke Plants”; beginning in July 2014, the average heat content of metallurgical coal is derived from receipts data from Form EIA-3, “Quarterly Survey of Non-Electric Sector Coal Data.” Data for export quantities are from U.S. Department of Commerce, U.S. Census Bureau, “Monthly Report EM 545.”

Coal Imports. • 1949–1963: Calculated annually by EIA by dividing the heat content of coal imported by the quantity imported. Data are from U.S. Department of Commerce, U.S. Census Bureau, “Monthly Report IM 145,” and predecessor forms. • 1964–2011: Assumed by EIA to be 25,000 million Btu per short ton. • 2012 forward: Calculated annually by EIA by dividing the heat content of coal imported (received) by the quantity imported (received). Data are from Form EIA-3, “Quarterly Survey of Non-Electric Sector Coal Data” (formerly called “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Users”); Form EIA-5, “Quarterly Coal Consumption and Quality Report—Coke Plants” (data through June 2014); and Form EIA-923, “Power Plant Operations Report.”

Coal Production. • 1949–2011: Calculated annually by EIA by dividing the heat content of domestic coal (excluding waste coal) received by the quantity received. Data are from Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Users”; Form EIA-5, “Quarterly Coal Consumption and Quality Report—Coke Plants”; Form EIA-923, “Power Plant Operations Report”; and predecessor forms. • 2012 forward: Calculated annually by EIA by dividing the heat content of domestic coal (excluding waste coal) received and exported by the quantity received and exported. Data are from Form EIA-3, “Quarterly Survey of Non-Electric Sector Coal Data” (formerly called “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Users”); Form EIA-5, “Quarterly Coal Consumption and Quality Report—Coke Plants” (data through June 2014); Form EIA-923, “Power Plant Operations Report”; U.S. Department of Commerce, U.S. Census Bureau, “Monthly Report EM 545”; and predecessor forms.

Waste Coal Supplied. • 1989–2000: Calculated annually by EIA by dividing the heat content of waste coal consumed by the quantity consumed. Data are from Form EIA-860B, “Annual Electric Generator Report—Nonutility,” and predecessor form. • 2001 forward: Calculated by EIA by dividing the heat content of waste coal received (or consumed) by the quantity received (or consumed). Receipts data are from Form EIA-3, “Quarterly Survey of Non-Electric Sector Coal Data” (formerly called “Quarterly Coal Consumption and Quality Report—Manufacturing and Transformation/Processing Coal Plants and Commercial and Institutional Users”), and predecessor form. Consumption

data are from Form EIA-923, "Power Plant Operations Report," and predecessor forms.

Approximate Heat Rates for Electricity

Electricity Net Generation, Coal. • 2001 forward: Calculated annually by EIA by using fuel consumption and net generation data reported on Form EIA-923, "Power Plant Operations Report," and predecessor forms. The computation includes data for all electric utilities and electricity-only independent power producers using anthracite, bituminous coal, subbituminous coal, lignite, and beginning in 2002, waste coal and coal synfuel.

Electricity Net Generation, Natural Gas. • 2001 forward: Calculated annually by EIA by using fuel consumption and net generation data reported on Form EIA-923, "Power Plant Operations Report," and predecessor forms. The computation includes data for all electric utilities and electricity-only independent power producers using natural gas and supplemental gaseous fuels.

Electricity Net Generation, Noncombustible Renewable Energy. There is no generally accepted practice for measuring the thermal conversion rates for power plants that generate electricity from hydro, geothermal, solar thermal, photovoltaic, and wind energy sources. Therefore, EIA calculates a rate factor that is equal to the annual average heat rate factor for fossil-fueled power plants in the United States (see "Electricity Net Generation, Total Fossil Fuels"). By using that factor it is possible to evaluate fossil fuel requirements for replacing those sources during periods of interruption, such as droughts. See Appendix E for more information.

Electricity Net Generation, Nuclear. • 1957–1984: Calculated annually by dividing the total heat content consumed in nuclear generating units by the total (net) electricity generated by nuclear generating units. The heat content and electricity generation were reported on Form FERC-1, "Annual Report of Major Electric Utilities, Licensees, and Others"; Form EIA-412, "Annual Report of Public

Electric Utilities"; and predecessor forms. For 1982, the factors were published in EIA, *Historical Plant Cost and Annual Production Expenses for Selected Electric Plants 1982*, page 215. For 1983 and 1984, the factors were published in EIA, *Electric Plant Cost and Power Production Expenses 1991*, Table 13. • 1985 forward: Calculated annually by EIA by using the heat rate data reported on Form EIA-860, "Annual Electric Generator Report," and predecessor forms.

Electricity Net Generation, Petroleum. • 2001 forward: Calculated annually by EIA by using fuel consumption and net generation data reported on Form EIA-923, "Power Plant Operations Report," and predecessor forms. The computation includes data for all electric utilities and electricity-only independent power producers using distillate fuel oil, residual fuel oil, jet fuel, kerosene, petroleum coke, and waste oil.

Electricity Net Generation, Total Fossil Fuels.

• 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. • 1989–2000: Calculated annually by EIA by using heat rate data reported on Form EIA-860, "Annual Electric Generator Report," and predecessor forms; and net generation data reported on Form EIA-759, "Monthly Power Plant Report." The computation includes data for all electric utility steam-electric plants using fossil fuels. • 2001 forward: Calculated annually by EIA by using fuel consumption and net generation data reported on Form EIA-923, "Power Plant Operations Report," and predecessor forms. The computation includes data for all electric utilities and electricity-only independent power producers using coal, petroleum, natural gas, and other gases (blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels).

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix B

Metric Conversion Factors, Metric Prefixes, and Other Physical Conversion Factors

Data presented in the *Monthly Energy Review* and in other U.S. 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. The metric conversion factors presented in Table B1 can be used to calculate the metric-unit equivalents of values expressed in U.S. Customary units. For example, 500 short tons are the equivalent of 453.6 metric tons (500 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 are the equivalent of 420 U.S. gallons (10 barrels x 42 gallons/barrel = 420 gallons).

Table B1. Metric Conversion Factors

Type of Unit	U.S. Unit		Equivalent in	Metric Units
Mass	1 short ton (2,000 lb)	=	0.907 184 7	metric tons (t)
	1 long ton	=	1.016 047	metric tons (t)
	1 pound (lb)	=	0.453 592 37 ^a	kilograms (kg)
	1 pound uranium oxide (lb U ₃ O ₈)	=	0.384 647 ^b	kilograms uranium (kgU)
	1 ounce, avoirdupois (avdp oz)	=	28.349 52	grams (g)
Volume	1 barrel of oil (bbl)	=	0.158 987 3	cubic meters (m ³)
	1 cubic yard (yd ³)	=	0.764 555	cubic meters (m ³)
	1 cubic foot (ft ³)	=	0.028 316 85	cubic meters (m ³)
	1 U.S. gallon (gal)	=	3.785 412	liters (L)
	1 ounce, fluid (fl oz)	=	29.573 53	milliliters (mL)
	1 cubic inch (in ³)	=	16.387 06	milliliters (mL)
Length	1 mile (mi)	=	1.609 344 ^a	kilometers (km)
	1 yard (yd)	=	0.914 4 ^a	meters (m)
	1 foot (ft)	=	0.304 8 ^a	meters (m)
	1 inch (in)	=	2.54 ^a	centimeters (cm)
Area	1 acre	=	0.404 69	hectares (ha)
	1 square mile (mi ²)	=	2.589 988	square kilometers (km ²)
	1 square yard (yd ²)	=	0.836 127 4	square meters (m ²)
	1 square foot (ft ²)	=	0.092 903 04 ^a	square meters (m ²)
	1 square inch (in ²)	=	6.451 6 ^a	square centimeters (cm ²)
Energy	1 British thermal unit (Btu) ^c	=	1,055.055 852 62 ^a	joules (J)
	1 calorie (cal)	=	4.186 8 ^a	joules (J)
	1 kilowatthour (kWh)	=	3.6 ^a	megajoules (MJ)
Temperature^d	32 degrees Fahrenheit (°F)	=	0 ^a	degrees Celsius (°C)
	212 degrees Fahrenheit (°F)	=	100 ^a	degrees Celsius (°C)

^aExact conversion.

^bCalculated by the U.S. Energy Information Administration.

^cThe Btu used in this table is the International Table Btu adopted by the Fifth International Conference on Properties of Steam, London, 1956.

^dTo convert degrees Fahrenheit (°F) to degrees Celsius (°C) exactly, subtract 32, then multiply by 5/9.

Notes: • Spaces have been inserted after every third digit to the right of the decimal for ease of reading. • Most metric units belong to the International System of Units (SI), and the liter, hectare, and metric ton are accepted for use with the SI units. For more information about the SI units, see <http://physics.nist.gov/cuu/Units/index.html>.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#appendices>.

Sources: • General Services Administration, Federal Standard 376B, *Preferred Metric Units for General Use by the Federal Government* (Washington, DC, January 1993), pp. 9–11, 13, and 16. • U.S. Department of Commerce, National Institute of Standards and Technology, Special Publications 330, 811, and 814. • American National Standards Institute/Institute of Electrical and Electronic Engineers, ANSI/IEEE Std 268-1992, pp. 28 and 29.

Table B2. Metric Prefixes

Unit Multiple	Prefix	Symbol	Unit Subdivision	Prefix	Symbol
10 ¹	deka	da	10 ⁻¹	deci	d
10 ²	hecto	h	10 ⁻²	centi	c
10 ³	kilo	k	10 ⁻³	milli	m
10 ⁶	mega	M	10 ⁻⁶	micro	μ
10 ⁹	giga	G	10 ⁻⁹	nano	n
10 ¹²	tera	T	10 ⁻¹²	pico	p
10 ¹⁵	peta	P	10 ⁻¹⁵	femto	f
10 ¹⁸	exa	E	10 ⁻¹⁸	atto	a
10 ²¹	zetta	Z	10 ⁻²¹	zepto	z
10 ²⁴	yotta	Y	10 ⁻²⁴	yocto	y

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#appendices>.

