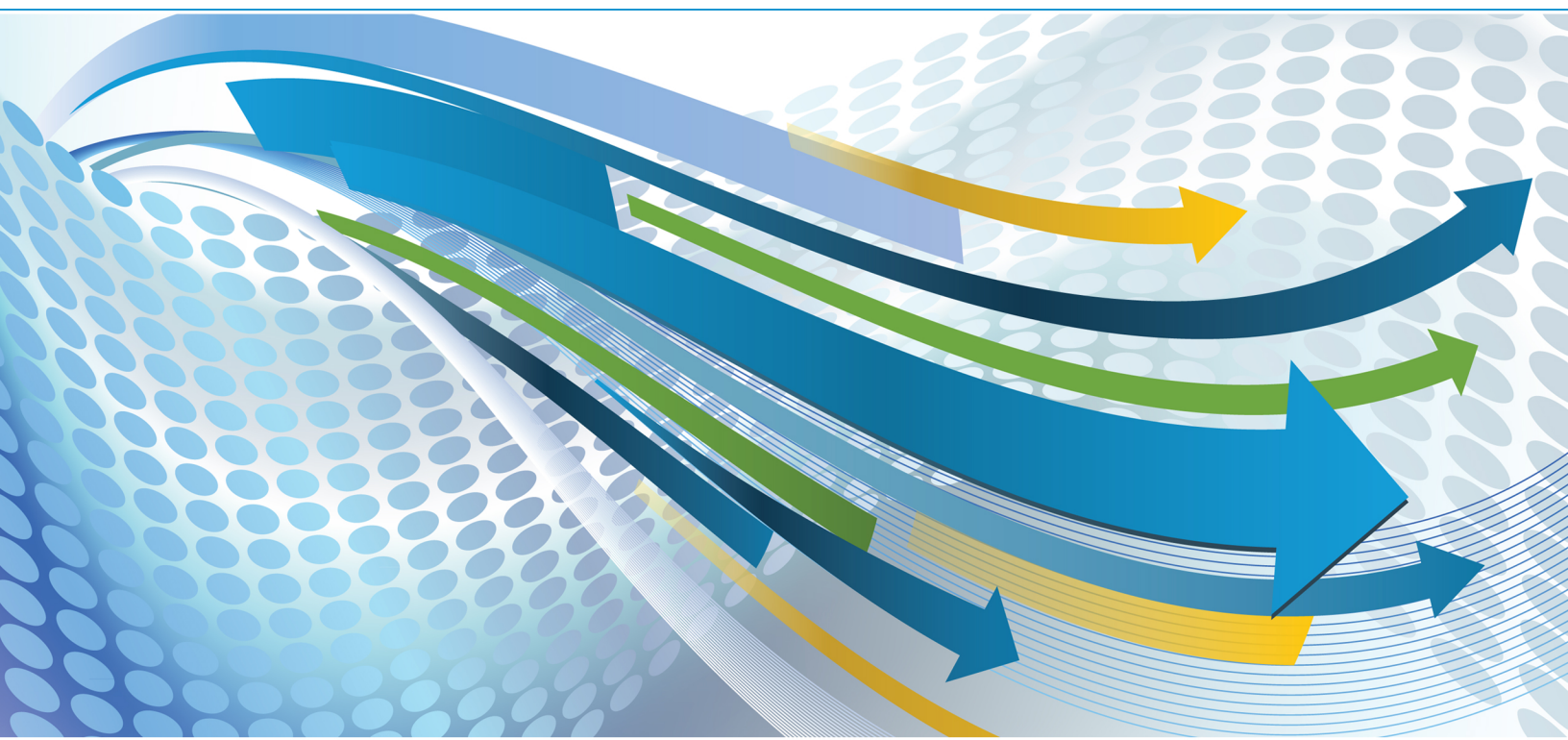


March 2018

# Monthly Energy Review



*Independent Statistics & Analysis*

U.S. Energy Information  
Administration

[www.eia.gov/mer](http://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, stocks, 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](mailto: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 files, comma-separated values (CSV) files, application programming interface (API) files, and in the data browser. 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 files, CSV files, API files, and in the data browser.

**Comprehensive changes:** Each month, most MER tables and figures carry a new month of data, which is usually preliminary (and sometimes estimated or forecast) and likely to be revised 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. The last edition of the AER was released in September 2012 with 2011 data. Annual data beginning in 1949 for many related supplemental data series that are not found in the MER are available at <http://www.eia.gov/totalenergy/data/annual>.

## Electronic access

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

- Full report and report tables: PDF files
- Table data (unrounded): Excel files, CSV files, API files, and data browser
- Graphs: PDF files and data browser

Note: PDF files display selected annual and monthly data; Excel files, CSV files, API files, and data browser 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>.

**Released:** March 27, 2018

# **Monthly Energy Review**

## **March 2018**

**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 Nanda Srinivasan, 202-586-7777 (nanda.srinivasan@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:

<b>Section 1. Energy Overview</b>	Dianne R. Dunn	202-586-2792 dianne.dunn@eia.gov
<b>Section 2. Energy Consumption by Sector</b>	Dianne R. Dunn	202-586-2792 dianne.dunn@eia.gov
<b>Section 3. Petroleum</b>	Jennifer Barrick	202-586-6254 jennifer.barrick@eia.gov
<b>Section 4. Natural Gas</b>	Jennifer Wade	202-586-4749 jennifer.wade@eia.gov
<b>Section 5. Crude Oil and Natural Gas Resource Development</b>	Gary Long	202-586-3467 gary.long@eia.gov
<b>Section 6. Coal</b>	Rosalyn Berry	202-586-6393 rosalyn.berry@eia.gov
<b>Section 7. Electricity</b>	Lisa Cabral	202-287-6533 lisa.cabral@eia.gov
<b>Section 8. Nuclear Energy</b>	Tim Shear	202-586-0403 tim.shear@eia.gov
<b>Section 9. Energy Prices</b>		
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
<b>Section 10. Renewable Energy</b>	Lolita Jamison	202-586-9567 lolita.jamison@eia.gov
<b>Section 11. International Petroleum</b>	Patricia Smith	202-586-6925 patricia.smith@eia.gov
<b>Section 12. Environment</b>	Perry Lindstrom	202-586-0934 perry.lindstrom@eia.gov

# Contents

	<b>Page</b>
Section 1. Energy Overview. . . . .	1
Section 2. Energy Consumption by Sector. . . . .	29
Section 3. Petroleum. . . . .	49
Section 4. Natural Gas. . . . .	83
Section 5. Crude Oil and Natural Gas Resource Development. . . . .	91
Section 6. Coal. . . . .	97
Section 7. Electricity. . . . .	107
Section 8. Nuclear Energy. . . . .	129
Section 9. Energy Prices. . . . .	133
Section 10. Renewable Energy. . . . .	151
Section 11. International Petroleum. . . . .	169
Section 12. Environment. . . . .	179
Appendix A. British Thermal Unit Conversion Factors. . . . .	193
Appendix B. Metric Conversion Factors, Metric Prefixes, and Other Physical Conversion Factors. . . . .	207
Appendix C. Population, U.S. Gross Domestic Product, and U.S. Gross Output. . . . .	211
Appendix D. Estimated Primary Energy Consumption in the United States, Selected Years, 1635–1945. . . . .	213
Appendix E. Alternative Approaches for Deriving Energy Contents of Noncombustible Renewables. . . . .	215
Glossary . . . . .	219

# Tables

	Page
<b>Section 1. Energy Overview</b>	
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
1.11a Non-Combustion Use of Fossil Fuels in Physical Units. . . . .	22
1.11b Heat Content of Non-Combustion Use of Fossil Fuels. . . . .	23
<b>Section 2. Energy Consumption by Sector</b>	
2.1 Energy Consumption by Sector. . . . .	31
2.2 Residential Sector Energy Consumption. . . . .	33
2.3 Commercial Sector Energy Consumption. . . . .	35
2.4 Industrial Sector Energy Consumption. . . . .	37
2.5 Transportation Sector Energy Consumption. . . . .	39
2.6 Electric Power Sector Energy Consumption. . . . .	41
2.7 U.S. Government Energy Consumption by Agency, Fiscal Years. . . . .	42
2.8 U.S. Government Energy Consumption by Source, Fiscal Years. . . . .	43
<b>Section 3. Petroleum</b>	
3.1 Petroleum Overview . . . . .	51
3.2 Refinery and Blender Net Inputs and Net Production. . . . .	53
3.3 Petroleum Trade	
3.3a Overview. . . . .	55
3.3b Imports and Exports by Type. . . . .	57
3.3c Imports From OPEC Countries. . . . .	58
3.3d Imports From Non-OPEC Countries. . . . .	59
3.4 Petroleum Stocks. . . . .	61
3.5 Petroleum Products Supplied by Type. . . . .	63
3.6 Heat Content of Petroleum Products Supplied by Type. . . . .	65
3.7 Petroleum Consumption	
3.7a Residential and Commercial Sectors. . . . .	67
3.7b Industrial Sector. . . . .	68
3.7c Transportation and Electric Power Sectors. . . . .	69
3.8 Heat Content of Petroleum Consumption	
3.8a Residential and Commercial Sectors. . . . .	72
3.8b Industrial Sector. . . . .	73
3.8c Transportation and Electric Power Sectors. . . . .	74
<b>Section 4. Natural Gas</b>	
4.1 Natural Gas Overview. . . . .	85
4.2 Natural Gas Trade by Country . . . . .	86
4.3 Natural Gas Consumption by Sector. . . . .	87
4.4 Natural Gas in Underground Storage. . . . .	88

# Tables

	Page
<b>Section 5. Crude Oil and Natural Gas Resource Development</b>	
5.1 Crude Oil and Natural Gas Drilling Activity Measurements. . . . .	93
5.2 Crude Oil and Natural Gas Exploratory and Development Wells. . . . .	94
<b>Section 6. Coal</b>	
6.1 Coal Overview. . . . .	99
6.2 Coal Consumption by Sector. . . . .	100
6.3 Coal Stocks by Sector. . . . .	101
<b>Section 7. Electricity</b>	
7.1 Electricity Overview. . . . .	109
7.2 Electricity Net Generation	
7.2a Total (All Sectors). . . . .	111
7.2b Electric Power Sector. . . . .	112
7.2c Commercial and Industrial Sectors. . . . .	113
7.3 Consumption of Combustible Fuels for Electricity Generation	
7.3a Total (All Sectors). . . . .	115
7.3b Electric Power Sector. . . . .	116
7.3c Commercial and Industrial Sectors (Selected Fuels). . . . .	117
7.4 Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output	
7.4a Total (All Sectors). . . . .	119
7.4b Electric Power Sector. . . . .	120
7.4c Commercial and Industrial Sectors (Selected Fuels). . . . .	121
7.5 Stocks of Coal and Petroleum: Electric Power Sector. . . . .	123
7.6 Electricity End Use. . . . .	125
<b>Section 8. Nuclear Energy</b>	
8.1 Nuclear Energy Overview. . . . .	131
<b>Section 9. Energy Prices</b>	
9.1 Crude Oil Price Summary. . . . .	135
9.2 F.O.B. Costs of Crude Oil Imports From Selected Countries. . . . .	136
9.3 Landed Costs of Crude Oil Imports From Selected Countries. . . . .	137
9.4 Retail Motor Gasoline and On-Highway Diesel Fuel Prices. . . . .	138
9.5 Refiner Prices of Residual Fuel Oil. . . . .	139
9.6 Refiner Prices of Petroleum Products for Resale. . . . .	140
9.7 Refiner Prices of Petroleum Products to End Users. . . . .	141
9.8 Average Retail Prices of Electricity. . . . .	143
9.9 Cost of Fossil-Fuel Receipts at Electric Generating Plants. . . . .	145
9.10 Natural Gas Prices. . . . .	147
<b>Section 10. Renewable Energy</b>	
10.1 Renewable Energy Production and Consumption by Source. . . . .	153
10.2 Renewable Energy Consumption	
10.2a Residential and Commercial Sectors. . . . .	154
10.2b Industrial and Transportation Sectors. . . . .	155
10.2c Electric Power Sector . . . . .	156
10.3 Fuel Ethanol Overview. . . . .	157
10.4 Biodiesel and Other Renewable Fuels Overview. . . . .	158
10.5 Solar Energy Consumption. . . . .	159
10.6 Solar Electricity Net Generation. . . . .	160

# Tables

Page

## Section 11. International Petroleum

11.1	World Crude Oil Production	
11.1a	OPEC Members	172
11.1b	Persian Gulf Nations, Non-OPEC, and World	173
11.2	Petroleum Consumption in OECD Countries	175
11.3	Petroleum Stocks in OECD Countries	177

## Section 12. Environment

12.1	Carbon Dioxide Emissions From Energy Consumption by Source	181
12.2	Carbon Dioxide Emissions From Energy Consumption: Residential Sector	183
12.3	Carbon Dioxide Emissions From Energy Consumption: Commercial Sector	184
12.4	Carbon Dioxide Emissions From Energy Consumption: Industrial Sector	185
12.5	Carbon Dioxide Emissions From Energy Consumption: Transportation Sector	186
12.6	Carbon Dioxide Emissions From Energy Consumption: Electric Power Sector	187
12.7	Carbon Dioxide Emissions From Biomass Energy Consumption	188

## Appendix A. British Thermal Unit Conversion Factors

A1	Approximate Heat Content of Petroleum and Other Liquids	193
A2	Approximate Heat Content of Petroleum Production, Imports, and Exports	194
A3	Approximate Heat Content of Petroleum Consumption and Fuel Ethanol	195
A4	Approximate Heat Content of Natural Gas	196
A5	Approximate Heat Content of Coal and Coal Coke	197
A6	Approximate Heat Rates for Electricity, and Heat Content of Electricity	198

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

B1	Metric Conversion Factors	208
B2	Metric Prefixes	209
B3	Other Physical Conversion Factors	209

## 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	211
----	--	-----

## 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	213
----	--	-----

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

E1	Noncombustible Renewable Primary Energy Consumption:	
E1a	Conventional Hydroelectric Power, Geothermal, and Wind	216
E1b	Solar and Total	217



# Figures

	Page
<b>Section 1. Energy Overview</b>	
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, 1949–2016 . . . . .	18
<b>Section 2. Energy Consumption by Sector</b>	
2.1 Energy Consumption by Sector. . . . .	30
2.2 Residential Sector Energy Consumption. . . . .	32
2.3 Commercial Sector Energy Consumption. . . . .	34
2.4 Industrial Sector Energy Consumption. . . . .	36
2.5 Transportation Sector Energy Consumption. . . . .	38
2.6 Electric Power Sector Energy Consumption. . . . .	40
<b>Section 3. Petroleum</b>	
3.1 Petroleum Overview . . . . .	50
3.2 Refinery and Blender Net Inputs and Net Production. . . . .	52
3.3 Petroleum Trade . . . . .	
3.3a Overview. . . . .	54
3.3b Imports. . . . .	56
3.4 Petroleum Stocks. . . . .	60
3.5 Petroleum Products Supplied by Type. . . . .	62
3.6 Heat Content of Petroleum Products Supplied by Type. . . . .	64
3.7 Petroleum Consumption by Sector. . . . .	66
3.8a Heat Content of Petroleum Consumption by End-User Sector, 1949–2017. . . . .	70
3.8b Heat Content of Petroleum Consumption by End-User Sector, Monthly. . . . .	71
<b>Section 4. Natural Gas</b>	
4.1 Natural Gas. . . . .	84
<b>Section 5. Crude Oil and Natural Gas Resource Development</b>	
5.1 Crude Oil and Natural Gas Resource Development Indicators. . . . .	92
<b>Section 6. Coal</b>	
6.1 Coal. . . . .	98
<b>Section 7. Electricity</b>	
7.1 Electricity Overview. . . . .	108
7.2 Electricity Net Generation. . . . .	110
7.3 Consumption of Selected Combustible Fuels for Electricity Generation. . . . .	114
7.4 Consumption of Selected Combustible Fuels for Electricity Generation and Useful Thermal Output. . . . .	118
7.5 Stocks of Coal and Petroleum: Electric Power Sector. . . . .	122
7.6 Electricity End Use. . . . .	124

# Figures

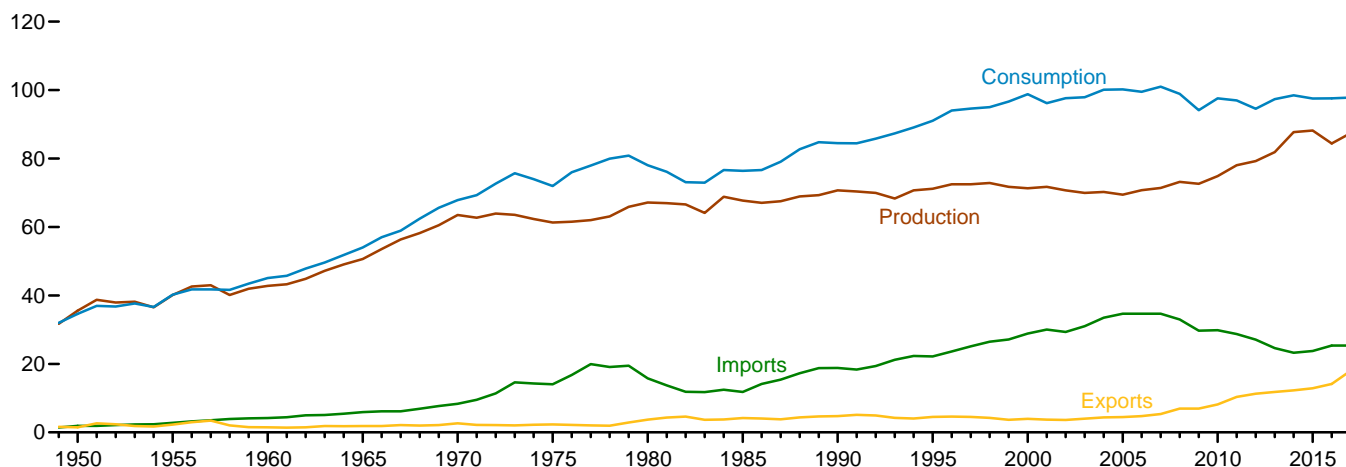
	Page
<b>Section 8. Nuclear Energy</b>	
8.1 Nuclear Energy Overview. . . . .	130
<b>Section 9. Energy Prices</b>	
9.1 Petroleum Prices. . . . .	134
9.2 Average Retail Prices of Electricity. . . . .	142
9.3 Cost of Fossil-Fuel Receipts at Electric Generating Plants. . . . .	144
9.4 Natural Gas Prices. . . . .	146
<b>Section 10. Renewable Energy</b>	
10.1 Renewable Energy Consumption. . . . .	152
<b>Section 11. International Petroleum</b>	
11.1 World Crude Oil Production	
11.1a Overview. . . . .	170
11.1b By Selected Countries. . . . .	171
11.2 Petroleum Consumption in OECD Countries. . . . .	174
11.3 Petroleum Stocks in OECD Countries. . . . .	176
<b>Section 12. Environment</b>	
12.1 Carbon Dioxide Emissions From Energy Consumption by Source . . . . .	180
12.2 Carbon Dioxide Emissions From Energy Consumption by Sector. . . . .	182

# 1. Energy Overview

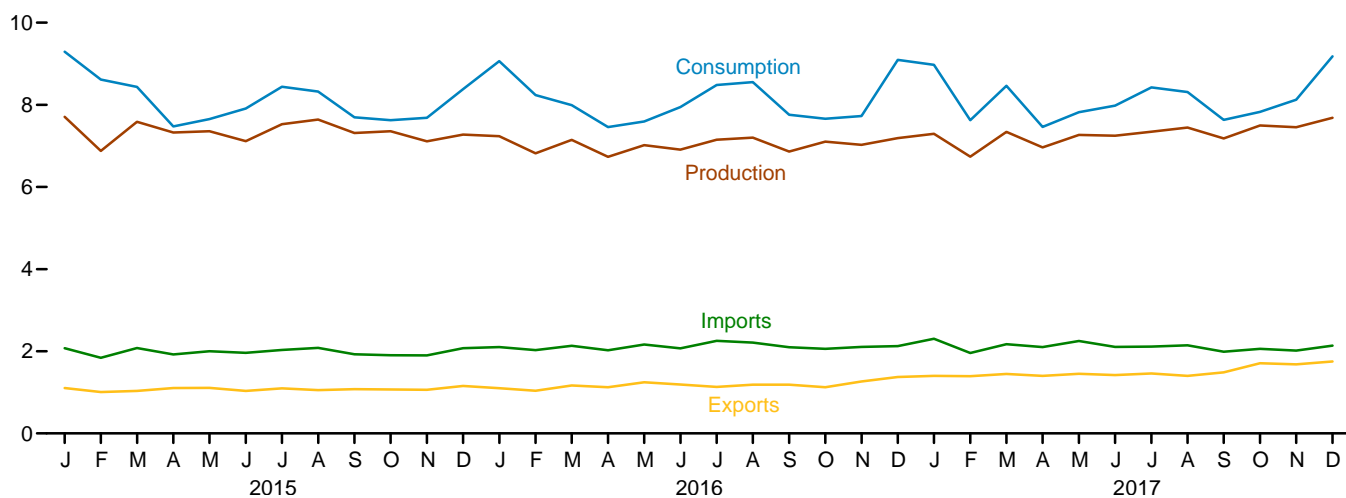
---

**Figure 1.1 Primary Energy Overview**  
(Quadrillion Btu)

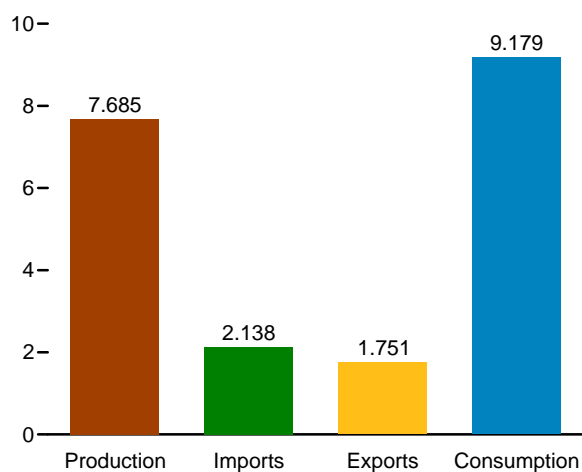
Overview, 1949–2017



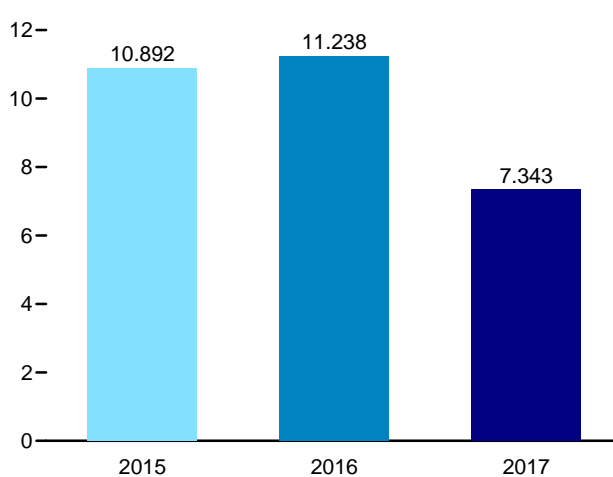
Overview, Monthly



Overview, December 2017



Net Imports, January–December



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

**Table 1.1 Primary Energy Overview**  
(Quadrillion Btu)

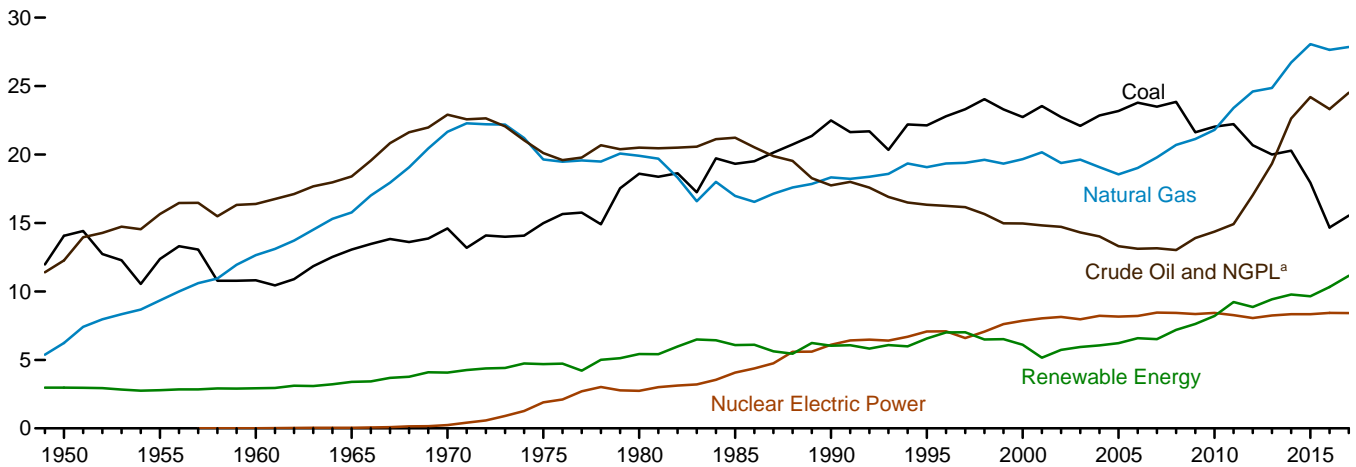
	Production				Trade			Stock Change and Other <sup>d</sup>	Consumption			
	Fossil Fuels <sup>a</sup>	Nuclear Electric Power	Renewable Energy <sup>b</sup>	Total	Imports	Exports	Net Imports <sup>c</sup>		Fossil Fuels <sup>e</sup>	Nuclear Electric Power	Renewable Energy <sup>b</sup>	Total <sup>f</sup>
1950 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	3.233	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 .....	56.429	8.459	6.510	71.398	34.679	5.338	29.341	.276	85.927	8.459	6.523	101.015
2008 Total .....	57.583	8.426	7.191	73.200	32.970	6.949	26.021	-.331	83.178	8.426	7.174	98.891
2009 Total .....	56.660	8.355	7.620	72.636	29.690	6.920	22.770	-1.288	78.042	8.355	7.604	94.118
2010 Total .....	58.216	8.434	8.212	74.863	29.866	8.176	21.690	1.027	80.891	8.434	8.166	97.580
2011 Total .....	60.543	8.269	9.224	78.036	28.748	10.373	18.375	.564	79.452	8.269	9.128	96.757
2012 Total .....	62.324	8.062	8.866	79.252	27.066	11.267	15.801	-.518	77.482	8.062	8.829	94.535
2013 Total .....	64.199	8.244	9.427	81.870	24.623	11.788	12.835	2.636	79.446	8.244	9.453	97.341
2014 Total .....	69.631	8.338	R 9.774	R 87.742	23.241	12.270	10.971	-.224	80.233	8.338	R 9.738	R 98.490
2015 January .....	6.108	.777	R .822	7.707	2.075	1.103	.972	.614	7.692	.777	R .807	9.294
February .....	5.449	.664	R .765	R 6.878	1.840	1.006	.834	.901	7.174	.664	R .761	R 8.613
March .....	6.082	.675	.831	7.588	2.079	1.035	1.044	-.195	6.915	.675	.827	R 8.436
April .....	5.872	.625	R .827	R 7.324	1.922	1.105	.816	-.669	6.001	.625	.826	7.472
May .....	5.849	.688	.821	R 7.358	2.000	1.110	.890	-.595	6.122	.688	R .822	R 7.653
June .....	5.614	.717	R .786	7.117	1.963	1.032	.930	-.137	6.385	.717	R .788	R 7.910
July .....	5.971	.747	.812	R 7.529	2.032	1.095	.937	-.027	6.858	.747	R .813	R 8.439
August .....	6.100	.757	R .785	7.643	2.082	1.054	1.028	-.348	6.754	.757	.790	8.323
September .....	5.882	.695	R .736	R 7.313	1.925	1.076	.849	-.467	6.237	.695	R .743	R 7.695
October .....	5.956	.633	.769	7.358	1.901	1.070	.832	-.563	6.208	.633	R .769	R 7.626
November .....	5.661	.630	.821	7.112	1.899	1.060	.839	-.265	6.220	.630	.818	R 7.685
December .....	5.670	.728	R .876	R 7.274	2.076	1.156	.920	.186	6.763	.728	.871	8.380
Total .....	70.213	8.337	R 9.651	R 88.201	23.794	12.902	10.892	-1.566	79.328	8.337	R 9.635	R 97.527
2016 January .....	5.609	.759	R .867	R 7.234	2.102	1.100	1.003	.826	7.437	.759	R .848	R 9.063
February .....	5.277	.687	R .857	R 6.821	2.026	1.038	.988	.428	6.687	.687	R .848	R 8.237
March .....	5.522	.692	R .933	R 7.147	2.135	1.168	.967	-.122	6.359	.692	R .924	R 7.992
April .....	5.195	.656	R .884	R 6.734	2.026	1.123	.902	-.179	5.911	.656	R .877	R 7.457
May .....	5.426	.696	R .894	R 7.016	2.165	1.243	.921	-.344	5.990	.696	R .891	R 7.593
June .....	5.356	.703	R .851	R 6.909	2.070	1.191	.879	.156	6.377	.703	R .845	R 7.944
July .....	5.551	.736	R .862	R 7.149	2.253	1.132	1.121	.213	6.863	.736	R .863	R 8.483
August .....	5.640	.748	R .814	R 7.202	2.210	1.188	1.023	.327	6.969	.748	R .813	R 8.551
September .....	5.395	.685	R .780	R 6.860	2.097	1.186	.911	-.012	6.282	.685	R .780	R 7.760
October .....	5.643	.635	R .827	R 7.105	2.057	1.125	.932	-.375	6.189	.635	R .822	R 7.662
November .....	5.516	.682	R .827	R 7.025	2.104	1.264	.841	-.139	6.202	.682	R .825	R 7.727
December .....	5.506	.750	R .933	R 7.188	2.123	1.372	.751	1.154	7.404	.750	R .924	R 9.093
Total .....	65.635	8.427	R 10.329	R 84.391	25.368	14.130	11.238	1.933	78.669	8.427	R 10.261	R 97.562
2017 January .....	R 5.599	.765	R .932	R 7.296	R 2.303	R 1.399	R .903	R .774	7.285	.765	R .907	R 8.973
February .....	R 5.196	R .665	R .877	R 6.738	R 1.959	R 1.392	R .567	R .323	R 6.089	R .665	R .862	R 7.627
March .....	R 5.629	.681	R 1.029	R 7.340	R 2.171	R 1.448	R .723	R .401	R 6.754	.681	R 1.017	R 8.464
April .....	R 5.376	.593	R .995	R 6.964	R 2.101	R 1.402	R .699	R -.200	R 5.865	.593	R .990	R 7.463
May .....	R 5.604	.641	R 1.022	R 7.267	R 2.249	R 1.451	R .797	R -.244	R 6.145	.641	R 1.020	R 7.821
June .....	R 5.565	.701	R .980	R 7.246	R 2.104	R 1.421	R .683	R .049	R 6.281	.701	R .981	R 7.979
July .....	R 5.691	.746	R .908	R 7.345	R 2.112	R 1.457	R .655	R .424	R 6.758	.746	R .905	R 8.424
August .....	R 5.838	.757	R .850	R 7.445	R 2.145	R 1.399	R .746	R .120	R 6.693	.757	R .844	R 8.311
September .....	R 5.636	.712	R .834	R 7.181	R 1.987	R 1.488	R .499	R -.046	R 6.084	.712	R .825	R 7.634
October .....	R 5.908	.690	R .898	R 7.496	2.058	R 1.708	R .350	R -.019	R 6.236	.690	R .888	R 7.828
November .....	R 5.867	.697	R .890	R 7.453	2.016	R 1.682	R .334	R .336	R 6.538	.697	R .875	R 8.124
December .....	5.992	.771	.923	7.685	2.138	1.751	.386	1.107	7.490	.771	.903	9.179
Total .....	67.901	8.419	11.138	87.458	25.342	17.999	7.343	3.026	78.219	8.419	11.017	97.827

<sup>a</sup> Coal, natural gas (dry), crude oil, and natural gas plant liquids.  
<sup>b</sup> 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.  
<sup>c</sup> Net imports equal imports minus exports.  
<sup>d</sup> 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.  
<sup>e</sup> Coal, coal coke net imports, natural gas, and petroleum.  
<sup>f</sup> Also includes electricity net imports.  
R=Revised.

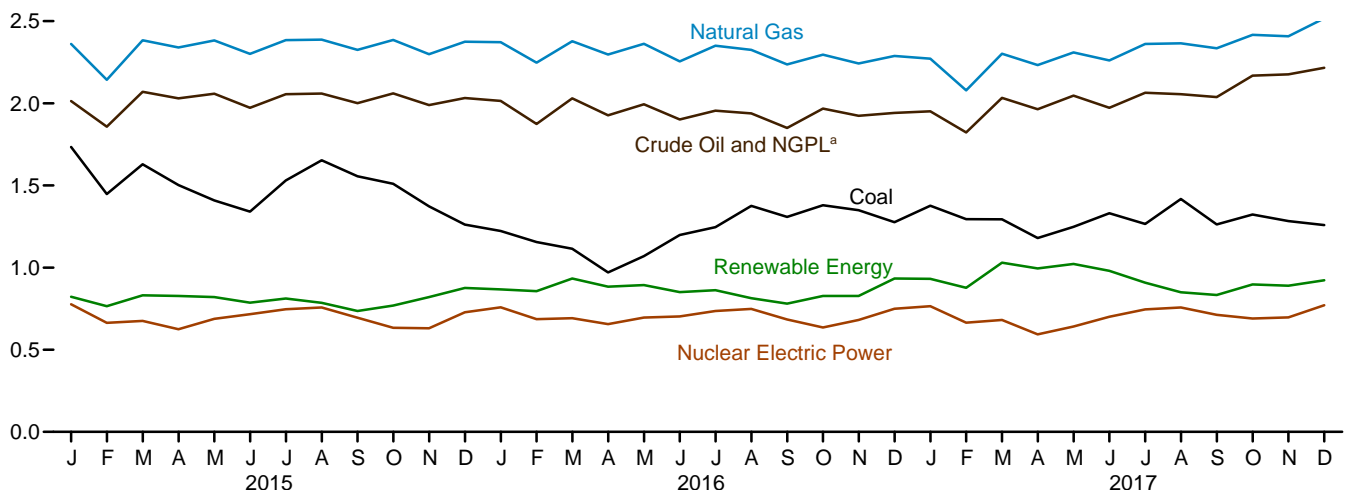
Notes: • See "Primary Energy," "Primary Energy Production," and "Primary Energy Consumption," in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.  
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (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)

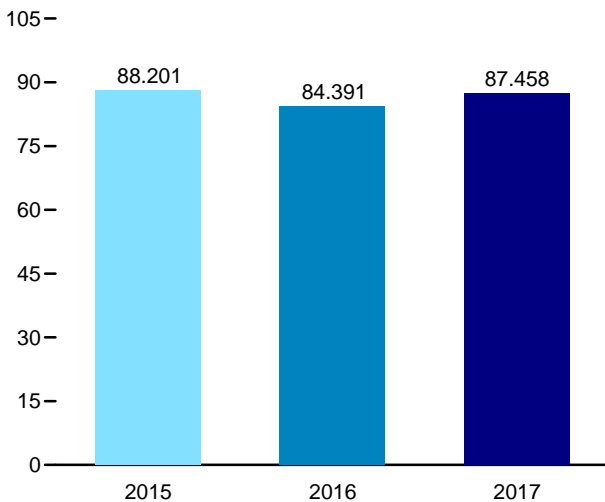
By Source, 1949–2017



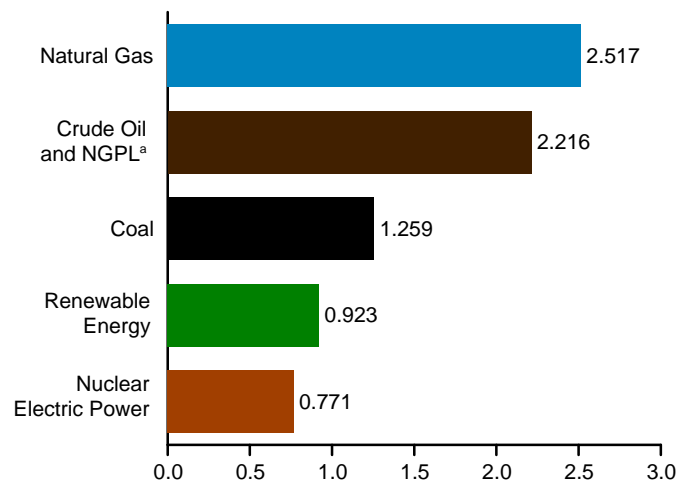
By Source, Monthly



Total, January–December



By Source, December 2017



<sup>a</sup> 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 <sup>a</sup>						Total
	Coal <sup>b</sup>	Natural Gas (Dry)	Crude Oil <sup>c</sup>	NGPL <sup>d</sup>	Total		Hydro- electric Power <sup>e</sup>	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	10.741	2.409	56.429	8.459	2.446	.186	.065	.341	3.472	6.510	71.398
2008 Total .....	23.851	20.703	10.609	2.419	57.583	8.426	2.511	.192	.074	.546	3.868	7.191	73.200
2009 Total .....	21.624	21.139	11.323	2.574	56.660	8.355	2.669	.200	.078	.721	3.953	7.620	72.636
2010 Total .....	22.038	21.806	11.591	2.781	58.216	8.434	2.539	.208	.090	.923	4.452	8.212	74.863
2011 Total .....	22.221	23.406	11.946	2.970	60.543	8.269	3.103	.212	.111	1.168	4.630	9.224	78.036
2012 Total .....	20.677	24.610	13.791	3.246	62.324	8.062	2.629	.212	.157	1.340	4.529	8.866	79.252
2013 Total .....	20.001	24.859	15.806	3.532	64.199	8.244	2.562	.214	.225	1.601	4.824	9.427	81.870
2014 Total .....	20.286	26.718	18.531	4.096	69.631	8.338	2.467	.214	.337	1.728	5.029	9.774	87.742
2015 January .....	1.734	2.361	1.659	.355	6.108	.777	.225	.018	.021	.141	.417	8.822	7.707
February .....	1.448	2.143	1.527	.331	5.449	.664	.208	.017	.025	.139	.377	8.765	6.878
March .....	1.628	2.383	1.694	.376	6.082	.675	.226	.018	.035	.143	.409	.831	7.588
April .....	1.502	2.340	1.651	.379	5.872	.625	.209	.017	.040	.167	.395	8.827	7.324
May .....	1.409	2.383	1.671	.387	5.849	.688	.188	.018	.043	.160	.412	.821	7.358
June .....	1.341	2.301	1.600	.373	5.614	.717	.190	.017	.043	.125	8.410	8.786	7.117
July .....	1.531	2.385	1.666	.389	5.971	.747	.196	.018	.045	.127	8.425	.812	7.529
August .....	1.654	2.388	1.662	.397	6.100	.757	.178	.018	.045	.122	8.422	8.785	7.643
September .....	1.555	2.325	1.615	.386	5.882	.695	.150	.016	.039	.130	8.401	8.736	7.313
October .....	1.510	2.385	1.655	.405	5.956	.633	.155	.018	.034	.153	8.409	.769	7.358
November .....	1.373	2.298	1.596	.393	5.661	.630	.180	.018	.030	.183	.410	.821	7.112
December .....	1.262	2.375	1.636	.397	5.670	.728	.216	.018	.027	.187	.428	8.876	7.274
Total .....	17.946	28.067	19.632	4.567	70.213	8.337	2.321	.212	.426	1.777	4.914	9.651	88.201
2016 January .....	1.222	2.372	1.630	.385	5.609	.759	.236	.018	.026	.170	8.417	8.867	7.234
February .....	1.156	2.247	1.511	.363	5.277	.687	.223	.017	.035	.186	8.396	8.857	6.821
March .....	1.115	2.377	1.620	.409	5.522	.692	.253	.018	.043	.203	8.417	8.933	7.147
April .....	.971	2.297	1.529	.398	5.195	.656	.239	.016	.048	.192	8.388	8.884	6.734
May .....	1.069	2.363	1.571	.423	5.426	.696	.235	.018	.055	.174	8.411	8.894	7.016
June .....	1.198	2.255	1.494	.408	5.356	.703	.215	.017	.056	.151	8.412	8.851	6.909
July .....	1.246	2.350	1.540	.415	5.551	.736	.198	.017	.062	.163	8.422	8.862	7.149
August .....	1.376	2.325	1.546	.393	5.640	.748	.181	.018	.061	.125	8.429	8.814	7.202
September .....	1.309	2.237	1.468	.382	5.395	.685	.151	.017	.055	.151	8.405	8.780	6.860
October .....	1.379	2.296	1.559	.408	5.643	.635	.160	.018	.049	.188	8.412	8.827	7.105
November .....	1.350	2.242	1.524	.401	5.516	.682	.174	.018	.041	.179	8.415	8.827	7.025
December .....	1.276	2.288	1.556	.386	5.506	.750	.208	.019	.037	.214	8.456	8.933	7.188
Total .....	14.667	27.649	18.548	4.770	65.635	8.427	2.472	.210	.570	2.096	4.982	10.329	84.391
2017 January .....	1.376	2.272	1.565	8.386	5.599	.765	.257	.018	.035	8.192	8.430	8.932	7.296
February .....	1.295	2.079	1.449	8.373	5.196	8.665	.227	.016	.040	8.205	8.389	8.877	6.738
March .....	1.294	2.302	1.615	8.418	5.629	.681	.279	.018	.064	8.241	8.427	8.1029	7.340
April .....	1.179	2.232	1.561	8.403	5.376	.593	.271	.018	.070	8.238	8.399	8.995	6.964
May .....	1.248	2.309	1.620	8.427	5.604	.641	.297	.017	.082	8.209	8.417	8.1022	7.267
June .....	1.331	2.261	1.557	8.416	5.565	.701	.281	.017	.087	8.182	8.413	8.980	7.246
July .....	1.265	2.361	1.633	8.431	5.691	.746	.238	.018	.081	.146	8.426	8.908	7.345
August .....	1.417	2.365	1.631	8.425	5.838	.757	.196	.018	.079	.121	8.436	8.850	7.445
September .....	1.263	2.335	1.628	8.410	5.636	.712	.175	.017	.074	8.159	8.407	8.834	7.181
October .....	1.323	2.417	1.713	8.455	5.908	.690	.159	.017	8.069	.229	8.424	8.898	7.496
November .....	1.283	2.407	1.726	8.450	5.867	.697	.183	.018	8.048	.215	8.426	8.890	7.453
December .....	1.259	2.517	1.765	.451	5.992	.771	.208	.018	.046	.210	.440	.923	7.685
Total .....	15.534	27.857	19.464	5.046	67.901	8.419	2.770	.211	.775	2.347	5.034	11.138	87.458

<sup>a</sup> 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.

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

<sup>c</sup> Includes lease condensate.

<sup>d</sup> Natural gas plant liquids.

<sup>e</sup> Conventional hydroelectric power.

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

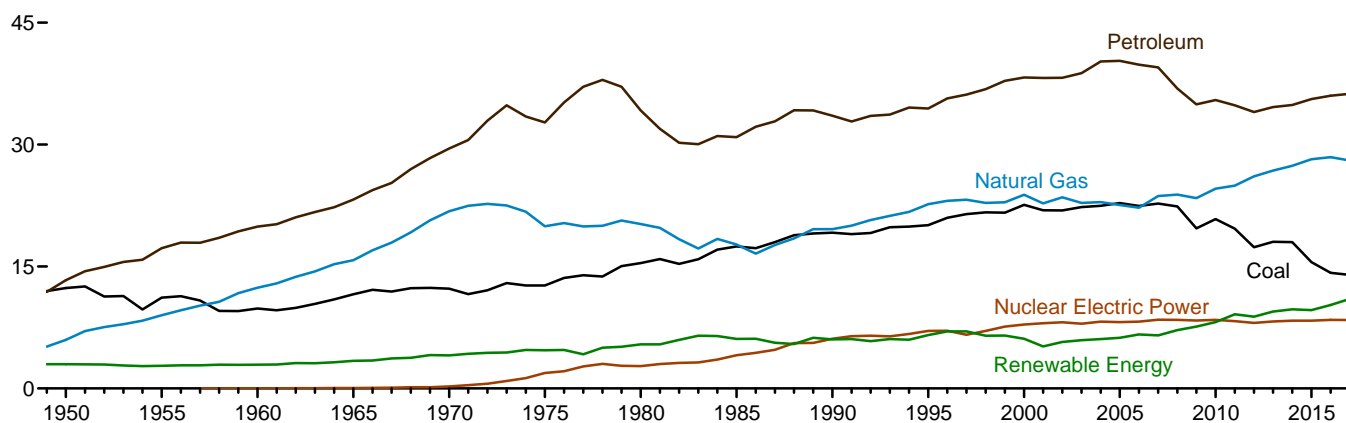
Notes: • See "Primary Energy Production" in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

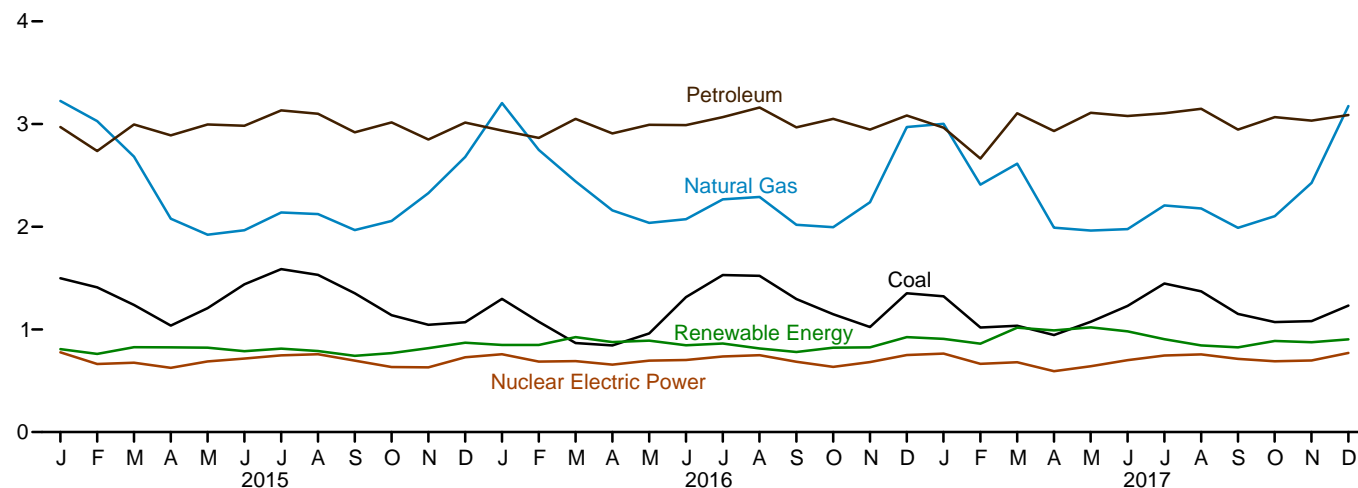
Sources: See end of section.

**Figure 1.3 Primary Energy Consumption**  
(Quadrillion Btu)

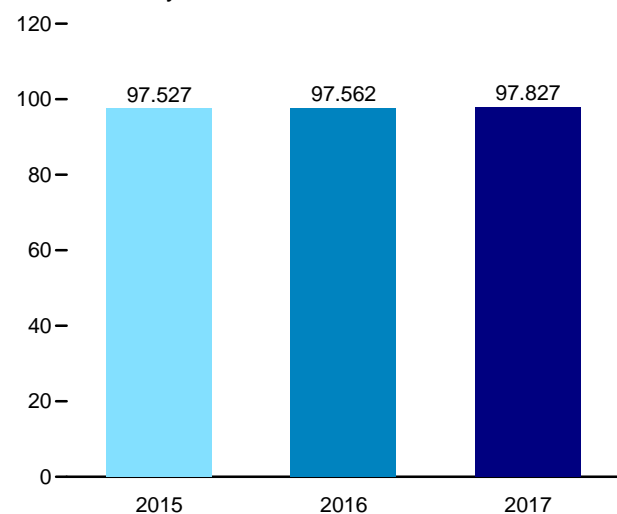
By Source,<sup>a</sup> 1949–2017



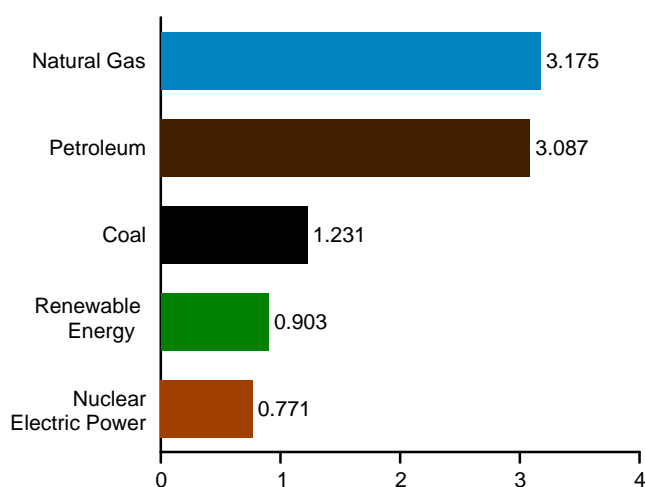
By Source,<sup>a</sup> Monthly



Total, January–December



By Source,<sup>a</sup> December 2017



<sup>a</sup> 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 <sup>a</sup>				Nuclear Electric Power	Renewable Energy <sup>b</sup>						Total <sup>g</sup>
	Coal	Natural Gas <sup>c</sup>	Petro- leum <sup>d</sup>	Total <sup>e</sup>		Hydro- electric Power <sup>f</sup>	Geo- thermal	Solar	Wind	Bio- mass	Total	
<b>1950 Total</b> .....	12.347	5.968	13.315	31.632	0.000	1.415	NA	NA	NA	1.562	2.978	34.616
<b>1955 Total</b> .....	11.167	8.998	17.255	37.410	.000	1.360	NA	NA	NA	1.424	2.784	40.208
<b>1960 Total</b> .....	9.838	12.385	19.919	42.137	.006	1.608	(s)	NA	NA	1.320	2.928	45.086
<b>1965 Total</b> .....	11.581	15.769	23.246	50.577	.043	2.059	.002	NA	NA	1.335	3.396	54.015
<b>1970 Total</b> .....	12.265	21.795	29.521	63.522	.239	2.634	.006	NA	NA	1.431	4.070	67.838
<b>1975 Total</b> .....	12.663	19.948	32.732	65.357	1.900	3.155	.034	NA	NA	1.499	4.687	71.965
<b>1980 Total</b> .....	15.423	20.235	34.205	69.828	2.739	2.900	.053	NA	NA	2.475	5.428	78.067
<b>1985 Total</b> .....	17.478	17.703	30.925	66.093	4.076	2.970	.097	(s)	(s)	3.016	6.084	76.392
<b>1990 Total</b> .....	19.173	19.603	33.552	72.332	6.104	3.046	.171	.059	.029	2.735	6.040	84.484
<b>1995 Total</b> .....	20.089	22.671	34.441	77.262	7.075	3.205	.152	.068	.033	3.101	6.559	91.031
<b>2000 Total</b> .....	22.580	23.824	38.266	84.735	7.862	2.811	.164	.063	.057	3.008	6.104	98.817
<b>2001 Total</b> .....	21.914	22.773	38.190	82.906	8.029	2.242	.164	.062	.070	2.622	5.160	96.170
<b>2002 Total</b> .....	21.904	23.510	38.226	83.700	8.145	2.689	.171	.060	.105	2.701	5.726	97.643
<b>2003 Total</b> .....	22.321	22.831	38.790	83.992	7.960	2.793	.173	.058	.113	2.806	5.944	97.918
<b>2004 Total</b> .....	22.466	22.923	40.227	85.754	8.223	2.688	.178	.058	.142	3.008	6.075	100.090
<b>2005 Total</b> .....	22.797	22.565	40.303	85.709	8.161	2.703	.181	.058	.178	3.114	6.233	100.188
<b>2006 Total</b> .....	22.447	22.239	39.824	84.570	8.215	2.869	.181	.061	.264	3.262	6.637	99.485
<b>2007 Total</b> .....	22.749	23.663	39.489	85.927	8.459	2.446	.186	.065	.341	3.485	6.523	101.015
<b>2008 Total</b> .....	22.387	23.843	36.907	83.178	8.426	2.511	.192	.074	.546	3.851	7.174	98.891
<b>2009 Total</b> .....	19.691	23.416	34.959	78.042	8.355	2.669	.200	.078	.721	3.936	7.604	94.118
<b>2010 Total</b> .....	20.834	24.575	35.488	80.891	8.434	2.539	.208	.090	.923	4.405	8.166	97.580
<b>2011 Total</b> .....	19.658	24.955	34.828	79.452	8.269	3.103	.212	.111	1.168	4.534	9.128	96.975
<b>2012 Total</b> .....	17.378	26.089	34.012	77.482	8.062	2.629	.212	.157	1.340	4.492	8.829	94.535
<b>2013 Total</b> .....	18.039	26.805	34.619	79.446	8.244	2.562	.214	.225	1.601	4.850	9.453	97.341
<b>2014 Total</b> .....	17.998	27.383	34.874	80.233	8.338	2.467	.214	.337	1.728	4.992	9.738	98.490
<b>2015 January</b> .....	1.498	3.225	2.971	7.692	.777	.225	.018	.021	.141	4.402	8.807	9.294
February .....	1.409	3.029	2.738	7.174	.664	.208	.017	.025	.139	4.373	8.761	8.613
March .....	1.238	2.682	2.995	6.915	.675	.226	.018	.035	.143	4.404	8.827	8.436
April .....	1.037	2.077	2.889	6.001	.625	.209	.017	.040	.167	4.393	8.826	7.472
May .....	1.206	1.922	2.996	6.122	.688	.188	.018	.043	.160	4.414	8.822	7.653
June .....	1.439	1.965	2.984	6.385	.717	.190	.017	.043	.125	4.412	8.788	7.910
July .....	1.587	2.139	3.133	6.858	.747	.196	.018	.045	.127	4.427	8.813	8.439
August .....	1.531	2.124	3.100	6.754	.757	.178	.018	.045	.122	4.426	8.790	8.323
September .....	1.351	1.967	2.919	6.237	.695	.150	.016	.039	.130	4.408	8.743	7.695
October .....	1.138	2.056	3.016	6.208	.633	.155	.018	.034	.153	4.410	8.769	7.626
November .....	1.045	2.327	2.850	6.220	.630	.180	.018	.030	.183	4.407	8.818	7.685
December .....	1.070	2.679	3.015	6.763	.728	.216	.018	.027	.187	4.422	8.871	8.380
<b>Total</b> .....	<b>15.549</b>	<b>28.191</b>	<b>35.605</b>	<b>79.328</b>	<b>8.337</b>	<b>2.321</b>	<b>.212</b>	<b>.426</b>	<b>1.777</b>	<b>4.898</b>	<b>9.635</b>	<b>97.527</b>
<b>2016 January</b> .....	1.297	3.204	2.936	7.437	.759	.236	.018	.026	.170	4.398	8.848	9.063
February .....	1.074	2.748	2.864	6.687	.687	.223	.017	.035	.186	4.387	8.848	8.237
March .....	.867	2.442	3.051	6.359	.692	.253	.018	.043	.203	4.408	8.924	7.992
April .....	.844	2.159	2.908	5.911	.656	.239	.016	.048	.192	4.382	8.877	7.457
May .....	.960	2.038	2.993	5.990	.696	.235	.018	.055	.174	4.408	8.891	7.593
June .....	1.314	2.074	2.989	6.377	.703	.215	.017	.056	.151	4.407	8.845	7.944
July .....	1.529	2.267	3.068	6.863	.736	.198	.017	.062	.163	4.423	8.863	8.483
August .....	1.521	2.290	3.161	6.969	.748	.181	.018	.061	.125	4.429	8.813	8.551
September .....	1.296	2.019	2.968	6.282	.685	.151	.017	.055	.151	4.404	8.780	7.760
October .....	1.147	1.995	3.050	6.189	.635	.160	.018	.049	.188	4.407	8.822	7.662
November .....	1.022	2.238	2.946	6.202	.682	.174	.018	.041	.179	4.413	8.825	7.727
December .....	1.352	2.971	3.083	7.404	.750	.208	.019	.037	.214	4.447	8.924	9.093
<b>Total</b> .....	<b>14.226</b>	<b>28.445</b>	<b>36.017</b>	<b>78.669</b>	<b>8.427</b>	<b>2.472</b>	<b>.210</b>	<b>.570</b>	<b>2.096</b>	<b>4.913</b>	<b>10.261</b>	<b>97.562</b>
<b>2017 January</b> .....	1.322	3.001	2.964	7.285	.765	.257	.018	.035	4.192	4.405	9.907	8.973
February .....	1.018	2.410	2.663	6.089	.665	.227	.016	.040	4.205	4.374	8.862	7.627
March .....	1.036	2.614	3.106	6.754	.681	.279	.018	.064	4.241	4.414	9.107	8.464
April .....	.944	1.990	2.932	5.865	.593	.271	.018	.070	4.238	4.393	8.990	7.463
May .....	1.074	1.963	3.110	6.145	.641	.297	.017	.082	4.209	4.415	9.102	7.821
June .....	1.229	1.977	3.079	6.281	.701	.281	.017	.087	4.182	4.414	8.981	7.979
July .....	1.447	2.207	3.106	6.758	.746	.238	.018	.081	4.146	4.423	8.905	8.424
August .....	1.370	2.178	3.148	6.693	.757	.196	.018	.079	4.121	4.430	8.844	8.311
September .....	1.151	1.989	2.946	6.084	.712	.175	.017	.074	4.159	4.399	8.825	7.634
October .....	1.072	2.102	3.067	6.236	.690	.159	.017	4.069	4.229	4.414	8.888	7.828
November .....	1.081	2.428	3.033	6.538	.697	.183	.018	4.048	4.215	4.411	8.875	8.124
December .....	1.231	3.175	3.087	7.490	.771	.208	.018	.046	4.210	4.421	9.003	9.179
<b>Total</b> .....	<b>13.973</b>	<b>28.033</b>	<b>36.241</b>	<b>78.219</b>	<b>8.419</b>	<b>2.770</b>	<b>.211</b>	<b>.775</b>	<b>2.347</b>	<b>4.913</b>	<b>11.017</b>	<b>97.827</b>

<sup>a</sup> Includes non-combustion use of fossil fuels.

<sup>b</sup> 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.

<sup>c</sup> Natural gas only; excludes supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.

<sup>d</sup> Petroleum products supplied; excludes biofuels that have been blended with petroleum—biofuels are included in "Biomass."

<sup>e</sup> Includes coal coke net imports. See Tables 1.4a and 1.4b.

<sup>f</sup> Conventional hydroelectric power.

<sup>g</sup> 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.

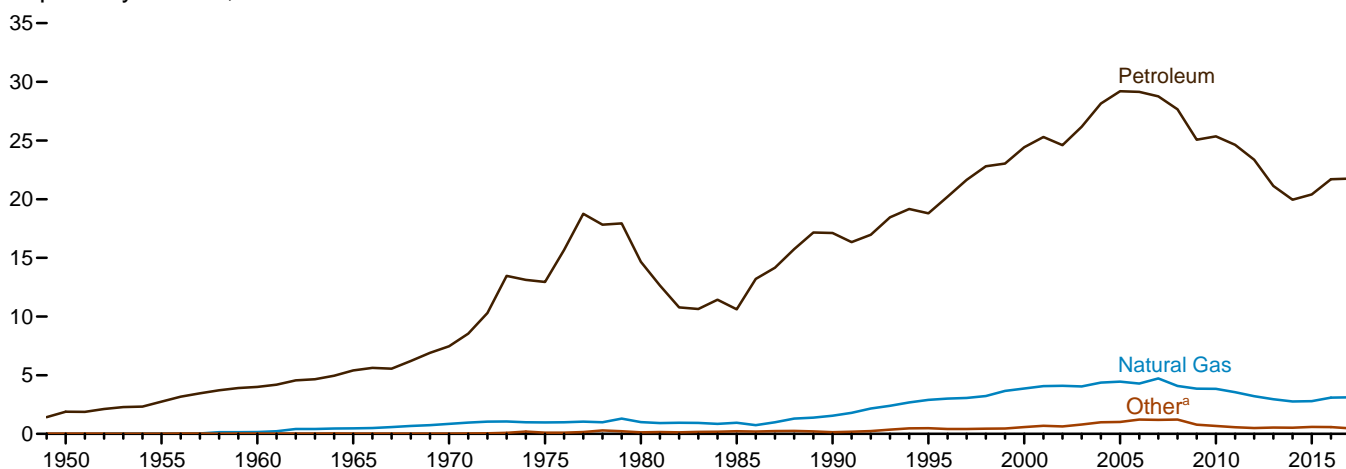
Notes: • See "Primary Energy Consumption" in Glossary.  
• See Table D1 for estimated energy consumption for 1635–1945. • Totals may not equal sum of components due to independent rounding.  
• Geographic coverage is the 50 states and the District of Columbia.

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.

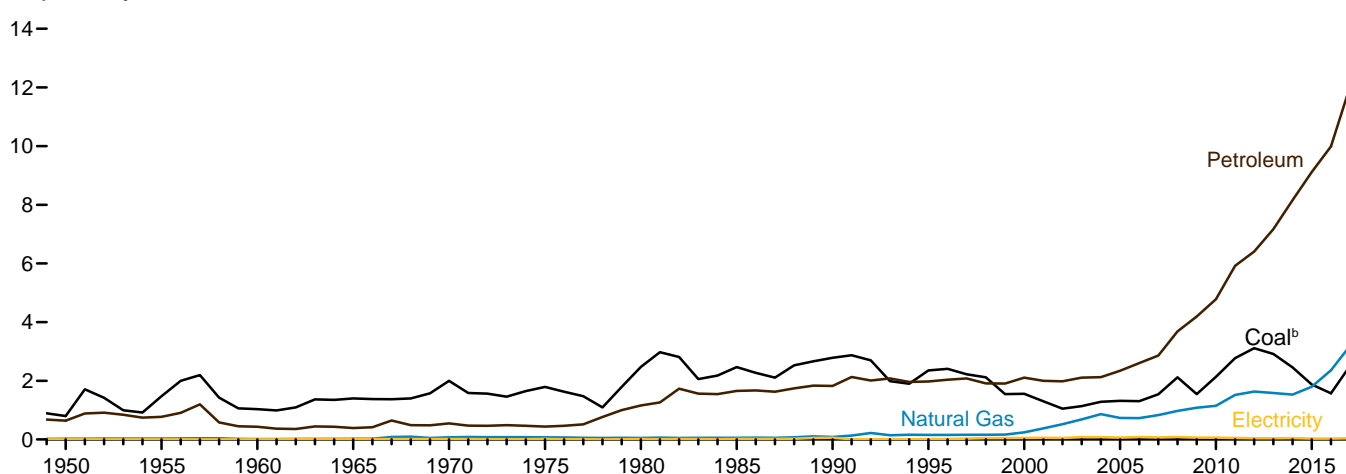
Sources: See end of section.

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

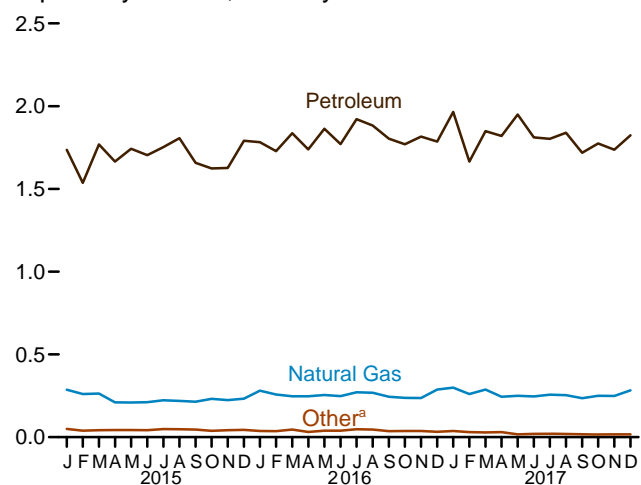
Imports by Source, 1949–2017



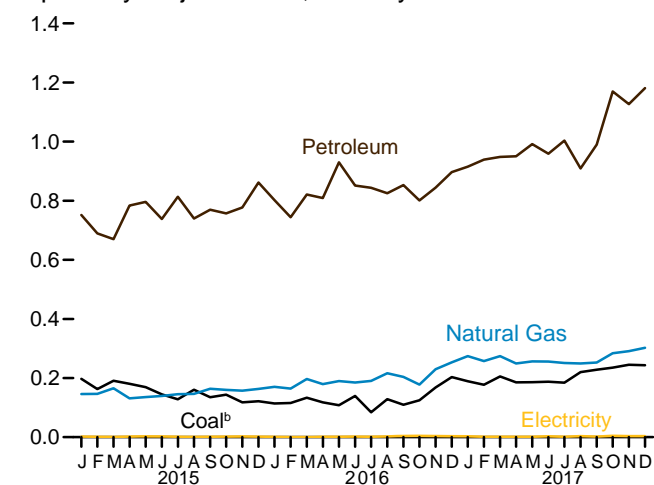
Exports by Source, 1949–2017



Imports by Source, Monthly



Exports by Major Source, Monthly



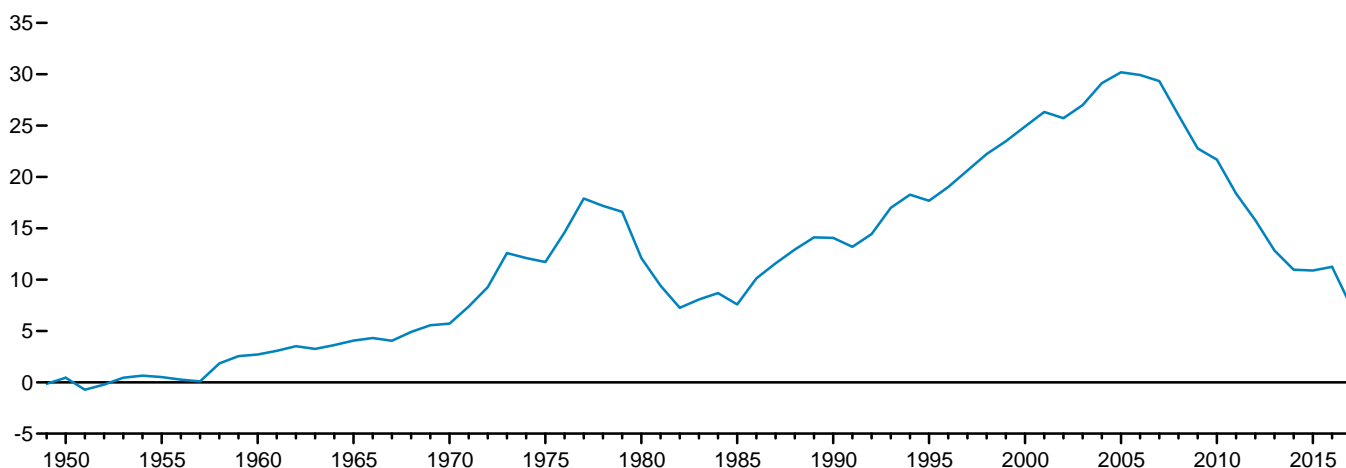
<sup>a</sup> Coal, coal coke, biomass, and electricity.

<sup>b</sup> Includes coal coke.

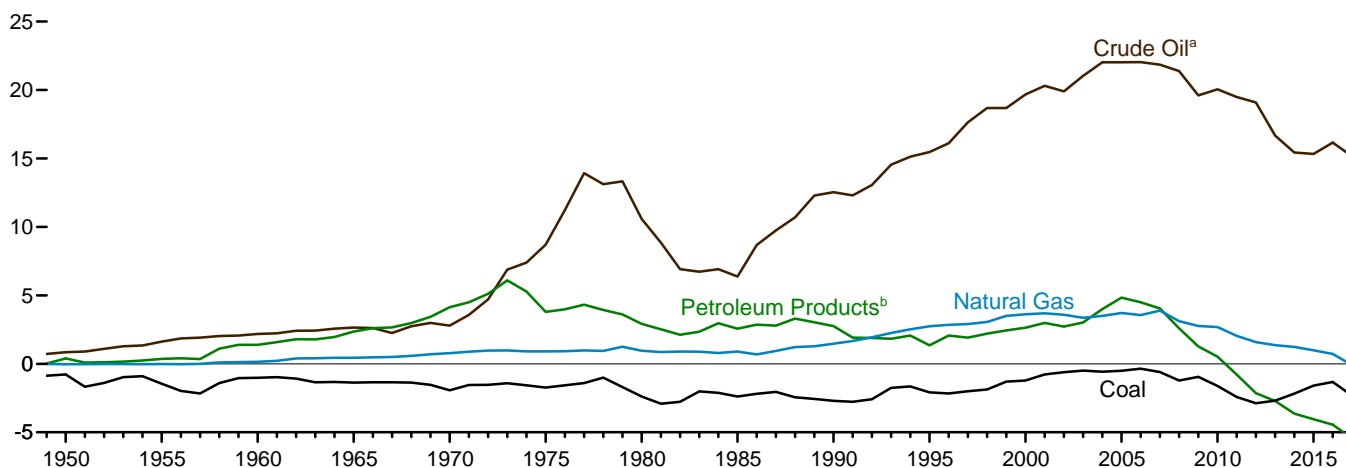
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.  
Sources: Tables 1.4a and 1.4b.

**Figure 1.4b Primary Energy Net Imports**  
(Quadrillion Btu)

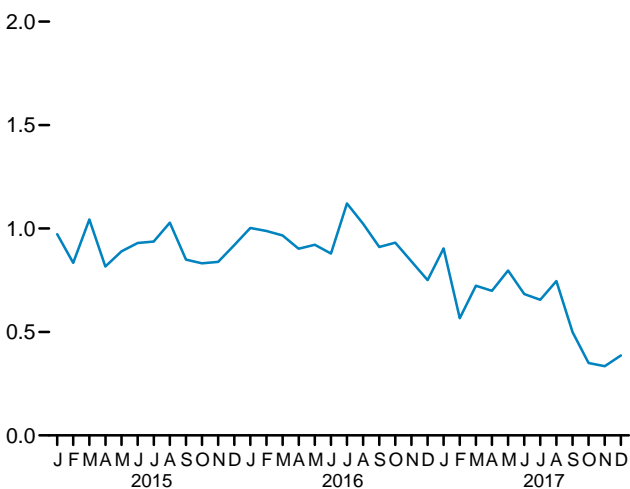
Total, 1949–2017



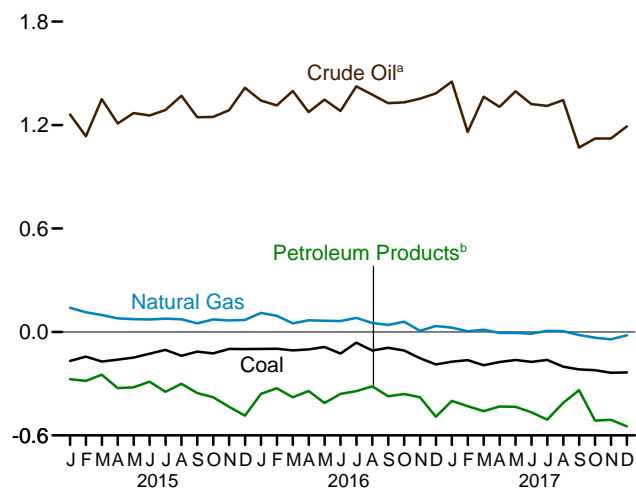
By Major Source, 1949–2017



Total, Monthly



By Major Source, Monthly



<sup>a</sup> Crude oil and lease condensate. Includes imports into the Strategic Petroleum Reserve, which began in 1977.

<sup>b</sup> Petroleum products, unfinished oils, natural gasoline, 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 <sup>c</sup>	Electricity	Total
				Crude Oil <sup>a</sup>	Petroleum Products <sup>b</sup>	Total			
<b>1950 Total</b> .....	<b>0.009</b>	<b>0.011</b>	<b>0.000</b>	<b>1.056</b>	<b>0.830</b>	<b>1.886</b>	<b>NA</b>	<b>0.007</b>	<b>1.913</b>
<b>1955 Total</b> .....	<b>.008</b>	<b>.003</b>	<b>.011</b>	<b>1.691</b>	<b>1.061</b>	<b>2.752</b>	<b>NA</b>	<b>.016</b>	<b>2.790</b>
<b>1960 Total</b> .....	<b>.007</b>	<b>.003</b>	<b>.161</b>	<b>2.196</b>	<b>1.802</b>	<b>3.999</b>	<b>NA</b>	<b>.018</b>	<b>4.188</b>
<b>1965 Total</b> .....	<b>.005</b>	<b>.002</b>	<b>.471</b>	<b>2.654</b>	<b>2.748</b>	<b>5.402</b>	<b>NA</b>	<b>.012</b>	<b>5.892</b>
<b>1970 Total</b> .....	<b>.001</b>	<b>.004</b>	<b>.846</b>	<b>2.814</b>	<b>4.656</b>	<b>7.470</b>	<b>NA</b>	<b>.021</b>	<b>8.342</b>
<b>1975 Total</b> .....	<b>.024</b>	<b>.045</b>	<b>.978</b>	<b>8.721</b>	<b>4.227</b>	<b>12.948</b>	<b>NA</b>	<b>.038</b>	<b>14.032</b>
<b>1980 Total</b> .....	<b>.030</b>	<b>.016</b>	<b>1.006</b>	<b>11.195</b>	<b>3.463</b>	<b>14.658</b>	<b>NA</b>	<b>.085</b>	<b>15.796</b>
<b>1985 Total</b> .....	<b>.049</b>	<b>.014</b>	<b>.952</b>	<b>6.814</b>	<b>3.796</b>	<b>10.609</b>	<b>NA</b>	<b>.157</b>	<b>11.781</b>
<b>1990 Total</b> .....	<b>.067</b>	<b>.019</b>	<b>1.551</b>	<b>12.766</b>	<b>4.351</b>	<b>17.117</b>	<b>NA</b>	<b>.063</b>	<b>18.817</b>
<b>1995 Total</b> .....	<b>.237</b>	<b>.095</b>	<b>2.901</b>	<b>15.669</b>	<b>3.131</b>	<b>18.800</b>	<b>.001</b>	<b>.146</b>	<b>22.180</b>
<b>2000 Total</b> .....	<b>.313</b>	<b>.094</b>	<b>3.869</b>	<b>19.783</b>	<b>4.641</b>	<b>24.424</b>	<b>(s)</b>	<b>.166</b>	<b>28.865</b>
<b>2001 Total</b> .....	<b>.495</b>	<b>.063</b>	<b>4.068</b>	<b>20.348</b>	<b>4.946</b>	<b>25.294</b>	<b>.002</b>	<b>.131</b>	<b>30.052</b>
<b>2002 Total</b> .....	<b>.422</b>	<b>.080</b>	<b>4.104</b>	<b>19.920</b>	<b>4.677</b>	<b>24.597</b>	<b>.002</b>	<b>.125</b>	<b>29.331</b>
<b>2003 Total</b> .....	<b>.626</b>	<b>.068</b>	<b>4.042</b>	<b>21.060</b>	<b>5.105</b>	<b>26.165</b>	<b>.002</b>	<b>.104</b>	<b>31.007</b>
<b>2004 Total</b> .....	<b>.682</b>	<b>.170</b>	<b>4.365</b>	<b>22.082</b>	<b>6.063</b>	<b>28.145</b>	<b>.013</b>	<b>.117</b>	<b>33.492</b>
<b>2005 Total</b> .....	<b>.762</b>	<b>.088</b>	<b>4.450</b>	<b>22.091</b>	<b>7.108</b>	<b>29.198</b>	<b>.012</b>	<b>.150</b>	<b>34.659</b>
<b>2006 Total</b> .....	<b>.906</b>	<b>.101</b>	<b>4.291</b>	<b>22.085</b>	<b>7.054</b>	<b>29.139</b>	<b>.066</b>	<b>.146</b>	<b>34.649</b>
<b>2007 Total</b> .....	<b>.909</b>	<b>.061</b>	<b>4.723</b>	<b>21.914</b>	<b>6.842</b>	<b>28.756</b>	<b>.055</b>	<b>.175</b>	<b>34.679</b>
<b>2008 Total</b> .....	<b>.855</b>	<b>.089</b>	<b>4.084</b>	<b>21.448</b>	<b>6.214</b>	<b>27.662</b>	<b>.085</b>	<b>.195</b>	<b>32.970</b>
<b>2009 Total</b> .....	<b>.566</b>	<b>.009</b>	<b>3.845</b>	<b>19.699</b>	<b>5.367</b>	<b>25.066</b>	<b>.027</b>	<b>.178</b>	<b>29.690</b>
<b>2010 Total</b> .....	<b>.484</b>	<b>.030</b>	<b>3.834</b>	<b>20.140</b>	<b>5.219</b>	<b>25.359</b>	<b>.004</b>	<b>.154</b>	<b>29.866</b>
<b>2011 Total</b> .....	<b>.327</b>	<b>.035</b>	<b>3.555</b>	<b>19.595</b>	<b>5.038</b>	<b>24.633</b>	<b>.019</b>	<b>.178</b>	<b>28.748</b>
<b>2012 Total</b> .....	<b>.212</b>	<b>.028</b>	<b>3.216</b>	<b>19.239</b>	<b>4.122</b>	<b>23.361</b>	<b>.049</b>	<b>.202</b>	<b>27.068</b>
<b>2013 Total</b> .....	<b>.199</b>	<b>.003</b>	<b>2.955</b>	<b>16.957</b>	<b>4.169</b>	<b>21.126</b>	<b>.102</b>	<b>.236</b>	<b>24.623</b>
<b>2014 Total</b> .....	<b>.252</b>	<b>.002</b>	<b>2.763</b>	<b>16.178</b>	<b>3.773</b>	<b>19.951</b>	<b>.046</b>	<b>.227</b>	<b>23.241</b>
<b>2015 January</b> .....	<b>.029</b>	<b>(s)</b>	<b>.286</b>	<b>1.348</b>	<b>.388</b>	<b>1.736</b>	<b>.003</b>	<b>.021</b>	<b>2.075</b>
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
<b>Total</b> .....	<b>.256</b>	<b>.003</b>	<b>2.786</b>	<b>16.299</b>	<b>4.111</b>	<b>20.410</b>	<b>.079</b>	<b>.259</b>	<b>23.794</b>
<b>2016 January</b> .....	<b>.015</b>	<b>(s)</b>	<b>.280</b>	<b>1.429</b>	<b>.353</b>	<b>1.782</b>	<b>.003</b>	<b>.021</b>	<b>2.102</b>
February .....	.018	(s)	.258	1.389	.339	1.728	.003	.018	2.026
March .....	.026	(s)	.247	1.503	.333	1.837	.005	.019	2.135
April .....	.017	(s)	.247	1.382	.357	1.739	.008	.015	2.026
May .....	.020	.001	.255	1.488	.376	1.864	.008	.018	2.165
June .....	.014	.002	.248	1.373	.398	1.771	.013	.022	2.070
July .....	.022	(s)	.272	1.519	.402	1.921	.012	.025	2.253
August .....	.021	(s)	.269	1.504	.379	1.883	.014	.024	2.210
September .....	.018	.002	.244	1.460	.343	1.804	.012	.017	2.097
October .....	.017	.001	.237	1.420	.350	1.770	.013	.019	2.057
November .....	.016	(s)	.237	1.457	.359	1.816	.015	.021	2.104
December .....	.015	(s)	.288	1.467	.319	1.786	.017	.018	2.123
<b>Total</b> .....	<b>.220</b>	<b>.006</b>	<b>3.082</b>	<b>17.392</b>	<b>4.309</b>	<b>21.700</b>	<b>.123</b>	<b>.237</b>	<b>25.368</b>
<b>2017 January</b> .....	<b>.017</b>	<b>(s)</b>	<b>.299</b>	<sup>R</sup> 1.585	<b>.380</b>	<sup>R</sup> 1.965	<b>.003</b>	<b>.019</b>	<sup>R</sup> 2.303
February .....	.014	(s)	.261	<sup>R</sup> 1.339	.326	<sup>R</sup> 1.665	.004	.015	<sup>R</sup> 1.959
March .....	.012	(s)	.288	<sup>R</sup> 1.512	.336	<sup>R</sup> 1.849	.006	.016	<sup>R</sup> 2.171
April .....	.011	(s)	.244	<sup>R</sup> 1.478	.342	<sup>R</sup> 1.820	.006	.019	<sup>R</sup> 2.101
May .....	.024	(s)	.250	<sup>R</sup> 1.578	.372	<sup>R</sup> 1.950	.008	.017	<sup>R</sup> 2.249
June .....	.015	.001	.246	<sup>R</sup> 1.457	.355	<sup>R</sup> 1.811	.013	.020	<sup>R</sup> 2.104
July .....	.021	(s)	.257	<sup>R</sup> 1.470	.333	<sup>R</sup> 1.803	.012	.019	<sup>R</sup> 2.112
August .....	.019	(s)	.254	<sup>R</sup> 1.482	.357	<sup>R</sup> 1.840	.011	.021	<sup>R</sup> 2.145
September .....	.011	(s)	.235	<sup>R</sup> 1.323	.395	<sup>R</sup> 1.718	.005	.017	<sup>R</sup> 1.987
October .....	.013	(s)	.250	<sup>R</sup> 1.430	.345	<sup>R</sup> 1.775	.004	<sup>R</sup> .016	2.058
November .....	.008	(s)	.249	<sup>R</sup> 1.386	.351	<sup>R</sup> 1.737	.005	<sup>R</sup> .017	2.016
December .....	.009	(s)	.283	1.462	.362	1.824	.004	.017	2.138
<b>Total</b> .....	<b>.174</b>	<b>.001</b>	<b>3.115</b>	<b>17.503</b>	<b>4.254</b>	<b>21.756</b>	<b>.083</b>	<b>.213</b>	<b>25.342</b>

<sup>a</sup> Crude oil and lease condensate. Includes imports into the Strategic Petroleum Reserve, which began in 1977.

<sup>b</sup> Petroleum products, unfinished oils, natural gasoline, and gasoline blending components. Does not include biofuels.

<sup>c</sup> 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 <sup>a</sup>
	Coal	Coal Coke	Natural Gas	Petroleum			Biomass <sup>d</sup>	Electricity	Total	
				Crude Oil <sup>b</sup>	Petroleum Products <sup>c</sup>	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 .....	.114	.001	.170	.087	.713	.800	.013	.002	1.100	1.003
February .....	.116	(s)	.164	.075	.666	.742	.014	.002	1.038	.988
March .....	.134	.001	.197	.106	.712	.818	.016	.003	1.168	.967
April .....	.118	.001	.179	.107	.699	.807	.016	.002	1.123	.902
May .....	.108	.001	.190	.140	.788	.928	.014	.002	1.243	.921
June .....	.139	.002	.185	.091	.757	.848	.014	.003	1.191	.879
July .....	.084	.001	.190	.095	.746	.841	.012	.003	1.132	1.121
August .....	.128	.003	.216	.128	.694	.822	.015	.003	1.188	1.023
September .....	.110	.003	.204	.133	.716	.850	.016	.003	1.186	.911
October .....	.125	.004	.178	.089	.710	.799	.017	.003	1.125	.932
November .....	.168	.005	.230	.104	.738	.842	.016	.002	1.264	.841
December .....	.203	.002	.253	.083	.811	.894	.017	.003	1.372	.751
Total .....	1.546	.025	2.356	1.238	8.752	9.990	.181	.032	14.130	11.238
2017 January .....	.189	.003	.274	R .133	R .780	R .912	.017	.003	R 1.399	R .903
February .....	.177	.001	.257	.179	R .757	R .936	.017	.003	R 1.392	R .567
March .....	.206	.002	.274	.148	R .796	R .944	.018	.004	R 1.448	R .723
April .....	.186	.001	.249	.172	R .774	R .946	.015	.004	R 1.402	R .699
May .....	.186	.001	.256	.182	R .807	R .989	.017	.003	R 1.451	R .797
June .....	.188	.003	.256	.135	R .820	R .955	.016	.004	R 1.421	R .683
July .....	.184	.001	.251	.159	R .841	R 1.000	.018	.004	R 1.457	R .655
August .....	.220	.004	.249	.137	R .768	R .906	.017	.004	R 1.399	R .746
September .....	.228	.002	.253	.253	R .733	R .986	.015	.004	R 1.488	R .499
October .....	.235	.005	.284	R .308	R .859	R 1.167	.015	.003	R 1.708	R .350
November .....	.245	.003	.291	R .264	R .860	R 1.124	.015	.003	R 1.682	R .334
December .....	.244	.003	.302	.269	.909	1.178	.021	.003	1.751	.386
Total .....	2.487	.030	3.196	2.340	9.704	12.044	.201	.040	17.999	7.343

<sup>a</sup> Net imports equal imports minus exports.

<sup>b</sup> Crude oil and lease condensate.

<sup>c</sup> Petroleum products, unfinished oils, natural gasoline, and gasoline blending components. Does not include biofuels.

<sup>d</sup> 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.

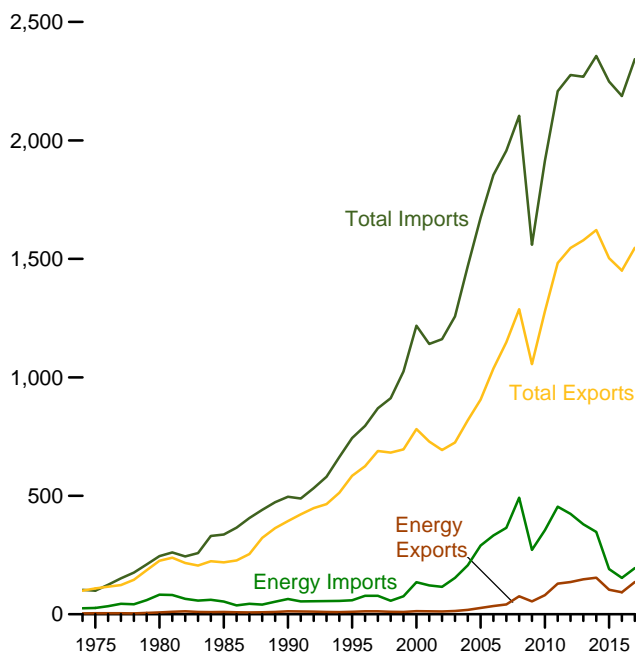
Notes: • See "Primary Energy" in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

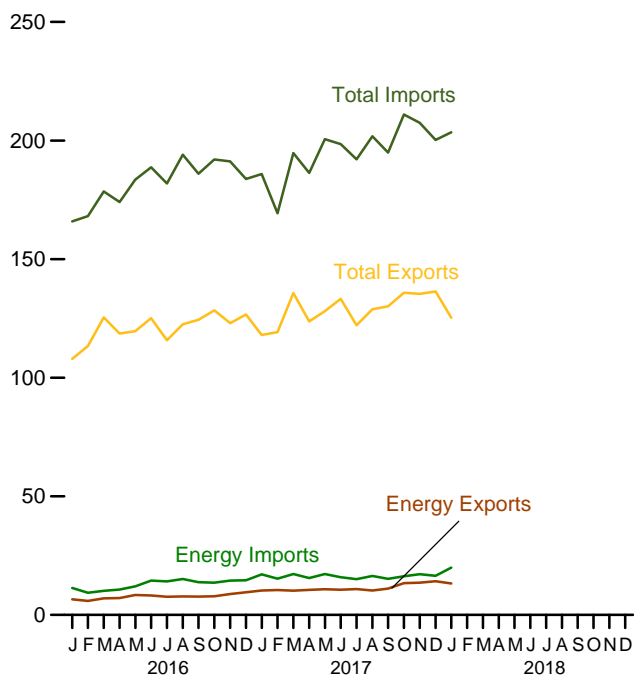
Sources: See end of section.

**Figure 1.5 Merchandise Trade Value**  
(Billion Dollars<sup>a</sup>)

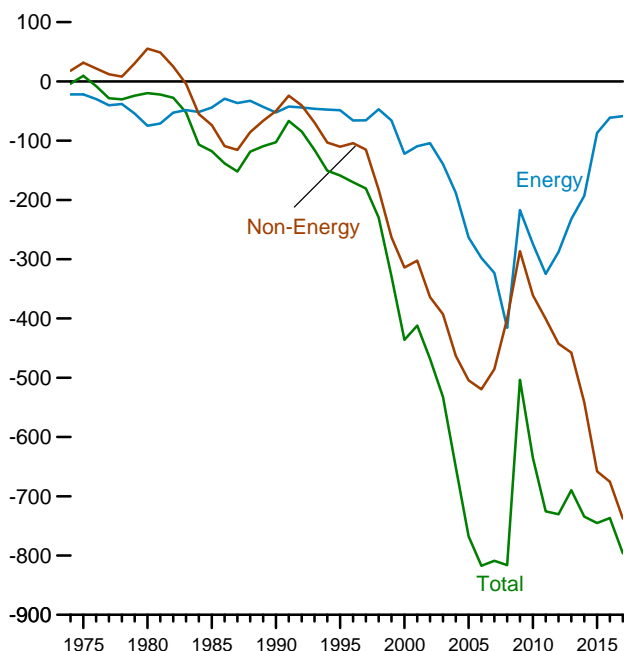
Imports and Exports, 1974–2017



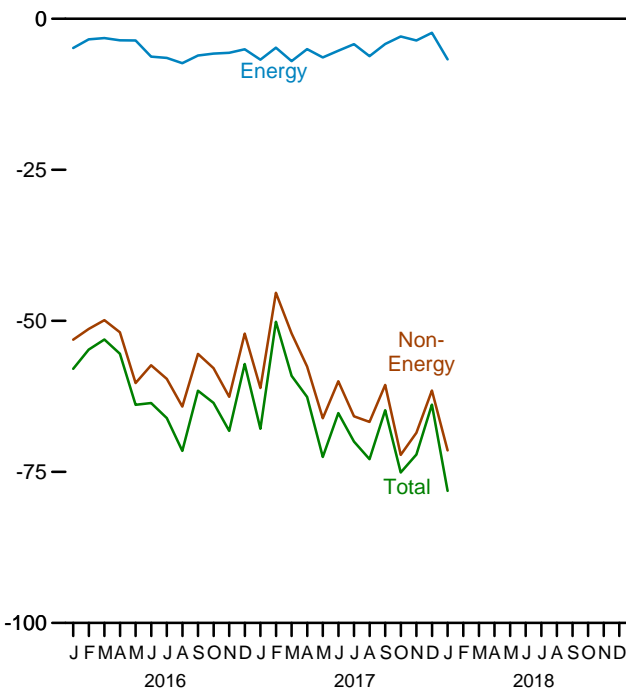
Imports and Exports, Monthly



Trade Balance, 1974–2017



Trade Balance, Monthly



<sup>a</sup> 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<sup>a</sup>)

	Petroleum <sup>b</sup>			Energy <sup>c</sup>			Non-Energy Balance	Total Merchandise		
	Exports	Imports	Balance	Exports	Imports	Balance		Exports	Imports	Balance
<b>1974 Total</b> .....	792	24,668	-23,876	3,444	25,454	-22,010	18,126	99,437	103,321	-3,884
<b>1975 Total</b> .....	907	25,197	-24,289	4,470	26,476	-22,006	31,557	108,856	99,305	9,551
<b>1980 Total</b> .....	2,833	78,637	-75,803	7,982	82,924	-74,942	55,246	225,566	245,262	-19,696
<b>1985 Total</b> .....	4,707	50,475	-45,768	9,971	53,917	-43,946	-73,765	218,815	336,526	-117,712
<b>1990 Total</b> .....	6,901	61,583	-54,682	12,233	64,661	-52,428	-50,068	393,592	496,088	-102,496
<b>1995 Total</b> .....	6,321	54,368	-48,047	10,358	59,109	-48,751	-110,050	584,742	743,543	-158,801
<b>2000 Total</b> .....	10,192	119,251	-109,059	13,179	135,367	-122,188	-313,916	781,918	1,218,022	-436,104
<b>2001 Total</b> .....	8,868	102,747	-93,879	12,494	121,923	-109,429	-302,470	729,100	1,140,999	-411,899
<b>2002 Total</b> .....	8,569	102,663	-94,094	11,541	115,748	-104,207	-364,056	693,103	1,161,366	-468,263
<b>2003 Total</b> .....	10,209	132,433	-122,224	13,768	153,298	-139,530	-392,820	724,771	1,257,121	-532,350
<b>2004 Total</b> .....	13,130	179,266	-166,136	18,642	206,660	-188,018	-462,912	818,775	1,469,704	-650,930
<b>2005 Total</b> .....	19,155	250,068	-230,913	26,488	289,723	-263,235	-504,242	905,978	1,673,455	-767,477
<b>2006 Total</b> .....	28,171	299,714	-271,543	34,711	332,500	-297,789	-519,515	1,036,635	1,853,938	-817,304
<b>2007 Total</b> .....	33,293	327,620	-294,327	41,725	364,987	-323,262	-485,501	1,148,199	1,956,962	-808,763
<b>2008 Total</b> .....	61,695	449,847	-388,152	76,075	491,885	-415,810	-400,389	1,287,442	2,103,641	-816,199
<b>2009 Total</b> .....	44,509	251,833	-207,324	54,536	271,739	-217,203	-286,379	1,056,043	1,559,625	-503,582
<b>2010 Total</b> .....	64,753	333,472	-268,719	80,625	354,982	-274,357	-361,005	1,278,495	1,913,857	-635,362
<b>2011 Total</b> .....	<sup>b</sup> 102,180	<sup>b</sup> 431,866	<sup>b</sup> -329,686	128,989	453,839	-324,850	-400,597	1,482,508	2,207,954	-725,447
<b>2012 Total</b> .....	111,951	408,509	-296,558	136,054	423,862	-287,808	-442,638	1,545,821	2,276,267	-730,446
<b>2013 Total</b> .....	123,218	363,141	-239,923	147,539	379,758	-232,219	-457,712	1,578,439	2,268,370	-689,931
<b>2014 Total</b> .....	127,818	326,709	-198,891	154,498	347,474	-192,976	-541,506	1,621,874	2,356,356	-734,482
<b>2015 January</b> .....	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
<b>Total</b> .....	<b>85,733</b>	<b>177,455</b>	<b>-91,722</b>	<b>103,458</b>	<b>190,501</b>	<b>-87,043</b>	<b>-658,039</b>	<b>1,503,101</b>	<b>2,248,183</b>	<b>-745,082</b>
<b>2016 January</b> .....	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
<b>Total</b> .....	<b>74,636</b>	<b>142,933</b>	<b>-68,297</b>	<b>92,623</b>	<b>153,822</b>	<b>-61,199</b>	<b>-675,595</b>	<b>1,451,011</b>	<b>2,187,805</b>	<b>-736,794</b>
<b>2017 January</b> .....	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	-57,561	123,765	186,347	-62,582
May .....	8,297	16,220	-7,923	10,826	17,234	-6,408	-66,118	128,052	200,577	-72,526
June .....	8,325	14,930	-6,605	10,593	15,866	-5,273	-59,989	133,267	198,529	-65,262
July .....	8,664	14,024	-5,360	10,892	15,090	-4,198	-65,792	122,120	192,110	-69,990
August .....	7,781	15,420	-7,639	10,272	16,457	-6,185	-66,711	128,892	201,788	-72,896
September .....	8,376	14,184	-5,808	11,070	15,235	-4,165	-60,617	130,112	194,895	-64,782
October .....	10,294	15,231	-4,937	13,366	16,281	-2,915	-72,188	135,856	210,959	-75,103
November .....	10,445	16,123	-5,678	13,569	17,149	-3,580	-68,536	135,370	207,486	-72,116
December .....	10,921	14,978	-4,057	14,174	16,488	-2,314	<sup>R</sup> -61,540	<sup>R</sup> 136,386	<sup>R</sup> 200,240	<sup>R</sup> -63,854
<b>Total</b> .....	<b>103,801</b>	<b>181,320</b>	<b>-77,519</b>	<b>136,358</b>	<b>194,945</b>	<b>-58,587</b>	<sup>R</sup> <b>-737,607</b>	<sup>R</sup> <b>1,546,725</b>	<sup>R</sup> <b>2,342,919</b>	<sup>R</sup> <b>-796,194</b>
<b>2018 January</b> .....	10,139	18,086	-7,947	13,231	19,944	-6,713	-71,436	125,329	203,478	-78,149

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

<sup>b</sup> 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.

<sup>c</sup> Petroleum, coal, natural gas, and electricity.

<sup>R</sup>=Revised.

Notes: • Monthly data are not adjusted for seasonal variations. • See Note 1, "Merchandise Trade Value," at end of section. • Totals may not equal sum of

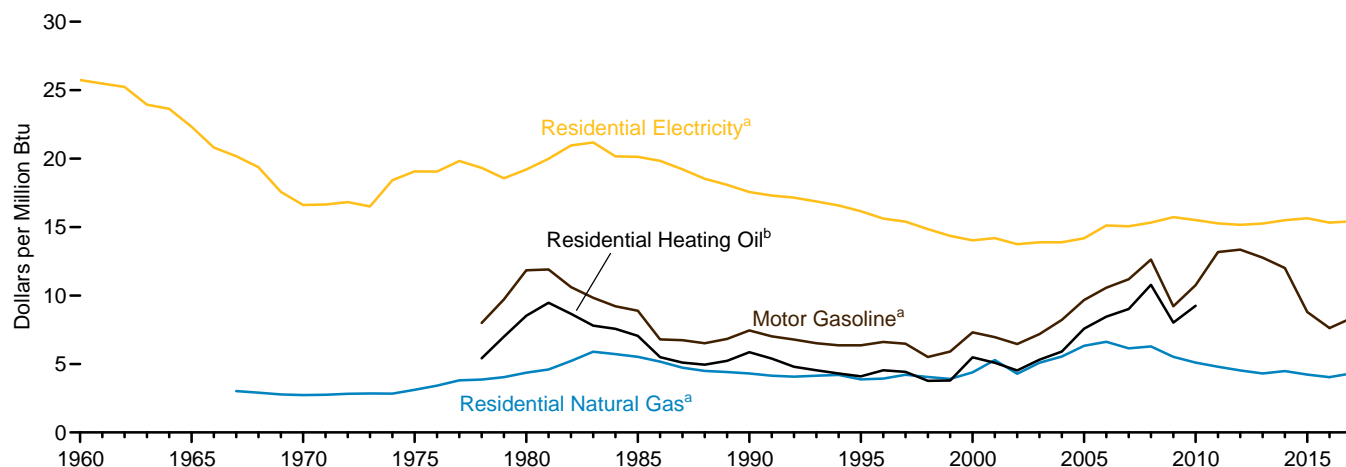
components due to independent rounding. • The U.S. import statistics reflect both government and nongovernment imports of merchandise from foreign countries into the U.S. customs territory, which comprises the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands.

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.

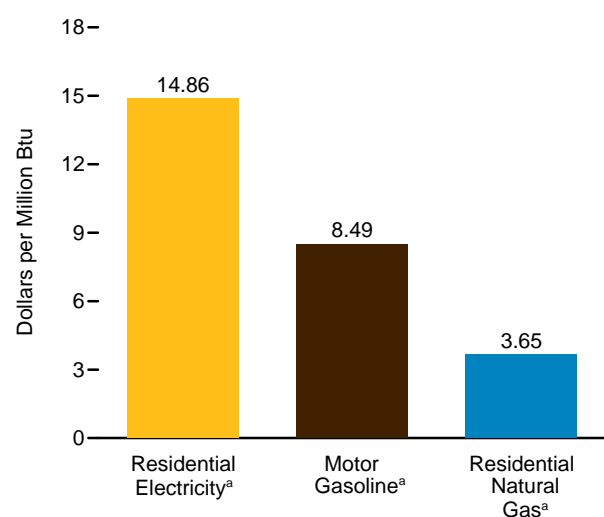
Sources: See end of section.

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

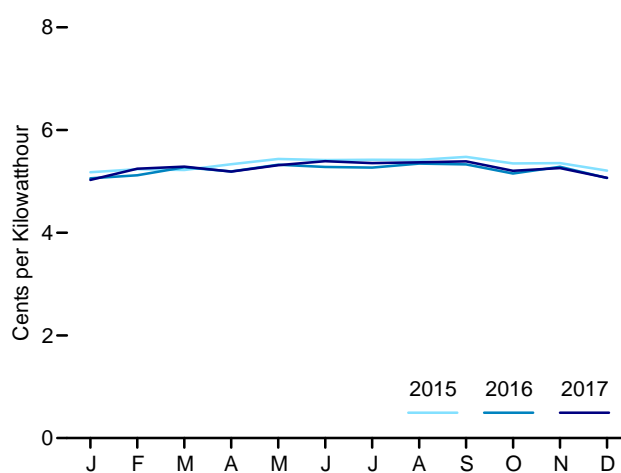
Costs, 1960–2017



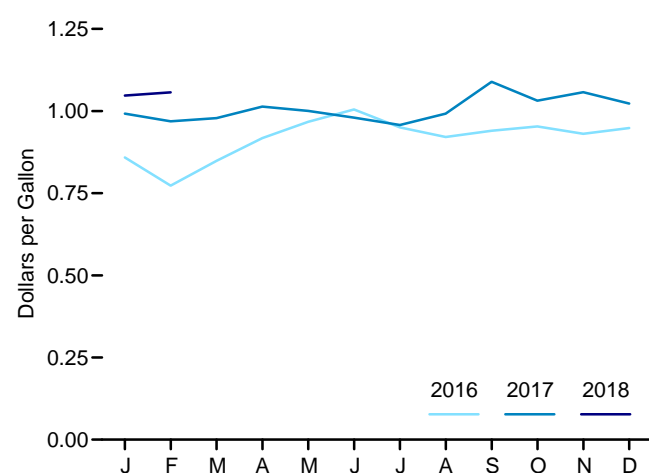
Costs, December 2017



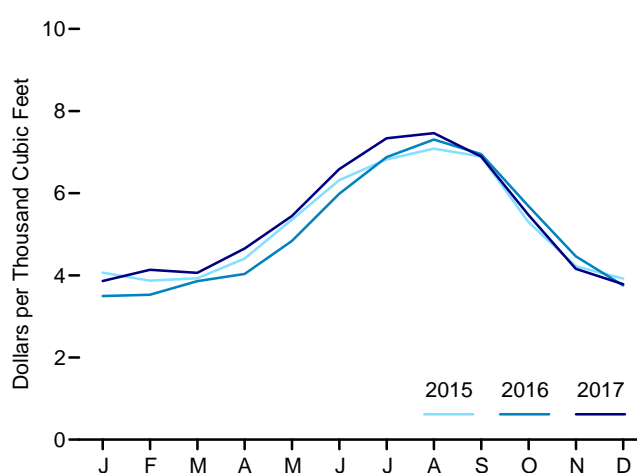
Residential Electricity,<sup>a</sup> Monthly



Motor Gasoline,<sup>a</sup> Monthly



Residential Natural Gas,<sup>a</sup> Monthly



<sup>a</sup> Includes taxes.

<sup>b</sup> 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 <sup>a</sup>	Motor Gasoline <sup>b</sup>		Residential Heating Oil <sup>c</sup>		Residential Natural Gas <sup>b</sup>		Residential Electricity <sup>b</sup>	
	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 Kilowatthour	Dollars per Million Btu
<b>1960 Average</b> .....	29.6	NA	NA	NA	NA	NA	NA	8.8	25.74
<b>1965 Average</b> .....	31.5	NA	NA	NA	NA	NA	NA	7.6	22.33
<b>1970 Average</b> .....	38.8	NA	NA	NA	NA	2.81	2.72	5.7	16.62
<b>1975 Average</b> .....	53.8	NA	NA	NA	NA	3.18	3.12	6.5	19.07
<b>1980 Average</b> .....	82.4	1.482	11.85	1.182	8.52	4.47	4.36	6.6	19.21
<b>1985 Average</b> .....	107.6	1.112	8.89	0.979	7.06	5.69	5.52	6.87	20.13
<b>1990 Average</b> .....	130.7	0.931	7.44	0.813	5.86	4.44	4.31	5.99	17.56
<b>1995 Average</b> .....	152.4	0.791	6.36	0.569	4.10	3.98	3.87	5.51	16.15
<b>2000 Average</b> .....	172.2	0.908	7.31	0.761	5.49	4.51	4.39	4.79	14.02
<b>2001 Average</b> .....	177.1	0.864	6.96	0.706	5.09	5.44	5.28	4.84	14.20
<b>2002 Average</b> .....	179.9	0.801	6.46	0.628	4.52	4.39	4.28	4.69	13.75
<b>2003 Average</b> .....	184.0	0.890	7.19	0.736	5.31	5.23	5.09	4.74	13.89
<b>2004 Average</b> .....	188.9	1.018	8.22	0.819	5.91	5.69	5.55	4.74	13.89
<b>2005 Average</b> .....	195.3	1.197	9.67	1.051	7.58	6.50	6.33	4.84	14.18
<b>2006 Average</b> .....	201.6	1.307	10.58	1.173	8.46	6.81	6.63	5.16	15.12
<b>2007 Average</b> .....	207.342	1.374	11.20	1.250	9.01	6.31	6.14	5.14	15.05
<b>2008 Average</b> .....	215.303	1.541	12.62	1.495	10.78	6.45	6.28	5.23	15.33
<b>2009 Average</b> .....	214.537	1.119	9.21	1.112	8.02	5.66	5.52	5.37	15.72
<b>2010 Average</b> .....	218.056	1.301	10.76	1.283	9.25	5.22	5.11	5.29	15.51
<b>2011 Average</b> .....	224.939	1.590	13.18	NA	NA	4.90	4.80	5.21	15.27
<b>2012 Average</b> .....	229.594	1.609	13.35	NA	NA	4.64	4.53	5.17	15.17
<b>2013 Average</b> .....	232.957	1.538	12.76	NA	NA	4.43	4.31	5.21	15.26
<b>2014 Average</b> .....	236.736	1.447	12.01	NA	NA	4.63	4.49	5.29	15.50
<b>2015 January</b> .....	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	4.25	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	6.08	5.41	15.87
July .....	238.654	1.212	10.06	NA	NA	6.82	6.57	5.42	15.89
August .....	238.316	1.152	9.56	NA	NA	7.08	6.82	5.42	15.88
September .....	237.945	1.035	8.59	NA	NA	6.89	6.64	5.48	16.05
October .....	237.838	0.991	8.23	NA	NA	5.30	5.10	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
<b>Average</b> .....	<b>237.017</b>	<b>1.059</b>	<b>8.79</b>	<b>NA</b>	<b>NA</b>	<b>4.38</b>	<b>4.22</b>	<b>5.34</b>	<b>15.64</b>
<b>2016 January</b> .....	236.916	0.859	7.13	NA	NA	3.50	3.37	5.06	14.83
February .....	237.111	0.773	6.42	NA	NA	3.53	3.40	5.12	15.01
March .....	238.132	0.849	7.05	NA	NA	3.86	3.72	5.27	15.46
April .....	239.261	0.918	7.62	NA	NA	4.03	3.89	5.20	15.23
May .....	240.229	0.967	8.03	NA	NA	4.84	4.66	5.32	15.60
June .....	241.018	1.005	8.34	NA	NA	5.99	5.77	5.28	15.48
July .....	240.628	0.950	7.89	NA	NA	6.88	6.63	5.27	15.44
August .....	240.849	0.921	7.65	NA	NA	7.31	7.05	5.35	15.67
September .....	241.428	0.940	7.80	NA	NA	6.95	6.70	5.33	15.62
October .....	241.729	0.953	7.91	NA	NA	5.68	5.48	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	3.75	3.62	5.07	14.85
<b>Average</b> .....	<b>240.007</b>	<b>0.918</b>	<b>7.62</b>	<b>NA</b>	<b>NA</b>	<b>4.19</b>	<b>4.04</b>	<b>5.23</b>	<b>15.33</b>
<b>2017 January</b> .....	242.839	0.992	8.24	NA	NA	3.86	3.72	5.03	<sup>R</sup> 14.74
February .....	243.603	0.969	8.04	NA	NA	4.13	3.99	5.25	15.38
March .....	243.801	0.979	<sup>R</sup> 8.13	NA	NA	4.06	3.92	5.29	<sup>R</sup> 15.50
April .....	244.524	1.014	8.42	NA	NA	4.65	4.49	5.19	15.21
May .....	244.733	1.000	<sup>R</sup> 8.31	NA	NA	5.44	5.25	5.32	<sup>R</sup> 15.58
June .....	244.955	0.980	<sup>R</sup> 8.14	NA	NA	6.59	6.35	<sup>R</sup> 5.39	<sup>R</sup> 15.81
July .....	244.786	0.958	7.95	NA	NA	7.34	7.08	5.36	<sup>R</sup> 15.70
August .....	245.519	0.992	8.24	NA	NA	7.46	7.20	5.37	15.75
September .....	246.819	1.089	9.04	NA	NA	6.89	6.65	5.39	15.79
October .....	246.663	1.032	8.57	NA	NA	5.47	5.28	5.21	15.26
November .....	246.669	1.057	8.78	NA	NA	4.16	4.01	<sup>R</sup> 5.26	<sup>R</sup> 15.41
December .....	246.524	1.023	8.49	NA	NA	<sup>R</sup> 3.79	<sup>R</sup> 3.65	<sup>R</sup> 5.07	<sup>R</sup> 14.86
<b>Average</b> .....	<b>245.120</b>	<b>1.007</b>	<b>8.36</b>	<b>NA</b>	<b>NA</b>	<sup>R</sup> <b>4.48</b>	<sup>R</sup> <b>4.32</b>	<sup>R</sup> <b>5.26</b>	<sup>R</sup> <b>15.42</b>
<b>2018 January</b> .....	247.867	1.047	8.70	NA	NA	NA	NA	NA	NA
February .....	248.991	1.057	8.78	NA	NA	NA	NA	NA	NA

<sup>a</sup> Data are U.S. city averages for all items, and are not seasonally adjusted.

<sup>b</sup> Includes taxes.

<sup>c</sup> Excludes taxes.

R=Revised. NA=Not available.

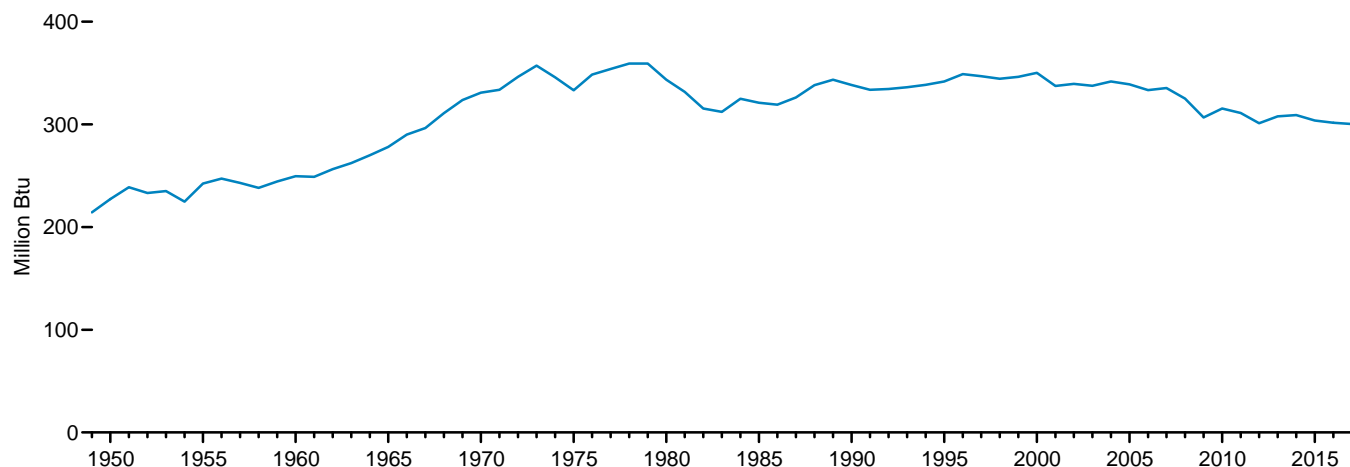
Notes: • See "Real Dollars" in Glossary. • Fuel costs are calculated by using the Urban Consumer Price Index (CPI) developed by the Bureau of Labor Statistics. • Annual averages may not equal average of months due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

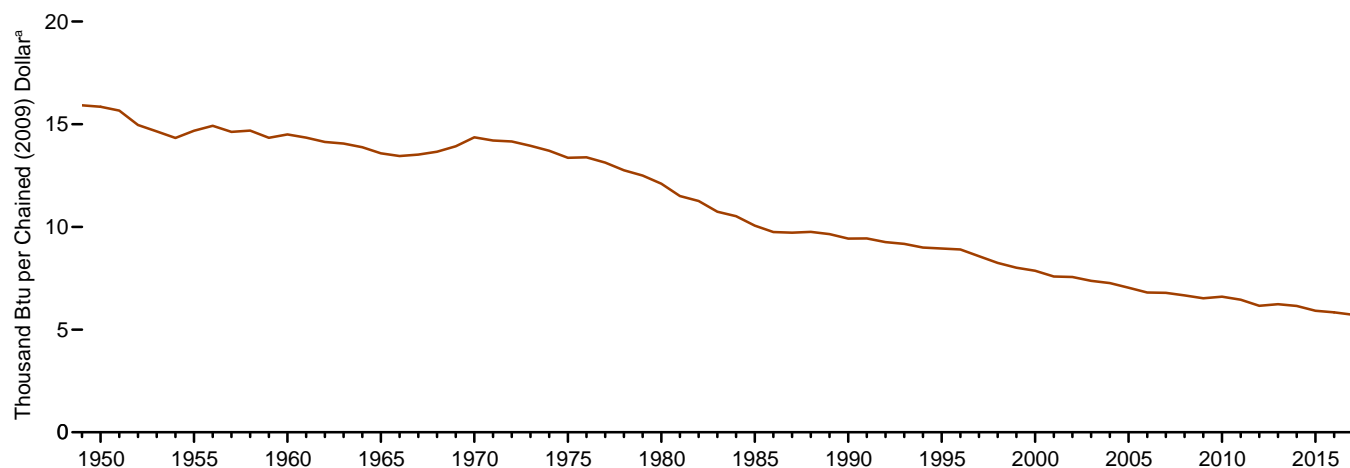
Sources: • **Fuel Prices:** Tables 9.4 (All Grades), 9.8, and 9.10, adjusted by the CPI; and *Monthly Energy Review*, September 2012, Table 9.8c. • **Consumer Price Index, All Urban Consumers:** U.S. Department of Labor, Bureau of Labor Statistics, series ID CUUR0000SA0. • **Conversion Factors:** Tables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

## Figure 1.7 Primary Energy Consumption and Energy Expenditures Indicators

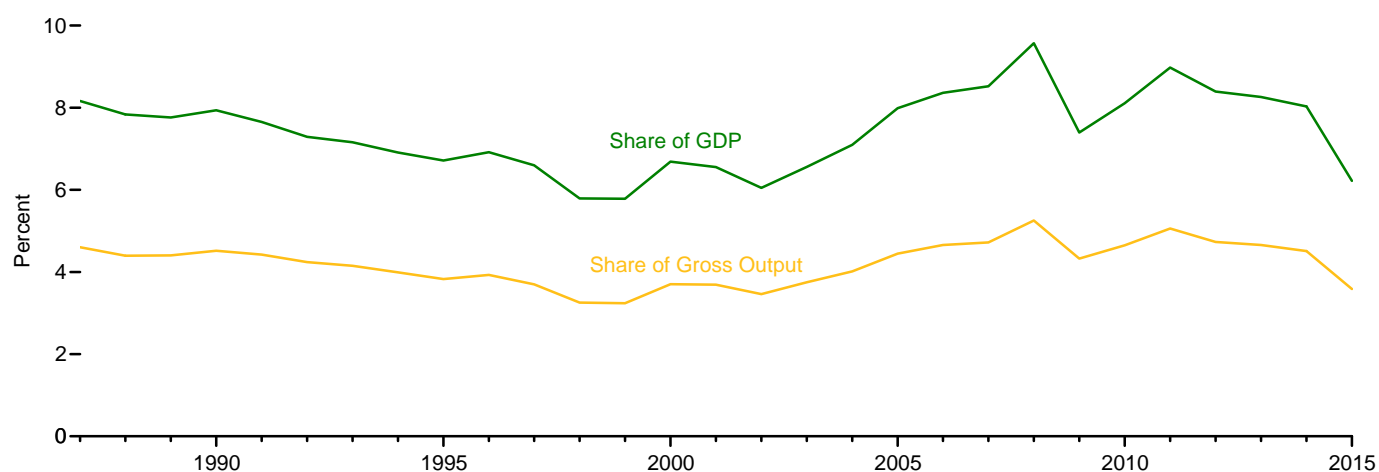
### Energy Consumption per Capita, 1949–2017



### Primary Energy Consumption per Real Dollar<sup>a</sup> of Gross Domestic Product, 1949–2017



### Energy Expenditures as Share of Gross Domestic Product and Gross Output,<sup>b</sup> 1987–2015



<sup>a</sup> See "Chained Dollars" and "Real Dollars" in Glossary.

<sup>b</sup> 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 <sup>a</sup>			Energy Expenditures <sup>b</sup>				Carbon Dioxide Emissions <sup>c</sup>		
	Consumption	Consumption per Capita	Consumption per Real Dollar <sup>d</sup> of GDP <sup>e</sup>	Expenditures	Expenditures per Capita	Expenditures as Share of GDP <sup>e</sup>	Expenditures as Share of Gross Output <sup>f</sup>	Emissions	Emissions per Capita	Emissions per Real Dollar <sup>d</sup> of GDP <sup>e</sup>
	Quadrillion Btu	Million Btu	Thousand Btu per Chained (2009) Dollar <sup>d</sup>	Million Nominal Dollars <sup>g</sup>	Nominal Dollars <sup>g</sup>	Percent	Percent	Million Metric Tons Carbon Dioxide	Metric Tons Carbon Dioxide	Metric Tons Carbon Dioxide per Million Chained (2009) Dollars <sup>d</sup>
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	4,421	20.5	821
1980 .....	78.067	344	12.10	374,347	1,647	13.1	NA	4,750	20.9	736
1981 .....	76.106	332	11.50	427,898	1,865	13.3	NA	4,625	20.2	699
1982 .....	73.099	316	11.26	426,479	1,841	12.7	NA	4,393	19.0	677
1983 .....	72.971	312	10.74	417,617	1,786	11.5	NA	4,371	18.7	644
1984 .....	76.632	325	10.52	435,309	1,846	10.8	NA	4,600	19.5	631
1985 .....	76.392	321	10.06	438,339	1,842	10.1	NA	4,593	19.3	605
1986 .....	76.647	319	9.75	384,088	1,599	8.4	NA	4,598	19.1	585
1987 .....	79.054	326	9.72	397,623	1,641	8.2	4.6	4,757	19.6	585
1988 .....	82.709	338	9.76	411,565	1,683	7.8	4.4	4,982	20.4	588
1989 .....	84.785	344	9.65	439,046	1,779	7.8	4.4	5,065	20.5	577
1990 .....	84.484	338	9.43	474,647	1,901	7.9	4.5	5,039	20.2	563
1991 .....	84.437	334	9.44	472,434	1,867	7.7	4.4	4,993	19.7	558
1992 .....	85.782	334	9.26	476,840	1,859	7.3	4.2	5,090	19.8	549
1993 .....	87.365	336	9.18	492,267	1,894	7.2	4.2	5,184	19.9	545
1994 .....	89.087	339	8.99	504,854	1,919	6.9	4.0	5,261	20.0	531
1995 .....	91.031	342	8.95	514,622	1,933	6.7	3.8	5,324	20.0	523
1996 .....	94.021	349	8.90	560,292	2,080	6.9	3.9	5,511	20.5	522
1997 .....	94.600	347	8.57	567,960	2,083	6.6	3.7	5,584	20.5	506
1998 .....	95.018	344	8.24	526,280	1,908	5.8	3.3	5,637	20.4	489
1999 .....	96.648	346	8.01	558,624	2,002	5.8	3.2	5,690	20.4	472
2000 .....	98.817	350	7.87	687,708	2,437	6.7	3.7	5,867	20.8	467
2001 .....	96.170	337	7.58	696,240	2,443	6.6	3.7	5,762	20.2	454
2002 .....	97.643	339	7.56	663,962	2,308	6.0	3.5	5,805	20.2	450
2003 .....	97.918	338	7.38	755,068	2,603	6.6	3.8	5,855	20.2	441
2004 .....	100.090	342	7.27	871,209	2,975	7.1	4.0	5,971	20.4	433
2005 .....	100.188	339	7.04	1,045,729	3,539	8.0	4.4	5,992	20.3	421
2006 .....	99.485	333	6.81	1,158,819	3,884	8.4	4.7	5,912	19.8	405
2007 .....	101.015	335	6.79	1,233,864	4,096	8.5	4.7	6,005	19.9	404
2008 .....	98.891	325	6.67	1,408,750	4,633	9.6	5.3	5,815	19.1	392
2009 .....	94.118	307	6.53	1,066,275	3,476	7.4	4.3	5,396	17.6	374
2010 .....	97.580	315	6.60	1,213,336	3,922	8.1	4.6	5,591	18.1	378
2011 .....	96.975	311	6.46	1,392,945	4,470	9.0	5.1	5,454	17.5	363
2012 .....	94.535	301	6.16	1,356,215	4,319	8.4	4.7	5,243	16.7	341
2013 .....	97.341	308	6.23	1,378,885	4,360	8.3	4.7	5,372	17.0	344
2014 .....	<sup>R</sup> 98.490	309	6.15	1,399,486	4,392	8.0	4.5	5,419	17.0	338
2015 .....	<sup>R</sup> 97.527	304	5.92	1,127,132	3,511	6.2	3.6	5,274	16.4	320
2016 .....	<sup>R</sup> 97.562	302	5.84	NA	NA	NA	NA	5,187	16.0	310
2017 .....	97.827	300	5.72	NA	NA	NA	NA	5,153	15.8	301

<sup>a</sup> See "Primary Energy Consumption" in Glossary.

<sup>b</sup> Expenditures include taxes where data are available.

<sup>c</sup> Carbon dioxide emissions from energy consumption. See Table 12.1.

<sup>d</sup> See "Chained Dollars" and "Real Dollars" in Glossary.

<sup>e</sup> See "Gross Domestic Product (GDP)" in Glossary.

<sup>f</sup> Gross output is the value of GDP plus the value of intermediate inputs used to produce GDP.

<sup>g</sup> See "Nominal Dollars" in Glossary.

<sup>R</sup>=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.

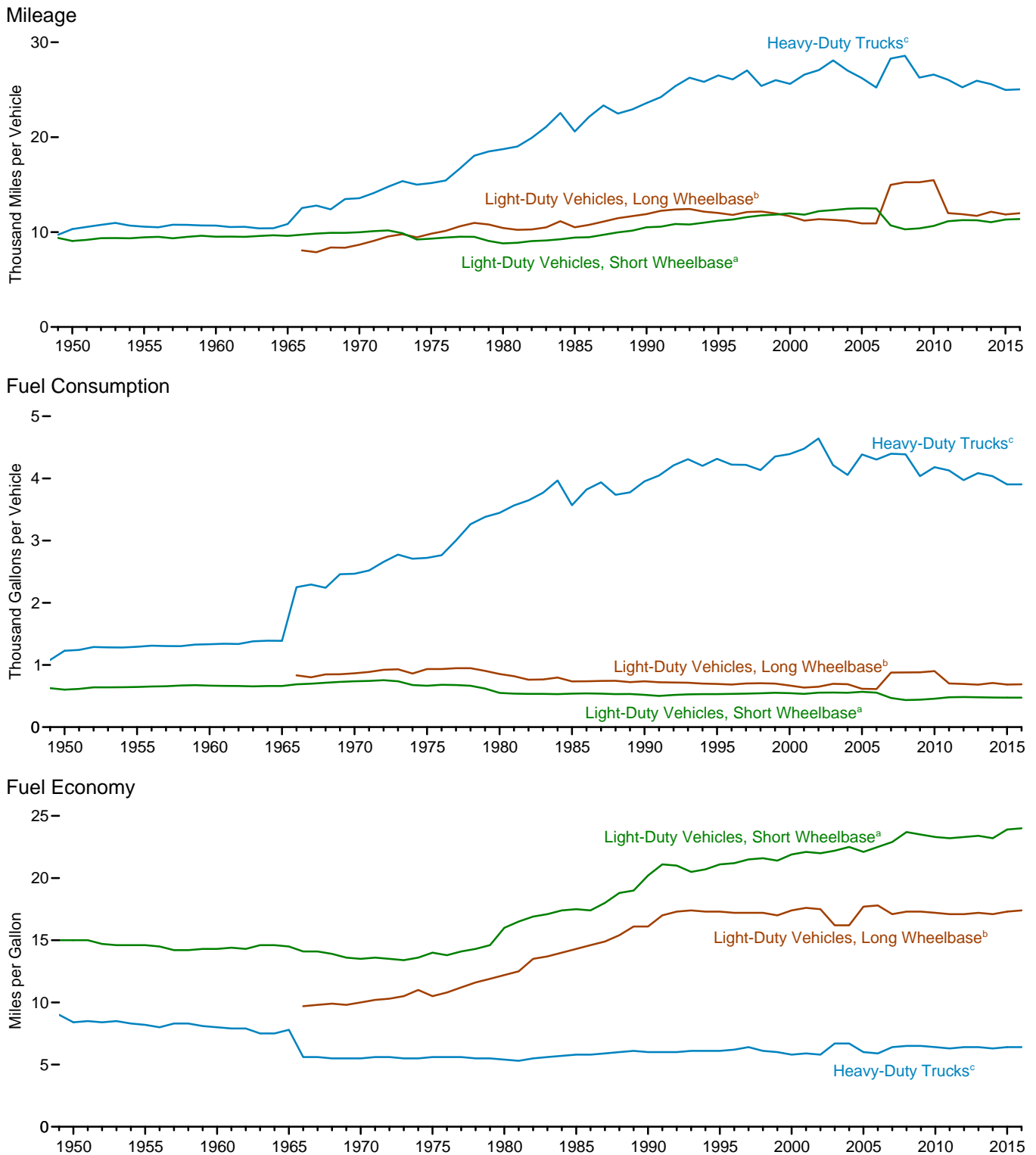
Sources: • **Consumption:** Table 1.3. • **Consumption per Capita:** Calculated as energy consumption divided by U.S. population (see Table C1).

• **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 2015" (June 2017), 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, 1949–2016**



<sup>a</sup> 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.

<sup>b</sup> 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.

<sup>c</sup> 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 <sup>a</sup>			Light-Duty Vehicles, Long Wheelbase <sup>b</sup>			Heavy-Duty Trucks <sup>c</sup>			All Motor Vehicles <sup>d</sup>		
	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	( <sup>e</sup> )	( <sup>e</sup> )	( <sup>e</sup> )	10,316	1,229	8.4	9,321	725	12.8
1955 .....	9,447	645	14.6	( <sup>e</sup> )	( <sup>e</sup> )	( <sup>e</sup> )	10,576	1,293	8.2	9,661	761	12.7
1960 .....	9,518	668	14.3	( <sup>e</sup> )	( <sup>e</sup> )	( <sup>e</sup> )	10,693	1,333	8.0	9,732	784	12.4
1965 .....	9,603	661	14.5	( <sup>e</sup> )	( <sup>e</sup> )	( <sup>e</sup> )	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 .....	<sup>a</sup> 10,710	<sup>a</sup> 468	<sup>a</sup> 22.9	<sup>b</sup> 14,970	<sup>b</sup> 877	<sup>b</sup> 17.1	<sup>c</sup> 28,290	<sup>c</sup> 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 .....	11,327	475	23.9	11,855	684	17.3	24,979	3,904	6.4	11,742	656	17.9
2016 <sup>P</sup> .....	11,370	475	24.0	11,991	689	17.4	25,037	3,904	6.4	11,810	658	17.9

<sup>a</sup> 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.

<sup>b</sup> 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.

<sup>c</sup> 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.

<sup>d</sup> Includes buses and motorcycles, which are not separately displayed.

<sup>e</sup> 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 <sup>a</sup>	Middle Atlantic <sup>b</sup>	East North Central <sup>c</sup>	West North Central <sup>d</sup>	South Atlantic <sup>e</sup>	East South Central <sup>f</sup>	West South Central <sup>g</sup>	Mountain <sup>h</sup>	Pacific <sup>i</sup>	United States
<b>1950 Total</b> .....	6,794	6,324	7,027	7,455	3,521	3,547	2,277	6,341	3,906	5,367
<b>1955 Total</b> .....	6,872	6,231	6,486	6,912	3,508	3,513	2,294	6,704	4,320	5,246
<b>1960 Total</b> .....	6,828	6,391	6,908	7,184	3,780	4,134	2,767	6,281	3,799	5,404
<b>1965 Total</b> .....	7,029	6,393	6,587	6,932	3,372	3,501	2,237	6,086	3,819	5,146
<b>1970 Total</b> .....	7,022	6,388	6,721	7,090	3,452	3,823	2,558	6,119	3,726	5,218
<b>1975 Total</b> .....	6,547	5,892	6,406	6,880	2,970	3,437	2,312	6,260	4,117	4,905
<b>1980 Total</b> .....	7,071	6,477	6,975	6,836	3,378	3,964	2,494	5,554	3,539	5,080
<b>1985 Total</b> .....	6,749	5,971	6,668	7,262	2,899	3,660	2,535	6,059	3,935	4,889
<b>1990 Total</b> .....	5,987	5,252	5,780	6,137	2,307	2,942	1,968	5,391	3,603	4,180
<b>1995 Total</b> .....	6,684	6,093	6,740	6,911	2,988	3,648	2,147	5,101	3,269	4,640
<b>2000 Total</b> .....	6,625	5,999	6,315	6,500	2,905	3,551	2,153	4,971	3,460	4,494
<b>2001 Total</b> .....	6,202	5,541	5,844	6,221	2,604	3,327	2,162	5,004	3,545	4,257
<b>2002 Total</b> .....	6,234	5,550	6,128	6,485	2,664	3,443	2,292	5,197	3,510	4,356
<b>2003 Total</b> .....	6,975	6,258	6,536	6,593	2,884	3,559	2,205	4,817	3,355	4,544
<b>2004 Total</b> .....	6,709	5,892	6,178	6,329	2,715	3,291	2,041	5,010	3,346	4,344
<b>2005 Total</b> .....	6,644	5,950	6,222	6,213	2,775	3,380	1,985	4,896	3,377	4,348
<b>2006 Total</b> .....	5,885	5,211	5,703	5,821	2,475	3,211	1,802	4,915	3,557	4,040
<b>2007 Total</b> .....	6,537	5,756	6,074	6,384	2,525	3,187	2,105	4,939	3,506	4,268
<b>2008 Total</b> .....	6,434	5,782	6,677	7,118	2,712	3,600	2,125	5,233	3,566	4,494
<b>2009 Total</b> .....	6,644	5,922	6,512	6,841	2,812	3,536	2,152	5,139	3,538	4,481
<b>2010 Total</b> .....	5,934	5,553	6,185	6,565	3,167	3,948	2,449	5,082	3,624	4,463
<b>2011 Total</b> .....	6,114	5,483	6,172	6,565	2,565	3,343	2,114	5,322	3,818	4,312
<b>2012 Total</b> .....	5,561	4,970	5,356	5,515	2,306	2,876	1,650	4,574	3,411	3,769
<b>2013 Total</b> .....	6,426	5,838	6,621	7,135	2,736	3,648	2,326	5,273	3,362	4,465
<b>2014 Total</b> .....	6,675	6,203	7,194	7,304	2,951	3,932	2,422	4,744	2,774	4,550
<b>2015 January</b> .....	1,336	1,260	1,334	1,267	643	836	623	818	470	890
<b>February</b> .....	1,412	1,318	1,405	1,306	666	864	498	601	334	867
<b>March</b> .....	1,101	1,002	951	802	357	445	278	484	285	584
<b>April</b> .....	588	481	454	399	131	147	55	396	294	300
<b>May</b> .....	148	100	159	215	22	37	14	268	208	119
<b>June</b> .....	84	30	45	40	1	1	0	42	26	24
<b>July</b> .....	7	4	12	12	0	0	0	24	8	6
<b>August</b> .....	8	9	24	33	0	1	0	21	13	11
<b>September</b> .....	43	27	39	50	8	13	1	78	57	32
<b>October</b> .....	458	391	365	355	143	164	42	247	112	227
<b>November</b> .....	610	529	603	650	237	313	218	687	471	445
<b>December</b> .....	726	626	775	960	279	402	358	937	619	581
<b>Total</b> .....	<b>6,521</b>	<b>5,777</b>	<b>6,165</b>	<b>6,088</b>	<b>2,487</b>	<b>3,222</b>	<b>2,087</b>	<b>4,602</b>	<b>2,898</b>	<b>4,087</b>
<b>2016 January</b> .....	1,127	1,119	1,241	1,303	659	857	565	918	569	871
<b>February</b> .....	957	901	957	937	483	574	310	619	341	628
<b>March</b> .....	754	644	670	653	240	324	179	543	395	450
<b>April</b> .....	605	515	506	424	152	162	61	381	242	309
<b>May</b> .....	251	213	221	207	58	71	17	254	181	151
<b>June</b> .....	45	22	25	27	1	0	0	42	44	21
<b>July</b> .....	4	1	2	11	0	0	0	15	20	6
<b>August</b> .....	5	1	5	17	0	0	0	31	12	6
<b>September</b> .....	67	38	40	75	2	5	1	115	66	39
<b>October</b> .....	388	316	285	304	91	89	22	265	200	198
<b>November</b> .....	672	609	582	569	290	339	154	513	331	418
<b>December</b> .....	1,053	975	1,166	1,257	479	672	444	927	627	783
<b>Total</b> .....	<b>5,928</b>	<b>5,353</b>	<b>5,701</b>	<b>5,786</b>	<b>2,456</b>	<b>3,094</b>	<b>1,752</b>	<b>4,621</b>	<b>3,029</b>	<b>3,879</b>
<b>2017 January</b> .....	<sup>R</sup> 1,039	971	<sup>R</sup> 1,081	1,211	<sup>R</sup> 477	579	<sup>R</sup> 418	<sup>R</sup> 959	668	767
<b>February</b> .....	907	778	<sup>R</sup> 775	817	323	<sup>R</sup> 409	208	<sup>R</sup> 626	<sup>R</sup> 499	548
<b>March</b> .....	<sup>R</sup> 1,040	908	834	783	<sup>R</sup> 347	387	<sup>R</sup> 147	<sup>R</sup> 467	<sup>R</sup> 394	<sup>R</sup> 543
<b>April</b> .....	<sup>R</sup> 454	343	<sup>R</sup> 349	401	76	<sup>R</sup> 93	52	402	<sup>R</sup> 311	249
<b>May</b> .....	<sup>R</sup> 307	<sup>R</sup> 234	250	224	47	57	14	<sup>R</sup> 233	172	154
<b>June</b> .....	<sup>R</sup> 45	25	28	37	2	3	0	<sup>R</sup> 58	<sup>R</sup> 50	25
<b>July</b> .....	<sup>R</sup> 9	3	7	10	0	0	0	7	14	5
<b>August</b> .....	27	17	34	50	1	1	0	27	9	15
<b>September</b> .....	58	52	65	78	14	<sup>R</sup> 24	3	<sup>R</sup> 120	<sup>R</sup> 45	45
<b>October</b> .....	<sup>R</sup> 239	<sup>R</sup> 216	292	363	89	<sup>R</sup> 146	59	355	178	193
<b>November</b> .....	<sup>R</sup> 747	<sup>R</sup> 700	774	806	<sup>R</sup> 322	408	<sup>R</sup> 180	<sup>R</sup> 486	351	<sup>R</sup> 490
<b>December</b> .....	1,190	1,087	1,197	1,217	535	726	501	812	504	797
<b>Total</b> .....	<b>6,061</b>	<b>5,337</b>	<b>5,687</b>	<b>5,997</b>	<b>2,232</b>	<b>2,833</b>	<b>1,582</b>	<b>4,552</b>	<b>3,196</b>	<b>3,831</b>

<sup>a</sup> Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

<sup>b</sup> New Jersey, New York, and Pennsylvania.

<sup>c</sup> Illinois, Indiana, Michigan, Ohio, and Wisconsin.

<sup>d</sup> Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.

<sup>e</sup> Delaware, Florida, Georgia, Maryland (and the District of Columbia), North Carolina, South Carolina, Virginia, and West Virginia.

<sup>f</sup> Alabama, Kentucky, Mississippi, and Tennessee.

<sup>g</sup> Arkansas, Louisiana, Oklahoma, and Texas.

<sup>h</sup> Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.

<sup>i</sup> Alaska, California, Hawaii, Oregon, and Washington.

R=Revised.

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](http://www.eia.gov/forecasts/steo/special/pdf/2012_sp_04.pdf).

**Table 1.10 Cooling Degree Days by Census Division**

	New England <sup>a</sup>	Middle Atlantic <sup>b</sup>	East North Central <sup>c</sup>	West North Central <sup>d</sup>	South Atlantic <sup>e</sup>	East South Central <sup>f</sup>	West South Central <sup>g</sup>	Mountain <sup>h</sup>	Pacific <sup>i</sup>	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	10	9
February .....	0	0	0	0	19	0	6	11	13	7
March .....	0	0	0	3	84	21	39	32	27	29
April .....	0	0	1	8	131	52	141	40	23	53
May .....	31	72	82	55	242	175	260	75	28	126
June .....	39	114	139	203	394	353	453	313	176	255
July .....	193	250	202	289	456	442	586	325	218	336
August .....	205	230	169	202	411	339	561	362	261	315
September .....	87	136	127	168	296	235	424	231	193	223
October .....	0	1	7	13	135	59	188	84	97	77
November .....	0	0	0	0	103	16	52	3	12	30
December .....	0	1	2	0	100	24	25	0	10	26
Total .....	555	804	729	941	2,405	1,718	2,741	1,478	1,068	1,488
2016 January .....	0	0	0	0	25	2	9	0	8	7
February .....	0	0	0	0	24	3	25	10	15	11
March .....	0	0	3	10	89	36	86	24	13	35
April .....	0	0	1	8	87	37	123	42	27	42
May .....	7	17	42	49	185	124	238	90	37	97
June .....	75	129	188	263	379	371	475	331	166	271
July .....	242	310	277	306	509	473	619	408	236	384
August .....	241	312	297	268	484	460	547	305	234	362
September .....	61	114	131	138	352	321	429	173	122	219
October .....	0	6	19	28	156	113	233	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 .....	626	887	958	1,073	2,412	1,957	2,882	1,496	929	1,558
2017 January .....	0	0	0	0	50	20	35	0	7	16
February .....	0	0	0	3	50	18	67	5	7	22
March .....	0	0	1	6	55	28	112	31	17	32
April .....	0	2	8	9	123	75	142	51	25	56
May .....	3	14	37	50	211	135	241	111	46	106
June .....	R 71	123	R 167	R 206	R 336	271	R 446	R 309	148	R 241
July .....	R 171	250	241	331	468	R 430	R 584	R 413	283	R 363
August .....	127	162	R 147	R 165	405	340	R 508	328	278	291
September .....	65	88	R 92	127	280	R 194	368	178	R 139	184
October .....	11	R 21	15	14	158	R 66	R 144	R 92	67	77
November .....	0	0	0	0	R 66	R 7	67	R 29	21	27
December .....	0	0	0	0	38	2	6	1	10	10
Total .....	448	660	707	910	2,245	1,584	2,720	1,548	1,047	1,424

<sup>a</sup> Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

<sup>b</sup> New Jersey, New York, and Pennsylvania.

<sup>c</sup> Illinois, Indiana, Michigan, Ohio, and Wisconsin.

<sup>d</sup> Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.

<sup>e</sup> Delaware, Florida, Georgia, Maryland (and the District of Columbia), North Carolina, South Carolina, Virginia, and West Virginia.

<sup>f</sup> Alabama, Kentucky, Mississippi, and Tennessee.

<sup>g</sup> Arkansas, Louisiana, Oklahoma, and Texas.

<sup>h</sup> Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.

<sup>i</sup> Alaska, California, Hawaii, Oregon, and Washington.

R=Revised.

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](http://www.eia.gov/forecasts/steo/special/pdf/2012_sp_04.pdf).

**Table 1.11a Non-Combustion Use of Fossil Fuels in Physical Units**

			Petroleum								Total
	Coal	Natural Gas	Asphalt and Road Oil	Hydrocarbon Gas Liquids <sup>a</sup>	Lubricants	Petro-chemical Feedstocks <sup>b</sup>	Petroleum Coke	Special Naphthas	Other <sup>c</sup>		
	Thousand Short Tons	Billion Cubic Feet	Thousand Barrels per Day								
1973 Total .....	3,345	792	522	736	162	375	42	88	134	2,059	
1975 Total .....	2,972	674	419	702	137	330	41	75	159	1,863	
1980 Total .....	2,370	674	396	871	159	709	39	100	176	2,451	
1985 Total .....	1,050	572	425	980	145	364	43	83	114	2,154	
1990 Total .....	641	712	483	1,067	164	553	56	56	94	2,473	
1995 Total .....	921	868	486	1,347	156	593	55	37	87	2,762	
1996 Total .....	884	896	484	1,420	151	593	54	39	87	2,828	
1997 Total .....	842	909	505	1,452	160	691	40	38	86	2,972	
1998 Total .....	786	938	521	1,375	168	693	69	56	107	2,988	
1999 Total .....	784	906	547	1,605	169	654	98	76	99	3,248	
2000 Total .....	807	918	525	1,586	166	666	45	51	103	3,142	
2001 Total .....	727	839	519	1,422	153	592	79	41	104	2,911	
2002 Total .....	660	836	512	1,504	151	630	66	53	103	3,020	
2003 Total .....	676	808	503	1,436	140	676	56	42	101	2,954	
2004 Total .....	660	818	537	1,481	141	784	99	27	98	3,167	
2005 Total .....	654	761	546	1,399	141	729	85	33	102	3,034	
2006 Total .....	640	584	521	1,454	137	726	97	37	112	3,084	
2007 Total .....	634	598	494	1,461	142	664	91	41	104	2,997	
2008 Total .....	616	608	417	1,340	131	574	102	44	107	2,714	
2009 Total .....	427	524	360	1,456	118	507	82	24	99	2,648	
2010 Total .....	588	654	362	1,586	131	539	28	14	100	2,760	
2011 Total .....	598	680	355	1,624	125	520	28	12	103	2,767	
2012 Total .....	579	706	340	1,641	114	444	31	8	94	2,673	
2013 Total .....	599	721	323	1,781	121	448	28	52	97	2,852	
2014 Total .....	594	725	327	1,780	126	410	28	55	101	2,828	
2015 January .....	53	69	200	2,033	153	407	33	67	101	2,994	
February .....	45	63	215	2,009	123	387	14	64	104	2,915	
March .....	46	63	222	1,810	152	354	32	48	103	2,721	
April .....	43	57	303	1,770	148	366	32	52	103	2,774	
May .....	47	57	343	1,780	159	372	32	47	96	2,827	
June .....	49	53	472	1,798	132	340	34	52	102	2,930	
July .....	50	54	480	1,847	156	364	32	48	107	3,034	
August .....	48	55	510	1,796	121	409	34	48	95	3,014	
September .....	42	53	469	1,715	127	377	21	58	105	2,873	
October .....	44	57	400	1,870	145	381	27	41	96	2,960	
November .....	41	60	287	1,922	104	382	25	58	104	2,881	
December .....	41	63	212	2,030	130	398	23	41	109	2,943	
Total .....	550	703	343	1,865	138	378	28	52	102	2,906	
2016 January .....	37	69	195	2,075	136	377	31	47	107	2,968	
February .....	38	63	230	1,970	148	373	29	53	95	2,899	
March .....	40	63	254	1,932	143	368	29	58	108	2,892	
April .....	37	59	301	1,840	131	370	22	46	109	2,820	
May .....	38	58	394	1,828	132	359	21	59	101	2,894	
June .....	39	55	482	1,751	146	363	18	40	107	2,907	
July .....	40	57	472	1,853	115	384	25	47	112	3,007	
August .....	39	58	524	1,760	124	371	36	43	110	2,968	
September .....	37	56	439	1,817	125	364	21	56	107	2,928	
October .....	37	58	417	1,920	131	365	26	41	90	2,991	
November .....	37	62	310	1,865	121	373	42	49	108	2,868	
December .....	40	70	195	1,969	115	390	32	45	107	2,853	
Total .....	460	728	351	1,882	130	371	28	49	105	2,917	
2017 January .....	40	70	192	2,106	105	368	34	49	104	2,958	
February .....	38	61	241	1,938	123	409	21	58	106	2,896	
March .....	40	66	265	1,952	133	435	13	50	111	2,959	
April .....	40	59	318	1,878	105	429	29	43	105	2,907	
May .....	41	59	365	1,878	108	438	28	51	112	2,981	
June .....	39	57	477	1,948	108	442	21	56	113	3,164	
July .....	42	58	441	1,956	98	403	39	49	110	3,097	
August .....	43	59	542	1,644	91	383	25	55	107	2,848	
September .....	41	58	447	1,717	108	356	30	45	98	2,800	
October .....	57	62	413	1,926	124	372	14	57	102	3,008	
November .....	45	66	307	2,121	113	373	34	59	119	3,126	
December .....	58	72	218	2,258	92	381	31	55	108	3,143	
Total .....	523	746	353	1,944	109	399	27	52	108	2,991	

<sup>a</sup> Ethane, propane, normal butane, isobutane, natural gasoline, and refinery olefins (ethylene, propylene, butylene, and isobutylene).

<sup>b</sup> Includes still gas not burned as refinery fuel.

<sup>c</sup> Distillate fuel oil, residual fuel oil, waxes, and miscellaneous products.

Notes: • Data are estimates. • Non-combustion use estimates are included in total energy consumption. See Table 1.3. • Non-combustion estimates are all for industrial sector consumption, except for some lubricants consumed by the

transportation sector. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia. • See Note 2, "Non-Combustion Use of Fossil Fuels," at end of section.

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

Sources: • See Note 2, "Non-Combustion Use of Fossil Fuels," at end of section.



**Table 1.11b Heat Content of Non-Combustion Use of Fossil Fuels**  
(Quadrillion Btu)

	Coal	Natural Gas	Petroleum								Total	Percent of Total Energy Consumption
			Asphalt and Road Oil	Hydro-carbon Gas Liquids <sup>a</sup>	Lubricants	Petro-chemical Feed-stocks <sup>b</sup>	Petro-leum Coke	Special Naphthas	Other <sup>c</sup>	Total		
<b>1973 Total</b> .....	<b>0.107</b>	<b>0.808</b>	<b>1.264</b>	<b>0.977</b>	<b>0.359</b>	<b>0.767</b>	<b>0.088</b>	<b>0.169</b>	<b>0.290</b>	<b>3.914</b>	<b>4.829</b>	<b>6.4</b>
1975 Total .....	.095	.688	1.014	.921	.304	.675	.085	.144	.341	3.485	4.268	5.9
1980 Total .....	.076	.690	.962	1.147	.354	1.464	.081	.193	.379	4.580	5.345	6.8
1985 Total .....	.034	.590	1.029	1.251	.322	.747	.090	.159	.242	3.841	4.465	5.8
1990 Total .....	.021	.733	1.170	1.393	.362	1.138	.117	.107	.198	4.486	5.240	6.2
1995 Total .....	.029	.892	1.178	1.764	.346	1.222	.115	.071	.185	4.879	5.800	6.4
1996 Total .....	.028	.921	1.176	1.856	.335	1.211	.113	.075	.185	4.951	5.900	6.3
1997 Total .....	.027	.933	1.224	1.894	.354	1.410	.083	.072	.183	5.220	6.181	6.5
1998 Total .....	.025	.969	1.263	1.789	.371	1.409	.143	.107	.229	5.310	6.304	6.6
1999 Total .....	.025	.932	1.324	2.098	.375	1.336	.205	.145	.211	5.695	6.652	6.9
2000 Total .....	.026	.942	1.276	2.065	.369	1.353	.094	.097	.222	5.476	6.443	6.5
2001 Total .....	.023	.863	1.257	1.844	.338	1.205	.165	.078	.223	5.112	5.998	6.2
2002 Total .....	.021	.856	1.240	1.945	.334	1.276	.138	.102	.220	5.257	6.134	6.3
2003 Total .....	.022	.832	1.220	1.869	.309	1.371	.117	.080	.217	5.183	6.037	6.2
2004 Total .....	.021	.840	1.304	1.924	.313	1.592	.207	.051	.211	5.602	6.463	6.5
2005 Total .....	.021	.782	1.323	1.812	.312	1.474	.177	.063	.218	5.380	6.183	6.2
2006 Total .....	.020	.600	1.261	1.871	.303	1.477	.203	.070	.242	5.427	6.048	6.1
2007 Total .....	.020	.614	1.197	1.872	.313	1.351	.191	.078	.223	5.224	5.859	5.8
2008 Total .....	.020	.625	1.012	1.722	.291	1.172	.214	.085	.230	4.725	5.370	5.4
2009 Total .....	.014	.537	.873	1.839	.262	1.031	.172	.046	.212	4.434	4.985	5.3
2010 Total .....	.019	.669	.878	2.010	.291	1.096	.058	.026	.213	4.570	5.257	5.4
2011 Total .....	.019	.695	.859	2.027	.276	1.057	.059	.023	.221	4.522	5.236	5.4
2012 Total .....	.019	.724	.827	2.062	.254	.901	.064	.015	.201	4.324	5.066	5.4
2013 Total .....	.019	.741	.783	2.248	.268	.901	.059	.100	.206	4.566	5.327	5.5
2014 Total .....	.019	.749	.793	2.233	.280	.827	.058	.106	.214	4.512	5.280	5.4
<b>2015 January</b> .....	<b>.002</b>	<b>.071</b>	<b>.041</b>	<b>.220</b>	<b>.029</b>	<b>.069</b>	<b>.006</b>	<b>.011</b>	<b>.018</b>	<b>.393</b>	<b>.466</b>	<b>5.0</b>
February .....	.001	.066	.040	.194	.021	.059	.002	.009	.017	.343	.410	4.8
March .....	.001	.065	.046	.195	.029	.060	.006	.008	.018	.362	.428	5.1
April .....	.001	.060	.060	.183	.027	.060	.005	.008	.018	.362	.423	5.7
May .....	.001	.059	.070	.190	.030	.064	.006	.008	.017	.385	.445	5.8
June .....	.002	.055	.094	.187	.024	.057	.006	.008	.018	.393	.449	5.7
July .....	.002	.056	.099	.199	.029	.063	.006	.008	.019	.422	.480	5.7
August .....	.002	.057	.105	.194	.023	.070	.006	.008	.017	.423	.481	5.8
September .....	.001	.055	.093	.175	.023	.062	.004	.009	.018	.385	.441	5.7
October .....	.001	.059	.082	.201	.027	.065	.005	.007	.017	.404	.464	6.1
November .....	.001	.062	.057	.197	.019	.063	.004	.009	.018	.367	.431	5.6
December .....	.001	.065	.044	.217	.024	.068	.004	.007	.020	.383	.450	5.4
<b>Total</b> .....	<b>.018</b>	<b>.730</b>	<b>.832</b>	<b>2.351</b>	<b>.305</b>	<b>.760</b>	<b>.059</b>	<b>.099</b>	<b>.215</b>	<b>4.622</b>	<b>5.369</b>	<b>5.5</b>
<b>2016 January</b> .....	<b>.001</b>	<b>.072</b>	<b>.040</b>	<b>.223</b>	<b>.026</b>	<b>.065</b>	<b>.006</b>	<b>.008</b>	<b>.019</b>	<b>.386</b>	<b>.458</b>	<b>5.1</b>
February .....	.001	.066	.044	.196	.026	.060	.005	.008	.016	.355	.422	5.1
March .....	.001	.065	.052	.204	.027	.063	.005	.010	.019	.380	.447	5.6
April .....	.001	.061	.060	.189	.024	.061	.004	.007	.019	.364	.426	5.7
May .....	.001	.060	.081	.193	.025	.062	.004	.010	.018	.392	.453	6.0
June .....	.001	.057	.096	.180	.027	.060	.003	.006	.019	.391	.449	5.6
July .....	.001	.059	.097	.195	.022	.066	.004	.008	.020	.412	.473	5.6
August .....	.001	.060	.108	.185	.023	.064	.006	.007	.020	.413	.475	5.6
September .....	.001	.058	.107	.188	.023	.061	.004	.009	.019	.390	.450	5.8
October .....	.001	.061	.086	.205	.025	.063	.005	.007	.016	.406	.467	6.1
November .....	.001	.064	.062	.190	.022	.062	.007	.008	.019	.370	.435	5.6
December .....	.001	.073	.040	.210	.022	.067	.006	.007	.019	.371	.445	4.9
<b>Total</b> .....	<b>.015</b>	<b>.755</b>	<b>.853</b>	<b>2.358</b>	<b>.289</b>	<b>.754</b>	<b>.058</b>	<b>.094</b>	<b>.223</b>	<b>4.629</b>	<b>5.399</b>	<b>5.5</b>
<b>2017 January</b> .....	<b>.001</b>	<b>.072</b>	<b>.039</b>	<b>.225</b>	<b>.020</b>	<b>.063</b>	<b>.006</b>	<b>.008</b>	<b>.019</b>	<b>.380</b>	<b>.453</b>	<b>5.1</b>
February .....	.001	.064	.045	.183	.021	.063	.003	.009	.017	.341	.406	5.3
March .....	.001	.068	.054	.207	.025	.075	.002	.008	.020	.392	.461	5.5
April .....	.001	.061	.063	.193	.019	.072	.005	.007	.018	.377	.439	5.9
May .....	.001	.061	.075	.197	.020	.076	.005	.008	.020	.402	.464	5.9
June .....	.001	.059	.095	.197	.020	.074	.004	.009	.020	.417	.478	6.0
July .....	.001	.060	.091	.207	.019	.070	.007	.008	.020	.420	.481	5.7
August .....	.001	.062	.112	.172	.017	.066	.004	.009	.019	.399	.462	5.6
September .....	.001	.060	.089	.176	.020	.060	.005	.007	.017	.373	.434	5.7
October .....	.002	.064	.085	.203	.023	.064	.002	.009	.018	.406	.471	6.0
November .....	.001	.068	.061	.215	.021	.062	.006	.009	.021	.395	.464	5.7
December .....	.002	.075	.045	.238	.017	.065	.006	.009	.020	.399	.476	5.2
<b>Total</b> .....	<b>.017</b>	<b>.774</b>	<b>.854</b>	<b>2.412</b>	<b>.241</b>	<b>.808</b>	<b>.055</b>	<b>.100</b>	<b>.229</b>	<b>4.701</b>	<b>5.491</b>	<b>5.6</b>

<sup>a</sup> Ethane, propane, normal butane, isobutane, natural gasoline, and refinery olefins (ethylene, propylene, butylene, and isobutylene).

<sup>b</sup> Includes still gas not burned as refinery fuel.

<sup>c</sup> Distillate fuel oil, residual fuel oil, waxes, and miscellaneous products.

R=Revised.

Notes: • Data are estimates. • Non-combustion use estimates are included in total energy consumption. See Table 1.3. • Non-combustion estimates are all for industrial sector consumption, except for some lubricants consumed by the transportation sector. • Totals may not equal sum of components due to

independent rounding. • Geographic coverage is the 50 states and the District of Columbia. • See Note 2, "Non-Combustion Use of Fossil Fuels," at end of section.

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

Sources: • See Note 2, "Non-Combustion Use of Fossil Fuels," at end of section. • **Percent of Total Energy Consumption:** Calculated as total non-combustion use of fossil fuels divided by total primary energy consumption (see Table 1.3).

## Energy Overview

**Note 1. 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.

**Note 2. Non-Combustion Use of Fossil Fuels.** Most fossil-fuels consumed in the United States and elsewhere are combusted to produce heat and power. However, some are used directly for non-combustion use as construction materials, chemical feedstocks, lubricants, solvents, and waxes. For example, coal tars from coal coke manufacturing are used as feedstock in the chemical industry, for metallurgical work, and in anti-dandruff shampoos; natural gas is used to make nitrogenous fertilizers and as chemical feedstocks; asphalt and road oil are used for roofing and paving; hydrocarbon gas liquids are used to create intermediate products that are used in making plastics; lubricants, including motor oil and greases, are used in vehicles and various industrial processes; petrochemical feedstocks are used to make plastics, synthetic fabrics, and related products.

### Coal

The U.S. Energy Information Administration (EIA) assumes all non-combustion use of coal comes from the process of manufacturing coal coke. Among the byproducts of the process are “coal tars” or “coal liquids,” which typically are rich in aromatic hydrocarbons, such as benzene, and are used as chemical feedstock. EIA’s Office of Energy Analysis (OEA) estimates non-combustion use ratios of coal tar. Prior to 1995, estimate ratios are based on coal tar production data from the United States International Trade Commission’s

Synthetic Organic Chemicals. From 1995 forward, coal tar production is estimated using the ratio of EIA’s estimate of 1994 coke production, reported in EIA’s Quarterly Coal Report. Coal tar ratios prior to 1980 are assumed to be equal to the 1980 ratio. For Table 1.11b, coal tar values in Table 1.11a are multiplied by 32.0067 million Btu/barrel, which is the product of 4.95 (the conversion from barrels to short tons) and 6.466 (the approximate heat content of one barrel of coal tar).

### Natural Gas

EIA assumes that all non-combustion use of natural gas takes place in the industrial sector. OEA estimates non-combustion ratios of natural gas using Form EIA-864A “Manufacturers Energy Consumption Survey” (MECS) and natural gas used as feedstock for hydrogen production using Form EIA-820 “Annual Refinery Report” data. For years when MECS data are unavailable, estimates are interpolated or extrapolated using chemical indices as scaling factors. Non-combustion ratios prior to 1980 are assumed to be equal to the 1980 ratio. For Table 1.11b, natural gas values in Table 1.11a are multiplied by the heat content factor for natural gas total consumption shown in Table A4.

### Asphalt & Road Oil

EIA assumes all asphalt and road oil consumption is for non-combustion use. For Table 1.11b, asphalt and road oil values in Table 1.11a are multiplied by 6.636 million Btu/barrel (the approximate heat content of asphalt and road oil) and the number of days in the period.

### Distillate & Residual Fuels

OEA estimates non-combustion ratios of distillate and residual fuels using chemical industry fuel product data reported in MECS. Values for years after the most recent MECS are assumed to be equal to the most recent MECS values. Non-combustion ratios prior to 1980 are assumed to be equal to the 1980 ratio. Distillate and residual fuel oils are included in “other” petroleum products. For Table 1.11b, distillate fuel values in Table 1.11a are multiplied by the appropriate values in Table A3 and the number of days in the period. Residual fuel values in Table 1.11a are multiplied by 6.287 million Btu/barrel (the approximate heat content of residual fuel oil) and the number of days in the period.

### Hydrocarbon Gas Liquids (HGL)

OEA estimates non-combustion ratios of liquefied petroleum gas (LPG) components, including ethane, propane, and butane, using chemical industry fuel product data reported in MECS. Values for years after the most recent MECS are assumed to be equal to the most recent MECS values. OEA estimates non-combustion ratios of natural gasoline (pentanes plus) with annual surveys of natural gas liquids and refinery gases sold to the chemical industry published in EIA’s Petroleum Supply Annual (PSA). All non-combustion ratios prior to 1980 are assumed to be equal to the 1980 ratio. For Table 1.11b, HGL values in Table 1.11a are multiplied by the appropriate heat content factors in Table A1 and the number of days in the period.

## **Lubricants**

EIA assumes all lubricants consumption are for non-combustion use in the industrial and transportation sectors. For Table 1.11b, lubricants values in Table 1.11a are multiplied by 6.065 million Btu/barrel (the approximate heat rate for lubricants) and the number of days in the period.

## **Petrochemical Feedstocks**

EIA assumes all naphthas and other oils for petrochemical feedstock use are for non-combustion use. OEA estimates non-combustion ratios of still gas by deducting all known fuel uses (refinery fuel use from PSA and pipeline gas supplies from EIA's Natural Gas Annual) from the products supplied value from the PSA. The remainder is assumed to be dispatched to chemical plants as a feedstock. Non-combustion ratios prior to 1980 are assumed to be equal to the 1980 ratio. For Table 1.11b, petrochemical feedstock values in 1.11a are multiplied by the appropriate values in Table A1 and the number of days in the period.

## **Petroleum Coke**

EIA assumes all petroleum coke consumption is for non-combustion use. For Table 1.11b, petroleum coke values in 1.11a are multiplied by 5.719 million Btu/barrel (the approximate heat content of petroleum coke) and the number of days in the period.

## **Special Naphthas**

EIA assumes all special naphthas consumption is for non-combustion use. For Table 1.11b, special naphthas values in Table 1.11a are multiplied by 5.248 million Btu/barrel (the approximate heat content of special naphthas) and the number of days in the period.

## **Waxes**

EIA assumes all waxes consumption is for non-combustion use. Waxes are included in "other" petroleum products. For Table 1.11b, waxes values in Table 1.11a are multiplied by 5.537 million Btu/barrel (the approximate heat content of waxes) and the number of days in the period.

## **Miscellaneous Petroleum Products**

Miscellaneous products include all finished petroleum products not classified elsewhere. EIA assumes all miscellaneous petroleum products consumption are for non-combustion use and are included in "other" petroleum products. For Table 1.11b, miscellaneous petroleum values in Table 1.11a are multiplied by 5.796 million Btu/barrel (the approximate heat content of miscellaneous petroleum products) and the number of days in the period.

## **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**

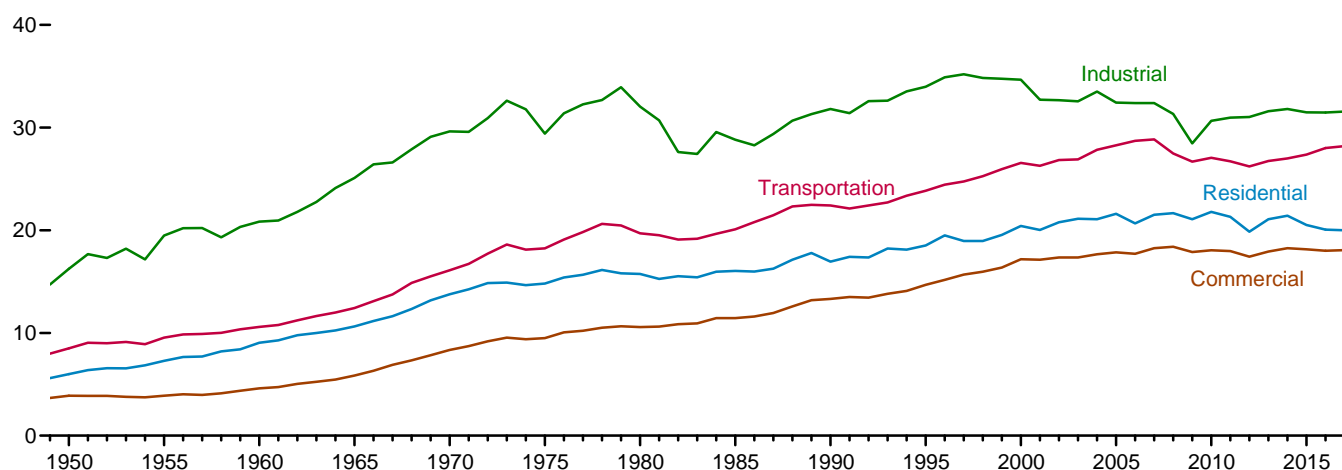
1974–1987: U.S. merchandise trade press releases and database printouts for adjustments.  
1988: “Report on U.S. Merchandise Trade, 1988 Final Revisions,” August 18, 1989.  
1989: “Report on U.S. Merchandise Trade, 1989 Revisions,” July 10, 1990.  
1990: “U.S. Merchandise Trade, 1990 Final Report,” May 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.

## 2. Energy Consumption by Sector

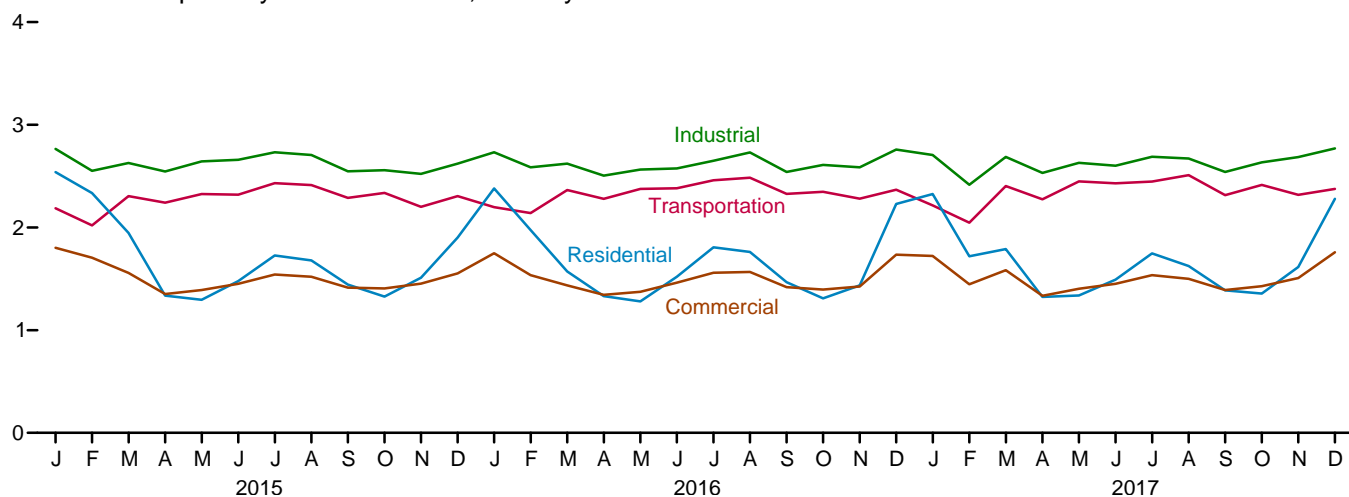
---

**Figure 2.1 Energy Consumption by Sector**  
(Quadrillion Btu)

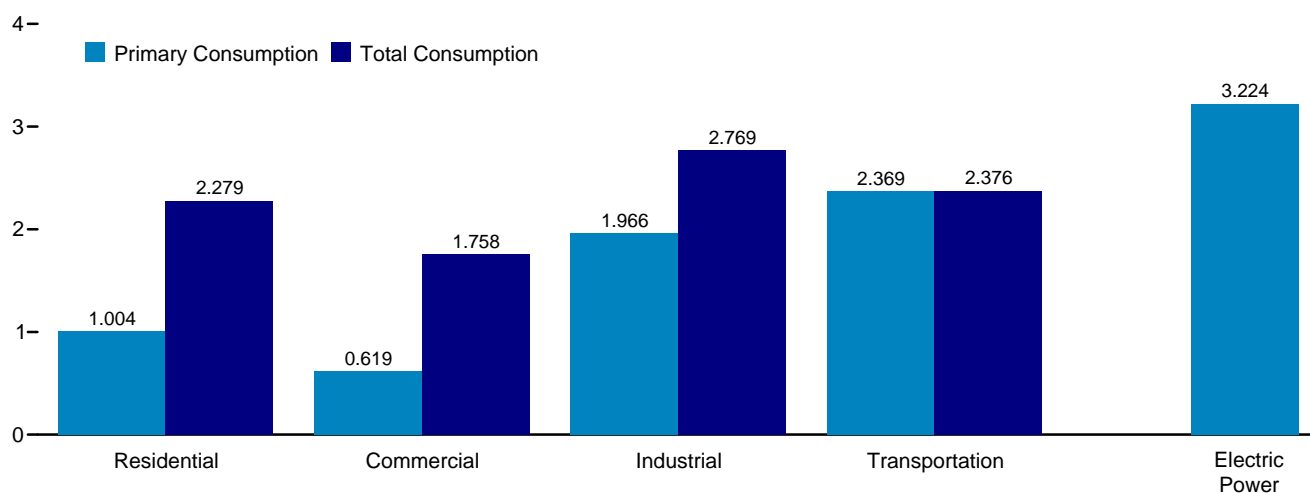
Total Consumption by End-Use Sector, 1949–2017



Total Consumption by End-Use Sector, Monthly



By Sector, December 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 <sup>c,d</sup>		
	Residential		Commercial <sup>a</sup>		Industrial <sup>b</sup>		Transportation				
	Primary <sup>e</sup>	Total <sup>f</sup>	Primary <sup>e</sup>	Total <sup>f</sup>	Primary <sup>e</sup>	Total <sup>f</sup>	Primary <sup>e</sup>	Total <sup>f</sup>			
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	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	39,969	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	20,413	30,661	26,978	27,059	39,619	7	97,580
2011 Total	6,393	21,302	4,063	17,979	20,588	30,975	26,632	26,712	39,293	8	96,975
2012 Total	5,672	19,857	3,725	17,422	20,861	31,034	26,144	26,219	38,131	2	94,535
2013 Total	6,706	21,069	4,164	17,932	21,444	31,591	26,671	26,750	38,357	-1	97,341
2014 Total	<sup>R</sup> 6,985	<sup>R</sup> 21,425	<sup>R</sup> 4,381	<sup>R</sup> 18,255	21,572	31,808	26,917	26,996	38,629	6	<sup>R</sup> 98,490
2015 January	1,137	2,540	666	1,803	1,954	2,765	2,180	2,187	3,357	-1	9,294
February	<sup>R</sup> 1,082	2,335	<sup>R</sup> 638	1,706	1,776	2,552	2,013	2,020	3,103	1	<sup>R</sup> 8,613
March	795	1,947	498	1,558	1,845	2,628	2,298	2,305	3,002	-2	<sup>R</sup> 8,436
April	444	1,336	322	1,352	1,750	2,546	2,236	2,242	2,723	-3	7,472
May	<sup>R</sup> 303	1,295	<sup>R</sup> 250	1,390	1,779	2,643	2,319	2,326	3,002	-1	<sup>R</sup> 7,653
June	232	<sup>R</sup> 1,478	215	1,451	1,765	2,659	2,314	2,320	3,383	2	<sup>R</sup> 7,910
July	222	<sup>R</sup> 1,727	218	<sup>R</sup> 1,542	1,828	2,732	2,425	2,432	3,741	5	<sup>R</sup> 8,439
August	<sup>R</sup> 220	<sup>R</sup> 1,679	222	1,519	1,814	2,706	2,407	2,413	3,655	5	8,323
September	220	<sup>R</sup> 1,444	220	<sup>R</sup> 1,413	1,719	2,547	2,282	2,288	3,251	3	<sup>R</sup> 7,695
October	359	1,327	306	1,406	1,747	2,558	2,330	2,336	2,886	-2	<sup>R</sup> 7,626
November	573	1,511	399	1,453	1,728	2,523	2,196	2,202	2,792	-3	<sup>R</sup> 7,685
December	778	1,902	<sup>R</sup> 478	1,554	1,835	2,622	2,299	2,305	2,993	-2	8,380
Total	<sup>R</sup> 6,363	<sup>R</sup> 20,516	<sup>R</sup> 4,433	<sup>R</sup> 18,149	21,541	31,485	27,299	27,376	37,890	1	<sup>R</sup> 97,527
2016 January	<sup>R</sup> 1,048	<sup>R</sup> 2,381	625	1,748	1,929	2,732	2,191	2,198	3,265	4	<sup>R</sup> 9,063
February	<sup>R</sup> 846	<sup>R</sup> 1,975	529	1,536	1,838	2,585	2,134	2,141	2,888	(s)	<sup>R</sup> 8,237
March	<sup>R</sup> 593	<sup>R</sup> 1,572	403	1,436	1,848	2,622	2,359	2,365	2,793	-4	<sup>R</sup> 7,992
April	<sup>R</sup> 452	<sup>R</sup> 1,331	327	<sup>R</sup> 1,344	1,722	2,505	2,273	2,279	2,685	-3	<sup>R</sup> 7,457
May	<sup>R</sup> 315	<sup>R</sup> 1,280	<sup>R</sup> 264	1,374	1,729	2,564	2,370	2,376	2,916	-1	<sup>R</sup> 7,593
June	<sup>R</sup> 228	<sup>R</sup> 1,519	221	<sup>R</sup> 1,463	1,712	2,575	2,375	2,382	3,402	5	<sup>R</sup> 7,944
July	<sup>R</sup> 218	<sup>R</sup> 1,807	221	1,559	1,753	2,649	2,453	2,459	3,831	8	<sup>R</sup> 8,483
August	<sup>R</sup> 204	<sup>R</sup> 1,761	223	1,567	1,843	2,730	2,478	2,484	3,794	9	<sup>R</sup> 8,551
September	<sup>R</sup> 221	<sup>R</sup> 1,468	229	1,419	1,739	2,541	2,321	2,327	3,245	5	<sup>R</sup> 7,760
October	<sup>R</sup> 315	<sup>R</sup> 1,309	288	1,395	1,810	2,609	2,341	2,347	2,906	2	<sup>R</sup> 7,662
November	<sup>R</sup> 510	<sup>R</sup> 1,436	381	1,425	1,807	2,586	2,274	2,280	2,755	(s)	<sup>R</sup> 7,727
December	<sup>R</sup> 970	<sup>R</sup> 2,229	592	1,735	1,943	2,758	2,361	2,367	3,224	4	<sup>R</sup> 9,093
Total	<sup>R</sup> 5,919	<sup>R</sup> 20,060	<sup>R</sup> 4,302	<sup>R</sup> 18,004	21,674	31,462	27,931	28,006	37,705	30	<sup>R</sup> 97,562
2017 January	<sup>R</sup> 1,008	<sup>R</sup> 2,326	608	<sup>R</sup> 1,723	<sup>R</sup> 1,933	<sup>R</sup> 2,705	<sup>R</sup> 2,209	<sup>R</sup> 2,215	<sup>R</sup> 3,212	4	<sup>R</sup> 8,973
February	<sup>R</sup> 721	<sup>R</sup> 1,719	466	1,446	<sup>R</sup> 1,708	<sup>R</sup> 2,416	<sup>R</sup> 2,041	<sup>R</sup> 2,047	<sup>R</sup> 2,693	-1	<sup>R</sup> 7,627
March	<sup>R</sup> 729	<sup>R</sup> 1,790	484	<sup>R</sup> 1,584	<sup>R</sup> 1,892	<sup>R</sup> 2,688	<sup>R</sup> 2,397	<sup>R</sup> 2,403	<sup>R</sup> 2,963	-1	<sup>R</sup> 8,464
April	<sup>R</sup> 407	<sup>R</sup> 1,324	309	<sup>R</sup> 1,335	<sup>R</sup> 1,766	<sup>R</sup> 2,531	<sup>R</sup> 2,268	<sup>R</sup> 2,274	<sup>R</sup> 2,716	-2	<sup>R</sup> 7,463
May	<sup>R</sup> 317	<sup>R</sup> 1,338	<sup>R</sup> 269	<sup>R</sup> 1,404	<sup>R</sup> 1,802	<sup>R</sup> 2,630	<sup>R</sup> 2,443	<sup>R</sup> 2,449	2,989	(s)	<sup>R</sup> 7,821
June	<sup>R</sup> 242	<sup>R</sup> 1,492	231	<sup>R</sup> 1,452	<sup>R</sup> 1,759	<sup>R</sup> 2,601	<sup>R</sup> 2,424	<sup>R</sup> 2,431	<sup>R</sup> 3,320	3	<sup>R</sup> 7,979
July	<sup>R</sup> 217	<sup>R</sup> 1,747	<sup>R</sup> 220	<sup>R</sup> 1,536	<sup>R</sup> 1,824	<sup>R</sup> 2,688	<sup>R</sup> 2,441	<sup>R</sup> 2,447	<sup>R</sup> 3,716	6	<sup>R</sup> 8,424
August	<sup>R</sup> 213	<sup>R</sup> 1,624	228	<sup>R</sup> 1,501	<sup>R</sup> 1,818	<sup>R</sup> 2,671	<sup>R</sup> 2,504	<sup>R</sup> 2,510	<sup>R</sup> 3,544	5	<sup>R</sup> 8,311
September	<sup>R</sup> 224	<sup>R</sup> 1,387	<sup>R</sup> 230	<sup>R</sup> 1,391	<sup>R</sup> 1,757	<sup>R</sup> 2,540	<sup>R</sup> 2,308	<sup>R</sup> 2,314	<sup>R</sup> 3,113	1	<sup>R</sup> 7,634
October	<sup>R</sup> 323	<sup>R</sup> 1,357	294	<sup>R</sup> 1,428	<sup>R</sup> 1,837	<sup>R</sup> 2,634	<sup>R</sup> 2,408	<sup>R</sup> 2,414	<sup>R</sup> 2,972	-5	<sup>R</sup> 7,828
November	<sup>R</sup> 611	<sup>R</sup> 1,615	432	<sup>R</sup> 1,508	<sup>R</sup> 1,903	<sup>R</sup> 2,685	<sup>R</sup> 2,312	<sup>R</sup> 2,318	<sup>R</sup> 2,868	-2	<sup>R</sup> 8,124
December	1,004	2,279	619	1,758	1,966	2,769	2,369	2,376	3,224	-3	9,179
Total	6,017	19,996	4,388	18,067	21,964	31,560	28,123	28,199	37,330	5	97,827

<sup>a</sup> Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

<sup>b</sup> Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

<sup>c</sup> 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.