Source: U.S. Department of Commerce, National Institute of Standards and Technology, *The International System of Units (SI)*, NIST Special Publication 330, 1991 Edition (Washington, DC, August 1991), p.10.

Table B3. Other Physical Conversion Factors

Energy Source	Original Unit		Equivalent in Final Units
Petroleum	1 barrel (bbl)	=	42 ^a U.S. gallons (gal)
Coal	1 short ton	=	2,000 ^a pounds (lb)
	1 long ton	=	2,240 ^a pounds (lb)
	1 metric ton (t)	=	1,000 ^a kilograms (kg)
Wood	1 cord (cd)	=	1.25 ^b shorts tons
	1 cord (cd)	=	128 ^a cubic feet (ft ³)

^aExact conversion.

^bCalculated by the U.S. Energy Information Administration.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#appendices>.

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.

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix C

Population, U.S. Gross Domestic Product, and U.S. Gross Output

Table C1. Population, U.S. Gross Domestic Product, and U.S. Gross Output

	Population			U.S. Gross Domestic Product			U.S. Gross Output ^a
	United States ^b	World	United States as Share of World	Billion Nominal Dollars ^d	Billion Chained (2009) Dollars ^e	Implicit Price Deflator ^c (2009 = 1.00000)	Billion Nominal Dollars ^d
	Million People		Percent				
1950	152.3	2,557.6	6.0	300.2	2,184.0	0.13745	NA
1955	165.9	2,782.1	6.0	426.2	2,739.0	.15559	NA
1960	180.7	3,043.0	5.9	543.3	3,108.7	.17476	NA
1965	194.3	3,350.4	5.8	743.7	3,976.7	.18702	NA
1970	205.1	3,712.7	5.5	1,075.9	4,722.0	.22784	NA
1975	216.0	4,088.0	5.3	1,688.9	5,385.4	.31361	NA
1980	227.2	4,444.5	5.1	2,862.5	6,450.4	.44377	NA
1981	229.5	4,525.9	5.1	3,211.0	6,617.7	.48520	NA
1982	231.7	4,606.3	5.0	3,345.0	6,491.3	.51530	NA
1983	233.8	4,687.6	5.0	3,638.1	6,792.0	.53565	NA
1984	235.8	4,766.7	4.9	4,040.7	7,285.0	.55466	NA
1985	237.9	4,848.8	4.9	4,346.7	7,593.8	.57240	NA
1986	240.1	4,933.1	4.9	4,590.2	7,860.5	.58395	NA
1987	242.3	5,020.0	4.8	4,870.2	8,132.6	.59885	8,639.9
1988	244.5	5,107.8	4.8	5,252.6	8,474.5	.61982	9,359.5
1989	246.8	5,195.2	4.8	5,657.7	8,786.4	.64392	9,969.6
1990	249.6	5,283.3	4.7	5,979.6	8,955.0	.66773	10,511.1
1991	253.0	5,366.4	4.7	6,174.0	8,948.4	.68996	10,676.5
1992	256.5	5,451.4	4.7	6,539.3	9,266.6	.70569	11,242.4
1993	259.9	5,533.9	4.7	6,878.7	9,521.0	.72248	11,857.6
1994	263.1	5,614.7	4.7	7,308.8	9,905.4	.73785	12,647.2
1995	266.3	5,695.5	4.7	7,664.1	10,174.8	.75324	13,451.6
1996	269.4	5,775.8	4.7	8,100.2	10,561.0	.76699	14,259.9
1997	272.6	5,854.3	4.7	8,608.5	11,034.9	.78012	15,355.4
1998	275.9	5,931.5	4.7	9,089.2	11,525.9	.78859	16,171.3
1999	279.0	6,008.3	4.6	9,660.6	12,065.9	.80065	17,244.8
2000	282.2	6,084.5	4.6	10,284.8	12,559.7	.81887	18,564.6
2001	285.0	6,160.8	4.6	10,621.8	12,682.2	.83754	18,863.1
2002	287.6	6,237.3	4.6	10,977.5	12,908.8	.85039	19,175.0
2003	290.1	6,313.4	4.6	11,510.7	13,271.1	.86735	20,135.1
2004	292.8	6,389.9	4.6	12,274.9	13,773.5	.89120	21,697.3
2005	295.5	6,466.5	4.6	13,093.7	14,234.2	.91988	23,514.9
2006	298.4	6,544.0	4.6	13,855.9	14,613.8	.94814	24,888.0
2007	301.2	6,621.9	4.5	14,477.6	14,873.7	.97337	26,151.3
2008	304.1	6,700.3	4.5	14,718.6	14,830.4	.99246	26,825.7
2009	306.8	6,778.8	4.5	14,418.7	14,418.7	1.00000	24,657.2
2010	309.3	6,856.6	4.5	14,964.4	14,783.8	1.01221	26,093.5
2011	311.7	6,934.1	4.5	15,517.9	15,020.6	1.03311	27,536.0
2012	314.0	7,012.2	4.5	16,155.3	15,354.6	1.05214	28,663.2
2013	316.2	7,090.4	4.5	16,691.5	15,612.2	1.06913	29,601.2
2014	318.6	7,167.9	4.4	17,393.1	15,982.3	1.08828	30,895.4
2015	320.9	7,245.3	4.4	18,036.6	16,397.2	1.09998	31,397.0
2016	323.1	7,323.2	4.4	18,569.1	16,662.1	1.11445	32,188.6

^a Gross output is the value of gross domestic product (GDP) plus the value of intermediate inputs used to produce GDP.

^b Resident population of the 50 states and the District of Columbia estimated for July 1 of each year.

^c The gross domestic product implicit price deflator is used to convert nominal dollars to chained (2009) dollars.

^d See "Nominal Dollars" in Glossary.

^e See "Chained Dollars" in Glossary.

NA=Not available.

Notes: • Data are estimates. • U.S. geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949.

Sources: • **United States Population: 1949–1989**—U.S. Department of

Commerce (DOC), U.S. Census Bureau, Current Population Reports Series P-25 (June 2000). **1990–1999**—DOC, U.S. Census Bureau, "Time Series of Intercensal State Population Estimates" (April 2002). **2000–2009**—DOC, U.S. Census Bureau, "Intercensal Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico" (September 2011). **2010 forward**—DOC, U.S. Census Bureau, "Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico" (December 2016). • **World Population: 1950 forward**—DOC, U.S. Census Bureau, International Database (August 2016). • **United States as Share of World Population:** Calculated as U.S. population divided by world population. • **U.S. Gross Domestic Product: 1949 forward**—DOC, Bureau of Economic Analysis (BEA), National Income and Product Accounts (March 2017), Tables 1.1.5, 1.1.6, and 1.1.9. • **U.S. Gross Output: 1987 forward**—DOC, BEA, GDP by Industry data (April 2017).

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix D

Estimated Primary Energy Consumption in the United States, Selected Years, 1635–1945

Table D1. Estimated Primary Energy Consumption in the United States, Selected Years, 1635–1945 (Quadrillion Btu)

	Fossil Fuels				Renewable Energy			Electricity Net Imports ^b	Total
	Coal	Natural Gas	Petroleum	Total	Conventional Hydroelectric Power	Biomass	Total		
Wood ^a									
1635	NA	--	--	NA	--	(s)	(s)	--	(s)
1645	NA	--	--	NA	--	0.001	0.001	--	0.001
1655	NA	--	--	NA	--	.002	.002	--	.002
1665	NA	--	--	NA	--	.005	.005	--	.005
1675	NA	--	--	NA	--	.007	.007	--	.007
1685	NA	--	--	NA	--	.009	.009	--	.009
1695	NA	--	--	NA	--	.014	.014	--	.014
1705	NA	--	--	NA	--	.022	.022	--	.022
1715	NA	--	--	NA	--	.037	.037	--	.037
1725	NA	--	--	NA	--	.056	.056	--	.056
1735	NA	--	--	NA	--	.080	.080	--	.080
1745	NA	--	--	NA	--	.112	.112	--	.112
1755	NA	--	--	NA	--	.155	.155	--	.155
1765	NA	--	--	NA	--	.200	.200	--	.200
1775	NA	--	--	NA	--	.249	.249	--	.249
1785	NA	--	--	NA	--	.310	.310	--	.310
1795	NA	--	--	NA	--	.402	.402	--	.402
1805	NA	--	--	NA	--	.537	.537	--	.537
1815	NA	--	--	NA	--	.714	.714	--	.714
1825	NA	--	--	NA	--	.960	.960	--	.960
1835	NA	--	--	NA	--	1.305	1.305	--	1.305
1845	NA	--	--	NA	--	1.757	1.757	--	1.757
1850	0.219	--	--	0.219	--	2.138	2.138	--	2.357
1855 .....	.421	--	--	.421	--	2.389	2.389	--	2.810
1860 .....	.518	--	0.003	.521	--	2.641	2.641	--	3.162
1865 .....	.632	--	.010	.642	--	2.767	2.767	--	3.409
1870	1.048	--	.011	1.059	--	2.893	2.893	--	3.952
1875	1.440	--	.011	1.451	--	2.872	2.872	--	4.323
1880	2.054	--	.096	2.150	--	2.851	2.851	--	5.001
1885	2.840	0.082	.040	2.962	--	2.683	2.683	--	5.645
1890	4.062	.257	.156	4.475	0.022	2.515	2.537	--	7.012
1895	4.950	.147	.168	5.265	.090	2.306	2.396	--	7.661
1900	6.841	.252	.229	7.322	.250	2.015	2.265	--	9.587
1905	10.001	.372	.610	10.983	.386	1.843	2.229	--	13.212
1910	12.714	.540	1.007	14.261	.539	1.765	2.304	--	16.565
1915	13.294	.673	1.418	15.385	.659	1.688	2.347	0.002	17.734
1920	15.504	.813	2.676	18.993	.738	1.610	2.348	.003	21.344
1925	14.706	1.191	4.280	20.177	.668	1.533	2.201	.004	22.382
1930	13.639	1.932	5.897	21.468	.752	1.455	2.207	.005	23.680
1935	10.634	1.919	5.675	18.228	.806	1.397	2.203	.005	20.436
1940	12.535	2.665	7.760	22.960	.880	1.358	2.238	.007	25.205
1945	15.972	3.871	10.110	29.953	1.442	^a 1.261	2.703	.009	32.665

^a There is a discontinuity in the "Wood" time series between 1945 (in this table) and 1949 (in Table 10.1). Through 1945, data are for fuelwood only; beginning in 1949, data are for wood and wood-derived fuels.