<sup>d</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

<sup>e</sup> See "Primary Energy Consumption" in Glossary.

<sup>f</sup> 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.

<sup>g</sup> 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.

<sup>h</sup> Primary energy consumption total. See Table 1.3.

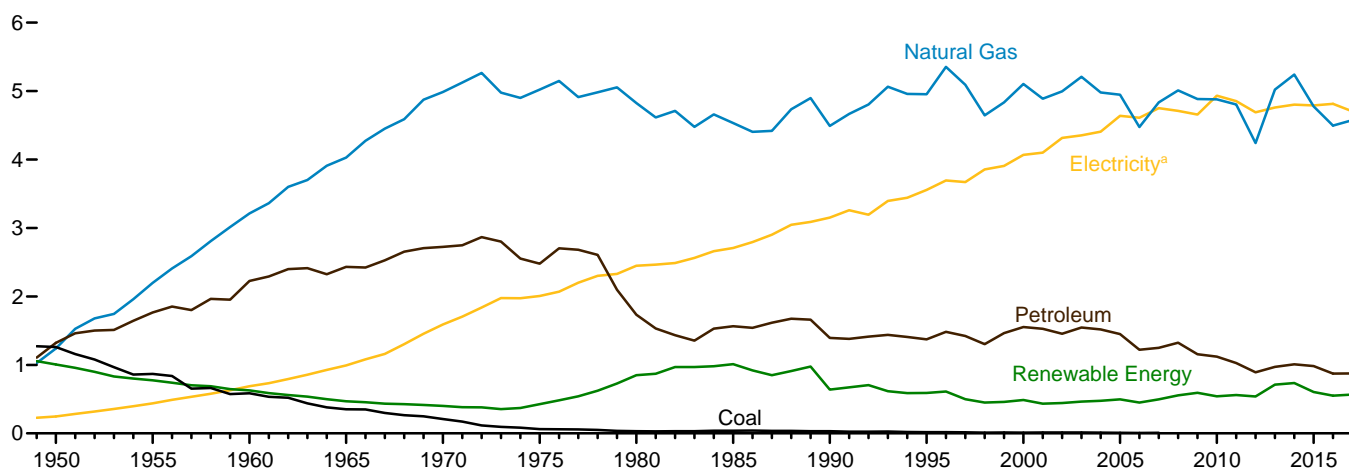
R=Revised. (s)=Less than 0.5 trillion Btu and greater than -0.5 trillion Btu.

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.

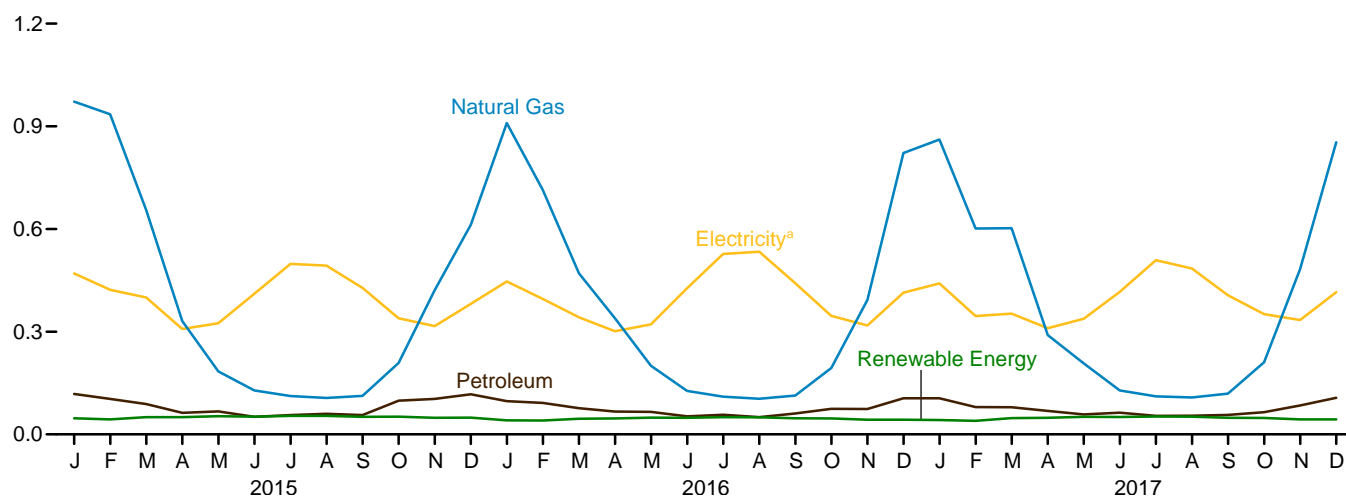
Sources: • **End-Use Sectors:** Tables 2.2–2.5. • **Electric Power Sector:** Table 2.6. • **Balancing Item:** Calculated as primary energy total consumption minus the sum of total energy consumption in the four end-use sectors. • **Primary Total:** Table 1.3.

**Figure 2.2 Residential Sector Energy Consumption**  
(Quadrillion Btu)

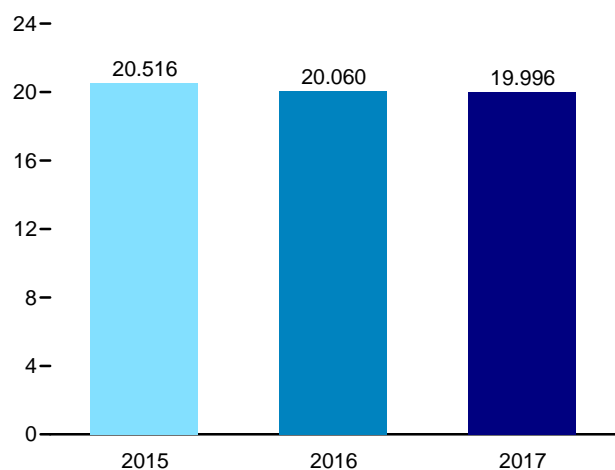
By Major Source, 1949–2017



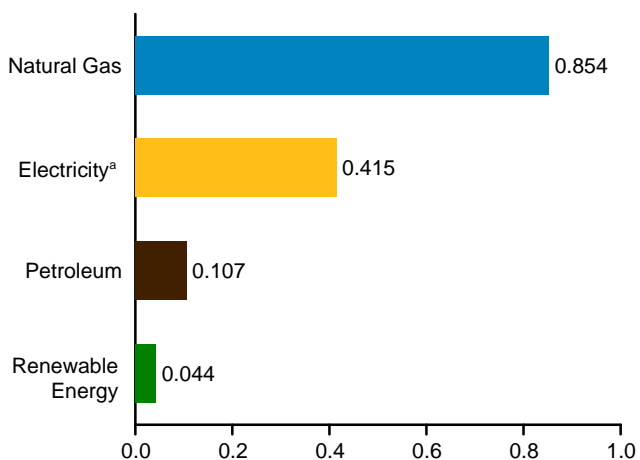
By Major Source, Monthly



Total, January–December



By Major Source, December 2017



<sup>a</sup> 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 <sup>a</sup>									Electricity Retail Sales <sup>e</sup>	Electrical System Energy Losses <sup>f</sup>	Total
	Fossil Fuels				Renewable Energy <sup>b</sup>				Total Primary			
	Coal	Natural Gas <sup>c</sup>	Petro- leum	Total	Geo- thermal	Solar <sup>d</sup>	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	1,028	5,833	40	71	450	560	6,393	4,855	10,054	21,302
2012 Total .....	NA	4,242	891	5,133	40	79	420	539	5,672	4,690	9,496	19,857
2013 Total .....	NA	5,023	971	5,994	40	92	580	711	6,706	4,759	9,604	21,069
2014 Total .....	NA	5,242	1,008	6,250	40	109	R 587	R 735	R 6,985	4,801	9,638	R 21,425
2015 January .....	NA	972	118	1,090	3	6	37	47	1,137	470	933	2,540
February .....	NA	935	104	1,039	3	7	R 33	44	R 1,082	423	830	2,335
March .....	NA	656	89	744	3	10	37	R 50	795	400	752	1,947
April .....	NA	331	63	394	3	11	36	R 50	444	308	584	1,336
May .....	NA	184	67	251	3	12	37	53	R 303	325	667	1,295
June .....	NA	128	51	180	3	13	36	52	232	410	836	R 1,478
July .....	NA	112	56	168	3	13	37	54	R 222	493	1,007	R 1,727
August .....	NA	106	60	166	3	13	37	54	R 220	493	966	R 1,679
September .....	NA	112	56	169	3	12	36	R 51	220	428	797	R 1,444
October .....	NA	209	98	307	3	11	37	R 51	359	339	630	1,327
November .....	NA	421	104	525	3	9	36	R 48	573	316	622	1,511
December .....	NA	612	117	729	3	8	37	49	778	381	743	1,902
Total .....	NA	4,777	983	5,760	40	128	R 436	R 603	R 6,363	4,791	9,362	R 20,516
2016 January .....	NA	910	97	1,007	3	8	R 30	R 41	R 1,048	447	886	R 2,381
February .....	NA	714	92	806	3	10	R 28	R 40	R 846	396	733	R 1,975
March .....	NA	471	76	547	3	13	R 30	R 46	R 593	342	637	R 1,572
April .....	NA	339	67	406	3	15	R 29	R 46	R 452	301	578	R 1,331
May .....	NA	200	66	266	3	16	R 30	R 49	R 315	321	643	R 1,280
June .....	NA	127	53	179	3	17	R 29	R 48	R 228	427	864	R 1,519
July .....	NA	110	57	168	3	17	R 30	R 50	R 218	527	1,062	R 1,807
August .....	NA	104	50	154	3	17	R 30	R 50	R 204	534	1,023	R 1,761
September .....	NA	113	61	175	3	15	R 29	R 47	R 221	441	805	R 1,468
October .....	NA	194	75	268	3	13	R 30	R 46	R 315	346	648	R 1,309
November .....	NA	393	74	467	3	11	R 29	R 43	R 510	318	608	R 1,436
December .....	NA	822	106	927	3	10	R 30	R 43	R 970	414	844	R 2,229
Total .....	NA	4,496	873	5,369	40	161	R 349	R 550	R 5,919	4,815	9,326	R 20,060
2017 January .....	NA	861	R 105	967	3	10	R 28	R 42	R 1,008	R 441	R 876	R 2,326
February .....	NA	602	80	R 681	3	11	R 26	R 40	R 721	R 346	R 652	R 1,719
March .....	NA	602	R 79	R 681	3	16	R 28	R 47	R 729	R 353	R 708	R 1,790
April .....	NA	290	69	359	3	R 17	R 27	R 48	R 407	310	R 607	R 1,324
May .....	NA	R 207	58	266	3	19	R 28	R 51	R 317	R 338	R 684	R 1,338
June .....	NA	128	R 63	192	3	20	R 27	R 51	R 242	416	R 833	R 1,492
July .....	NA	111	54	R 165	3	20	R 28	R 52	R 217	R 509	R 1,021	R 1,747
August .....	NA	108	R 54	162	3	20	R 28	R 52	R 213	R 485	R 926	R 1,624
September .....	NA	119	57	176	3	18	R 27	R 49	R 224	R 406	R 757	R 1,387
October .....	NA	211	65	276	3	16	R 28	R 48	R 323	351	R 682	R 1,357
November .....	NA	483	85	R 567	3	13	R 27	R 44	R 611	R 334	R 670	R 1,615
December .....	NA	854	107	960	3	12	28	44	1,004	415	860	2,279
Total .....	NA	4,575	876	5,451	40	192	334	566	6,017	4,705	9,275	19,996

<sup>a</sup> See "Primary Energy Consumption" in Glossary.

<sup>b</sup> See Table 10.2a for notes on series components.

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

<sup>d</sup> Distributed (small-scale) solar photovoltaic (PV) electricity generation in the residential sector and distributed solar thermal energy in the residential, commercial, and industrial sectors. See Tables 10.2a and 10.5.

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

<sup>f</sup> 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.

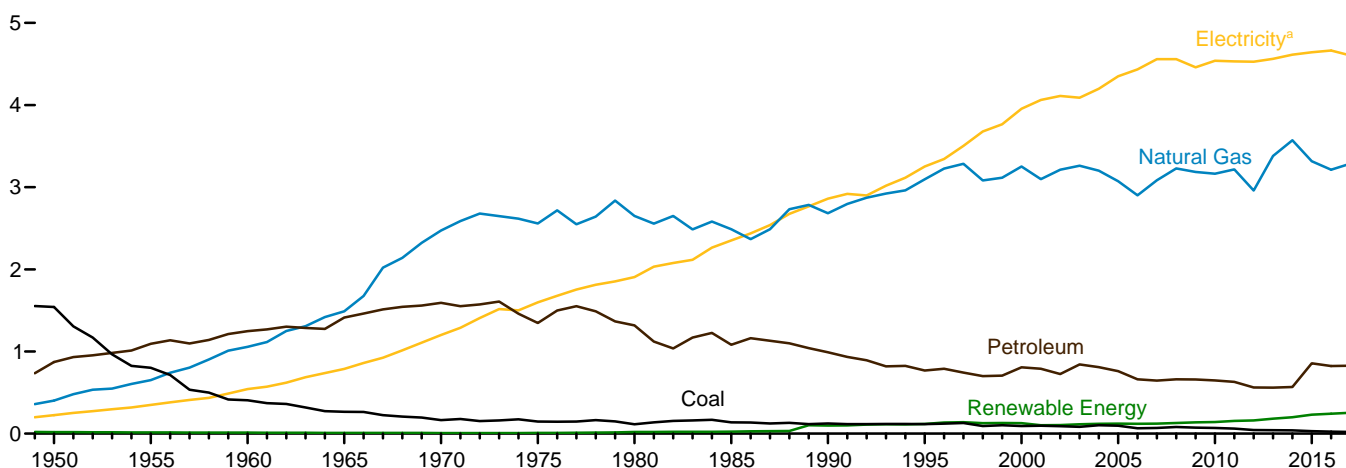
Notes: • Data are estimates, except for electricity retail sales. • See Note 2, "Energy Consumption Data and Surveys," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

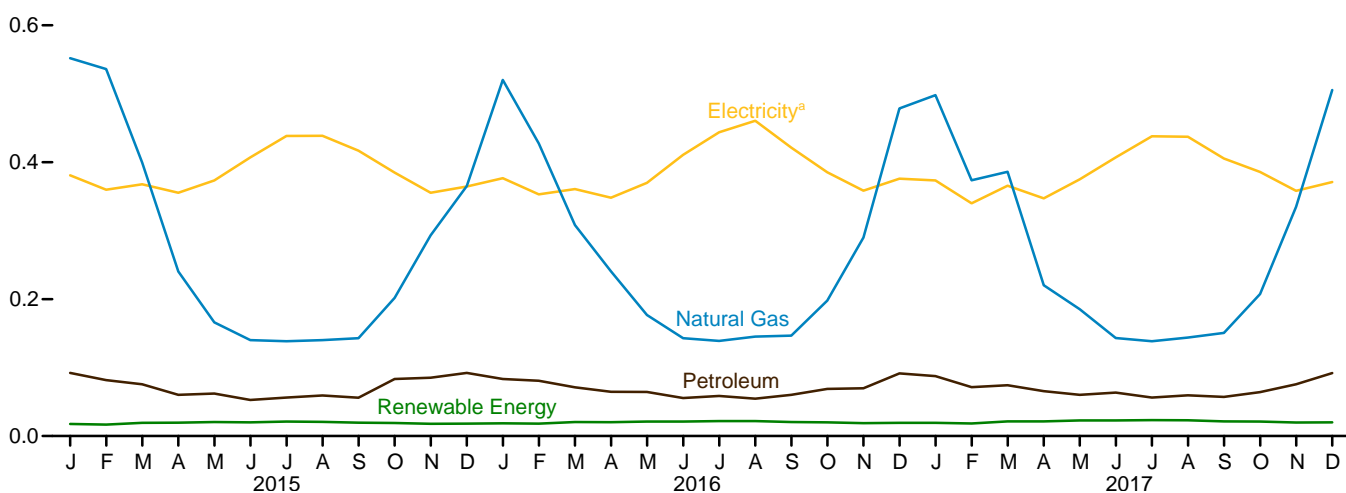
Sources: See end of section.

**Figure 2.3 Commercial Sector Energy Consumption**  
(Quadrillion Btu)

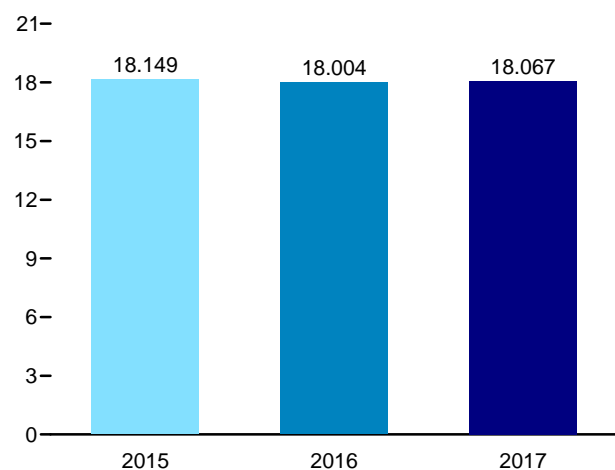
By Major Source, 1949–2017



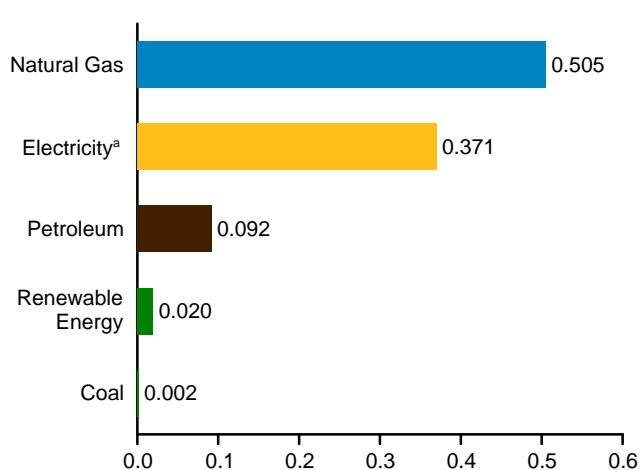
By Major Source, Monthly



Total, January–December



By Major Source, December 2017



<sup>a</sup> 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)

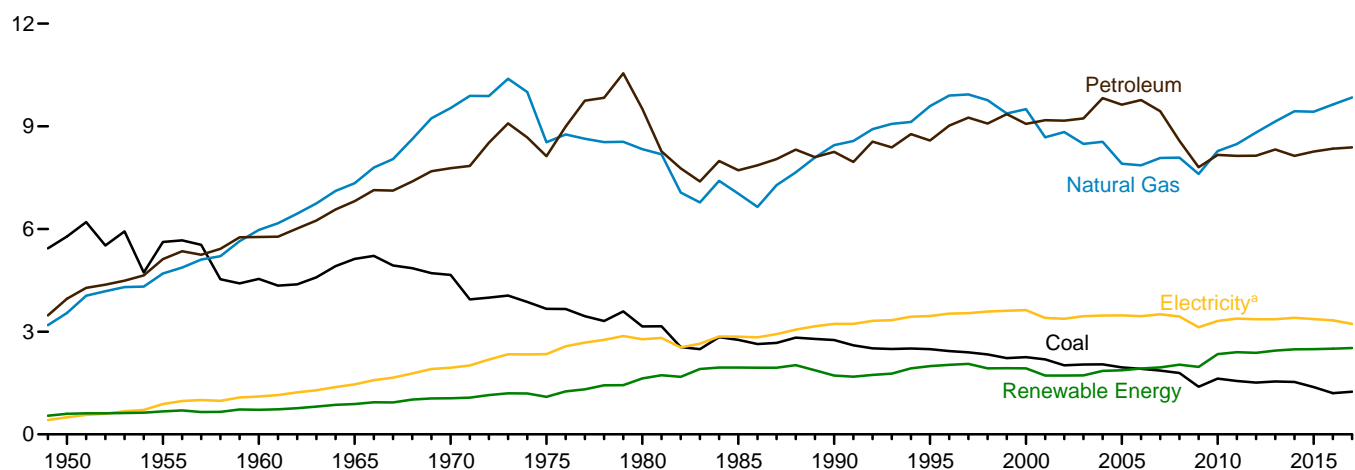
	Primary Consumption <sup>a</sup>											Elec- tricity Retail Sales <sup>g</sup>	Electrical System Energy Losses <sup>h</sup>	Total
	Fossil Fuels				Renewable Energy <sup>b</sup>									
	Coal	Natural Gas <sup>c</sup>	Petro- leum <sup>d</sup>	Total	Hydro- electric Power <sup>e</sup>	Geo- thermal	Solar <sup>f</sup>	Wind	Bio- mass	Total	Total Primary			
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	631	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	561	3,982	(s)	20	41	1	120	182	4,164	4,562	9,206	17,932
2014 Total .....	40	3,572	568	4,180	(s)	20	52	1	R 127	R 200	R 4,381	4,614	9,261	R 18,255
2015 January .....	4	552	92	648	(s)	2	3	(s)	13	18	666	381	756	1,803
February .....	4	536	82	622	(s)	2	4	(s)	R 11	17	R 638	360	707	1,706
March .....	4	400	76	479	(s)	2	5	(s)	13	19	498	368	692	1,558
April .....	2	240	60	303	(s)	2	5	(s)	R 12	R 19	322	355	674	1,352
May .....	2	166	62	230	(s)	2	6	(s)	13	R 20	R 250	373	767	1,390
June .....	2	140	53	195	(s)	2	6	(s)	13	20	215	407	829	1,451
July .....	2	138	56	197	(s)	2	6	(s)	13	21	218	438	886	R 1,542
August .....	2	140	59	201	(s)	2	6	(s)	13	21	222	439	859	1,519
September .....	2	143	56	201	(s)	2	5	(s)	13	20	220	417	776	R 1,413
October .....	2	202	83	287	(s)	2	5	(s)	13	19	306	385	715	1,406
November .....	2	293	85	381	(s)	2	4	(s)	13	18	399	355	698	1,453
December .....	3	365	92	460	(s)	2	3	(s)	13	18	R 478	365	711	1,554
Total .....	31	3,316	856	4,203	(s)	20	57	1	R 152	R 230	R 4,433	4,643	9,073	R 18,144
2016 January .....	3	520	83	607	(s)	2	3	(s)	13	R 19	625	377	747	1,748
February .....	3	427	81	511	(s)	2	4	(s)	12	18	529	353	654	1,536
March .....	3	308	71	382	(s)	2	5	(s)	13	20	403	361	672	1,436
April .....	1	241	65	307	(s)	2	6	(s)	13	20	327	348	668	R 1,344
May .....	1	177	64	242	(s)	2	6	(s)	13	21	R 264	370	741	1,374
June .....	2	143	56	200	(s)	2	6	(s)	13	21	221	411	831	R 1,463
July .....	1	139	59	199	(s)	2	6	(s)	R 14	22	221	444	895	1,559
August .....	1	145	55	201	(s)	2	6	(s)	R 14	22	223	461	883	1,567
September .....	1	147	60	208	(s)	2	6	(s)	13	20	229	421	769	1,419
October .....	2	198	69	268	(s)	2	5	(s)	13	20	288	385	721	1,395
November .....	2	290	70	362	(s)	2	4	(s)	13	19	381	358	685	1,425
December .....	3	479	91	573	(s)	2	4	(s)	13	19	592	376	767	1,735
Total .....	24	3,213	823	4,060	2	20	62	1	R 158	R 242	R 4,302	4,665	9,036	R 18,004
2017 January .....	3	498	88	R 588	(s)	2	4	(s)	13	19	608	R 373	R 742	R 1,723
February .....	2	374	R 71	R 447	(s)	2	4	(s)	12	18	466	R 340	641	1,446
March .....	2	386	R 74	463	(s)	2	6	(s)	13	21	484	R 366	R 734	R 1,584
April .....	1	220	66	R 287	(s)	2	7	(s)	R 13	21	309	R 347	R 679	R 1,335
May .....	1	185	60	247	(s)	2	8	(s)	13	23	R 269	R 375	759	R 1,404
June .....	1	143	R 63	208	(s)	2	8	(s)	13	23	231	R 407	815	R 1,452
July .....	1	R 139	56	196	(s)	2	8	(s)	13	23	R 220	R 438	R 879	R 1,536
August .....	1	144	R 59	R 204	(s)	2	8	(s)	13	23	228	R 437	R 836	R 1,501
September .....	1	151	57	209	(s)	2	7	(s)	12	21	R 230	R 405	R 755	R 1,391
October .....	1	207	R 64	R 272	(s)	2	6	(s)	13	21	294	386	R 749	R 1,428
November .....	2	335	76	412	(s)	2	5	(s)	13	20	432	358	R 718	R 1,508
December .....	2	505	92	599	(s)	2	5	(s)	13	20	619	371	767	1,758
Total .....	20	3,287	827	4,133	2	20	76	1	155	255	4,388	4,603	9,076	18,067

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

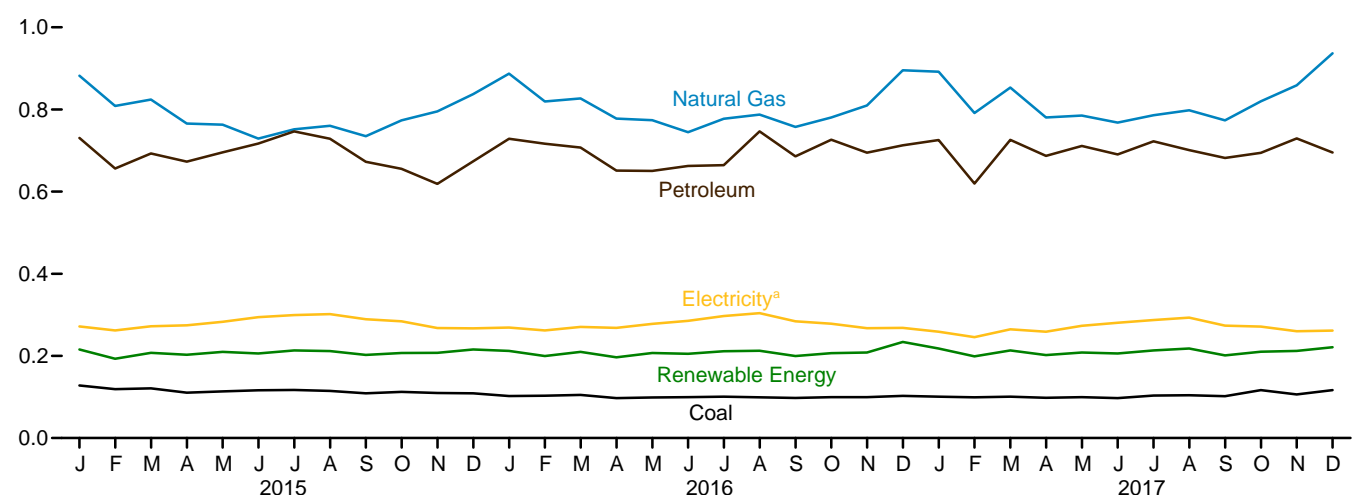
section.  
R=Revised. NA=Not available. —=No data reported. (s)=Less than 0.5 trillion Btu.  
Notes: • Data are estimates, except for coal totals beginning in 2008; hydroelectric power; solar; wind; and electricity retail sales beginning in 1979.  
• The commercial sector includes commercial combined-heat-and-power (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)

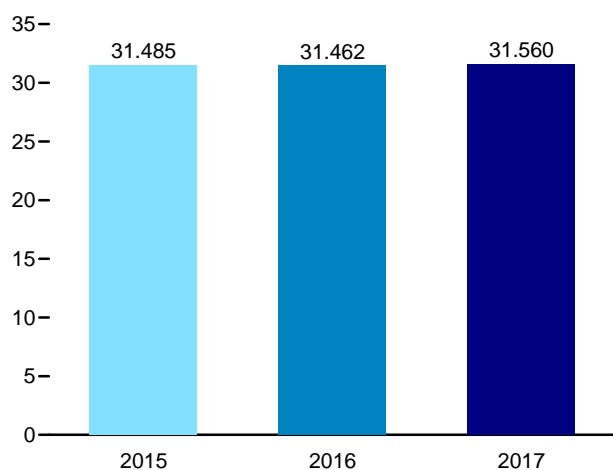
By Major Source, 1949–2017



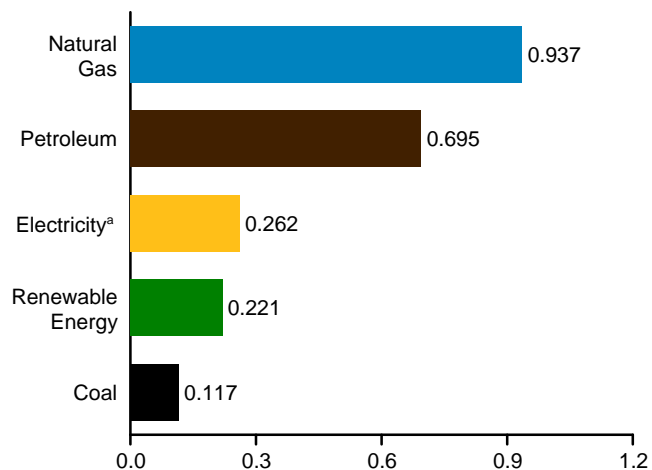
By Major Source, Monthly



Total, January–December



By Major Source, December 2017



<sup>a</sup> 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 <sup>a</sup>											Elec- tricity Retail Sales <sup>i</sup>	Electrical System Energy Losses <sup>j</sup>	Total <sup>l</sup>
	Fossil Fuels <sup>b</sup>				Renewable Energy <sup>c</sup>						Total Primary			
	Coal	Natural Gas <sup>d</sup>	Petro- leum <sup>e</sup>	Total <sup>f</sup>	Hydro- electric Power <sup>g</sup>	Geo- thermal	Solar <sup>h</sup>	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	8,832	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	8,166	18,070	16	4	3	—	2,320	2,343	20,413	3,314	6,934	30,661
2011 Total .....	1,561	8,481	8,135	18,187	17	4	4	(s)	2,375	2,401	20,588	3,382	7,005	30,975
2012 Total .....	1,513	8,819	8,143	18,479	22	4	7	(s)	2,349	2,382	20,861	3,363	6,810	31,034
2013 Total .....	1,546	9,140	8,326	18,995	33	4	9	(s)	2,403	2,449	21,444	3,362	6,785	31,591
2014 Total .....	1,530	9,441	8,138	19,088	12	4	11	1	2,456	2,484	21,572	3,404	6,832	31,808
2015 January .....	128	882	731	1,739	1	(s)	1	(s)	213	215	1,954	272	539	2,765
February .....	119	809	656	1,583	1	(s)	1	(s)	191	193	1,776	262	515	2,552
March .....	121	824	693	1,637	1	(s)	1	(s)	205	207	1,845	272	512	2,628
April .....	110	766	673	1,547	1	(s)	1	(s)	200	203	1,750	275	521	2,546
May .....	114	763	696	1,570	1	(s)	1	(s)	207	210	1,779	283	581	2,643
June .....	116	729	717	1,559	1	(s)	1	(s)	203	206	1,765	294	599	2,659
July .....	117	752	747	1,615	1	(s)	1	(s)	210	213	1,828	299	605	2,732
August .....	115	760	729	1,602	1	(s)	1	(s)	209	212	1,814	302	591	2,706
September .....	109	735	673	1,517	1	(s)	1	(s)	200	203	1,719	289	538	2,547
October .....	112	774	655	1,540	1	(s)	1	(s)	204	207	1,747	284	528	2,558
November .....	110	795	619	1,521	1	(s)	1	(s)	205	207	1,728	268	526	2,523
December .....	109	837	674	1,619	1	(s)	1	(s)	213	215	1,835	267	520	2,622
Total .....	1,380	9,426	8,262	19,049	13	4	14	(s)	2,460	2,491	21,541	3,366	6,578	31,485
2016 January .....	102	887	729	1,717	1	(s)	1	(s)	209	212	1,929	269	533	2,732
February .....	103	819	717	1,639	1	(s)	1	(s)	197	200	1,838	262	485	2,585
March .....	105	827	707	1,639	1	(s)	2	(s)	206	210	1,848	270	504	2,622
April .....	97	778	651	1,525	1	(s)	2	(s)	193	196	1,722	268	515	2,505
May .....	99	774	650	1,522	1	(s)	2	(s)	204	207	1,729	278	557	2,564
June .....	100	745	663	1,507	1	(s)	2	(s)	202	205	1,712	285	578	2,575
July .....	101	777	665	1,541	1	(s)	2	(s)	208	211	1,753	297	599	2,649
August .....	99	788	746	1,631	1	(s)	2	(s)	209	213	1,843	304	583	2,730
September .....	98	758	686	1,539	1	(s)	2	(s)	197	200	1,739	284	518	2,541
October .....	99	780	726	1,603	1	(s)	2	(s)	204	207	1,810	278	521	2,609
November .....	99	810	695	1,599	1	(s)	1	(s)	206	208	1,807	268	512	2,586
December .....	103	896	713	1,709	1	(s)	1	(s)	231	234	1,943	268	547	2,758
Total .....	1,205	9,638	8,347	19,171	12	4	19	1	2,467	2,503	21,674	3,333	6,456	31,462
2017 January .....	101	892	R 726	R 1,715	1	(s)	1	(s)	215	218	R 1,933	259	R 514	R 2,705
February .....	99	791	R 620	R 1,509	1	(s)	1	(s)	196	199	R 1,708	R 246	R 463	R 2,416
March .....	101	853	R 726	R 1,678	1	(s)	2	(s)	210	213	R 1,892	265	R 531	R 2,688
April .....	98	780	R 687	R 1,564	1	(s)	2	(s)	198	202	R 1,766	259	R 507	R 2,531
May .....	99	785	R 711	R 1,594	1	(s)	2	(s)	204	208	R 1,802	273	R 554	R 2,630
June .....	97	768	R 691	R 1,553	1	(s)	2	(s)	202	206	R 1,759	R 281	R 561	R 2,601
July .....	104	786	R 723	R 1,611	1	(s)	3	(s)	209	213	R 1,824	287	R 577	R 2,688
August .....	104	798	R 701	R 1,600	1	(s)	2	(s)	214	218	R 1,818	293	R 560	R 2,671
September .....	102	773	R 682	R 1,555	1	(s)	2	(s)	198	R 201	R 1,757	274	R 510	R 2,540
October .....	117	820	R 694	R 1,626	1	(s)	2	(s)	207	210	R 1,837	271	R 526	R 2,634
November .....	106	859	R 729	R 1,691	1	(s)	2	(s)	209	212	R 1,903	260	R 521	R 2,685
December .....	117	937	695	1,745	1	(s)	1	(s)	218	221	1,966	262	542	2,769
Total .....	1,244	9,843	8,384	19,442	13	4	24	1	2,480	2,522	21,964	3,229	6,366	31,560

<sup>a</sup> See "Primary Energy Consumption" in Glossary.

<sup>b</sup> Includes non-combustion use of fossil fuels.

<sup>c</sup> See Table 10.2b for notes on series components and estimation.

<sup>d</sup> Natural gas only; excludes the estimated portion of supplemental gaseous

fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.

<sup>e</sup> Does not include biofuels that have been blended with petroleum—biofuels are included in "Biomass."

<sup>f</sup> Includes coal coke net imports, which are not separately displayed. See Tables 1.4a and 1.4b.

<sup>g</sup> Conventional hydroelectric power.

<sup>h</sup> Solar photovoltaic (PV) electricity net generation in the industrial sector, both utility-scale and distributed (small-scale). See Tables 10.2b and 10.5.

<sup>i</sup> Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.

<sup>j</sup> 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.

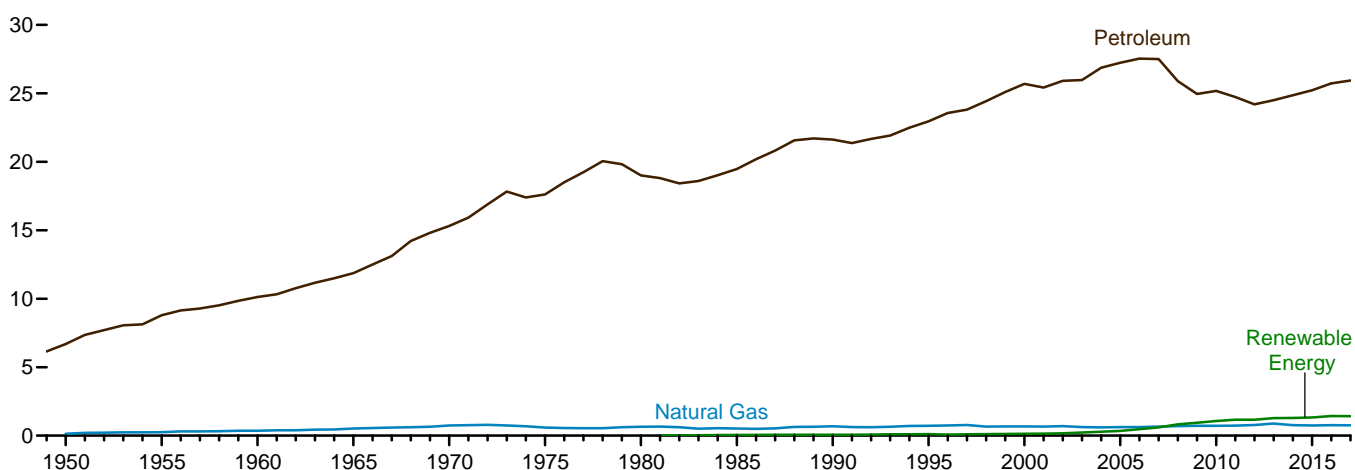
Notes: • Data are estimates, except for coal totals; hydroelectric power in 1949–1978 and 1989 forward; solar; wind; and electricity retail sales. • The industrial sector includes industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants 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.

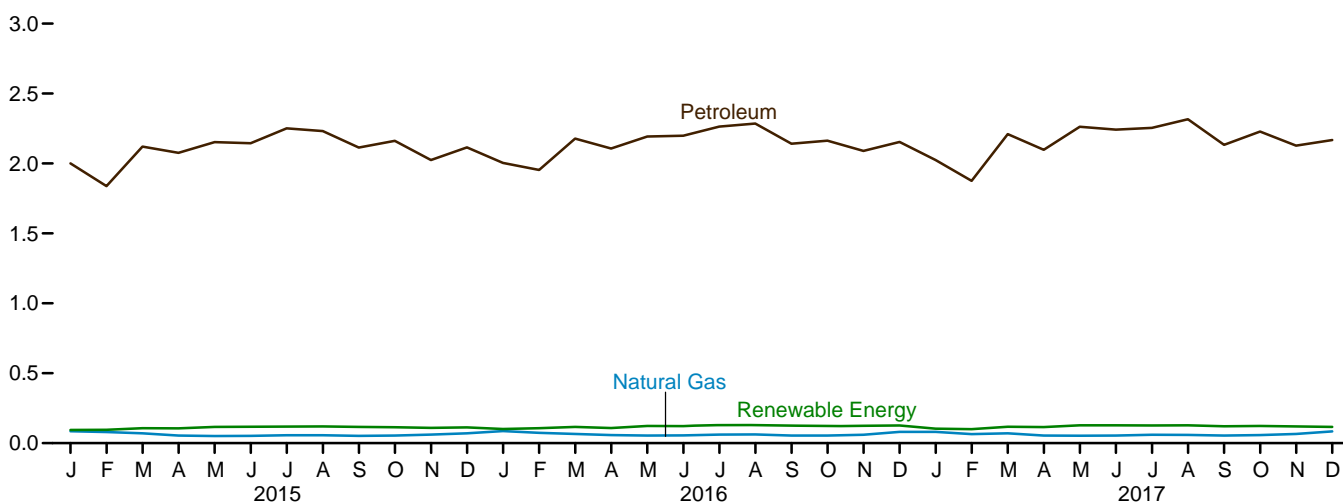
Sources: See end of section.

**Figure 2.5 Transportation Sector Energy Consumption**  
(Quadrillion Btu)

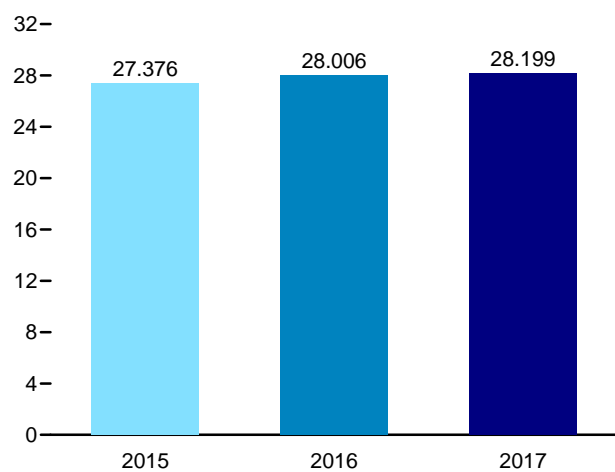
By Major Source, 1949–2017



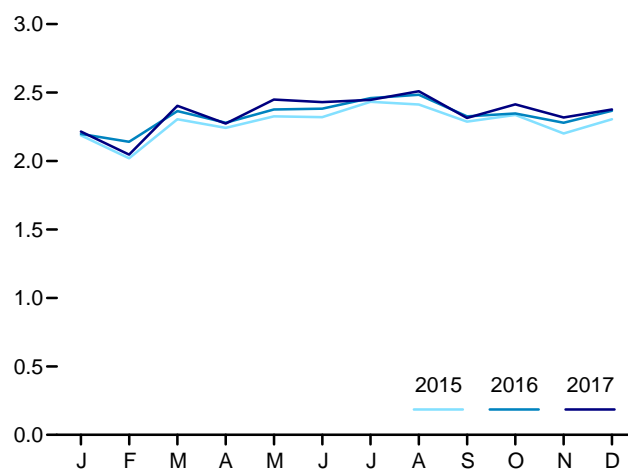
By Major Source, Monthly



Total, January–December



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 <sup>a</sup>						Electricity Retail Sales <sup>e</sup>	Electrical System Energy Losses <sup>f</sup>	Total
	Fossil Fuels				Renewable Energy <sup>b</sup>	Total Primary			
	Coal	Natural Gas <sup>c</sup>	Petroleum <sup>d</sup>	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	10	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)	85	2,001	2,086	94	2,180	2	5	2,187
February .....	(g)	80	1,838	1,918	95	2,013	2	5	2,020
March .....	(g)	71	2,120	2,191	107	2,298	2	4	2,305
April .....	(g)	55	2,076	2,131	105	2,236	2	4	2,242
May .....	(g)	51	2,153	2,203	116	2,319	2	4	2,326
June .....	(g)	52	2,145	2,196	117	2,314	2	4	2,320
July .....	(g)	57	2,251	2,307	118	2,425	2	4	2,432
August .....	(g)	56	2,231	2,287	120	2,407	2	4	2,413
September .....	(g)	52	2,114	2,166	116	2,282	2	4	2,288
October .....	(g)	54	2,161	2,216	114	2,330	2	4	2,336
November .....	(g)	62	2,024	2,086	110	2,196	2	4	2,202
December .....	(g)	71	2,115	2,186	113	2,299	2	4	2,305
Total .....	(g)	745	25,228	25,973	1,326	27,299	26	51	27,376
2016 January .....	(g)	86	2,004	2,090	102	2,191	2	4	2,198
February .....	(g)	74	1,953	2,027	107	2,134	2	4	2,141
March .....	(g)	66	2,177	2,243	116	2,359	2	4	2,365
April .....	(g)	58	2,107	2,165	108	2,273	2	4	2,279
May .....	(g)	55	2,193	2,248	122	2,370	2	4	2,376
June .....	(g)	56	2,198	2,254	122	2,375	2	4	2,382
July .....	(g)	61	2,263	2,325	128	2,453	2	4	2,459
August .....	(g)	62	2,286	2,348	131	2,478	2	4	2,484
September .....	(g)	55	2,142	2,196	124	2,321	2	4	2,327
October .....	(g)	54	2,164	2,218	123	2,341	2	4	2,347
November .....	(g)	61	2,090	2,150	124	2,274	2	4	2,280
December .....	(g)	80	2,153	2,234	127	2,361	2	5	2,367
Total .....	(g)	767	25,730	26,496	1,434	27,931	26	50	28,006
2017 January .....	(g)	80	R 2,025	R 2,105	104	R 2,209	2	5	R 2,215
February .....	(g)	65	R 1,876	R 1,941	100	R 2,041	2	4	R 2,047
March .....	(g)	R 70	R 2,209	R 2,280	117	R 2,397	2	R 4	R 2,403
April .....	(g)	54	R 2,098	R 2,153	116	R 2,268	2	4	R 2,274
May .....	(g)	54	R 2,262	R 2,316	127	R 2,443	2	4	R 2,449
June .....	(g)	54	R 2,242	R 2,296	128	R 2,424	2	4	R 2,431
July .....	(g)	60	R 2,254	R 2,314	126	R 2,441	2	4	R 2,447
August .....	(g)	R 59	R 2,316	R 2,375	128	R 2,504	2	4	R 2,510
September .....	(g)	54	R 2,133	R 2,188	121	R 2,308	2	4	R 2,314
October .....	(g)	57	R 2,228	R 2,285	123	R 2,408	2	4	R 2,414
November .....	(g)	R 65	R 2,127	R 2,193	119	R 2,312	2	4	R 2,318
December .....	(g)	85	2,168	2,253	117	2,369	2	5	2,376
Total .....	(g)	758	25,940	26,698	1,425	28,123	26	51	28,199

<sup>a</sup> See "Primary Energy Consumption" in Glossary.

<sup>b</sup> See Table 10.2b for notes on series components.

<sup>c</sup> 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.

<sup>d</sup> Does not include biofuels that have been blended with petroleum—biofuels are included in "Biomass." Includes non-combustion use of lubricants.

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

<sup>f</sup> 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.

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

R=Revised. NA=Not available.

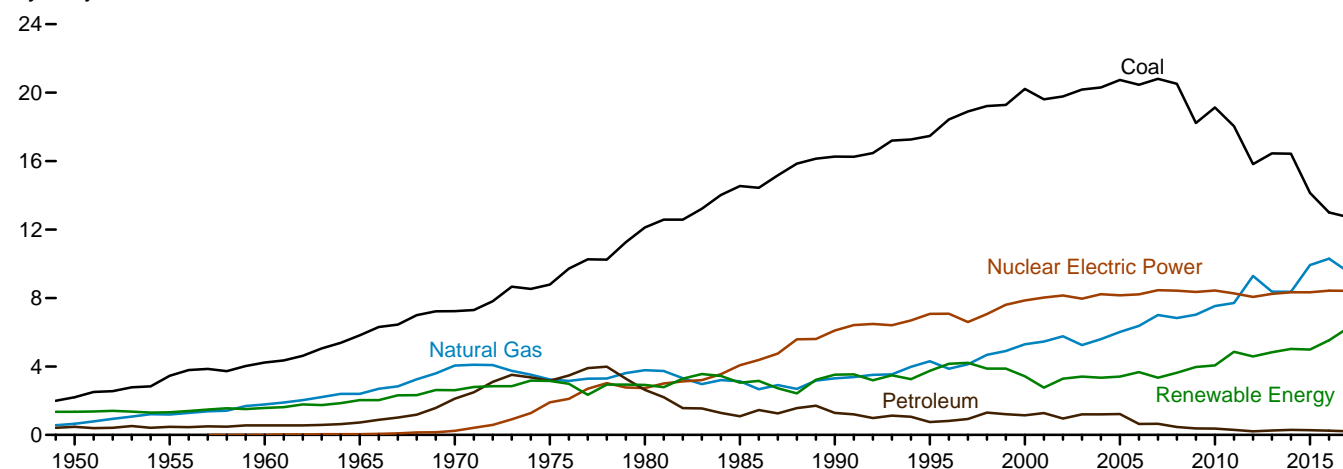
Notes: • Data are estimates, except for coal totals through 1977; and electricity retail sales beginning in 1979. • See Note 2, "Energy Consumption Data and Surveys," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the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

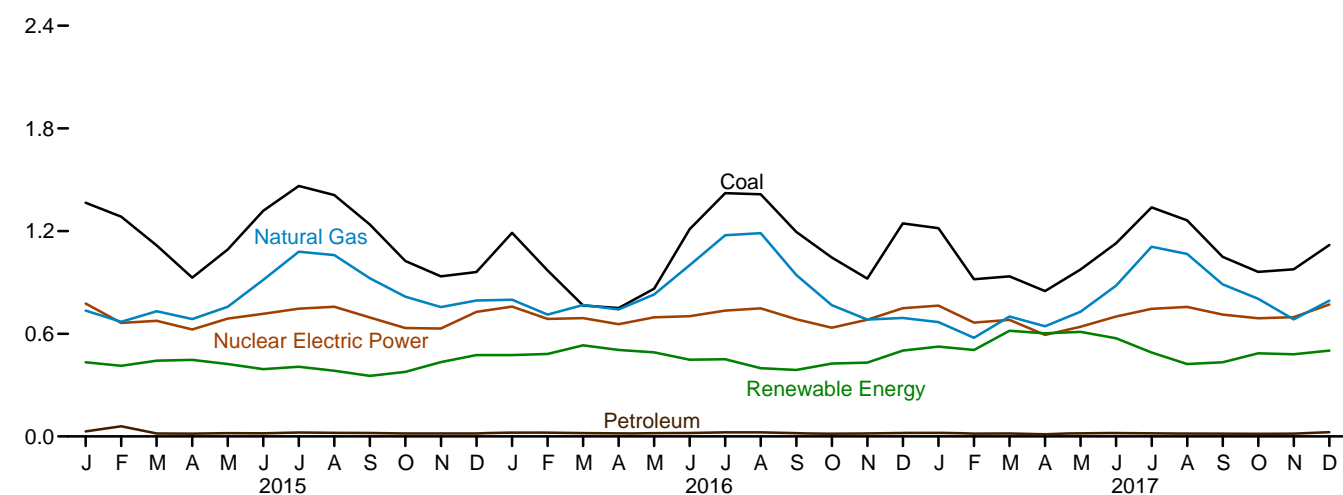
Sources: See end of section.

**Figure 2.6 Electric Power Sector Energy Consumption**  
(Quadrillion Btu)

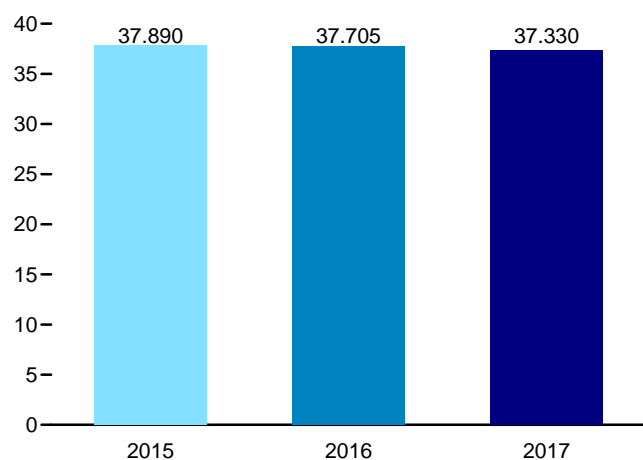
By Major Source, 1949–2017



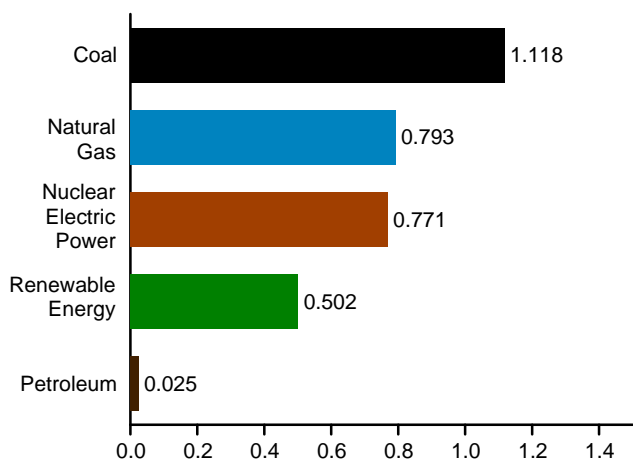
By Major Source, Monthly



Total, January–December



By Major Source, December 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 <sup>a</sup>													Elec- tricity Net Imports <sup>f</sup>	Total Primary
	Fossil Fuels				Nuclear Electric Power	Renewable Energy <sup>b</sup>									
	Coal	Natural Gas <sup>c</sup>	Petro- leum	Total		Hydro- electric Power <sup>d</sup>	Geo- thermal	Solar <sup>e</sup>	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 <sup>g</sup> .....	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 .....	1,190	799	23	2,012	759	235	12	13	170	44	475	19	3,265		
February .....	970	712	22	1,704	687	222	11	20	186	43	482	16	2,888		
March .....	765	768	18	1,552	692	251	12	24	202	43	533	16	2,793		
April .....	750	741	19	1,510	656	238	11	26	192	39	506	13	2,685		
May .....	863	830	19	1,712	696	234	12	31	174	40	491	16	2,916		
June .....	1,211	1,001	20	2,232	703	213	12	32	150	41	448	19	3,402		
July .....	1,422	1,176	24	2,622	736	197	12	36	163	44	451	22	3,831		
August .....	1,415	1,188	24	2,627	748	180	12	36	125	45	399	20	3,794		
September .....	1,195	944	20	2,158	685	150	12	33	151	41	388	13	3,245		
October .....	1,046	767	16	1,830	635	159	12	29	188	37	426	16	2,906		
November .....	923	683	18	1,623	682	173	13	25	179	42	432	19	2,755		
December .....	1,245	692	20	1,958	750	207	13	22	213	46	501	15	3,224		
Total .....	12,996	10,301	244	23,542	8,427	2,459	146	328	2,094	505	5,531	206	37,705		
2017 January .....	1,217	R 668	21	R 1,906	765	256	13	20	R 191	45	R 525	16	R 3,212		
February .....	919	R 577	16	R 1,511	R 665	225	11	23	R 205	41	R 505	12	R 2,693		
March .....	935	R 701	17	R 1,653	681	278	13	40	R 241	46	R 618	12	R 2,963		
April .....	849	R 643	13	R 1,505	593	269	13	R 44	R 238	40	R 603	15	R 2,716		
May .....	R 975	R 729	19	1,723	641	296	12	R 53	209	42	R 611	14	2,989		
June .....	1,129	R 881	19	R 2,029	701	279	12	57	R 182	R 44	573	16	R 3,320		
July .....	1,339	R 1,108	18	R 2,465	746	236	13	50	R 145	46	R 490	15	R 3,716		
August .....	R 1,263	R 1,066	17	R 2,346	757	195	13	49	121	46	423	17	R 3,544		
September .....	1,049	R 889	17	R 1,955	712	174	12	47	R 159	41	433	13	R 3,113		
October .....	R 962	R 804	16	R 1,782	690	158	12	44	229	43	R 486	R 13	R 2,972		
November .....	R 977	R 684	16	R 1,676	697	182	12	28	215	43	480	R 14	R 2,868		
December .....	1,118	793	25	1,936	771	207	13	28	210	45	502	14	3,224		
Total .....	12,732	9,543	214	22,489	8,419	2,755	147	483	2,345	519	6,249	173	37,330		

<sup>a</sup> See "Primary Energy Consumption" in Glossary.  
<sup>b</sup> See Table 10.2c for notes on series components.  
<sup>c</sup> Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.  
<sup>d</sup> Conventional hydroelectric power.  
<sup>e</sup> Solar photovoltaic (PV) and solar thermal electricity net generation in the electric power sector. See Tables 10.2c and 10.5.  
<sup>f</sup> Net imports equal imports minus exports.  
<sup>g</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.  
R=Revised. 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 <sup>a</sup>	Agri-culture	Defense	Energy	GSA <sup>b</sup>	HHS <sup>c</sup>	Interior	Justice	NASA <sup>d</sup>	Postal Service	Trans- portation	Veterans Affairs	Other <sup>e</sup>	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	44.1	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	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 .....	6.2	734.5	30.1	16.9	9.0	6.8	16.2	8.4	44.0	6.0	30.7	37.8	946.5
2016 .....	6.2	709.2	28.9	15.8	8.7	6.4	15.6	8.5	43.9	6.0	30.3	37.6	917.2

<sup>a</sup> 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).

<sup>b</sup> General Services Administration.

<sup>c</sup> Health and Human Services.

<sup>d</sup> National Aeronautics and Space Administration.

<sup>e</sup> Includes all U.S. government agencies not separately displayed. See <http://ctswebweb.ee.doe.gov/Annual/Report/AgencyReference.aspx> for agency list.

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://ctswebweb.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 <sup>a</sup>	Coal	Natural Gas <sup>b</sup>	Petroleum						Other Mobility Fuels <sup>f</sup>	Electricity	Purchased Steam and Other <sup>g</sup>	Total
			Aviation Gasoline	Fuel Oil <sup>c</sup>	Jet Fuel	LPG <sup>d</sup>	Motor Gasoline <sup>e</sup>	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	129.6	.4	198.4	525.4	2.3	49.0	775.4	3.6	196.1	17.7	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	134.4	418.9	1.8	46.8	602.2	3.7	184.4	20.3	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

<sup>a</sup> 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).

<sup>b</sup> Natural gas, plus a small amount of supplemental gaseous fuels.

<sup>c</sup> Distillate fuel oil, including diesel fuel; and residual fuel oil, including Navy Special.

<sup>d</sup> Liquefied petroleum gases, primarily propane.

<sup>e</sup> Includes E10 (a mixture of 10% ethanol and 90% motor gasoline) and E15 (a mixture of 15% ethanol and 85% motor gasoline).

<sup>f</sup> 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.

<sup>g</sup> 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.

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.

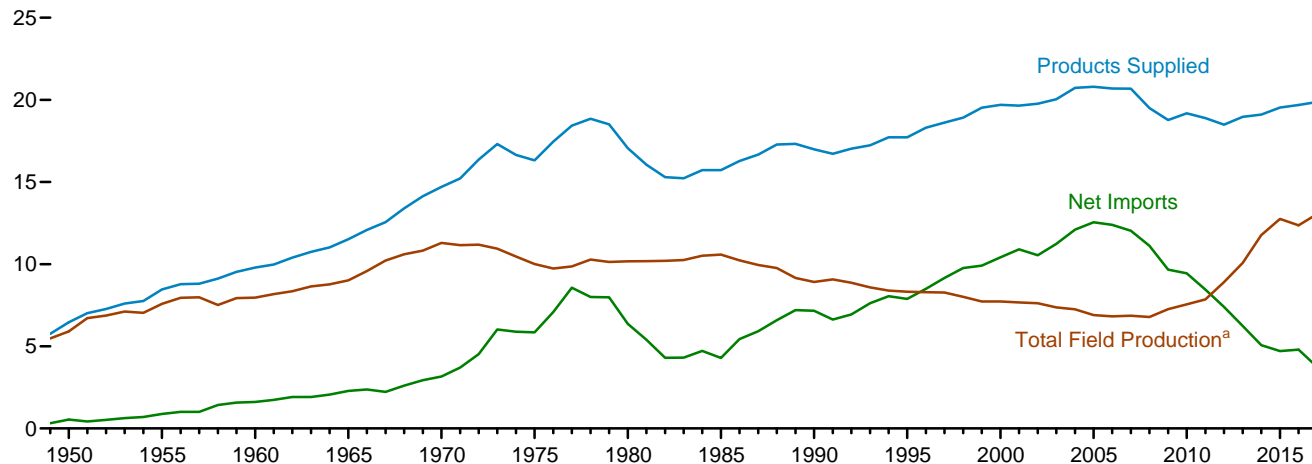
THIS PAGE INTENTIONALLY LEFT BLANK

## 3. Petroleum

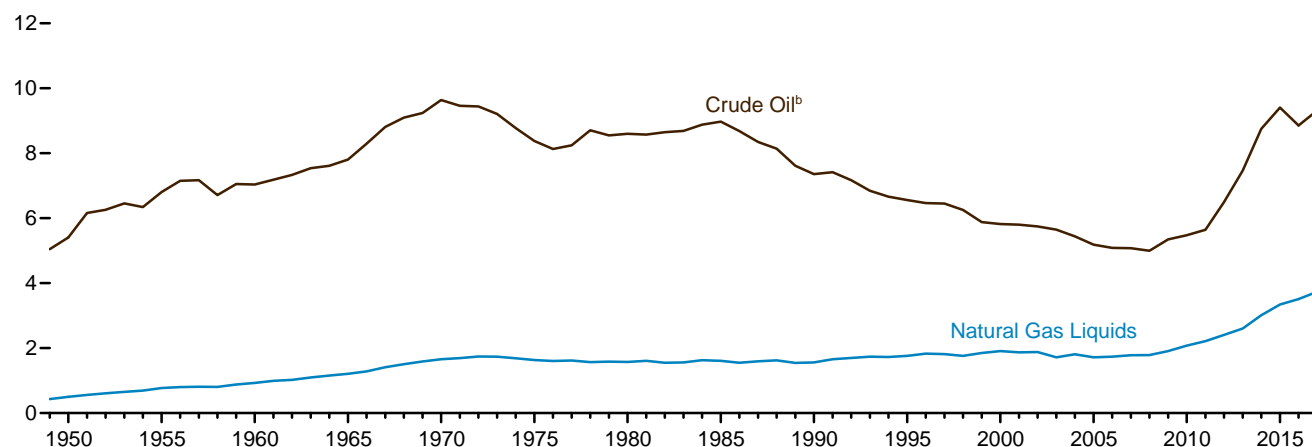
---

**Figure 3.1 Petroleum Overview**  
(Million Barrels per Day)

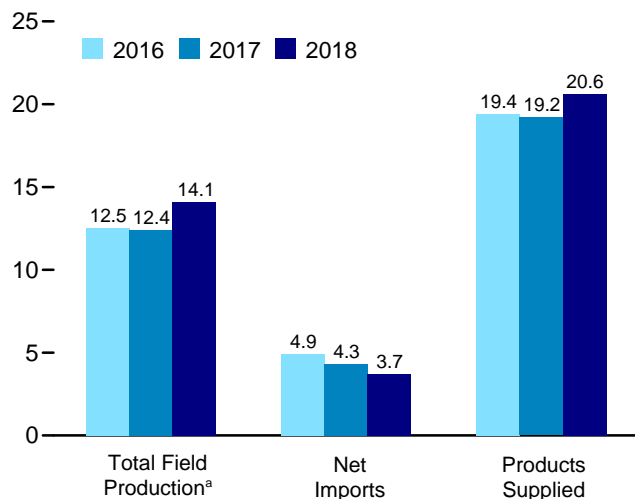
Overview, 1949–2017



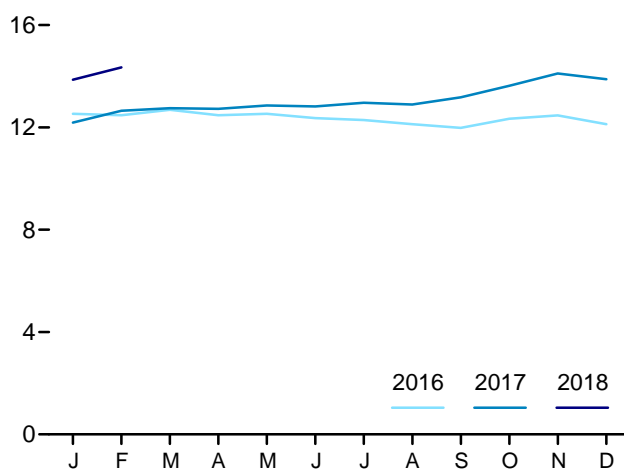
Crude Oil and Natural Gas Liquids Field Production, 1949–2017



Overview, January–February



Total Field Production,<sup>a</sup> Monthly



<sup>a</sup> Crude oil, including lease condensate, and natural gas liquids field production.

<sup>b</sup> 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 <sup>a</sup>					Renewable Fuels and Oxygenates <sup>e</sup>	Processing Gain <sup>f</sup>	Trade			Stock Change <sup>i</sup>	Adjustments <sup>c,j</sup>	Petroleum Products Supplied
	Crude Oil <sup>b,c</sup>			Natural Gas Liquids	Total <sup>c</sup>			Im-ports <sup>g</sup>	Ex-ports	Net Imports <sup>h</sup>			
	48 States <sup>d</sup>	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	-8	-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	<sup>k</sup> 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 .....	4,352	722	5,074	1,783	6,857	NA	996	13,468	1,433	12,036	-152	640	20,680
2008 Average .....	4,315	683	4,998	1,784	6,781	NA	993	12,915	1,802	11,114	195	805	19,498
2009 Average .....	4,703	645	5,349	1,910	7,259	746	979	11,691	2,024	9,667	107	229	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 .....	5,082	561	5,643	2,216	7,859	1,016	1,076	11,436	2,986	8,450	-129	356	18,887
2012 Average .....	5,971	526	6,497	2,408	8,905	964	1,059	10,598	3,205	7,393	147	313	18,487
2013 Average .....	6,951	515	7,466	2,606	10,072	1,002	1,087	9,859	3,621	6,237	-139	430	18,967
2014 Average .....	8,257	496	8,753	3,015	11,768	1,055	1,081	9,241	4,176	5,065	267	399	19,100
2015 Average .....	8,925	483	9,408	3,342	12,751	1,095	1,062	9,449	4,738	4,711	429	344	19,534
2016 January .....	8,671	516	9,186	3,345	12,531	1,109	1,117	9,707	4,977	4,730	1,020	597	19,063
February .....	8,600	507	9,107	3,369	12,476	1,128	1,070	10,066	4,934	5,132	148	188	19,847
March .....	8,623	511	9,134	3,556	12,690	1,146	1,049	10,001	5,092	4,910	206	140	19,728
April .....	8,418	489	8,906	3,570	12,477	1,094	1,095	9,822	5,195	4,627	361	409	19,340
May .....	8,354	505	8,859	3,672	12,531	1,146	1,160	10,181	5,739	4,441	495	545	19,328
June .....	8,233	470	8,703	3,662	12,365	1,180	1,114	10,054	5,437	4,617	-36	534	19,846
July .....	8,243	438	8,682	3,604	12,285	1,180	1,190	10,532	5,226	5,306	550	364	19,776
August .....	8,257	459	8,716	3,410	12,127	1,190	1,149	10,322	5,097	5,226	-5	579	20,275
September .....	8,101	452	8,553	3,427	11,981	1,167	1,122	10,199	5,439	4,760	-504	222	19,757
October .....	8,296	495	8,791	3,544	12,335	1,153	1,089	9,699	4,985	4,715	58	416	19,650
November .....	8,363	513	8,876	3,596	12,472	1,195	1,113	10,293	5,426	4,867	107	120	19,659
December .....	8,252	519	8,771	3,352	12,123	1,212	1,143	9,792	5,574	4,219	-860	428	19,984
Average .....	8,367	490	8,857	3,509	12,366	1,158	1,118	10,055	5,261	4,795	130	380	19,687
2017 January .....	E 8,309	E 516	E 8,825	3,365	E 12,190	1,177	1,125	10,685	5,691	4,994	698	457	19,244
February .....	E 8,532	E 513	E 9,045	3,604	E 12,650	1,164	1,045	10,039	6,443	3,597	-94	610	19,159
March .....	E 8,581	E 526	E 9,107	3,644	E 12,751	1,172	1,108	10,059	5,886	4,174	-556	287	20,047
April .....	E 8,568	E 525	E 9,093	3,633	E 12,726	1,138	1,128	10,244	6,066	4,178	1	388	19,556
May .....	E 8,627	E 508	E 9,134	3,721	E 12,855	1,174	1,125	10,628	6,142	4,486	152	551	20,039
June .....	E 8,605	E 463	E 9,068	3,752	E 12,819	1,186	1,151	10,240	6,148	4,092	-824	422	20,494
July .....	E 8,786	E 423	E 9,209	3,755	E 12,964	1,188	1,091	9,850	6,232	3,618	-364	795	20,020
August .....	E 8,742	E 451	E 9,192	3,704	E 12,896	1,214	1,112	10,055	5,647	4,407	-377	153	20,161
September .....	E 9,003	E 482	E 9,485	3,693	E 13,177	1,176	1,016	9,707	6,263	3,444	-261	506	19,581
October .....	RE 9,152	E 507	RE 9,658	3,968	RE 13,626	1,208	1,081	9,661	7,163	2,498	-1,133	<sup>R</sup> 261	19,806
November .....	RE 9,547	E 510	RE 10,057	4,054	RE 14,110	1,262	1,146	9,783	7,158	2,624	-691	<sup>R</sup> 445	20,278
December .....	RE 9,437	RE 512	RE 9,949	<sup>R</sup> 3,936	RE 13,885	<sup>R</sup> 1,236	<sup>R</sup> 1,122	<sup>R</sup> 9,934	<sup>R</sup> 7,296	<sup>R</sup> 2,638	<sup>R</sup> -889	<sup>R</sup> 311	<sup>R</sup> 20,082
Average .....	RE 8,825	RE 494	RE 9,320	<sup>R</sup> 3,736	RE 13,056	<sup>R</sup> 1,192	<sup>R</sup> 1,105	<sup>R</sup> 10,075	<sup>R</sup> 6,343	<sup>R</sup> 3,732	<sup>R</sup> -363	<sup>R</sup> 431	<sup>R</sup> 19,877
2018 January .....	E 9,371	E 510	E 9,881	E 3,985	E 13,866	E 1,130	E 1,115	E 10,221	E 6,240	E 3,981	E -411	E 295	E 20,798
February .....	E 9,780	E 514	E 10,294	E 4,054	E 14,348	E 1,139	E 1,071	E 9,601	E 6,250	E 3,351	E -211	E 163	E 20,283
2-Month Average ...	E 9,565	E 512	E 10,077	E 4,018	E 14,095	E 1,134	E 1,094	E 9,927	E 6,245	E 3,682	E -316	E 233	E 20,554
2017 2-Month Average ...	E 8,415	E 515	E 8,929	3,478	E 12,408	1,171	1,087	10,379	6,048	4,331	322	530	19,204
2016 2-Month Average ...	8,636	512	9,148	3,357	12,505	1,118	1,094	9,881	4,956	4,924	599	399	19,442

<sup>a</sup> Crude oil production on leases, and natural gas liquids (hydrocarbon gas liquids 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."

<sup>b</sup> Includes lease condensate.

<sup>c</sup> 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.

<sup>d</sup> United States excluding Alaska and Hawaii.

<sup>e</sup> Renewable fuels and oxygenate plant net production.

<sup>f</sup> Refinery and blender net production minus refinery and blender net inputs. See Table 3.2.

<sup>g</sup> Includes Strategic Petroleum Reserve imports. See Table 3.3b.

<sup>h</sup> Net imports equal imports minus exports.

<sup>i</sup> 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.

<sup>j</sup> 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.

<sup>k</sup> 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.

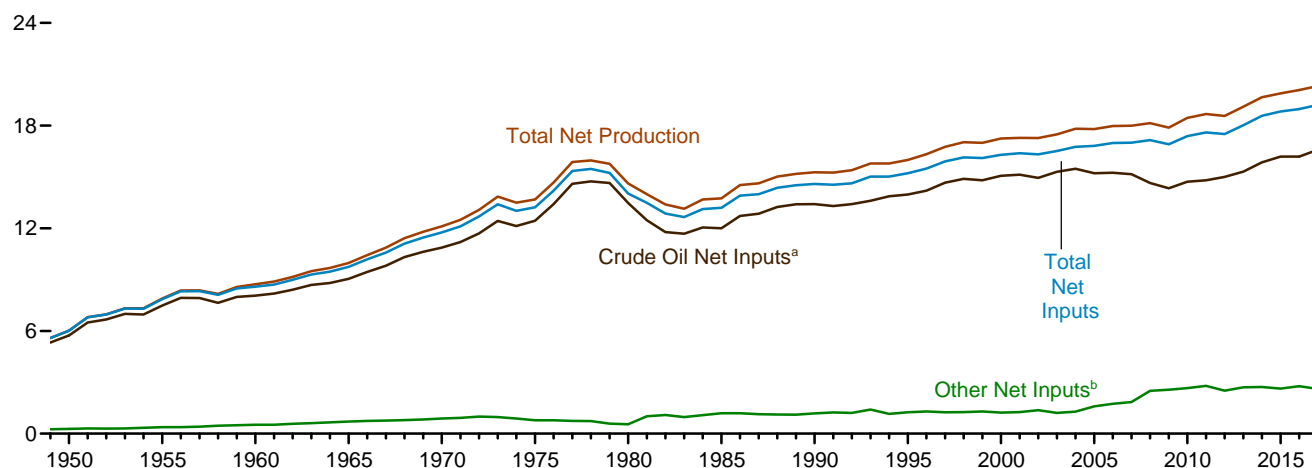
Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

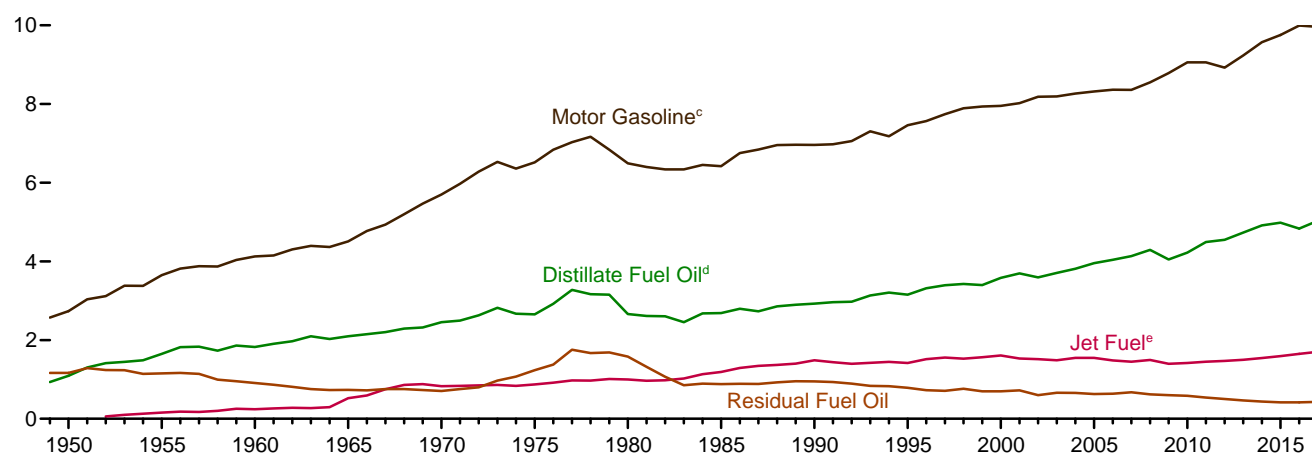
Sources: See end of section.

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

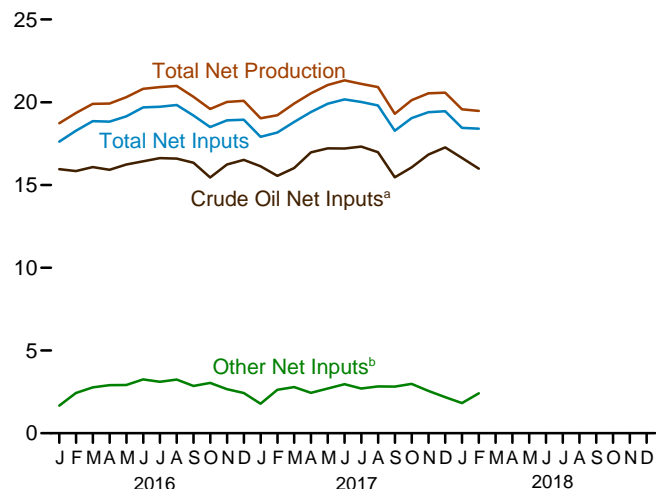
Net Inputs and Net Production, 1949–2017



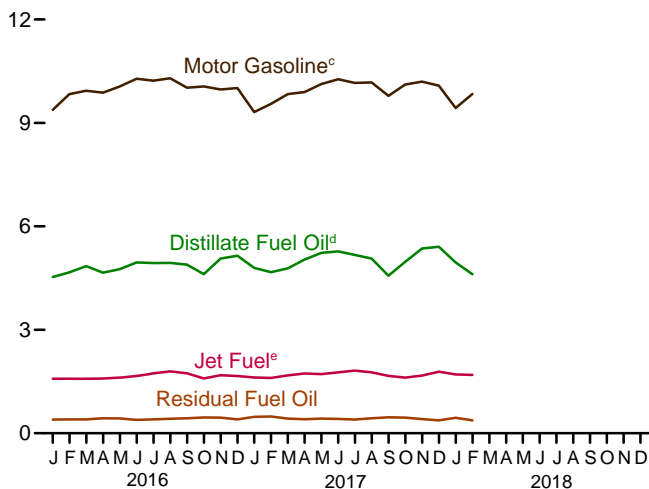
Net Production, Selected Products, 1949–2017



Net Inputs and Net Production, Monthly



Net Production, Selected Products, Monthly



<sup>a</sup> Includes lease condensate.

<sup>b</sup> Natural gas liquids and other liquids.

<sup>c</sup> Beginning in 1993, includes fuel ethanol blended into motor gasoline.

<sup>d</sup> Beginning in 2009, includes renewable diesel fuel (including biodie-

sel) blended into distillate fuel oil.

<sup>e</sup> 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 <sup>a</sup>				Refinery and Blender Net Production <sup>b</sup>							
	Crude Oil <sup>d</sup>	Natural Gas Liquids <sup>e</sup>	Other Liquids <sup>f</sup>	Total	Distillate Fuel Oil <sup>g</sup>	HGL <sup>c</sup>		Jet Fuel <sup>j</sup>	Motor Gasoline <sup>k</sup>	Residual Fuel Oil	Other Products <sup>l</sup>	Total
						Propane <sup>h</sup>	Total <sup>i</sup>					
1950 Average	5,739	259	19	6,018	1,093	NA	80	(j)	2,735	1,165	947	6,019
1955 Average	7,480	345	32	7,857	1,651	NA	119	155	3,648	1,152	1,166	7,891
1960 Average	8,067	455	61	8,583	1,823	NA	212	241	4,126	908	1,420	8,729
1965 Average	9,043	618	88	9,750	2,096	NA	293	523	4,507	736	1,814	9,970
1970 Average	10,870	763	121	11,754	2,454	239	345	827	5,699	706	2,082	12,113
1975 Average	12,442	710	72	13,225	2,653	238	311	871	6,518	1,235	2,097	13,685
1980 Average	13,481	462	81	14,025	2,661	273	330	999	6,492	1,580	2,559	14,622
1985 Average	12,002	509	681	13,192	2,686	295	391	1,189	6,419	882	2,183	13,750
1990 Average	13,409	467	713	14,589	2,925	404	499	1,488	6,959	950	2,452	15,272
1995 Average	13,973	471	775	15,220	3,155	503	654	1,416	7,459	788	2,522	15,994
2000 Average	15,067	380	849	16,295	3,580	583	705	1,606	7,951	696	2,705	17,243
2001 Average	15,128	429	825	16,382	3,695	556	667	1,530	8,022	721	2,651	17,285
2002 Average	14,947	429	941	16,316	3,592	572	671	1,514	8,183	601	2,712	17,273
2003 Average	15,304	419	791	16,513	3,707	570	658	1,488	8,194	660	2,780	17,487
2004 Average	15,475	422	866	16,762	3,814	584	645	1,547	8,265	655	2,887	17,814
2005 Average	15,220	441	1,149	16,811	3,954	540	573	1,546	8,318	628	2,782	17,900
2006 Average	15,242	501	1,238	16,981	4,040	543	627	1,481	8,364	635	2,827	17,975
2007 Average	15,156	505	1,337	16,999	4,133	562	655	1,448	8,358	673	2,728	17,994
2008 Average	14,648	485	2,019	17,153	4,294	519	630	1,493	8,548	620	2,561	18,146
2009 Average	14,336	485	2,082	16,904	4,048	537	623	1,396	8,786	598	2,431	17,882
2010 Average	14,724	442	2,219	17,385	4,223	560	659	1,418	9,059	585	2,509	18,452
2011 Average	14,806	490	2,300	17,596	4,492	552	619	1,449	9,058	537	2,518	18,673
2012 Average	14,999	509	1,997	17,505	4,550	553	630	1,471	8,926	501	2,487	18,564
2013 Average	15,312	496	2,211	18,019	4,733	564	623	1,499	9,234	467	2,550	19,106
2014 Average	15,848	511	2,214	18,574	4,916	587	653	1,541	9,570	435	2,537	19,654
2015 Average	16,188	517	2,119	18,824	4,983	559	615	1,590	9,754	417	2,527	19,886
2016 January	15,951	672	994	17,618	4,530	589	354	1,581	9,378	395	2,495	18,735
February	15,843	569	1,864	18,276	4,668	574	426	1,578	9,834	403	2,437	19,346
March	16,082	487	2,284	18,854	4,848	595	666	1,575	9,932	400	2,483	19,903
April	15,920	452	2,451	18,823	4,659	597	829	1,592	9,876	435	2,527	19,919
May	16,237	420	2,493	19,150	4,760	613	897	1,606	10,058	427	2,561	20,310
June	16,433	432	2,825	19,690	4,954	598	888	1,662	10,280	389	2,632	20,804
July	16,621	425	2,680	19,726	4,933	590	873	1,737	10,224	401	2,749	20,916
August	16,593	427	2,813	19,833	4,939	576	838	1,796	10,293	420	2,696	20,981
September	16,340	547	2,312	19,199	4,888	575	645	1,738	10,020	436	2,594	20,321
October	15,454	633	2,411	18,498	4,614	556	476	1,591	10,059	455	2,392	19,587
November	16,235	699	1,967	18,901	5,066	589	349	1,680	9,969	450	2,499	20,013
December	16,516	674	1,755	18,945	5,148	595	330	1,661	10,013	401	2,535	20,088
Average	16,187	536	2,238	18,961	4,834	587	632	1,650	9,995	418	2,550	20,079
2017 January	16,129	650	1,131	17,910	4,797	564	353	1,615	9,316	473	2,479	19,035
February	15,546	586	2,034	18,167	4,672	543	412	1,604	9,552	484	2,487	19,212
March	16,028	518	2,266	18,813	4,781	586	679	1,677	9,834	427	2,524	19,921
April	16,970	477	1,963	19,411	5,036	601	857	1,734	9,897	405	2,610	20,538
May	17,212	484	2,216	19,911	5,230	622	908	1,713	10,126	423	2,637	21,036
June	17,205	473	2,492	20,170	5,275	615	915	1,764	10,269	415	2,684	21,321
July	17,318	446	2,257	20,021	5,171	607	877	1,816	10,159	396	2,691	21,111
August	16,979	480	2,348	19,807	5,064	589	834	1,764	10,175	435	2,648	20,920
September	15,460	605	2,216	18,281	4,570	513	479	1,664	9,785	460	2,340	19,297
October	16,061	592	2,391	19,044	4,974	594	520	1,611	10,113	455	2,452	20,124
November	16,839	730	1,828	19,397	5,358	616	348	1,672	10,199	412	2,554	20,543
December	R 17,274	R 750	R 1,432	R 19,457	R 5,410	R 642	R 341	R 1,784	R 10,081	R 372	R 2,591	R 20,579
Average	R 16,593	R 566	R 2,047	R 19,206	R 5,031	R 591	R 628	R 1,702	R 9,961	R 429	R 2,559	R 20,311
2018 January	E 16,635	RF 647	RE 1,171	RF 18,453	E 4,953	RE 591	RF 379	E 1,705	E 9,432	E 448	RE 2,651	RE 19,568
February	E 15,984	F 590	E 1,826	F 18,400	E 4,610	E 593	F 444	E 1,690	E 9,841	E 374	E 2,512	E 19,471
2-Month Average	E 16,326	F 620	E 1,481	F 18,428	E 4,790	E 592	F 410	E 1,698	E 9,626	E 413	E 2,585	E 19,522
2017 2-Month Average	15,853	620	1,559	18,032	4,738	554	381	1,610	9,428	478	2,483	19,119
2016 2-Month Average	15,899	622	1,415	17,936	4,597	581	389	1,580	9,599	399	2,467	19,030

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

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

c Hydrocarbon gas liquids.

d Includes lease condensate.

e Ethane, propane, normal butane, isobutane, and natural gasoline (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 Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures."

i Ethane, propane, normal butane, isobutane, and refinery olefins (ethylene, propylene, butylene, and isobutylene).

j 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.")

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

l 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.

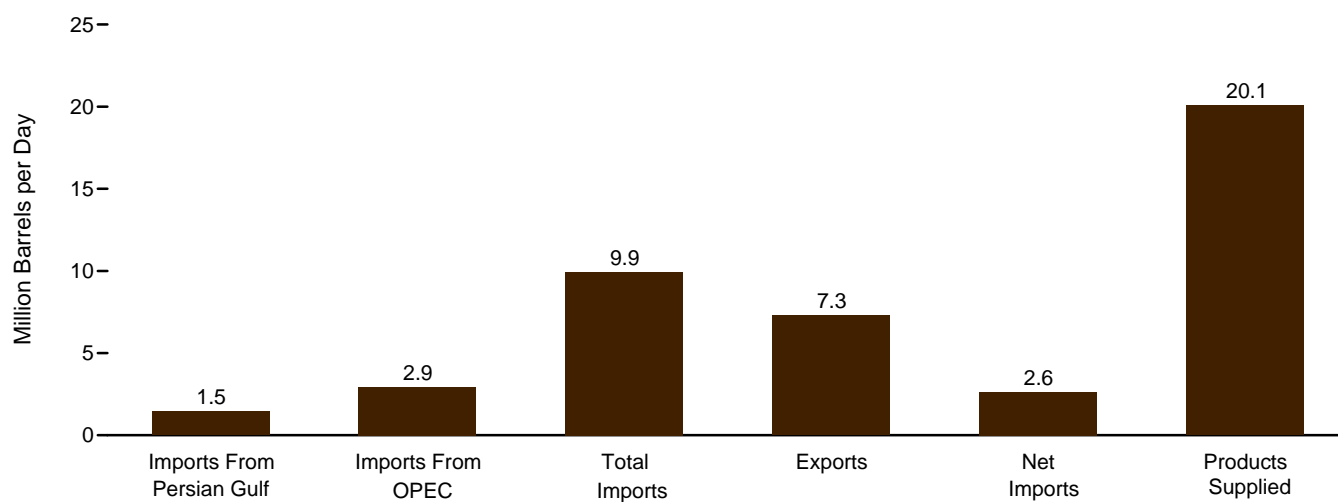
Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

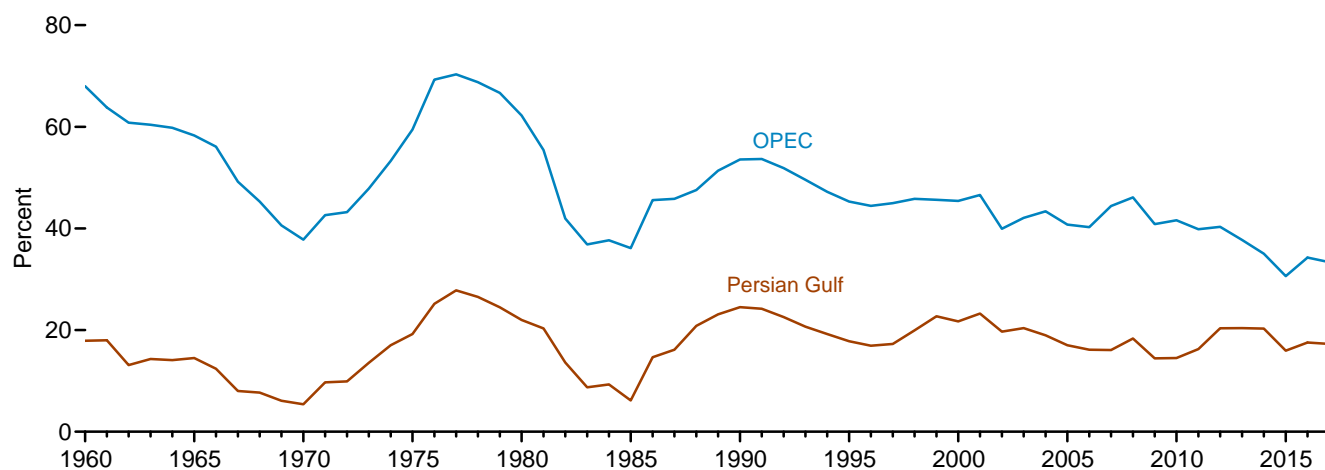
Sources: • 1949–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976–1980: U.S. Energy Information Administration (EIA), *Energy Data Reports, Petroleum Statement, Annual*, annual reports. • 1981–2016: EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • 2017 and 2018: 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

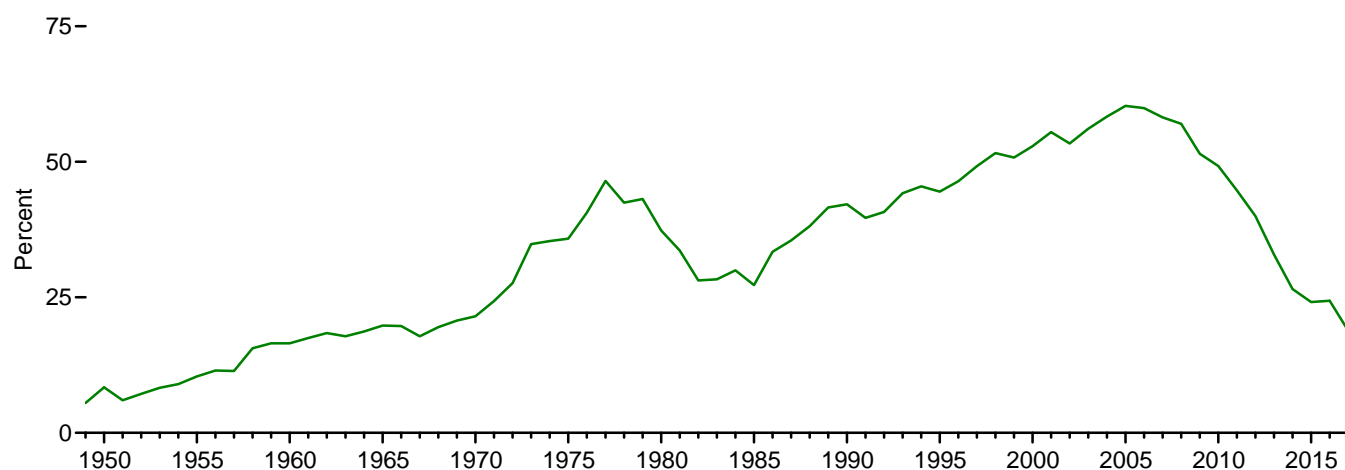
Overview, December 2017



Imports From OPEC and Persian Gulf as Share of Total Imports, 1960–2017



Net Imports as Share of Products Supplied, 1949–2017



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 <sup>a</sup>	Imports From OPEC <sup>b</sup>	Imports	Exports	Net Imports	Products Supplied	As Share of Products Supplied				As Share of Total Imports	
							Imports From Persian Gulf <sup>a</sup>	Imports From OPEC <sup>b</sup>	Imports	Net Imports	Imports From Persian Gulf <sup>a</sup>	Imports From OPEC <sup>b</sup>
							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	18,887	9.9	24.1	60.6	44.7	16.3	39.8
2012 Average .....	2,156	4,271	10,598	3,205	7,393	18,487	11.7	23.1	57.3	40.0	20.3	40.3
2013 Average .....	2,009	3,720	9,859	3,621	6,237	18,967	10.6	19.6	52.0	32.9	20.4	37.7
2014 Average .....	1,875	3,237	9,241	4,176	5,065	19,100	9.8	16.9	48.4	26.5	20.3	35.0
2015 Average .....	1,507	2,894	9,449	4,738	4,711	19,534	7.7	14.8	48.4	24.1	15.9	30.6
2016 January .....	1,520	3,054	9,707	4,977	4,730	19,063	8.0	16.0	50.9	24.8	15.7	31.5
February .....	1,592	3,230	10,066	4,934	5,132	19,847	8.0	16.3	50.7	25.9	15.8	32.1
March .....	1,820	3,576	10,001	5,092	4,910	19,728	9.2	18.1	50.7	24.9	18.2	35.8
April .....	1,709	3,354	9,822	5,195	4,627	19,340	8.8	17.3	50.8	23.9	17.4	34.1
May .....	1,949	3,665	10,181	5,739	4,441	19,328	10.1	19.0	52.7	23.0	19.1	36.0
June .....	1,716	3,303	10,054	5,437	4,617	19,846	8.6	16.6	50.7	23.3	17.1	32.9
July .....	1,797	3,769	10,532	5,226	5,306	19,776	9.1	19.1	53.3	26.8	17.1	35.8
August .....	1,820	3,427	10,322	5,097	5,226	20,275	9.0	16.9	50.9	25.8	17.6	33.2
September .....	1,982	3,575	10,199	5,439	4,760	19,757	10.0	18.1	51.6	24.1	19.4	35.1
October .....	1,698	3,330	9,699	4,985	4,715	19,650	8.6	16.9	49.4	24.0	17.5	34.3
November .....	1,702	3,560	10,293	5,426	4,867	19,659	8.7	18.1	52.4	24.8	16.5	34.6
December .....	1,882	3,491	9,792	5,574	4,219	19,984	9.4	17.5	49.0	21.1	19.2	35.6
Average .....	1,766	3,446	10,055	5,261	4,795	19,687	9.0	17.5	51.1	24.4	17.6	34.3
2017 January .....	2,085	3,793	10,685	5,691	4,994	19,244	10.8	19.7	55.5	26.0	19.5	35.5
February .....	2,013	3,445	10,039	6,443	3,597	19,159	10.5	18.0	52.4	18.8	20.0	34.3
March .....	1,955	3,592	10,059	5,886	4,174	20,047	9.8	17.9	50.2	20.8	19.4	35.7
April .....	2,094	3,737	10,244	6,066	4,178	19,556	10.7	19.1	52.4	21.4	20.4	36.5
May .....	1,943	3,644	10,628	6,142	4,486	20,039	9.7	18.2	53.0	22.4	18.3	34.3
June .....	1,806	3,537	10,240	6,148	4,092	20,494	8.8	17.3	50.0	20.0	17.6	34.5
July .....	1,796	3,399	9,850	6,232	3,618	20,020	9.0	17.0	49.2	18.1	18.2	34.5
August .....	1,363	3,181	10,055	5,647	4,407	20,161	6.8	15.8	49.9	21.9	13.6	31.6
September .....	1,370	2,880	9,707	6,263	3,444	19,581	7.0	14.7	49.6	17.6	14.1	29.7
October .....	1,472	3,135	9,661	7,163	2,498	19,806	7.4	15.8	48.8	12.6	15.2	32.4
November .....	1,555	3,042	9,783	7,158	2,624	20,278	7.7	15.0	48.2	12.9	15.9	31.1
December .....	<sup>R</sup> 1,460	<sup>R</sup> 2,939	<sup>R</sup> 9,934	<sup>R</sup> 7,296	<sup>R</sup> 2,638	<sup>R</sup> 20,082	<sup>R</sup> 7.3	<sup>R</sup> 14.6	<sup>R</sup> 49.5	<sup>R</sup> 13.1	<sup>R</sup> 14.7	<sup>R</sup> 29.6
Average .....	<sup>R</sup> 1,741	<sup>R</sup> 3,360	<sup>R</sup> 10,075	<sup>R</sup> 6,343	<sup>R</sup> 3,732	<sup>R</sup> 19,877	<sup>R</sup> 8.8	<sup>R</sup> 16.9	<sup>R</sup> 50.7	<sup>R</sup> 18.8	<sup>R</sup> 17.3	<sup>R</sup> 33.4
2018 January .....	NA	NA	<sup>E</sup> 10,221	<sup>E</sup> 6,240	<sup>E</sup> 3,981	<sup>E</sup> 20,798	NA	NA	<sup>E</sup> 49.1	<sup>E</sup> 19.1	NA	NA
February .....	NA	NA	<sup>E</sup> 9,601	<sup>E</sup> 6,250	<sup>E</sup> 3,351	<sup>E</sup> 20,283	NA	NA	<sup>E</sup> 47.3	<sup>E</sup> 16.5	NA	NA
2-Month Average .....	NA	NA	<sup>E</sup> 9,927	<sup>E</sup> 6,245	<sup>E</sup> 3,682	<sup>E</sup> 20,554	NA	NA	<sup>E</sup> 48.3	<sup>E</sup> 17.9	NA	NA
2017 2-Month Average .....	2,051	3,628	10,379	6,048	4,331	19,204	10.7	18.9	54.0	22.6	19.8	35.0
2016 2-Month Average .....	1,555	3,139	9,881	4,956	4,924	19,442	8.0	16.1	50.8	25.3	15.7	31.8

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

<sup>b</sup> 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](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

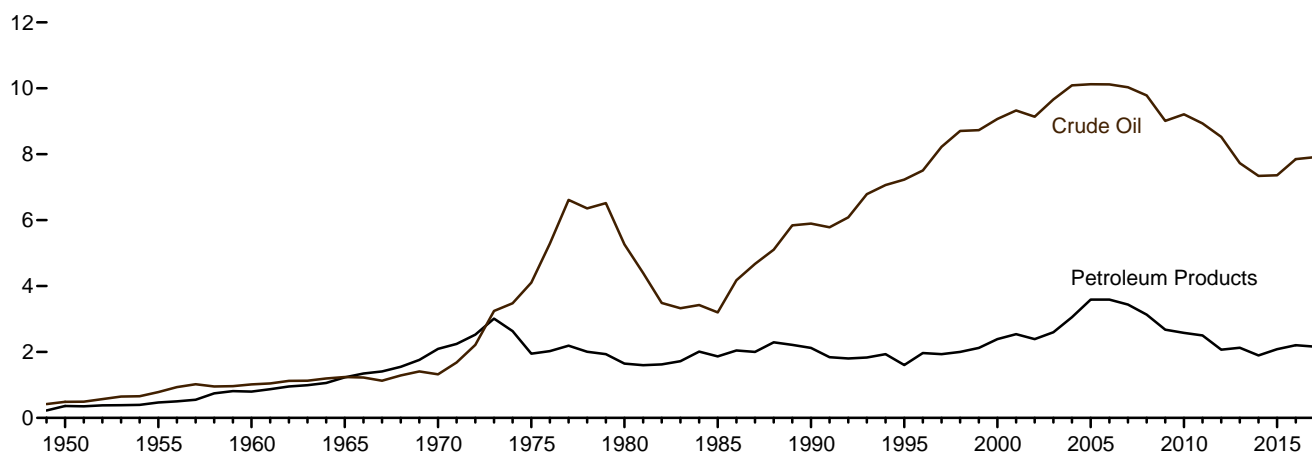
receipts from U.S. territories.

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.

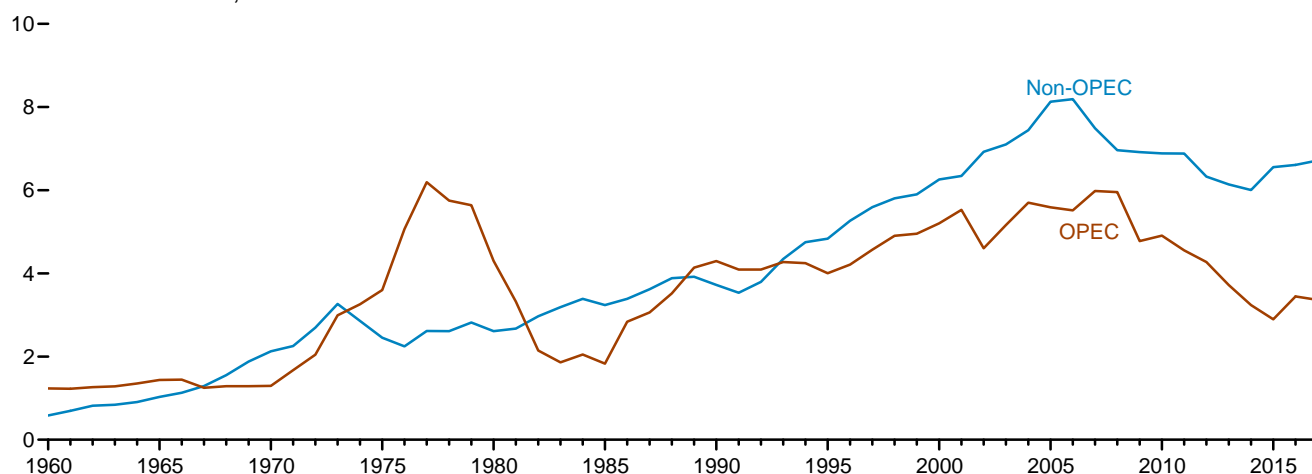
Sources: • **1949–1975:** Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976–1980:** U.S. Energy Information Administration (EIA), *Energy Data Reports, Petroleum Statement, Annual*, annual reports. • **1981–2016:** EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • **2017 and 2018:** 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)

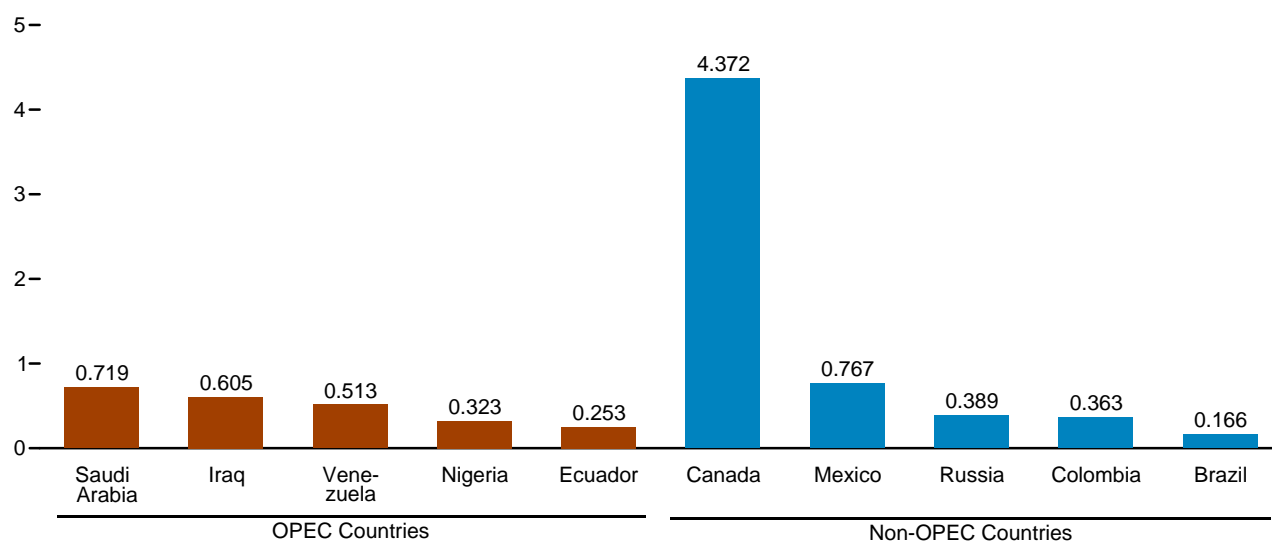
Overview, 1949–2017



OPEC and Non-OPEC, 1960–2017



From Selected Countries, December 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 <sup>a</sup>		Distillate Fuel Oil	HGL <sup>b</sup>		Jet Fuel <sup>f</sup>	Motor Gasoline <sup>g</sup>	Residual Fuel Oil	Other <sup>h</sup>	Total	Crude Oil <sup>a</sup>	Petroleum Products	Total
	SPR <sup>c</sup>	Total		Propane <sup>d</sup>	Total <sup>e</sup>								
1950 Average .....	--	487	7	--	--	( <sup>f</sup> )	(s)	329	27	850	95	210	305
1955 Average .....	--	782	12	--	--	( <sup>f</sup> )	13	417	24	1,248	32	336	368
1960 Average .....	--	1,015	35	NA	4	34	27	637	62	1,815	8	193	202
1965 Average .....	--	1,238	36	NA	21	81	28	946	119	2,468	3	184	187
1970 Average .....	--	1,324	147	26	58	144	67	1,528	150	3,419	14	245	259
1975 Average .....	--	4,105	155	60	185	133	184	1,223	70	6,056	6	204	209
1980 Average .....	44	5,263	142	84	226	80	140	939	120	6,909	287	258	544
1985 Average .....	118	3,201	200	67	235	39	381	510	501	5,067	204	577	781
1990 Average .....	27	5,894	278	115	197	108	342	504	695	8,018	109	748	857
1995 Average .....	--	7,230	193	102	192	106	265	187	662	8,835	95	855	949
2000 Average .....	8	9,071	295	161	256	162	427	352	897	11,459	50	990	1,040
2001 Average .....	11	9,328	344	145	250	148	454	295	1,051	11,871	20	951	971
2002 Average .....	16	9,140	267	145	199	107	498	249	1,069	11,530	9	975	984
2003 Average .....	--	9,665	333	168	271	109	518	327	1,041	12,264	12	1,014	1,027
2004 Average .....	77	10,088	325	209	305	127	496	426	1,377	13,145	27	1,021	1,048
2005 Average .....	52	10,126	329	233	374	190	603	530	1,562	13,714	32	1,133	1,165
2006 Average .....	8	10,118	365	228	360	186	475	350	1,854	13,707	25	1,292	1,317
2007 Average .....	7	10,031	304	182	276	217	413	372	1,856	13,468	27	1,405	1,433
2008 Average .....	19	9,783	213	185	275	103	302	349	1,891	12,915	29	1,773	1,802
2009 Average .....	56	9,013	225	147	194	81	223	331	1,623	11,691	44	1,980	2,024
2010 Average .....	--	9,213	228	121	179	98	134	366	1,574	11,793	42	2,311	2,353
2011 Average .....	--	8,935	179	110	183	69	105	328	1,637	11,436	47	2,939	2,986
2012 Average .....	--	8,527	126	116	170	55	44	256	1,421	10,598	67	3,137	3,205
2013 Average .....	--	7,730	155	127	182	84	45	225	1,438	9,859	134	3,487	3,621
2014 Average .....	--	7,344	195	108	143	94	49	173	1,242	9,241	351	3,824	4,176
2015 Average .....	--	7,363	200	124	156	132	71	192	1,335	9,449	465	4,273	4,738
2016 January .....	--	7,615	172	164	219	154	60	272	1,215	9,707	490	4,487	4,977
February .....	--	7,914	231	212	244	117	65	173	1,323	10,066	454	4,480	4,934
March .....	--	8,012	150	139	163	155	66	266	1,188	10,001	596	4,496	5,092
April .....	--	7,611	177	116	142	122	78	176	1,516	9,822	624	4,571	5,195
May .....	--	7,927	123	113	149	182	44	145	1,610	10,181	788	4,952	5,739
June .....	--	7,560	88	105	177	132	76	242	1,779	10,054	530	4,906	5,437
July .....	--	8,096	123	116	162	174	82	225	1,671	10,532	536	4,690	5,226
August .....	--	8,016	164	122	174	147	34	230	1,558	10,322	720	4,376	5,097
September .....	--	8,040	150	126	151	139	71	153	1,495	10,199	775	4,665	5,439
October .....	--	7,570	75	142	168	154	44	150	1,538	9,699	502	4,483	4,985
November .....	--	8,023	145	169	198	153	63	241	1,470	10,293	606	4,820	5,426
December .....	--	7,817	167	186	219	129	29	178	1,253	9,792	468	5,105	5,574
Average .....	--	7,850	147	142	180	147	59	205	1,468	10,055	591	4,670	5,261
2017 January .....	--	8,435	204	242	283	140	33	176	1,413	10,685	746	4,945	5,691
February .....	--	7,890	199	214	253	147	36	225	1,289	10,039	1,116	5,327	6,443
March .....	--	8,048	108	166	195	123	51	221	1,312	10,059	834	5,052	5,886
April .....	--	8,131	116	112	152	183	42	146	1,475	10,244	1,001	5,065	6,066
May .....	--	8,397	124	120	166	126	37	241	1,537	10,628	1,023	5,119	6,142
June .....	--	8,010	102	116	152	119	23	172	1,661	10,240	786	5,362	6,148
July .....	--	7,825	111	110	147	140	23	174	1,429	9,850	893	5,339	6,232
August .....	--	7,890	112	108	146	174	24	150	1,558	10,055	772	4,876	5,647
September .....	--	7,275	112	131	165	206	41	204	1,702	9,707	1,473	4,791	6,263
October .....	--	7,611	134	130	176	230	33	151	1,326	9,661	1,731	5,432	7,163
November .....	--	7,623	180	173	214	194	10	209	1,352	9,783	1,534	5,624	7,158
December .....	--	7,782	282	189	230	151	32	187	1,269	9,934	1,515	5,781	7,296
Average .....	--	7,912	149	151	190	161	32	188	1,444	10,075	1,118	5,225	6,343
2018 January .....	--	8,030	305	212	NA	126	9	176	NA	10,221	1,379	4,861	6,240
February .....	--	7,545	239	192	NA	123	33	209	NA	9,601	1,570	4,680	6,250
2-Month Average .....	--	7,800	274	203	NA	125	20	192	NA	9,927	1,470	4,775	6,245
2017 2-Month Average .....	--	8,176	202	229	269	144	35	199	1,354	10,379	922	5,126	6,048
2016 2-Month Average .....	--	7,759	200	187	231	136	63	224	1,267	9,881	472	4,484	4,956

<sup>a</sup> Includes lease condensate.

<sup>b</sup> Hydrocarbon gas liquids.

<sup>c</sup> "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.

<sup>d</sup> Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

<sup>e</sup> Ethane, propane, normal butane, isobutane, natural gasoline (pentanes plus), and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unfractionated stream.

<sup>f</sup> 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.")

<sup>g</sup> 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.

<sup>h</sup> Asphalt and road oil, aviation gasoline blending components, kerosene, lubricants, 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. • 1981–2016: EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • 2017 and 2018: 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 <sup>a</sup>	Angola <sup>b</sup>	Ecuador <sup>c</sup>	Iraq	Kuwait <sup>d</sup>	Libya <sup>e</sup>	Nigeria <sup>f</sup>	Saudi Arabia <sup>d</sup>	Venezuela	Other <sup>g</sup>	Total OPEC
1960 Average .....	( <sup>a</sup> )	( <sup>b</sup> )	( <sup>c</sup> )	22	182	( <sup>e</sup> )	( <sup>f</sup> )	84	911	34	1,233
1965 Average .....	( <sup>a</sup> )	( <sup>b</sup> )	( <sup>c</sup> )	16	74	42	( <sup>f</sup> )	158	994	155	1,439
1970 Average .....	8	( <sup>b</sup> )	( <sup>c</sup> )	—	48	47	( <sup>f</sup> )	30	989	172	1,294
1975 Average .....	282	( <sup>b</sup> )	57	2	16	232	762	715	702	832	3,601
1980 Average .....	488	( <sup>b</sup> )	27	28	27	554	857	1,261	481	577	4,300
1985 Average .....	187	( <sup>b</sup> )	67	46	21	4	293	168	605	439	1,830
1990 Average .....	280	( <sup>b</sup> )	49	518	86	—	800	1,339	1,025	199	4,296
1995 Average .....	234	( <sup>b</sup> )	( <sup>c</sup> )	—	218	—	627	1,344	1,480	98	4,002
2000 Average .....	225	( <sup>b</sup> )	( <sup>c</sup> )	620	272	0	896	1,572	1,546	72	5,203
2001 Average .....	278	( <sup>b</sup> )	( <sup>c</sup> )	795	250	0	885	1,662	1,553	105	5,528
2002 Average .....	264	( <sup>b</sup> )	( <sup>c</sup> )	459	228	—	621	1,552	1,398	83	4,605
2003 Average .....	382	( <sup>b</sup> )	( <sup>c</sup> )	481	220	—	867	1,774	1,376	61	5,162
2004 Average .....	452	( <sup>b</sup> )	( <sup>c</sup> )	656	250	20	1,140	1,558	1,554	70	5,701
2005 Average .....	478	( <sup>b</sup> )	( <sup>c</sup> )	531	243	56	1,166	1,537	1,529	47	5,587
2006 Average .....	657	( <sup>b</sup> )	( <sup>c</sup> )	553	185	87	1,114	1,463	1,419	38	5,517
2007 Average .....	670	508	( <sup>c</sup> )	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
<b>2015</b> 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
<b>Average</b> .....	<b>108</b>	<b>136</b>	<b>231</b>	<b>229</b>	<b>204</b>	<b>7</b>	<b>81</b>	<b>1,059</b>	<b>827</b>	<b>12</b>	<b>2,894</b>
<b>2016</b> January .....	126	166	334	252	205	10	132	1,054	702	74	3,054
February .....	174	133	246	245	289	5	274	1,029	773	63	3,230
March .....	147	172	264	365	123	—	290	1,309	846	59	3,576
April .....	137	242	182	349	199	10	243	1,154	788	48	3,354
May .....	102	161	230	571	177	75	297	1,171	787	93	3,665
June .....	183	128	223	434	135	—	252	1,104	748	97	3,303
July .....	191	299	234	390	323	5	265	1,053	933	75	3,769
August .....	169	159	253	488	156	22	181	1,147	773	78	3,427
September .....	155	157	213	448	275	4	168	1,211	825	119	3,575
October .....	296	122	203	508	154	—	232	1,025	741	49	3,330
November .....	300	174	250	434	228	27	247	1,003	849	49	3,560
December .....	202	102	236	590	254	32	246	1,014	789	25	3,491
<b>Average</b> .....	<b>182</b>	<b>168</b>	<b>239</b>	<b>424</b>	<b>210</b>	<b>16</b>	<b>235</b>	<b>1,106</b>	<b>796</b>	<b>69</b>	<b>3,446</b>
<b>2017</b> 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
May .....	196	105	230	619	174	87	294	1,109	767	64	3,644
June .....	254	178	212	587	162	38	320	1,015	663	108	3,537
July .....	215	189	166	756	206	108	241	795	686	37	3,399
August .....	229	296	193	473	87	35	397	741	606	125	3,181
September .....	145	171	223	502	127	59	292	676	620	65	2,880
October .....	144	124	163	708	119	176	441	572	562	127	3,135
November .....	120	77	193	611	117	72	470	780	555	47	3,042
December .....	149	172	253	605	78	73	323	719	513	55	2,939
<b>Average</b> .....	<b>189</b>	<b>135</b>	<b>207</b>	<b>606</b>	<b>145</b>	<b>65</b>	<b>334</b>	<b>949</b>	<b>674</b>	<b>58</b>	<b>3,360</b>

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

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

<sup>c</sup> 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.

<sup>d</sup> 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.

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

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

<sup>g</sup> Includes these countries for the dates indicated: Equatorial Guinea (May 2017 forward), Gabon (1975–1994 and July 2016 forward), Indonesia (1962–2008 and January–November 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. • **1981–2016:** EIA, *Petroleum Supply Annual*, annual reports. • **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 <sup>a</sup>	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
<b>2015</b> 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
<b>Average</b> .....	<b>215</b>	<b>3,765</b>	<b>395</b>	<b>758</b>	<b>57</b>	<b>61</b>	<b>371</b>	<b>123</b>	<b>—</b>	<b>811</b>	<b>6,554</b>
<b>2016</b> January .....	168	4,084	499	710	57	58	395	115	—	566	6,653
February .....	148	4,211	507	539	73	61	436	71	—	790	6,836
March .....	112	3,870	569	657	30	143	329	141	—	574	6,425
April .....	160	3,549	386	788	54	89	509	149	—	784	6,468
May .....	110	3,548	570	676	63	44	435	106	—	964	6,516
June .....	200	3,437	583	739	59	113	485	168	1	966	6,751
July .....	158	3,451	536	733	43	109	539	92	—	1,102	6,763
August .....	274	3,809	534	672	31	49	499	141	—	886	6,895
September .....	154	3,784	500	595	67	124	421	132	—	850	6,624
October .....	199	3,587	346	614	107	75	491	89	—	861	6,369
November .....	189	4,032	368	697	74	38	419	137	—	779	6,732
December .....	126	4,017	397	606	60	11	334	121	—	631	6,302
<b>Average</b> .....	<b>167</b>	<b>3,780</b>	<b>483</b>	<b>669</b>	<b>60</b>	<b>76</b>	<b>441</b>	<b>122</b>	<b>(s)</b>	<b>812</b>	<b>6,610</b>
<b>2017</b> January .....	206	4,282	345	730	75	134	348	141	—	631	6,892
February .....	240	4,182	401	607	81	34	319	96	—	633	6,594
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
May .....	132	4,123	424	810	49	73	401	167	—	806	6,984
June .....	202	3,804	334	784	72	122	503	126	—	756	6,703
July .....	376	3,768	357	668	45	64	358	113	—	703	6,451
August .....	258	3,960	388	573	74	186	443	67	—	925	6,874
September .....	250	3,932	374	430	93	118	450	149	—	1,031	6,827
October .....	231	3,916	277	654	51	71	355	83	—	889	6,526
November .....	228	3,986	337	841	43	38	357	61	—	850	6,741
December .....	166	4,372	363	767	59	7	389	88	—	784	6,994
<b>Average</b> .....	<b>224</b>	<b>4,023</b>	<b>362</b>	<b>682</b>	<b>62</b>	<b>79</b>	<b>384</b>	<b>111</b>	<b>—</b>	<b>787</b>	<b>6,715</b>

<sup>a</sup> 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

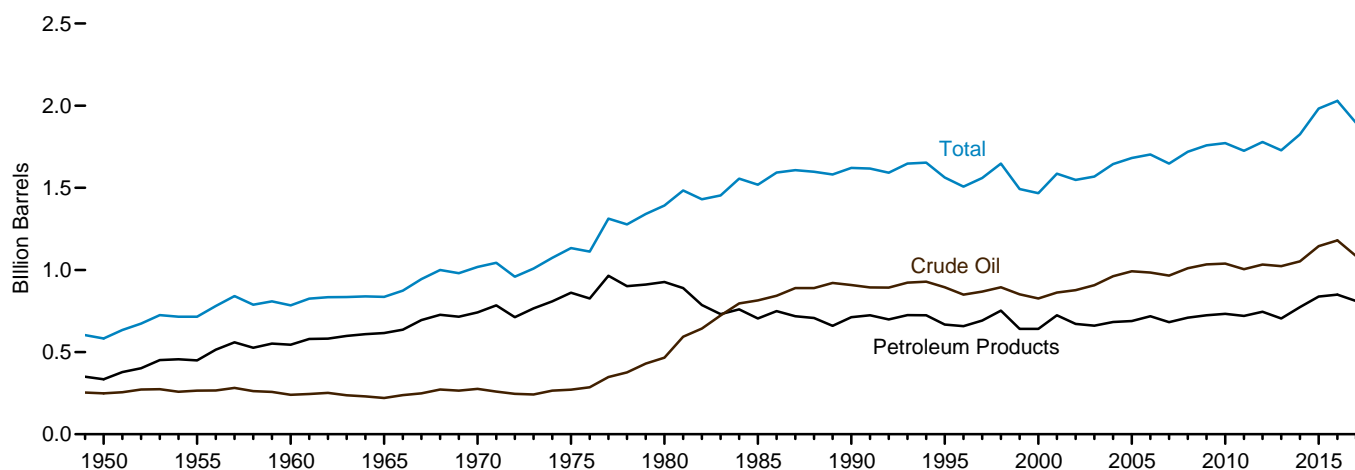
states and the District of Columbia.

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.

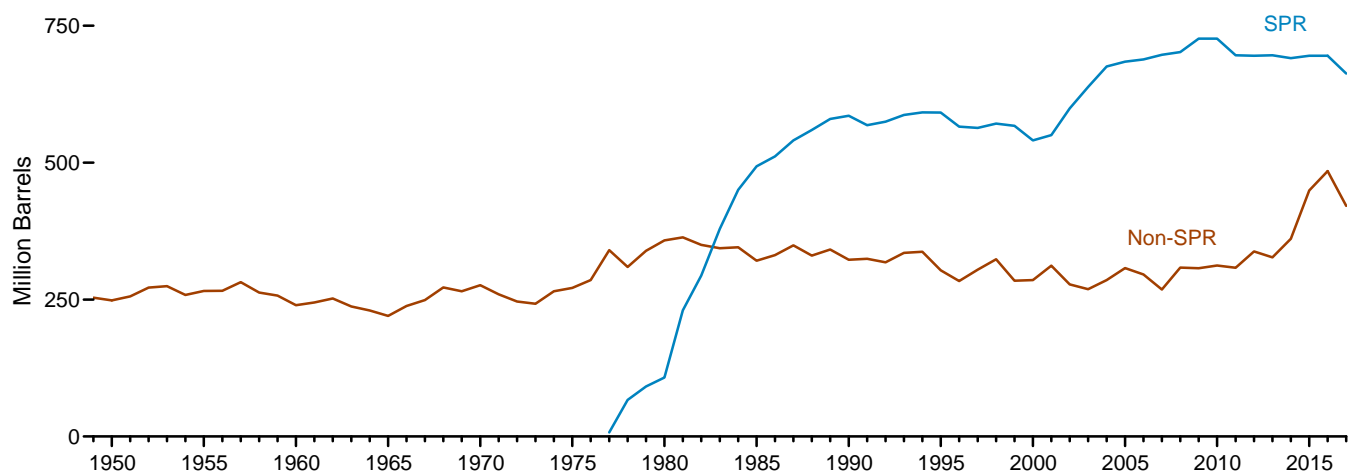
Sources: • **1960–1972:** Bureau of Mines, *Minerals Yearbook*, annual reports. • **1973–1975:** Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976–1980:** U.S. Energy Information Administration (EIA), *Energy Data Reports, Petroleum Statement, Annual*,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

**Figure 3.4 Petroleum Stocks**

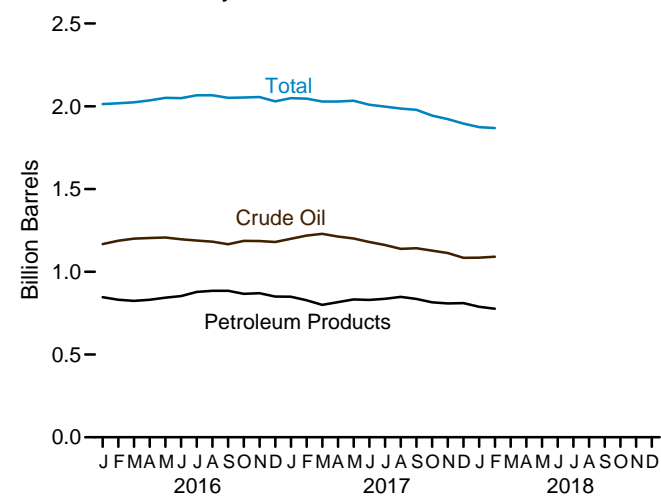
Overview, 1949–2017



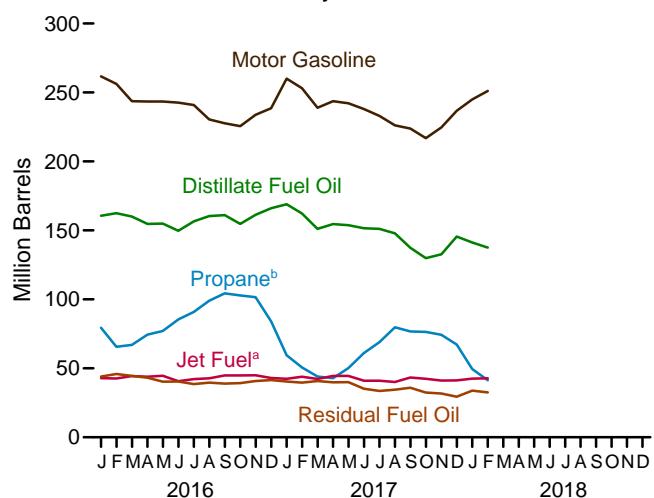
SPR and Non-SPR Crude Oil Stocks, 1949–2017



Overview, Monthly



Selected Products, Monthly



<sup>a</sup> Includes kerosene-type jet fuel only.

<sup>b</sup> 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 <sup>a</sup>			Distillate Fuel Oil <sup>f</sup>	HGL <sup>b</sup>		Jet Fuel <sup>i</sup>	Motor Gasoline <sup>j</sup>	Residual Fuel Oil	Other <sup>k</sup>	Total
	SPR <sup>c</sup>	Non-SPR <sup>d,e</sup>	Total <sup>e</sup>		Propane <sup>g</sup>	Total <sup>h</sup>					
1950 Year .....	--	248	248	72	NA	2	( <sup>i</sup> )	116	41	104	583
1955 Year .....	--	266	266	111	NA	7	3	165	39	123	715
1960 Year .....	--	240	240	138	NA	23	7	195	45	137	785
1965 Year .....	--	220	220	155	NA	35	19	175	56	176	836
1970 Year .....	--	276	276	195	44	74	28	209	54	181	1,018
1975 Year .....	--	271	271	209	82	133	30	235	74	181	1,133
1980 Year .....	108	358	466	205	71	137	42	261	92	189	1,392
1985 Year .....	493	321	814	144	39	82	40	223	50	165	1,519
1990 Year .....	586	323	908	132	49	104	52	220	49	156	1,621
1995 Year .....	592	303	895	130	43	100	40	202	37	158	1,563
2000 Year .....	541	286	826	118	41	88	45	196	36	159	1,468
2001 Year .....	550	312	862	145	66	128	42	210	41	158	1,586
2002 Year .....	599	278	877	134	53	113	39	209	31	144	1,548
2003 Year .....	638	269	907	137	50	101	39	207	38	140	1,568
2004 Year .....	676	286	961	126	55	111	40	218	42	146	1,645
2005 Year .....	685	308	992	136	57	117	42	208	37	148	1,682
2006 Year .....	689	296	984	144	62	125	39	212	42	157	1,703
2007 Year .....	697	268	965	134	52	106	39	218	39	146	1,648
2008 Year .....	702	308	1,010	146	55	127	38	214	36	149	1,719
2009 Year .....	727	307	1,034	166	50	113	43	223	37	142	1,758
2010 Year .....	727	312	1,039	164	49	120	43	219	41	145	1,772
2011 Year .....	696	308	1,004	149	55	127	41	223	34	146	1,725
2012 Year .....	695	338	1,033	135	68	152	40	231	34	154	1,779
2013 Year .....	696	327	1,023	128	45	125	37	228	38	149	1,728
2014 Year .....	691	361	1,052	136	78	174	38	240	34	151	1,825
2015 Year .....	695	449	1,144	161	96	194	40	235	42	164	1,982
2016 January .....	695	472	1,167	161	79	164	43	262	44	173	2,014
February .....	695	492	1,187	162	66	147	43	256	46	176	2,018
March .....	695	505	1,200	160	67	152	44	244	45	179	2,024
April .....	695	509	1,204	155	74	168	44	243	43	178	2,035
May .....	695	512	1,207	155	77	185	45	243	40	175	2,051
June .....	695	501	1,196	150	85	210	41	243	40	170	2,049
July .....	695	493	1,189	157	91	229	42	241	39	171	2,066
August .....	695	487	1,182	160	99	247	43	230	40	164	2,066
September .....	695	472	1,167	161	104	251	45	228	39	161	2,051
October .....	695	491	1,186	155	103	243	45	226	39	159	2,053
November .....	695	491	1,186	161	102	233	45	234	41	157	2,056
December .....	695	485	1,180	166	84	200	43	239	41	161	2,030
2017 January .....	695	504	1,200	169	59	165	42	260	40	172	2,049
February .....	695	524	1,218	162	51	154	44	253	40	175	2,046
March .....	692	538	1,229	151	44	148	42	239	41	179	2,029
April .....	689	524	1,213	155	43	154	45	244	40	180	2,029
May .....	684	517	1,201	154	50	171	44	242	40	181	2,034
June .....	679	500	1,180	152	61	191	41	238	35	173	2,009
July .....	679	482	1,161	151	69	207	41	233	34	171	1,998
August .....	679	459	1,138	148	80	231	40	226	35	169	1,986
September .....	674	469	1,143	137	77	230	43	224	36	165	1,978
October .....	669	459	1,128	130	76	232	42	217	32	162	1,943
November .....	661	452	1,114	133	74	217	41	225	32	161	1,923
December .....	R 663	R 421	R 1,084	R 146	R 67	R 191	41	R 237	R 29	R 167	R 1,895
2018 January .....	E 665	E 420	E 1,085	E 141	E 50	RF 158	E 42	E 245	E 34	RE 169	E 1,874
February .....	E 665	E 426	E 1,091	E 138	E 41	F 142	E 43	E 251	E 33	E 171	E 1,868

<sup>a</sup> Includes lease condensate.

<sup>b</sup> Hydrocarbon gas liquids.

<sup>c</sup> "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.

<sup>d</sup> All crude oil stocks other than those in "SPR."

<sup>e</sup> Beginning in 1981, includes stocks of Alaskan crude oil in transit.

<sup>f</sup> Excludes stocks in the Northeast Home Heating Oil Reserve. Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

<sup>g</sup> Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

<sup>h</sup> Ethane, propane, normal butane, isobutane, natural gasoline (pentanes plus), and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unfractionated stream.

<sup>i</sup> 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.")

<sup>j</sup> Includes finished motor gasoline and motor gasoline blending components; excludes oxygenates. Through 1963, also includes aviation gasoline and special

naphthas.

<sup>k</sup> Asphalt and road oil, aviation gasoline blending components, kerosene, lubricants, 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.

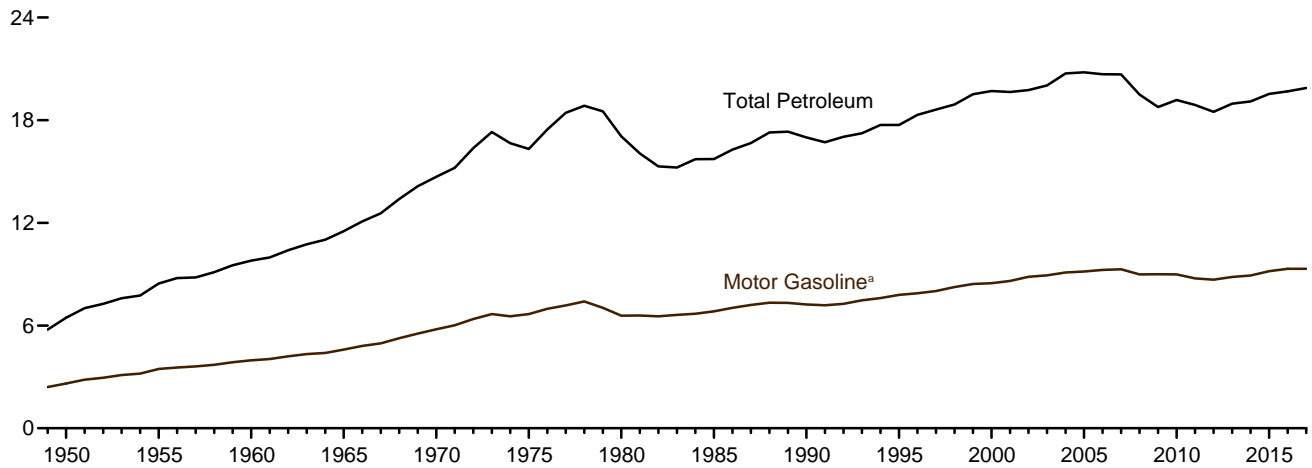
Notes: • Stocks are at end of period. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

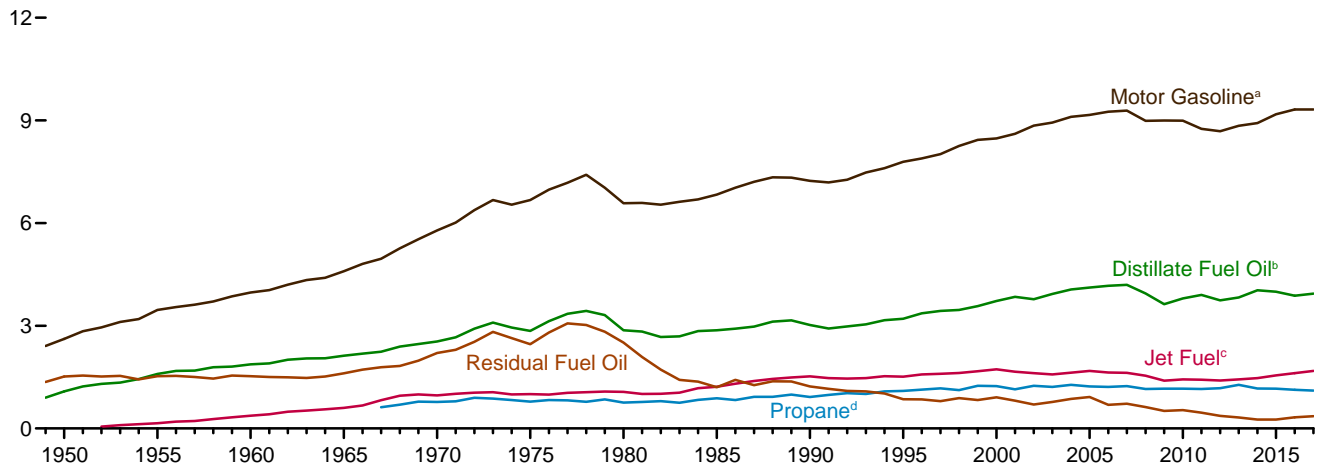
Sources: • 1949–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976–1980: U.S. Energy Information Administration (EIA), *Energy Data Reports, Petroleum Statement, Annual*, annual reports. • 1981–2016: EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • 2017 and 2018: 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)

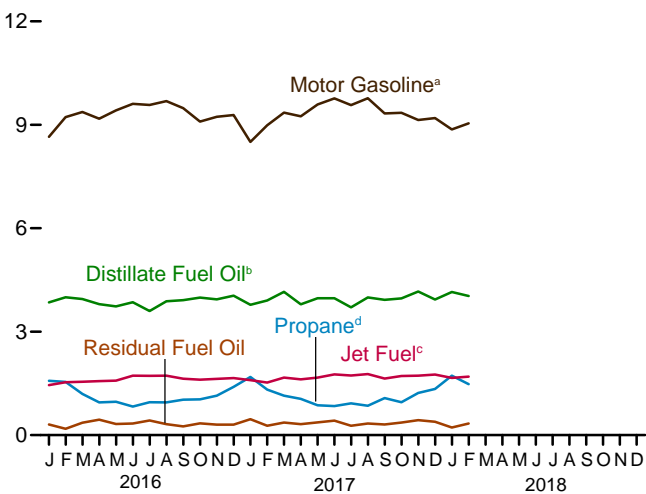
Total Petroleum and Motor Gasoline, 1949–2017



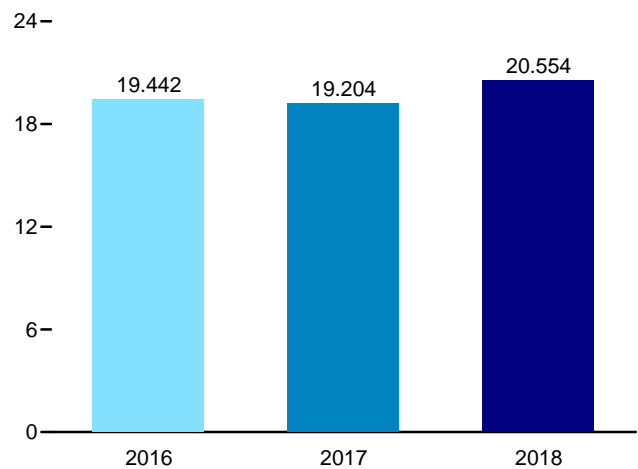
Selected Products, 1949–2017



Selected Products, Monthly



Total, January–February



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

<sup>d</sup> 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 <sup>b</sup>	HGL <sup>a</sup>		Jet Fuel <sup>e</sup>	Kero- sene	Lubri- cants	Motor Gasoline <sup>f</sup>	Petro- leum Coke	Residual Fuel Oil	Other <sup>g</sup>	Total
				Propane <sup>c</sup>	Total <sup>d</sup>								
1950 Average .....	180	108	1,082	NA	234	( <sup>e</sup> )	323	106	2,616	41	1,517	250	6,458
1955 Average .....	254	192	1,592	NA	404	154	320	116	3,463	67	1,526	366	8,455
1960 Average .....	302	161	1,872	NA	621	371	271	117	3,969	149	1,529	435	9,797
1965 Average .....	368	120	2,126	NA	841	602	267	129	4,593	202	1,608	657	11,512
1970 Average .....	447	55	2,540	782	1,224	967	263	136	5,785	212	2,204	866	14,697
1975 Average .....	419	39	2,851	790	1,352	1,001	159	137	6,675	247	2,462	982	16,322
1980 Average .....	396	35	2,866	813	1,590	1,068	158	159	6,579	237	2,508	1,460	17,056
1985 Average .....	425	27	2,868	883	1,721	1,218	114	145	6,831	264	1,202	909	15,726
1990 Average .....	483	24	3,021	917	1,705	1,522	43	164	7,235	339	1,229	1,225	16,988
1995 Average .....	486	21	3,207	1,096	2,100	1,514	54	156	7,789	365	852	1,180	17,725
2000 Average .....	525	20	3,722	1,235	2,434	1,725	67	166	8,472	406	909	1,255	19,701
2001 Average .....	519	19	3,847	1,142	2,200	1,655	72	153	8,610	437	811	1,325	19,649
2002 Average .....	512	18	3,776	1,248	2,295	1,614	43	151	8,848	463	700	1,342	19,761
2003 Average .....	503	16	3,927	1,215	2,205	1,578	55	140	8,935	455	772	1,448	20,034
2004 Average .....	537	17	4,058	1,276	2,264	1,630	64	141	9,105	524	865	1,525	20,731
2005 Average .....	546	19	4,118	1,229	2,146	1,679	70	141	9,159	515	920	1,489	20,802
2006 Average .....	521	18	4,169	1,215	2,135	1,633	54	137	9,253	522	689	1,557	20,687
2007 Average .....	494	17	4,196	1,235	2,191	1,622	32	142	9,286	490	723	1,487	20,680
2008 Average .....	417	15	3,945	1,154	2,044	1,539	14	131	8,989	464	622	1,317	19,498
2009 Average .....	360	14	3,631	1,160	2,127	1,393	18	118	8,997	427	511	1,175	18,771
2010 Average .....	362	15	3,800	1,160	2,265	1,432	20	131	8,993	376	535	1,251	19,180
2011 Average .....	355	15	3,899	1,153	2,241	1,425	12	125	8,753	361	461	1,240	18,887
2012 Average .....	340	14	3,741	1,175	2,297	1,398	5	114	8,682	360	369	1,165	18,487
2013 Average .....	323	12	3,827	1,275	2,501	1,434	5	121	8,843	354	319	1,227	18,967
2014 Average .....	327	12	4,037	1,167	2,442	1,470	9	126	8,921	347	257	1,151	19,100
2015 Average .....	343	11	3,995	1,162	2,552	1,548	6	138	9,178	349	259	1,153	19,534
2016 January .....	195	7	3,850	1,574	2,958	1,449	2	136	8,653	380	306	1,126	19,063
February .....	230	11	3,996	1,543	2,798	1,534	2	148	9,221	361	183	1,362	19,847
March .....	254	10	3,947	1,193	2,613	1,547	10	143	9,373	364	361	1,107	19,728
April .....	301	14	3,799	951	2,403	1,566	3	131	9,176	293	449	1,205	19,340
May .....	394	11	3,732	966	2,383	1,578	8	132	9,417	276	323	1,075	19,328
June .....	482	12	3,853	830	2,269	1,723	10	146	9,608	246	338	1,159	19,846
July .....	472	12	3,597	952	2,421	1,720	11	115	9,578	322	424	1,103	19,776
August .....	524	14	3,880	950	2,308	1,722	1	124	9,687	437	318	1,261	20,275
September .....	439	11	3,912	1,030	2,429	1,635	14	125	9,484	285	253	1,171	19,757
October .....	417	10	3,986	1,038	2,557	1,610	19	131	9,093	311	340	1,175	19,650
November .....	310	12	3,938	1,142	2,520	1,632	2	121	9,233	485	305	1,101	19,659
December .....	195	10	4,043	1,397	2,775	1,653	21	115	9,283	381	306	1,201	19,984
Average .....	351	11	3,877	1,130	2,536	1,614	9	130	9,317	345	326	1,170	19,687
2017 January .....	192	9	3,781	1,687	3,049	1,593	14	105	8,501	412	460	1,127	19,244
February .....	241	9	3,905	1,321	2,684	1,525	6	123	8,986	262	270	1,148	19,159
March .....	265	10	4,154	1,143	2,634	1,669	2	133	9,352	175	362	1,292	20,047
April .....	318	10	3,791	1,051	2,510	1,617	7	105	9,248	322	320	1,309	19,556
May .....	365	11	3,969	863	2,415	1,671	3	108	9,590	339	368	1,201	20,039
June .....	477	17	3,969	842	2,439	1,762	2	108	9,766	270	418	1,266	20,494
July .....	441	13	3,707	921	2,512	1,728	1	98	9,573	461	272	1,215	20,020
August .....	542	14	3,992	851	2,145	1,769	1	91	9,770	307	335	1,196	20,161
September .....	447	10	3,922	1,076	2,346	1,639	14	108	9,329	351	307	1,108	19,581
October .....	413	9	3,966	952	2,551	1,713	1	124	9,347	180	363	1,139	19,806
November .....	307	11	4,165	1,222	2,833	1,723	3	113	9,141	396	433	1,154	20,278
December .....	R 218	R 12	R 3,934	R 1,338	R 3,045	R 1,755	R 1	R 92	R 9,196	R 371	R 389	R 1,069	R 20,082
Average .....	R 353	R 11	R 3,938	R 1,105	R 2,597	R 1,682	R 4	R 109	R 9,319	R 321	R 359	R 1,185	R 19,877
2018 January .....	F 235	F 8	E 4,151	E 1,726	RF 3,330	E 1,660	RF 5	RF 137	E 8,864	F 381	E 221	RE 1,806	E 20,798
February .....	F 245	F 8	E 4,033	E 1,480	F 3,009	E 1,694	F 3	F 136	E 9,043	F 317	E 336	E 1,459	E 20,283
2-Month Average .....	F 240	F 8	E 4,095	E 1,609	F 3,178	E 1,676	F 4	F 136	E 8,949	F 351	E 276	E 1,641	E 20,554
2017 2-Month Average .....	215	9	3,840	1,514	2,876	1,561	10	114	8,731	341	370	1,137	19,204
2016 2-Month Average .....	212	9	3,921	1,559	2,881	1,490	2	141	8,928	371	247	1,240	19,442

<sup>a</sup> Hydrocarbon gas liquids.  
<sup>b</sup> Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

<sup>c</sup> Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

<sup>d</sup> Ethane, propane, normal butane, isobutane, natural gasoline (pentanes plus), and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unfractionated stream.

<sup>e</sup> 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.")

<sup>f</sup> Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

<sup>g</sup> 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.

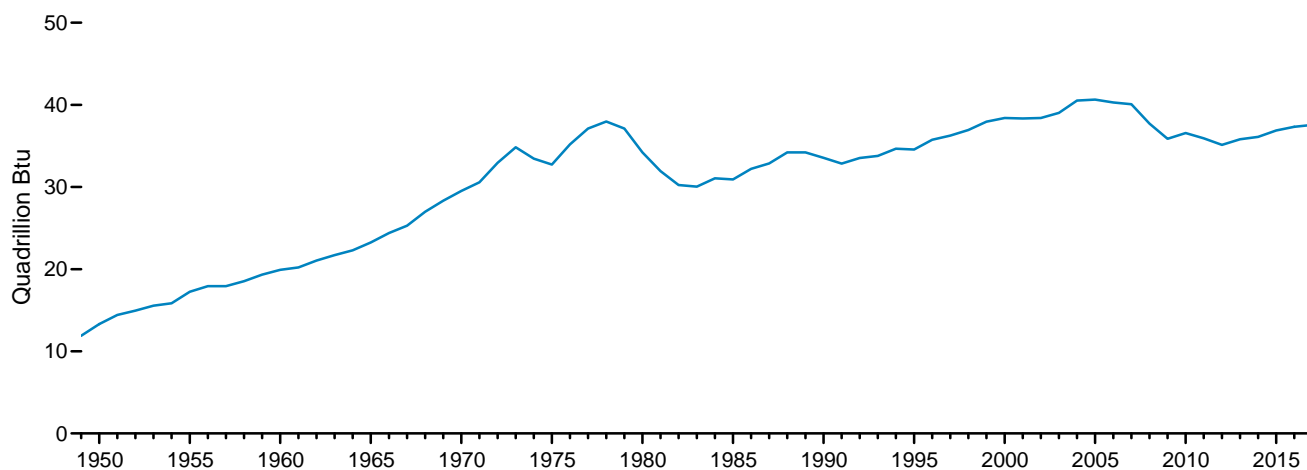
Notes: • Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent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

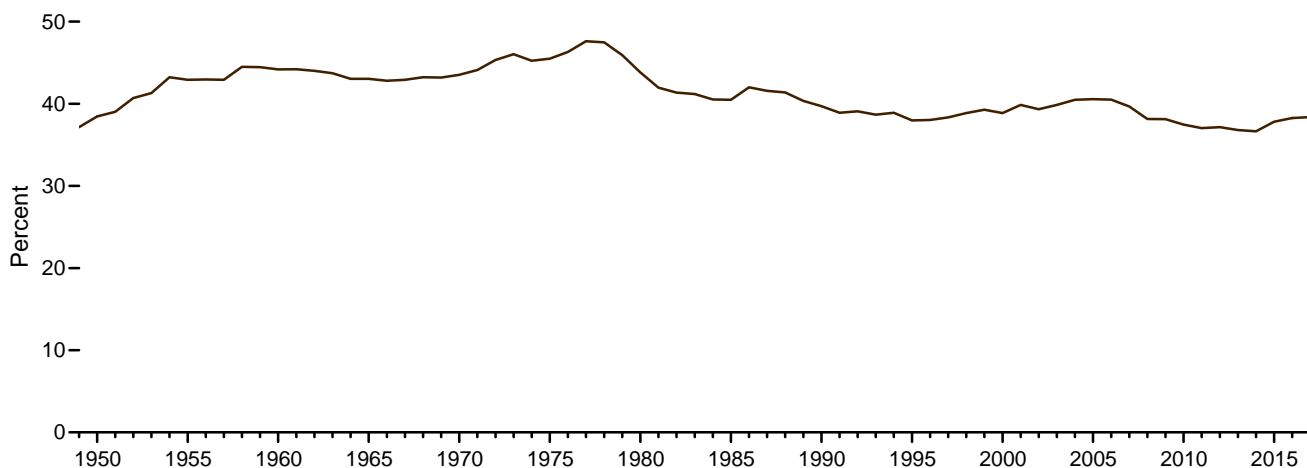
Sources: • 1949–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976–1980: U.S. Energy Information Administration (EIA), *Energy Data Reports, Petroleum Statement, Annual*, annual reports. • 1981–2016: EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • 2017 and 2018: 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**

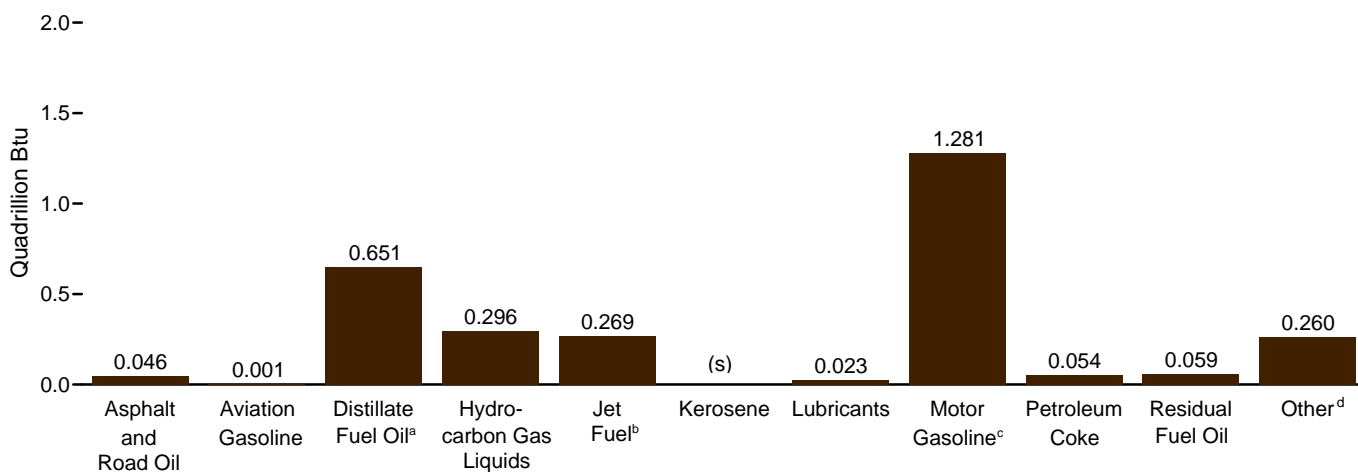
Total, 1949–2017



Petroleum Products Supplied as Share of Total Energy Consumption, 1949–2017



By Product, February 2018



<sup>a</sup> Includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

<sup>b</sup> Includes kerosene-type jet fuel only.

<sup>c</sup> Includes fuel ethanol blended into motor gasoline.

<sup>d</sup> All petroleum products not separately displayed.

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

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 <sup>b</sup>	HGL <sup>a</sup>		Jet Fuel <sup>e</sup>	Kero- sene	Lubri- cants	Motor Gasoline <sup>f</sup>	Petro- leum Coke	Residual Fuel Oil	Other <sup>g</sup>	Total
				Propane <sup>c</sup>	Total <sup>d</sup>								
1950 Total .....	435	199	2,300	NA	343	( <sup>e</sup> )	668	236	5,015	90	3,482	546	13,315
1955 Total .....	615	354	3,385	NA	592	301	662	258	6,640	147	3,502	798	17,255
1960 Total .....	734	298	3,992	NA	912	739	563	259	7,631	328	3,517	947	19,919
1965 Total .....	890	222	4,519	NA	1,232	1,215	553	286	8,806	444	3,691	1,390	23,246
1970 Total .....	1,082	100	5,401	1,095	1,689	1,973	544	301	11,091	465	5,057	1,817	29,521
1975 Total .....	1,014	71	6,061	1,107	1,845	2,047	329	304	12,798	542	5,649	2,071	32,732
1980 Total .....	962	64	6,110	1,142	2,180	2,190	329	354	12,648	522	5,772	3,073	34,205
1985 Total .....	1,029	50	6,098	1,236	2,309	2,497	236	322	13,098	582	2,759	1,945	30,925
1990 Total .....	1,170	45	6,422	1,284	2,309	3,129	88	362	13,872	745	2,820	2,589	33,552
1995 Total .....	1,178	40	6,812	1,534	2,849	3,132	112	346	14,834	802	1,955	2,499	34,558
2000 Total .....	1,276	36	7,927	1,734	3,288	3,580	140	369	16,167	895	2,091	2,636	38,406
2001 Total .....	1,257	35	8,170	1,598	2,960	3,426	150	338	16,386	961	1,861	2,793	38,337
2002 Total .....	1,240	34	8,020	1,747	3,076	3,340	90	334	16,829	1,018	1,605	2,816	38,401
2003 Total .....	1,220	30	8,341	1,701	2,968	3,265	113	309	16,968	1,000	1,772	3,043	39,030
2004 Total .....	1,304	31	8,642	1,791	3,047	3,383	133	313	17,333	1,148	1,990	3,205	40,528
2005 Total .....	1,323	35	8,745	1,721	2,878	3,475	144	312	17,378	1,125	2,111	3,122	40,647
2006 Total .....	1,261	33	8,831	1,701	2,841	3,379	111	303	17,531	1,141	1,581	3,276	40,289
2007 Total .....	1,197	32	8,858	1,729	2,912	3,358	67	313	17,472	1,072	1,659	3,134	40,073
2008 Total .....	1,012	28	8,346	1,620	2,727	3,193	30	291	16,865	1,017	1,432	2,788	37,728
2009 Total .....	873	27	7,661	1,624	2,791	2,883	36	262	16,750	937	1,173	2,483	35,877
2010 Total .....	878	27	8,014	1,624	2,976	2,963	41	291	16,668	831	1,228	2,645	36,561
2011 Total .....	859	27	8,217	1,614	2,898	2,950	25	276	16,191	801	1,058	2,621	35,925
2012 Total .....	827	25	7,903	1,649	2,992	2,901	11	254	16,089	802	849	2,474	35,126
2013 Total .....	783	22	8,059	1,785	3,267	2,969	11	268	16,339	786	731	2,583	35,818
2014 Total .....	793	22	8,499	1,634	3,172	3,042	19	280	16,476	772	590	2,430	36,094
2015 Total .....	832	21	8,411	1,627	3,331	3,204	13	305	16,952	776	595	2,435	36,873
2016 January .....	40	1	688	187	329	255	(s)	26	1,357	72	60	208	3,036
February .....	44	2	668	172	288	252	(s)	26	1,353	64	33	235	2,966
March .....	52	2	706	142	286	272	2	27	1,470	69	70	205	3,160
April .....	60	2	657	109	254	266	1	24	1,393	54	85	215	3,011
May .....	81	2	667	115	260	277	1	25	1,477	52	63	199	3,104
June .....	96	2	666	96	241	293	2	27	1,458	45	64	208	3,101
July .....	97	2	643	113	264	302	2	22	1,502	61	83	205	3,182
August .....	108	2	694	113	251	303	(s)	23	1,519	83	62	233	3,278
September .....	87	2	677	118	260	278	2	23	1,439	52	48	210	3,078
October .....	86	2	713	123	282	283	3	25	1,426	59	66	217	3,161
November .....	62	2	681	131	267	278	(s)	22	1,401	89	58	197	3,056
December .....	40	2	723	166	307	291	4	22	1,456	72	60	222	3,197
Total .....	853	20	8,183	1,586	3,289	3,350	18	289	17,251	771	751	2,553	37,330
2017 January .....	39	1	676	201	338	280	2	20	1,333	78	90	208	3,066
February .....	45	1	631	142	265	242	1	21	1,273	45	48	190	2,761
March .....	54	2	743	136	290	293	(s)	25	1,466	33	71	237	3,215
April .....	63	2	656	121	267	275	1	19	1,403	59	60	234	3,039
May .....	75	2	709	103	263	294	1	20	1,504	64	72	222	3,225
June .....	95	3	687	97	254	300	(s)	20	1,482	50	79	226	3,194
July .....	91	2	663	110	274	304	(s)	19	1,501	87	53	225	3,218
August .....	112	2	714	101	232	311	(s)	17	1,532	58	65	221	3,264
September .....	89	1	678	124	249	279	2	20	1,416	65	58	199	3,056
October .....	85	1	709	113	280	301	(s)	23	1,466	34	71	210	3,181
November .....	61	2	721	141	298	293	1	21	1,387	73	82	206	3,143
December .....	R 45	R 2	R 703	R 159	R 333	R 309	R (s)	R 17	R 1,442	R 70	R 76	R 198	R 3,195
Total .....	R 854	R 21	R 8,289	R 1,547	R 3,343	R 3,480	R 9	R 241	R 17,204	R 717	R 823	R 2,576	R 37,557
2018 January .....	F 48	F 1	E 742	E 205	RF 362	E 292	F 1	RF 26	E 1,390	F 72	E 43	RE 361	RE 3,338
February .....	F 46	F 1	E 651	E 159	F 296	E 269	F (s)	F 23	E 1,281	F 54	E 59	E 260	E 2,940
2-Month Total .....	F 94	F 2	E 1,393	E 364	F 657	E 561	F 1	F 49	E 2,671	F 127	E 102	E 621	E 6,278
2017 2-Month Total .....	84	3	1,307	343	602	522	3	41	2,606	123	137	399	5,827
2016 2-Month Total .....	84	3	1,357	359	617	507	1	51	2,710	136	93	443	6,002

<sup>a</sup> Hydrocarbon gas liquids.

<sup>b</sup> Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

<sup>c</sup> Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

<sup>d</sup> Ethane, propane, normal butane, isobutane, natural gasoline (pentanes plus), and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unfractionated stream.

<sup>e</sup> 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.")

<sup>f</sup> Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

<sup>g</sup> 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.

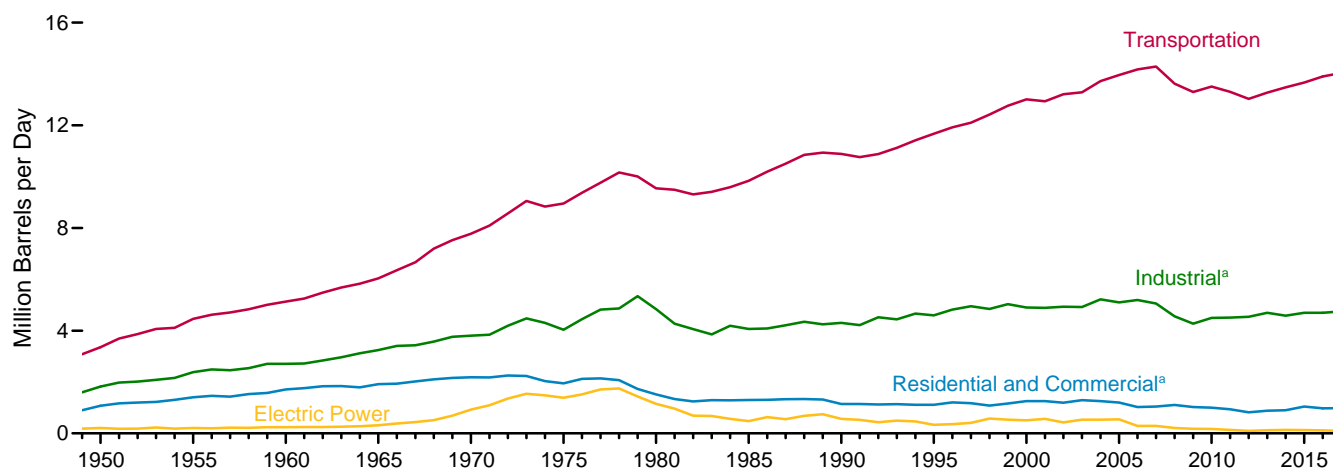
Notes: • Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent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

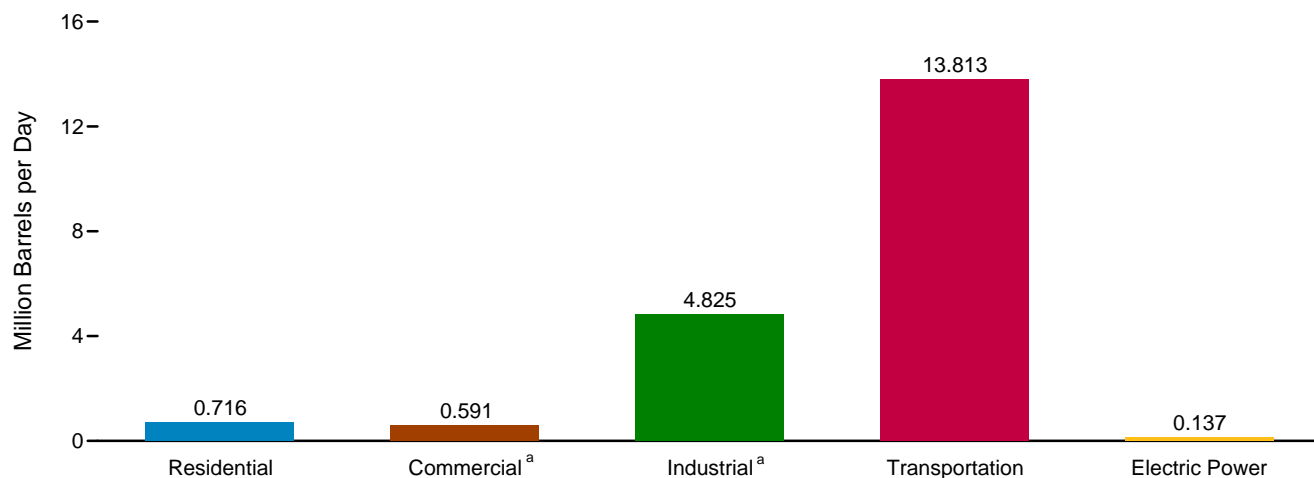
Sources: See end of section.

**Figure 3.7 Petroleum Consumption by Sector**

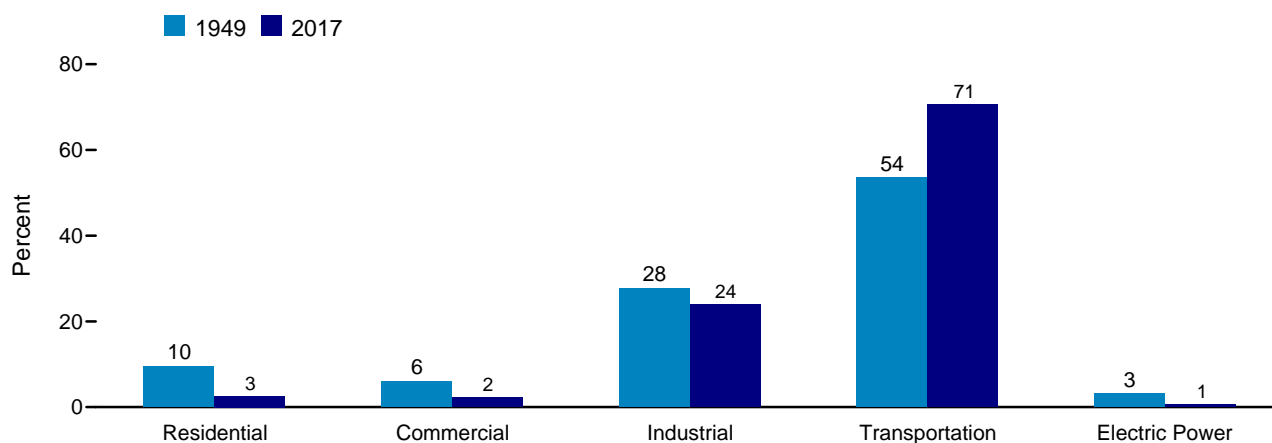
By Sector, 1949–2017



By Sector, December 2017



Sector Shares 1949 and 2017



<sup>a</sup> 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 <sup>a</sup>						
	Distillate Fuel Oil	HGL <sup>b</sup>	Kero-sene	Total	Distillate Fuel Oil	HGL <sup>b</sup>	Kero-sene	Motor Gasoline <sup>d,e</sup>	Petroleum Coke	Residual Fuel Oil	Total
		Propane <sup>c</sup>				Propane <sup>c</sup>					
1950 Average .....	390	104	168	662	123	28	23	52	NA	185	411
1955 Average .....	562	144	179	885	177	38	24	69	NA	209	519
1960 Average .....	736	217	171	1,123	232	58	23	35	NA	243	590
1965 Average .....	805	275	161	1,242	251	74	26	40	NA	281	672
1970 Average .....	883	392	144	1,419	276	102	30	45	NA	311	764
1975 Average .....	850	365	78	1,293	276	92	24	46	NA	214	653
1980 Average .....	617	222	51	890	243	63	20	56	NA	245	626
1985 Average .....	514	224	77	815	297	68	16	50	NA	99	530
1990 Average .....	460	252	31	742	252	73	6	58	0	100	489
1995 Average .....	426	282	36	743	225	78	11	10	(s)	62	385
2000 Average .....	424	395	46	865	230	107	14	23	(s)	40	415
2001 Average .....	427	375	46	849	239	102	15	20	(s)	30	406
2002 Average .....	404	384	29	817	209	101	8	24	(s)	35	376
2003 Average .....	438	389	34	861	233	112	9	32	(s)	48	434
2004 Average .....	433	364	41	839	221	108	10	23	(s)	53	416
2005 Average .....	402	366	40	809	210	94	10	24	(s)	50	389
2006 Average .....	335	318	32	685	189	88	7	26	(s)	33	343
2007 Average .....	342	345	21	708	181	87	4	32	(s)	33	337
2008 Average .....	354	394	10	758	181	113	2	24	(s)	31	351
2009 Average .....	276	391	13	680	187	99	2	28	(s)	31	348
2010 Average .....	266	379	14	659	185	100	2	28	(s)	27	343
2011 Average .....	248	348	9	605	186	101	2	24	(s)	23	335
2012 Average .....	228	286	4	518	168	98	1	21	(s)	14	301
2013 Average .....	233	337	4	574	163	110	(s)	22	(s)	11	306
2014 Average .....	253	329	7	589	169	108	1	29	(s)	3	311
2015 January .....	424	350	2	776	277	116	(s)	<sup>e</sup> 192	(s)	3	589
February .....	405	344	7	757	265	114	1	196	(s)	3	579
March .....	290	295	9	594	190	98	1	201	(s)	2	492
April .....	181	276	1	457	118	92	(s)	204	(s)	1	415
May .....	175	276	16	467	114	92	2	206	(s)	1	415
June .....	106	286	(s)	393	69	95	(s)	209	0	1	374
July .....	118	293	1	412	77	97	(s)	210	0	1	386
August .....	147	282	1	430	96	94	(s)	210	(s)	1	401
September .....	144	271	(s)	415	94	90	(s)	206	(s)	1	392
October .....	353	294	2	649	230	98	(s)	205	(s)	2	536
November .....	391	311	1	704	256	103	(s)	202	(s)	3	564
December .....	412	336	19	766	269	112	3	203	(s)	3	589
Average .....	262	301	5	568	171	100	1	204	(s)	2	477
2016 January .....	306	355	1	662	229	118	(s)	188	(s)	3	539
February .....	319	343	2	663	239	114	(s)	200	(s)	3	557
March .....	211	312	8	531	158	104	1	204	(s)	2	469
April .....	192	288	3	482	144	96	(s)	199	(s)	2	441
May .....	168	289	6	463	126	96	1	205	0	2	429
June .....	119	267	8	393	89	89	1	209	(s)	1	389
July .....	122	287	8	418	92	95	1	208	(s)	1	398
August .....	95	278	1	373	71	92	(s)	211	0	1	375
September .....	150	290	10	450	112	96	2	206	0	1	418
October .....	204	298	14	517	153	99	2	198	0	2	454
November .....	228	300	2	529	171	100	(s)	201	(s)	2	474
December .....	358	326	16	700	268	108	2	202	(s)	3	585
Average .....	206	303	7	515	154	101	1	203	(s)	2	460
2017 January .....	<sup>R</sup> 338	362	10	<sup>R</sup> 710	<sup>R</sup> 253	120	2	185	(s)	3	<sup>R</sup> 564
February .....	<sup>R</sup> 278	317	5	<sup>R</sup> 600	<sup>R</sup> 209	105	1	195	(s)	3	<sup>R</sup> 513
March .....	<sup>R</sup> 236	309	1	<sup>R</sup> 546	<sup>R</sup> 177	103	(s)	203	(s)	2	<sup>R</sup> 486
April .....	<sup>R</sup> 195	295	5	<sup>R</sup> 495	<sup>R</sup> 146	98	1	201	(s)	2	<sup>R</sup> 448
May .....	<sup>R</sup> 135	283	2	<sup>R</sup> 420	<sup>R</sup> 101	94	(s)	208	(s)	1	<sup>R</sup> 405
June .....	<sup>R</sup> 168	296	2	<sup>R</sup> 466	<sup>R</sup> 126	98	(s)	212	(s)	2	<sup>R</sup> 439
July .....	<sup>R</sup> 103	300	(s)	<sup>R</sup> 403	<sup>R</sup> 77	100	(s)	208	(s)	1	<sup>R</sup> 386
August .....	<sup>R</sup> 134	254	1	<sup>R</sup> 388	<sup>R</sup> 101	84	(s)	212	(s)	1	<sup>R</sup> 399
September .....	<sup>R</sup> 135	276	11	<sup>R</sup> 421	<sup>R</sup> 101	92	2	203	(s)	1	<sup>R</sup> 399
October .....	<sup>R</sup> 171	287	1	<sup>R</sup> 458	<sup>R</sup> 128	95	(s)	203	(s)	2	<sup>R</sup> 429
November .....	<sup>R</sup> 264	335	2	<sup>R</sup> 601	<sup>R</sup> 198	111	(s)	199	(s)	3	<sup>R</sup> 511
December .....	357	358	1	716	268	119	(s)	200	(s)	4	591
Average .....	209	306	3	518	157	102	1	203	(s)	2	464

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

<sup>b</sup> Hydrocarbon gas liquids.

<sup>c</sup> Propane and propylene.

<sup>d</sup> Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

<sup>e</sup> 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.