^b Electricity transmitted across U.S. borders. Net imports equal imports minus exports.

NA=Not available. --=Not applicable. (s)=Less than 0.5 trillion Btu.

Notes: • For years not shown, data are not available. • See Tables 1.3 and 10.1 for continuation of these data series beginning in 1949. • See Note, "Geographic Coverage of Statistics for 1635–1945," at end of section.

Sources: • **Fossil Fuels:** *Energy in the American Economy, 1850–1975*, Table VII. • **Conventional Hydroelectric Power:** *Energy in the American Economy, 1850–1975*, Table II. • **Wood:** 1635–1845—U.S. Department of Agriculture,

Circular No. 641, *Fuel Wood Used in the United States 1630–1930*, February 1942. This source estimates fuelwood consumption in cords per decade, which were converted to Btu using the conversion factor of 20 million Btu per cord. The annual average value for each decade was assigned to the fifth year of the decade on the assumption that annual use was likely to increase during any given decade and the average annual value was more likely to reflect mid-decade yearly consumption than use at either the beginning or end of the decade. Values thus begin in 1635 and are plotted at 10-year intervals. 1850–1945—*Energy in the American Economy, 1850–1975*, Table VII. • **Electricity Net Imports:** *Energy in the American Economy, 1850–1975*, Tables I and VI. Electricity net imports are assumed to equal hydroelectric consumption minus hydroelectric production (data are converted to Btu by multiplying by 3,412 Btu per kilowatt-hour).

Note. Geographic Coverage of Statistics for 1635–1945.

Table D1 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, although 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 D1 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 1900–1945 is the 48 contiguous states, and the District of Columbia. • **Wood**—All 48 contiguous states and the District of Columbia by 1810.

Appendix E

Alternative Approaches for Deriving Energy Contents of Noncombustible Renewables

EIA compiles data on most energy sources in physical units, such as barrels and cubic feet, in order to calculate total primary energy consumption. To sum data for different energy sources, EIA converts the data to the common unit of British thermal units (Btu), a measure that is based on the thermal conversion of energy resources to heat and power.

Noncombustible renewables are resources from which energy is extracted without burning or combusting fuel. They include hydroelectric, geothermal, solar, and wind energy. When noncombustible renewables are used to generate electricity, there is no fuel combustion and, therefore, no set Btu conversion factors for the energy sources.¹ However, there are several possible approaches for converting that electricity to Btu. Three of these approaches are described below.

Fossil Fuel Equivalency Approach

In Sections 1, 2, and 10 of the *Monthly Energy Review*, EIA calculates total primary energy consumption for noncombustible renewable electricity in Btu by applying a fossil fuel equivalency factor. Under that approach, the primary energy consumption of noncombustible renewable electricity can be viewed as the sum of captured energy “transformed into electricity” and an “adjustment for fossil fuel equivalency.”

The adjustment for fossil fuel equivalency is equal to the difference between total primary consumption of noncombustible renewables for electricity generation in Btu (calculated using the fossil fuels heat rate in Table A6) and the captured energy of that electricity (calculated using the constant conversion factor of 3,412 Btu per kWh). The fossil fuels heat rate is equal to the thermal efficiency across fossil fuel-fired generating stations based on net generation. The fossil fuel equivalency adjustment represents the energy that would have been consumed if electricity had been generated by fossil fuels. By using that factor, it is possible, for example, to evaluate fossil fuel requirements for replacing electricity generation during periods of interruptions, such as droughts.

Captured Energy Approach

Captured energy (Tables E1a and E1b) reflects the primary energy captured for economic use and does not include

losses. Thus, it is the net energy available for direct consumption after transformation of a noncombustible renewable into electricity. In other words, captured energy is the energy measured as the “output” of a generating unit, such as electricity from a wind turbine or solar plant. The captured energy approach is often used to show the economically significant energy transformations in the United States. There is no market for the resource-specific energy apart from its immediate, site-specific energy conversion, and there is no substantive opportunity cost to its continued exploitation.²

Incident Energy Approach

Incident energy is the mechanical, radiation, or thermal energy that is measurable as the “input” of the device. EIA defines “incident energy” for noncombustible renewables as the gross energy that first strikes an energy conversion device:

- For hydroelectric, the energy contained in the water passing through the penstock (a closed conduit for carrying water to the turbines)
- For geothermal, the energy contained in the hot fluid at the surface of the wellbore
- For wind, the energy contained in the wind that passes through the rotor disc
- For solar, the energy contained in the sunlight that strikes the panel or collector mirror

The incident energy approach to converting noncombustible renewable electricity to Btu could, in theory, be used to account for “losses” that are due to the inability to convert 100% of incident energy to a useful form of energy. EIA does not publish total primary energy consumption estimates based on the incident energy approach because it would be difficult to obtain accurate estimates of input energy without creating undue burden on survey respondents. Few renewable electricity power plants track cumulative input energy due to its lack of economic significance or other purpose. In addition, estimated energy efficiencies of renewable conversion technologies vary significantly across technologies, site-specific configurations, and environmental factors.³

¹Direct use of noncombustible renewables in the form of heat (e.g., solar thermal heating) is estimated separately and is measured in Btu.

²There is an initial opportunity cost when a facility is first built: water behind a dam might flood land that could have been used for other purposes, or a solar panel might shade an area that could have used the sunlight. But that is a “fixed” opportunity cost that does not change during the operation of the plant.

³Based on EIA research conducted in 2016, engineering estimates of conversion efficiencies for noncombustible renewables range from less than 20% for solar photovoltaics and geothermal to 90% for large-scale hydroelectricity plants. Those estimates are notional indications of the energy output as a percent of energy input at each technology based on typical equipment operating within the normal operating range for that technology.

Table E1a. Noncombustible Renewable Primary Energy Consumption: Conventional Hydroelectric Power, Geothermal, and Wind (Trillion Btu)

	Conventional Hydroelectric Power ^a			Geothermal ^b				Wind ^c		
	Trans- formed Into Electricity ^{d,e}	Adjustment for Fossil Fuel Equivalence ^f	Total Primary Energy ^g	Direct Consump- tion ^h	Trans- formed Into Electricity ^{d,i}	Adjustment for Fossil Fuel Equivalence ^f	Total Primary Energy ^j	Trans- formed Into Electricity ^{d,i}	Adjustment for Fossil Fuel Equivalence ^f	Total Primary Energy ^g
1950	344	1,071	1,415	NA	NA	NA	NA	NA	NA	NA
1955	397	963	1,360	NA	NA	NA	NA	NA	NA	NA
1960	510	1,098	1,608	NA	(s)	(s)	(s)	NA	NA	NA
1965	672	1,387	2,059	NA	1	1	2	NA	NA	NA
1970	856	1,777	2,634	NA	2	4	6	NA	NA	NA
1975	1,034	2,120	3,155	NA	11	23	34	NA	NA	NA
1980	953	1,948	2,900	NA	17	35	53	NA	NA	NA
1981	900	1,858	2,758	NA	19	40	59	NA	NA	NA
1982	1,066	2,200	3,266	NA	17	34	51	NA	NA	NA
1983	1,144	2,383	3,527	NA	21	43	64	(s)	(s)	(s)
1984	1,107	2,279	3,386	NA	26	54	81	(s)	(s)	(s)
1985	970	2,000	2,970	NA	32	66	97	(s)	(s)	(s)
1986	1,003	2,068	3,071	NA	35	73	108	(s)	(s)	(s)
1987	863	1,772	2,635	NA	37	76	112	(s)	(s)	(s)
1988	771	1,563	2,334	NA	35	71	106	(s)	(s)	(s)
1989	^e 928	1,909	2,837	9	ⁱ 50	102	162	ⁱ 7	15	22
1990	999	2,047	3,046	10	53	108	171	10	19	29
1991	986	2,030	3,016	11	54	112	178	10	21	31
1992	864	1,754	2,617	12	55	112	179	10	20	30
1993	957	1,935	2,892	13	57	116	186	10	21	31
1994	888	1,796	2,683	13	53	107	173	12	24	36
1995	1,061	2,145	3,205	14	46	92	152	11	22	33
1996	1,185	2,405	3,590	15	49	99	163	11	22	33
1997	1,216	2,424	3,640	16	50	100	167	11	22	34
1998	1,103	2,194	3,297	18	50	100	168	10	21	31
1999	1,090	2,177	3,268	19	51	101	171	15	31	46
2000	940	1,871	2,811	21	48	96	164	19	38	57
2001	740	1,502	2,242	22	47	95	164	23	47	70
2002	902	1,787	2,689	24	49	98	171	35	70	105
2003	941	1,851	2,793	27	49	97	173	38	75	113
2004	916	1,773	2,688	30	51	98	178	48	93	142
2005	922	1,781	2,703	34	50	97	181	61	117	178
2006	987	1,882	2,869	37	50	95	181	91	173	264
2007	845	1,602	2,446	41	50	95	186	118	223	341
2008	869	1,642	2,511	46	51	96	192	189	357	546
2009	933	1,736	2,669	54	51	95	200	252	469	721
2010	888	1,651	2,539	60	52	97	208	323	600	923
2011	1,090	2,013	3,103	64	52	97	212	410	758	1,168
2012	943	1,686	2,629	64	53	95	212	480	860	1,340
2013	916	1,646	2,562	64	54	97	214	573	1,029	1,601
2014	885	1,582	2,467	64	54	97	214	620	1,108	1,728
2015	850	1,471	2,321	64	54	94	212	651	1,127	1,777
2016	907	1,570	2,477	64	59	103	226	774	1,340	2,114

^a Conventional hydroelectricity net generation. Through 1989, also includes hydroelectric pumped storage.