<sup>R</sup>=Revised. NA=Not available. (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 <sup>a</sup>										
	Asphalt and Road Oil	Distillate Fuel Oil	HGL <sup>b</sup>		Kerosene	Lubricants	Motor Gasoline <sup>e,f</sup>	Petroleum Coke	Residual Fuel Oil	Other <sup>g</sup>	Total
			Propane <sup>c</sup>	Total <sup>d</sup>							
1950 Average .....	180	328	NA	100	132	43	131	41	617	250	1,822
1955 Average .....	254	466	NA	212	116	47	173	67	686	366	2,387
1960 Average .....	302	476	NA	333	78	48	198	149	689	435	2,708
1965 Average .....	368	541	NA	470	80	62	179	202	689	657	3,247
1970 Average .....	447	577	256	699	89	70	150	203	708	866	3,808
1975 Average .....	419	630	302	863	58	68	116	246	658	982	4,038
1980 Average .....	396	621	516	1,293	87	82	82	234	586	1,460	4,842
1985 Average .....	425	526	569	1,408	21	75	114	261	326	909	4,065
1990 Average .....	483	541	576	1,364	6	84	97	325	179	1,225	4,304
1995 Average .....	486	532	723	1,727	7	80	105	328	147	1,180	4,594
2000 Average .....	525	563	724	1,923	8	86	79	361	105	1,255	4,903
2001 Average .....	519	611	654	1,713	11	79	155	390	89	1,325	4,892
2002 Average .....	512	566	754	1,801	7	78	163	383	83	1,342	4,934
2003 Average .....	503	551	701	1,691	12	72	171	375	96	1,448	4,918
2004 Average .....	537	570	790	1,778	14	73	195	423	108	1,525	5,222
2005 Average .....	546	594	749	1,666	19	72	187	404	123	1,489	5,100
2006 Average .....	521	594	789	1,710	14	71	198	425	104	1,557	5,193
2007 Average .....	494	595	787	1,744	6	73	161	412	84	1,487	5,056
2008 Average .....	417	637	619	1,510	2	67	131	394	84	1,317	4,559
2009 Average .....	360	509	650	1,617	2	61	128	363	57	1,175	4,272
2010 Average .....	362	547	660	1,766	4	68	140	310	52	1,251	4,500
2011 Average .....	355	586	680	1,769	2	64	138	295	59	1,240	4,507
2012 Average .....	340	602	765	1,888	1	59	136	319	30	1,165	4,540
2013 Average .....	323	601	796	2,022	1	142	142	295	21	1,227	4,694
2014 Average .....	327	648	696	1,972	1	65	114	290	18	1,151	4,586
<b>2015</b> January .....	200	714	1,080	2,422	(s)	79	<sup>f</sup> 131	342	17	1,079	4,984
February .....	215	826	1,080	2,401	1	63	134	146	8	1,173	4,967
March .....	222	658	807	2,127	1	78	138	334	16	1,075	4,650
April .....	303	650	573	1,973	(s)	76	140	330	11	1,126	4,609
May .....	343	466	496	1,928	3	82	141	330	14	1,281	4,588
June .....	472	543	644	2,021	(s)	68	143	357	12	1,231	4,848
July .....	480	515	612	2,050	(s)	80	144	335	18	1,265	4,887
August .....	510	486	640	2,052	(s)	62	144	350	17	1,156	4,777
September .....	469	662	584	1,897	(s)	65	141	222	15	1,106	4,577
October .....	400	444	664	2,121	(s)	75	141	281	14	951	4,426
November .....	287	328	725	2,141	(s)	54	139	264	17	1,159	4,387
December .....	212	396	905	2,347	3	67	139	239	18	1,231	4,653
<b>Average</b> .....	<b>343</b>	<b>555</b>	<b>733</b>	<b>2,122</b>	<b>1</b>	<b>71</b>	<b>140</b>	<b>295</b>	<b>15</b>	<b>1,153</b>	<b>4,695</b>
<b>2016</b> January .....	195	631	1,068	2,451	(s)	70	132	326	22	1,126	4,953
February .....	230	685	1,054	2,309	(s)	76	140	305	13	1,362	5,121
March .....	254	663	748	2,168	1	73	142	306	26	1,107	4,741
April .....	301	506	540	1,992	(s)	67	139	231	33	1,205	4,475
May .....	394	444	554	1,970	1	68	143	218	22	1,075	4,336
June .....	482	508	450	1,889	1	75	146	185	23	1,159	4,469
July .....	472	331	542	2,011	1	59	146	259	28	1,103	4,411
August .....	524	517	555	1,912	(s)	64	147	371	21	1,261	4,817
September .....	439	572	616	2,016	2	64	144	223	17	1,171	4,648
October .....	417	569	612	2,131	2	68	138	272	24	1,175	4,797
November .....	310	596	715	2,092	(s)	62	140	436	21	1,101	4,759
December .....	195	557	932	2,310	3	59	141	329	21	1,201	4,816
<b>Average</b> .....	<b>351</b>	<b>548</b>	<b>698</b>	<b>2,104</b>	<b>1</b>	<b>67</b>	<b>142</b>	<b>289</b>	<b>23</b>	<b>1,170</b>	<b>4,694</b>
<b>2017</b> January .....	192	<sup>R</sup> 545	1,171	2,532	2	54	129	355	<sup>R</sup> 33	1,127	<sup>R</sup> 4,970
February .....	241	<sup>R</sup> 611	869	2,232	1	64	137	215	18	1,148	<sup>R</sup> 4,666
March .....	265	<sup>R</sup> 739	701	2,193	(s)	68	142	132	<sup>R</sup> 26	1,292	<sup>R</sup> 4,857
April .....	318	<sup>R</sup> 477	631	2,089	1	54	141	297	23	1,309	<sup>R</sup> 4,709
May .....	365	<sup>R</sup> 600	460	2,012	(s)	56	146	288	26	1,201	<sup>R</sup> 4,694
June .....	477	<sup>R</sup> 506	419	2,016	(s)	56	148	215	<sup>R</sup> 30	1,266	<sup>R</sup> 4,714
July .....	441	<sup>R</sup> 397	493	2,084	(s)	51	145	409	19	1,215	<sup>R</sup> 4,761
August .....	542	<sup>R</sup> 524	490	1,783	(s)	47	148	262	<sup>R</sup> 24	1,196	<sup>R</sup> 4,526
September .....	447	<sup>R</sup> 571	683	1,953	2	56	142	308	21	1,108	<sup>R</sup> 4,607
October .....	413	<sup>R</sup> 569	544	2,142	(s)	64	142	145	<sup>R</sup> 26	1,139	<sup>R</sup> 4,640
November .....	307	<sup>R</sup> 676	745	2,356	(s)	58	139	353	<sup>R</sup> 32	1,154	<sup>R</sup> 5,075
December .....	218	464	828	2,534	(s)	47	140	326	28	1,069	4,825
<b>Average</b> .....	<b>353</b>	<b>556</b>	<b>668</b>	<b>2,161</b>	<b>1</b>	<b>56</b>	<b>142</b>	<b>276</b>	<b>25</b>	<b>1,185</b>	<b>4,754</b>

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

<sup>b</sup> Hydrocarbon gas liquids.

<sup>c</sup> Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

<sup>d</sup> Ethane, propane, normal butane, isobutane, natural gasoline (pentanes plus), and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unfractionated stream.

<sup>e</sup> Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

<sup>f</sup> 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.

<sup>g</sup> 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. NA=Not available. (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 <sup>a</sup>			
	Aviation Gasoline	Distillate Fuel Oil <sup>c</sup>	HGL <sup>b</sup>	Jet Fuel <sup>e</sup>	Lubri- cants	Motor Gasoline <sup>f,g</sup>	Residual Fuel Oil	Total	Distillate Fuel Oil <sup>h</sup>	Petroleum Coke	Residual Fuel Oil <sup>i</sup>	Total
			Propane <sup>d</sup>									
1950 Average .....	108	226	2	( <sup>e</sup> )	64	2,433	524	3,356	15	NA	192	207
1955 Average .....	192	372	9	154	70	3,221	440	4,458	15	NA	191	206
1960 Average .....	161	418	13	371	68	3,736	367	5,135	10	NA	231	241
1965 Average .....	120	514	23	602	67	4,374	336	6,036	14	NA	302	316
1970 Average .....	55	738	32	967	66	5,589	332	7,778	66	9	853	928
1975 Average .....	39	998	31	992	70	6,512	310	8,951	107	1	1,280	1,388
1980 Average .....	35	1,311	13	1,062	77	6,441	608	9,546	79	2	1,069	1,151
1985 Average .....	27	1,491	21	1,218	71	6,667	342	9,838	40	3	435	478
1990 Average .....	24	1,722	16	1,522	80	7,080	443	10,888	45	14	507	566
1995 Average .....	21	1,973	13	1,514	76	7,674	397	11,668	51	37	247	334
2000 Average .....	20	2,422	8	1,725	81	8,370	386	13,012	82	45	378	505
2001 Average .....	19	2,489	10	1,655	74	8,435	255	12,938	80	47	437	564
2002 Average .....	18	2,536	10	1,614	73	8,662	295	13,208	60	80	287	427
2003 Average .....	16	2,629	13	1,578	68	8,733	249	13,286	76	79	379	534
2004 Average .....	17	2,783	14	1,630	69	8,887	321	13,720	52	101	382	535
2005 Average .....	19	2,858	20	1,679	68	8,948	365	13,957	54	111	382	547
2006 Average .....	18	3,017	20	1,633	67	9,029	395	14,178	35	97	157	289
2007 Average .....	17	3,037	16	1,622	69	9,093	433	14,287	42	78	173	293
2008 Average .....	15	2,738	29	1,539	64	8,834	402	13,621	34	70	104	209
2009 Average .....	14	2,626	20	1,393	57	8,841	344	13,297	33	63	79	175
2010 Average .....	15	2,764	21	1,432	64	8,824	389	13,508	38	65	67	170
2011 Average .....	15	2,849	24	1,425	61	8,591	338	13,303	30	66	41	137
2012 Average .....	14	2,719	26	1,398	56	8,525	291	13,029	25	41	33	99
2013 Average .....	12	2,804	32	1,434	59	8,679	253	13,274	26	59	34	119
2014 Average .....	12	2,928	34	1,470	61	8,778	195	13,477	39	57	41	137
2015 January .....	8	2,729	33	1,375	74	9,316	218	12,754	41	61	57	159
February .....	8	2,931	32	1,445	60	8,498	35	13,010	132	71	149	352
March .....	9	2,913	28	1,548	74	8,718	217	13,507	27	43	28	97
April .....	14	3,058	26	1,527	72	8,846	133	13,676	21	47	27	95
May .....	13	2,996	26	1,519	77	8,916	194	13,742	26	53	25	105
June .....	12	3,153	27	1,654	64	9,065	158	14,134	26	50	29	105
July .....	18	3,168	28	1,650	76	9,116	269	14,324	23	65	38	126
August .....	11	3,165	27	1,601	59	9,106	247	14,216	22	61	33	116
September .....	11	3,142	26	1,534	62	8,941	221	13,936	21	61	30	112
October .....	14	2,967	28	1,614	70	8,899	193	13,785	20	47	27	94
November .....	9	2,740	29	1,524	51	8,771	250	13,374	26	42	30	99
December .....	9	2,731	32	1,578	63	8,805	270	13,488	24	43	26	93
Average .....	11	2,974	28	1,548	67	8,835	202	13,666	33	54	41	128
2016 January .....	7	2,645	33	1,449	66	8,334	248	12,782	40	53	34	127
February .....	11	2,721	32	1,534	72	8,881	128	13,379	31	55	39	126
March .....	10	2,892	29	1,547	69	9,027	311	13,885	22	58	22	102
April .....	14	2,936	27	1,566	64	8,837	392	13,836	21	63	23	107
May .....	11	2,968	27	1,578	64	9,069	275	13,992	26	57	24	107
June .....	12	3,113	25	1,723	71	9,253	285	14,481	23	61	29	114
July .....	12	3,027	27	1,720	56	9,224	351	14,417	26	63	43	132
August .....	14	3,172	26	1,722	60	9,329	254	14,578	24	66	41	131
September .....	11	3,057	27	1,635	61	9,133	205	14,130	21	62	29	111
October .....	10	3,039	28	1,610	64	8,757	284	13,792	20	39	30	89
November .....	12	2,916	28	1,632	59	8,892	258	13,797	27	49	25	101
December .....	10	2,830	31	1,653	56	8,940	252	13,772	30	53	29	112
Average .....	11	2,944	29	1,614	63	8,973	271	13,904	26	57	31	113
2017 January .....	9	R 2,615	34	1,593	51	8,187	R 396	R 12,886	30	57	28	115
February .....	9	R 2,782	30	1,525	60	8,654	R 222	R 13,281	26	46	26	R 98
March .....	10	R 2,976	29	1,669	64	9,007	R 310	R 14,065	26	43	24	R 93
April .....	10	R 2,951	28	1,617	51	8,906	R 270	R 13,833	22	25	24	71
May .....	11	R 3,108	27	1,671	52	9,236	313	R 14,417	25	50	27	103
June .....	17	R 3,147	28	1,762	53	9,406	356	R 14,768	22	55	30	108
July .....	13	R 3,108	28	1,728	48	9,219	R 225	R 14,370	22	52	26	100
August .....	14	R 3,213	24	1,769	44	9,409	280	R 14,753	21	R 44	30	95
September .....	10	R 3,091	26	1,639	52	8,984	257	R 14,059	R 24	43	28	95
October .....	9	R 3,074	27	1,713	60	9,002	308	R 14,193	24	35	28	87
November .....	11	R 3,003	32	1,723	55	8,803	R 374	R 14,000	24	43	R 25	R 92
December .....	12	2,798	34	1,755	45	8,856	312	13,813	46	45	46	137
Average .....	11	2,990	29	1,682	53	8,974	302	14,041	26	45	29	100

<sup>a</sup> 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.

<sup>b</sup> Hydrocarbon gas liquids.

<sup>c</sup> Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

<sup>d</sup> Propane and propylene.

<sup>e</sup> 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.)

<sup>f</sup> Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

<sup>g</sup> 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.

<sup>h</sup> 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.

<sup>i</sup> 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.

R=Revised. NA=Not available.

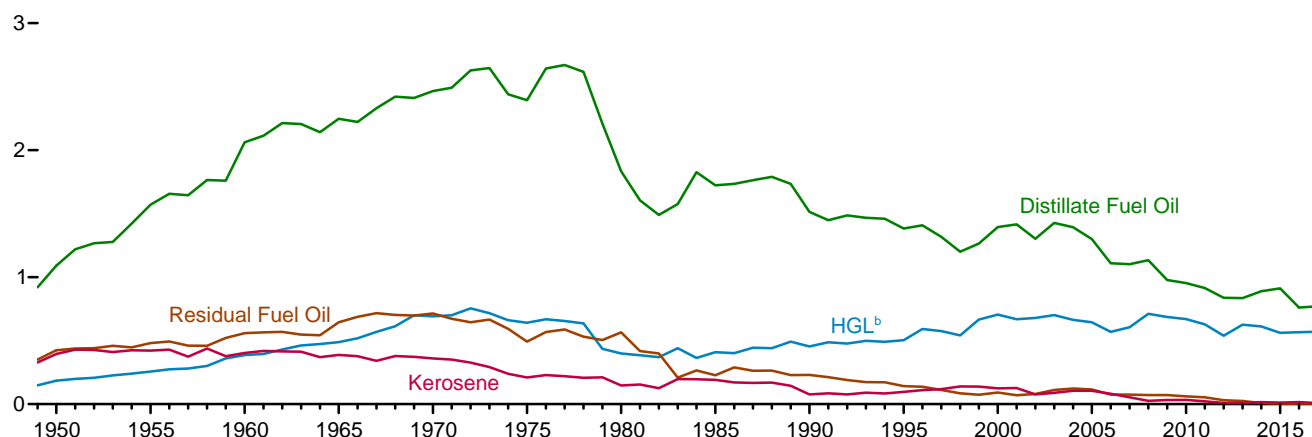
Notes: • Transportation sector data are estimates. • For total petroleum consumption by all sectors, see petroleum products supplied data in Table 3.5. Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. 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.

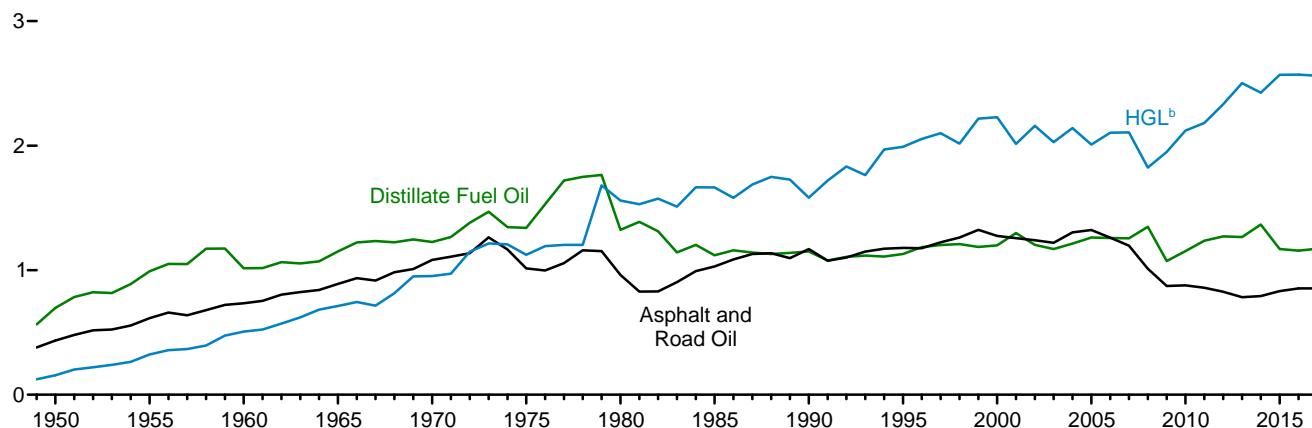
Sources: See end of section.

**Figure 3.8a Heat Content of Petroleum Consumption by End-Use Sector, 1949–2017**  
(Quadrillion Btu)

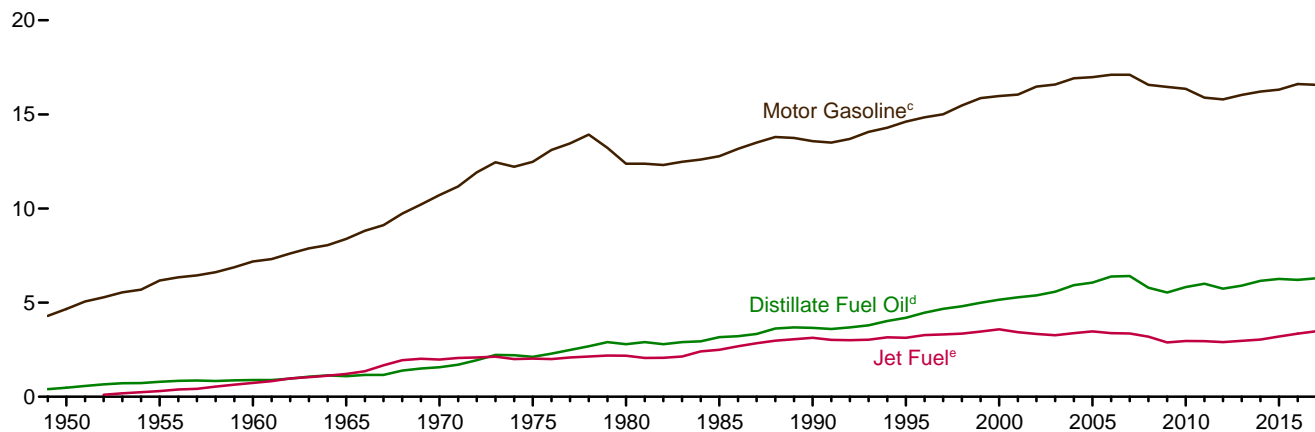
Residential and Commercial<sup>a</sup> Sectors, Selected Products



Industrial<sup>a</sup> Sector, Selected Products



Transportation Sector, Selected Products



<sup>a</sup> Includes combined-heat-and-power plants and a small number of electricity-only plants.

<sup>b</sup> Hydrocarbon gas liquids.

<sup>c</sup> Beginning in 1993, includes fuel ethanol blended into motor gasoline.

<sup>d</sup> Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

<sup>e</sup> 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.

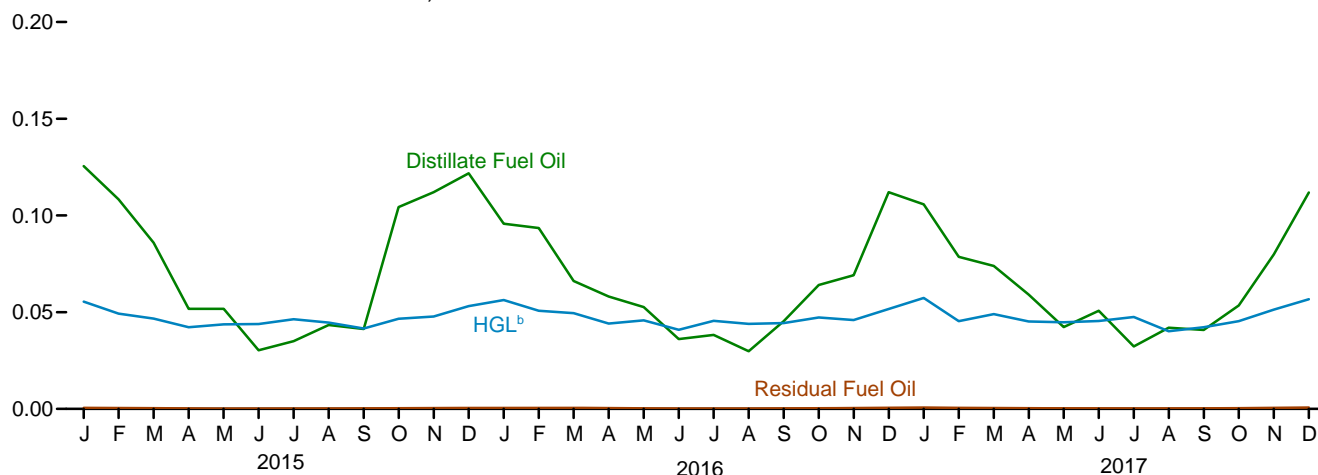
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.

Sources: Tables 3.8a–3.8c.

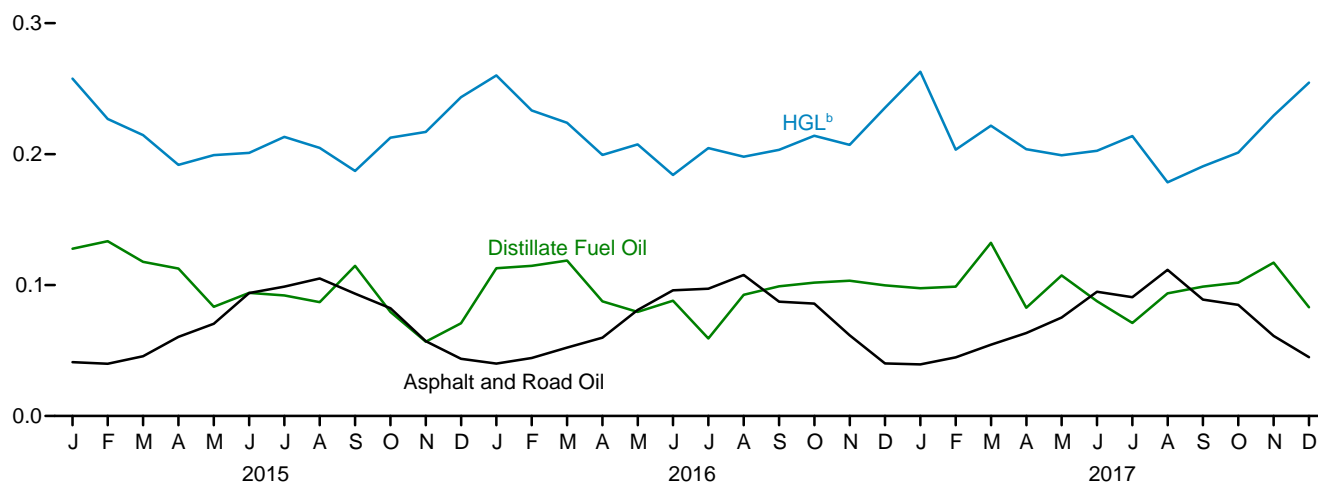


**Figure 3.8b Heat Content of Petroleum Consumption by End-Use Sector, Monthly**  
(Quadrillion Btu)

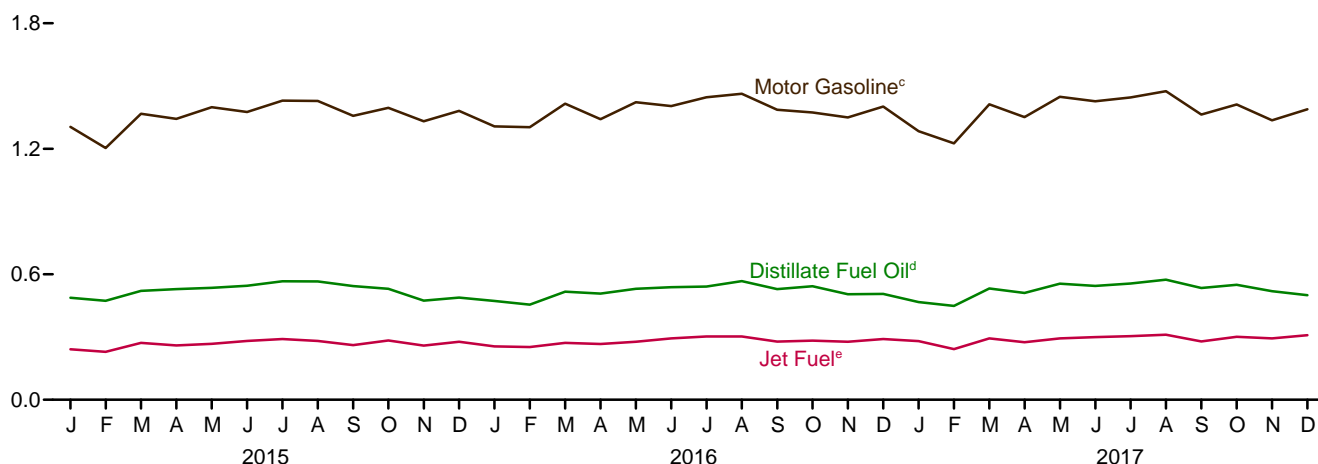
Residential and Commercial<sup>a</sup> Sectors, Selected Products



Industrial<sup>a</sup> Sector, Selected Products



Transportation Sector, Selected Products



<sup>a</sup> Includes combined-heat-and-power plants and a small number of electricity-only plants.

<sup>b</sup> Hydrocarbon gas liquids.

<sup>c</sup> Includes fuel ethanol blended into motor gasoline.

<sup>d</sup> Includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

<sup>e</sup> 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 <sup>a</sup>						
	Distillate Fuel Oil	HGL <sup>b</sup>	Kero-sene	Total	Distillate Fuel Oil	HGL <sup>b</sup>	Kero-sene	Motor Gasoline <sup>d,e</sup>	Petroleum Coke	Residual Fuel Oil	Total
		Propane <sup>c</sup>				Propane <sup>c</sup>					
1950 Total .....	829	146	347	1,322	262	39	47	100	NA	424	872
1955 Total .....	1,194	202	371	1,767	377	54	51	133	NA	480	1,095
1960 Total .....	1,568	305	354	2,227	494	81	48	67	NA	559	1,248
1965 Total .....	1,713	385	334	2,432	534	103	54	77	NA	645	1,413
1970 Total .....	1,878	549	298	2,725	587	143	61	86	NA	714	1,592
1975 Total .....	1,807	512	161	2,479	587	129	49	89	NA	492	1,346
1980 Total .....	1,316	311	107	1,734	518	88	41	107	NA	565	1,318
1985 Total .....	1,092	314	159	1,565	631	95	33	96	NA	228	1,083
1990 Total .....	978	352	64	1,394	536	102	12	111	0	230	991
1995 Total .....	904	395	74	1,373	478	109	22	18	(s)	141	769
2000 Total .....	904	555	95	1,553	490	150	30	45	(s)	92	807
2001 Total .....	907	526	95	1,528	508	143	31	37	(s)	70	789
2002 Total .....	859	537	60	1,456	444	141	16	45	(s)	80	726
2003 Total .....	931	544	70	1,546	496	157	19	60	(s)	111	842
2004 Total .....	923	512	85	1,519	470	152	20	45	(s)	122	810
2005 Total .....	853	513	84	1,450	447	131	22	46	(s)	116	762
2006 Total .....	709	446	66	1,221	400	123	15	48	(s)	75	662
2007 Total .....	721	484	44	1,249	381	121	9	60	(s)	75	648
2008 Total .....	750	553	21	1,324	384	158	4	45	(s)	71	663
2009 Total .....	582	547	28	1,157	395	139	4	52	(s)	71	662
2010 Total .....	562	530	29	1,121	391	140	5	52	(s)	62	650
2011 Total .....	523	487	19	1,028	391	141	3	44	(s)	54	633
2012 Total .....	482	401	8	891	355	137	1	39	(s)	31	564
2013 Total .....	491	472	8	971	344	154	1	40	(s)	24	563
2014 Total .....	533	461	14	1,008	357	151	2	54	1	8	572
2015 January .....	76	42	(s)	118	50	14	(s)	<sup>e</sup> 30	(s)	1	94
February .....	66	37	1	104	43	12	(s)	28	(s)	(s)	84
March .....	52	35	2	89	34	12	(s)	32	(s)	(s)	78
April .....	31	32	(s)	63	20	11	(s)	31	(s)	(s)	62
May .....	31	33	3	67	20	11	(s)	32	(s)	(s)	64
June .....	18	33	(s)	51	12	11	(s)	32	0	(s)	55
July .....	21	35	(s)	56	14	12	(s)	33	0	(s)	59
August .....	26	34	(s)	60	17	11	(s)	33	(s)	(s)	61
September .....	25	31	(s)	56	16	10	(s)	31	(s)	(s)	58
October .....	63	35	(s)	98	41	12	(s)	32	(s)	(s)	86
November .....	68	36	(s)	104	44	12	(s)	31	(s)	(s)	87
December .....	74	40	3	117	48	13	(s)	32	(s)	1	94
Total .....	551	421	10	983	360	140	1	376	1	4	882
2016 January .....	55	42	(s)	97	41	14	(s)	29	(s)	1	85
February .....	53	38	(s)	92	40	13	(s)	29	(s)	1	83
March .....	38	37	1	76	28	12	(s)	32	(s)	(s)	73
April .....	33	33	(s)	67	25	11	(s)	30	(s)	(s)	67
May .....	30	34	1	66	23	11	(s)	32	0	(s)	67
June .....	21	31	1	53	15	10	(s)	32	(s)	(s)	58
July .....	22	34	1	57	16	11	(s)	33	(s)	(s)	61
August .....	17	33	(s)	50	13	11	(s)	33	0	(s)	57
September .....	26	33	2	61	19	11	(s)	31	0	(s)	62
October .....	37	35	3	75	27	12	(s)	31	0	(s)	71
November .....	39	34	(s)	74	30	11	(s)	30	(s)	(s)	72
December .....	64	39	3	106	48	13	(s)	32	(s)	1	94
Total .....	435	425	14	873	326	141	2	375	(s)	4	849
2017 January .....	<sup>R</sup> 60	43	2	<sup>R</sup> 105	<sup>R</sup> 45	14	(s)	29	(s)	1	90
February .....	<sup>R</sup> 45	34	1	80	34	11	(s)	28	(s)	<sup>R</sup> 1	<sup>R</sup> 73
March .....	<sup>R</sup> 42	37	(s)	<sup>R</sup> 79	32	12	(s)	32	(s)	(s)	<sup>R</sup> 76
April .....	34	34	1	69	<sup>R</sup> 25	11	(s)	31	(s)	(s)	68
May .....	24	34	(s)	58	18	11	(s)	33	(s)	(s)	<sup>R</sup> 62
June .....	29	34	(s)	<sup>R</sup> 63	22	11	(s)	32	(s)	(s)	66
July .....	<sup>R</sup> 18	36	(s)	54	14	12	(s)	33	(s)	(s)	59
August .....	24	30	(s)	<sup>R</sup> 54	18	10	(s)	33	(s)	(s)	62
September .....	<sup>R</sup> 23	32	2	57	18	11	(s)	31	(s)	(s)	<sup>R</sup> 59
October .....	31	34	(s)	65	23	11	(s)	32	(s)	(s)	<sup>R</sup> 66
November .....	46	39	(s)	85	<sup>R</sup> 34	13	(s)	30	(s)	<sup>R</sup> 1	78
December .....	64	43	(s)	107	48	14	(s)	31	(s)	1	94
Total .....	440	428	7	876	330	142	1	374	(s)	5	853

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

<sup>b</sup> Hydrocarbon gas liquids.

<sup>c</sup> Propane and propylene.

<sup>d</sup> Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

<sup>e</sup> 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.

<sup>R</sup>=Revised. 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 <sup>a</sup>										
	Asphalt and Road Oil	Distillate Fuel Oil	HGL <sup>b</sup>		Kerosene	Lubricants	Motor Gasoline <sup>e,f</sup>	Petroleum Coke	Residual Fuel Oil	Other <sup>g</sup>	Total
			Propane <sup>c</sup>	Total <sup>d</sup>							
1950 Total .....	435	698	NA	156	274	94	251	90	1,416	546	3,960
1955 Total .....	615	991	NA	323	241	103	332	147	1,573	798	5,123
1960 Total .....	734	1,016	NA	507	161	107	381	328	1,584	947	5,766
1965 Total .....	890	1,150	NA	712	165	137	342	444	1,582	1,390	6,813
1970 Total .....	1,082	1,226	359	953	185	155	288	446	1,624	1,817	7,776
1975 Total .....	1,014	1,339	422	1,161	119	149	223	540	1,509	2,071	8,127
1980 Total .....	962	1,324	725	1,763	181	182	158	516	1,349	3,073	9,509
1985 Total .....	1,029	1,119	797	1,871	44	166	218	575	748	1,945	7,714
1990 Total .....	1,170	1,150	807	1,832	12	186	185	714	411	2,589	8,251
1995 Total .....	1,178	1,130	1,013	2,328	15	178	200	721	337	2,499	8,587
2000 Total .....	1,276	1,199	1,016	2,571	16	190	150	796	241	2,636	9,075
2001 Total .....	1,257	1,299	916	2,278	23	174	295	858	203	2,793	9,179
2002 Total .....	1,240	1,203	1,055	2,383	14	172	309	842	190	2,816	9,170
2003 Total .....	1,220	1,169	981	2,249	24	159	324	825	220	3,043	9,233
2004 Total .....	1,304	1,213	1,109	2,364	28	161	371	937	249	3,205	9,832
2005 Total .....	1,323	1,262	1,049	2,205	39	160	355	894	281	3,122	9,641
2006 Total .....	1,261	1,258	1,105	2,244	30	156	374	938	239	3,276	9,777
2007 Total .....	1,197	1,256	1,102	2,285	13	161	302	910	193	3,134	9,452
2008 Total .....	1,012	1,348	870	1,976	4	150	246	870	194	2,788	8,588
2009 Total .....	873	1,073	910	2,077	4	135	238	805	130	2,483	7,819
2010 Total .....	878	1,153	924	2,276	7	149	260	694	120	2,645	8,183
2011 Total .....	859	1,236	952	2,237	4	142	255	663	135	2,621	8,151
2012 Total .....	827	1,271	1,074	2,416	2	130	252	717	70	2,474	8,160
2013 Total .....	783	1,266	1,115	2,597	1	138	263	663	48	2,583	8,343
2014 Total .....	793	1,366	975	2,513	3	144	210	653	41	2,430	8,152
2015 January .....	41	128	128	267	(s)	15	121	65	3	192	732
February .....	40	134	116	237	(s)	11	19	26	1	190	657
March .....	46	118	96	235	(s)	15	22	63	3	193	694
April .....	60	113	66	208	(s)	14	21	61	2	196	674
May .....	70	83	59	209	(s)	15	22	63	3	231	697
June .....	94	94	74	214	(s)	12	22	66	2	215	718
July .....	99	92	73	224	(s)	15	23	64	4	228	748
August .....	105	87	76	227	(s)	12	23	67	3	207	730
September .....	93	115	67	197	(s)	12	21	41	3	192	674
October .....	82	80	79	232	(s)	14	22	54	3	170	657
November .....	57	57	83	223	(s)	10	21	49	3	201	620
December .....	44	71	108	256	1	13	22	46	4	221	675
Total .....	832	1,170	1,026	2,730	2	157	258	663	34	2,435	8,279
2016 January .....	40	113	127	269	(s)	13	21	62	4	208	730
February .....	44	115	117	234	(s)	13	21	55	2	235	718
March .....	52	119	89	233	(s)	14	22	59	5	205	709
April .....	60	88	62	207	(s)	12	21	43	6	215	653
May .....	81	80	66	211	(s)	13	22	42	4	199	652
June .....	96	88	52	197	(s)	14	22	35	4	208	664
July .....	97	59	64	215	(s)	11	23	50	6	205	666
August .....	108	93	66	204	(s)	12	23	71	4	233	748
September .....	87	99	71	212	(s)	12	22	42	3	210	687
October .....	86	102	73	232	(s)	13	22	52	5	217	728
November .....	62	103	82	217	(s)	11	21	80	4	197	696
December .....	40	100	111	252	(s)	11	22	63	4	222	714
Total .....	853	1,157	980	2,683	2	149	262	653	52	2,553	8,365
2017 January .....	39	<sup>R</sup> 98	139	276	(s)	10	20	68	6	208	<sup>R</sup> 727
February .....	45	<sup>R</sup> 99	93	216	(s)	11	19	37	3	190	<sup>R</sup> 621
March .....	54	<sup>R</sup> 132	83	237	(s)	13	22	26	5	237	<sup>R</sup> 727
April .....	63	<sup>R</sup> 83	73	218	(s)	10	21	55	4	234	<sup>R</sup> 688
May .....	75	<sup>R</sup> 107	55	215	(s)	10	23	55	5	222	<sup>R</sup> 713
June .....	95	<sup>R</sup> 88	48	205	(s)	10	23	40	6	226	<sup>R</sup> 692
July .....	91	<sup>R</sup> 71	59	223	(s)	10	23	78	4	225	<sup>R</sup> 724
August .....	112	<sup>R</sup> 94	58	189	(s)	9	23	50	5	221	<sup>R</sup> 703
September .....	89	<sup>R</sup> 99	79	204	(s)	10	22	57	4	199	<sup>R</sup> 684
October .....	85	<sup>R</sup> 102	65	232	(s)	12	22	28	5	210	<sup>R</sup> 696
November .....	61	<sup>R</sup> 117	86	244	(s)	11	21	65	6	206	<sup>R</sup> 731
December .....	45	83	98	272	(s)	9	22	62	5	198	697
Total .....	854	1,172	936	2,732	1	124	261	623	58	2,576	8,402

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

<sup>b</sup> Hydrocarbon gas liquids.

<sup>c</sup> Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

<sup>d</sup> Ethane, propane, normal butane, isobutane, natural gasoline (pentanes plus), and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unfractionated stream.

<sup>e</sup> Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

<sup>f</sup> 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.

<sup>g</sup> 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. 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 3.8c Heat Content of Petroleum Consumption: Transportation and Electric Power Sectors (Trillion Btu)**

	Transportation Sector								Electric Power Sector <sup>a</sup>			
	Aviation Gasoline	Distillate Fuel Oil <sup>c</sup>	HGL <sup>b</sup>	Jet Fuel <sup>e</sup>	Lubricants	Motor Gasoline <sup>f,g</sup>	Residual Fuel Oil	Total	Distillate Fuel Oil <sup>h</sup>	Petroleum Coke	Residual Fuel Oil <sup>i</sup>	Total
			Propane <sup>d</sup>									
1950 Total .....	199	480	3	( <sup>e</sup> )	141	4,664	1,201	6,690	32	NA	440	472
1955 Total .....	354	791	13	301	155	6,175	1,009	8,799	32	NA	439	471
1960 Total .....	298	892	19	739	152	7,183	844	10,125	22	NA	530	553
1965 Total .....	222	1,093	32	1,215	149	8,386	770	11,866	29	NA	693	722
1970 Total .....	100	1,569	44	1,973	147	10,716	761	15,310	141	19	1,958	2,117
1975 Total .....	71	2,121	43	2,029	155	12,485	711	17,615	226	2	2,937	3,166
1980 Total .....	64	2,795	18	2,179	172	12,383	1,398	19,009	169	5	2,459	2,634
1985 Total .....	50	3,170	30	2,497	156	12,784	786	19,472	85	7	998	1,090
1990 Total .....	45	3,661	23	3,129	176	13,575	1,016	21,626	97	30	1,163	1,289
1995 Total .....	40	4,191	18	3,132	168	14,616	911	23,075	108	81	566	755
2000 Total .....	36	5,159	12	3,580	179	15,973	888	25,827	175	99	871	1,144
2001 Total .....	35	5,286	14	3,426	164	16,053	586	25,564	170	103	1,003	1,276
2002 Total .....	34	5,387	14	3,340	162	16,474	677	26,089	127	175	659	961
2003 Total .....	30	5,584	18	3,265	150	16,585	571	26,203	161	175	869	1,205
2004 Total .....	31	5,925	19	3,383	152	16,917	740	27,166	111	211	879	1,201
2005 Total .....	35	6,068	28	3,475	151	16,977	837	27,573	114	231	876	1,222
2006 Total .....	33	6,390	27	3,379	147	17,108	906	27,991	73	203	361	637
2007 Total .....	32	6,411	22	3,358	152	17,109	994	28,077	89	163	397	648
2008 Total .....	28	5,792	40	3,193	141	16,574	926	26,695	73	146	240	459
2009 Total .....	27	5,541	28	2,883	127	16,460	791	25,857	70	132	181	382
2010 Total .....	27	5,828	29	2,963	141	16,356	892	26,236	80	137	154	370
2011 Total .....	27	6,003	34	2,950	134	15,892	776	25,817	64	138	93	295
2012 Total .....	25	5,741	37	2,901	123	15,798	671	25,296	52	85	77	214
2013 Total .....	22	5,902	44	2,969	130	16,036	581	25,685	55	123	77	255
2014 Total .....	22	6,162	47	3,042	136	16,212	447	26,067	82	118	95	295
2015 January .....	1	488	4	242	14	<sup>g</sup> 1,304	42	2,096	7	11	11	29
February .....	1	473	3	229	10	1,204	6	1,928	21	11	26	59
March .....	1	521	3	272	14	1,367	42	2,221	5	8	5	18
April .....	2	529	3	260	13	1,343	25	2,175	4	8	5	17
May .....	2	535	3	267	15	1,399	38	2,259	5	9	5	19
June .....	2	545	3	281	12	1,376	30	2,249	4	9	6	19
July .....	3	566	3	290	14	1,430	52	2,359	4	11	7	23
August .....	2	566	3	281	11	1,428	48	2,340	4	11	6	21
September .....	2	543	3	261	11	1,357	42	2,219	4	10	6	20
October .....	2	530	3	284	13	1,396	38	2,266	4	8	5	17
November .....	1	474	3	259	9	1,331	47	2,126	5	7	6	18
December .....	1	488	4	277	12	1,381	53	2,216	4	8	5	17
Total .....	21	6,259	40	3,204	148	16,317	463	26,453	70	112	94	276
2016 January .....	1	473	4	255	12	1,307	48	2,100	7	9	7	23
February .....	2	455	4	252	13	1,303	23	2,051	5	9	7	22
March .....	2	517	4	272	13	1,416	61	2,283	4	10	4	18
April .....	2	508	3	266	12	1,341	74	2,206	4	11	4	19
May .....	2	530	3	277	12	1,422	54	2,301	5	10	5	19
June .....	2	538	3	293	13	1,404	54	2,307	4	11	5	20
July .....	2	541	3	302	10	1,447	68	2,374	5	11	8	24
August .....	2	567	3	303	11	1,463	50	2,399	4	12	8	24
September .....	2	529	3	278	11	1,386	39	2,248	4	11	5	20
October .....	2	543	3	283	12	1,373	55	2,272	4	7	6	16
November .....	2	504	3	278	11	1,350	49	2,196	5	8	5	18
December .....	2	506	4	291	11	1,402	49	2,263	5	9	6	20
Total .....	20	6,211	40	3,350	141	16,614	623	26,999	55	118	71	244
2017 January .....	1	<sup>R</sup> 467	4	280	10	1,284	77	<sup>R</sup> 2,123	5	10	5	21
February .....	1	<sup>R</sup> 449	3	242	10	1,226	39	<sup>R</sup> 1,970	4	7	5	16
March .....	2	<sup>R</sup> 532	3	293	12	<sup>R</sup> 1,412	<sup>R</sup> 60	<sup>R</sup> 2,315	5	8	5	17
April .....	2	<sup>R</sup> 510	3	275	9	<sup>R</sup> 1,351	51	<sup>R</sup> 2,202	4	4	5	13
May .....	2	<sup>R</sup> 555	3	294	10	1,448	61	<sup>R</sup> 2,373	5	9	5	19
June .....	3	<sup>R</sup> 544	3	300	10	1,427	67	<sup>R</sup> 2,354	4	9	6	19
July .....	2	<sup>R</sup> 556	3	304	9	1,446	44	<sup>R</sup> 2,363	4	9	5	18
August .....	2	<sup>R</sup> 574	3	311	8	<sup>R</sup> 1,475	55	<sup>R</sup> 2,428	4	8	6	17
September .....	1	<sup>R</sup> 535	3	279	10	<sup>R</sup> 1,363	<sup>R</sup> 48	<sup>R</sup> 2,239	4	7	5	17
October .....	1	<sup>R</sup> 549	3	301	11	<sup>R</sup> 1,411	60	<sup>R</sup> 2,338	4	6	5	16
November .....	2	<sup>R</sup> 519	4	293	10	1,336	71	<sup>R</sup> 2,234	4	7	5	16
December .....	2	500	4	309	8	1,389	61	2,272	8	8	9	25
Total .....	21	6,291	40	3,480	117	16,568	694	27,212	55	94	66	214

<sup>a</sup> 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.

<sup>b</sup> Hydrocarbon gas liquids.

<sup>c</sup> Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

<sup>d</sup> Propane and propylene.

<sup>e</sup> 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.)

<sup>f</sup> Finished motor gasoline. Through 1963, also includes special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.

<sup>g</sup> 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.

<sup>h</sup> 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.

<sup>i</sup> 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.

<sup>R</sup>=Revised. 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. This also includes petroleum products supplied for non-combustion use in the industrial and transportation sectors (see Tables 1.11a and 1.11b). In general, except for crude oil, product supplied of each product is computed as follows: field production, plus renewable fuels and oxygenate plant net production, plus refinery and blender net production, plus imports, plus net receipts, plus adjustments, minus stock change, minus refinery and blender net inputs, minus 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.

## Hydrocarbon Gas Liquids (HGL)—Propane (Including Propylene)

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

## Hydrocarbon Gas Liquids (HGL)—Total

Prior to the current two months, product supplied data in thousand barrels per day for the component products of HGL (ethane, propane, normal butane, isobutane, natural gasoline, and refinery olefins—ethylene, propylene, butylene, and 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 HGL product supplied is the sum of the data in trillion Btu for the HGL component products.

For the current two months: Note that “liquefied petroleum gases” (“LPG”) below include ethane, propane, normal butane, isobutane, and refinery olefins (ethylene, propylene, butylene, and isobutylene), but exclude natural gasoline. Product supplied data in thousand barrels per day for LPG are from EIA’s Short-Term Integrated Forecasting System (STIFS). (The STIFS model results are used in EIA’s *Short-Term Energy Outlook*, which is accessible on the Web at <https://www.eia.gov/outlooks/steo/>.) These data are converted to trillion Btu by multiplying by the previous year’s quantity-weighted LPG heat content factor (derived using LPG component heat content factors in Table A1). Product supplied data in thousand barrels per day for natural gasoline are from STIFS, and are converted to trillion Btu by multiplying by the natural gasoline heat content factor in Table A1. Total HGL product supplied is the sum of the data in trillion Btu for LPG and natural gasoline.

## 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.

## 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 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 HGL, 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.

### **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.

1981–2016: EIA, *Petroleum Supply Annual (PSA)*, annual reports, and unpublished revisions.

2017: EIA, *Petroleum Supply Monthly (PSM)*, 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.

#### **Hydrocarbon Gas Liquids (HGL)—Propane (Including Propylene) and Total**

Note that "liquefied petroleum gases" ("LPG") below include ethane, propane, normal butane, isobutane, and refinery olefins (ethylene, propylene, butylene, and isobutylene), but exclude natural gasoline.

The annual shares of LPG 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 propane 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 to the residential sector and sales to retailers, 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 propane sold each year for consumption in internal combustion engines is allocated between the

transportation and industrial sectors using data for special fuels used on highways provided by the U.S. Department of Transportation, Federal Highway Administration. The transportation portion is assumed to equal annual LPG consumption by the transportation sector.

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 consumption estimates for creating annual sector 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.

1984–2007: American Petroleum Institute (API), "Sales of Natural Gas Liquids and Liquefied Refinery Gases," table on sales of natural gas liquids and liquefied refinery gases by end use. EIA adjusts the data to remove quantities of natural gasoline and to estimate withheld values.

2008 forward: Propane consumption is from API, "Sales of Natural Gas Liquids and Liquefied Refinery Gases," table on sales of propane by end use. EIA adjusts the data to estimate withheld values. Other LPG consumption is from EIA, PSA, annual reports, and is allocated to the industrial sector.

Residential sector propane (including propylene) consumption is equal to residential sector LPG consumption.

Commercial sector propane (including propylene) consumption is equal to commercial sector LPG consumption.

Transportation sector propane (including propylene) consumption is equal to transportation sector LPG consumption.

Industrial sector propane (including propylene) consumption is equal to propane (including propylene) product supplied from the PSA, PSM, and earlier publications (see sources for Table 3.5), minus propane (including propylene) consumption in the residential, commercial, and transportation sectors.

Industrial sector total HGL consumption: Product supplied data in thousand barrels per day for natural gasoline are



from the PSA, PSM, and earlier publications (see sources for Table 3.5). Industrial sector total HGL consumption is the sum of industrial sector LPG consumption and natural gasoline product supplied.

### 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.

### 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 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.

#### **Hydrocarbon Gas Liquids (HGL)—Propane (Including Propylene)**

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

#### **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.

#### **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.

### Hydrocarbon Gas Liquids (HGL)—Propane (Including Propylene)

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

### Hydrocarbon Gas Liquids (HGL)—Total

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

### 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.

### 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.

### Hydrocarbon Gas Liquids (HGL)—Propane (Including Propylene)

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

### 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.)

### **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**

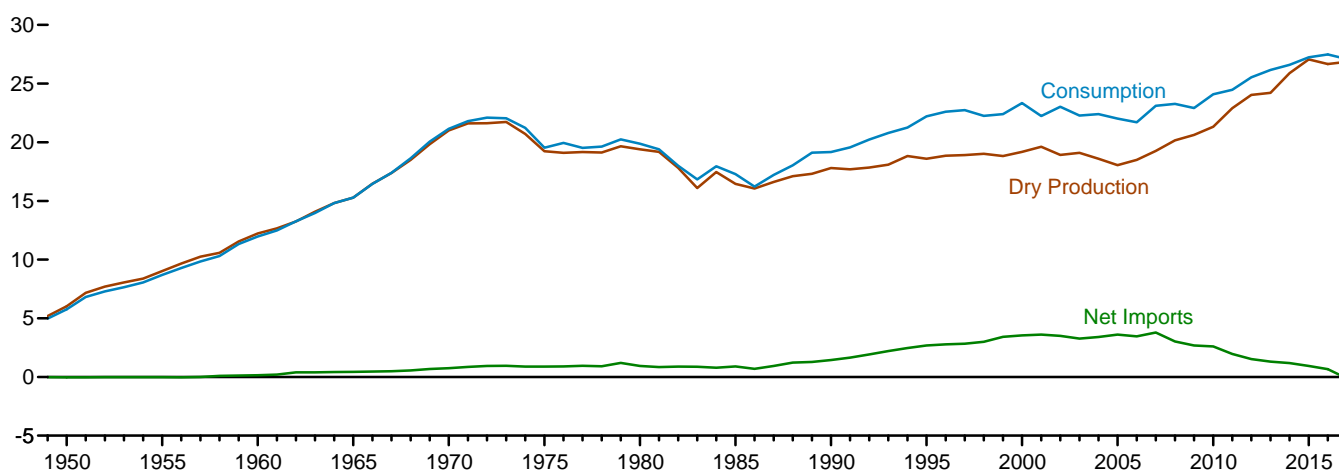
Transportation sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under “Transportation Sector” in Table 3.8c. Electric power sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under “Electric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

## 4. Natural Gas

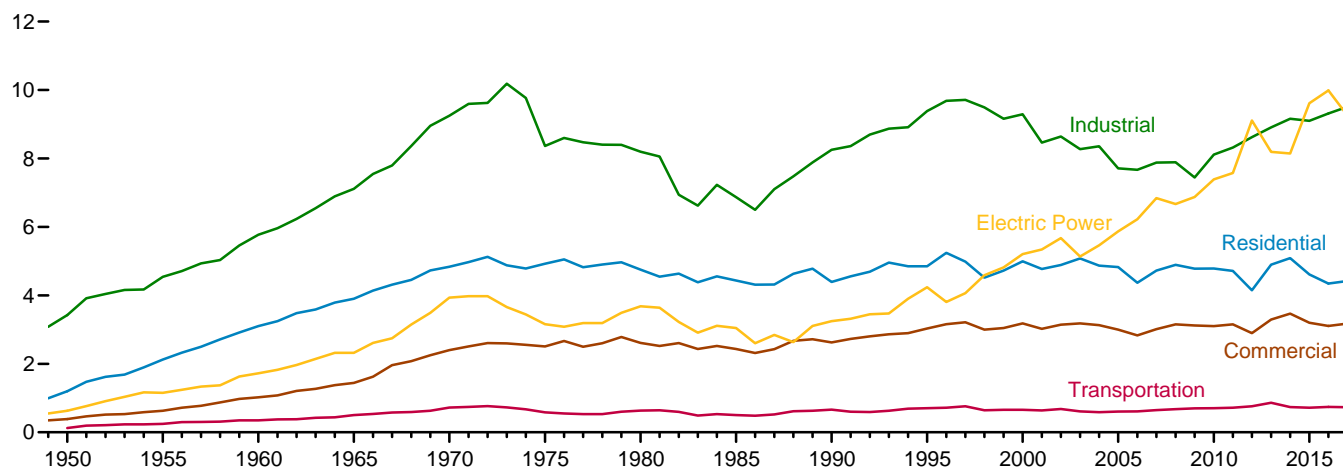
---

**Figure 4.1 Natural Gas**  
(Trillion Cubic Feet)

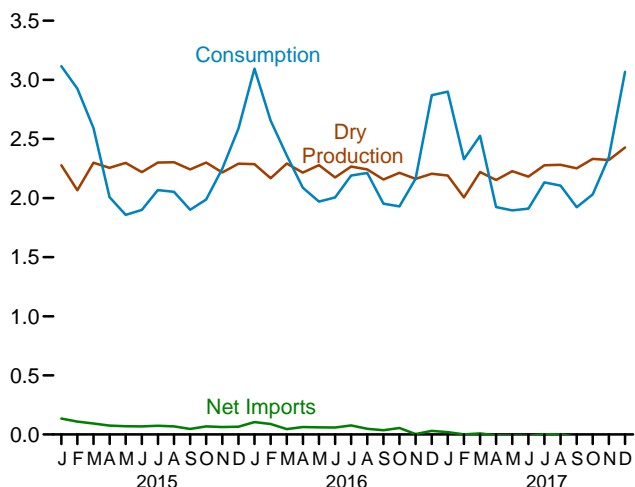
Overview, 1949–2017



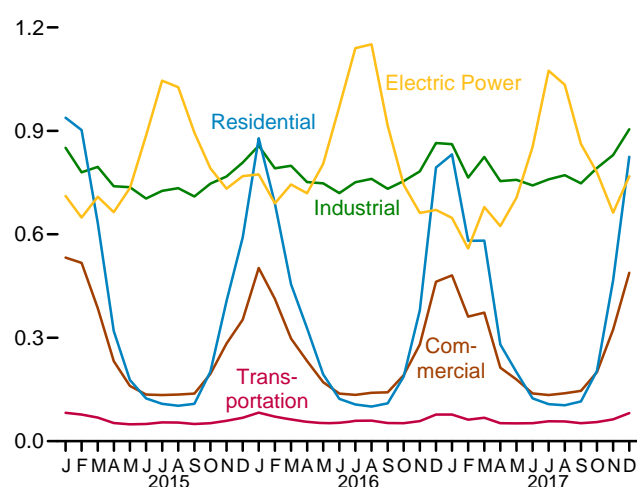
Consumption by Sector, 1949–2017



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 <sup>a</sup>	Marketed Production (Wet) <sup>b</sup>	NGPL Production <sup>c</sup>	Dry Gas Production <sup>d</sup>	Supplemental Gaseous Fuels <sup>e</sup>	Trade			Net Storage Withdrawals <sup>f</sup>	Balancing Item <sup>g</sup>	Consumption <sup>h</sup>
						Imports	Exports	Net Imports			
1950 Total	8,480	<sup>i</sup> 6,282	260	<sup>i</sup> 6,022	NA	0	26	-26	-54	-175	5,767
1955 Total	11,720	<sup>i</sup> 9,405	377	<sup>i</sup> 9,029	NA	11	31	-20	-68	-247	8,694
1960 Total	15,088	<sup>i</sup> 12,771	543	<sup>i</sup> 12,228	NA	156	11	144	-132	-274	11,967
1965 Total	17,963	<sup>i</sup> 16,040	753	<sup>i</sup> 15,286	NA	456	26	430	-118	-319	15,280
1970 Total	23,786	<sup>i</sup> 21,921	906	<sup>i</sup> 21,014	NA	821	70	751	-398	-228	21,139
1975 Total	21,104	<sup>i</sup> 20,109	872	<sup>i</sup> 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	<sup>j</sup> 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	2,790	2,420	144	2,277	5	279	145	135	741	-42	3,115
February	2,521	2,197	130	2,067	4	254	145	109	757	-12	2,925
March	2,828	2,443	145	2,298	5	257	164	93	201	-6	2,591
April	2,759	2,398	142	2,256	5	205	130	75	-329	1	2,008
May	2,791	2,443	145	2,298	5	204	134	70	-507	-8	1,858
June	2,660	2,358	140	2,219	5	206	138	68	-370	-21	1,900
July	2,756	2,445	145	2,300	5	217	144	73	-292	-19	2,068
August	2,745	2,448	145	2,302	5	214	145	69	-317	-7	2,053
September	2,721	2,384	141	2,242	5	209	163	46	-381	-11	1,901
October	2,606	2,445	145	2,300	5	226	159	68	-339	-47	1,987
November	2,726	2,356	140	2,216	5	218	156	63	16	-51	2,249
December	2,812	2,435	144	2,290	5	227	162	66	272	-45	2,588
Total	32,915	28,772	1,707	27,065	59	2,718	1,784	935	-547	-268	27,244
2016 January	2,828	2,443	156	2,287	5	274	169	105	741	-43	3,095
February	2,656	2,315	148	2,167	5	252	163	89	411	-17	2,655
March	2,828	2,449	156	2,293	5	241	195	46	53	-37	2,359
April	2,681	2,366	151	2,215	5	241	178	63	-171	-26	2,087
May	2,787	2,433	155	2,278	5	248	188	60	-337	-36	1,970
June	2,636	2,323	148	2,175	5	242	183	59	-229	-5	2,004
July	2,730	2,421	154	2,266	5	265	189	76	-139	-17	2,191
August	2,726	2,395	153	2,242	5	262	214	48	-130	48	2,213
September	2,630	2,304	147	2,157	5	238	202	37	-270	24	1,952
October	2,718	2,365	151	2,214	5	231	176	55	-317	-28	1,929
November	2,673	2,310	147	2,162	5	231	228	3	39	-46	2,163
December	2,742	2,356	150	2,206	5	281	251	30	688	-59	2,869
Total	32,636	28,479	1,817	26,663	57	3,006	2,335	671	339	-242	27,487
2017 January	<sup>E</sup> 2,727	<sup>E</sup> 2,339	149	<sup>E</sup> 2,191	5	292	272	20	675	9	2,899
February	<sup>E</sup> 2,504	<sup>E</sup> 2,148	143	<sup>E</sup> 2,005	5	255	255	(s)	285	<sup>R</sup> 34	<sup>R</sup> 2,328
March	<sup>E</sup> 2,778	<sup>E</sup> 2,381	161	<sup>E</sup> 2,220	5	281	272	9	275	<sup>R</sup> 17	<sup>R</sup> 2,526
April	<sup>E</sup> 2,682	<sup>E</sup> 2,308	156	<sup>E</sup> 2,153	5	238	247	-9	-230	<sup>R</sup> 6	<sup>R</sup> 1,924
May	<sup>E</sup> 2,770	<sup>E</sup> 2,391	164	<sup>E</sup> 2,227	3	244	254	-10	-341	<sup>R</sup> 16	<sup>R</sup> 1,895
June	<sup>E</sup> 2,682	<sup>E</sup> 2,341	160	<sup>E</sup> 2,180	4	240	253	-14	-281	<sup>R</sup> 20	<sup>R</sup> 1,910
July	<sup>E</sup> 2,750	<sup>E</sup> 2,443	166	<sup>E</sup> 2,277	5	251	248	2	-150	<sup>R</sup> 1	<sup>R</sup> 2,133
August	<sup>E</sup> 2,764	<sup>E</sup> 2,444	163	<sup>E</sup> 2,281	5	248	247	1	-196	<sup>R</sup> 14	<sup>R</sup> 2,105
September	<sup>E</sup> 2,757	<sup>E</sup> 2,408	157	<sup>E</sup> 2,251	5	<sup>R</sup> 229	250	-21	-317	<sup>R</sup> 4	<sup>R</sup> 1,923
October	<sup>RE</sup> 2,888	<sup>RE</sup> 2,507	176	<sup>RE</sup> 2,331	4	244	281	-37	-248	<sup>R</sup> 19	<sup>R</sup> 2,031
November	<sup>RE</sup> 2,874	<sup>RE</sup> 2,496	174	<sup>RE</sup> 2,322	6	242	288	-46	85	<sup>R</sup> 20	<sup>R</sup> 2,347
December	<sup>E</sup> 2,994	<sup>E</sup> 2,600	173	<sup>E</sup> 2,427	5	276	299	-23	693	-34	3,067
Total	<sup>E</sup> 33,170	<sup>E</sup> 28,807	1,943	<sup>E</sup> 26,863	56	3,039	3,168	-129	251	47	27,089

<sup>a</sup> 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.

<sup>b</sup> Gross withdrawals minus natural gas repressuring, nonhydrocarbon gases removed, and vented and flared. See Note 1, "Natural Gas Production," at end of section.

<sup>c</sup> 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.

<sup>d</sup> Marketed production (wet) minus NGPL production.

<sup>e</sup> See Note 3, "Supplemental Gaseous Fuels," at end of section.

<sup>f</sup> 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.

<sup>g</sup> 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).

<sup>h</sup> See Note 6, "Natural Gas Consumption," at end of section.

<sup>i</sup> Through 1979, may include unknown quantities of nonhydrocarbon gases.

<sup>j</sup> 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.

<sup>R</sup>Revised. <sup>E</sup>Estimate. <sup>NA</sup>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*, February 2018, Table 1.

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

	Imports									Exports <sup>a</sup>				
	Algeria <sup>b</sup>	Canada <sup>c</sup>	Egypt <sup>b</sup>	Mexico <sup>c</sup>	Nigeria <sup>b</sup>	Qatar <sup>b</sup>	Trinidad and Tobago <sup>b</sup>	Other <sup>b,d</sup>	Total	Canada <sup>c</sup>	Japan <sup>b</sup>	Mexico <sup>c</sup>	Other <sup>b,e</sup>	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
<b>2015 January .....</b>	<b>0</b>	<b>268</b>	<b>0</b>	<b>(s)</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>279</b>	<b>73</b>	<b>0</b>	<b>69</b>	<b>3</b>	<b>145</b>
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
<b>Total .....</b>	<b>0</b>	<b>2,626</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>71</b>	<b>20</b>	<b>2,718</b>	<b>701</b>	<b>8</b>	<b>1,054</b>	<b>20</b>	<b>1,784</b>
<b>2016 January .....</b>	<b>0</b>	<b>262</b>	<b>0</b>	<b>(s)</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>274</b>	<b>70</b>	<b>0</b>	<b>99</b>	<b>0</b>	<b>169</b>
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	105	10	178
May .....	0	243	0	(s)	0	0	5	0	248	63	0	116	10	188
June .....	0	234	0	(s)	0	0	8	0	242	51	0	116	16	183
July .....	0	259	0	(s)	0	0	6	0	265	50	0	123	16	189
August .....	0	254	0	(s)	0	0	8	0	262	55	0	136	23	214
September .....	0	236	0	(s)	0	0	3	0	238	61	0	127	13	202
October .....	0	226	0	(s)	0	0	6	0	231	43	0	130	3	176
November .....	0	222	0	(s)	0	0	6	3	231	75	0	134	20	228
December .....	0	272	0	(s)	0	0	9	0	281	97	11	119	23	251
<b>Total .....</b>	<b>0</b>	<b>2,918</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>84</b>	<b>3</b>	<b>3,006</b>	<b>771</b>	<b>11</b>	<b>1,405</b>	<b>148</b>	<b>2,335</b>
<b>2017 January .....</b>	<b>0</b>	<b>279</b>	<b>0</b>	<b>(s)</b>	<b>3</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>292</b>	<b>99</b>	<b>11</b>	<b>136</b>	<b>27</b>	<b>272</b>
February .....	0	246	0	(s)	0	0	8	0	255	88	4	130	34	255
March .....	0	276	0	(s)	0	0	5	0	281	100	0	140	33	272
April .....	0	233	0	(s)	0	0	5	0	238	81	7	130	29	247
May .....	0	239	0	(s)	0	0	5	0	244	64	4	139	47	254
June .....	0	234	0	(s)	0	0	5	0	240	67	4	159	24	253
July .....	0	245	0	(s)	0	0	5	0	251	60	0	150	39	248
August .....	0	240	0	(s)	0	0	8	0	248	66	4	142	35	247
September .....	0	227	0	(s)	0	0	R 2	0	R 229	70	0	136	44	250
October .....	0	242	0	(s)	0	0	2	0	244	68	7	140	66	281
November .....	0	236	0	(s)	0	0	6	0	242	74	0	145	69	288
December .....	0	265	0	1	3	0	8	0	276	81	14	139	65	299
<b>Total .....</b>	<b>0</b>	<b>2,962</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>0</b>	<b>70</b>	<b>0</b>	<b>3,039</b>	<b>917</b>	<b>53</b>	<b>1,684</b>	<b>513</b>	<b>3,168</b>

<sup>a</sup> Includes re-exports.

<sup>b</sup> As liquefied natural gas.

<sup>c</sup> 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.

<sup>d</sup> 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.

<sup>e</sup> Argentina in 2016 and 2017; Barbados in 2016 and 2017; Brazil in 2010–2012, and 2014–2017; Chile in 2011, 2016, and 2017; China in 2011, 2016, and 2017; Dominican Republic in 2016 and 2017; Egypt in 2015–2017; India in 2010–2012, 2016, and 2017; Italy in 2016 and 2017; Jordan in 2016 and 2017; Kuwait in 2016 and 2017; Lithuania in 2017; Malta in 2017; Netherlands in 2017; Pakistan in 2017; Poland 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

and 2017; Thailand in 2017; Turkey in 2015–2017; United Arab Emirates in 2016 and 2017; and United Kingdom in 2010 and 2011 and 2017.

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*, February 2018, 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 <sup>g</sup>	Total
	Residential	Commercial <sup>a</sup>	Lease and Plant Fuel	Industrial			Total	Transportation				
				Other Industrial		Pipelines <sup>d</sup> and Distribution <sup>e</sup>		Vehicle Fuel	Total			
				CHP <sup>b</sup>	Non-CHP <sup>c</sup>					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	1,055	5,963	7,018	8,255	660	(s)	660	3,245	19,174
1995 Total	4,850	3,031	1,220	1,258	6,906	8,164	9,384	700	5	705	4,237	22,207
2000 Total	4,996	3,182	1,151	1,386	6,757	8,142	9,293	642	13	655	5,206	23,333
2001 Total	4,771	3,023	1,119	1,310	6,035	7,344	8,463	625	15	640	5,342	22,239
2002 Total	4,889	3,144	1,113	1,240	6,287	7,527	8,640	667	15	682	5,672	23,027
2003 Total	5,079	3,179	1,122	1,144	6,007	7,150	8,273	591	18	610	5,135	22,277
2004 Total	4,869	3,129	1,098	1,191	6,066	7,256	8,354	566	21	587	5,464	22,403
2005 Total	4,827	2,999	1,112	1,084	5,518	6,601	7,713	584	23	607	5,869	22,014
2006 Total	4,368	2,832	1,142	1,115	5,412	6,527	7,669	584	24	608	6,222	21,699
2007 Total	4,722	3,013	1,226	1,050	5,604	6,655	7,881	621	25	646	6,841	23,104
2008 Total	4,892	3,153	1,220	955	5,715	6,670	7,890	648	26	674	6,668	23,277
2009 Total	4,779	3,119	1,275	990	5,178	6,167	7,443	670	27	697	6,873	22,910
2010 Total	4,782	3,103	1,286	1,029	5,797	6,826	8,112	674	29	703	7,387	24,087
2011 Total	4,714	3,155	1,323	1,063	5,931	6,994	8,317	688	30	718	7,574	24,477
2012 Total	4,150	2,895	1,396	1,149	6,077	7,226	8,622	731	30	761	9,111	25,538
2013 Total	4,897	3,295	1,483	1,170	6,255	7,425	8,909	833	30	863	8,191	26,155
2014 Total	5,087	3,466	1,512	1,145	6,501	7,646	9,158	700	35	735	8,146	26,593
2015 January	938	533	133	103	615	718	851	79	3	82	711	3,115
February	902	517	120	92	567	660	780	74	3	77	648	2,925
March	633	386	134	99	563	662	795	65	3	68	709	2,591
April	319	232	131	93	515	608	739	50	3	53	664	2,008
May	178	161	134	95	508	603	737	46	3	49	734	1,858
June	124	135	129	101	474	575	704	47	3	50	886	1,900
July	108	134	134	109	482	592	726	51	3	54	1,046	2,068
August	103	135	134	110	489	600	734	51	3	54	1,027	2,053
September	108	138	131	102	477	579	710	47	3	50	895	1,901
October	202	195	134	102	511	613	747	49	3	52	792	1,987
November	407	283	129	103	535	639	768	56	3	59	732	2,249
December	591	353	133	110	564	675	808	65	3	68	769	2,588
Total	4,613	3,202	1,576	1,222	6,300	7,522	9,098	678	39	718	9,613	27,244
2016 January	879	503	136	103	617	720	857	80	3	83	774	3,095
February	690	413	129	95	567	662	791	68	3	71	690	2,655
March	455	298	137	99	563	662	799	60	3	63	745	2,359
April	328	233	132	95	525	620	752	53	3	56	719	2,087
May	194	171	136	98	515	612	748	49	3	53	804	1,970
June	123	138	130	101	489	590	720	51	3	54	970	2,004
July	106	134	135	107	509	616	751	55	4	59	1,140	2,191
August	100	140	134	108	519	627	761	56	4	60	1,151	2,213
September	110	142	129	101	502	604	732	49	4	53	915	1,952
October	187	191	132	99	523	622	754	48	4	52	744	1,929
November	380	280	129	99	555	654	782	55	4	58	662	2,163
December	794	462	132	104	629	733	865	74	4	77	671	2,869
Total	4,345	3,105	1,590	1,209	6,513	7,722	9,312	697	42	739	9,985	27,487
2017 January	832	481	E 131	R 107	624	731	861	E 74	E 4	E 77	R 647	2,899
February	R 581	361	E 120	97	548	645	765	E 59	E 3	E 62	R 559	R 2,328
March	582	373	E 133	103	588	691	824	RE 64	E 4	RE 68	R 679	R 2,526
April	281	213	E 129	98	527	625	754	E 49	E 4	E 52	R 624	R 1,924
May	200	179	E 133	99	526	625	758	E 48	E 4	E 52	R 706	R 1,895
June	124	138	E 131	100	511	611	742	RE 48	E 4	E 52	R 854	R 1,910
July	107	134	E 136	107	516	623	759	E 54	E 4	E 58	R 1,074	R 2,133
August	104	139	E 136	103	532	635	771	RE 53	E 4	RE 57	R 1,034	R 2,105
September	115	146	E 134	98	515	613	748	E 49	E 4	RE 52	R 862	R 1,923
October	204	200	E 140	R 100	R 552	R 652	792	E 52	E 4	E 55	R 780	R 2,031
November	467	324	E 139	102	589	691	830	E 70	E 4	E 63	R 663	R 2,347
December	825	488	E 145	113	646	759	905	E 78	E 4	E 82	768	3,067
Total	4,422	3,176	E 1,608	1,226	6,675	7,902	9,510	E 687	E 43	E 731	9,250	27,089

<sup>a</sup> 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.

<sup>b</sup> Industrial combined-heat-and-power (CHP) and a small number of industrial electricity-only plants.

<sup>c</sup> All industrial sector fuel use other than that in "Lease and Plant Fuel" and "CHP."

<sup>d</sup> 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.

<sup>e</sup> 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.

<sup>f</sup> 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.

<sup>g</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

<sup>h</sup> Included in "Non-CHP."

<sup>i</sup> 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)*, February 2018, 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, February 2018, 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 <sup>a</sup>	Volume	Percent	Withdrawals	Injections	Net <sup>b,c</sup>
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	-499
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 .....	4,368	2,407	6,776	482	25.1	795	70	725
February .....	4,368	1,666	6,034	466	38.8	803	62	742
March .....	4,369	1,471	5,841	614	71.6	376	182	193
April .....	4,369	1,793	6,162	727	68.1	84	405	-321
May .....	4,371	2,287	6,658	739	47.8	44	541	-496
June .....	4,375	2,647	7,022	641	32.0	68	430	-362
July .....	4,380	2,924	7,305	524	21.9	95	379	-284
August .....	4,372	3,242	7,614	473	17.1	85	394	-309
September .....	4,373	3,614	7,987	427	13.4	63	435	-372
October .....	4,374	3,942	8,316	355	9.9	70	401	-331
November .....	4,376	3,927	8,303	500	14.6	214	201	12
December .....	4,372	3,667	8,038	525	16.7	403	138	264
Total .....	4,372	3,667	8,038	525	16.7	3,100	3,638	-539
2016 January .....	4,369	2,938	7,307	531	22.1	795	66	729
February .....	4,369	2,534	6,904	869	52.2	515	111	403
March .....	4,360	2,486	6,847	1,015	69.0	264	215	49
April .....	4,364	2,646	7,009	852	47.5	130	294	-164
May .....	4,366	2,966	7,332	679	29.7	74	402	-329
June .....	4,369	3,186	7,555	539	20.4	94	316	-222
July .....	4,369	3,318	7,687	394	13.5	150	283	-133
August .....	4,369	3,441	7,811	200	6.2	162	285	-124
September .....	4,369	3,705	8,074	91	2.5	88	351	-262
October .....	4,371	4,013	8,384	70	1.8	78	387	-308
November .....	4,372	3,977	8,349	50	1.3	213	178	35
December .....	4,380	3,297	7,677	-370	-10.1	762	87	676
Total .....	4,380	3,297	7,677	-370	-10.1	3,325	2,977	348
2017 January .....	4,379	2,623	7,002	-315	-10.7	776	101	675
February .....	4,378	2,338	6,716	-196	-7.7	416	131	285
March .....	4,379	2,063	6,442	-423	-17.0	443	167	275
April .....	4,380	2,292	6,672	-353	-13.4	111	341	-230
May .....	4,386	2,627	7,013	-339	-11.4	82	423	-341
June .....	4,355	2,908	7,263	-278	-8.7	106	387	-281
July .....	4,357	3,055	7,412	-263	-7.9	160	310	-150
August .....	4,356	3,250	7,606	-191	-5.6	160	355	-196
September .....	4,356	3,568	7,924	-137	-3.7	107	423	-317
October .....	4,355	3,817	8,171	-196	-4.9	137	385	-248
November .....	4,354	3,732	8,086	-245	-6.1	288	203	85
December .....	4,359	3,039	7,398	-258	-7.8	773	80	693
Total .....	4,359	3,039	7,398	-258	-7.8	3,559	3,308	251

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

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

<sup>c</sup> 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, February 2018, 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, February 2018, 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	1990	...	7,794	2005	...	8,268
1976	...	6,544	1991	...	7,993	2006	...	8,330
1977	...	6,678	1992	...	7,932	2007	...	8,402
1978	...	6,890	1993	...	7,989	2008	...	8,499
1979	...	6,929	1994	...	8,043	2009	...	8,656
1980	...	7,434	1995	...	7,953	2010	...	8,764
1981	...	7,805	1996	...	7,980	2011	...	8,849
1982	...	7,915	1997	...	8,332	2012	...	8,991
1983	...	7,985	1998	...	8,179	2013	...	9,173
1984	...	8,043	1999	...	8,229	2014	...	9,233
1985	...	8,087	2000	...	8,241	2015	...	9,231
1986	...	8,145	2001	...	8,182	2016	...	9,239
1987	...	8,124	2002	...	8,207	2017	...	9,264
1988	...	8,124	2003	...	8,206			
1989	...	8,120	2004	...	8,255			

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 also includes the relatively small amount of natural gas consumption for non-combustion use (see Tables 1.11a and 1.11b); "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](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 (1,569 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, Pakistan, 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.

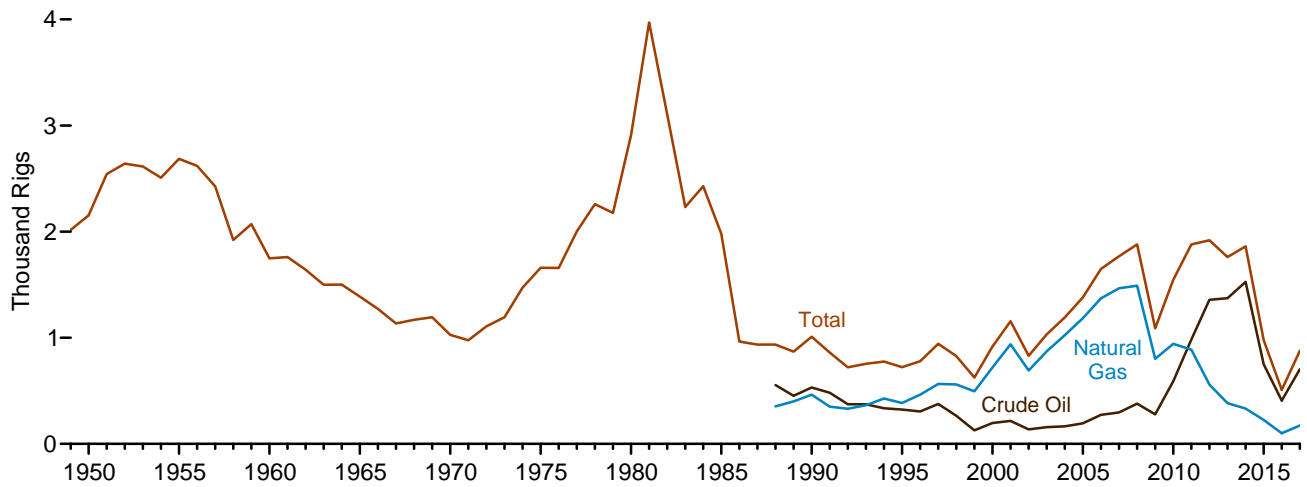
Preliminary monthly data are EIA estimates. For a discussion of estimation procedures, see EIA's *Natural Gas Monthly*. Preliminary data are revised after publication of EIA's *U.S. Imports and Exports of Natural Gas*.

## **5. Crude Oil and Natural Gas Resource Development**

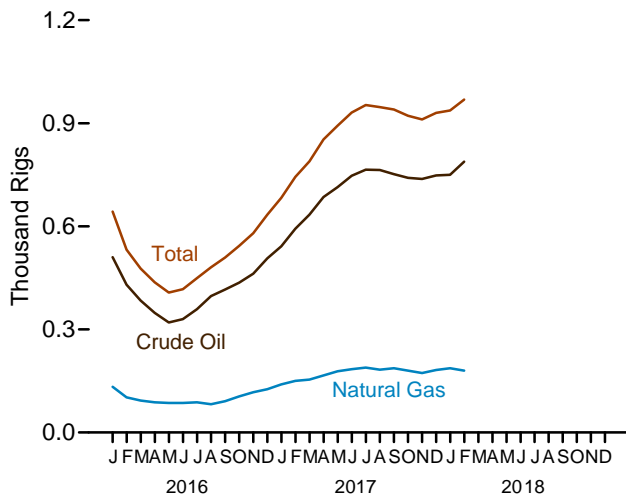
---

**Figure 5.1 Crude Oil and Natural Gas Resource Development Indicators**

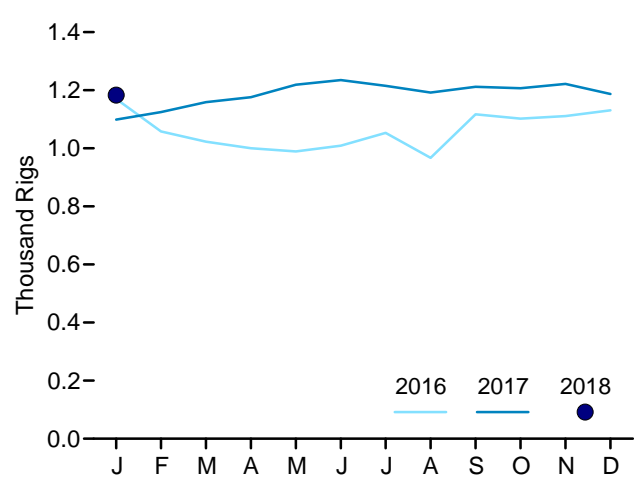
Rotary Rigs in Operation by Type, 1949–2017



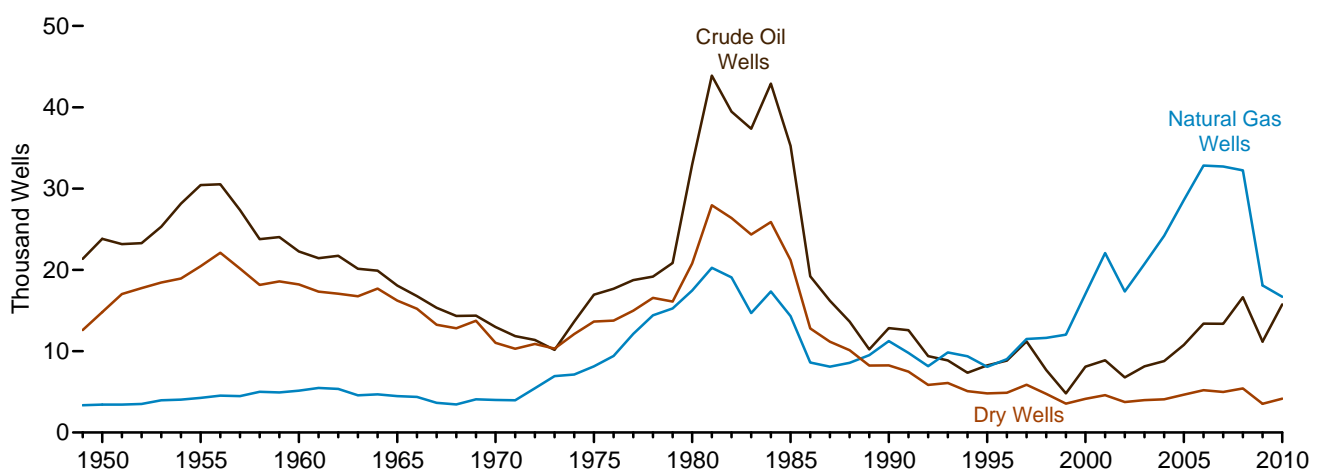
Rotary Rigs in Operation by Type, Monthly



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 <sup>a</sup>					Active Well Service Rig Count <sup>c</sup>
	By Site		By Type		Total <sup>b</sup>	
	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 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	1,235
July .....	931	22	765	189	953	1,215
August .....	930	17	764	183	947	1,192
September .....	922	18	752	187	940	1,212
October .....	901	21	741	180	922	1,207
November .....	891	20	738	173	911	1,222
December .....	911	19	748	182	930	1,187
Average .....	856	20	703	172	876	1,187
2018 January .....	919	18	750	187	937	<sup>R</sup> 1,183
February .....	952	17	788	180	969	NA
2-Month Average .....	935	17	769	183	953	NA
2017 2-Month Average .....	692	22	568	145	713	1,112
2016 2-Month Average .....	561	27	470	118	587	1,114

<sup>a</sup> 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.

<sup>b</sup> 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.

<sup>c</sup> 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](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.

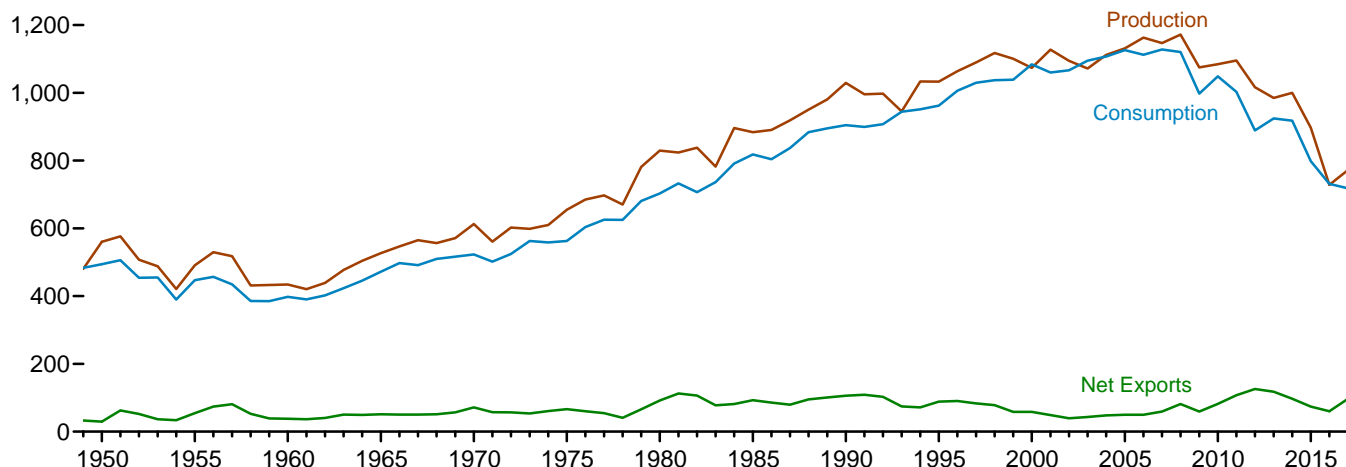
THIS PAGE INTENTIONALLY LEFT BLANK

## 6. Coal

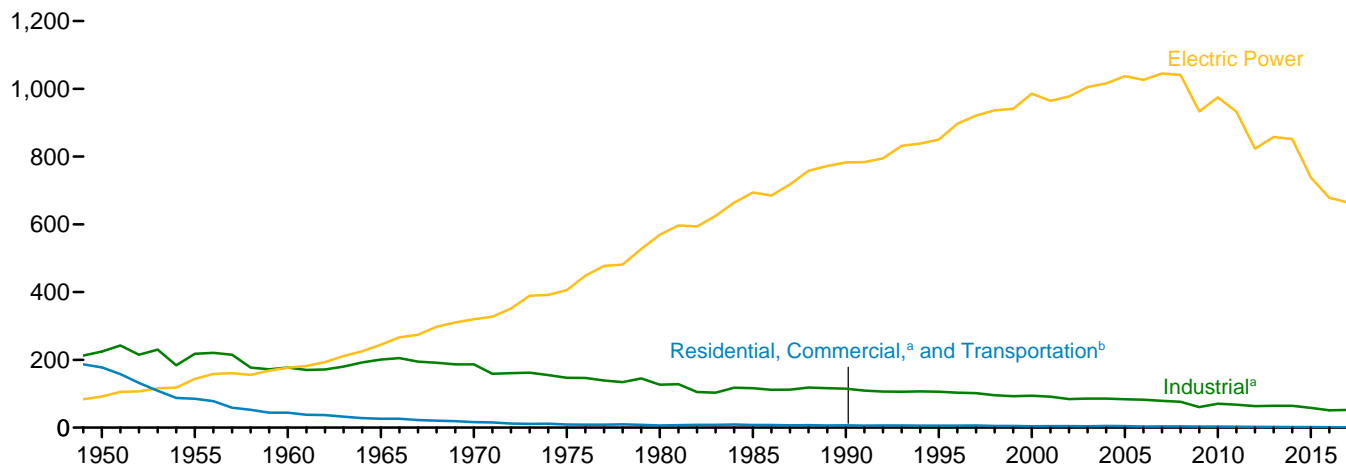
---

**Figure 6.1 Coal**  
(Million Short Tons)

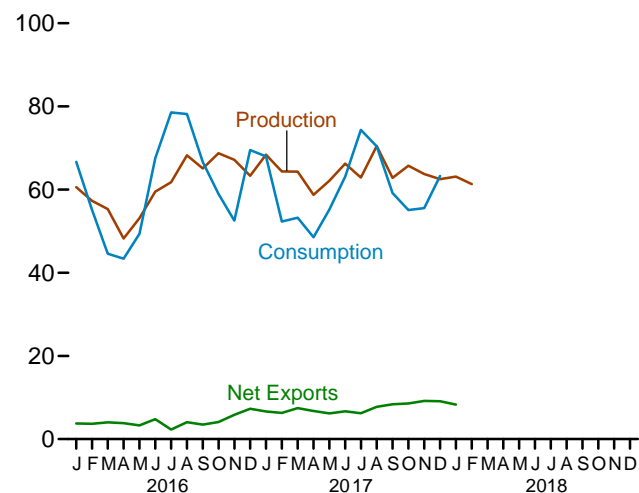
Overview, 1949–2017



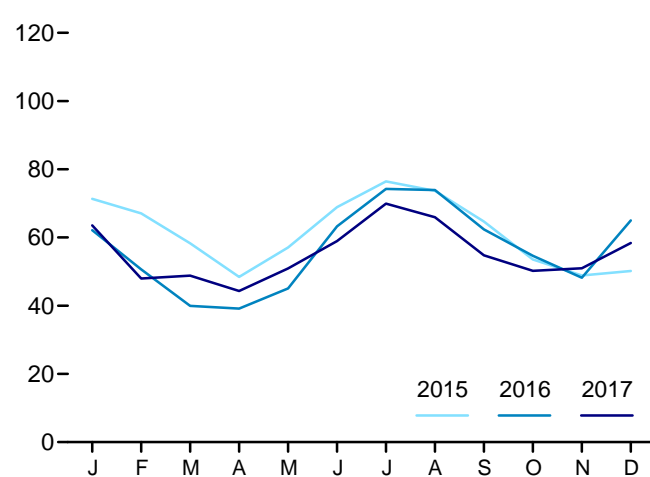
Consumption by Sector, 1949–2017



Overview, Monthly



Electric Power Sector Consumption, Monthly



<sup>a</sup> Includes combined-heat-and-power (CHP) plants and a small number of electricity-only-plants.

<sup>b</sup> 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 <sup>a</sup>	Waste Coal Supplied <sup>b</sup>	Trade			Stock Change <sup>d,e</sup>	Losses and Unaccounted for <sup>e,f</sup>	Consumption
			Imports	Exports	Net Imports <sup>c</sup>			
<b>1950 Total</b> .....	560,388	NA	365	29,360	-28,995	27,829	9,462	494,102
<b>1955 Total</b> .....	490,838	NA	337	54,429	-54,092	-3,974	-6,292	447,012
<b>1960 Total</b> .....	434,329	NA	262	37,981	-37,719	-3,194	1,722	398,081
<b>1965 Total</b> .....	526,954	NA	184	51,032	-50,848	1,897	2,244	471,965
<b>1970 Total</b> .....	612,661	NA	36	71,733	-71,697	11,100	6,633	523,231
<b>1975 Total</b> .....	654,641	NA	940	66,309	-65,369	32,154	-5,522	562,640
<b>1980 Total</b> .....	829,700	NA	1,194	91,742	-90,548	25,595	10,827	702,730
<b>1985 Total</b> .....	883,638	NA	1,952	92,680	-90,727	27,934	2,796	818,049
<b>1990 Total</b> .....	1,029,076	3,339	2,699	105,804	-103,104	26,542	-1,730	904,498
<b>1995 Total</b> .....	1,032,974	8,561	9,473	88,547	-79,074	-275	632	962,104
<b>2000 Total</b> .....	1,073,612	9,089	12,513	58,489	-45,976	-48,309	938	1,084,095
<b>2001 Total</b> .....	1,127,689	10,085	19,787	48,666	-28,879	41,630	7,120	1,060,146
<b>2002 Total</b> .....	1,094,283	9,052	16,875	39,601	-22,726	10,215	4,040	1,066,355
<b>2003 Total</b> .....	1,071,753	10,016	25,044	43,014	-17,970	-26,659	-4,403	1,094,861
<b>2004 Total</b> .....	1,112,099	11,299	27,280	47,998	-20,718	-11,462	6,887	1,107,255
<b>2005 Total</b> .....	1,131,498	13,352	30,460	49,942	-19,482	-9,702	9,092	1,125,978
<b>2006 Total</b> .....	1,162,750	14,409	36,246	49,647	-13,401	42,642	8,824	1,112,292
<b>2007 Total</b> .....	1,146,635	14,076	36,347	59,163	-22,816	5,812	4,085	1,127,998
<b>2008 Total</b> .....	1,171,809	14,146	34,208	81,519	-47,311	12,354	5,740	1,120,548
<b>2009 Total</b> .....	1,074,923	13,666	22,639	59,097	-36,458	39,668	14,985	997,478
<b>2010 Total</b> .....	1,084,368	13,651	19,353	81,716	-62,363	-13,039	182	1,048,514
<b>2011 Total</b> .....	1,095,628	13,209	13,088	107,259	-94,171	211	11,506	1,002,948
<b>2012 Total</b> .....	1,016,458	11,196	9,159	125,746	-116,586	6,902	14,980	889,185
<b>2013 Total</b> .....	984,842	11,279	8,906	117,659	-108,753	-38,525	1,451	924,442
<b>2014 Total</b> .....	1,000,049	12,090	11,350	97,257	-85,907	-2,601	11,101	917,731
<b>2015 Total</b> .....	896,941	9,969	11,318	73,958	-62,640	40,704	5,452	798,115
<b>2016 January</b> .....	60,569	1,077	693	4,433	-3,740	-9,250	494	66,662
February .....	57,329	934	819	4,511	-3,693	-387	-253	55,211
March .....	55,328	818	1,186	5,208	-4,023	4,168	3,380	44,575
April .....	48,216	642	740	4,583	-3,843	1,360	271	43,384
May .....	53,123	706	910	4,209	-3,298	-1,802	2,990	49,343
June .....	59,513	826	641	5,432	-4,790	-11,528	-475	67,551
July .....	61,784	1,050	990	3,276	-2,286	-15,581	-2,439	78,569
August .....	68,247	1,064	943	5,003	-4,060	-11,552	-1,372	78,175
September .....	65,070	766	800	4,273	-3,473	-4,260	7	66,615
October .....	68,725	541	768	4,863	-4,095	3,482	2,737	58,953
November .....	67,150	705	706	6,554	-5,847	8,538	937	52,533
December .....	63,311	1,009	652	7,926	-7,274	-8,630	-3,825	69,501
<b>Total</b> .....	<b>728,364</b>	<b>10,138</b>	<b>9,850</b>	<b>60,271</b>	<b>-50,421</b>	<b>-45,441</b>	<b>2,452</b>	<b>731,071</b>
<b>2017 January</b> .....	68,378	902	743	7,385	-6,642	-6,408	R 1,091	R 67,954
February .....	64,354	798	612	6,908	-6,296	4,230	2,333	52,293
March .....	64,301	809	560	8,013	-7,453	R 1,024	R 3,416	R 53,216
April .....	58,749	505	493	7,236	-6,744	R 2,108	R 1,874	R 48,528
May .....	62,110	610	1,053	7,243	-6,190	R -2,136	R 3,490	R 55,177
June .....	66,223	726	651	7,317	-6,666	R -5,414	R 2,557	R 63,139
July .....	62,877	803	956	7,177	-6,221	R -10,707	R -6,183	R 74,350
August .....	70,482	820	839	8,573	-7,734	R -5,294	R -1,536	R 70,398
September .....	62,802	719	513	8,894	-8,381	R -3,600	R -409	R 59,149
October .....	65,754	F 835	582	9,159	-8,577	R 1,040	R 1,906	R 55,065
November .....	63,750	F 835	368	9,552	-9,185	R 1,616	R -1,745	R 55,530
December .....	62,522	RF 835	408	9,495	-9,087	R -6,362	R -2,637	R 63,268
<b>Total</b> .....	<b>772,302</b>	<b>R 9,195</b>	<b>7,777</b>	<b>96,953</b>	<b>-89,176</b>	<b>R -29,904</b>	<b>4,158</b>	<b>718,067</b>
<b>2018 January</b> .....	63,113	NA	R 500	R 8,772	R -8,273	NA	NA	NA
February .....	61,308	NA	NA	NA	NA	NA	NA	NA
<b>2-Month Total</b> .....	<b>124,421</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<b>2017 2-Month Total</b> .....	<b>132,732</b>	<b>1,699</b>	<b>1,355</b>	<b>14,294</b>	<b>-12,938</b>	<b>-2,178</b>	<b>3,424</b>	<b>120,247</b>
<b>2016 2-Month Total</b> .....	<b>117,897</b>	<b>2,011</b>	<b>1,512</b>	<b>8,945</b>	<b>-7,433</b>	<b>-9,638</b>	<b>241</b>	<b>121,873</b>

<sup>a</sup> 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).

<sup>b</sup> 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."

<sup>c</sup> Net imports equal imports minus exports. A minus sign indicates exports are greater than imports.

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

<sup>e</sup> In 1949, stock change is included in "Losses and Unaccounted for."

<sup>f</sup> 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 <sup>e,f</sup>	Total
	Resi- dential	Commercial			Coke Plants	Industrial			Total	Trans- portation		
		CHP <sup>a</sup>	Other <sup>b</sup>	Total		Other Industrial						
						CHP <sup>c</sup>	Non-CHP <sup>d</sup>	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	1,191	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 Total	(i)	798	706	1,503	19,708	16,984	21,475	38,459	58,167	(h)	738,444	798,115
2016 January	(i)	75	75	150	1,328	1,397	1,652	3,049	4,377	(h)	62,135	66,662
February	(i)	75	75	150	1,361	1,282	1,755	3,037	4,399	(h)	50,661	55,211
March	(i)	74	74	148	1,434	1,275	1,770	3,045	4,479	(h)	39,948	44,575
April	(i)	46	29	74	1,324	1,076	1,751	2,827	4,151	(h)	39,159	43,384
May	(i)	37	23	60	1,367	1,178	1,657	2,835	4,201	(h)	45,082	49,343
June	(i)	46	29	75	1,405	1,243	1,578	2,821	4,226	(h)	63,250	67,551
July	(i)	46	17	64	1,433	1,321	1,515	2,836	4,268	(h)	74,237	78,569
August	(i)	49	19	68	1,395	1,292	1,530	2,822	4,217	(h)	73,890	78,175
September	(i)	50	19	68	1,336	1,157	1,668	2,826	4,161	(h)	62,385	66,615
October	(i)	50	38	88	1,335	1,126	1,782	2,909	4,243	(h)	54,621	58,953
November	(i)	60	45	105	1,326	1,093	1,830	2,923	4,249	(h)	48,179	52,533
December	(i)	75	57	133	1,442	1,280	1,640	2,920	4,362	(h)	65,006	69,501
Total	(i)	683	500	1,183	16,485	14,720	20,129	34,849	51,333	(h)	678,554	731,071
2017 January	(i)	66	72	138	1,431	R 1,290	R 1,547	2,837	4,268	(h)	R 63,548	R 67,954
February	(i)	54	59	112	1,368	R 1,087	R 1,760	2,848	4,216	(h)	R 47,965	R 52,293
March	(i)	58	64	122	1,438	1,172	1,658	2,830	4,268	(h)	R 48,826	R 53,216
April	(i)	40	23	64	1,441	1,068	1,632	2,700	4,141	(h)	R 44,324	R 48,528
May	(i)	40	23	63	1,482	1,098	1,607	2,705	4,188	(h)	R 50,926	R 55,177
June	(i)	46	26	72	1,402	1,094	1,620	2,714	4,115	(h)	R 58,952	R 63,139
July	(i)	53	17	70	1,494	1,047	1,838	2,885	4,380	(h)	R 69,900	R 74,350
August	(i)	49	15	64	1,528	1,065	1,807	2,872	4,400	(h)	R 65,934	R 70,398
September	(i)	47	15	62	1,469	1,030	1,809	2,839	4,308	(h)	R 54,780	R 59,149
October	(i)	43	F(s)	F 43	F 2,027	1,149	F 1,632	F 2,781	F 4,808	(h)	R 50,214	R 55,065
November	(i)	50	F 26	F 76	F 1,609	1,142	F 1,711	F 2,853	F 4,462	(h)	R 50,992	R 55,530
December	(i)	62	F 28	F 89	F 2,072	1,181	F 1,538	F 2,719	F 4,791	(h)	58,388	63,268
Total	(i)	607	E 368	E 975	E 18,760	13,424	E 20,159	E 33,583	E 52,343	(h)	664,749	718,067

<sup>a</sup> 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.

<sup>b</sup> All commercial sector fuel use other than that in "Commercial CHP."

<sup>c</sup> 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.

<sup>d</sup> All industrial sector fuel use other than that in "Coke Plants" and "Industrial CHP."

<sup>e</sup> 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.

<sup>f</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

<sup>g</sup> Included in "Commercial Other."

<sup>h</sup> Included in "Industrial Non-CHP."

<sup>i</sup> Beginning in 2008, residential coal consumption data are no longer collected by the U.S. Energy Information Administration (EIA).

R=Revised. E=Estimate. F=Forecast. (s)=Greater than -0.5 or less than 0.5 thousand short tons.

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 <sup>c,d</sup>	Total
		Residential <sup>a</sup> and Commercial	Industrial			Total		
			Coke Plants	Other <sup>b</sup>	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 Year .....	35,871	394	2,236	4,382	6,618	7,012	195,548	238,431
2016 January .....	35,236	373	2,129	4,240	6,368	6,742	187,203	229,181
February .....	35,258	353	2,022	4,098	6,119	6,472	187,064	228,793
March .....	35,207	332	1,914	3,956	5,870	6,202	191,553	232,962
April .....	35,011	334	1,877	3,915	5,792	6,126	193,185	234,322
May .....	34,053	336	1,839	3,875	5,714	6,050	192,417	232,520
June .....	32,932	337	1,802	3,834	5,636	5,973	182,086	220,992
July .....	31,393	348	1,755	3,796	5,551	5,899	168,119	205,411
August .....	29,126	359	1,707	3,758	5,465	5,825	158,908	193,859
September .....	27,282	370	1,660	3,720	5,380	5,751	156,567	189,600
October .....	26,425	367	1,665	3,692	5,357	5,724	160,932	193,082
November .....	25,645	364	1,670	3,665	5,334	5,698	170,277	201,620
December .....	25,309	360	1,675	3,637	5,312	5,672	162,009	192,990
2017 January .....	F 24,974	351	1,579	3,503	5,082	5,433	156,175	186,582
February .....	F 25,170	342	1,483	3,369	4,852	5,195	R 160,448	190,812
March .....	F 25,190	334	1,388	3,235	4,623	4,956	R 161,690	R 191,836
April .....	F 25,169	332	1,467	3,254	4,721	5,052	R 163,723	R 193,944
May .....	F 24,350	330	1,547	3,272	4,819	5,149	R 162,309	R 191,808
June .....	F 23,430	328	1,626	3,291	4,917	5,245	R 157,719	R 186,394
July .....	F 24,983	331	1,641	3,356	4,997	5,328	R 145,376	R 175,687
August .....	F 23,262	334	1,655	3,422	5,077	5,411	R 141,720	R 170,393
September .....	F 21,984	337	1,670	3,487	5,157	5,494	R 139,315	R 166,793
October .....	F 21,532	F 237	F 1,737	F 3,123	4,860	5,096	R 141,204	R 167,832
November .....	F 21,296	F 211	F 1,741	F 2,991	4,731	4,942	R 143,210	R 169,448
December .....	F 21,108	F 190	F 1,783	F 2,851	4,634	4,823	137,155	163,086

<sup>a</sup> Through 1979, data are for the residential and commercial sectors. Beginning in 2008, data are for the commercial sector only.

<sup>b</sup> 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.

<sup>c</sup> 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.

<sup>d</sup> 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. Coal coke consumption values also include the relatively small amount consumed for non-combustion use (See Tables 1.11a and 1.11b).

**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,” and predecessor forms.

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,” and predecessor forms.

2008 forward: EIA, Form EIA-923, “Power Plant Operations Report,” and Form EIA-3, “Quarterly Survey of Industrial, Commercial, and Institutional Coal Users” (formerly called, “Quarterly Survey of Non-Electric Sector Coal Data”); 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 Survey of Industrial, Commercial, and Institutional Coal Users” (formerly called, “Quarterly Survey of Non-Electric Sector Coal Data”); 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, “Quarterly Coal Consumption and Quality Report—Manufacturing Plants,” and predecessor forms.

1980–1997: EIA, Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing Plants,” and predecessor forms and Form EIA-6, “Coal Distribution Report,” quarterly.

1998–2007: EIA, Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing Plants,” and predecessor forms, Form EIA-6A, “Coal Distribution Report,” annual, and Form EIA-7A, “Coal Production Report,” annual.

2008 forward: EIA, Form EIA-3, “Quarterly Survey of Industrial, Commercial, and Institutional Coal Users” (formerly called, “Quarterly Survey of Non-Electric Sector Coal Data”) 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-3, “Quarterly Survey of Industrial, Commercial, and Institutional Coal Users” (formerly called, “Quarterly Survey of Non-Electric Sector Coal Data”); (data for “Commercial and Institutional Coal Users”); and, for forecast values, EIA.

#### **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 Survey of Industrial, Commercial, and Institutional Coal Users” (formerly called “Quarterly Survey of Non-Electric Coal Data”); 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 1977–2007: EIA, Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing Plants,” and predecessor forms.

2008 forward: EIA, Form EIA-3, “Quarterly Survey of Industrial, Commercial, and Institutional Coal Users” (formerly called, “Quarterly Survey of Non-Electric Sector Coal Data”); and, for forecast values, EIA, STIFS.

#### **Electric Power**

1949 forward: Table 7.5.

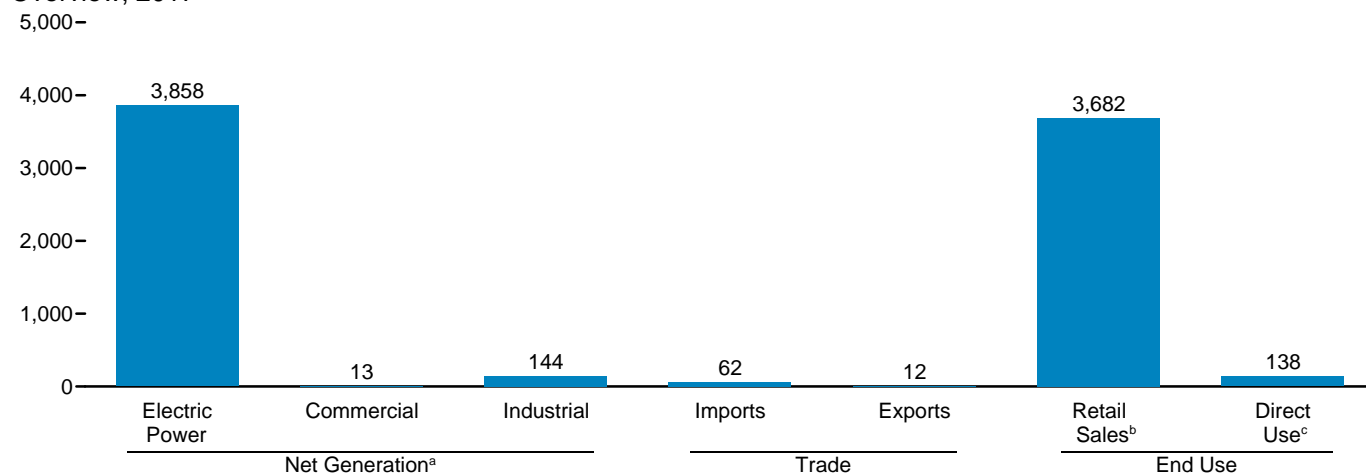
THIS PAGE INTENTIONALLY LEFT BLANK

## 7. Electricity

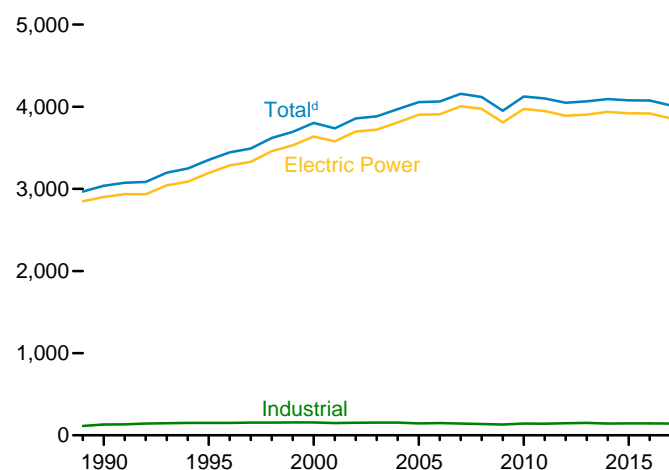
---

**Figure 7.1 Electricity Overview**  
(Billion Kilowatthours)

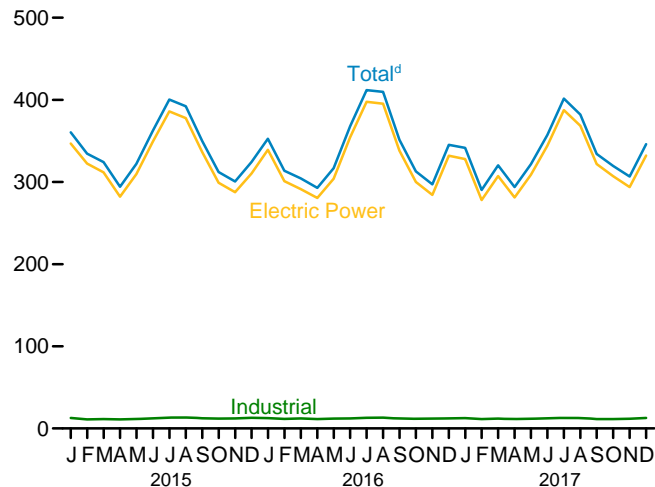
Overview, 2017



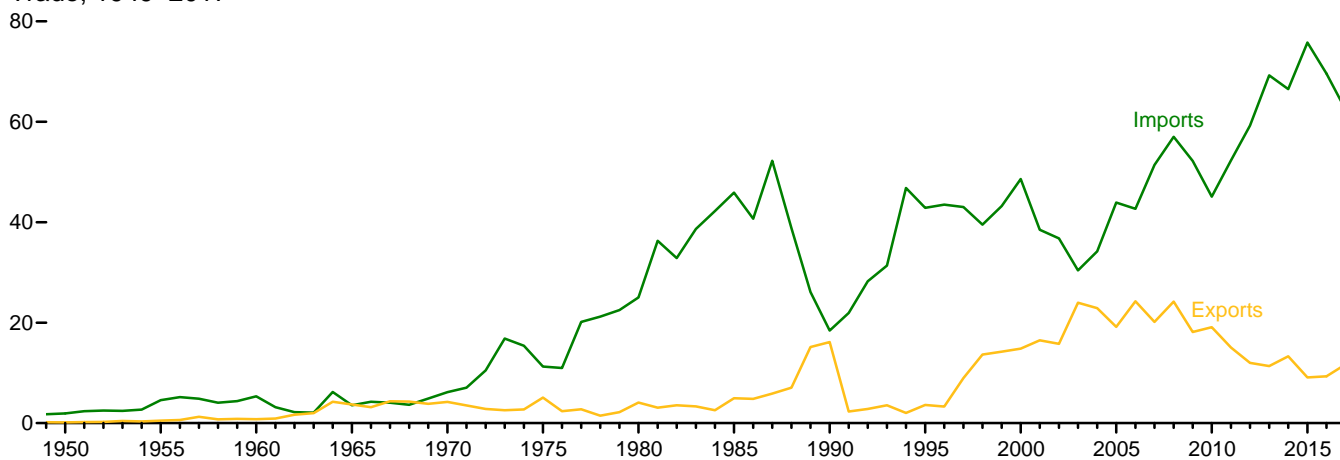
Net Generation<sup>a</sup> by Sector, 1989–2017



Net Generation<sup>a</sup> by Sector, Monthly



Trade, 1949–2017



<sup>a</sup> Data are for utility-scale facilities.

<sup>b</sup> Electricity retail sales to ultimate customers reported by electric utilities and other energy service providers.

<sup>c</sup> See "Direct Use" in Glossary.

<sup>d</sup> 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 <sup>a</sup>				Trade			T&D Losses <sup>f</sup> and Unaccounted for <sup>g</sup>	End Use		
	Electric Power Sector <sup>b</sup>	Com- mercial Sector <sup>c</sup>	Indus- trial Sector <sup>d</sup>	Total	Imports <sup>e</sup>	Exports <sup>e</sup>	Net Imports <sup>e</sup>		Retail Sales <sup>h</sup>	Direct Use <sup>i</sup>	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	<sup>c</sup> 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	4,078	76	9	67	244	3,759	141	3,900
2016 January .....	339	1	12	353	6	1	5	26	321	E 12	333
February .....	301	1	12	314	5	1	5	10	297	E 11	308
March .....	291	1	12	304	6	1	5	12	286	E 12	297
April .....	281	1	11	293	4	1	4	16	270	E 11	280
May .....	304	1	12	317	5	1	5	25	285	E 11	296
June .....	354	1	12	368	7	1	6	32	330	E 12	342
July .....	398	1	13	412	7	1	6	34	372	E 13	385
August .....	395	1	13	410	7	1	6	22	381	E 13	394
September .....	338	1	12	351	5	1	4	7	337	E 12	348
October .....	300	1	12	313	5	1	5	10	297	E 11	308
November .....	284	1	12	297	6	1	5	14	277	E 11	289
December .....	332	1	12	345	5	1	4	27	311	E 12	322
Total .....	3,918	13	146	4,077	70	9	60	235	3,762	140	3,902
2017 January .....	328	1	12	R 342	6	1	5	R 19	R 315	E 12	R 327
February .....	278	1	11	290	4	1	3	R 9	R 274	E 11	284
March .....	307	1	12	320	5	1	4	24	R 289	E 12	300
April .....	281	1	12	294	5	1	4	18	269	E 11	280
May .....	R 309	1	12	R 322	5	1	4	25	R 290	E 11	R 301
June .....	344	1	12	357	6	1	5	R 26	R 324	E 12	R 336
July .....	R 387	1	13	402	6	1	5	R 31	362	E 12	R 375
August .....	R 368	1	13	382	6	1	5	R 18	R 357	E 12	R 369
September .....	322	1	11	334	5	1	4	R 8	R 319	E 11	R 330
October .....	307	1	11	319	F 5	F 1	F 4	R 16	296	E 11	307
November .....	294	1	12	307	F 5	F 1	F 4	R 20	R 280	E 11	R 291
December .....	332	1	13	346	F 5	F 1	F 4	30	308	E 12	320
Total .....	3,858	13	144	4,015	E 62	E 12	E 51	245	3,682	E 138	3,820

<sup>a</sup> 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.

<sup>b</sup> 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.

<sup>c</sup> Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

<sup>d</sup> Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. Through 1988, data are for industrial hydroelectric power only.

<sup>e</sup> Electricity transmitted across U.S. borders. Net imports equal imports minus exports.

<sup>f</sup> 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.

<sup>g</sup> Data collection frame differences and nonsampling error.

<sup>h</sup> Electricity retail sales to ultimate customers by electric utilities and, beginning

in 1996, other energy service providers.

<sup>i</sup> 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.

R=Revised. E=Estimate. NA=Not available. F=Forecast. (s)=Less than 0.5 billion kilowatthours.

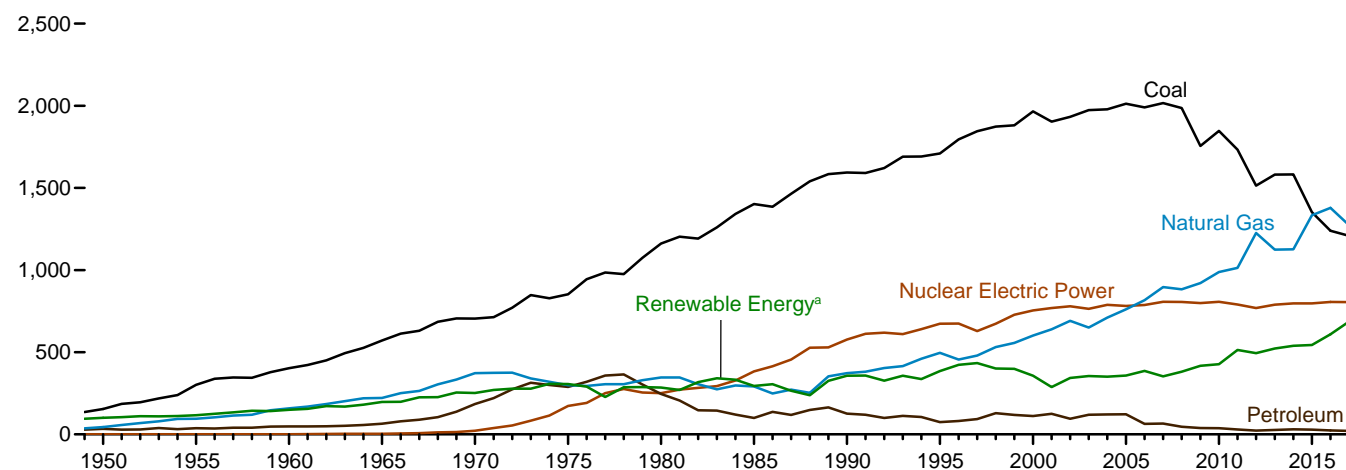
Notes: • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Data values preceded by "F" are derived from the U.S. Energy Information Administration's Short-Term Integrated Forecasting System. See Note 3, "Electricity 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/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

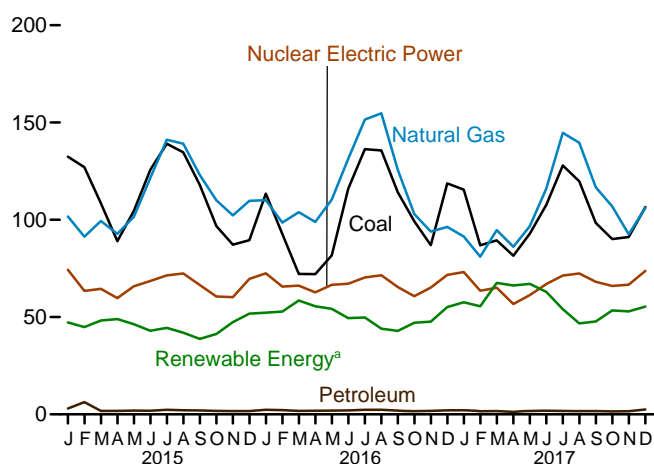
Sources: See end of section.

**Figure 7.2 Electricity Net Generation**  
(Billion Kilowatthours)

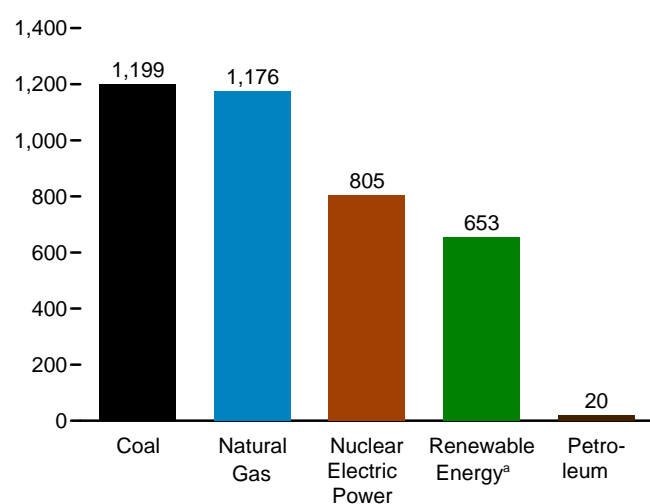
Total (All Sectors), Major Sources, 1949–2017



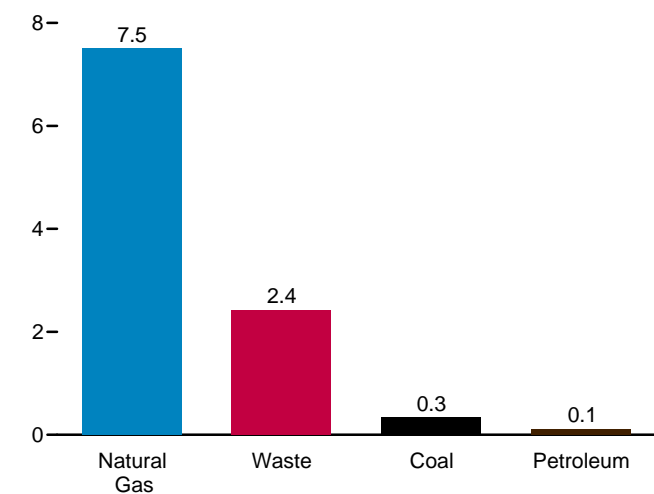
Total (All Sectors), Major Sources, Monthly



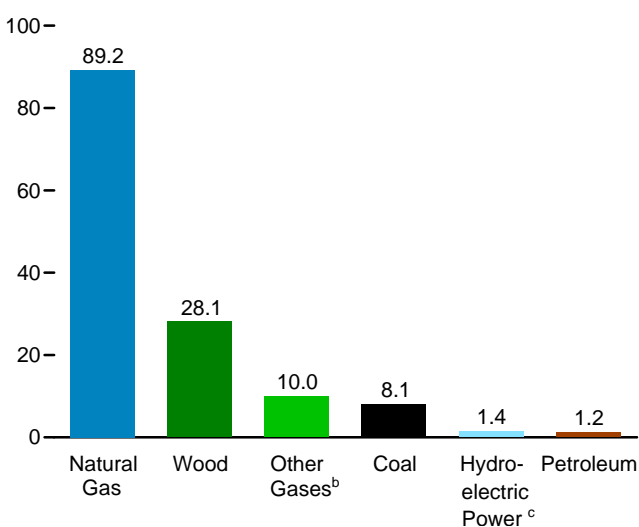
Electric Power Sector, Major Sources, 2017



Commercial Sector, Major Sources, 2017



Industrial Sector, Major Sources, 2017



<sup>a</sup> Conventional hydroelectric power, wood, waste, geothermal, solar, and wind.

<sup>b</sup> Blast furnace gas, and other manufactured and waste gases derived from fossil fuels.

<sup>c</sup> 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 7.2c Electricity Net Generation: Commercial and Industrial Sectors**  
(Subset of Table 7.2a; Million Kilowatthours)

	Commercial Sector <sup>a</sup>					Industrial Sector <sup>b</sup>							
	Coal <sup>c</sup>	Petro- leum <sup>d</sup>	Natural Gas <sup>e</sup>	Biomass	Total <sup>g</sup>	Coal <sup>c</sup>	Petro- leum <sup>d</sup>	Natural Gas <sup>e</sup>	Other Gases <sup>h</sup>	Hydro- electric Power <sup>i</sup>	Biomass		Total <sup>k</sup>
				Waste <sup>f</sup>							Wood <sup>j</sup>	Waste <sup>f</sup>	
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	10,800	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	9	605	212	1,022	793	135	7,653	851	130	2,392	93	12,497
February .....	45	9	570	192	967	750	121	7,133	763	115	2,217	92	11,597
March .....	46	4	579	210	1,011	781	102	7,462	837	142	2,266	108	12,117
April .....	24	6	551	205	961	670	87	7,067	815	128	2,079	106	11,386
May .....	20	6	607	218	1,019	740	138	7,341	740	119	2,238	106	11,886
June .....	23	5	692	202	1,089	814	125	7,661	692	99	2,310	76	12,248
July .....	24	9	831	216	1,263	873	127	8,165	731	104	2,408	90	12,989
August .....	26	7	859	215	1,298	847	118	8,291	732	92	2,398	89	13,075
September .....	29	4	700	206	1,114	762	101	7,706	674	65	2,231	76	12,111
October .....	27	5	617	202	1,021	693	117	7,527	679	88	2,220	86	11,851
November .....	35	8	521	210	927	630	124	7,514	662	69	2,323	104	11,852
December .....	42	9	598	208	1,015	750	118	7,678	720	117	2,375	108	12,283
Total .....	383	82	7,730	2,496	12,706	9,103	1,412	91,197	8,895	1,269	27,458	1,134	145,890
2017 January .....	41	15	648	R 204	1,057	757	98	R 7,885	R 769	123	2,372	R 90	R 12,484
February .....	32	8	566	R 185	R 934	662	90	R 6,952	R 855	112	2,254	R 82	R 11,381
March .....	32	11	638	R 205	R 1,066	669	114	R 7,372	R 885	127	2,349	R 91	R 12,030
April .....	19	6	R 532	R 194	R 934	593	82	R 7,171	R 857	124	2,261	R 85	R 11,596
May .....	19	8	583	R 212	R 1,036	637	111	R 7,252	R 835	135	2,233	R 76	R 11,689
June .....	23	7	645	R 198	R 1,075	706	110	R 7,489	R 867	124	2,330	R 68	R 12,127
July .....	29	8	R 703	R 210	R 1,150	R 699	120	R 7,977	R 884	121	2,524	R 72	R 12,897
August .....	R 27	10	698	R 211	R 1,137	R 700	106	R 7,634	951	109	2,514	R 75	R 12,590
September .....	27	9	R 651	R 195	R 1,058	R 652	88	R 6,993	787	98	R 2,214	R 68	R 11,301
October .....	24	8	R 627	R 200	R 1,039	R 680	82	R 7,087	R 698	102	R 2,258	R 81	R 11,373
November .....	27	R 8	595	R 202	R 986	634	112	7,362	R 834	120	2,282	R 84	R 11,846
December .....	36	16	626	210	1,046	685	99	8,013	759	119	2,517	89	12,714
Total .....	335	114	7,512	2,427	12,518	8,074	1,213	89,188	9,982	1,413	28,108	960	144,028

<sup>a</sup> Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

<sup>b</sup> Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

<sup>c</sup> Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

<sup>d</sup> Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

<sup>e</sup> Natural gas, plus a small amount of supplemental gaseous fuels.

<sup>f</sup> 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).

<sup>g</sup> 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.

<sup>h</sup> Blast furnace gas, and other manufactured and waste gases derived from

fossil fuels. Through 2010, also includes propane gas.

<sup>i</sup> Conventional hydroelectric power.

<sup>j</sup> Wood and wood-derived fuels.

<sup>k</sup> 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.

R=Revised. NA=Not available.

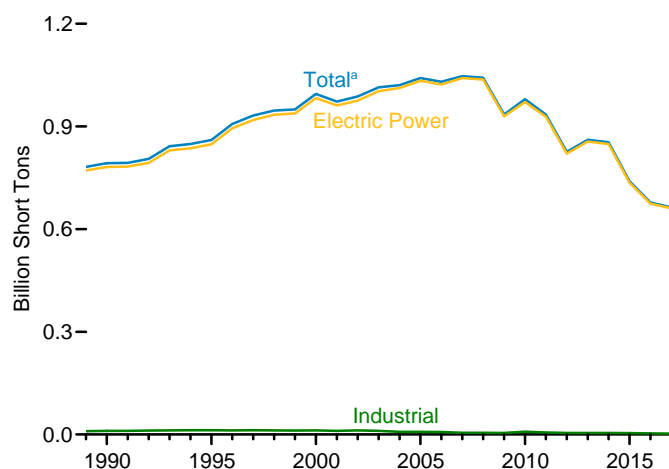
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is 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.

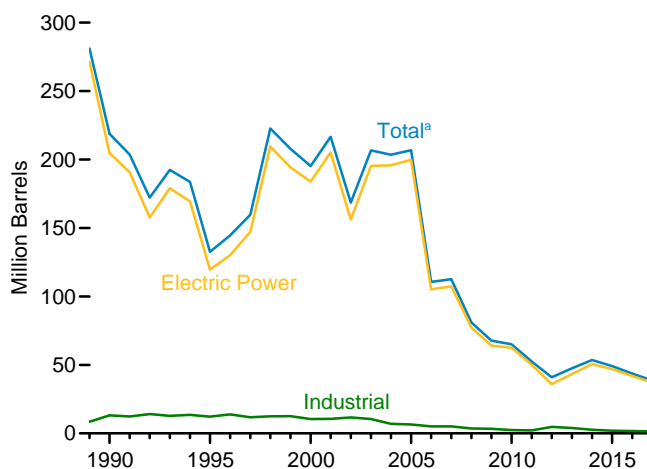
Sources: See end of section.

**Figure 7.3 Consumption of Selected Combustible Fuels for Electricity Generation**

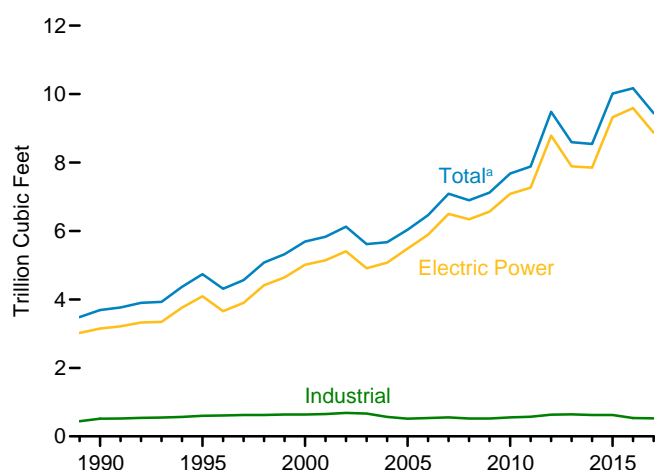
**Coal by Sector, 1989–2017**



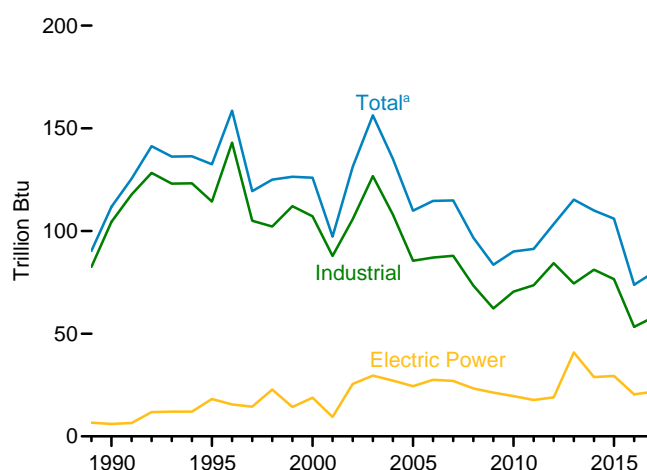
**Petroleum by Sector, 1989–2017**



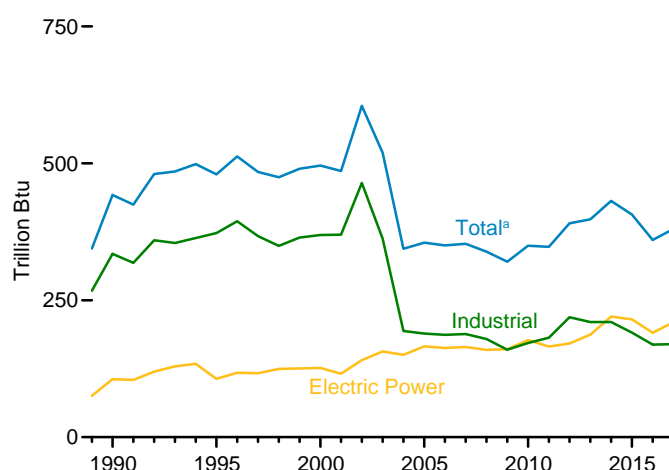
**Natural Gas by Sector, 1989–2017**



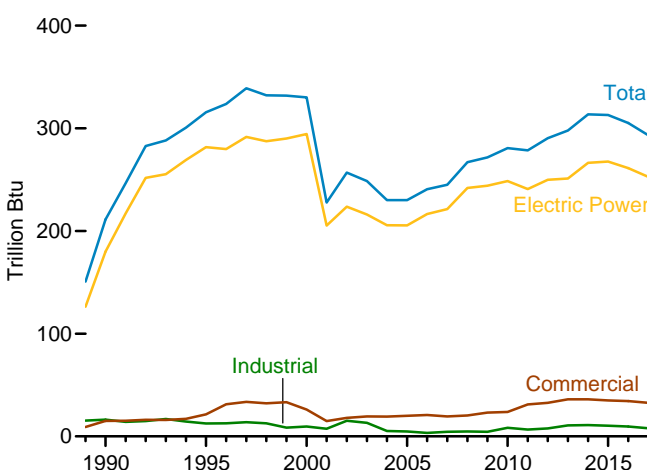
**Other Gases<sup>b</sup> by Sector, 1989–2017**



**Wood by Sector, 1989–2017**



**Waste by Sector, 1989–2017**



<sup>a</sup> Includes commercial sector.

<sup>b</sup> 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)**

		Petroleum					Natural Gas <sup>f</sup>	Other Gases <sup>g</sup>	Biomass		Other <sup>i</sup>
		Distillate Fuel Oil <sup>b</sup>	Residual Fuel Oil <sup>c</sup>	Other Liquids <sup>d</sup>	Petroleum Coke <sup>e</sup>	Total <sup>e</sup>			Wood <sup>h</sup>	Waste <sup>j</sup>	
	Coal <sup>a</sup>	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	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 <sup>k</sup>	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	61,983	1,258	1,049	165	342	4,179	786	7	32	25	17
February	50,516	920	1,131	178	330	3,877	702	6	31	24	15
March	39,864	698	678	119	362	3,306	758	6	30	25	16
April	39,065	644	687	90	382	3,330	735	6	25	26	16
May	45,032	808	752	102	370	3,514	819	6	27	26	17
June	63,186	707	864	123	380	3,594	986	6	30	25	17
July	74,132	810	1,348	129	400	4,289	1,158	6	32	26	18
August	73,798	769	1,274	187	419	4,325	1,168	6	34	26	18
September	62,335	640	856	124	376	3,500	932	6	31	25	17
October	54,537	636	929	64	250	2,879	761	5	28	24	16
November	48,076	830	734	107	307	3,204	679	6	29	26	16
December	64,847	943	893	159	336	3,672	686	6	32	27	17
Total	677,371	9,662	11,195	1,548	4,253	43,671	10,170	74	360	305	199
2017 January	R 63,394	959	853	R 165	355	R 3,752	664	6	32	26	15
February	R 47,878	734	735	100	263	R 2,883	R 573	7	30	23	14
March	R 48,700	817	750	107	R 273	R 3,037	R 693	7	33	25	15
April	R 44,216	R 678	735	106	153	2,283	R 640	7	29	23	15
May	R 50,843	R 802	846	105	320	R 3,352	R 723	7	30	24	15
June	R 58,884	676	914	149	341	R 3,444	R 871	7	32	25	16
July	R 69,775	691	814	348	R 332	R 3,515	R 1,092	7	34	25	17
August	R 65,801	666	931	127	R 282	R 3,136	R 1,049	7	34	25	17
September	R 54,702	R 758	827	137	R 262	R 3,033	R 876	6	R 29	24	R 14
October	R 50,129	R 766	853	111	R 221	R 2,833	R 794	6	32	24	14
November	R 50,864	742	R 736	140	267	R 2,951	R 679	7	31	24	15
December	58,292	1,439	1,422	197	280	4,460	785	6	33	25	16
Total	663,479	9,727	10,415	1,792	3,349	38,679	9,441	80	380	293	182

<sup>a</sup> Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

<sup>b</sup> 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.

<sup>c</sup> 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.

<sup>d</sup> Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

<sup>e</sup> Petroleum coke is converted from short tons to barrels by multiplying by 5.

<sup>f</sup> Natural gas, plus a small amount of supplemental gaseous fuels.

<sup>g</sup> Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

<sup>h</sup> Wood and wood-derived fuels.

<sup>i</sup> 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).

<sup>j</sup> 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).

<sup>k</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

R=Revised. 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 <sup>a</sup>	Petroleum					Natural Gas <sup>f</sup>	Other Gases <sup>g</sup>	Biomass		Other <sup>i</sup>
		Distillate Fuel Oil <sup>b</sup>	Residual Fuel Oil <sup>c</sup>	Other Liquids <sup>d</sup>	Petroleum Coke <sup>e</sup>	Total <sup>e</sup>			Wood <sup>h</sup>	Waste <sup>j</sup>	
	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	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 .....	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 .....	61,714	1,232	1,032	148	318	4,001	738	2	17	22	11
February .....	50,255	895	1,115	162	310	3,722	657	1	17	21	10
March .....	39,599	682	665	103	345	3,176	711	2	16	21	10
April .....	38,852	627	674	74	368	3,216	690	2	13	22	10
May .....	44,777	790	743	65	348	3,336	772	2	13	22	11
June .....	62,912	691	855	93	360	3,437	937	2	16	22	11
July .....	73,840	792	1,337	96	380	4,124	1,104	2	17	22	11
August .....	73,508	749	1,265	168	398	4,172	1,114	2	19	23	11
September .....	62,072	622	848	99	360	3,368	883	2	17	21	10
October .....	54,293	617	917	44	232	2,738	714	1	14	20	10
November .....	47,848	807	723	90	285	3,047	632	2	15	22	10
December .....	64,570	917	881	142	315	3,517	638	2	17	23	11
Total .....	674,239	9,421	11,056	1,284	4,018	41,853	9,590	20	191	261	126
2017 January .....	<sup>R</sup> 63,117	928	840	145	341	<sup>R</sup> 3,618	613	2	17	22	10
February .....	<sup>R</sup> 47,633	714	726	79	<sup>R</sup> 249	<sup>R</sup> 2,766	<sup>R</sup> 529	2	16	20	9
March .....	<sup>R</sup> 48,456	792	738	90	254	<sup>R</sup> 2,892	<sup>R</sup> 646	2	18	22	10
April .....	<sup>R</sup> 44,008	658	723	92	139	<sup>R</sup> 2,170	<sup>R</sup> 595	2	15	20	9
May .....	<sup>R</sup> 50,619	<sup>R</sup> 777	836	87	302	<sup>R</sup> 3,208	<sup>R</sup> 677	2	17	21	10
June .....	<sup>R</sup> 58,650	652	904	131	322	<sup>R</sup> 3,295	<sup>R</sup> 823	2	18	21	10
July .....	<sup>R</sup> 69,533	663	807	331	310	<sup>R</sup> 3,350	<sup>R</sup> 1,041	2	19	22	10
August .....	<sup>R</sup> 65,560	<sup>R</sup> 634	923	110	<sup>R</sup> 264	<sup>R</sup> 2,985	<sup>R</sup> 1,001	2	19	22	11
September .....	<sup>R</sup> 54,469	<sup>R</sup> 727	821	121	<sup>R</sup> 246	<sup>R</sup> 2,899	<sup>R</sup> 832	2	16	20	9
October .....	<sup>R</sup> 49,889	742	843	92	<sup>R</sup> 205	<sup>R</sup> 2,704	<sup>R</sup> 749	2	18	21	10
November .....	<sup>R</sup> 50,628	719	<sup>R</sup> 721	123	247	<sup>R</sup> 2,800	<sup>R</sup> 632	2	17	20	10
December .....	58,036	1,409	1,401	179	266	4,319	734	2	18	21	10
Total .....	660,600	9,416	10,280	1,579	3,146	37,005	8,871	22	210	253	119

<sup>a</sup> Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

<sup>b</sup> 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.

<sup>c</sup> 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.

<sup>d</sup> Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

<sup>e</sup> Petroleum coke is converted from short tons to barrels by multiplying by 5.

<sup>f</sup> Natural gas, plus a small amount of supplemental gaseous fuels.

<sup>g</sup> Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

<sup>h</sup> Wood and wood-derived fuels.

<sup>i</sup> 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).

<sup>j</sup> 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).

<sup>k</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

R=Revised. 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 <sup>a</sup>				Industrial Sector <sup>b</sup>						
	Coal <sup>c</sup>	Petroleum <sup>d</sup>	Natural Gas <sup>e</sup>	Biomass	Coal <sup>c</sup>	Petroleum <sup>d</sup>	Natural Gas <sup>e</sup>	Other Gases <sup>g</sup>	Biomass		Other <sup>i</sup>
				Waste <sup>f</sup>					Wood <sup>h</sup>	Waste <sup>f</sup>	
	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 .....	12	14	3	3	258	164	44	5	14	1	4
February .....	13	13	3	3	248	142	42	5	14	1	4
March .....	13	6	3	3	252	124	44	5	14	1	4
April .....	7	8	3	3	206	106	42	5	13	1	4
May .....	6	8	4	3	249	170	43	5	14	1	5
June .....	7	7	4	3	266	151	45	4	14	1	5
July .....	7	11	5	3	285	154	48	4	15	1	5
August .....	8	10	5	3	282	143	49	4	15	1	5
September .....	8	7	4	3	254	125	45	4	14	1	5
October .....	8	7	4	3	237	135	43	4	14	1	4
November .....	10	11	3	3	218	146	44	4	14	1	4
December .....	12	13	4	3	266	142	45	4	15	1	4
Total .....	111	116	46	34	3,021	1,701	534	53	169	10	53
2017 January .....	12	22	4	3	265	111	47	5	14	1	3
February .....	10	14	3	3	235	104	41	5	14	1	3
March .....	9	17	4	3	235	128	43	5	14	1	4
April .....	5	11	3	3	202	102	43	5	14	1	4
May .....	6	<sup>R</sup> 16	3	3	219	128	43	5	14	1	4
June .....	7	15	4	3	226	134	44	5	14	1	4
July .....	8	18	4	3	<sup>R</sup> 234	148	47	5	15	1	4
August .....	8	22	4	3	<sup>R</sup> 233	129	45	5	15	1	4
September .....	8	17	4	3	<sup>R</sup> 225	118	41	4	13	1	<sup>R</sup> 3
October .....	7	16	4	3	<sup>R</sup> 233	<sup>R</sup> 113	41	4	14	1	3
November .....	7	16	4	3	229	135	43	5	14	1	4
December .....	10	24	4	3	246	117	47	5	15	1	4
Total .....	96	206	45	33	2,783	1,467	525	58	170	8	44

<sup>a</sup> Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

<sup>b</sup> Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

<sup>c</sup> Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

<sup>d</sup> Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

<sup>e</sup> Natural gas, plus a small amount of supplemental gaseous fuels.

<sup>f</sup> 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).

<sup>g</sup> Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

<sup>h</sup> Wood and wood-derived fuels.

<sup>i</sup> 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).

<sup>R</sup>=Revised.

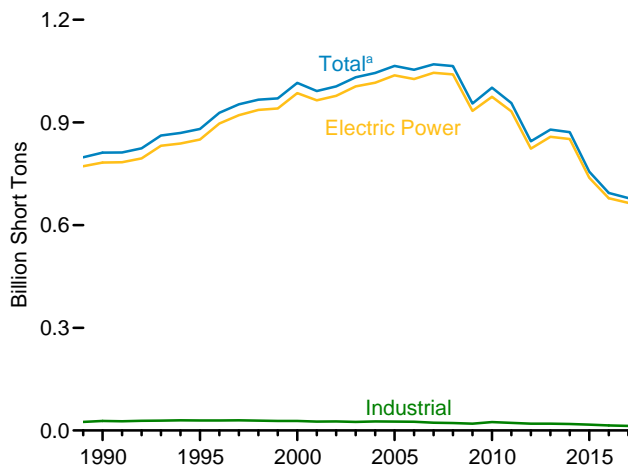
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Data are for fuels consumed to produce electricity. Through 1988, data are not available. • 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.

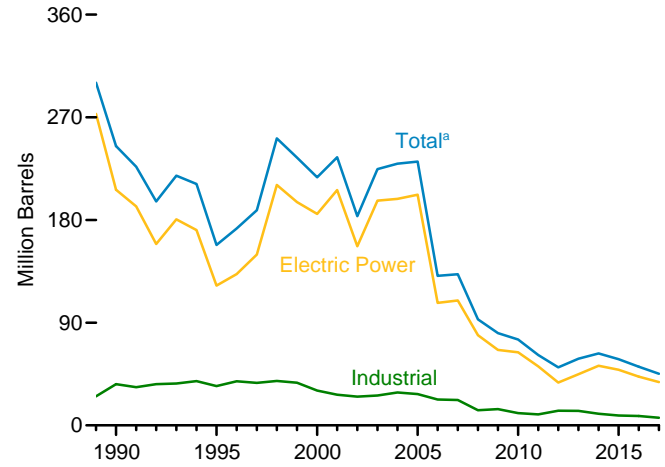
Sources: • **1989–1997:** U.S. Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • **1998–2000:** EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • **2001–2003:** EIA, Form EIA-906, "Power Plant Report." • **2004–2007:** EIA, Form EIA-906, "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**

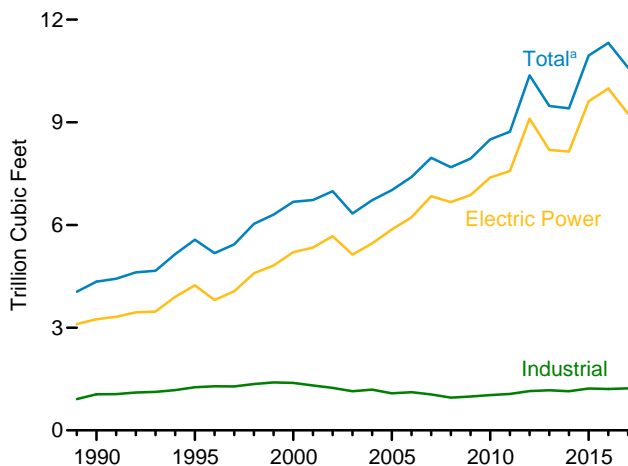
**Coal by Sector, 1989–2017**



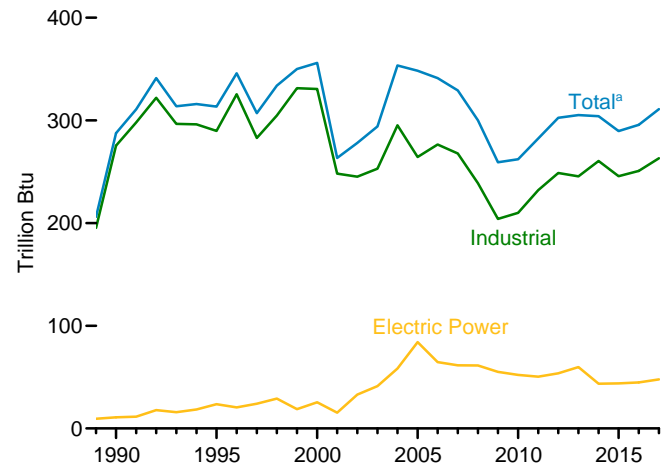
**Petroleum by Sector, 1989–2017**



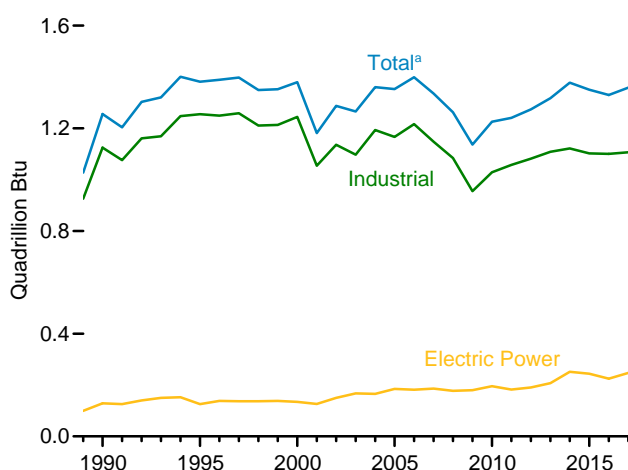
**Natural Gas by Sector, 1989–2017**



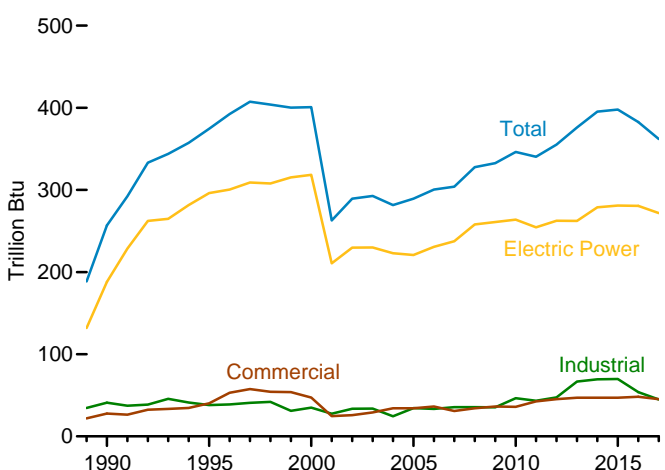
**Other Gases<sup>b</sup> by Sector, 1989–2017**



**Wood by Sector, 1989–2017**



**Waste by Sector, 1989–2017**



<sup>a</sup> Includes commercial sector.

<sup>b</sup> 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 <sup>a</sup>	Petroleum					Natural Gas <sup>f</sup>	Other Gases <sup>g</sup>	Biomass		Other <sup>i</sup>
		Distillate Fuel Oil <sup>b</sup>	Residual Fuel Oil <sup>c</sup>	Other Liquids <sup>d</sup>	Petroleum Coke <sup>e</sup>	Total <sup>e</sup>			Wood <sup>h</sup>	Waste <sup>i</sup>	
		Thousand Short Tons	Thousand Barrels			Thousand Short Tons			Thousand Barrels	Billion Cubic Feet	
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 <sup>k</sup>	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	63,607	1,303	1,185	215	427	4,840	888	25	116	32	20
February	52,019	1,045	1,263	238	425	4,669	794	23	110	31	18
March	41,297	736	762	175	447	3,910	854	26	110	33	19
April	40,280	681	783	131	455	3,871	823	25	100	33	20
May	46,297	876	818	166	466	4,190	912	25	105	33	20
June	64,539	768	928	179	480	4,274	1,082	25	109	30	20
July	75,604	860	1,426	186	502	4,981	1,260	25	113	31	21
August	75,232	803	1,350	230	520	4,983	1,273	25	115	32	22
September	63,592	674	915	174	451	4,016	1,027	24	106	29	20
October	55,798	674	1,017	112	342	3,514	853	23	104	31	19
November	49,331	877	808	153	406	3,867	769	24	110	33	19
December	66,362	982	977	214	431	4,327	785	26	132	34	20
Total	693,958	10,278	12,231	2,173	5,352	51,441	11,322	296	1,330	383	238
2017 January	<sup>R</sup> 64,904	1,009	949	<sup>R</sup> 225	<sup>R</sup> 428	<sup>R</sup> 4,326	<sup>R</sup> 765	26	117	34	19
February	49,106	762	799	144	<sup>R</sup> 325	<sup>R</sup> 3,332	<sup>R</sup> 665	25	109	30	17
March	<sup>R</sup> 50,057	849	819	143	<sup>R</sup> 358	<sup>R</sup> 3,600	<sup>R</sup> 792	27	114	32	18
April	<sup>R</sup> 45,432	705	805	146	<sup>R</sup> 222	<sup>R</sup> 2,768	<sup>R</sup> 731	24	107	<sup>R</sup> 30	17
May	<sup>R</sup> 52,064	<sup>R</sup> 837	<sup>R</sup> 919	<sup>R</sup> 153	<sup>R</sup> 396	<sup>R</sup> 3,891	<sup>R</sup> 814	26	109	29	18
June	<sup>R</sup> 60,092	<sup>R</sup> 703	994	189	433	<sup>R</sup> 4,049	<sup>R</sup> 964	26	113	29	18
July	<sup>R</sup> 71,001	<sup>R</sup> 718	871	389	412	<sup>R</sup> 4,035	<sup>R</sup> 1,192	27	118	30	19
August	<sup>R</sup> 67,048	<sup>R</sup> 696	998	167	<sup>R</sup> 367	<sup>R</sup> 3,695	<sup>R</sup> 1,147	27	120	30	20
September	<sup>R</sup> 55,857	<sup>R</sup> 787	885	170	<sup>R</sup> 337	<sup>R</sup> 3,526	<sup>R</sup> 970	25	107	27	17
October	<sup>R</sup> 51,406	798	923	155	<sup>R</sup> 302	<sup>R</sup> 3,387	<sup>R</sup> 889	25	<sup>R</sup> 111	30	17
November	<sup>R</sup> 52,184	790	<sup>R</sup> 829	175	338	<sup>R</sup> 3,485	<sup>R</sup> 774	26	112	31	17
December	59,631	1,572	1,569	253	348	5,135	892	26	121	32	19
Total	678,780	10,227	11,362	2,310	4,266	45,228	10,597	311	1,359	362	216

<sup>a</sup> Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

<sup>b</sup> 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.

<sup>c</sup> 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.

<sup>d</sup> Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

<sup>e</sup> Petroleum coke is converted from short tons to barrels by multiplying by 5.

<sup>f</sup> Natural gas, plus a small amount of supplemental gaseous fuels.

<sup>g</sup> Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

<sup>h</sup> Wood and wood-derived fuels.

<sup>i</sup> 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).

<sup>j</sup> 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).

<sup>k</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

<sup>R</sup>=Revised. 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 <sup>a</sup>	Petroleum					Natural Gas <sup>f</sup>	Other Gases <sup>g</sup>	Biomass		Other <sup>i</sup>
		Distillate Fuel Oil <sup>b</sup>	Residual Fuel Oil <sup>c</sup>	Other Liquids <sup>d</sup>	Petroleum Coke <sup>e</sup>	Total <sup>e</sup>			Wood <sup>h</sup>	Waste <sup>i</sup>	
	Thousand Short Tons	Thousand Barrels				Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	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 <sup>k</sup>	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	62,135	1,240	1,058	149	329	4,093	774	4	21	23	12
February	50,661	910	1,143	176	321	3,832	690	3	20	22	11
March	39,948	691	680	111	357	3,265	745	4	19	24	11
April	39,159	631	688	75	376	3,272	719	3	15	24	11
May	45,082	796	757	65	354	3,391	804	3	16	24	12
June	63,250	697	866	94	368	3,499	970	4	18	23	12
July	74,237	797	1,345	97	389	4,186	1,140	4	20	24	12
August	73,890	754	1,277	169	408	4,241	1,151	4	21	24	12
September	62,385	627	859	100	370	3,436	915	4	19	22	11
October	54,621	623	932	45	244	2,818	744	3	16	22	11
November	48,179	813	735	92	295	3,116	662	4	18	24	11
December	65,006	930	901	151	326	3,614	671	4	21	25	12
Total	678,554	9,510	11,242	1,322	4,138	42,763	9,985	45	224	281	139
2017 January	R 63,548	939	864	160	351	R 3,718	R 647	4	21	24	11
February	47,965	719	741	84	R 259	R 2,842	R 559	4	19	22	10
March	R 48,826	798	745	91	265	R 2,961	R 679	4	22	24	11
April	R 44,324	662	731	93	R 149	2,234	R 624	4	18	21	10
May	R 50,926	R 783	846	88	313	3,280	R 706	4	20	22	11
June	R 58,952	658	914	134	332	R 3,366	R 854	4	21	23	11
July	R 69,900	668	818	332	R 320	R 3,421	R 1,074	4	22	23	12
August	R 65,934	R 639	932	111	R 275	R 3,057	R 1,034	4	22	23	12
September	R 54,780	R 734	831	122	256	R 2,968	R 862	4	19	21	10
October	R 50,214	749	857	93	R 216	R 2,778	R 780	4	21	22	10
November	R 50,992	727	R 738	124	258	R 2,877	R 663	4	20	22	10
December	58,388	1,440	1,428	189	277	4,444	768	4	21	23	11
Total	664,749	9,519	10,446	1,621	3,272	37,947	9,250	48	247	272	130

<sup>a</sup> Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

<sup>b</sup> 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.

<sup>c</sup> 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.

<sup>d</sup> Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

<sup>e</sup> Petroleum coke is converted from short tons to barrels by multiplying by 5.

<sup>f</sup> Natural gas, plus a small amount of supplemental gaseous fuels.

<sup>g</sup> Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

<sup>h</sup> Wood and wood-derived fuels.

<sup>i</sup> 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).

<sup>j</sup> 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).

<sup>k</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

R=Revised. 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 <sup>a</sup>				Industrial Sector <sup>b</sup>						
	Coal <sup>c</sup>	Petroleum <sup>d</sup>	Natural Gas <sup>e</sup>	Biomass	Coal <sup>c</sup>	Petroleum <sup>d</sup>	Natural Gas <sup>e</sup>	Other Gases <sup>g</sup>	Biomass		Other <sup>i</sup>
				Waste <sup>f</sup>					Wood <sup>h</sup>	Waste <sup>f</sup>	
	Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Thousand Short Tons	Thousand Barrels	Billion Cubic Feet				
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 .....	75	68	11	4	1,397	679	103	22	95	5	6
February .....	75	49	10	4	1,282	788	95	20	89	5	5
March .....	74	21	10	4	1,275	624	99	22	90	6	5
April .....	46	26	9	4	1,076	573	95	22	85	5	6
May .....	37	22	10	4	1,178	776	98	22	89	5	6
June .....	46	21	11	4	1,243	754	101	21	91	3	6
July .....	46	45	13	4	1,321	749	107	21	92	3	6
August .....	49	28	14	4	1,292	714	108	21	93	4	7
September .....	50	16	11	4	1,157	564	101	20	86	3	6
October .....	50	16	10	4	1,126	680	99	20	88	5	6
November .....	60	47	9	4	1,093	704	99	20	91	5	6
December .....	75	46	10	4	1,280	667	104	22	111	5	5
Total .....	683	404	127	48	14,720	8,273	1,209	251	1,100	54	70
2017 January .....	66	71	R 12	4	R 1,290	R 537	R 107	22	96	5	5
February .....	54	48	10	4	1,087	R 442	97	21	89	5	4
March .....	58	56	10	4	1,172	R 583	103	23	92	5	5
April .....	40	29	9	4	1,068	R 504	98	R 21	88	4	5
May .....	40	40	9	4	1,098	R 571	99	22	89	3	5
June .....	46	32	10	4	1,094	R 650	100	22	91	2	5
July .....	53	36	11	4	1,047	R 579	107	23	96	2	6
August .....	49	51	11	4	1,065	R 587	103	23	98	3	6
September .....	47	41	10	R 4	1,030	R 517	98	R 22	87	2	5
October .....	43	39	10	4	1,149	R 570	R 100	21	90	4	4
November .....	50	43	10	4	1,142	R 565	102	21	92	5	5
December .....	62	84	11	4	1,181	608	113	22	99	5	5
Total .....	607	569	121	45	13,424	6,712	1,226	263	1,107	45	58

<sup>a</sup> Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

<sup>b</sup> Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

<sup>c</sup> Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

<sup>d</sup> Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

<sup>e</sup> Natural gas, plus a small amount of supplemental gaseous fuels.

<sup>f</sup> 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).

<sup>g</sup> Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

<sup>h</sup> Wood and wood-derived fuels.

<sup>i</sup> 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).

R=Revised.

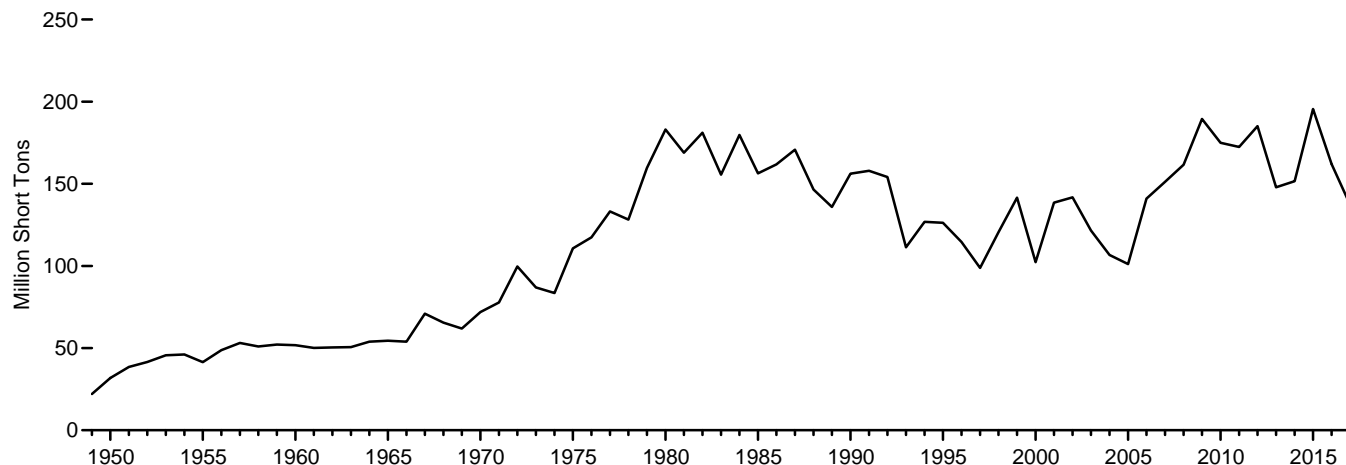
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is 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.

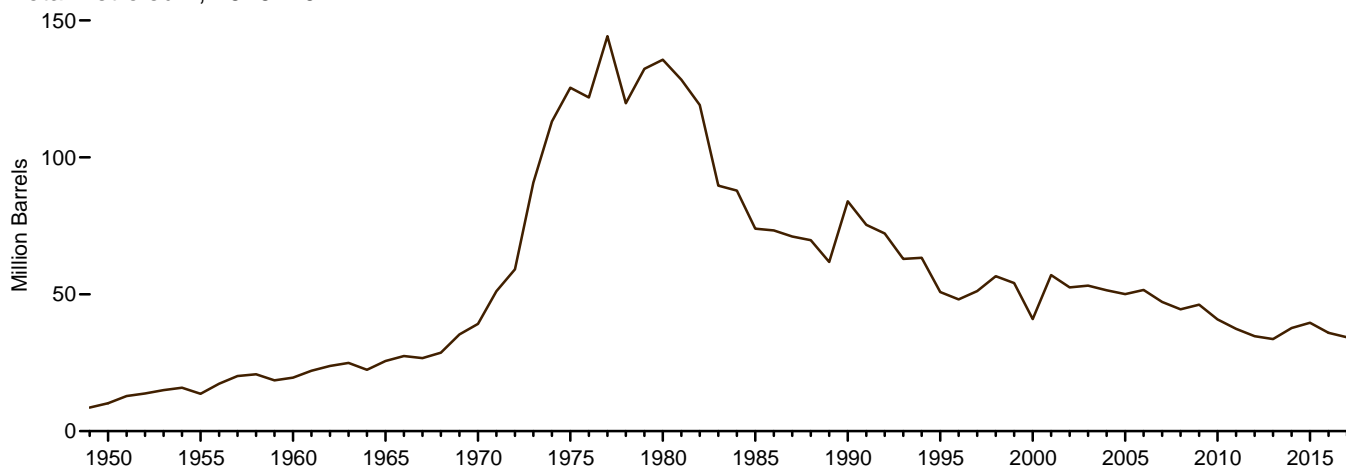
Sources: • **1989–1997:** U.S. Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • **1998–2000:** EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • **2001–2003:** EIA, Form EIA-906, "Power Plant Report." • **2004–2007:** EIA, Form EIA-906, "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**

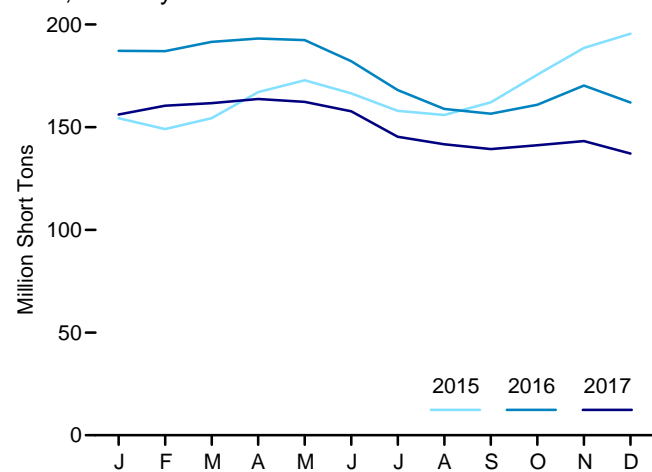
Coal, 1949–2017



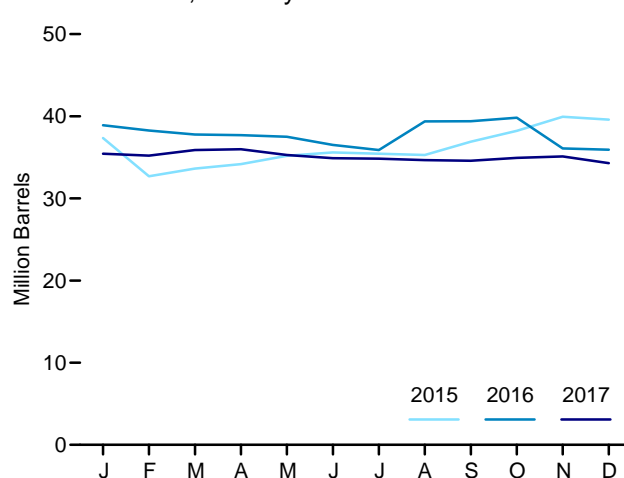
Total Petroleum, 1949–2017



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 <sup>a</sup>	Petroleum				
		Distillate Fuel Oil <sup>b</sup>	Residual Fuel Oil <sup>c</sup>	Other Liquids <sup>d</sup>	Petroleum Coke <sup>e</sup>	Total <sup>e,f</sup>
	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels
1950 Year .....	31,842	NA	NA	NA	NA	10,201
1955 Year .....	41,391	NA	NA	NA	NA	13,671
1960 Year .....	51,735	NA	NA	NA	NA	19,572
1965 Year .....	54,525	NA	NA	NA	NA	25,647
1970 Year .....	71,908	NA	NA	NA	239	39,151
1975 Year .....	110,724	16,432	108,825	NA	31	125,413
1980 Year .....	183,010	30,023	105,351	NA	52	135,635
1985 Year .....	156,376	16,386	57,304	NA	49	73,933
1990 Year .....	156,166	16,471	67,030	NA	94	83,970
1995 Year .....	126,304	15,392	35,102	NA	65	50,821
2000 Year <sup>g</sup> .....	102,296	15,127	24,748	NA	211	40,932
2001 Year .....	138,496	20,486	34,594	NA	390	57,031
2002 Year .....	141,714	17,413	25,723	800	1,711	52,490
2003 Year .....	121,567	19,153	25,820	779	1,484	53,170
2004 Year .....	106,669	19,275	26,596	879	937	51,434
2005 Year .....	101,137	18,778	27,624	1,012	530	50,062
2006 Year .....	140,964	18,013	28,823	1,380	674	51,583
2007 Year .....	151,221	18,395	24,136	1,902	554	47,203
2008 Year .....	161,589	17,761	21,088	1,955	739	44,498
2009 Year .....	189,467	17,886	19,068	2,257	1,394	46,181
2010 Year .....	174,917	16,758	16,629	2,319	1,019	40,800
2011 Year .....	172,387	16,649	15,491	2,707	508	37,387
2012 Year .....	185,116	16,433	12,999	2,792	495	34,698
2013 Year .....	147,884	16,068	12,926	2,679	390	33,622
2014 Year .....	151,548	18,309	12,764	2,432	827	37,643
2015 January .....	154,390	18,216	12,207	2,473	892	37,355
February .....	149,071	16,459	9,798	2,188	850	32,697
March .....	154,347	16,996	10,251	2,289	818	33,626
April .....	167,063	17,167	10,152	2,294	912	34,173
May .....	172,809	17,357	10,518	2,309	999	35,180
June .....	166,437	17,513	10,570	2,358	1,031	35,598
July .....	157,938	17,519	10,263	2,337	1,064	35,442
August .....	155,952	17,712	10,087	2,345	1,029	35,286
September .....	162,109	18,286	10,766	2,339	1,102	36,898
October .....	175,588	18,596	11,492	2,375	1,151	38,217
November .....	188,595	18,738	12,310	2,440	1,290	39,937
December .....	195,548	17,955	12,566	2,363	1,340	39,586
2016 January .....	187,203	17,930	12,020	2,357	1,320	38,907
February .....	187,064	17,662	11,645	2,337	1,323	38,262
March .....	191,553	17,501	11,733	2,335	1,240	37,768
April .....	193,185	17,637	11,982	2,169	1,181	37,693
May .....	192,417	17,856	12,094	2,189	1,071	37,495
June .....	182,086	17,859	11,936	2,197	905	36,519
July .....	168,119	17,726	11,696	2,183	858	35,897
August .....	158,908	21,736	11,595	2,150	780	39,381
September .....	156,567	21,770	11,640	2,145	768	39,394
October .....	160,932	21,940	11,630	2,184	813	39,817
November .....	170,277	17,819	11,939	2,162	833	36,085
December .....	162,009	17,750	11,786	2,165	845	35,926
2017 January .....	156,175	17,496	11,847	2,125	794	35,440
February .....	R 160,448	17,287	11,710	2,097	R 822	R 35,204
March .....	R 161,690	17,006	12,542	2,075	855	35,897
April .....	R 163,723	16,948	12,306	2,071	933	35,991
May .....	R 162,309	R 16,817	12,036	2,027	881	R 35,287
June .....	R 157,719	R 16,644	R 11,890	R 2,016	R 868	R 34,887
July .....	R 145,376	R 16,804	R 11,691	R 1,975	875	R 34,845
August .....	R 141,720	R 16,644	R 11,500	1,928	R 919	R 34,667
September .....	R 139,315	R 16,354	R 11,379	1,914	R 988	R 34,588
October .....	R 141,204	R 16,378	R 11,325	R 1,943	R 1,058	R 34,934
November .....	R 143,210	R 16,388	R 11,377	R 1,906	R 1,089	R 35,117
December .....	137,155	15,833	10,992	1,898	1,113	34,288

<sup>a</sup> Anthracite, bituminous coal, subbituminous coal, and lignite; excludes waste coal.

<sup>b</sup> 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.

<sup>c</sup> 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.

<sup>d</sup> Jet fuel and kerosene. Through 2003, data also include a small amount of waste oil.

<sup>e</sup> Petroleum coke is converted from short tons to barrels by multiplying by 5.

<sup>f</sup> Distillate fuel oil and residual fuel oil. Beginning in 1970, also includes petroleum coke. Beginning in 2002, also includes other liquids.

<sup>g</sup> 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.

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

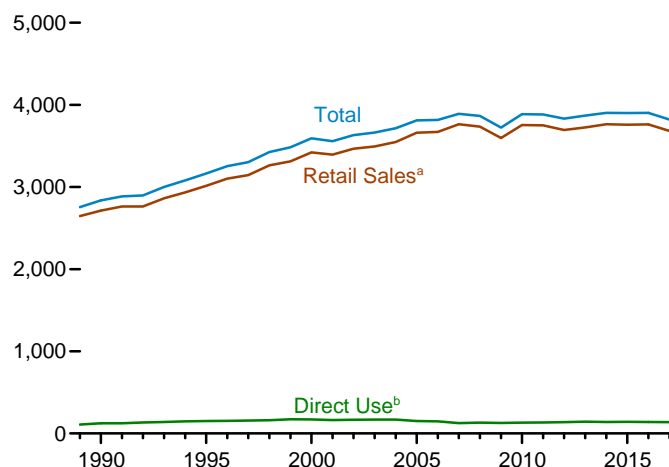
primary business is to sell electricity, or electricity and heat, to the public. • Stocks are at end of period. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

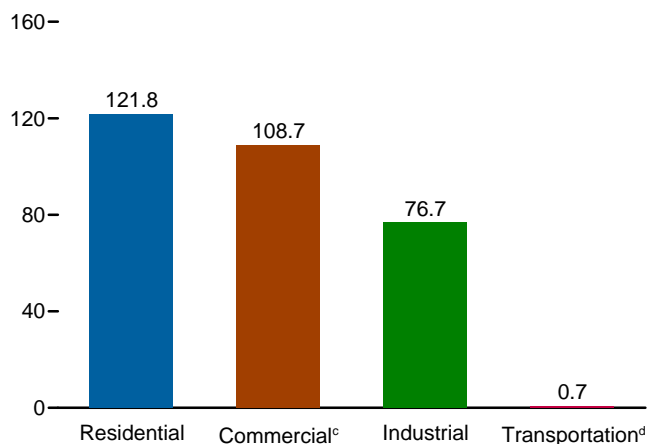
Sources: • **1949–September 1977:** Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • **October 1977–1981:** Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • **1982–1988:** U.S. Energy Information Administration (EIA), Form EIA-759, "Monthly Power 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)

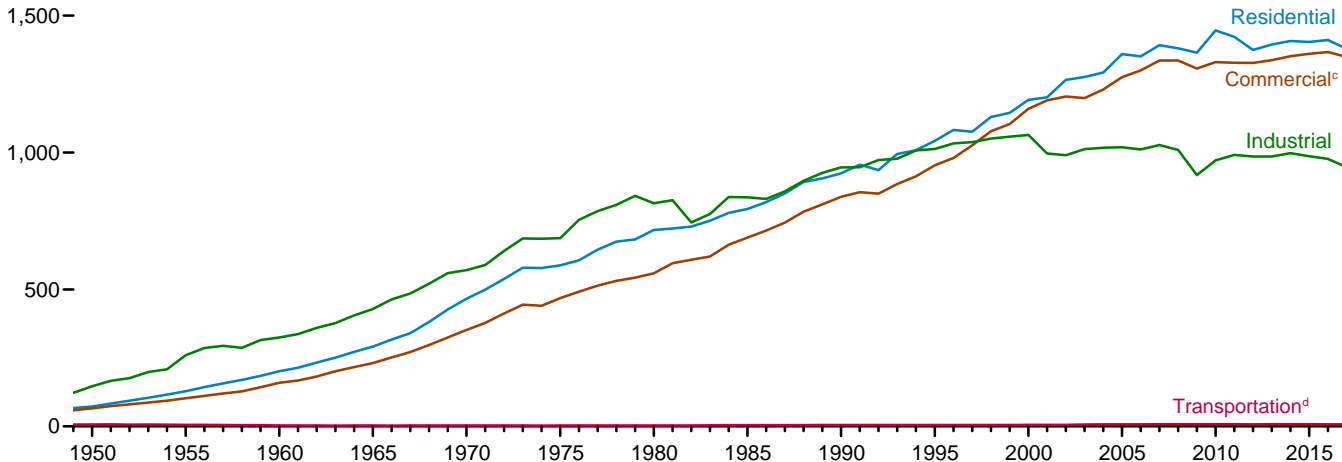
Electricity End Use Overview, 1989–2017



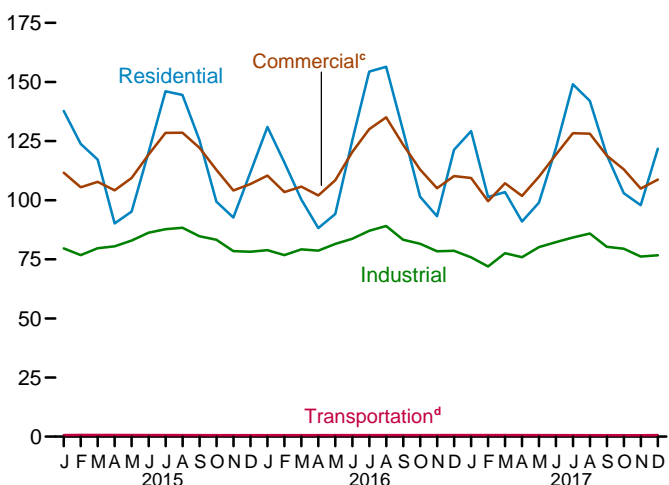
Retail Sales<sup>a</sup> by Sector, December 2017



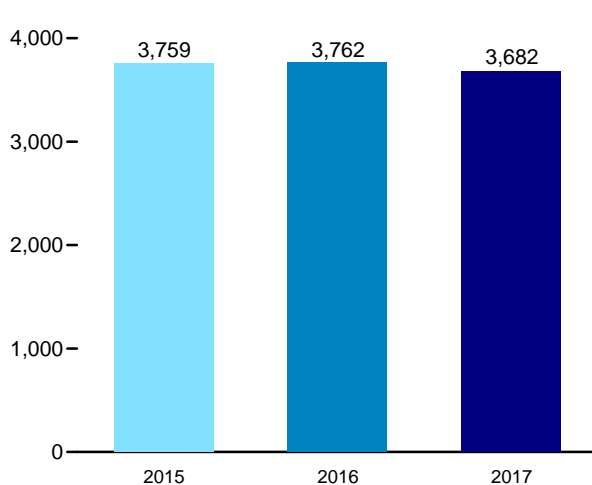
Retail Sales<sup>a</sup> by Sector, 1949–2017



Retail Sales<sup>a</sup> by Sector, Monthly



Retail Sales<sup>a</sup> Total, January–December



<sup>a</sup> Electricity retail sales to ultimate customers reported by utilities and other energy service providers.