^b Geothermal heat pump and direct use energy; and geothermal electricity net generation.

^c Wind electricity net generation.

^d Electricity net generation in kilowatt-hours (kWh) multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

^e Through 1988, data are for electric utilities and industrial plants. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

^f Equals the difference between the fossil-fuel equivalent value of electricity and the captured energy consumed as electricity. The fossil-fuel equivalent value of electricity equals electricity net generation in kilowatt-hours multiplied by the total fossil fuels heat rate factors (see Table A6). The captured energy consumed as electricity equals electricity net generation in kilowatt-hours multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

^g Electricity net generation in kilowatt-hours multiplied by the total fossil fuels

heat rate factors (see Table A6).

^h Geothermal heat pump and direct use energy.

ⁱ Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

^j Direct consumption of energy; and energy used to generate electricity, calculated as electricity net generation in kilowatt-hours multiplied by the total fossil fuels heat rate factors (see Table A6).

NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Geothermal direct consumption data are estimates. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949.

Sources: • **Conventional Hydroelectric Power** and **Wind**: Tables 7.2a, 10.1, and A6. • **Geothermal**: Tables 7.2a, 10.1, 10.2a, 10.2b, and A6.

Table E1b. Noncombustible Renewable Primary Energy Consumption: Solar and Total
(Trillion Btu)

	Solar ^a						Total ^b		
	Distributed ^c			Utility-Scale ^d		Total Primary Energy ⁱ	Captured Energy ^j	Adjustment for Fossil Fuel Equivalence ^g	Total Primary Energy ⁱ
	Direct Consumption ^e	Transformed Into Electricity ^f	Adjustment for Fossil Fuel Equivalence ^g	Transformed Into Electricity ^{f,h}	Adjustment for Fossil Fuel Equivalence ^g				
1950	NA	NA	NA	NA	NA	NA	344	1,071	1,415
1955	NA	NA	NA	NA	NA	NA	397	963	1,360
1960	NA	NA	NA	NA	NA	NA	510	1,098	1,608
1965	NA	NA	NA	NA	NA	NA	673	1,388	2,061
1970	NA	NA	NA	NA	NA	NA	858	1,781	2,639
1975	NA	NA	NA	NA	NA	NA	1,045	2,143	3,188
1980	NA	NA	NA	NA	NA	NA	970	1,983	2,953
1981	NA	NA	NA	NA	NA	NA	920	1,898	2,817
1982	NA	NA	NA	NA	NA	NA	1,082	2,234	3,316
1983	NA	NA	NA	NA	NA	NA	1,165	2,426	3,591
1984	NA	NA	NA	(s)	(s)	(s)	1,133	2,334	3,467
1985	NA	NA	NA	(s)	(s)	(s)	1,002	2,066	3,068
1986	NA	NA	NA	(s)	(s)	(s)	1,038	2,141	3,179
1987	NA	NA	NA	(s)	(s)	(s)	900	1,847	2,747
1988	NA	NA	NA	(s)	(s)	(s)	807	1,634	2,441
1989	52	(s)	(s)	^h 1	2	54	1,047	2,029	3,075
1990	55	(s)	(s)	1	3	59	1,128	2,177	3,305
1991	56	(s)	(s)	2	3	62	1,120	2,166	3,286
1992	58	(s)	(s)	1	3	63	1,000	1,889	2,889
1993	60	(s)	(s)	2	3	65	1,099	2,075	3,173
1994	62	(s)	(s)	2	3	67	1,029	1,931	2,960
1995	63	(s)	(s)	2	3	68	1,196	2,263	3,458
1996	63	(s)	(s)	2	4	69	1,325	2,531	3,856
1997	62	(s)	(s)	2	3	68	1,358	2,551	3,909
1998	61	(s)	1	2	3	67	1,245	2,319	3,564
1999	60	(s)	1	2	3	66	1,237	2,313	3,550
2000	57	(s)	1	2	3	63	1,087	2,009	3,096
2001	55	(s)	1	2	4	62	890	1,648	2,538
2002	53	1	1	2	4	60	1,066	1,960	3,025
2003	51	1	1	2	4	58	1,109	2,028	3,138
2004	50	1	1	2	4	58	1,097	1,969	3,067
2005	49	1	2	2	4	58	1,119	2,001	3,120
2006	51	2	3	2	3	61	1,218	2,156	3,375
2007	53	2	4	2	4	65	1,110	1,928	3,038
2008	54	4	7	3	6	74	1,216	2,107	3,323
2009	55	5	9	3	6	78	1,353	2,315	3,668
2010	56	8	15	4	8	90	1,390	2,370	3,760
2011	58	13	23	6	11	111	1,692	2,902	4,594
2012	59	20	36	15	26	157	1,634	2,703	4,337
2013	61	28	50	31	55	225	1,726	2,877	4,603
2014	62	38	68	60	108	337	1,783	2,963	4,745
2015	63	48	84	85	147	426	1,814	2,922	4,737
2016	63	66	115	125	217	587	2,059	3,345	5,404

^a Solar thermal direct use energy; and solar photovoltaic (PV) and solar thermal electricity net generation.

^b Conventional hydroelectricity net generation; geothermal heat pump and direct use energy; geothermal electricity net generation; wind electricity net generation; solar thermal direct use energy; and solar photovoltaic (PV) and solar thermal electricity net generation.

^c Distributed (small-scale) facilities (electric generators have a combined generator nameplate capacity of less than 1 megawatt).

^d Utility-scale facilities (combined generator nameplate capacity of 1 megawatt or more).

^e Solar thermal direct use energy.

^f Electricity net generation in kilowatthours (kWh) multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

^g Equals the difference between the fossil-fuel equivalent value of electricity and the captured energy consumed as electricity. The fossil-fuel equivalent value of electricity equals electricity net generation in kilowatthours multiplied by the total fossil fuels heat rate factors (see Table A6). The captured energy consumed as electricity equals electricity net generation in kilowatthours multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

^h Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

ⁱ Direct consumption of energy; and energy used to generate electricity, calculated as electricity net generation in kilowatthours multiplied by the total fossil fuels heat rate factors (see Table A6).

^j Direct consumption of energy plus captured energy consumed as electricity, which is calculated as electricity net generation in kilowatthours (kWh) multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Beginning in 1989, data for distributed solar and total captured energy are estimates. For the current year, data for utility-scale solar are estimates.

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

• Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949.

Sources: • **Solar:** Tables 10.5, 10.6, and A6. • **Total:** Tables 7.2a, 10.1, 10.2a, 10.2b, 10.5, 10.6, and A6.

THIS PAGE INTENTIONALLY LEFT BLANK

Glossary

Alcohol: The family name of a group of organic chemical compounds composed of carbon, hydrogen, and oxygen. The series of molecules vary in chain length and are composed of a **hydrocarbon** plus a hydroxyl group; $\text{CH}_3\text{-(CH}_2)_n\text{-OH}$ (e.g., **methanol**, **ethanol**, and tertiary butyl alcohol). See **Fuel Ethanol**.

Alternative Fuel: Alternative fuels, for transportation applications, include the following: **methanol**; denatured **ethanol**, and other **alcohols**; fuel mixtures containing 85 percent or more by volume of methanol, denatured ethanol, and other alcohols with **motor gasoline** or other fuels; **natural gas**; **liquefied petroleum gas (propane)**; **hydrogen**; **coal-derived liquid fuels**; fuels (other than alcohol) derived from biological materials (**biofuels** such as **soy diesel fuel**); **electricity** (including electricity from **solar energy**); and "... any other fuel the Secretary determines, by rule, is substantially not **petroleum** and would yield substantial energy security benefits and substantial environmental benefits." The term "alternative fuel" does not include alcohol or other blended portions of primarily petroleum-based fuels used as **oxygenates** or extenders, i.e., **MTBE**, **ETBE**, other ethers, and the 10-percent ethanol portion of **gasohol**.

Alternative-Fuel Vehicle (AFV): A vehicle designed to operate on an **alternative fuel** (e.g., compressed **natural gas**, **methane** blend, or **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 coal 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 ton or less.

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.

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 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. See **Aviation Gasoline, Finished**.

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 D 910 and Military Specification MIL-G-5572. *Note:* Data on blending components are not counted in data on finished aviation gasoline.

Barrel (Petroleum): A unit of volume equal to 42 U.S. Gallons.

Base Gas: The quantity of **natural gas** needed to maintain adequate reservoir pressures and deliverability rates throughout the withdrawal season. Base gas usually is not withdrawn and remains in the reservoir. All natural gas native to a depleted reservoir is included in the base gas volume.

Biodiesel: A fuel typically made from soybean, canola, or other vegetable oils; animal fats; and recycled grease. It can serve as a substitute for **petroleum-derived diesel fuel** or **distillate fuel oil**. For U.S. Energy Information Administration reporting, it is a fuel composed of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats, designated B100, and meeting the requirements of ASTM (American Society for Testing & Materials) D 6751.

Biofuels: Liquid fuels and blending components produced from **biomass** (plant) feedstocks, used primarily for transportation. See **Biodiesel** and **Fuel Ethanol**.

Biogenic: Produced by biological processes of living organisms. *Note:* EIA uses the term "biogenic" to refer only to organic nonfossil material of biological origin.

Biomass: Organic non-fossil material of biological origin constituting a **renewable energy** source. See **Biodiesel, Biofuels, Biomass Waste, Densified Biomass, Fuel Ethanol,** and **Wood and Wood-Derived Fuels.**

Biomass-Based Diesel Fuel: Biodiesel and other renewable **diesel fuel** or diesel fuel blending components derived from **biomass**, but excluding renewable diesel fuel coprocessed with petroleum feedstocks. See **Renewable Diesel Fuel (Other).**

Biomass Waste: Organic non-fossil material of biological origin that is a byproduct or a discarded product. "Biomass waste" includes municipal solid waste from **biogenic** sources, landfill gas, sludge waste, agricultural crop byproducts, straw, and other **biomass** solids, liquids, and gases; but excludes **wood and wood-derived fuels** (including **black liquor**), **biofuels** feedstock, **biodiesel**, and **fuel ethanol**. *Note:* EIA "biomass waste" data also include energy crops grown specifically for energy production, which would not normally constitute waste.