<sup>b</sup> See “Direct Use” in Glossary.

<sup>c</sup> Commercial sector, including public street and highway lighting, inter-

departmental sales, and other sales to public authorities.

<sup>d</sup> 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 <sup>a</sup>					Direct Use <sup>f</sup>	Total End Use <sup>g</sup>
	Residential	Commercial <sup>b</sup>	Industrial <sup>c</sup>	Transportation <sup>d</sup>	Total Retail Sales <sup>e</sup>		
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	917,416	7,768	3,596,795	126,938	3,723,733
2010 Total .....	1,445,708	1,330,199	971,221	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
<b>2015 January .....</b>	<b>137,765</b>	<b>111,620</b>	<b>79,609</b>	<b>673</b>	<b>329,666</b>	<b>E 12,214</b>	<b>341,881</b>
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
<b>Total .....</b>	<b>1,404,096</b>	<b>1,360,752</b>	<b>986,508</b>	<b>7,637</b>	<b>3,758,992</b>	<b>141,168</b>	<b>3,900,160</b>
<b>2016 January .....</b>	<b>130,972</b>	<b>110,410</b>	<b>78,848</b>	<b>660</b>	<b>320,890</b>	<b>RE 11,921</b>	<b>R 332,811</b>
February .....	115,959	103,452	76,748	646	296,806	RE 11,078	R 307,884
March .....	100,227	105,739	79,237	609	285,812	RE 11,576	R 297,388
April .....	88,244	102,045	78,647	595	269,531	RE 10,886	R 280,418
May .....	94,198	108,437	81,491	581	284,708	RE 11,379	R 296,087
June .....	125,211	120,363	83,672	631	329,878	RE 11,759	R 341,637
July .....	154,409	130,038	87,076	648	372,172	RE 12,567	R 384,739
August .....	156,442	135,019	89,101	631	381,192	RE 12,673	R 393,865
September .....	129,363	123,493	83,259	637	336,752	RE 11,661	R 348,413
October .....	101,508	112,963	81,597	613	296,681	RE 11,350	R 308,031
November .....	93,244	105,060	78,421	592	277,317	RE 11,268	R 288,585
December .....	121,281	110,172	78,616	653	310,722	RE 11,726	R 322,448
<b>Total .....</b>	<b>1,411,058</b>	<b>1,367,191</b>	<b>976,715</b>	<b>7,497</b>	<b>3,762,462</b>	<b>R 139,844</b>	<b>R 3,902,306</b>
<b>2017 January .....</b>	<b>R 129,253</b>	<b>R 109,414</b>	<b>R 75,814</b>	<b>666</b>	<b>R 315,148</b>	<b>RE 11,940</b>	<b>R 327,088</b>
February .....	R 101,349	R 99,607	R 71,958	636	R 273,550	RE 10,859	R 284,410
March .....	R 103,434	R 107,171	R 77,587	644	R 288,836	RE 11,547	R 300,383
April .....	R 90,966	R 101,796	R 75,917	590	R 269,269	RE 11,049	R 280,318
May .....	R 98,977	R 109,912	R 80,147	583	R 289,619	RE 11,221	R 300,839
June .....	R 122,034	R 119,289	R 82,224	629	R 324,176	RE 11,641	R 335,817
July .....	R 149,075	R 128,324	R 84,240	630	R 362,268	RE 12,387	R 374,655
August .....	R 142,026	R 128,144	R 85,905	641	R 356,716	RE 12,104	R 368,820
September .....	R 119,077	R 118,836	R 80,260	619	R 318,793	RE 10,898	R 329,691
October .....	R 102,983	R 113,036	R 79,471	626	R 296,116	RE 10,944	R 307,060
November .....	R 97,870	R 104,959	R 76,195	598	R 279,622	RE 11,315	R 290,937
December .....	121,775	108,720	76,724	663	307,882	E 12,133	320,014
<b>Total .....</b>	<b>1,378,819</b>	<b>1,349,208</b>	<b>946,443</b>	<b>7,524</b>	<b>3,681,995</b>	<b>E 138,037</b>	<b>R 3,820,032</b>

<sup>a</sup> Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.

<sup>b</sup> Commercial sector, including public street and highway lighting, interdepartmental sales, and other sales to public authorities.

<sup>c</sup> Industrial sector. Through 2002, excludes agriculture and irrigation; beginning in 2003, includes agriculture and irrigation.

<sup>d</sup> Transportation sector, including sales to railroads and railways.

<sup>e</sup> The sum of "Residential," "Commercial," "Industrial," and "Transportation."

<sup>f</sup> 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.

<sup>g</sup> The sum of "Total Retail Sales" and "Direct Use."

R=Revised. 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](http://www.eia.gov/survey/form/eia_860/instructions.pdf).

**Note 3. Electricity 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). STIFS is driven primarily by data and assumptions about key macroeconomic variables, energy prices, and weather. The electricity forecast relies on additional variables such as alternative fuel prices (natural gas and oil) and power generation by sources other than fossil fuels, including nuclear, renewables, and hydroelectric power. Each month, EIA staff review the model output and make adjustments, if appropriate, based on their knowledge of developments in the electricity 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 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 2011–2016: National Energy Board of Canada; California Independent System Operator; and EIA estimates for Texas transfers.

2017: EIA, Form EIA-111, “Quarterly Electricity Imports and Exports Report” as of February 27, 2018.

### 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 February 27, 2018.

### 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 February 27, 2018.

### 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 February 27, 2018.

### 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 February 27, 2018.

### 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)*, February 2018, 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](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, February 2018, 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](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, February 2018, 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.”

2001–2016: EIA, *Electric Power Annual 2016*, December 2017, Table 2.2.

2017: Sum of monthly estimates.

**Direct Use, Monthly**

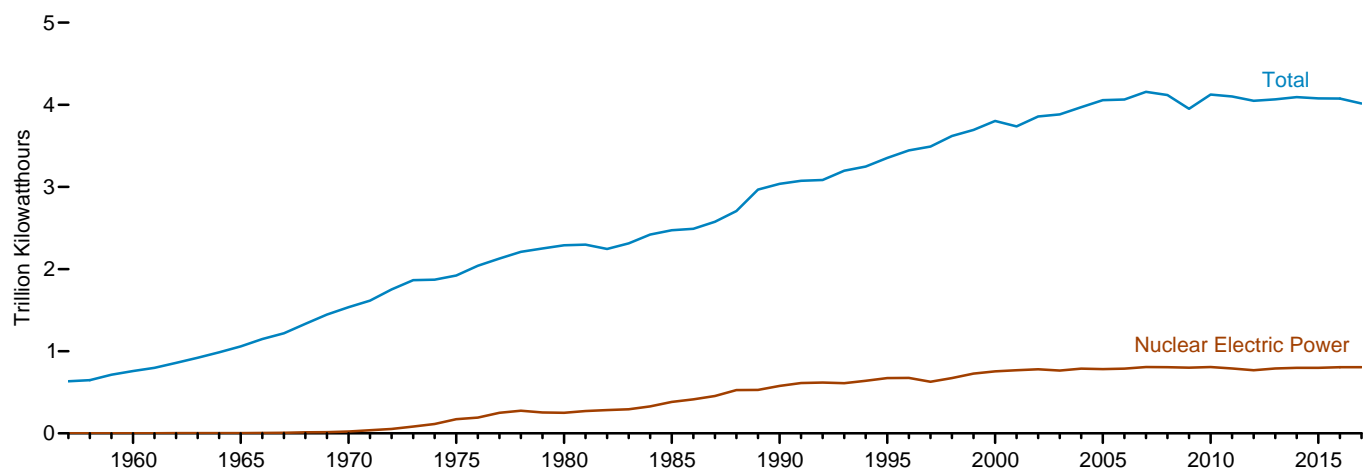
1989 forward: Annual shares are calculated as annual direct use divided by annual commercial and industrial net generation (on Table 7.1). Then monthly direct use estimates are calculated as the annual share multiplied by the monthly commercial and industrial net generation values. For 2017, the 2016 annual share is used.

## 8. Nuclear Energy

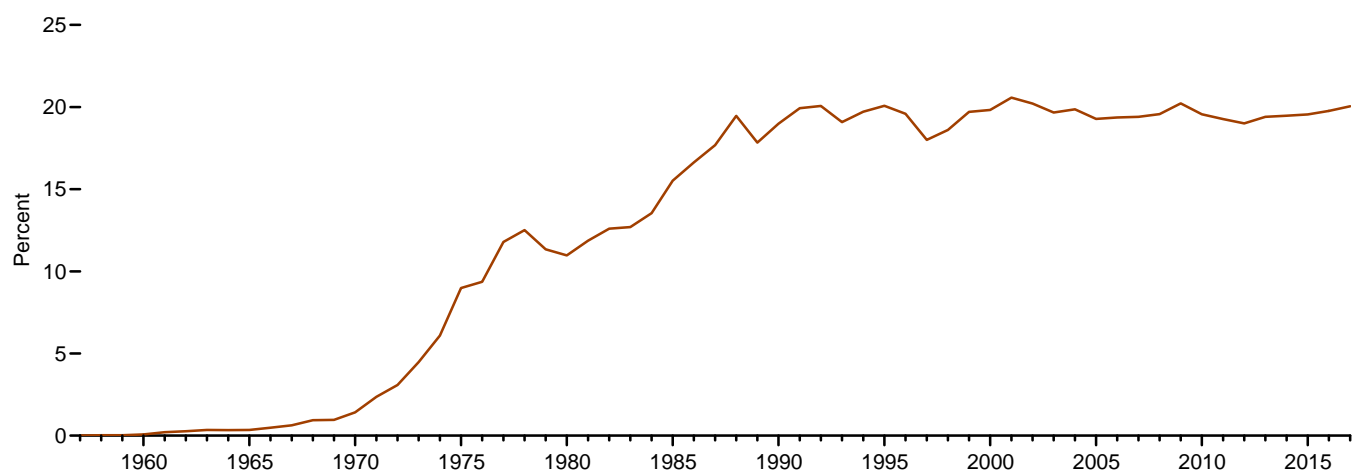
---

## Figure 8.1 Nuclear Energy Overview

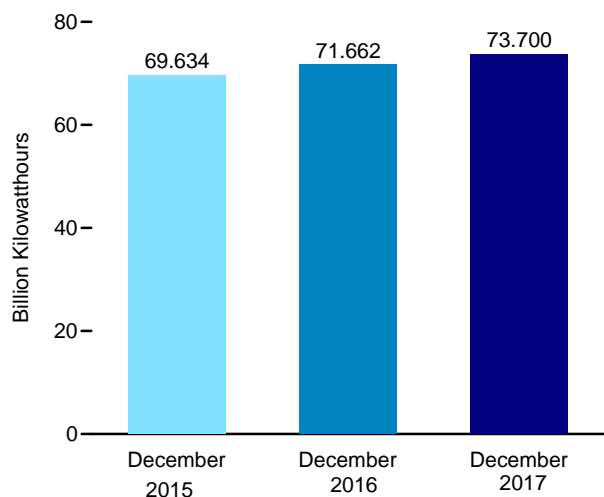
Electricity Net Generation, 1957–2017



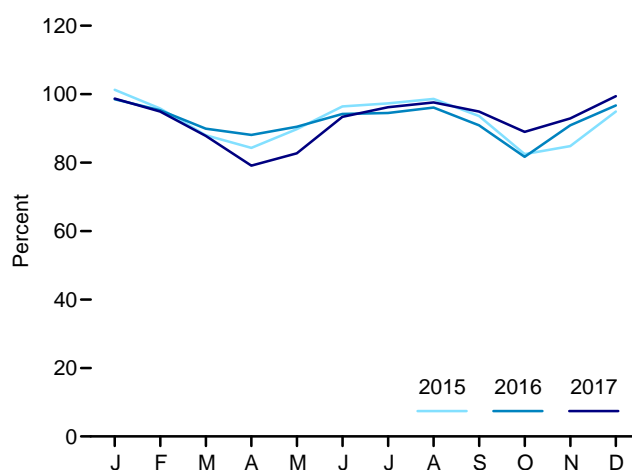
Nuclear Share of Electricity Net Generation, 1957–2017



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 <sup>a,b</sup>	Net Summer Capacity of Operable Units <sup>b,c</sup>	Nuclear Electricity Net Generation	Nuclear Share of Electricity Net Generation	Capacity Factor <sup>d</sup>
	Number	Million Kilowatts	Million Kilowatthours	Percent	
<b>1957 Total</b> .....	<b>1</b>	<b>0.055</b>	<b>10</b>	<b>(s)</b>	<b>NA</b>
<b>1960 Total</b> .....	<b>3</b>	<b>.411</b>	<b>518</b>	<b>.1</b>	<b>NA</b>
<b>1965 Total</b> .....	<b>13</b>	<b>.793</b>	<b>3,657</b>	<b>.3</b>	<b>NA</b>
<b>1970 Total</b> .....	<b>20</b>	<b>7.004</b>	<b>21,804</b>	<b>1.4</b>	<b>NA</b>
<b>1975 Total</b> .....	<b>57</b>	<b>37.267</b>	<b>172,505</b>	<b>9.0</b>	<b>55.9</b>
<b>1980 Total</b> .....	<b>71</b>	<b>51.810</b>	<b>251,116</b>	<b>11.0</b>	<b>56.3</b>
<b>1985 Total</b> .....	<b>96</b>	<b>79.397</b>	<b>383,691</b>	<b>15.5</b>	<b>58.0</b>
<b>1990 Total</b> .....	<b>112</b>	<b>99.624</b>	<b>576,862</b>	<b>19.0</b>	<b>66.0</b>
<b>1995 Total</b> .....	<b>109</b>	<b>99.515</b>	<b>673,402</b>	<b>20.1</b>	<b>77.4</b>
<b>2000 Total</b> .....	<b>104</b>	<b>97.860</b>	<b>753,893</b>	<b>19.8</b>	<b>88.1</b>
<b>2001 Total</b> .....	<b>104</b>	<b>98.159</b>	<b>768,826</b>	<b>20.6</b>	<b>89.4</b>
<b>2002 Total</b> .....	<b>104</b>	<b>98.657</b>	<b>780,064</b>	<b>20.2</b>	<b>90.3</b>
<b>2003 Total</b> .....	<b>104</b>	<b>99.209</b>	<b>763,733</b>	<b>19.7</b>	<b>87.9</b>
<b>2004 Total</b> .....	<b>104</b>	<b>99.628</b>	<b>788,528</b>	<b>19.9</b>	<b>90.1</b>
<b>2005 Total</b> .....	<b>104</b>	<b>99.988</b>	<b>781,986</b>	<b>19.3</b>	<b>89.3</b>
<b>2006 Total</b> .....	<b>104</b>	<b>100.334</b>	<b>787,219</b>	<b>19.4</b>	<b>89.6</b>
<b>2007 Total</b> .....	<b>104</b>	<b>100.266</b>	<b>806,425</b>	<b>19.4</b>	<b>91.8</b>
<b>2008 Total</b> .....	<b>104</b>	<b>100.755</b>	<b>806,208</b>	<b>19.6</b>	<b><sup>d</sup> 91.1</b>
<b>2009 Total</b> .....	<b>104</b>	<b>101.004</b>	<b>798,855</b>	<b>20.2</b>	<b>90.3</b>
<b>2010 Total</b> .....	<b>104</b>	<b>101.167</b>	<b>806,968</b>	<b>19.6</b>	<b>91.1</b>
<b>2011 Total</b> .....	<b>104</b>	<b><sup>c</sup> 101.419</b>	<b>790,204</b>	<b>19.3</b>	<b>89.1</b>
<b>2012 Total</b> .....	<b>104</b>	<b>101.885</b>	<b>769,331</b>	<b>19.0</b>	<b>86.1</b>
<b>2013 Total</b> .....	<b>100</b>	<b>99.240</b>	<b>789,016</b>	<b>19.4</b>	<b>89.9</b>
<b>2014 Total</b> .....	<b>99</b>	<b>98.569</b>	<b>797,166</b>	<b>19.5</b>	<b>91.7</b>
<b>2015 January</b> .....	<b>99</b>	<b>98.533</b>	<b>74,270</b>	<b>20.6</b>	<b>101.3</b>
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
<b>Total</b> .....	<b>99</b>	<b>98.672</b>	<b>797,178</b>	<b>19.6</b>	<b>92.3</b>
<b>2016 January</b> .....	<b>99</b>	<b>98.921</b>	<b>72,525</b>	<b>20.6</b>	<b>98.5</b>
February .....	99	98.921	65,638	20.9	95.3
March .....	99	98.921	66,149	21.7	89.9
April .....	99	98.921	62,732	21.4	88.1
May .....	99	98.921	66,576	21.0	90.5
June .....	99	100.043	67,175	18.3	94.2
July .....	100	100.043	70,349	17.1	94.5
August .....	100	100.043	71,526	17.5	96.1
September .....	100	100.043	65,448	18.6	90.9
October .....	99	99.565	60,733	19.4	81.7
November .....	99	99.565	65,179	21.9	90.9
December .....	99	99.565	71,662	20.8	96.7
<b>Total</b> .....	<b>99</b>	<b>99.565</b>	<b>805,694</b>	<b>19.8</b>	<b>92.3</b>
<b>2017 January</b> .....	<b>99</b>	<b>RE 99.616</b>	<b>73,121</b>	<b>21.4</b>	<b><sup>E</sup> 98.7</b>
February .....	99	RE 99.616	<sup>R</sup> 63,560	<sup>R</sup> 21.9	RE 94.9
March .....	99	RE 99.616	65,093	20.3	RE 87.8
April .....	99	RE 99.616	56,743	19.3	RE 79.1
May .....	99	RE 99.616	<sup>R</sup> 61,313	19.1	RE 82.7
June .....	99	RE 99.616	67,011	18.8	RE 93.4
July .....	99	RE 99.635	71,314	17.8	RE 96.2
August .....	99	RE 99.635	72,384	18.9	RE 97.6
September .....	99	RE 99.635	<sup>R</sup> 68,098	20.4	<sup>E</sup> 94.9
October .....	99	RE 99.635	65,995	20.7	RE 89.0
November .....	99	RE 99.635	66,618	21.7	<sup>E</sup> 92.9
December .....	<b>99</b>	<b><sup>E</sup> 99.635</b>	<b>73,700</b>	<b>21.3</b>	<b><sup>E</sup> 99.4</b>
<b>Total</b> .....	<b>99</b>	<b><sup>E</sup> 99.635</b>	<b>804,950</b>	<b>20.0</b>	<b><sup>E</sup> 92.2</b>

<sup>a</sup> 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.

<sup>b</sup> At end of period.

<sup>c</sup> 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.

<sup>d</sup> 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.

R=Revised. 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 <sup>a</sup> (AL)
2008		
2009		
2010		
2011		
2012		
2013	Kewaunee (WI); San Onofre 2 and 3 (CA); Crystal River 3 <sup>b</sup> (FL)	
2014	Vermont Yankee (VT)	
2015		
2016	Fort Calhoun (NE)	Watts Bar 2 (TN)
2017		

<sup>a</sup> Restarted after long-term shutdown from 1986 to 2006, but counted as operable for those years.

<sup>b</sup> 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.

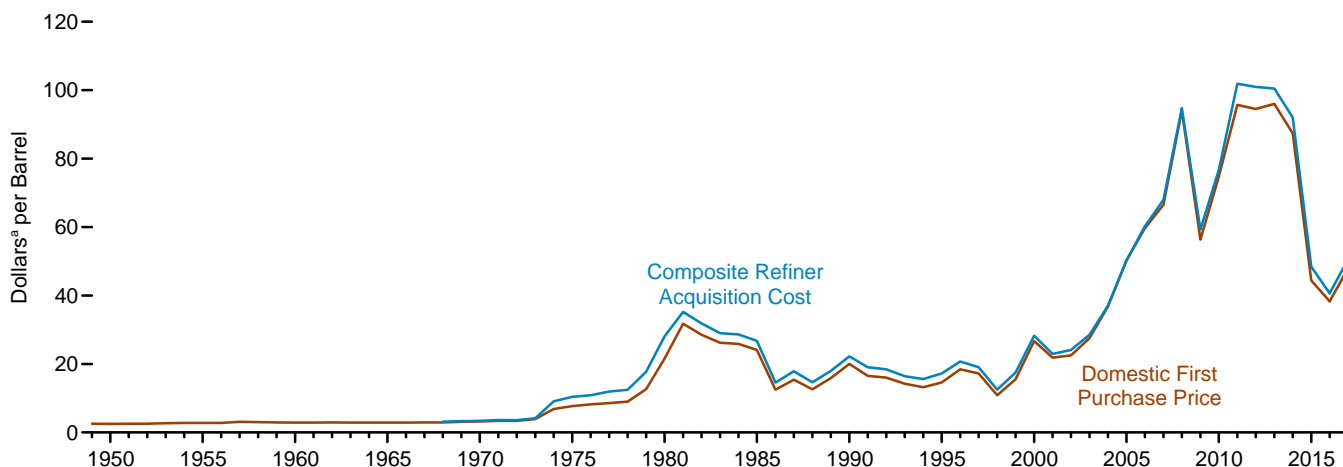
2008 forward: EIA, Form EIA-860, “Annual Electric Generator Report”; Form EIA-860M, “Monthly Update to the Annual Electric Generator Report”; and Form EIA-923, “Power Plant Operations Report.”

## 9. Energy Prices

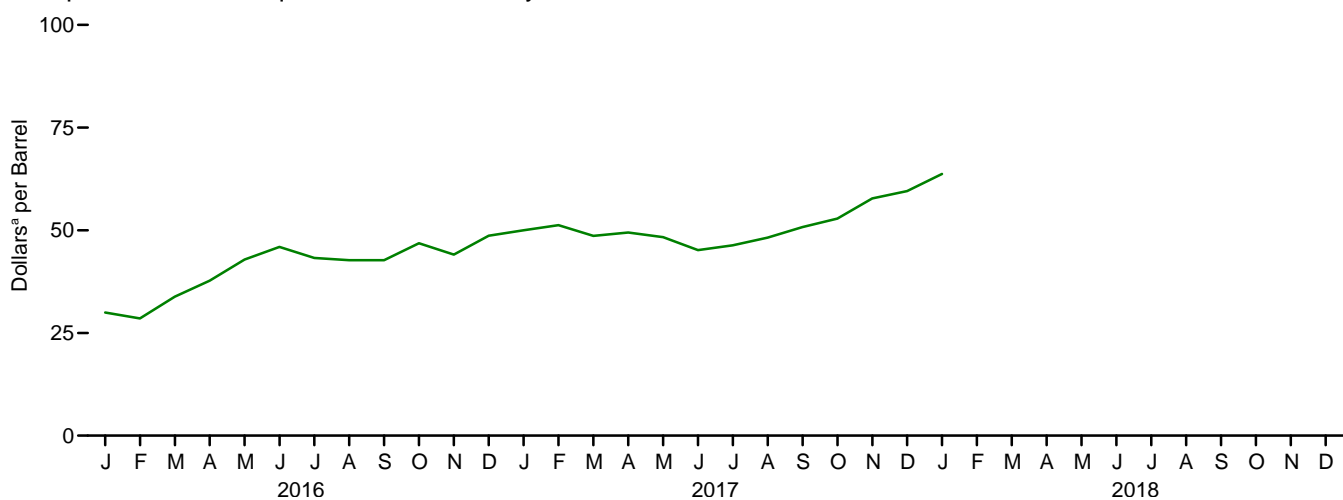
---

## Figure 9.1 Petroleum Prices

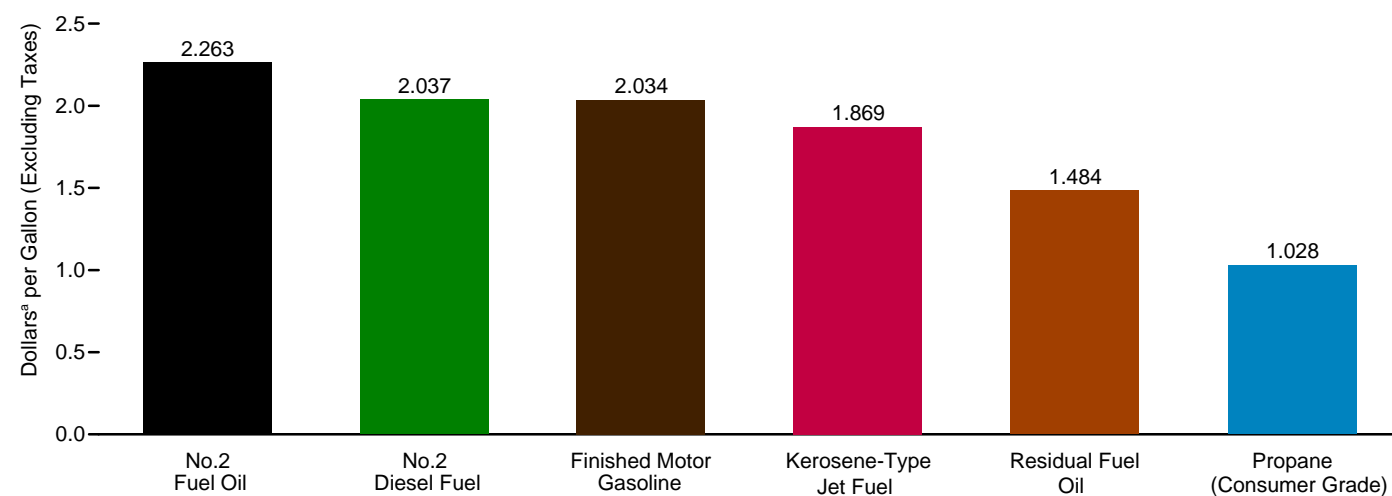
Crude Oil Prices, 1949–2017



Composite Refiner Acquisition Cost, Monthly



Refiner Prices to End Users: Selected Products, December 2017



<sup>a</sup> 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<sup>a</sup> per Barrel)

	Domestic First Purchase Price <sup>c</sup>	F.O.B. Cost of Imports <sup>d</sup>	Landed Cost of Imports <sup>e</sup>	Refiner Acquisition Cost <sup>b</sup>		
				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	NA	NA	NA
1975 Average .....	7.67	11.18	12.70	E 3.46	E 2.96	E 3.40
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	57.03	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	93.47	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	78.01	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
<b>2015</b> 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
<b>Average</b> .....	<b>44.39</b>	<b>41.91</b>	<b>45.38</b>	<b>49.94</b>	<b>46.38</b>	<b>48.39</b>
<b>2016</b> 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
<b>Average</b> .....	<b>38.29</b>	<b>36.37</b>	<b>38.56</b>	<b>42.41</b>	<b>38.75</b>	<b>40.66</b>
<b>2017</b> January .....	48.19	44.63	47.05	51.81	48.12	49.99
February .....	49.41	45.88	48.10	53.15	49.38	51.24
March .....	46.39	44.08	46.22	50.60	46.53	48.65
April .....	47.23	43.58	46.00	51.34	47.47	49.47
May .....	45.19	43.74	46.13	49.58	46.94	48.34
June .....	42.19	41.35	43.82	46.17	43.93	45.17
July .....	43.42	42.09	44.70	47.44	45.02	46.32
August .....	44.96	44.18	46.92	48.71	47.61	48.19
September .....	47.17	46.47	49.74	51.14	50.37	50.79
October .....	49.13	47.22	R 50.93	53.69	51.80	52.86
November .....	R 55.19	R 51.94	R 55.67	R 58.85	R 56.36	R 57.75
December .....	R 56.98	R 53.60	R 56.13	R 60.97	R 57.56	R 59.53
<b>Average</b> .....	<b>48.05</b>	<b>45.40</b>	<b>48.19</b>	<b>52.01</b>	<b>49.14</b>	<b>50.68</b>
<b>2018</b> January .....	NA	NA	NA	E 65.71	E 61.40	E 63.72

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

<sup>b</sup> See Note 1, "Crude Oil Refinery Acquisition Costs," at end of section.

<sup>c</sup> See Note 2, "Crude Oil Domestic First Purchase Prices," at end of section.

<sup>d</sup> See Note 3, "Crude Oil F.O.B. Costs," at end of section.

<sup>e</sup> 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<sup>a</sup> per Barrel)

	Selected Countries							Persian Gulf Nations <sup>b</sup>	Total OPEC <sup>c</sup>	Total Non-OPEC <sup>c</sup>
	Angola	Colombia	Mexico	Nigeria	Saudi Arabia	United Kingdom	Venezuela			
1973 Average <sup>d</sup>	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	—	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
<b>2015</b>										
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
<b>Average</b>	<b>W</b>	<b>47.52</b>	<b>44.90</b>	<b>W</b>	<b>47.53</b>	<b>—</b>	<b>40.73</b>	<b>46.95</b>	<b>43.25</b>	<b>41.19</b>
<b>2016</b>										
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
<b>Average</b>	<b>42.68</b>	<b>35.28</b>	<b>36.22</b>	<b>46.20</b>	<b>39.30</b>	<b>W</b>	<b>34.71</b>	<b>38.76</b>	<b>38.51</b>	<b>34.81</b>
<b>2017</b>										
January	—	47.92	45.50	W	W	—	45.94	47.61	47.30	43.27
February	W	46.97	45.91	W	51.21	—	45.69	50.06	49.11	43.63
March	W	46.05	42.10	W	48.54	—	42.47	47.83	46.85	41.73
April	W	46.76	44.32	W	50.00	W	43.59	48.93	47.09	41.47
May	W	44.70	44.85	W	47.95	—	41.08	47.14	45.58	42.66
June	W	41.30	41.86	48.88	45.41	—	39.16	44.41	43.52	40.28
July	W	44.44	44.33	50.26	46.94	—	41.72	45.95	45.40	40.39
August	W	47.16	46.33	52.18	49.33	—	45.41	48.06	48.32	41.38
September	—	W	48.06	W	53.41	—	49.22	51.74	52.36	43.18
October	—	52.69	49.01	58.58	55.44	—	52.51	50.92	53.93	44.21
November	—	W	54.66	W	59.64	W	55.88	58.77	58.77	48.53
December	—	W	55.27	W	61.64	—	58.27	59.83	60.57	50.59
<b>Average</b>	<b>W</b>	<b>48.34</b>	<b>46.53</b>	<b>54.14</b>	<b>50.90</b>	<b>W</b>	<b>45.42</b>	<b>49.86</b>	<b>49.17</b>	<b>43.25</b>

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

<sup>b</sup> Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, and the Neutral Zone (between Kuwait and Saudi Arabia).

<sup>c</sup> 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.

<sup>d</sup> 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<sup>a</sup> per Barrel)

	Selected Countries								Persian Gulf Nations <sup>b</sup>	Total OPEC <sup>c</sup>	Total Non-OPEC <sup>c</sup>
	Angola	Canada	Colombia	Mexico	Nigeria	Saudi Arabia	United Kingdom	Venezuela			
1973 Average <sup>d</sup>	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
<b>2015</b> 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
<b>Average</b>	<b>51.73</b>	<b>41.99</b>	<b>49.53</b>	<b>45.51</b>	<b>54.70</b>	<b>49.78</b>	<b>W</b>	<b>42.87</b>	<b>49.43</b>	<b>47.44</b>	<b>44.09</b>
<b>2016</b> 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
<b>Average</b>	<b>44.65</b>	<b>36.27</b>	<b>38.86</b>	<b>36.64</b>	<b>48.11</b>	<b>42.14</b>	<b>W</b>	<b>35.50</b>	<b>41.20</b>	<b>40.54</b>	<b>37.09</b>
<b>2017</b> January	—	44.70	49.17	46.35	54.74	50.40	W	47.53	49.35	49.22	45.77
February	W	44.97	49.66	46.57	54.42	52.34	—	46.28	51.09	50.57	46.26
March	W	43.00	48.29	42.97	W	50.36	W	43.91	49.61	48.93	43.96
April	W	43.05	48.38	44.65	W	50.18	W	44.55	49.04	48.47	44.31
May	W	44.26	45.86	45.51	51.83	49.06	W	43.50	47.26	47.30	45.25
June	50.74	41.75	44.89	42.36	50.36	47.88	W	40.88	46.76	45.71	42.67
July	50.20	41.59	46.72	45.17	50.89	47.79	—	42.25	46.99	46.65	43.38
August	52.23	43.17	48.56	46.86	53.18	51.19	W	46.16	49.55	49.48	45.44
September	56.59	45.14	52.43	49.63	57.99	55.03	W	50.98	52.93	53.53	47.28
October	W	45.68	53.95	50.28	59.35	<sup>R</sup> 58.18	W	<sup>R</sup> 53.05	<sup>R</sup> 54.40	<sup>R</sup> 55.36	<sup>R</sup> 48.24
November	61.03	<sup>R</sup> 51.22	<sup>R</sup> 59.52	<sup>R</sup> 55.47	<sup>R</sup> 64.15	<sup>R</sup> 60.56	<sup>R</sup> 62.24	<sup>R</sup> 56.99	<sup>R</sup> 58.50	<sup>R</sup> 59.19	<sup>R</sup> 53.56
December	W	51.43	60.23	56.01	66.33	62.20	—	59.34	60.25	61.09	53.89
<b>Average</b>	<b>54.17</b>	<b>44.89</b>	<b>50.21</b>	<b>47.56</b>	<b>55.81</b>	<b>51.94</b>	<b>56.11</b>	<b>46.80</b>	<b>50.78</b>	<b>50.72</b>	<b>46.54</b>

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

<sup>b</sup> Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, and the Neutral Zone (between Kuwait and Saudi Arabia).

<sup>c</sup> 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.

<sup>d</sup> Based on October, November, and December data only.

<sup>R</sup> = 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*, March 2018, Table 22.

**Table 9.4 Retail Motor Gasoline and On-Highway Diesel Fuel Prices**

(Dollars<sup>a</sup> 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 <sup>b</sup>	All Grades <sup>c</sup>	Conventional Gasoline Areas <sup>d</sup>	Reformulated Gasoline Areas <sup>e</sup>	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
July .....	--	2.281	2.800	2.344	2.211	2.486	2.300	2.496
August .....	--	2.374	2.883	2.436	2.297	2.557	2.380	2.595
September .....	--	2.630	3.120	2.688	2.570	2.802	2.645	2.785
October .....	--	2.484	2.996	2.545	2.430	2.663	2.505	2.794
November .....	--	2.548	3.056	2.608	2.474	2.751	2.564	2.909
December .....	--	2.459	2.985	2.521	2.388	2.663	2.477	2.909
Average .....	--	2.408	2.911	2.469	2.333	2.586	2.415	2.650
2018 January .....	--	2.539	3.042	2.596	2.467	2.738	2.555	3.018
February .....	--	2.575	3.091	2.632	2.488	2.795	2.587	3.046

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

<sup>b</sup> The 1981 average (available in Web file) is based on September through December data only.

<sup>c</sup> Also includes grades of motor gasoline not shown separately.

<sup>d</sup> Any area that does not require the sale of reformulated gasoline.

<sup>e</sup> "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

**Table 9.5 Refiner Prices of Residual Fuel Oil**  
(Dollars<sup>a</sup> 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
<b>2015</b> 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
<b>Average .....</b>	<b>.971</b>	<b>1.529</b>	<b>.999</b>	<b>1.227</b>	<b>.996</b>	<b>1.285</b>
<b>2016</b> 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
<b>Average .....</b>	<b>.736</b>	<b>1.138</b>	<b>.746</b>	<b>.897</b>	<b>.745</b>	<b>.945</b>
<b>2017</b> 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	1.075	1.186	1.077	1.239
April .....	1.038	W	1.039	1.147	1.039	1.201
May .....	.986	W	1.047	1.153	1.043	1.213
June .....	.937	W	.995	1.129	.991	1.195
July .....	1.026	W	1.040	1.154	1.039	1.211
August .....	1.042	W	1.081	1.142	1.079	1.204
September .....	1.150	W	1.137	1.295	1.138	1.314
October .....	1.153	W	1.178	1.249	1.176	1.304
November .....	1.302	W	1.277	1.384	1.279	1.413
December .....	1.254	W	1.249	1.447	1.249	1.484

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.  
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*, March 2018, Table 16.

**Table 9.6 Refiner Prices of Petroleum Products for Resale**  
(Dollars<sup>a</sup> per Gallon, Excluding Taxes)

	Finished Motor Gasoline <sup>b</sup>	Finished Aviation Gasoline	Kerosene- Type Jet Fuel	Kerosene	No. 2 Fuel Oil	No. 2 Diesel Fuel	Propane (Consumer Grade)
<b>1978 Average</b> .....	0.434	0.537	0.386	0.404	0.369	0.365	0.237
<b>1980 Average</b> .....	.941	1.128	.868	.864	.803	.801	.415
<b>1985 Average</b> .....	.835	1.130	.794	.874	.776	.772	.398
<b>1990 Average</b> .....	.786	1.063	.773	.839	.697	.694	.386
<b>1995 Average</b> .....	.626	.975	.539	.580	.511	.538	.344
<b>2000 Average</b> .....	.963	1.330	.880	.969	.886	.898	.595
<b>2001 Average</b> .....	.886	1.256	.763	.821	.756	.784	.540
<b>2002 Average</b> .....	.828	1.146	.716	.752	.694	.724	.431
<b>2003 Average</b> .....	1.002	1.288	.871	.955	.881	.883	.607
<b>2004 Average</b> .....	1.288	1.627	1.208	1.271	1.125	1.187	.751
<b>2005 Average</b> .....	1.670	2.076	1.723	1.757	1.623	1.737	.933
<b>2006 Average</b> .....	1.969	2.490	1.961	2.007	1.834	2.012	1.031
<b>2007 Average</b> .....	2.182	2.758	2.171	2.249	2.072	2.203	1.194
<b>2008 Average</b> .....	2.586	3.342	3.020	2.851	2.745	2.994	1.437
<b>2009 Average</b> .....	1.767	2.480	1.719	1.844	1.657	1.713	.921
<b>2010 Average</b> .....	2.165	2.874	2.185	2.299	2.147	2.214	1.212
<b>2011 Average</b> .....	2.867	3.739	3.014	3.065	2.907	3.034	1.467
<b>2012 Average</b> .....	2.929	3.919	3.080	3.163	3.031	3.109	1.033
<b>2013 Average</b> .....	2.812	3.869	2.953	3.084	2.966	3.028	1.048
<b>2014 Average</b> .....	2.618	3.687	2.763	2.882	2.741	2.812	1.165
<b>2015 January</b> .....	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
<b>Average</b> .....	<b>1.726</b>	<b>2.764</b>	<b>1.592</b>	<b>1.735</b>	<b>1.565</b>	<b>1.667</b>	<b>.555</b>
<b>2016 January</b> .....	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
<b>Average</b> .....	<b>1.454</b>	<b>2.404</b>	<b>1.295</b>	<b>1.383</b>	<b>1.239</b>	<b>1.378</b>	<b>.523</b>
<b>2017 January</b> .....	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	1.520	1.580	1.495	1.581	.671
April .....	1.723	2.724	1.545	1.572	1.499	1.627	.641
May .....	1.668	2.620	1.459	1.481	1.447	1.552	.631
June .....	1.574	2.552	1.378	1.360	1.375	1.465	.585
July .....	1.621	2.608	1.436	1.468	1.392	1.533	.634
August .....	1.711	2.710	1.587	1.630	1.522	1.681	.742
September .....	1.826	2.893	1.771	1.809	1.668	1.847	.864
October .....	1.730	2.716	1.704	1.805	1.695	1.852	.942
November .....	1.806	2.841	<sup>R</sup> 1.795	<sup>R</sup> 1.961	1.781	1.936	.997
December .....	1.720	2.691	1.847	2.034	1.842	1.917	.991

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

<sup>b</sup> 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*, March 2018, Table 4.

**Table 9.7 Refiner Prices of Petroleum Products to End Users**

(Dollars<sup>a</sup> per Gallon, Excluding Taxes)

	Finished Motor Gasoline <sup>b</sup>	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	1.554	W	1.909	1.699	.657
April .....	1.997	W	1.595	W	2.081	1.747	.652
May .....	1.963	W	1.492	2.637	NA	1.693	.650
June .....	1.906	W	1.434	2.600	1.739	1.618	.611
July .....	1.871	W	1.478	2.621	1.728	1.665	.667
August .....	1.952	W	1.613	2.579	1.904	1.792	.768
September .....	2.154	W	1.795	2.703	2.044	1.959	.895
October .....	2.042	W	1.743	W	2.048	1.982	.972
November .....	2.122	W	R 1.831	W	2.134	2.047	1.011
December .....	2.034	W	1.869	W	2.263	2.037	1.028

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

<sup>b</sup> 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

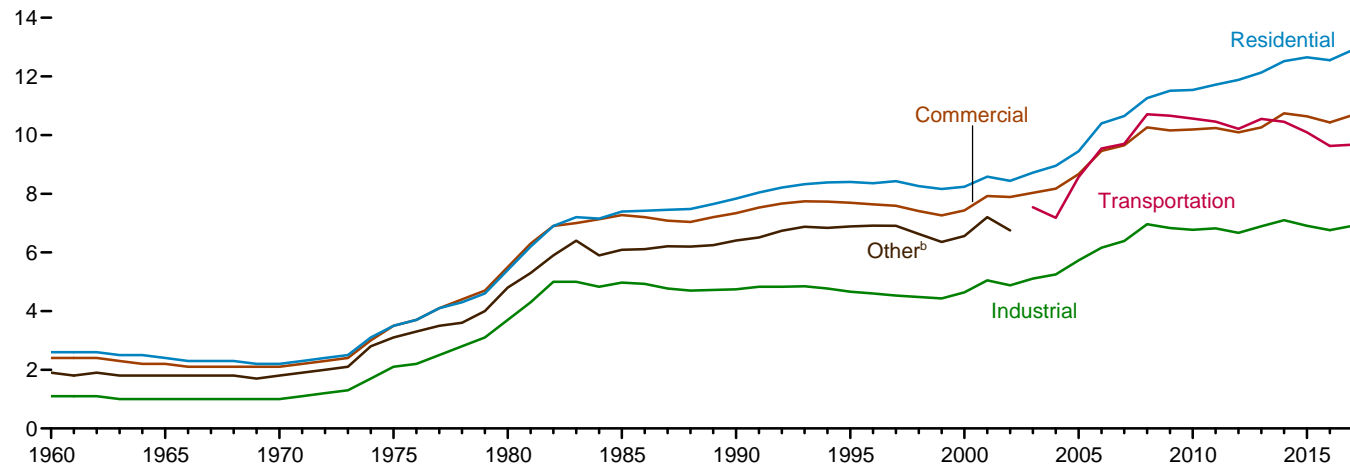
Information Administration (EIA) estimates. See Note 6, "Historical Petroleum Prices," at end of section. • Geographic coverage is the 50 states and the District of Columbia.

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.

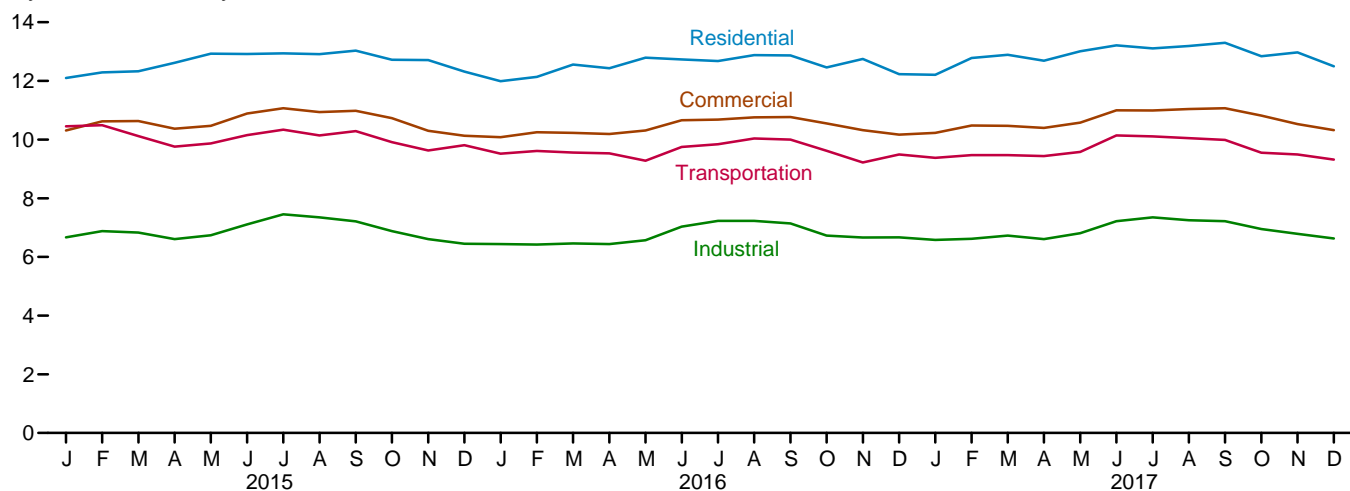
Sources: • 1978–2007: EIA, *Petroleum Marketing Annual 2007*, Table 2. • 2008 forward: EIA, *Petroleum Marketing Monthly*, March 2018, Table 2.

**Figure 9.2 Average Retail Prices of Electricity**  
(Cents<sup>a</sup> per Kilowatthour)

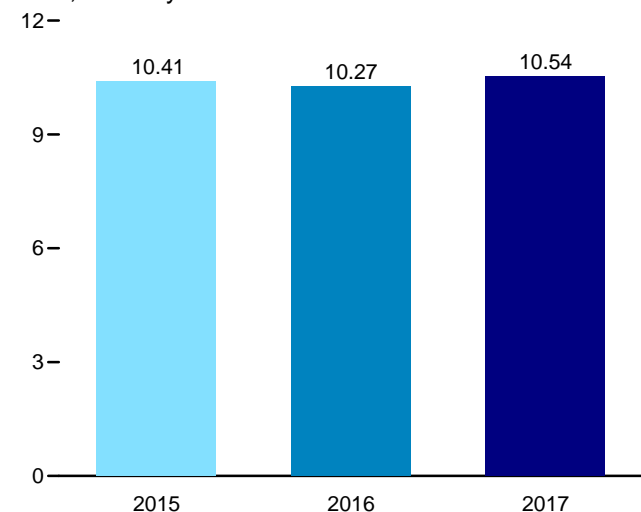
By Sector, 1960–2017



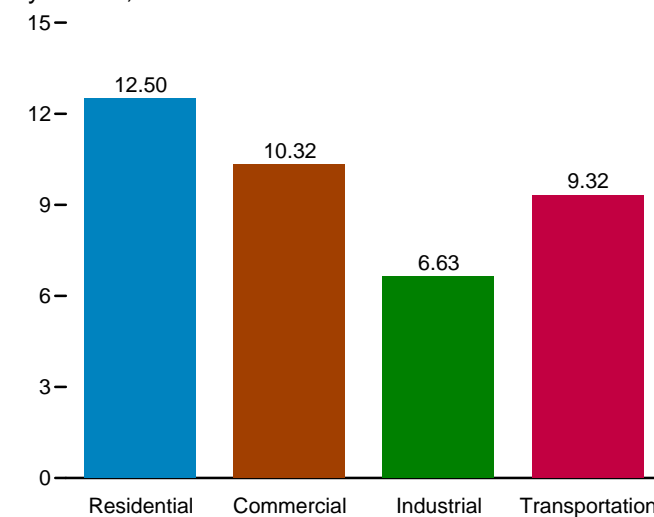
By Sector, Monthly



Total, January–December



By Sector, December 2017



<sup>a</sup> Prices are not adjusted for inflation. See “Nominal Price” in Glossary.

<sup>b</sup> 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<sup>a</sup> per Kilowatthour, Including Taxes)

	Residential	Commercial <sup>b</sup>	Industrial <sup>c</sup>	Transportation <sup>d</sup>	Other <sup>e</sup>	Total
<b>1960 Average</b> .....	2.60	2.40	1.10	NA	1.90	1.80
<b>1965 Average</b> .....	2.40	2.20	1.00	NA	1.80	1.70
<b>1970 Average</b> .....	2.20	2.10	1.00	NA	1.80	1.70
<b>1975 Average</b> .....	3.50	3.50	2.10	NA	3.10	2.90
<b>1980 Average</b> .....	5.40	5.50	3.70	NA	4.80	4.70
<b>1985 Average</b> .....	7.39	7.27	4.97	NA	6.09	6.44
<b>1990 Average</b> .....	7.83	7.34	4.74	NA	6.40	6.57
<b>1995 Average</b> .....	8.40	7.69	4.66	NA	6.88	6.89
<b>2000 Average</b> .....	8.24	7.43	4.64	NA	6.56	6.81
<b>2001 Average</b> .....	8.58	7.92	5.05	NA	7.20	7.29
<b>2002 Average</b> .....	8.44	7.89	4.88	NA	6.75	7.20
<b>2003 Average</b> .....	8.72	8.03	5.11	7.54	--	7.44
<b>2004 Average</b> .....	8.95	8.17	5.25	7.18	--	7.61
<b>2005 Average</b> .....	9.45	8.67	5.73	8.57	--	8.14
<b>2006 Average</b> .....	10.40	9.46	6.16	9.54	--	8.90
<b>2007 Average</b> .....	10.65	9.65	6.39	9.70	--	9.13
<b>2008 Average</b> .....	11.26	10.26	6.96	10.71	--	9.74
<b>2009 Average</b> .....	11.51	10.16	6.83	10.66	--	9.82
<b>2010 Average</b> .....	11.54	10.19	6.77	10.56	--	9.83
<b>2011 Average</b> .....	11.72	10.24	6.82	10.46	--	9.90
<b>2012 Average</b> .....	11.88	10.09	6.67	10.21	--	9.84
<b>2013 Average</b> .....	12.13	10.26	6.89	10.55	--	10.07
<b>2014 Average</b> .....	12.52	10.74	7.10	10.45	--	10.44
<b>2015 January</b> .....	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
<b>Average</b> .....	<b>12.65</b>	<b>10.64</b>	<b>6.91</b>	<b>10.09</b>	--	<b>10.41</b>
<b>2016 January</b> .....	11.99	10.08	6.44	9.52	--	9.97
February .....	12.14	10.25	6.42	9.61	--	10.00
March .....	12.56	10.23	6.46	9.56	--	10.00
April .....	12.43	10.19	6.44	9.53	--	9.83
May .....	12.79	10.31	6.57	9.28	--	10.06
June .....	12.73	10.66	7.03	9.75	--	10.52
July .....	12.68	10.68	7.23	9.84	--	10.70
August .....	12.88	10.76	7.23	10.04	--	10.81
September .....	12.87	10.77	7.14	10.00	--	10.68
October .....	12.46	10.55	6.73	9.62	--	10.15
November .....	12.75	10.32	6.66	9.22	--	10.10
December .....	12.23	10.17	6.67	9.49	--	10.09
<b>Average</b> .....	<b>12.55</b>	<b>10.43</b>	<b>6.76</b>	<b>9.63</b>	--	<b>10.27</b>
<b>2017 January</b> .....	R 12.21	10.23	6.58	9.38	--	10.16
February .....	12.78	10.48	6.62	9.47	--	10.31
March .....	R 12.89	10.47	6.73	9.47	--	10.33
April .....	12.69	10.40	6.61	9.44	--	10.10
May .....	R 13.01	R 10.58	6.81	9.58	--	10.37
June .....	R 13.21	R 11.00	R 7.22	10.14	--	10.87
July .....	R 13.11	R 10.99	R 7.35	R 10.11	--	11.02
August .....	13.19	11.04	R 7.25	R 10.05	--	10.98
September .....	13.30	R 11.07	R 7.22	R 9.99	--	10.93
October .....	12.84	10.82	6.95	R 9.55	--	10.48
November .....	R 12.97	R 10.53	6.79	9.49	--	R 10.36
December .....	12.50	10.32	6.63	9.32	--	10.26
<b>Average</b> .....	<b>12.90</b>	<b>10.68</b>	<b>6.91</b>	<b>9.67</b>	--	<b>10.54</b>

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Price" in Glossary.

<sup>b</sup> Commercial sector. For 1960–2002, prices exclude public street and highway lighting, interdepartmental sales, and other sales to public authorities.

<sup>c</sup> Industrial sector. For 1960–2002, prices exclude agriculture and irrigation.

<sup>d</sup> Transportation sector, including railroads and railways.

<sup>e</sup> Public street and highway lighting, interdepartmental sales, other sales to public authorities, agriculture and irrigation, and transportation including railroads and railways.

R=Revised. 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.

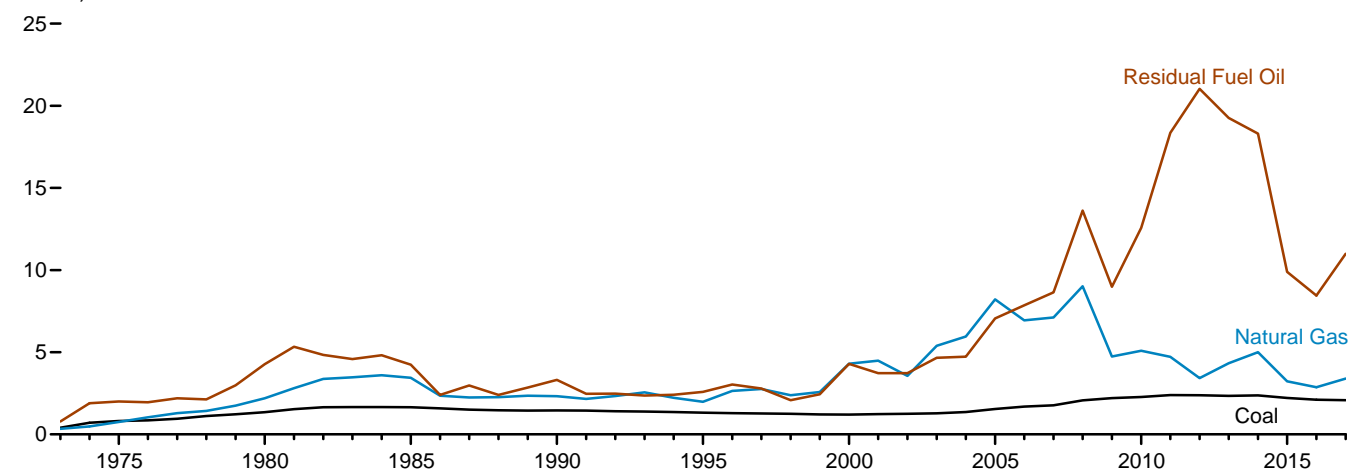
(Class A utilities are those with operating revenues of \$2.5 million or more; Class B utilities are those with operating revenues between \$1 million and \$2.5 million.) For 1980–1982, data are for selected Class A utilities whose electric operating revenues were \$100 million or more during the previous 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.

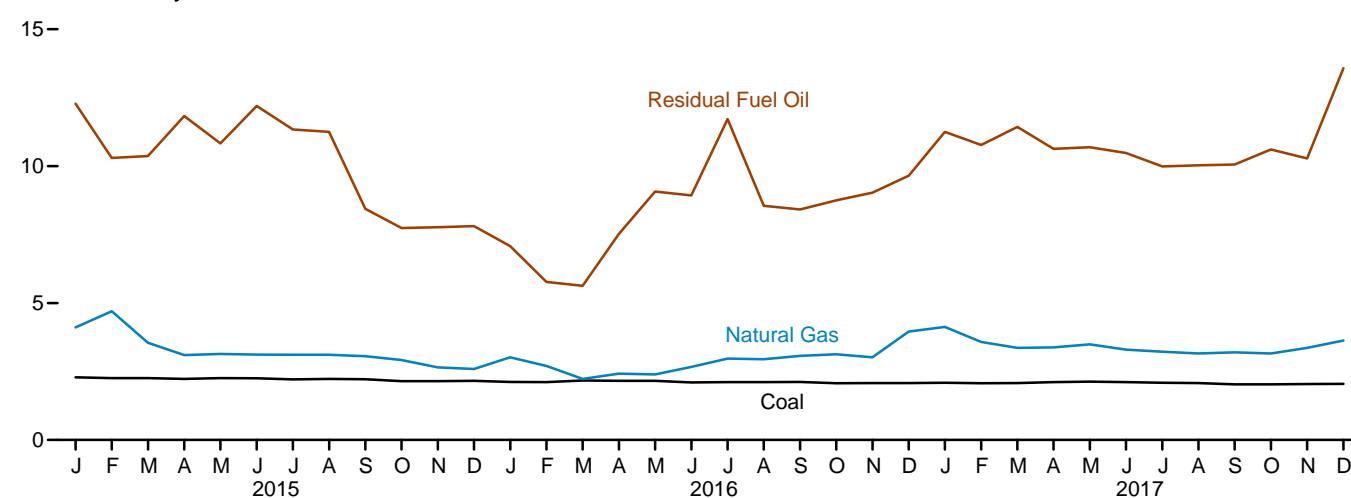
Sources: • **1960–September 1977:** Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • **October 1977–February 1980:** Federal Energy Regulatory Commission (FERC), Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • **March 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*, February 2018, Table 5.3.

**Figure 9.3 Cost of Fossil-Fuel Receipts at Electric Generating Plants**  
(Dollars<sup>a</sup> per Million Btu, Including Taxes)

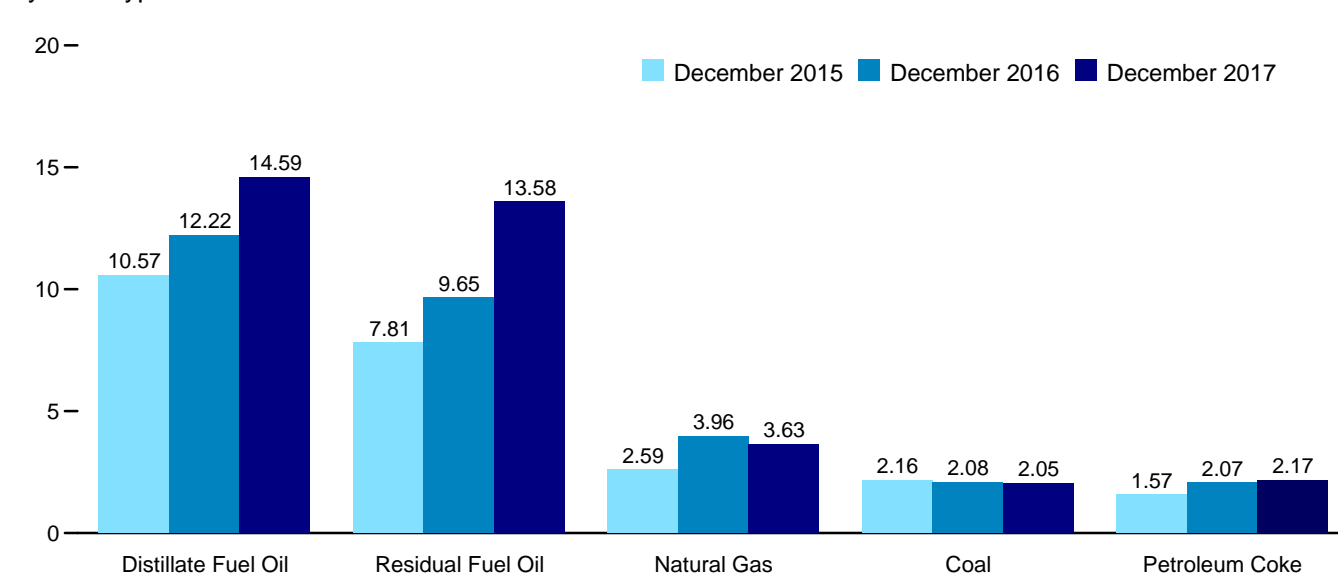
Costs, 1973–2017



Costs, Monthly



By Fuel Type



<sup>a</sup> 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<sup>a</sup> per Million Btu, Including Taxes)

	Coal	Petroleum				Natural Gas <sup>e</sup>	All Fossil Fuels <sup>f</sup>
		Residual Fuel Oil <sup>b</sup>	Distillate Fuel Oil <sup>c</sup>	Petroleum Coke	Total <sup>d</sup>		
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 <sup>g</sup> .....	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	7.08	8.90	1.38	4.56	3.02	2.52
February .....	2.11	5.77	8.78	1.30	3.66	2.70	2.36
March .....	2.17	5.63	9.46	1.41	3.62	2.23	2.21
April .....	2.16	7.53	9.97	1.35	4.53	2.42	2.31
May .....	2.16	9.07	10.76	1.32	5.70	2.39	2.31
June .....	2.10	8.93	12.22	1.41	6.13	2.67	2.39
July .....	2.11	11.72	12.08	1.47	6.38	2.97	2.55
August .....	2.11	8.55	11.41	1.75	5.24	2.95	2.52
September .....	2.12	8.42	11.29	2.07	5.23	3.07	2.55
October .....	2.07	8.75	12.04	1.98	5.85	3.13	2.51
November .....	2.08	9.03	R 12.01	2.26	R 6.24	3.02	2.47
December .....	2.08	9.65	12.22	2.07	5.93	3.96	2.82
Average .....	2.11	8.45	10.90	1.65	5.24	2.87	2.47
2017 January .....	2.09	11.25	12.95	2.14	7.68	4.13	2.82
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	3.38	2.62
May .....	2.13	R 10.69	12.21	2.05	6.63	3.49	W
June .....	2.11	R 10.48	11.48	W	6.08	3.30	W
July .....	2.09	9.99	11.79	W	5.88	3.22	W
August .....	2.08	10.03	12.95	W	6.24	3.16	W
September .....	2.03	10.06	14.51	W	6.36	3.20	W
October .....	2.03	10.61	14.12	W	6.78	3.16	W
November .....	2.04	10.28	R 14.86	W	R 7.92	R 3.36	W
December .....	2.05	13.58	14.59	2.17	8.76	3.63	2.75
Average .....	2.08	10.99	13.21	W	7.01	3.39	W

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

<sup>b</sup> For 1973–2001, electric utility data are for heavy oil (fuel oil nos. 5 and 6, and small amounts of fuel oil no. 4).

<sup>c</sup> For 1973–2001, electric utility data are for light oil (fuel oil nos. 1 and 2).

<sup>d</sup> 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.

<sup>e</sup> 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.

<sup>f</sup> Weighted average of costs shown under "Coal," "Petroleum," and "Natural Gas."

<sup>g</sup> 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.

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

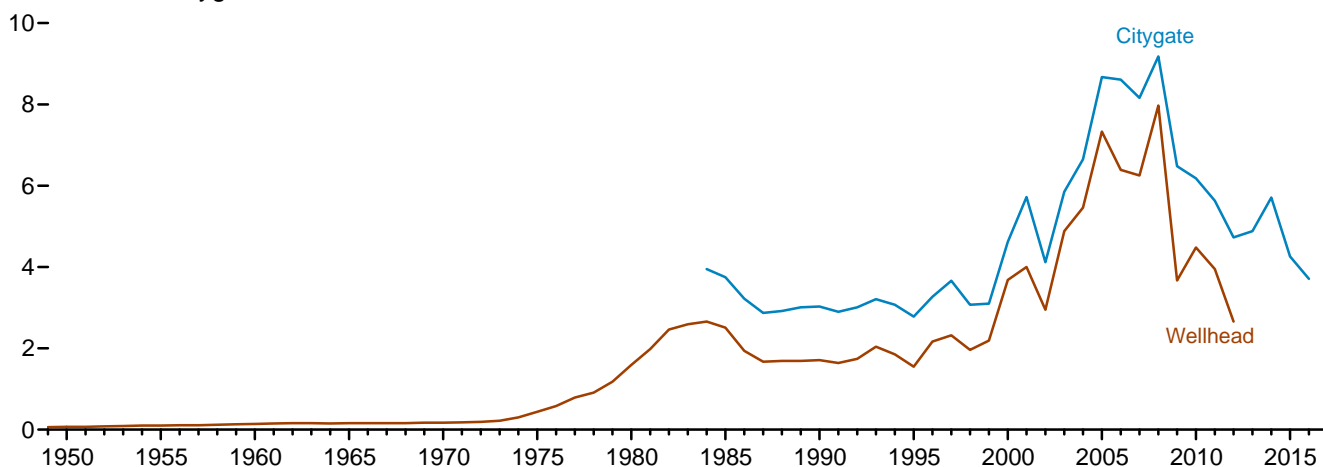
Notes: • Receipts are purchases of fuel. • Yearly costs are averages of monthly values, weighted by quantities in Btu. • For this table, there are several breaks in the data series related to what plants and fuels are covered. Beginning in 2013, data cover all regulated generating plants; plus unregulated 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.

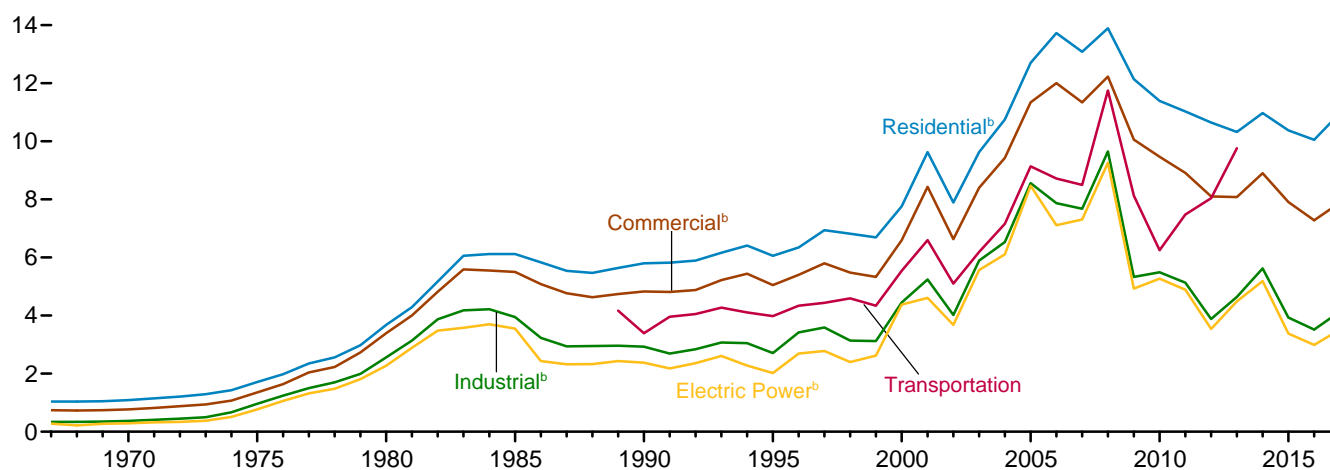
Sources: See end of section.

**Figure 9.4 Natural Gas Prices**  
(Dollars<sup>a</sup> per Thousand Cubic Feet)

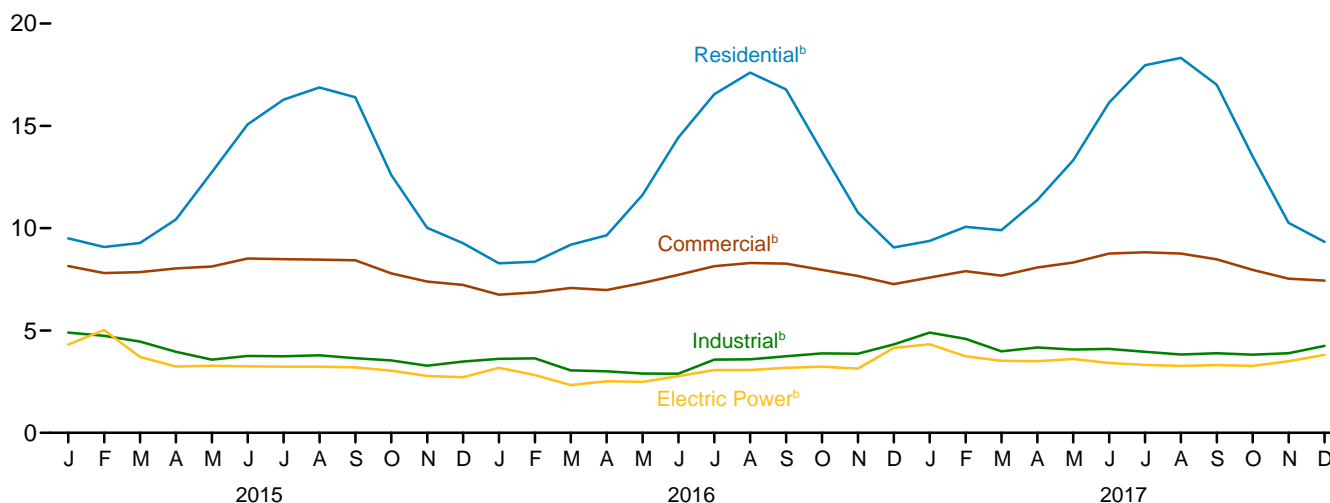
Wellhead and Citygate, 1949–2017



Consuming Sectors, 1967–2017



Consuming Sectors, Monthly



<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.  
<sup>b</sup> Includes taxes.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#prices>.  
Source: Table 9.10.

**Table 9.10 Natural Gas Prices**  
(Dollars<sup>a</sup> per Thousand Cubic Feet)

	Wellhead Price <sup>f</sup>	City-gate Price <sup>g</sup>	Consuming Sectors <sup>b</sup>								
			Residential		Commercial <sup>c</sup>		Industrial <sup>d</sup>		Transportation	Electric Power <sup>e</sup>	
			Price <sup>h</sup>	Percentage of Sector <sup>i</sup>	Price <sup>h</sup>	Percentage of Sector <sup>i</sup>	Price <sup>h</sup>	Percentage of Sector <sup>i</sup>	Vehicle Fuel Price <sup>h</sup>	Price <sup>h</sup>	Percentage of Sector <sup>i,k</sup>
1950 Average	0.07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1955 Average	.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1960 Average	.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1965 Average	.16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1970 Average	.17	NA	1.09	NA	.77	NA	.37	NA	NA	.29	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	8.15	70.8	4.90	14.8	NA	4.31	93.6
February	NA	4.57	9.08	95.6	7.81	71.0	4.74	15.2	NA	5.02	93.7
March	NA	4.35	9.28	95.4	7.85	69.9	4.46	15.4	NA	3.71	94.4
April	NA	3.93	10.43	95.4	8.03	64.8	3.96	14.6	NA	3.24	95.6
May	NA	4.25	12.73	95.4	8.13	61.2	3.58	15.1	NA	3.28	95.5
June	NA	4.44	15.07	95.5	8.52	57.9	3.76	14.6	NA	3.25	94.9
July	NA	4.65	16.28	95.7	8.49	56.9	3.74	14.6	NA	3.23	94.9
August	NA	4.59	16.88	95.4	8.46	55.6	3.79	14.3	NA	3.23	94.7
September	NA	4.56	16.40	95.8	8.43	55.8	3.65	14.5	NA	3.20	94.4
October	NA	4.00	12.60	95.5	7.79	59.5	3.54	14.7	NA	3.04	94.6
November	NA	3.69	10.02	96.0	7.39	63.8	3.28	14.8	NA	2.78	94.8
December	NA	3.75	9.27	96.0	7.23	67.6	3.48	14.9	NA	2.72	94.2
Average	NA	4.26	10.38	95.6	7.91	65.7	3.93	14.8	NA	3.38	94.6
2016 January	NA	3.39	8.28	96.0	6.75	70.4	3.62	15.2	NA	3.18	95.1
February	NA	3.48	8.36	95.8	6.86	69.4	3.64	15.3	NA	2.83	95.2
March	NA	3.49	9.19	95.6	7.08	66.7	3.05	15.3	NA	2.33	95.7
April	NA	3.22	9.65	95.6	6.98	65.0	3.01	14.5	NA	2.52	95.9
May	NA	3.44	11.62	95.4	7.32	60.2	2.90	14.6	NA	2.49	96.0
June	NA	3.84	14.43	95.7	7.72	58.0	2.89	14.6	NA	2.77	95.7
July	NA	4.42	16.55	95.9	8.14	56.9	3.58	14.2	NA	3.07	95.4
August	NA	4.33	17.60	95.8	8.30	54.7	3.59	14.6	NA	3.07	95.6
September	NA	4.60	16.78	96.0	8.27	56.2	3.74	14.6	NA	3.18	95.7
October	NA	4.19	13.74	95.9	7.96	59.9	3.88	14.4	NA	3.23	95.4
November	NA	3.90	10.77	96.0	7.67	63.5	3.87	14.5	NA	3.14	95.5
December	NA	3.96	9.06	96.0	7.27	68.2	4.32	14.7	NA	4.15	95.4
Average	NA	3.71	10.05	95.8	7.28	64.8	3.52	14.7	NA	2.99	95.6
2017 January	NA	4.21	9.38	96.0	7.59	70.5	4.90	15.0	NA	4.33	R 81.8
February	NA	4.13	10.07	95.9	7.90	69.1	4.59	15.0	NA	3.74	R 82.8
March	NA	3.84	9.90	95.7	7.68	67.8	3.98	15.0	NA	3.52	R 80.0
April	NA	4.19	11.38	95.3	8.08	65.0	4.17	14.5	NA	3.50	R 81.1
May	NA	4.41	13.32	95.6	R 8.32	61.0	R 4.07	13.8	NA	3.61	R 81.4
June	NA	4.81	16.13	94.5	8.76	58.0	4.10	14.4	NA	3.41	R 80.2
July	NA	4.69	17.96	95.8	R 8.82	57.1	3.96	14.5	NA	3.32	R 78.3
August	NA	R 4.59	18.32	95.7	R 8.76	55.6	3.83	14.2	NA	3.27	R 79.0
September	NA	4.56	17.01	96.1	8.48	56.2	3.89	13.6	NA	3.31	R 79.0
October	NA	4.06	13.50	96.5	7.96	61.6	3.82	R 14.2	NA	3.27	R 79.4
November	NA	3.98	10.26	96.0	R 7.53	65.9	R 3.89	14.6	NA	R 3.50	R 79.6
December	NA	3.99	9.33	96.5	7.44	69.2	4.25	14.9	NA	3.81	80.4
Average	NA	4.16	10.98	95.9	7.89	65.4	4.14	14.5	NA	3.52	80.1

<sup>a</sup> Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

<sup>b</sup> See Note 8, "Natural Gas Prices," at end of section.

<sup>c</sup> 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.

<sup>d</sup> 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.

<sup>e</sup> 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.

<sup>f</sup> See "Natural Gas Wellhead Price" in Glossary.

<sup>g</sup> See "Citygate" in Glossary.

<sup>h</sup> Includes taxes.

<sup>i</sup> 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.

<sup>j</sup> 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.

<sup>k</sup> 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-861M (formerly Form EIA-826), “Monthly Electric Power Industry 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-861M 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*, March 2018, 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*, March 2018, 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*, March 2018, 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*, March 2018, 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*, February 2018, 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)*, February 2018, 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, February 2018, 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, February 2018, 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).

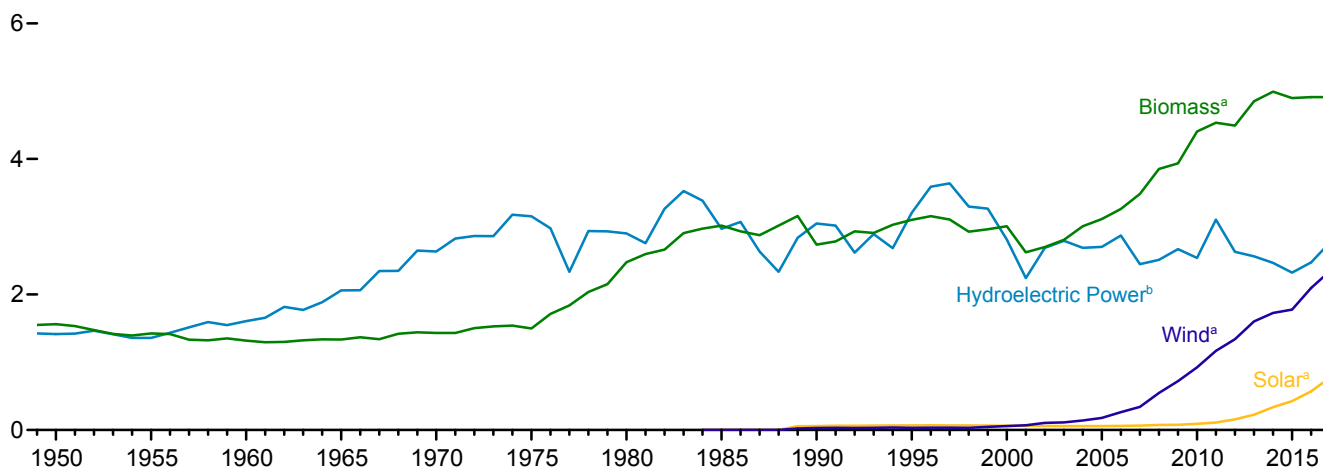


# 10. Renewable Energy

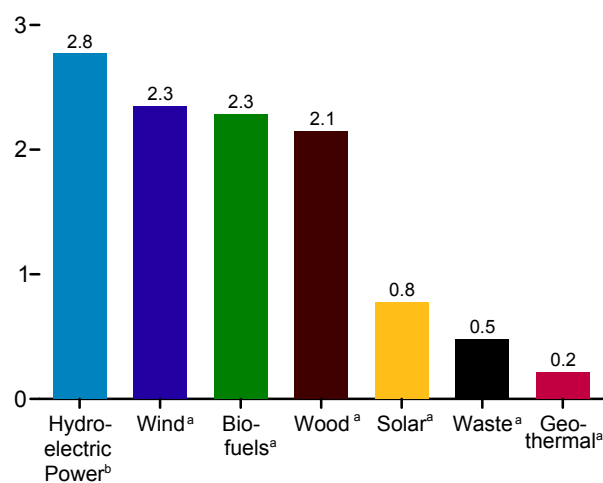
---

**Figure 10.1 Renewable Energy Consumption**  
(Quadrillion Btu)

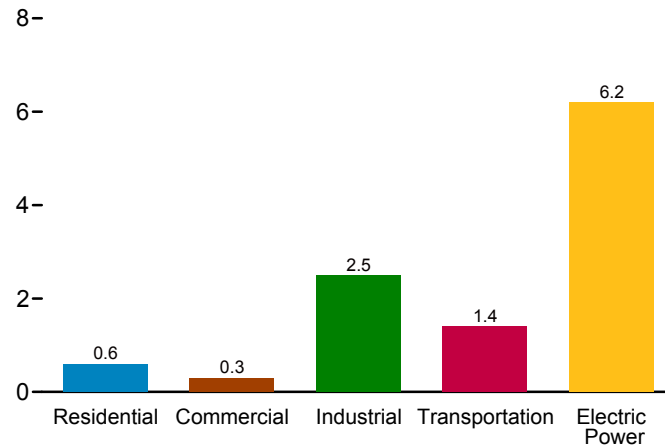
Major Sources, 1949–2017



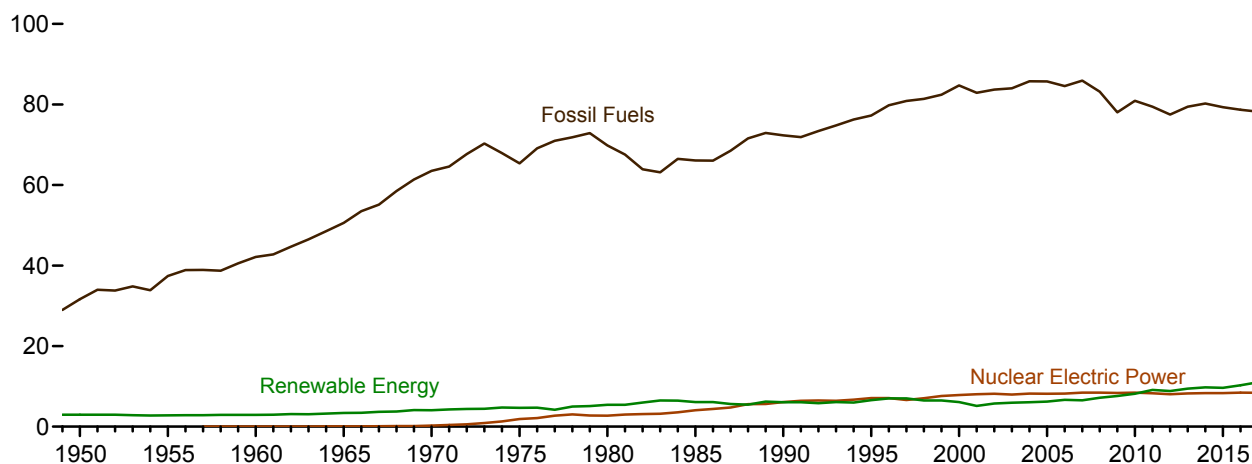
By Source, 2017



By Sector, 2017



Compared With Other Resources, 1949–2017



<sup>a</sup> See Table 10.1 for definition.

<sup>b</sup> 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 <sup>a</sup>			Consumption								
	Biomass		Total Renewable Energy <sup>d</sup>	Hydro-electric Power <sup>e</sup>	Geo-thermal <sup>f</sup>	Solar <sup>g</sup>	Wind <sup>h</sup>	Biomass				Total Renewable Energy
	Bio-fuels <sup>b</sup>	Total <sup>c</sup>						Wood <sup>i</sup>	Waste <sup>j</sup>	Bio-fuels <sup>k</sup>	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	4,452	8,212	2,539	208	90	923	2,116	468	1,821	4,405	8,166
2011 Total	2,029	4,630	9,224	3,103	212	111	1,168	2,139	462	1,933	4,534	9,128
2012 Total	1,929	4,529	8,866	2,629	212	157	1,340	2,133	467	1,892	4,492	8,829
2013 Total	1,981	4,824	9,427	2,562	214	225	1,601	2,347	496	2,007	4,850	9,453
2014 Total	2,103	R 5,029	R 9,774	2,467	214	337	1,728	2,410	516	2,067	R 4,992	R 9,738
2015 January	178	417	R 822	225	18	21	141	196	43	163	R 402	R 807
February	162	377	R 765	208	17	25	139	177	38	158	R 373	R 761
March	180	409	831	226	18	35	143	R 186	43	176	R 404	827
April	172	395	R 827	209	17	40	167	R 181	42	170	R 393	826
May	183	R 412	821	188	18	43	160	187	42	185	R 414	R 822
June	184	R 410	R 786	190	17	43	125	R 184	42	186	R 412	R 788
July	187	R 425	812	196	18	45	127	193	46	189	427	R 813
August	185	R 422	R 785	178	18	45	122	R 193	44	189	R 426	790
September	175	401	R 736	150	16	39	130	R 183	42	182	408	R 743
October	183	R 409	769	155	18	34	153	R 181	45	184	410	R 769
November	182	410	821	180	18	30	183	183	45	179	407	818
December	190	428	R 876	216	18	27	187	191	47	185	R 422	871
Total	2,161	R 4,914	R 9,651	2,321	212	426	1,777	R 2,235	518	2,145	R 4,898	R 9,635
2016 January	185	R 417	R 867	236	18	26	170	R 184	42	171	R 398	R 848
February	176	R 396	R 857	223	17	35	186	R 173	40	173	R 387	R 848
March	190	R 417	R 933	253	18	43	203	R 177	44	187	R 408	924
April	175	R 388	R 884	239	16	48	192	R 166	43	173	R 382	R 877
May	189	R 411	R 894	235	18	55	174	R 173	43	192	R 408	891
June	189	R 412	R 851	215	17	56	151	R 175	40	192	R 407	R 845
July	196	R 422	R 862	198	17	62	163	R 181	41	201	R 423	R 863
August	198	R 429	R 814	181	18	61	125	R 183	42	204	R 429	R 813
September	187	R 405	R 780	151	17	55	151	R 172	39	194	R 404	R 780
October	194	R 412	R 827	160	18	49	188	R 172	41	195	R 407	R 822
November	192	R 415	R 827	174	18	41	179	R 175	43	195	R 413	R 825
December	203	R 456	R 933	208	19	37	214	R 200	45	202	R 447	R 924
Total	2,275	R 4,982	R 10,329	2,472	210	570	2,096	R 2,131	503	2,279	R 4,913	R 10,261
2017 January	195	R 430	R 932	257	18	35	R 192	R 184	44	177	R 405	R 907
February	176	R 389	R 877	227	16	40	R 205	R 169	39	166	R 374	R 862
March	196	R 427	R 1,029	279	18	64	R 241	R 181	43	190	R 414	R 1,017
April	182	R 399	R 995	271	18	70	R 238	R 171	39	183	R 393	R 990
May	196	R 417	R 1,022	297	17	82	209	R 176	39	200	R 415	R 1,020
June	191	R 413	R 980	281	17	87	R 182	R 177	38	198	R 414	R 981
July	195	R 426	R 908	238	18	81	146	R 185	40	198	R 423	R 905
August	202	R 436	R 850	196	18	79	121	R 187	40	202	R 430	R 844
September	191	R 407	R 834	175	17	74	R 159	R 171	37	191	R 399	R 825
October	200	R 424	R 898	159	17	R 69	229	R 178	40	196	R 414	R 888
November	202	R 426	R 890	183	18	R 48	215	R 177	41	193	R 411	R 875
December	204	440	923	208	18	46	210	188	42	191	421	903
Total	2,332	5,034	11,138	2,770	211	775	2,347	2,145	482	2,286	4,913	11,017

<sup>a</sup> 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.

<sup>b</sup> Total biomass inputs to the production of fuel ethanol and biodiesel.

<sup>c</sup> Wood and wood-derived fuels, biomass waste, and total biomass inputs to the production of fuel ethanol and biodiesel.

<sup>d</sup> Hydroelectric power, geothermal, solar, wind, and biomass.

<sup>e</sup> Conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

<sup>f</sup> 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.

<sup>g</sup> 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.

<sup>h</sup> Wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

<sup>i</sup> Wood and wood-derived fuels.

<sup>j</sup> 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).

<sup>k</sup> Fuel ethanol (minus denaturant) and biodiesel consumption, plus losses and co-products from the production of fuel ethanol and biodiesel.