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 to make **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).

Black Liquor: A byproduct of the paper production process, alkaline spent liquor, that can be used as a source of energy. Alkaline spent liquor is removed from the digesters in the process of chemically pulping wood. After evaporation, the residual "black" 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.**

Btu: See **British Thermal Unit.**

Btu Conversion Factor: A factor for converting **energy** data between one unit of measurement and **British thermal units (Btu)**. Btu conversion factors are generally used to convert energy data from physical units of measure (such as **barrels, cubic feet,** or **short tons**) into the energy-equivalent measure of Btu. (See

<http://www.eia.gov/totalenergy/data/monthly/#appendices> for further information on Btu conversion factors.)

Butane (C₄H₁₀): A straight-chain or branch-chain **hydrocarbon** extracted from **natural gas** or **refinery gas** streams, which is gaseous at standard temperature and pressure. It includes **isobutane** and **normal butane** and is designated in ASTM Specification D1835 and Gas Processors Association specifications for commercial butane.

Isobutane (C₄H₁₀): A branch-chain saturated (paraffinic) **hydrocarbon** extracted from both **natural gas** and **refinery gas** streams, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of 11 degrees Fahrenheit. See **Paraffinic Hydrocarbons.**

Normal Butane (C₄H₁₀): A straight-chain saturated (paraffinic) **hydrocarbon** extracted from both **natural gas** and **refinery gas** streams, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of 31 degrees Fahrenheit. See **Paraffinic Hydrocarbons.**

Butylene (C₄H₈): An olefinic **hydrocarbon** recovered from refinery or petrochemical processes, which is gaseous at standard temperature and pressure. Butylene is used in the production of gasoline and various petrochemical products. See **Olefinic Hydrocarbons (Olefins).**

Capacity Factor: The ratio of the electrical energy produced by a generating unit for a given period of time to the electrical energy that could have been produced at continuous full-power operation during the same period.

Carbon Dioxide (CO₂): A colorless, odorless, non-poisonous gas 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).

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 and is therefore subject to less distortion over time.

CIF: See **Cost, Insurance, Freight**.

Citygate: 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 inclusive of natural changes in climate, including 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 **Anthracite, Bituminous Coal, Lignite, Subbituminous Coal, Waste Coal, and Coal Synfuel**.

Coal Coke: 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 grey, hard, and porous and has a heating value of 24.8 million Btu per ton.

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 the period.

Coal Synfuel: Coal-based solid fuel that has been processed by a **coal synfuel plant**; and coal-based fuels such as briquettes, pellets, or extrusions, which are formed from fresh or recycled coal and binding materials.

Coal Synfuel Plant: A plant engaged in the chemical transformation of **coal** into **coal synfuel**.

Coke: See **Coal Coke** and **Petroleum Coke**.

Coking Coal: Bituminous coal suitable for making coke. See **Coal Coke**.

Combined-Heat-and-Power (CHP) Plant: A plant designed to produce both heat and electricity from a single heat source. *Note:* This term is being used in place of the term "cogenerator" that was used by EIA in the past. CHP better describes the facilities because some of the plants

included do not produce heat and power in a sequential fashion and, as a result, do not meet the legal definition of cogeneration specified in the Public Utility Regulatory Policies Act (PURPA).

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: The installation of permanent equipment for the production of oil or gas. If a well is equipped to produce only oil or gas from one zone or reservoir, the definition of a well (classified as an oil well or gas well) and the definition of a completion are identical. However, if a well is equipped to produce oil and/or gas separately from more than one reservoir, a well is not synonymous with a completion.

Conventional Hydroelectric Power: Hydroelectric power generated from flowing water that is not created by **hydroelectric pumped storage**.

Conventional Motor Gasoline: See **Motor Gasoline Conventional**.

Conversion Factor: A factor for converting data between one unit of measurement and another (such as between **short tons** and **British thermal units**, or between **barrels** and **gallons**). (See <http://www.eia.gov/totalenergy/data/monthly/#appendices> for further information on conversion factors.) See **Btu Conversion Factor** and **Thermal Conversion Factor**.

Cost, Insurance, Freight (CIF): A sales transaction in which the seller pays for the transportation and insurance of the goods to the port of destination specified by the buyer.

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, oil 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 F.O.B. Price: The crude oil price actually charged at the oil-producing country's port of loading. Includes deductions for any rebates and discounts or additions of premiums, where applicable. It is the actual price paid with no adjustment for credit terms.

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

Crude Oil Landed Cost: The price of crude oil at the port of discharge, including charges associated with the purchase, transporting, and insuring of 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 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 pipelines, at pipeline terminals, and on leases.

Crude Oil Used Directly: Crude oil consumed as fuel by crude oil pipelines and on crude oil leases.

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

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.

Denaturant: Petroleum, typically **pentanes plus** or **conventional motor gasoline**, added to **fuel ethanol** to make it unfit for human consumption. Fuel ethanol is denatured, usually prior to transport from the ethanol production facility, by adding 2 to 5 volume percent denaturant. See **Fuel Ethanol** and **Fuel Ethanol Minus Denaturant**.

Densified Biomass: Raw **biomass**, primarily wood, that has been condensed into a homogeneously sized, energy-dense product, such as wood pellets, intended for use as

fuel. It is mainly used for residential and commercial space heating and electricity generation.

Design Electrical Rating, Net: The nominal net electrical output of a nuclear unit as specified by the electric utility for the purpose of plant design.

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

Diesel Fuel: A fuel composed of **distillate fuel oils** obtained in petroleum refining operation or blends of such distillate fuel oils with **residual fuel oil** used in motor vehicles. The boiling point and specific gravity are higher for diesel fuels than for gasoline.

Direct Use: Use of electricity that 1) is self-generated, 2) is produced by either the same entity that consumes the power or an affiliate, and 3) is used in direct support of a service or industrial process located within the same facility or group of facilities that house the generating equipment. Direct use is exclusive of **station use**.

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 in trucks and automobiles, 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**.

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

Dry Natural Gas Production: See **Natural Gas (Dry) Production**.

E85: A fuel containing a mixture of 85 percent **ethanol** and 15 percent **motor gasoline**.

Electric Power Plant: A station containing prime movers, electric generators, and auxiliary equipment for converting mechanical, chemical, and/or fission energy into electric energy.

Electric Power Sector: An energy-consuming sector that consists of electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public-i.e., North American Industry Classification System 22 plants. See also **Combined-Heat-and-Power (CHP) Plant**, **Electricity-Only Plant**, **Electric Utility**, and **Independent Power Producer**.

Electric Utility: Any entity that generates, transmits, or distributes **electricity** and recovers the cost of its

generation, transmission or distribution assets and operations, either directly or indirectly, through cost-based rates set by a separate regulatory authority (e.g., State Public Service Commission), or is owned by a governmental unit or the consumers that the entity serves. Examples of these entities include: investor-owned entities, public power districts, public utility districts, municipalities, rural electric cooperatives, and state and federal agencies. Electric utilities may have Federal Energy Regulatory Commission approval for interconnection agreements and wholesale trade tariffs covering either cost-of-service and/or market-based rates under the authority of the Federal Power Act. 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 **kilowatt-hours** (kWh) or megawatt-hours (MWh).

Electricity Generation, Gross: The total amount of electric energy produced by generating units and measured at the generating terminal in **kilowatt-hours** (kWh) or megawatt-hours (MWh).

Electricity Generation, Net: The amount of **gross electricity generation** less **station use** (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 electricity for station service and is deducted from gross generation.

Electricity-Only Plant: A plant designed to produce electricity only. See also **Combined-Heat-and-Power (CHP) Plant**.

Electricity Retail Sales: The amount of electricity sold to customers purchasing electricity for their own use and not for resale.

End-Use Sectors: The **residential**, **commercial**, **industrial**, and **transportation** sectors of the economy.

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. Electrical energy is usually measured in kilowatt-hours, 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 Service Provider: An energy entity that provides service to a retail or end-use customer.

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 (C₂H₆): A straight-chain saturated (paraffinic) **hydrocarbon** extracted predominantly from the **natural gas** stream, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of -127 degrees Fahrenheit. See **Paraffinic Hydrocarbons.**

Ethanol (C₂H₅OH): A clear, colorless, flammable **alcohol.** Ethanol is typically produced biologically from **biomass** feedstocks such as agricultural crops and cellulosic residues from agricultural crops or wood. Ethanol can also be produced chemically from **ethylene.** See **Biomass, Fuel Ethanol, and Fuel Ethanol Minus Denaturant.**

Ether: A generic term applied to a group of organic chemical compounds composed of carbon, **hydrogen,** and oxygen, characterized by an oxygen atom attached to two carbon atoms (e.g., **methyl tertiary butyl ether**).

Ethylene (C₂H₄): An olefinic **hydrocarbon** recovered from refinery or petrochemical processes, which is gaseous at standard temperature and pressure. Ethylene is used as a petrochemical feedstock for many chemical applications and the production of consumer goods. See **Olefinic Hydrocarbons (Olefins).**

Exploratory Well: A well drilled to find and produce oil or gas in an area previously considered an unproductive area, to find a new reservoir in a known field (i.e., one previously found to be producing oil or gas in another reservoir), or to extend the limit of a known oil or gas reservoir.

Exports: Shipments of goods from within the 50 states and the District of Columbia to U.S. possessions and territories or to foreign countries.

Federal Energy Administration (FEA): A predecessor of the U.S. 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, oil pipeline rates, and gas pipeline certification. FERC is an independent regulatory agency within the U.S. 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 U.S. Department of Energy was created. Its functions were divided between the U.S. Department of Energy and the Federal Energy Regulatory Commission, an independent regulatory agency.

First Purchase Price: The price for domestic crude oil reported by the company that owns the crude oil the first time it is removed from the lease boundary.

Flared Natural Gas: **Natural gas** burned in flares on the base site or at gas processing plants.

F.O.B. (Free on Board): 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.

Footage Drilled: Total footage for wells in various categories, as reported for any specified period, includes (1) the deepest total depth (length of well bores) of all wells drilled from the surface, (2) the total of all bypassed footage drilled in connection with reported wells, and (3) all new footage drilled for directional sidetrack wells. Footage reported for directional sidetrack wells does not include footage in the common bore, which is reported as footage for the original well. In the case of old wells drilled deeper, the reported footage is that which was drilled below the total depth of the old well.

Former U.S.S.R.: See **Union of Soviet Socialist Republics (U.S.S.R.).**

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 electricity generation plant in which the prime mover is a turbine rotated by high-pressure steam produced in a boiler by heat from burning fossil fuels.

Fuel Ethanol: **Ethanol** intended for fuel use. Fuel ethanol in the United States must be anhydrous (less than 1 percent water). Fuel ethanol is denatured (made unfit for human consumption), usually prior to transport from the ethanol production facility, by adding 2 to 5 volume percent petroleum, typically **pentanes plus** or **conventional motor gasoline.** Fuel ethanol is used principally for blending in low concentrations with **motor gasoline** as an **oxygenate** or octane enhancer. In high concentrations, it is used to fuel **alternative-fuel vehicles** specially designed for its use. See **Alternative-Fuel Vehicle,**

Denaturant, E85, Ethanol, Fuel Ethanol Minus Denaturant, and Oxygenates.

Fuel Ethanol Minus Denaturant: An unobserved quantity of anhydrous, biomass-derived, undenatured **ethanol** for fuel use. The quantity is obtained by subtracting the estimated **denaturant** volume from **fuel ethanol** volume. Fuel ethanol minus denaturant is counted as **renewable energy**, while denaturant is counted as **nonrenewable fuel**. See **Denaturant, Ethanol, Fuel Ethanol, Nonrenewable Fuels, Oxygenates, and Renewable Energy**.

Full-Power Operation: Operation of a nuclear generating unit at 100 percent of its design capacity. Full-power operation precedes commercial operation.

Gasohol: A blend of finished motor gasoline containing alcohol (generally **ethanol** but sometimes methanol) at a concentration between 5.7 percent and 10 percent by volume. See **Motor Gasoline, Oxygenated**.

Gas Well: A well completed for production of natural gas from one or more gas zones or reservoirs. Such wells contain no completions for the production of crude oil.

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 fixed 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 (infrared) radiation, thus preventing long-wave radiant energy from leaving 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.

GT/IC: Gas turbine and internal combustion plants.

Heat Content: The amount of heat energy available to be released by the transformation or use of a specified physical unit of an energy form (e.g., a ton of coal, a barrel of oil, a kilowatt-hour of electricity, a cubic foot of natural gas, or a pound of steam). The amount of heat energy is commonly expressed in **British thermal units (Btu)**. *Note:* Heat content of combustible energy forms can be expressed in terms of either gross heat content (higher or upper heating value) or net heat content (lower heating value), depending upon whether or not the available heat energy includes or excludes the energy used to vaporize water (contained in the original energy form or created during the combustion process). The U.S. Energy Information Administration typically uses gross heat content values.

Heat Rate: A measure of generating station thermal efficiency commonly stated as **Btu per kilowatt-hour**. *Note:* Heat rates can be expressed as either gross or net heat rates, depending whether the electricity output is gross or net generation. Heat rates are typically expressed as net heat rates.

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**, the primary constituent of **natural gas**) to the very heavy and very complex.

Hydrocarbon Gas Liquids (HGL): A group of **hydrocarbons** including **ethane, propane, normal butane, isobutane, and natural gasoline**, and their associated **olefins**, including **ethylene, propylene, butylene, and isobutylene**. As marketed products, HGL represents all **natural gas liquids (NGL)** and olefins. EIA reports production of HGL from refineries (**liquefied refinery gases**, or LRG) and natural gas plants (**natural gas plant liquids**, or NGPL). Excludes **liquefied natural gas (LNG)**. See **Olefinic Hydrocarbons (Olefins)**.

Hydroelectric Power: The production of electricity from the kinetic energy of falling water.

Hydroelectric Power Plant: A plant in which the turbine generators are driven by falling water.

Hydroelectric Pumped Storage: Hydroelectricity 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 a power plant at a lower level.

Hydrogen (H): The lightest of all gases, hydrogen occurs chiefly in combination with oxygen in water. It also exists in acids, bases, **alcohols, petroleum**, and other **hydrocarbons**.

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**.

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); 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**.

Injections (Natural Gas): **Natural gas** injected into storage reservoirs.

Isobutane (C₄H₁₀): A branch-chain saturated (paraffinic) **hydrocarbon** extracted from both **natural gas** and **refinery gas** streams, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of 11 degrees Fahrenheit. See **Paraffinic Hydrocarbons**.

Isobutylene (C₄H₈): A branch-chain olefinic **hydrocarbon** recovered from refinery or petrochemical processes, which is gaseous at standard temperature and pressure. Isobutylene is used in the production of gasoline and various petrochemical products. See **Olefinic Hydrocarbons (Olefins)**.

Isopentane (C₅H₁₂): 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 having 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 D 1655 and Military Specifications MIL-T-5624P and MIL-T-83133D (Grades JP-5 and JP-8). It is used for commercial and military turbo jet and turbo prop aircraft engines.

Jet Fuel, Naphtha-Type: A fuel in the heavy **naphtha** boiling range having an average gravity of 52.8 degrees

API, 20% to 90% distillation temperatures of 290 degrees 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 D 3699 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**.

Kilowatt: A unit of electrical power equal to 1,000 **watts**.

Kilowatt-hour (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 kilowatt-hour is equivalent to 3,412 Btu. See **Watt-hour**.

Landed Costs: The dollar-per-barrel price of crude oil at the port of discharge. Included are the charges associated with the purchase, transporting, and insuring of a cargo from the purchase point to the port of discharge. Not included are charges incurred at the discharge port (e.g., import tariffs or fees, wharfage charges, and demurrage charges).

Lease and Plant Fuel: Natural gas used in well, field, and lease operations (such as gas used in drilling operations, heaters, dehydrators, and field compressors) and used as fuel in natural gas processing plants.

Lease Condensate: Light liquid **hydrocarbons** recovered from lease separators or field facilities at associated and non-associated **natural gas** wells. Mostly pentanes and heavier hydrocarbons. Normally enters the **crude oil** stream after production.

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).

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** gases, primarily **propane**, **normal butane**, and **isobutane**, derived from **crude oil** refining or **natural gas** processing. These gases may be marketed individually or mixed. They can be liquefied through pressurization (without requiring cryogenic refrigeration) for convenience of transportation or storage. Excludes **ethane** and **olefins**. *Note:* In some EIA publications, LPG includes ethane and marketed refinery olefin streams, in accordance with definitions used prior to January 2014.

Liquefied Refinery Gases (LRG): **Hydrocarbon gas liquids** produced in refineries from processing of **crude oil** and **unfinished oils**. They are retained in the liquid state through pressurization and/or refrigeration. The reported categories include **ethane**, **propane**, **normal butane**, **isobutane**, and refinery **olefins** (**ethylene**, **propylene**, **butylene**, and **isobutylene**).

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 as process materials either incorporated into other materials used as processing aids in the manufacturing of other products or as carriers of other materials. Petroleum lubricants may be produced either from distillates or residues. Other substances may be added to impart or improve certain required properties. Excluded are byproducts of lubricating oil refining, such as aromatic extracts derived from solvent extraction or tars derived from deasphalting. Included are all grades of lubricating oils from spindle oil to cylinder oil and those used in greases. Lubricant categories are paraffinic and naphthenic.

Marketed Production (Natural Gas): See **Natural Gas Marketed Production**.

Methane (CH₄): A colorless, flammable, odorless **hydrocarbon** gas which is the major component of **natural gas**. It is also an important source of **hydrogen** in various industrial processes. Methane is a greenhouse gas. See **Greenhouse Gases**.

Methanol (CH₃OH): A light, volatile **alcohol** eligible for gasoline blending. See **Motor Gasoline Blending and Oxygenates**.

Methyl Tertiary Butyl Ether (MTBE) ((CH₃)₃COCH₃): An **ether** intended for gasoline blending. See **Motor Gasoline Blending and 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 Components: Naphtha (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 (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, hydrogens, 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 engines. Motor gasoline, as defined in ASTM Specification D 4814 or Federal Specification VV-G-1690C, is characterized as having a boiling range of 122 to 158 degrees Fahrenheit at the 10 percent recovery point to 365 to 374 degrees Fahrenheit at the 90 percent recovery point. Motor gasoline includes conventional gasoline; all types of oxygenated gasoline, including **gasohol**; and reformulated gasoline, but excludes aviation gasoline. *Note:* Volumetric data on blending components, such as **oxygenates**, are not counted in data on finished motor gasoline until the blending components are blended into the gasoline. See **Motor Gasoline, Conventional; Motor Gasoline, Oxygenated; and Motor Gasoline, Reformulated**.

Motor Gasoline Grades: The classification of gasoline by octane ratings. Each type of gasoline (conventional, oxygenated, and reformulated) is classified by three grades: regular, midgrade, and premium. *Note:* 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. *Note:* Octane requirements may vary by altitude. See **Motor Gasoline Grades**.

Midgrade Gasoline: Gasoline having an antiknock index, i.e., octane rating, greater than or equal to 88 and less than or equal to 90. *Note:* Octane requirements may vary by altitude. See **Motor Gasoline Grades**.

Premium Gasoline: Gasoline having an antiknock index, i.e., octane rating, greater than 90. *Note:* Octane requirements may vary by altitude. See **Motor Gasoline Grades**.

Motor Gasoline, Oxygenated: Finished motor gasoline, other than reformulated 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 oxygenated fuels program reformulated gasoline (OPRG) and reformulated gasoline blendstock for oxygenate blending (RBOB). Data on gasohol that has at least 2.7 percent oxygen, by weight, and is intended for sale inside CO nonattainment areas are included in data on oxygenated gasoline. Other data on gasohol are included in data on conventional gasoline.

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).

Motor Gasoline Retail Prices: Motor gasoline prices calculated each month by the Bureau of Labor Statistics (BLS) in conjunction with the construction of the Consumer Price Index (CPI). Those prices are collected in 85 urban areas selected to represent all urban consumers—about 80 percent of the total U.S. population. The service stations are selected initially, and on a replacement basis, in such a way that they represent the purchasing habits of the CPI population. Service stations in the current sample include those providing all types of service (i.e., full-, mini-, and self-service).

Motor Gasoline (Total): For stock level data, a sum including finished motor gasoline stocks plus stocks of motor gasoline blending components but excluding stocks of oxygenates.

MTBE: See **Methyl Tertiary Butyl Ether**.

NAICS (North American Industry Classification System): 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. For additional information on NAICS, go to <http://www.census.gov/eos/www/naics/>.

Naphtha: A generic term applied to a refined or partially refined **petroleum** fraction with an approximate boiling range between 122 degrees and 400 degrees Fahrenheit.

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 **natural gas plant liquids** production.

Natural Gas Liquids (NGL): A group of **hydrocarbons** including **ethane**, **propane**, **normal butane**, **isobutane**, and **natural gasoline**. Generally include **natural gas plant liquids** and all **liquefied refinery gases** except **olefins**. See **Paraffinic Hydrocarbons**.

Natural Gas Marketed Production: Gross withdrawals of **natural gas** from production reservoirs, less gas used for reservoir **repressuring**; **nonhydrocarbon gases** removed in treating and processing operations; and quantities of **vented natural gas** and **flared natural gas**.

Natural Gas Plant Liquids (NGPL): Those **hydrocarbons** in **natural gas** that are separated as liquids at natural gas processing, fractionating, and cycling plants. Products obtained include **ethane**, **liquefied petroleum gases** (**propane**, **normal butane**, and **isobutane**), and **natural gasoline**. Component products may be fractionated or mixed. **Lease condensate** and **plant condensate** are excluded. *Note:* Some EIA publications categorize NGPL production as field production, in accordance with definitions used prior to January 2014.

Natural Gas Wellhead Price: The **wellhead price** of **natural gas** is calculated by dividing the total reported value at the wellhead by the total quantity produced as reported by the appropriate agencies of individual

producing states and the U.S. Minerals 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 commodity product commonly traded in **natural gas liquids** (NGL) markets that comprises liquid **hydrocarbons** (mostly pentanes and hexanes) and generally remains liquid at ambient temperatures and atmospheric pressure. Natural gasoline is equivalent to **pentanes plus**.

Net Summer Capacity: The maximum output, commonly expressed in **kilowatts** (kW) or 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 June 1 through September 30). This output reflects a reduction in capacity due to electricity use for station service or auxiliaries.

Neutral Zone: A 6,200 square-mile area shared equally between Kuwait and Saudi Arabia under a 1992 agreement. The Neutral Zone contains an estimated 5 billion barrels of oil and 8 trillion cubic feet of natural gas.

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.

Non-Biomass Waste: Material of non-biological origin that is a byproduct or a discarded product. "Non-biomass waste" includes municipal solid waste from non-biogenic sources, such as plastics, and tire-derived fuels.

Nonhydrocarbon Gases: Typical nonhydrocarbon gases that may be present in reservoir **natural gas** are **carbon dioxide**, helium, hydrogen sulfide, and nitrogen.

Nonrenewable Fuels: Fuels that cannot be easily made or "renewed," such as **crude oil**, **natural gas**, and **coal**.

Normal Butane (C₄H₁₀): A straight-chain saturated (paraffinic) **hydrocarbon** extracted from both **natural gas** and **refinery gas** streams, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of 31 degrees Fahrenheit. See **Paraffinic Hydrocarbons**.

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.

Oil: See **Crude Oil**.

Olefinic Hydrocarbons (Olefins): Unsaturated **hydrocarbon** compounds with the general formula C_nH_{2n} containing at least one carbon-to-carbon double-bond. Olefins are produced at crude oil refineries and petrochemical plants and are not naturally occurring constituents of oil and natural gas. Sometimes referred to as alkenes or unsaturated hydrocarbons. Excludes aromatics.

Olefins: See **Olefinic Hydrocarbons (Olefins)**.

OPEC: See **Organization of the Petroleum Exporting Countries**.

Operable Unit (Nuclear): In the United States, a nuclear generating unit that has completed low-power testing and been issued a full-power operating license by the Nuclear Regulatory Commission, or equivalent permission to operate.

Organization for Economic Cooperation and Development (OECD): An international organization helping governments tackle the economic, social and governance challenges of a globalized economy. Its membership comprises about 30 member countries. With active relationships with some 70 other countries, non-governmental organizations (NGOs) and civil society, it has a global reach. For details about the organization, see <http://www.oecd.org>.

Organization of the Petroleum Exporting Countries (OPEC): An intergovernmental organization whose stated objective is to "coordinate and unify the petroleum policies of member countries." It was created at the Baghdad Conference on September 10–14, 1960. Current and former members (with years of membership) include Algeria (1969 forward), Angola (2007 forward), Ecuador (1973–1992 and 2007 forward), Gabon (1974–1995 and 2016 forward), Indonesia

(1962–2008 and 2016), Iran (1960 forward), Iraq (1960 forward), Kuwait (1960 forward), Libya (1962 forward), Nigeria (1971 forward), Qatar (1961 forward), Saudi Arabia (1960 forward), United Arab Emirates (1967 forward), and Venezuela (1960 forward).

Other Hydrocarbons: Materials received by a refinery and consumed as a raw material. Includes **hydrogen**, coal tar derivatives, gilsonite. Excludes **natural gas** used for fuel or hydrogen feedstock.

Oxygenates: Substances which, when added to 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.

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.

Paraffinic Hydrocarbons: Saturated **hydrocarbon** compounds with the general formula C_nH_{2n+2} containing only single bonds. Sometimes referred to as alkanes or **natural gas liquids**.

Pentanes Plus: A mixture of liquid **hydrocarbons**, mostly pentanes and heavier, extracted from **natural gas** in a gas processing plant. Pentanes plus is equivalent to **natural gasoline**.

Petrochemical Feedstocks: Chemical feedstocks derived from refined or partially refined **petroleum** fractions, principally for use in the manufacturing 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: 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. See **Petroleum Coke, Catalyst** and **Petroleum Coke, Marketable**.

Petroleum Coke, Catalyst: The carbonaceous residue that is deposited on the catalyst used in many catalytic operations

(e.g., catalytic cracking). Carbon is deposited on the catalyst, thus deactivating the catalyst. The catalyst is reactivated by burning off the carbon producing heat and **carbon dioxide (CO₂)**. The carbonaceous residue is not recoverable as a product. See **Petroleum Coke**.

Petroleum Coke, Marketable: Those grades of coke produced in delayed or fluid cokers that may be recovered as relatively pure carbon. Marketable petroleum coke may be sold as is or further purified by calcining. See **Petroleum Coke**.

Petroleum Consumption: See **Products Supplied (Petroleum)**.

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 Products: Products 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 products.

Petroleum Stocks, Primary: For individual products, quantities that are held at refineries, in 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 oils estimates and total.

Pipeline Fuel: Gas consumed in the operation of pipelines, primarily in compressors.

Plant Condensate: Liquid **hydrocarbons** recovered at inlet separators or scrubbers in **natural gas** processing plants at atmospheric pressure and ambient temperatures. Mostly pentanes and heavier hydrocarbons.

Primary Energy: **Energy** in the form that it is first accounted for in a statistical energy balance, before any transformation to secondary or tertiary forms of energy. For example, **coal** can be converted to synthetic gas, which can be converted to **electricity**; in this example, coal is primary energy, synthetic gas is secondary energy,

and electricity is tertiary energy. See **Primary Energy Production** and **Primary Energy Consumption**.

Primary Energy Consumption: Consumption of **primary energy**. (Energy sources that are produced from other energy sources—e.g., **coal coke** from **coal**—are included in primary energy consumption only if their energy content has not already been included as part of the original energy source. Thus, U.S. primary energy consumption does include net imports of coal coke, but not the coal coke produced from domestic coal.) The U.S. Energy Information Administration includes the following in U.S. primary energy consumption: coal consumption; coal coke net imports; **petroleum consumption (petroleum products supplied, including natural gas plant liquids and crude oil burned as fuel); dry natural gas**—excluding **supplemental gaseous fuels**—consumption; **nuclear electricity net generation** (converted to Btu using the nuclear plants **heat rate**); **conventional hydroelectricity** net generation (converted to Btu using the fossil-fueled plants heat rate); **geothermal** electricity net generation (converted to Btu using the fossil-fueled plants heat rate), and geothermal heat pump energy and geothermal direct use energy; **solar thermal** and **photovoltaic** electricity net generation (converted to Btu using the fossil-fueled plants heat rate), and solar thermal direct use energy; **wind** electricity net generation (converted to Btu using the fossil-fueled plants heat rate); **wood and wood-derived fuels** consumption; **biomass waste** consumption; **fuel ethanol** and **biodiesel** consumption; losses and co-products from the production of fuel ethanol and biodiesel; and electricity net imports (converted to Btu using the electricity heat content of 3,412 Btu per kilowatthour). See **Total Energy Consumption**.

Primary Energy Production: Production of **primary energy**. The U.S. Energy Information Administration includes the following in U.S. primary energy production: **coal** production, **waste coal** supplied, and coal refuse recovery; **crude oil** and **lease condensate** production; **natural gas plant liquids** production; **dry natural gas**—excluding **supplemental gaseous fuels**—production; **nuclear electricity net generation** (converted to Btu using the nuclear plants **heat rate**); **conventional hydroelectricity** net generation (converted to Btu using the fossil-fueled plants heat rate); **geothermal** electricity net generation (converted to Btu using the fossil-fueled plants heat rate), and geothermal heat pump energy and geothermal direct use energy; **solar thermal** and **photovoltaic** electricity net generation (converted to Btu using the fossil-fueled plants heat rate), and solar thermal direct use energy; **wind** electricity net generation (converted to Btu using the fossil-fueled plants heat rate); **wood and wood-derived fuels** production; **biomass waste** consumption; and **biofuels** feedstock.

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.

Product Supplied (Petroleum): Approximately represents consumption of petroleum products because it measures the disappearance of these products from primary

sources, i.e., refineries, natural gas-processing plants, blending plants, pipelines, and bulk terminals. In general, product supplied of each product in any given period is computed as follows: field production, plus refinery 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.

Propane (C₃H₈): A straight-chain saturated (paraffinic) **hydrocarbon** extracted from **natural gas** or **refinery gas** streams, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of -44 degrees Fahrenheit. It includes all products designated in ASTM Specification D1835 and Gas Processors Association specifications for commercial (HD-5) propane. See **Paraffinic Hydrocarbons**.

Propylene (C₃H₆): An olefinic **hydrocarbon** recovered from refinery or petrochemical processes, which is gaseous at standard temperature and pressure. Propylene is an important petrochemical feedstock. See **Olefinic Hydrocarbons (Olefins)**.

Real Dollars: These are dollars that have been adjusted for inflation.

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.

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

Refinery and Blender Net Inputs: Raw materials, **unfinished oils**, and blending components processed at refineries, or blended at refineries or petroleum storage terminals to produce finished **petroleum products**. Included are gross inputs of **crude oil, natural gas plant liquids**, other **hydrocarbon** raw materials, **hydrogen, oxygenates** (excluding **fuel ethanol**), and renewable fuels (including **fuel ethanol**). Also included are net inputs of unfinished oils, **motor gasoline blending components**, and **aviation gasoline blending components**. Net inputs are calculated as gross inputs minus gross production. Negative net inputs indicate gross inputs are less than gross production. Examples of negative net inputs include reformulated gasoline blendstock for oxygenate blending (RBOB) produced at refineries for shipment to blending terminals, and unfinished oils produced and added to inventory in advance of scheduled maintenance of a refinery crude oil distillation unit.

Refinery and Blender Net Production: Liquefied refinery gases, and finished **petroleum products** produced at a **refinery** or petroleum storage terminal blending facility. Net production equals gross production minus gross inputs. Negative net production indicates gross production is

less than gross inputs for a finished petroleum product. Examples of negative net production include reclassification of one finished product to another finished product, or reclassification of a finished product to **unfinished oils** or blending components.

Refinery Gas: Still gas consumed as refinery fuel.

Refinery (Petroleum): An installation that manufactures finished petroleum products from crude oil, unfinished oils, natural gas liquids, other hydrocarbons, and alcohol.

Refuse Mine: A surface site where **coal** is recovered from previously mined coal. It may also be known as a silt bank, culm bank, refuse bank, slurry dam, or dredge operation.

Refuse Recovery: The recapture of **coal** from a **refuse mine** or the coal recaptured by that process. The resulting product has been cleaned to reduce the concentration of noncombustible materials.

Renewable Diesel Fuel: See **Biomass-Based Diesel Fuel** and **Renewable Diesel Fuel (Other)**.

Renewable Diesel Fuel (Other): **Diesel fuel** and diesel fuel blending components produced from renewable sources that are coprocessed with **petroleum** feedstocks and meet requirements of advanced biofuels. *Note:* This category "other" pertains to the petroleum supply data system. See **Biomass-Based Diesel Fuel**.

Renewable Energy: Energy obtained from sources that are essentially inexhaustible (unlike, for example, the **fossil fuels**, of which there is a finite supply). Renewable sources of energy include **conventional hydroelectric power, biomass, geothermal, solar, and wind**.

Renewable Fuels Except Fuel Ethanol: See **Biomass-Based Diesel Fuel, Renewable Diesel Fuel (Other), and Renewable Fuels (Other)**.

Renewable Fuels (Other): Fuels and fuel blending components, except **biomass-based diesel fuel, renewable diesel fuel (other), and fuel ethanol**, produced from renewable **biomass**. *Note:* This category "other" pertains to the petroleum supply data system.

Repressuring: The injection of a pressurized fluid (such as air, gas, or water) into oil and gas reservoir 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. See **End-Use Sectors** and **Energy-Use Sectors**.

Residual Fuel Oil: A general classification for 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 D 396 and D 975 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 power plants. No. 6 fuel oil includes Bunker C fuel oil and is used for the production of electric power, 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.

Short Ton (Coal): A unit of weight equal to 2,000 pounds.

SIC (Standard Industrial Classification): A set of codes developed by the U.S. Office of Management and Budget which categorizes industries into groups with similar economic activities. Replaced by **NAICS (North American Industry Classification System)**.

Small-Scale: Generators at a site that has a total generating nameplate capacity of less than 1 megawatt (MW).

Solar Energy: See **Solar Photovoltaic Energy (PV)** and **Solar Thermal Energy**.

Solar Photovoltaic (PV) Energy: Energy, radiated by the sun, that is converted into direct-current electricity by solar photovoltaic cells. Examples of solar PV technologies include solar panels on residential and commercial rooftops (generally small-scale solar PV energy) and mirrors or dishes that concentrate solar rays onto solar PV panels (concentrating PV or CPV). Utility-scale solar PV electric generation typically relies on installations of solar PV panels on or near the ground (solar farms).

Solar Thermal Energy: Energy, radiated by the sun, that is converted into electricity or heat by means of solar concentrating collectors. Examples of solar thermal energy technologies include pool heaters, dark water bladders, or thermal panels (generally small-scale solar thermal energy). Utility-scale solar thermal electric generation typically relies on a large array of mirrors to heat fluids and turn a turbine, which generates electricity

Special Naphthas: All finished products within the **naphtha** boiling range that are used as paint thinners, cleaners, or solvents. These products are refined to a specified flash point. Special naphthas include all commercial hexane and cleaning solvents conforming to ASTM Specification D1836 and D484, respectively. Naphthas to be blended or marketed as motor gasoline or aviation gasoline, or that are to be used as petrochemical and synthetic natural gas (SNG) feedstocks are excluded.

Station Use: Energy that is used to operate an **electric power plant**. It includes energy consumed for plant lighting, power, and auxiliary facilities, regardless of whether the energy is produced at the plant or comes from another source.

Steam Coal: All nonmetallurgical coal.

Steam-Electric Power Plant: A 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: Any form or mixture of gases produced in refineries by distillation, cracking, reforming, and other processes. The principal constituents are **methane** and **ethane**. May contain **hydrogen** and small/trace amounts of other gases. Still gas is typically consumed as refinery fuel or used as petrochemical feedstock. Still gas burned for refinery fuel may differ in composition from marketed still gas sold to other users. See **Refinery Gas**.

Stocks: See **Coal Stocks**, **Crude Oil Stocks**, or **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** whose properties range 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 ton, on the as-received basis (i.e., containing both inherent moisture and mineral matter).

Supplemental Gaseous Fuels: Synthetic **natural gas**, **propane-air**, coke oven gas, **still gas (refinery gas)**, **biomass** gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.

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 **hydrocarbons** that may easily be

substituted for or interchanged with pipeline-quality natural gas.

Thermal Conversion Factor: A factor for converting data between physical units of measure (such as **barrels**, **cubic feet**, or **short tons**) and thermal units of measure (such as **British thermal units**, calories, or joules); or for converting data between different thermal units of measure. See **Btu Conversion Factor**.

Total Energy Consumption: Primary energy consumption in the **end-use sectors**, plus **electricity retail sales** and **electrical system energy losses**.

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. See **End-Use Sectors** and **Energy-Use Sectors**.

Underground Storage: The storage of **natural gas** in underground reservoirs at a different location from which it was produced.

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 Streams: Mixtures of unsegregated **natural gas liquids** components, excluding those in **plant condensate**. This product is extracted from **natural gas**.

Union of Soviet Socialist Republics (U.S.S.R.): A political entity that consisted of 15 constituent republics: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. The U.S.S.R. ceased to exist as of December 31, 1991.

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."

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 electrical generation.

U.S.S.R.: See **Union of Soviet Socialist Republics (U.S.S.R.)**.

Utility-Scale: Generators at a site that has a total generating nameplate capacity of 1 megawatt (MW) or more.

Vented Natural Gas: **Natural gas** released into the air on the production site or at processing plants.

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: See **Biomass Waste** and **Non-Biomass Waste**.

Waste Coal: Usable material that is a byproduct of previous **coal** processing operations. Waste coal is usually composed of mixed coal, soil, and rock (mine waste). Most waste coal is burned as-is in unconventional fluidized-bed combustors. For some uses, waste coal may be partially cleaned by removing some extraneous noncombustible constituents. Examples of waste coal include fine coal, coal obtained from a refuse bank or slurry dam, anthracite culm, bituminous gob, and lignite waste.

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 electrical energy unit of measure equal to one watt of power supplied to, or taken from, an electric circuit steadily for one hour.

Wax: A solid or semi-solid material consisting of a mixture of **hydrocarbons** obtained or derived from **petroleum** fractions, or through a Fischer-Tropsch type process, in which the straight-chained paraffin series predominates. This includes all marketable wax, whether crude or refined, with a congealing point (ASTM D 938) between 100 and 200 degrees Fahrenheit and a maximum oil content (ASTM D 3235) of 50 weight percent.

Wellhead Price: The value of **crude oil** or **natural gas** at the mouth of the well.

Wind Energy: Kinetic energy present in wind motion that can be converted to mechanical energy for driving pumps, mills, and electric power generators.

Wood and Wood-Derived Fuels: Wood and products derived from wood that are used as fuel, including round wood (cord wood), limb wood, wood chips, bark, sawdust, forest residues, charcoal, paper pellets, railroad ties, utility poles, **black liquor**, red liquor, sludge wood, spent sulfite liquor, **densified biomass** (including wood pellets), and other wood-based solids and liquids.

Working Gas: The quantity of **natural 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. Volumes of working gas are reported in thousand cubic feet at standard temperature and pressure.