R=Revised. 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 <sup>a</sup>								
	Geo-thermal <sup>b</sup>	Solar <sup>c</sup>	Biomass	Total	Hydro-electric Power <sup>e</sup>	Geo-thermal <sup>b</sup>	Solar <sup>f</sup>	Wind <sup>g</sup>	Biomass				Total
			Wood <sup>d</sup>						Wood <sup>d</sup>	Waste <sup>h</sup>	Fuel Ethanol <sup>i,j</sup>	Total	
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	R 587	R 735	(s)	20	52	1	R 76	47	4	R 127	R 200
2015 January .....	3	6	37	47	(s)	2	3	(s)	7	4	j 2	13	18
February .....	3	7	R 33	44	(s)	2	4	(s)	6	3	2	R 11	17
March .....	3	10	37	R 50	(s)	2	5	(s)	7	4	2	13	19
April .....	3	11	36	R 50	(s)	2	5	(s)	7	4	2	R 12	R 19
May .....	3	12	37	53	(s)	2	6	(s)	7	4	2	13	R 20
June .....	3	13	36	52	(s)	2	6	(s)	R 6	4	2	13	20
July .....	3	13	37	54	(s)	2	6	(s)	7	4	2	13	21
August .....	3	13	37	54	(s)	2	6	(s)	7	4	2	13	21
September .....	3	12	36	R 51	(s)	2	5	(s)	7	4	2	13	20
October .....	3	11	37	R 51	(s)	2	5	(s)	7	4	2	13	19
November .....	3	9	36	R 48	(s)	2	4	(s)	R 6	4	2	13	18
December .....	3	8	37	49	(s)	2	3	(s)	7	4	2	13	18
Total .....	40	128	R 436	R 603	(s)	20	57	1	R 79	47	26	R 152	R 230
2016 January .....	3	8	R 30	R 41	(s)	2	3	(s)	7	4	2	13	R 19
February .....	3	10	R 28	R 40	(s)	2	4	(s)	7	4	2	12	18
March .....	3	13	R 30	R 46	(s)	2	5	(s)	7	4	2	13	20
April .....	3	15	R 29	R 46	(s)	2	6	(s)	7	4	2	13	20
May .....	3	16	R 30	R 49	(s)	2	6	(s)	7	4	2	13	21
June .....	3	17	R 29	R 48	(s)	2	6	(s)	7	4	2	13	21
July .....	3	17	R 30	R 50	(s)	2	6	(s)	7	4	2	R 14	22
August .....	3	17	R 30	R 50	(s)	2	6	(s)	7	4	2	R 14	22
September .....	3	15	R 29	R 47	(s)	2	6	(s)	7	4	2	13	20
October .....	3	13	R 30	R 46	(s)	2	5	(s)	7	4	2	13	20
November .....	3	11	R 29	R 43	(s)	2	4	(s)	7	4	2	13	19
December .....	3	10	R 30	R 43	(s)	2	4	(s)	7	4	2	13	19
Total .....	40	161	R 349	R 550	2	20	62	1	R 84	48	26	R 158	R 242
2017 January .....	3	10	R 28	R 42	(s)	2	4	(s)	7	4	2	13	19
February .....	3	11	R 26	R 40	(s)	2	4	(s)	R 7	4	2	12	18
March .....	3	16	R 28	R 47	(s)	2	6	(s)	7	4	2	13	21
April .....	3	R 17	R 27	R 48	(s)	2	7	(s)	7	4	2	R 13	21
May .....	3	19	R 28	R 51	(s)	2	8	(s)	7	4	2	13	23
June .....	3	20	R 27	R 51	(s)	2	8	(s)	7	4	2	13	23
July .....	3	20	R 28	R 52	(s)	2	8	(s)	7	4	2	13	23
August .....	3	20	R 28	R 52	(s)	2	8	(s)	7	4	2	13	23
September .....	3	18	R 27	R 49	(s)	2	7	(s)	7	R 4	2	12	21
October .....	3	16	R 28	R 48	(s)	2	6	(s)	7	4	2	13	21
November .....	3	13	R 27	R 44	(s)	2	5	(s)	7	4	2	13	20
December .....	3	12	28	44	(s)	2	5	(s)	7	4	2	13	20
Total .....	40	192	334	566	2	20	76	1	84	45	26	155	255

<sup>a</sup> 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.

<sup>b</sup> Geothermal heat pump and direct use energy.

<sup>c</sup> 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.

<sup>d</sup> Wood and wood-derived fuels.

<sup>e</sup> Conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

<sup>f</sup> 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.

<sup>g</sup> Wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

<sup>h</sup> 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).

<sup>i</sup> The fuel ethanol (minus denaturant) portion of motor fuels, such as E10, consumed by the commercial sector.

<sup>j</sup> 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.

R=Revised. 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 <sup>a</sup>										Transportation Sector		
	Hydro- electric Power <sup>b</sup>	Geo- thermal <sup>c</sup>	Solar <sup>d</sup>	Wind <sup>e</sup>	Biomass					Total	Biomass		
					Wood <sup>f</sup>	Waste <sup>g</sup>	Fuel Ethanol <sup>h,i</sup>	Losses and Co- products <sup>j</sup>	Total		Fuel Ethanol <sup>i,k</sup>	Bio- diesel <sup>l</sup>	Total <sup>m</sup>
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	—	1,409	168	17	727	2,320	2,343	1,041	33	1,075
2011 Total .....	17	4	4	(s)	1,438	165	17	756	2,375	2,401	1,045	113	1,158
2012 Total .....	22	4	7	(s)	1,462	159	17	711	2,349	2,382	1,045	115	1,162
2013 Total .....	33	4	9	(s)	1,489	187	18	709	2,403	2,449	1,072	182	1,278
2014 Total .....	12	4	11	1	1,495	190	14	757	2,456	2,484	1,093	181	1,292
2015 January .....	1	(s)	1	(s)	130	17	<sup>i</sup> 1	65	213	215	<sup>i</sup> 88	6	94
February .....	1	(s)	1	(s)	116	15	1	59	191	193	83	11	95
March .....	1	(s)	1	(s)	122	17	1	65	205	207	92	13	107
April .....	1	(s)	1	(s)	121	16	1	61	200	203	88	15	105
May .....	1	(s)	1	(s)	125	15	2	65	207	210	97	18	116
June .....	1	(s)	1	(s)	121	15	1	65	203	206	94	21	117
July .....	1	(s)	1	(s)	126	16	2	67	210	213	97	18	118
August .....	1	(s)	1	(s)	127	15	2	66	209	212	98	20	120
September .....	1	(s)	1	(s)	121	15	1	63	200	203	94	20	116
October .....	1	(s)	1	(s)	120	17	1	66	204	207	94	17	114
November .....	1	(s)	1	(s)	121	16	1	65	205	207	92	14	110
December .....	1	(s)	1	(s)	126	17	1	68	213	215	93	17	113
Total .....	13	4	14	(s)	1,476	190	18	776	2,460	2,491	1,110	191	1,326
2016 January .....	1	(s)	1	(s)	127	15	1	66	209	212	88	13	102
February .....	1	(s)	1	(s)	119	15	1	63	197	200	90	15	107
March .....	1	(s)	2	(s)	121	16	2	67	206	210	96	17	116
April .....	1	(s)	2	(s)	115	15	1	61	193	196	89	18	108
May .....	1	(s)	2	(s)	121	15	2	66	204	207	97	23	122
June .....	1	(s)	2	(s)	121	13	2	66	202	205	97	21	122
July .....	1	(s)	2	(s)	124	14	2	69	208	211	99	27	128
August .....	1	(s)	2	(s)	124	14	2	70	209	213	101	28	131
September .....	1	(s)	2	(s)	117	13	1	66	197	200	94	26	124
October .....	1	(s)	2	(s)	120	15	2	68	204	207	96	25	123
November .....	1	(s)	1	(s)	122	15	1	67	206	208	95	26	124
December .....	1	(s)	1	(s)	143	16	2	71	231	234	100	26	127
Total .....	12	4	19	1	1,474	174	18	801	2,467	2,503	1,143	266	1,434
2017 January .....	1	(s)	1	(s)	128	15	1	70	215	218	89	13	104
February .....	1	(s)	1	(s)	118	14	1	63	196	199	85	13	100
March .....	1	(s)	2	(s)	124	15	1	70	210	213	95	19	117
April .....	1	(s)	2	(s)	119	14	1	64	198	202	93	21	116
May .....	1	(s)	2	(s)	121	13	2	69	204	208	99	25	127
June .....	1	(s)	2	(s)	122	12	2	66	202	206	100	25	128
July .....	1	(s)	3	(s)	127	13	2	68	209	213	98	26	126
August .....	1	(s)	2	(s)	129	13	2	70	214	218	101	25	128
September .....	1	(s)	2	(s)	118	12	2	66	198	<sup>R</sup> 201	95	22	121
October .....	1	(s)	2	(s)	122	14	2	69	207	210	100	21	123
November .....	1	(s)	2	(s)	122	15	2	70	209	212	97	21	119
December .....	1	(s)	1	(s)	131	15	2	71	218	221	96	19	117
Total .....	13	4	24	1	1,480	165	18	817	2,480	2,522	1,148	249	1,425

<sup>a</sup> 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.

<sup>b</sup> Conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

<sup>c</sup> Geothermal heat pump and direct use energy.

<sup>d</sup> 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.

<sup>e</sup> Wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

<sup>f</sup> Wood and wood-derived fuels.

<sup>g</sup> 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).

<sup>h</sup> The fuel ethanol (minus denaturant) portion of motor fuels, such as E10, consumed by the industrial sector.

<sup>i</sup> 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.

<sup>j</sup> 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.

<sup>k</sup> The fuel ethanol (minus denaturant) portion of motor fuels, such as E10 and E85, consumed by the transportation sector.

<sup>l</sup> Although there is biodiesel use in other sectors, all biodiesel consumption is assigned to the transportation sector.

<sup>m</sup> 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.

R=Revised. 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 <sup>a</sup>	Geo-thermal <sup>b</sup>	Solar <sup>c</sup>	Wind <sup>d</sup>	Biomass			Total
					Wood <sup>e</sup>	Waste <sup>f</sup>	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 <sup>g</sup> .....	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 .....	235	12	13	170	21	23	44	475
February .....	222	11	20	186	20	22	43	482
March .....	251	12	24	202	19	24	43	533
April .....	238	11	26	192	15	24	39	506
May .....	234	12	31	174	16	24	40	491
June .....	213	12	32	150	18	23	41	448
July .....	197	12	36	163	20	24	44	451
August .....	180	12	36	125	21	24	45	399
September .....	150	12	33	151	19	22	41	388
October .....	159	12	29	188	16	22	37	426
November .....	173	13	25	179	18	24	42	432
December .....	207	13	22	213	21	25	46	501
Total .....	2,459	146	328	2,094	224	281	505	5,531
2017 January .....	256	13	20	<sup>R</sup> 191	21	24	45	<sup>R</sup> 525
February .....	225	11	23	<sup>R</sup> 205	19	22	41	<sup>R</sup> 505
March .....	278	13	40	<sup>R</sup> 241	22	24	46	<sup>R</sup> 618
April .....	269	13	<sup>R</sup> 44	<sup>R</sup> 238	18	21	40	<sup>R</sup> 603
May .....	296	12	<sup>R</sup> 53	209	20	22	42	<sup>R</sup> 611
June .....	279	12	57	<sup>R</sup> 182	21	23	<sup>R</sup> 44	573
July .....	236	13	50	<sup>R</sup> 145	22	23	46	<sup>R</sup> 490
August .....	195	13	49	121	22	23	46	423
September .....	174	12	47	<sup>R</sup> 159	19	21	41	433
October .....	158	12	44	229	21	22	43	<sup>R</sup> 486
November .....	182	12	28	215	20	22	43	480
December .....	207	13	28	210	21	23	45	502
Total .....	2,755	147	483	2,345	247	272	519	6,249

<sup>a</sup> Conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

<sup>b</sup> Geothermal electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

<sup>c</sup> 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.

<sup>d</sup> Wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

<sup>e</sup> Wood and wood-derived fuels.

<sup>f</sup> 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).

<sup>g</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

R=Revised. 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 <sup>a</sup>	Losses and Co-products <sup>b</sup>	Denaturant <sup>c</sup>	Production <sup>d</sup>			Trade <sup>d</sup>	Stocks <sup>d,f</sup>	Stock Change <sup>d,g</sup>	Consumption <sup>d</sup>			Consumption Minus Denaturant <sup>h</sup>
							Net Imports <sup>e</sup>						
	TBtu	TBtu	Mbbl	Mbbl	MMgal	TBtu	Mbbl	Mbbl	Mbbl	Mbbl	MMgal	TBtu	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	320,095	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 .....	172	66	617	30,452	1,279	108	-2,294	23,347	1,751	26,407	1,109	94	92
February .....	162	63	586	28,810	1,210	103	-2,024	23,171	-176	26,962	1,132	96	93
March .....	175	67	601	30,957	1,300	110	-2,612	22,730	-441	28,786	1,209	102	100
April .....	159	61	557	28,208	1,185	100	-2,919	21,336	-1,394	26,683	1,121	95	93
May .....	171	66	586	30,346	1,275	108	-1,627	20,962	-374	29,093	1,222	104	101
June .....	172	66	567	30,443	1,279	108	-1,045	21,284	322	29,076	1,221	103	101
July .....	178	68	570	31,469	1,322	112	-1,641	21,381	97	29,731	1,249	106	103
August .....	180	69	564	31,856	1,338	113	-1,924	21,198	-183	30,115	1,265	107	105
September .....	170	65	544	30,048	1,262	107	-2,315	20,713	-485	28,218	1,185	100	98
October .....	175	67	563	31,006	1,302	110	-2,946	20,113	-600	28,660	1,204	102	100
November .....	173	67	559	30,706	1,290	109	-3,074	19,463	-650	28,282	1,188	101	98
December .....	185	71	606	32,680	1,373	116	-2,583	19,758	295	29,802	1,252	106	104
Total .....	2,072	798	6,920	366,981	15,413	1,306	-27,002	19,758	-1,838	341,817	14,356	1,216	1,187
2017 January .....	183	70	593	32,577	1,368	116	-2,901	22,624	1,309	26,583	1,116	95	92
February .....	164	63	541	29,052	1,220	103	-3,349	23,015	391	25,312	1,063	90	88
March .....	181	69	597	32,161	1,351	114	-3,044	23,759	744	28,373	1,192	101	99
April .....	166	64	540	29,500	1,239	105	-1,981	23,593	-166	27,685	1,163	98	96
May .....	179	68	558	31,700	1,331	113	-2,809	22,909	-684	29,575	1,242	105	103
June .....	173	66	539	30,667	1,288	109	-1,958	21,763	-1,146	29,855	1,254	106	104
July .....	176	67	551	31,221	1,311	111	-2,512	21,147	-616	29,325	1,232	104	102
August .....	183	70	569	32,447	1,363	115	-2,199	21,197	50	30,198	1,268	107	105
September .....	172	66	531	30,581	1,284	109	-1,809	21,485	288	28,484	1,196	101	99
October .....	181	69	550	32,076	1,347	114	-2,162	21,574	89	29,825	1,253	106	104
November .....	183	70	520	32,469	1,364	115	-2,152	22,863	1,289	29,028	1,219	103	101
December .....	185	71	525	32,809	1,378	117	-4,130	23,048	185	28,494	1,197	101	99
Total .....	2,126	814	6,614	377,260	15,845	1,342	-31,007	23,048	1,3517	342,736	14,395	1,219	1,192

<sup>a</sup> Total corn and other biomass inputs to the production of undenatured ethanol used for fuel ethanol.

<sup>b</sup> 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.

<sup>c</sup> The amount of denaturant in fuel ethanol produced.

<sup>d</sup> Includes denaturant.

<sup>e</sup> 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.

<sup>f</sup> Stocks are at end of period.

<sup>g</sup> A negative value indicates a decrease in stocks and a positive value indicates an increase.

<sup>h</sup> 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.

<sup>i</sup> Derived from the preliminary 2016 stocks value (19,531 thousand barrels), not the final 2016 value (19,758 thousand barrels) that is shown under "Stocks."

R=Revised. 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 <sup>f</sup>
	Feed-stock <sup>a</sup>	Losses and Co-products <sup>b</sup>	Production			Trade			Stocks <sup>d</sup>	Stock Change <sup>e</sup>	Consumption			
						Imports	Exports	Net Imports <sup>c</sup>						
			TBtu	TBtu	Mbbl	MMgal	TBtu	Mbbl			Mbbl	Mbbl	Mbbl	
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	<sup>g</sup> 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	<sup>h</sup> 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	248	42	206	4,222	279	2,416	101	13	1
February .....	14	(s)	2,504	105	13	287	49	238	4,133	-89	2,831	119	15	2
March .....	16	(s)	2,861	120	15	565	234	331	4,167	34	3,159	133	17	3
April .....	16	(s)	2,856	120	15	969	246	723	4,358	192	3,388	142	18	1
May .....	18	(s)	3,222	135	17	1,117	335	782	4,091	-268	4,272	179	23	2
June .....	17	(s)	3,205	135	17	1,630	220	1,410	4,726	635	3,980	167	21	3
July .....	18	(s)	3,331	140	18	1,681	250	1,431	4,443	-283	5,045	212	27	2
August .....	18	(s)	3,385	142	18	1,873	235	1,638	4,265	-177	5,201	218	28	2
September .....	17	(s)	3,206	135	17	1,835	150	1,685	4,227	-38	4,929	207	26	4
October .....	19	(s)	3,433	144	18	1,822	114	1,708	4,690	463	4,678	196	25	2
November .....	19	(s)	3,408	143	18	2,184	143	2,041	5,314	624	4,825	203	26	3
December .....	19	(s)	3,425	144	18	2,668	80	2,588	6,398	1,083	4,929	207	26	1
Total .....	203	3	37,327	1,568	200	16,879	2,098	14,781	6,398	2,455	49,653	2,085	266	25
2017 January .....	12	(s)	2,204	93	12	241	43	198	6,259	<sup>i</sup> 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
May .....	18	(s)	3,237	136	17	948	239	709	4,926	-787	4,734	199	25	3
June .....	18	(s)	3,336	140	18	1,736	226	1,510	5,072	147	4,700	197	25	3
July .....	19	(s)	3,552	149	19	1,670	455	1,215	5,076	3	4,764	200	26	3
August .....	19	(s)	3,551	149	19	1,582	387	1,195	5,172	96	4,650	195	25	2
September .....	19	(s)	3,507	147	19	205	100	105	4,655	-517	4,129	173	22	3
October .....	19	(s)	3,484	146	19	386	217	169	4,397	-258	3,911	164	21	2
November .....	19	(s)	3,523	148	19	222	38	184	4,257	-140	3,847	162	21	1
December .....	19	(s)	3,515	148	19	504	35	469	4,750	493	3,491	147	19	2
Total .....	206	3	37,913	1,592	203	9,374	2,218	7,156	4,750	<sup>i</sup> -1,468	46,537	1,955	249	28

<sup>a</sup> 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.

<sup>b</sup> 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.

<sup>c</sup> Net imports equal imports minus exports.

<sup>d</sup> 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.

<sup>e</sup> A negative value indicates a decrease in stocks and a positive value indicates an increase.

<sup>f</sup> Imports minus stock change of other renewable diesel fuel and other renewable fuels. See "Renewable Diesel Fuel (Other)" and "Renewable Fuels (Other)" in Glossary.

<sup>g</sup> 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.

<sup>h</sup> 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."

<sup>i</sup> Derived from the preliminary 2016 stocks value (6,217 thousand barrels), not the final 2016 value (6,398 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 <sup>a</sup> Solar Energy <sup>b</sup>						Utility-Scale <sup>c</sup> Solar Energy <sup>b</sup>				Total <sup>k</sup>
	Heat <sup>f</sup>	Electricity <sup>d</sup>				Total <sup>g</sup>	Electricity <sup>e</sup>				
		Residential Sector	Commercial Sector	Industrial Sector	Total		Commercial Sector <sup>h</sup>	Industrial Sector <sup>i</sup>	Electric Power Sector <sup>j</sup>	Total	
1985 Total .....	NA	NA	NA	NA	NA	NA	NA	NA	(s)	(s)	(s)
1990 Total .....	55	(s)	(s)	(s)	(s)	55	—	—	4	4	59
1995 Total .....	63	(s)	(s)	(s)	1	63	—	—	5	5	68
2000 Total .....	57	(s)	1	(s)	1	58	—	—	5	5	63
2001 Total .....	55	(s)	1	(s)	1	56	—	—	6	6	62
2002 Total .....	53	1	1	(s)	2	54	—	—	6	6	60
2003 Total .....	51	1	1	(s)	2	53	—	—	5	5	58
2004 Total .....	50	1	1	(s)	2	53	—	—	6	6	58
2005 Total .....	49	1	2	(s)	3	52	—	—	6	6	58
2006 Total .....	51	2	2	1	5	56	—	—	5	5	61
2007 Total .....	53	2	4	1	7	59	—	—	6	6	65
2008 Total .....	54	4	6	1	11	65	(s)	—	9	9	74
2009 Total .....	55	5	7	2	14	69	(s)	—	9	9	78
2010 Total .....	56	9	11	3	23	79	(s)	(s)	12	12	90
2011 Total .....	58	13	19	4	36	93	1	(s)	17	18	111
2012 Total .....	59	20	30	7	57	116	1	(s)	40	41	157
2013 Total .....	61	31	38	9	78	139	3	(s)	83	86	225
2014 Total .....	62	47	49	11	107	169	4	(s)	165	168	337
2015 January .....	3	3	3	1	7	10	(s)	(s)	11	11	21
February .....	4	3	3	1	8	11	(s)	(s)	14	14	25
March .....	5	5	4	1	11	16	(s)	(s)	19	19	35
April .....	6	6	5	1	12	17	(s)	(s)	22	22	40
May .....	6	6	5	1	13	19	(s)	(s)	23	23	43
June .....	6	6	5	1	13	19	(s)	(s)	23	24	43
July .....	7	7	6	1	14	20	(s)	(s)	24	24	45
August .....	7	7	5	1	14	20	(s)	(s)	25	25	45
September .....	6	6	5	1	12	18	(s)	(s)	20	21	39
October .....	5	6	4	1	11	16	(s)	(s)	17	18	34
November .....	4	5	3	1	9	14	(s)	(s)	16	16	30
December .....	4	4	3	1	9	13	(s)	(s)	14	15	27
Total .....	63	65	53	14	132	194	4	(s)	228	232	426
2016 January .....	3	5	3	1	9	12	(s)	(s)	13	14	26
February .....	4	6	4	1	11	14	(s)	(s)	20	21	35
March .....	5	8	5	2	14	19	(s)	(s)	24	24	43
April .....	6	9	5	2	16	21	(s)	(s)	26	27	48
May .....	6	10	6	2	17	24	(s)	(s)	31	32	55
June .....	6	10	6	2	18	24	(s)	(s)	32	32	56
July .....	7	11	6	2	18	25	1	(s)	36	36	62
August .....	7	10	6	2	18	24	1	(s)	36	37	61
September .....	6	9	5	2	16	22	(s)	(s)	33	34	55
October .....	5	8	5	2	14	20	(s)	(s)	29	29	49
November .....	4	7	4	1	12	16	(s)	(s)	25	26	41
December .....	4	6	4	1	11	15	(s)	(s)	22	22	37
Total .....	63	98	57	19	174	237	5	(s)	328	333	570
2017 January .....	3	6	4	1	11	15	(s)	(s)	20	20	35
February .....	4	7	4	1	13	<sup>R</sup> 16	(s)	(s)	23	23	40
March .....	5	11	6	2	18	23	(s)	(s)	40	41	64
April .....	6	12	6	2	20	26	(s)	(s)	<sup>R</sup> 44	44	70
May .....	6	13	7	2	23	29	1	(s)	<sup>R</sup> 53	53	82
June .....	6	14	7	2	23	29	1	(s)	57	58	87
July .....	7	14	8	2	24	30	1	(s)	50	51	81
August .....	7	13	7	2	23	30	1	(s)	49	50	79
September .....	6	12	7	2	21	27	1	(s)	47	<sup>R</sup> 48	74
October .....	5	11	6	2	<sup>R</sup> 18	24	(s)	(s)	44	<sup>R</sup> 45	<sup>R</sup> 69
November .....	4	8	5	2	15	19	(s)	(s)	28	<sup>R</sup> 29	<sup>R</sup> 48
December .....	4	8	4	1	14	18	(s)	(s)	28	28	46
Total .....	64	129	71	23	223	286	5	(s)	483	489	775

<sup>a</sup> Data are estimates for distributed (small-scale) facilities (combined generator nameplate capacity less than 1 megawatt).

<sup>b</sup> See "Photovoltaic Energy" and "Solar Thermal Energy" in Glossary.

<sup>c</sup> Data are for utility-scale facilities (combined generator nameplate capacity of 1 megawatt or more).

<sup>d</sup> 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).

<sup>e</sup> 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).

<sup>f</sup> 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.

<sup>g</sup> Data are the sum of "Distributed Solar Energy Heat" and "Distributed Solar Energy Electricity."

<sup>h</sup> 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.

<sup>i</sup> 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.

<sup>j</sup> 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.

<sup>k</sup> Data are the sum of "Distributed Solar Energy Total" and "Utility-Scale Solar Energy Total."

<sup>R</sup>=Revised. 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 <sup>a</sup> Solar Generation <sup>b</sup>				Utility-Scale <sup>c</sup> Solar Generation <sup>b</sup>				Total
	Residential Sector	Commercial Sector	Industrial Sector	Total	Commercial Sector <sup>d</sup>	Industrial Sector <sup>e</sup>	Electric Power Sector <sup>f</sup>	Total	
<b>1985 Total</b> .....	NA	NA	NA	NA	NA	NA	11	11	11
<b>1990 Total</b> .....	12	17	4	32	—	—	367	367	399
<b>1995 Total</b> .....	20	29	6	56	—	—	497	497	553
<b>2000 Total</b> .....	39	55	12	107	—	—	493	493	600
<b>2001 Total</b> .....	47	67	15	129	—	—	543	543	672
<b>2002 Total</b> .....	56	79	18	153	—	—	555	555	708
<b>2003 Total</b> .....	66	93	21	179	—	—	534	534	713
<b>2004 Total</b> .....	81	115	25	222	—	—	575	575	797
<b>2005 Total</b> .....	122	172	38	333	—	—	550	550	883
<b>2006 Total</b> .....	178	252	56	485	—	—	508	508	993
<b>2007 Total</b> .....	251	355	79	685	—	—	612	612	1,297
<b>2008 Total</b> .....	404	571	126	1,101	(s)	—	864	864	1,965
<b>2009 Total</b> .....	543	767	170	1,480	(s)	—	891	891	2,371
<b>2010 Total</b> .....	897	1,172	259	2,328	5	2	1,206	1,212	3,540
<b>2011 Total</b> .....	1,330	1,913	424	3,667	84	7	1,727	1,818	5,485
<b>2012 Total</b> .....	2,071	3,173	703	5,947	148	14	4,164	4,327	10,274
<b>2013 Total</b> .....	3,264	4,029	892	8,185	294	17	8,724	9,036	17,221
<b>2014 Total</b> .....	4,947	5,146	1,139	11,233	371	16	17,304	17,691	28,924
<b>2015 January</b> .....	340	327	80	746	20	1	1,134	1,155	1,902
<b>February</b> .....	375	356	85	816	23	1	1,459	1,484	2,299
<b>March</b> .....	536	479	119	1,134	33	2	2,037	2,072	3,206
<b>April</b> .....	609	525	129	1,264	39	2	2,338	2,379	3,643
<b>May</b> .....	676	574	144	1,394	46	2	2,456	2,504	3,898
<b>June</b> .....	693	571	144	1,408	43	2	2,512	2,558	3,966
<b>July</b> .....	741	596	150	1,487	45	2	2,579	2,627	4,114
<b>August</b> .....	746	575	147	1,468	46	2	2,639	2,688	4,156
<b>September</b> .....	679	515	135	1,330	37	2	2,178	2,217	3,547
<b>October</b> .....	618	455	125	1,198	32	2	1,875	1,910	3,107
<b>November</b> .....	515	367	100	982	27	1	1,702	1,730	2,712
<b>December</b> .....	471	349	93	914	24	1	1,545	1,570	2,484
<b>Total</b> .....	<b>6,999</b>	<b>5,689</b>	<b>1,451</b>	<b>14,139</b>	<b>416</b>	<b>21</b>	<b>24,456</b>	<b>24,893</b>	<b>39,032</b>
<b>2016 January</b> .....	520	346	113	980	26	1	1,458	1,486	2,465
<b>February</b> .....	622	398	124	1,145	39	2	2,201	2,242	3,386
<b>March</b> .....	835	520	171	1,525	44	2	2,571	2,617	4,143
<b>April</b> .....	951	566	186	1,703	46	2	2,831	2,880	4,583
<b>May</b> .....	1,058	616	206	1,879	48	3	3,375	3,425	5,304
<b>June</b> .....	1,099	623	206	1,928	53	3	3,418	3,473	5,401
<b>July</b> .....	1,146	640	214	2,000	55	3	3,886	3,945	5,945
<b>August</b> .....	1,113	620	209	1,942	58	3	3,908	3,969	5,911
<b>September</b> .....	989	556	190	1,735	48	2	3,584	3,635	5,370
<b>October</b> .....	884	493	174	1,552	42	2	3,147	3,191	4,743
<b>November</b> .....	726	393	139	1,257	36	2	2,729	2,767	4,024
<b>December</b> .....	653	387	128	1,167	33	1	2,389	2,424	3,591
<b>Total</b> .....	<b>10,595</b>	<b>6,158</b>	<b>2,060</b>	<b>18,812</b>	<b>529</b>	<b>27</b>	<b>35,497</b>	<b>36,054</b>	<b>54,866</b>
<b>2017 January</b> .....	R 697	R 414	R 133	R 1,244	22	NM	R 2,128	R 2,152	R 3,396
<b>February</b> .....	R 783	R 454	R 147	R 1,383	26	NM	R 2,469	R 2,497	R 3,880
<b>March</b> .....	R 1,147	630	209	R 1,987	R 48	NM	R 4,381	R 4,433	R 6,419
<b>April</b> .....	R 1,284	R 700	R 227	R 2,211	50	NM	R 4,721	R 4,774	R 6,985
<b>May</b> .....	R 1,415	774	R 252	R 2,440	65	4	R 5,698	R 5,766	R 8,207
<b>June</b> .....	1,468	781	254	2,503	71	8	R 6,174	R 6,252	R 8,755
<b>July</b> .....	1,495	R 818	264	2,578	63	7	R 5,435	R 5,505	R 8,083
<b>August</b> .....	1,446	R 798	258	2,501	60	7	R 5,334	R 5,401	R 7,903
<b>September</b> .....	R 1,292	713	235	R 2,240	R 58	6	R 5,103	R 5,168	R 7,408
<b>October</b> .....	1,156	R 633	214	R 2,002	53	6	R 4,771	R 4,830	R 6,832
<b>November</b> .....	R 903	R 501	R 170	R 1,574	31	4	R 3,085	R 3,120	R 4,694
<b>December</b> .....	837	485	155	1,476	29	NM	3,027	3,059	4,536
<b>Total</b> .....	<b>13,922</b>	<b>7,700</b>	<b>2,518</b>	<b>24,139</b>	<b>578</b>	<b>54</b>	<b>52,326</b>	<b>52,958</b>	<b>77,097</b>

<sup>a</sup> 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.

<sup>b</sup> See "Photovoltaic Energy" and "Solar Thermal Energy" in Glossary.

<sup>c</sup> Solar photovoltaic (PV) and solar thermal electricity net generation at utility-scale facilities (combined generator nameplate capacity of 1 megawatt or more).

<sup>d</sup> 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.

<sup>e</sup> 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.

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

R=Revised. 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 2015 forward, the annual estimates are assumed by EIA to be equal to that of 2014). 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 natural gasoline and conventional motor gasoline used as denaturant).

2009–2016: U.S. Energy Information Administration (EIA), *Petroleum Supply Annual (PSA)*, annual reports, Table 1. Data in thousand barrels for net production of natural gasoline 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 natural gasoline). 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 natural gasoline, conventional motor gasoline, and motor gasoline blending components.

2017: EIA, *Petroleum Supply Monthly (PSM)*, monthly reports, Table 1. Data in thousand barrels for net production of natural gasoline 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 natural gasoline). 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 natural gasoline, conven-

tional 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."

2009–2016: EIA, PSA, annual reports, Table 1, data for net production of fuel ethanol at renewable fuels and oxygenate plants.

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

1992–2016: EIA, PSA, annual reports, Table 1.

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).

2009–2016: EIA, PSA, annual reports, Table 1. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments.

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.

2011–2016: EIA, *Petroleum Supply Annual (PSA)*, annual reports, Table 1, data for renewable fuels except fuel ethanol.

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.

2012–2016: EIA, PSA, annual reports, Tables 25 and 31, data for biomass-based diesel fuel.

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.

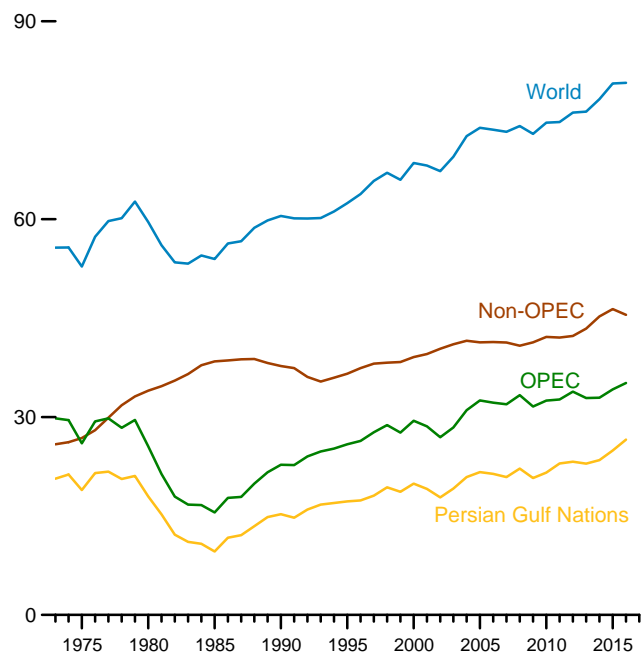
THIS PAGE INTENTIONALLY LEFT BLANK

# **11. International Petroleum**

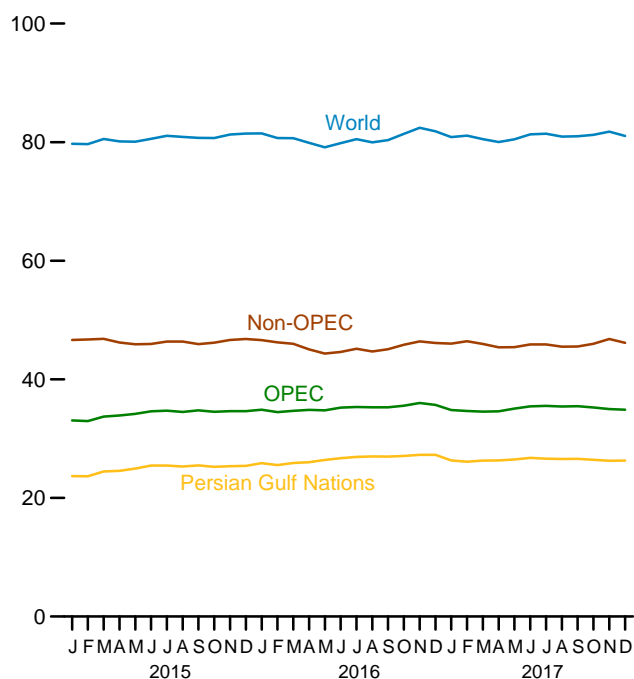
---

**Figure 11.1a World Crude Oil Production Overview**  
(Million Barrels per Day)

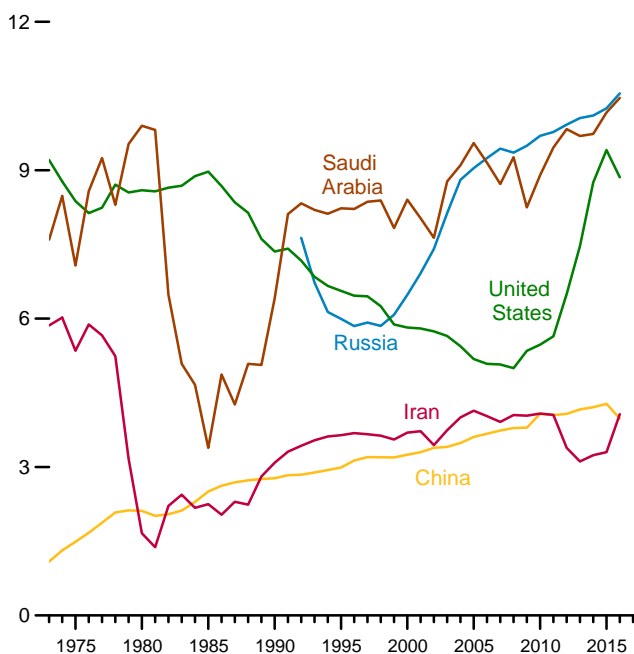
World Production, 1973–2017



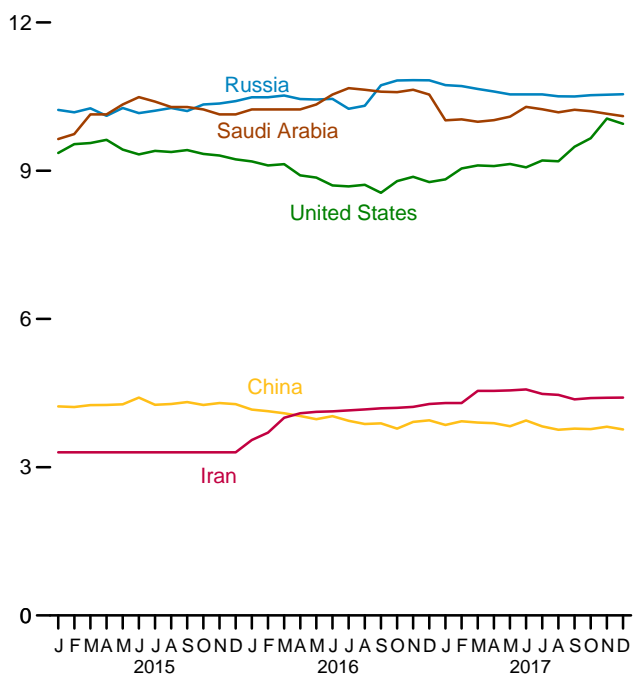
World Production, Monthly



Selected Producers, 1973–2017



Selected Producers, Monthly



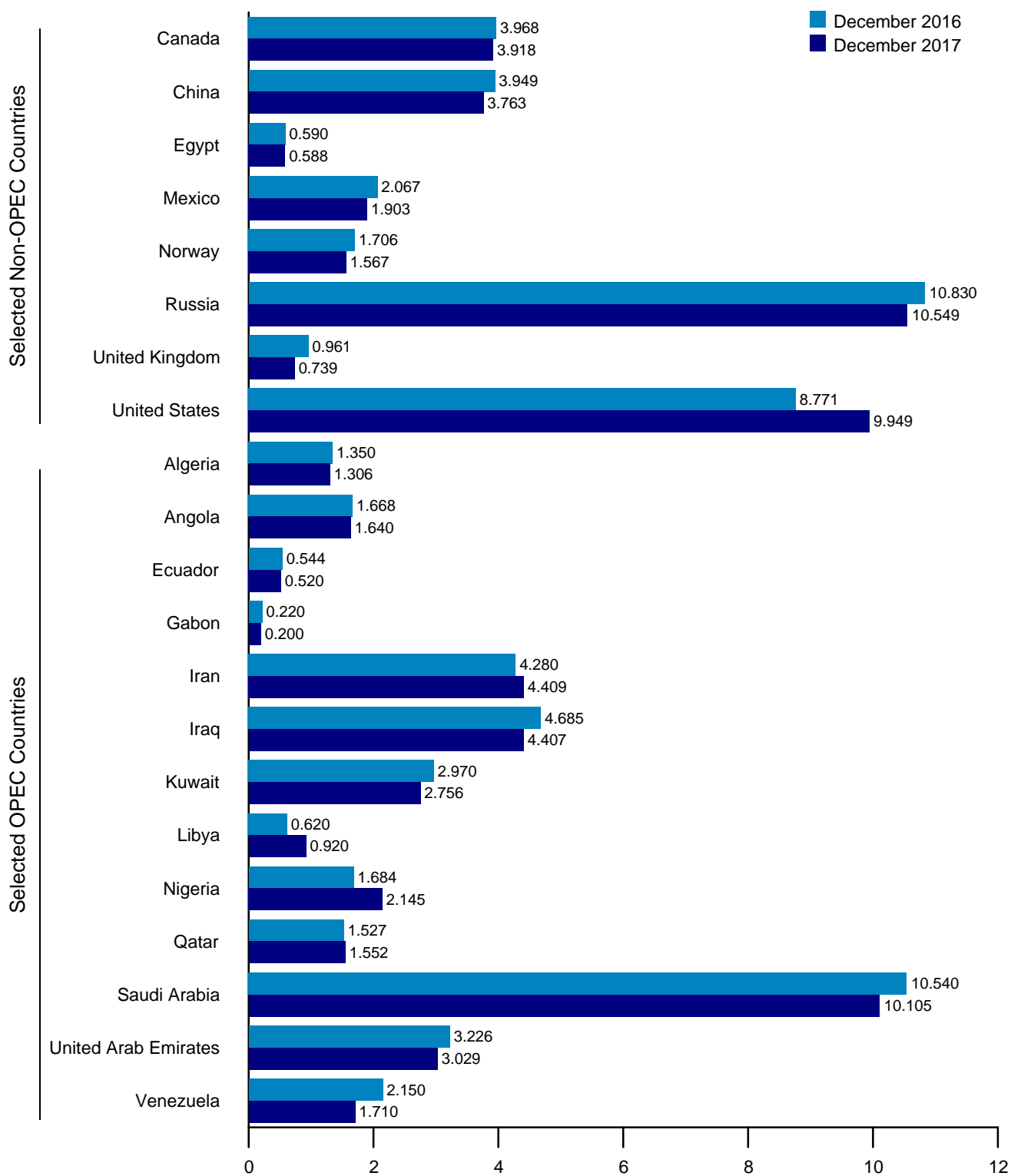
Notes: • OPEC is the Organization of the Petroleum Exporting Countries. • The Persian Gulf Nations are Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates. Production from the Neutral Zone between Kuwait and Saudi Arabia is included in "Per-

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: Selected OPEC Members**  
(Thousand Barrels per Day)

	Algeria	Angola	Ecuador	Gabon	Iran	Iraq	Kuwait <sup>a</sup>	Libya	Nigeria	Qatar	Saudi Arabia <sup>a</sup>	United Arab Emirates	Venezuela	Total OPEC <sup>b</sup>
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	25,870
1996 Average	1,227	709	396	368	3,686	579	2,062	1,401	2,001	510	8,218	2,278	2,938	26,389
1997 Average	1,259	714	388	370	3,664	1,155	2,007	1,446	2,132	550	8,362	2,316	3,280	27,697
1998 Average	1,226	735	375	352	3,634	2,150	2,085	1,390	2,153	696	8,389	2,345	3,167	28,781
1999 Average	1,177	745	373	331	3,557	2,508	1,898	1,319	2,130	665	7,833	2,169	2,826	27,632
2000 Average	1,214	746	395	315	3,696	2,571	2,079	1,410	2,165	742	8,404	2,368	3,155	29,427
2001 Average	1,265	742	412	270	3,724	2,390	1,998	1,367	2,256	730	8,031	2,205	3,010	28,581
2002 Average	1,349	896	393	251	3,444	2,023	1,894	1,319	2,118	709	7,634	2,082	2,604	26,929
2003 Average	1,516	903	411	241	3,743	1,308	2,136	1,421	2,275	807	8,775	2,348	2,335	28,425
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	31,036
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	32,526
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	32,187
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	31,944
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	33,308
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	31,609
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	32,500
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	32,672
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	33,859
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	32,990
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	32,935
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	33,075
February	1,429	1,770	553	215	3,300	3,325	2,750	360	2,269	1,520	9,740	2,970	2,500	32,951
March	1,429	1,720	553	215	3,300	3,725	2,750	475	2,152	1,525	10,140	2,980	2,500	33,714
April	1,429	1,790	548	205	3,300	3,775	2,770	505	2,165	1,531	10,140	3,010	2,500	33,918
May	1,429	1,770	543	205	3,300	3,925	2,780	430	2,139	1,532	10,340	3,020	2,500	34,163
June	1,429	1,820	541	215	3,300	4,275	2,780	410	2,025	1,537	10,490	3,030	2,500	34,602
July	1,429	1,850	538	215	3,300	4,325	2,810	400	2,122	1,537	10,400	3,030	2,500	34,706
August	1,429	1,870	537	215	3,300	4,225	2,850	360	2,088	1,537	10,290	3,040	2,500	34,491
September	1,429	1,800	539	215	3,300	4,425	2,850	375	2,225	1,537	10,290	3,040	2,500	34,775
October	1,429	1,770	538	215	3,300	4,275	2,800	415	2,198	1,537	10,240	3,050	2,500	34,517
November	1,429	1,820	537	215	3,300	4,425	2,850	375	2,226	1,537	10,140	3,040	2,500	34,644
December	1,429	1,820	533	215	3,300	4,425	2,900	370	2,159	1,537	10,140	3,060	2,500	34,638
Average	1,429	1,802	543	213	3,300	4,054	2,804	404	2,171	1,532	10,168	3,019	2,500	34,190
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	34,865
February	1,350	1,793	540	210	3,700	4,225	2,910	360	2,120	1,517	10,240	2,885	2,400	34,477
March	1,350	1,798	552	210	4,000	4,225	2,930	320	1,993	1,537	10,240	2,910	2,400	34,692
April	1,350	1,793	555	210	4,090	4,475	2,700	330	2,010	1,537	10,240	2,920	2,400	34,837
May	1,350	1,818	556	210	4,120	4,355	2,910	285	1,673	1,537	10,340	3,100	2,300	34,781
June	1,330	1,823	550	210	4,130	4,405	2,910	330	1,811	1,537	10,540	3,135	2,280	35,218
July	1,350	1,829	545	210	4,150	4,415	2,950	310	1,764	1,537	10,670	3,156	2,220	35,333
August	1,350	1,833	549	210	4,170	4,460	2,960	250	1,694	1,537	10,640	3,186	2,210	35,276
September	1,350	1,768	560	210	4,190	4,480	2,960	310	1,726	1,477	10,600	3,216	2,200	35,274
October	1,350	1,618	552	200	4,200	4,565	2,960	550	1,854	1,507	10,590	3,196	2,190	35,559
November	1,350	1,698	544	220	4,220	4,645	2,970	580	1,984	1,527	10,640	3,226	2,180	36,011
December	1,350	1,668	544	220	4,280	4,685	2,970	620	1,684	1,527	10,540	3,226	2,150	35,691
Average	1,348	1,770	548	211	4,068	4,452	2,924	385	1,871	1,523	10,461	3,106	2,277	35,170
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	34,834
February	1,340	1,688	535	185	4,300	4,445	2,770	690	1,869	1,467	10,040	3,047	2,090	34,668
March	1,316	1,630	531	190	4,544	4,431	2,763	590	1,730	1,507	9,992	3,028	2,090	34,544
April	1,306	1,700	528	210	4,544	4,426	2,763	535	1,780	1,512	10,022	3,008	2,080	34,600
May	1,306	1,660	533	200	4,554	4,476	2,763	780	1,900	1,517	10,093	3,028	2,080	35,076
June	1,306	1,690	540	200	4,574	4,491	2,774	850	1,945	1,522	10,293	3,048	2,030	35,449
July	1,306	1,670	541	210	4,482	4,501	2,764	1,005	2,022	1,527	10,243	3,048	2,030	35,535
August	1,306	1,690	536	200	4,462	4,527	2,765	890	2,070	1,532	10,183	3,049	2,025	35,416
September	1,306	1,670	529	200	4,374	4,567	2,785	925	2,095	1,537	10,233	3,049	2,010	35,461
October	1,256	1,695	526	200	4,399	4,417	2,795	960	2,080	1,532	10,204	3,039	1,960	35,249
November	1,276	1,600	521	190	4,404	4,347	2,765	980	2,120	1,537	10,154	3,009	1,890	34,974
December	1,306	1,640	520	200	4,409	4,407	2,756	920	2,145	1,552	10,105	3,029	1,710	34,880
Average	1,306	1,666	531	199	4,446	4,467	2,774	818	1,968	1,519	10,132	3,037	2,007	35,060

<sup>a</sup> 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.

<sup>b</sup> 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, Equatorial

Guinea joined OPEC in May 2017 and is thus included in "Total OPEC" for all years.

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 <sup>b</sup>	Selected Non-OPEC <sup>a</sup> Producers									Total Non-OPEC <sup>a</sup>	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	36,564	62,434
1996 Average	17,367	1,837	3,131	922	2,944	3,091	--	5,850	2,568	6,465	37,429	63,818
1997 Average	18,095	1,922	3,200	856	3,104	3,142	--	5,920	2,518	6,452	38,109	65,806
1998 Average	19,337	1,981	3,198	834	3,160	3,011	--	5,854	2,616	6,252	38,250	67,032
1999 Average	18,667	1,907	3,195	852	2,998	3,019	--	6,079	2,684	5,881	38,335	65,967
2000 Average	19,897	1,977	3,249	768	3,104	3,222	--	6,479	2,275	5,822	39,100	68,527
2001 Average	19,114	2,029	3,300	720	3,218	3,226	--	6,917	2,282	5,801	39,551	68,132
2002 Average	17,824	2,171	3,390	715	3,263	3,131	--	7,408	2,292	5,744	40,361	67,290
2003 Average	19,154	2,306	3,409	713	3,459	3,042	--	8,132	2,093	5,649	41,035	69,460
2004 Average	20,906	2,398	3,485	673	3,476	2,954	--	8,805	1,845	5,441	41,559	72,595
2005 Average	21,644	2,369	3,609	623	3,423	2,698	--	9,043	1,649	5,184	41,325	73,851
2006 Average	21,377	2,525	3,673	616	3,345	2,491	--	9,247	1,490	5,086	41,380	73,566
2007 Average	20,904	2,628	3,736	608	3,143	2,270	--	9,437	1,498	5,074	41,302	73,246
2008 Average	22,186	2,579	3,790	633	2,839	2,182	--	9,357	1,391	4,998	40,809	74,117
2009 Average	20,754	2,579	3,796	649	2,646	2,067	--	9,495	1,328	5,349	41,321	72,930
2010 Average	21,589	2,741	4,078	636	2,621	1,871	--	9,694	1,233	5,475	42,142	74,642
2011 Average	22,953	2,901	4,052	637	2,600	1,760	--	9,774	1,026	5,643	42,058	74,730
2012 Average	23,233	3,138	4,074	642	2,593	1,612	--	9,922	888	6,497	42,299	76,157
2013 Average	22,932	3,325	4,164	645	2,562	1,533	--	10,054	801	7,466	43,415	76,305
2014 Average	23,469	3,613	4,208	645	2,469	1,562	--	10,107	787	8,753	45,264	78,199
2015 January	23,689	3,885	4,232	642	2,290	1,579	--	10,231	872	9,358	<sup>R</sup> 46,640	<sup>R</sup> 79,714
February	23,655	3,906	4,218	650	2,370	1,589	--	10,181	812	9,537	<sup>R</sup> 46,713	<sup>R</sup> 79,664
March	24,470	3,775	4,256	663	2,356	1,586	--	10,264	867	9,561	<sup>R</sup> 46,818	<sup>R</sup> 80,532
April	24,576	3,463	4,258	656	2,235	1,614	--	10,111	925	9,626	<sup>R</sup> 46,219	<sup>R</sup> 80,137
May	24,947	3,212	4,271	646	2,263	1,555	--	10,270	1,016	9,428	<sup>R</sup> 45,905	<sup>R</sup> 80,068
June	25,462	3,457	4,408	657	2,283	1,596	--	10,166	870	9,329	<sup>R</sup> 45,967	<sup>R</sup> 80,569
July	25,452	3,821	4,263	661	2,308	1,611	--	10,213	839	9,402	<sup>R</sup> 46,362	<sup>R</sup> 81,068
August	25,292	3,922	4,278	659	2,291	1,599	--	10,268	788	9,379	<sup>R</sup> 46,383	<sup>R</sup> 80,874
September	25,492	3,422	4,317	652	2,306	1,581	--	10,209	862	9,417	<sup>R</sup> 45,932	<sup>R</sup> 80,707
October	25,252	3,582	4,259	652	2,314	1,685	--	10,341	912	9,339	<sup>R</sup> 46,183	<sup>R</sup> 80,700
November	25,342	3,819	4,297	644	2,310	1,644	--	10,361	972	9,307	<sup>R</sup> 46,641	<sup>R</sup> 81,285
December	25,412	3,866	4,275	642	2,308	1,682	--	10,407	979	9,229	<sup>R</sup> 46,808	<sup>R</sup> 81,446
Average	24,927	3,677	4,278	652	2,302	1,610	--	10,253	893	9,408	<sup>R</sup> 46,380	<sup>R</sup> 80,570
2016 January	25,867	3,877	4,166	632	2,294	1,657	--	10,485	1,003	9,186	<sup>R</sup> 46,603	<sup>R</sup> 81,468
February	25,527	3,797	4,133	623	2,247	1,675	--	10,485	1,014	9,107	<sup>R</sup> 46,229	<sup>R</sup> 80,706
March	25,892	3,767	4,091	623	2,249	1,632	--	10,522	987	9,134	<sup>R</sup> 45,986	<sup>R</sup> 80,678
April	26,012	3,429	4,036	626	2,210	1,666	--	10,450	989	8,906	<sup>R</sup> 45,050	<sup>R</sup> 79,887
May	26,412	2,811	3,973	625	2,207	1,608	--	10,440	991	8,859	<sup>R</sup> 44,341	<sup>R</sup> 79,122
June	26,707	3,112	4,034	621	2,213	1,480	--	10,453	897	8,703	<sup>R</sup> 44,615	<sup>R</sup> 79,833
July	26,928	3,657	3,938	620	2,192	1,762	--	10,254	980	8,682	<sup>R</sup> 45,166	<sup>R</sup> 80,499
August	27,003	3,855	3,874	614	2,179	1,603	--	10,316	841	8,716	<sup>R</sup> 44,702	<sup>R</sup> 79,978
September	26,973	3,849	3,887	609	2,146	1,430	--	10,729	826	8,553	<sup>R</sup> 45,072	<sup>R</sup> 80,346
October	27,068	3,893	3,780	608	2,135	1,766	--	10,826	760	8,791	<sup>R</sup> 45,823	<sup>R</sup> 81,382
November	27,278	4,135	3,915	598	2,105	1,785	--	10,832	948	8,876	<sup>R</sup> 46,401	<sup>R</sup> 82,412
December	27,278	3,968	3,949	590	2,067	1,706	--	10,830	961	8,771	<sup>R</sup> 46,137	<sup>R</sup> 81,828
Average	26,583	3,679	3,981	616	2,187	1,648	--	10,551	933	8,857	<sup>R</sup> 45,509	<sup>R</sup> 80,679
2017 January	26,312	4,097	3,855	589	2,054	<sup>R</sup> 1,653	--	10,733	<sup>R</sup> 945	<sup>E</sup> 8,825	<sup>R</sup> 46,016	<sup>R</sup> 80,850
February	26,111	4,137	3,929	583	2,051	<sup>R</sup> 1,693	--	10,713	<sup>R</sup> 1,005	<sup>E</sup> 9,045	<sup>R</sup> 46,423	<sup>R</sup> 81,091
March	26,306	3,927	3,903	573	2,053	<sup>R</sup> 1,745	--	10,654	<sup>E</sup> 945	<sup>E</sup> 9,107	<sup>R</sup> 45,968	<sup>R</sup> 80,512
April	26,316	3,577	3,891	582	2,046	<sup>R</sup> 1,738	--	10,603	<sup>E</sup> 915	<sup>E</sup> 9,093	<sup>R</sup> 45,411	<sup>R</sup> 80,011
May	26,472	3,690	3,829	588	2,053	<sup>R</sup> 1,636	--	10,543	<sup>R</sup> 929	<sup>E</sup> 9,134	<sup>R</sup> 45,414	<sup>R</sup> 80,490
June	26,743	4,069	3,944	590	2,042	<sup>R</sup> 1,576	--	10,543	<sup>E</sup> 936	<sup>E</sup> 9,068	<sup>R</sup> 45,875	<sup>R</sup> 81,324
July	26,606	3,970	3,827	587	2,020	<sup>R</sup> 1,653	--	10,546	<sup>E</sup> 912	<sup>E</sup> 9,209	<sup>R</sup> 45,876	<sup>R</sup> 81,411
August	26,559	4,154	3,758	594	1,962	<sup>R</sup> 1,584	--	10,507	<sup>E</sup> 831	<sup>E</sup> 9,192	<sup>R</sup> 45,508	<sup>R</sup> 80,924
September	26,586	3,940	3,779	602	1,761	<sup>R</sup> 1,473	--	10,503	<sup>E</sup> 885	<sup>E</sup> 9,485	<sup>R</sup> 45,535	<sup>R</sup> 80,996
October	26,427	<sup>R</sup> 3,890	<sup>R</sup> 3,770	597	1,933	<sup>R</sup> 1,576	--	10,527	<sup>R</sup> 945	<sup>RE</sup> 9,658	<sup>R</sup> 45,988	<sup>R</sup> 81,237
November	26,257	<sup>R</sup> 4,249	3,820	588	1,896	<sup>R</sup> 1,520	--	10,538	<sup>R</sup> 977	<sup>RE</sup> 10,057	<sup>R</sup> 46,812	<sup>R</sup> 81,786
December	26,299	3,918	3,763	588	1,903	1,567	--	10,549	739	<sup>E</sup> 9,949	46,154	81,034
Average	26,418	3,967	3,838	588	1,981	1,618	--	10,579	913	<sup>E</sup> 9,320	45,911	80,971

<sup>a</sup> 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, Equatorial Guinea joined OPEC in May 2017 and is thus included in "Total OPEC" for all years.

<sup>b</sup> 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

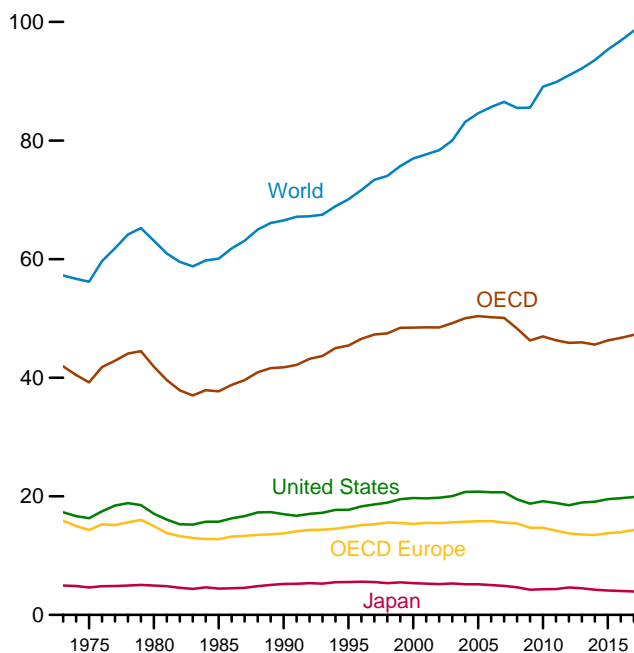
plant liquids. • Monthly data are often preliminary figures and may not average to the annual totals because of rounding or because updates to the preliminary monthly data are not available. • Data for countries may not sum to World totals due to independent rounding. • U.S. geographic coverage is the 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.

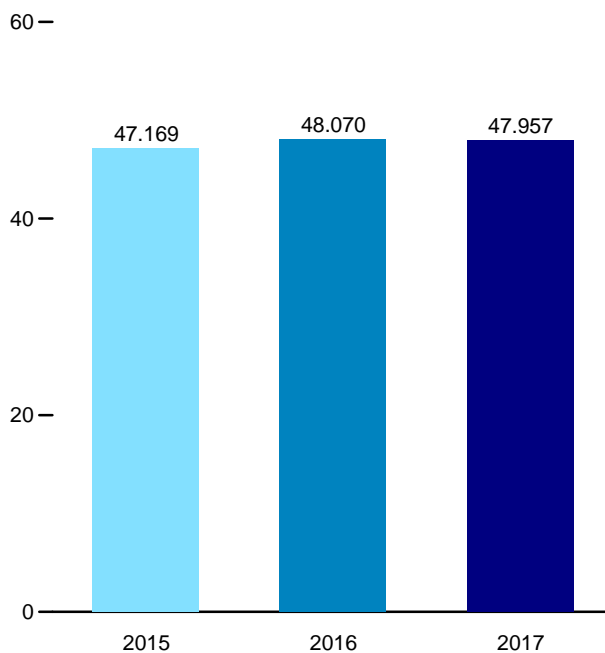
Sources: See end of section.

**Figure 11.2 Petroleum Consumption in OECD Countries**  
(Million Barrels per Day)

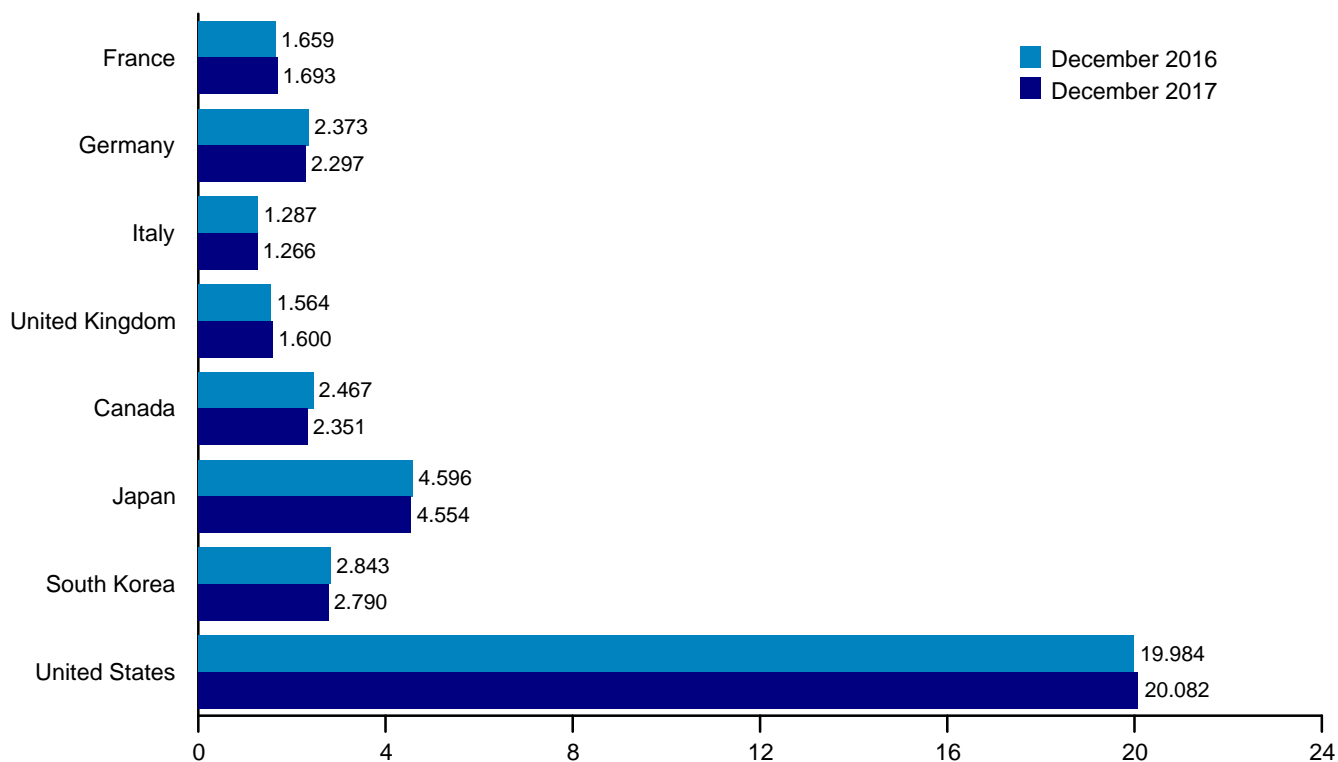
Overview, 1973–2017



OECD Total, December



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 <sup>a</sup>	Italy	United Kingdom	OECD Europe <sup>b</sup>	Canada	Japan	South Korea	United States	Other OECD <sup>c</sup>	OECD <sup>d</sup>	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	14,835	1,799	5,546	2,008	17,725	3,517	45,430	70,077
1996 Average .....	1,943	2,922	1,920	1,852	15,148	1,853	5,591	2,101	18,309	3,554	46,556	71,654
1997 Average .....	1,962	2,917	1,934	1,810	15,291	1,940	5,549	2,255	18,620	3,640	47,296	73,378
1998 Average .....	2,040	2,923	1,943	1,792	15,591	1,931	5,348	1,917	18,917	3,774	47,478	74,028
1999 Average .....	2,034	2,836	1,891	1,811	15,500	2,016	5,486	2,084	19,519	3,808	48,414	75,700
2000 Average .....	2,001	2,767	1,854	1,765	15,349	2,008	5,357	2,135	19,701	3,899	48,449	76,982
2001 Average .....	2,054	2,807	1,835	1,747	15,529	2,029	5,265	2,132	19,649	3,905	48,508	77,670
2002 Average .....	1,991	2,710	1,870	1,739	15,488	2,040	5,187	2,149	19,761	3,857	48,482	78,361
2003 Average .....	2,001	2,679	1,860	1,759	15,612	2,155	5,298	2,175	20,034	3,930	49,203	80,015
2004 Average .....	2,008	2,648	1,829	1,789	15,714	2,233	5,163	2,155	20,731	4,035	50,032	83,156
2005 Average .....	1,990	2,624	1,781	1,819	15,792	2,338	5,164	2,191	20,802	4,101	50,389	84,597
2006 Average .....	1,991	2,636	1,777	1,805	15,838	2,346	5,032	2,180	20,687	4,116	50,199	85,661
2007 Average .....	1,978	2,407	1,729	1,751	15,570	2,434	4,899	2,240	20,680	4,259	50,083	86,512
2008 Average .....	1,940	2,533	1,667	1,729	15,427	2,344	4,664	2,142	19,498	4,200	48,274	85,484
2009 Average .....	1,863	2,434	1,544	1,649	14,704	2,283	4,257	2,188	18,771	4,082	46,287	85,540
2010 Average .....	1,821	2,467	1,544	1,626	14,685	2,382	4,328	2,269	19,180	4,114	46,957	89,096
2011 Average .....	1,779	2,392	1,494	1,582	14,208	2,429	4,345	2,259	18,887	4,181	46,308	89,833
2012 Average .....	1,739	2,389	1,370	1,535	13,737	2,480	4,630	2,322	18,487	4,227	45,883	91,013
2013 Average .....	1,714	2,435	1,260	1,508	13,549	2,457	4,504	2,328	18,967	4,148	45,953	92,170
2014 Average .....	1,691	2,374	1,266	1,509	13,474	2,375	4,248	2,348	19,100	4,404	45,585	93,563
<b>2015</b> January .....	1,643	2,287	1,131	1,434	13,019	2,410	4,522	2,531	19,261	3,838	45,581	NA
February .....	1,783	2,426	1,236	1,657	13,914	2,492	5,034	2,578	19,664	4,102	47,784	NA
March .....	1,692	2,383	1,227	1,480	13,515	2,306	4,505	2,468	19,340	3,994	46,129	NA
April .....	1,721	2,355	1,315	1,572	13,717	2,248	4,163	2,445	19,251	3,941	45,764	NA
May .....	1,542	2,184	1,232	1,488	13,095	2,289	3,598	2,266	19,316	3,962	44,525	NA
June .....	1,774	2,312	1,301	1,561	14,010	2,359	3,677	2,371	19,853	4,038	46,308	NA
July .....	1,811	2,385	1,398	1,497	14,205	2,408	3,800	2,355	20,134	4,164	47,066	NA
August .....	1,676	2,410	1,248	1,581	13,987	2,424	3,918	2,507	19,939	4,015	46,790	NA
September .....	1,793	2,525	1,336	1,625	14,445	2,426	3,859	2,422	19,433	4,062	46,647	NA
October .....	1,665	2,426	1,293	1,531	13,919	2,409	3,836	2,472	19,491	3,987	46,113	NA
November .....	1,499	2,388	1,258	1,582	13,511	2,371	3,978	2,589	19,127	3,998	45,575	NA
December .....	1,718	2,341	1,310	1,572	13,885	2,335	4,616	2,683	19,589	4,060	47,169	NA
<b>Average</b> .....	<b>1,692</b>	<b>2,368</b>	<b>1,274</b>	<b>1,547</b>	<b>13,766</b>	<b>2,372</b>	<b>4,120</b>	<b>2,473</b>	<b>19,534</b>	<b>4,013</b>	<b>46,278</b>	<b>95,335</b>
<b>2016</b> January .....	1,569	2,300	1,108	1,492	12,878	2,371	4,345	2,695	19,063	3,989	45,340	NA
February .....	1,682	2,468	1,243	1,641	13,851	2,328	4,629	2,752	19,847	4,160	47,566	NA
March .....	1,718	2,475	1,251	1,538	<sup>R</sup> 13,903	2,304	4,356	2,533	19,728	4,061	<sup>R</sup> 46,885	NA
April .....	1,663	2,478	1,281	1,611	13,985	2,258	3,973	2,519	19,340	3,985	46,060	NA
May .....	1,661	2,285	1,246	1,549	13,599	2,304	3,579	2,574	19,328	3,910	<sup>R</sup> 45,295	NA
June .....	1,580	2,313	1,302	1,654	<sup>R</sup> 14,016	2,389	3,561	2,544	19,846	4,039	<sup>R</sup> 46,396	NA
July .....	1,681	2,398	1,305	1,551	<sup>R</sup> 14,028	2,401	3,779	2,472	19,776	4,004	<sup>R</sup> 46,459	NA
August .....	1,702	2,451	1,250	1,608	<sup>R</sup> 14,555	2,532	3,860	2,684	20,275	4,083	<sup>R</sup> 47,989	NA
September .....	1,738	2,426	1,319	1,646	<sup>R</sup> 14,520	2,455	3,723	2,642	19,757	4,018	<sup>R</sup> 47,115	NA
October .....	1,667	2,457	1,236	1,594	<sup>R</sup> 14,261	2,347	3,777	2,532	19,650	3,911	<sup>R</sup> 46,477	NA
November .....	1,565	2,502	1,206	1,596	<sup>R</sup> 14,059	2,386	4,158	2,780	19,659	4,072	<sup>R</sup> 47,112	NA
December .....	1,659	2,373	1,287	1,564	14,041	2,467	4,596	2,843	19,984	4,140	48,070	NA
<b>Average</b> .....	<b>1,657</b>	<b>2,410</b>	<b>1,253</b>	<b>1,586</b>	<sup>R</sup> <b>13,973</b>	<b>2,379</b>	<b>4,026</b>	<b>2,630</b>	<b>19,687</b>	<b>4,030</b>	<b>46,726</b>	<sup>R</sup> <b>96,848</b>
<b>2017</b> January .....	1,738	<sup>R</sup> 2,446	1,178	1,445	<sup>R</sup> 13,556	2,350	4,176	2,665	19,244	<sup>R</sup> 3,754	<sup>R</sup> 45,746	NA
February .....	1,706	<sup>R</sup> 2,518	1,234	1,652	<sup>R</sup> 13,940	2,325	4,565	2,739	19,159	<sup>R</sup> 4,034	<sup>R</sup> 46,761	NA
March .....	1,709	<sup>R</sup> 2,668	1,280	1,492	<sup>R</sup> 14,155	2,376	4,279	2,668	20,047	<sup>R</sup> 4,089	<sup>R</sup> 47,615	NA
April .....	1,625	<sup>R</sup> 2,531	1,196	1,629	<sup>R</sup> 13,890	2,159	3,841	2,522	19,556	<sup>R</sup> 4,035	<sup>R</sup> 46,004	NA
May .....	1,670	<sup>R</sup> 2,523	1,279	1,514	<sup>R</sup> 14,201	2,413	3,553	2,590	20,039	<sup>R</sup> 4,128	<sup>R</sup> 46,924	NA
June .....	1,747	<sup>R</sup> 2,509	1,371	1,629	<sup>R</sup> 14,683	<sup>R</sup> 2,437	3,524	2,563	20,494	<sup>R</sup> 4,147	<sup>R</sup> 47,847	NA
July .....	1,729	<sup>R</sup> 2,566	1,348	1,587	<sup>R</sup> 14,638	2,465	3,636	2,634	20,020	<sup>R</sup> 3,987	<sup>R</sup> 47,380	NA
August .....	1,713	<sup>R</sup> 2,552	1,278	1,584	<sup>R</sup> 14,549	2,561	3,747	2,616	20,161	<sup>R</sup> 4,117	<sup>R</sup> 47,750	NA
September .....	1,848	<sup>R</sup> 2,436	1,330	1,644	<sup>R</sup> 14,885	2,475	3,679	2,682	19,581	<sup>R</sup> 4,061	<sup>R</sup> 47,363	NA
October .....	1,624	<sup>R</sup> 2,429	1,340	1,564	<sup>R</sup> 14,464	2,482	3,649	2,633	19,806	<sup>R</sup> 3,900	<sup>R</sup> 46,934	NA
November .....	1,677	<sup>R</sup> 2,577	1,287	<sup>R</sup> 1,626	<sup>R</sup> 14,541	<sup>R</sup> 2,563	4,148	2,751	20,278	<sup>R</sup> 4,068	<sup>R</sup> 48,349	NA
December .....	1,693	2,297	1,266	1,600	14,116	2,351	4,554	2,790	20,082	4,064	47,957	NA
<b>Average</b> .....	<b>1,706</b>	<b>2,504</b>	<b>1,283</b>	<b>1,579</b>	<b>14,302</b>	<b>2,414</b>	<b>3,942</b>	<b>2,654</b>	<b>19,877</b>	<b>4,031</b>	<b>47,221</b>	<b>98,518</b>

<sup>a</sup> Data are for unified Germany, i.e., the former East Germany and West Germany.

<sup>b</sup> "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.

<sup>c</sup> "Other OECD" consists of Australia, New Zealand, and the U.S. Territories; for 1984 forward, Mexico; for 2000 forward, Chile, Estonia, and Israel; and, for 2016 forward, Latvia.

<sup>d</sup> 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.

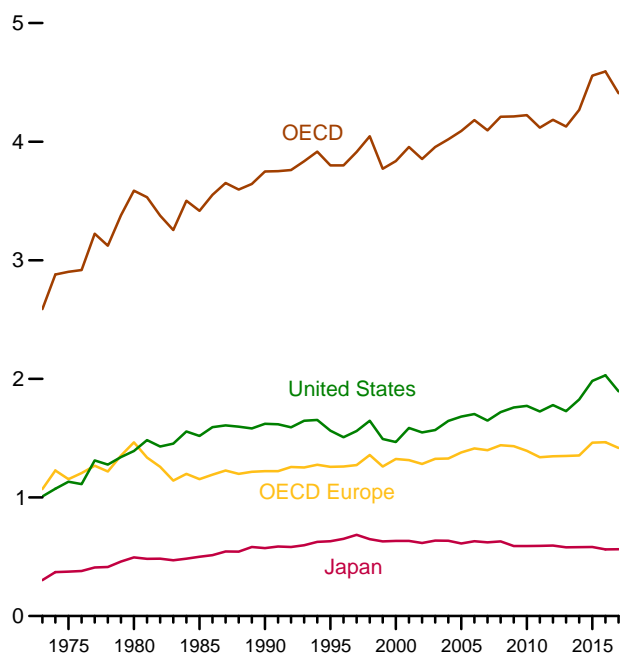
Notes: • Totals may not equal sum of components due to independent rounding. • U.S. geographic coverage is the 50 states and the District of Columbia.

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.

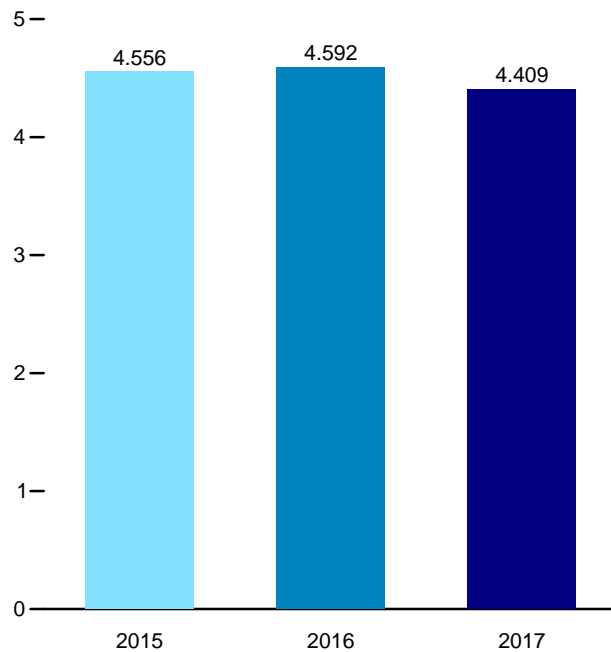
Sources: • **United States:** Table 3.1. • **Chile, East Germany, Former Czechoslovakia, Hungary, Mexico, Poland, South Korea, Non-OECD Countries, U.S. Territories, and World: 1973–1979**—U.S. Energy Information Administration (EIA), International Energy Database. • **Countries Other Than United States: 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)

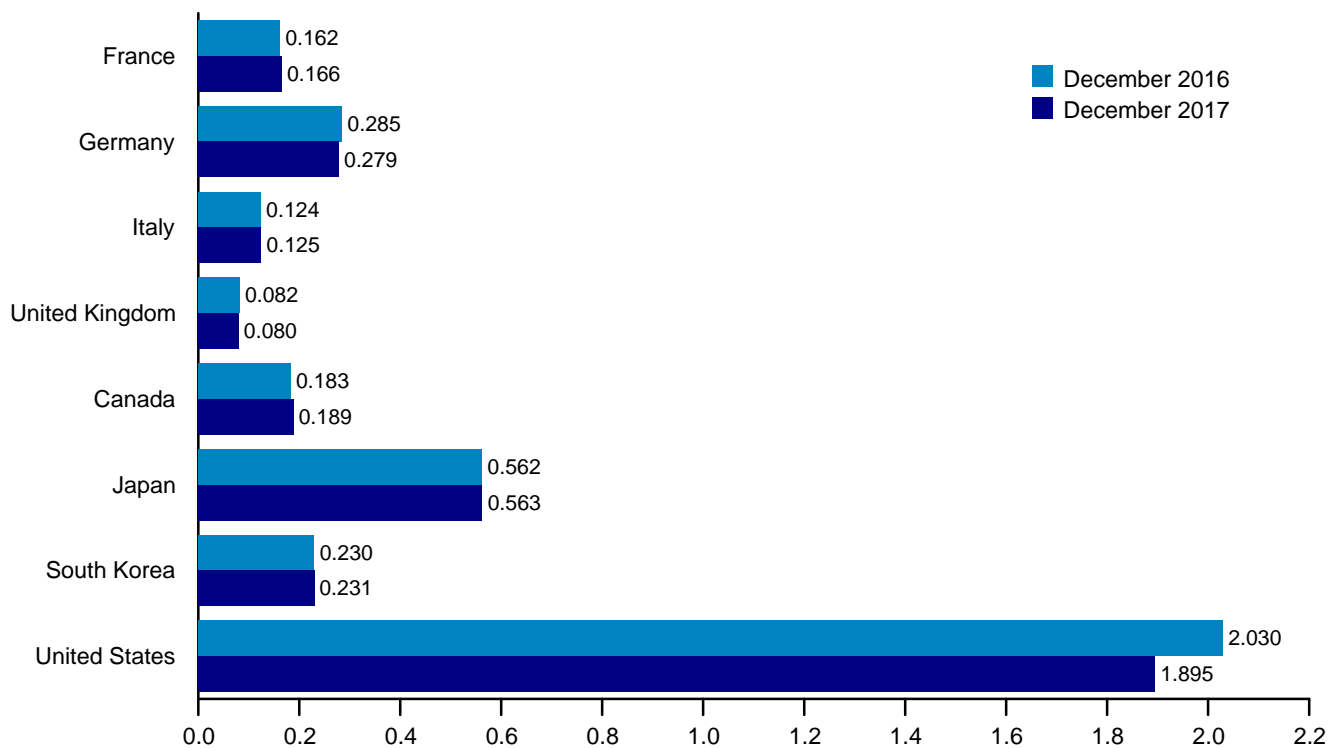
Overview, End of Year, 1973–2017



OECD Stocks, End of Month, December



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 <sup>a</sup>	Italy	United Kingdom	OECD Europe <sup>b</sup>	Canada	Japan	South Korea	United States	Other OECD <sup>c</sup>	OECD <sup>d</sup>
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	1,257	132	631	92	1,563	125	3,799
1996 Year .....	154	303	152	103	1,261	127	651	123	1,507	131	3,800
1997 Year .....	161	299	147	100	1,274	144	685	124	1,560	126	3,913
1998 Year .....	169	323	153	104	1,358	139	649	129	1,647	123	4,045
1999 Year .....	160	290	148	101	1,261	141	629	132	1,493	115	3,771
2000 Year .....	170	272	157	100	1,324	143	634	140	1,468	127	3,836
2001 Year .....	165	273	151	113	1,315	154	634	143	1,586	122	3,954
2002 Year .....	170	253	156	104	1,282	155	615	140	1,548	113	3,854
2003 Year .....	179	273	153	100	1,325	165	636	155	1,568	106	3,956
2004 Year .....	177	267	154	101	1,328	154	635	149	1,645	109	4,020
2005 Year .....	185	283	151	95	1,380	168	612	135	1,682	114	4,090
2006 Year .....	182	283	153	103	1,413	169	631	152	1,703	115	4,182
2007 Year .....	180	275	152	92	1,398	163	621	143	1,648	123	4,096
2008 Year .....	179	279	148	93	1,441	162	629	135	1,719	125	4,211
2009 Year .....	175	284	146	89	1,432	157	591	155	1,758	119	4,213
2010 Year .....	168	287	143	83	1,393	184	590	165	1,772	120	4,224
2011 Year .....	165	281	135	80	1,338	178	592	167	1,725	119	4,119
2012 Year .....	162	288	126	80	1,347	174	594	181	1,779	109	4,184
2013 Year .....	167	290	125	78	1,350	170	580	185	1,728	116	4,127
2014 Year .....	168	284	119	78	1,354	193	581	197	1,825	118	4,268
2015 January .....	170	284	116	73	1,371	192	574	197	1,847	119	4,300
February .....	170	286	113	75	1,383	184	568	198	1,848	117	4,297
March .....	173	284	121	76	1,407	183	568	201	1,881	115	4,355
April .....	170	284	124	85	1,411	185	558	210	1,907	115	4,385
May .....	175	288	122	78	1,419	181	582	224	1,928	112	4,446
June .....	170	286	117	77	1,409	176	578	225	1,939	118	4,445
July .....	168	281	116	74	1,400	184	589	223	1,936	118	4,450
August .....	167	283	123	77	1,429	185	594	227	1,958	116	4,509
September .....	167	281	117	79	1,433	182	590	226	1,968	115	4,514
October .....	165	280	118	80	1,436	183	588	223	1,975	111	4,516
November .....	164	281	117	83	1,446	187	582	222	1,989	109	4,535
December .....	168	285	117	81	1,462	188	582	228	1,982	114	4,556
2016 January .....	171	287	120	83	<sup>R</sup> 1,502	187	580	219	2,014	117	<sup>R</sup> 4,618
February .....	169	289	123	81	<sup>R</sup> 1,512	183	564	233	2,018	114	<sup>R</sup> 4,623
March .....	166	289	120	77	<sup>R</sup> 1,497	184	560	236	2,024	115	<sup>R</sup> 4,616
April .....	171	286	126	77	<sup>R</sup> 1,496	180	566	230	2,035	117	<sup>R</sup> 4,624
May .....	167	289	123	81	<sup>R</sup> 1,503	169	574	235	2,051	119	<sup>R</sup> 4,649
June .....	167	288	121	82	<sup>R</sup> 1,494	175	573	238	2,049	123	<sup>R</sup> 4,653
July .....	169	290	125	75	<sup>R</sup> 1,516	186	577	238	2,066	125	<sup>R</sup> 4,707
August .....	167	287	130	80	<sup>R</sup> 1,501	186	585	233	2,066	121	<sup>R</sup> 4,692
September .....	167	285	127	78	<sup>R</sup> 1,483	185	587	239	2,051	120	<sup>R</sup> 4,665
October .....	163	287	128	77	<sup>R</sup> 1,467	190	587	238	2,053	119	<sup>R</sup> 4,653
November .....	166	283	126	80	<sup>R</sup> 1,472	190	573	238	2,056	112	<sup>R</sup> 4,641
December .....	162	285	124	82	<sup>R</sup> 1,466	183	562	230	2,030	120	<sup>R</sup> 4,592
2017 January .....	166	285	129	82	<sup>R</sup> 1,505	185	562	238	2,049	124	<sup>R</sup> 4,663
February .....	166	285	131	82	<sup>R</sup> 1,508	187	556	236	2,046	123	<sup>R</sup> 4,656
March .....	168	<sup>R</sup> 280	134	81	<sup>R</sup> 1,501	185	546	238	2,029	126	<sup>R</sup> 4,625
April .....	165	283	131	84	<sup>R</sup> 1,507	181	558	240	2,029	127	<sup>R</sup> 4,644
May .....	167	280	132	81	<sup>R</sup> 1,485	180	572	238	2,034	131	<sup>R</sup> 4,640
June .....	165	277	134	81	<sup>R</sup> 1,477	183	566	236	2,009	127	<sup>R</sup> 4,599
July .....	170	279	131	80	<sup>R</sup> 1,477	188	577	240	1,998	122	<sup>R</sup> 4,602
August .....	170	<sup>R</sup> 278	131	80	<sup>R</sup> 1,465	186	582	240	1,986	120	<sup>R</sup> 4,580
September .....	165	<sup>R</sup> 274	128	78	<sup>R</sup> 1,440	186	571	244	1,978	118	<sup>R</sup> 4,537
October .....	165	<sup>R</sup> 273	125	79	<sup>R</sup> 1,419	184	575	241	1,943	121	<sup>R</sup> 4,485
November .....	164	<sup>R</sup> 271	125	82	<sup>R</sup> 1,424	<sup>R</sup> 185	574	235	1,923	115	<sup>R</sup> 4,456
December .....	166	279	125	80	1,417	189	563	231	1,895	115	4,409

<sup>a</sup> 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.

<sup>b</sup> "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.

<sup>c</sup> "Other OECD" consists of Australia, New Zealand, and the U.S. Territories; for 1984 forward, Mexico; for 2000 forward, Chile, Estonia, and Israel; and, for 2016 forward, Latvia.

<sup>d</sup> The Organization for Economic Cooperation and Development (OECD) consists of "OECD Europe," Canada, Japan, South Korea, the United States, and "Other OECD."

<sup>R</sup>=Revised. NA=Not available.

Notes: • Stocks are at end of period. • Petroleum stocks include crude

oil (including strategic reserves), unfinished oils, natural gas 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, March 15, 2018.

# 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, March 2018.

### 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.

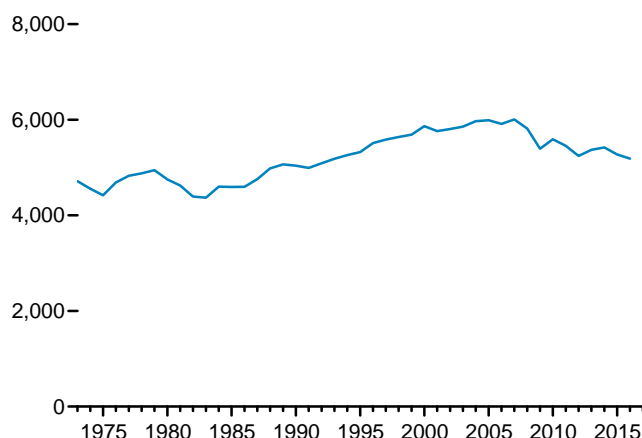
1994 forward: EIA, International Energy Statistics Database, March 2018.

## **12. Environment**

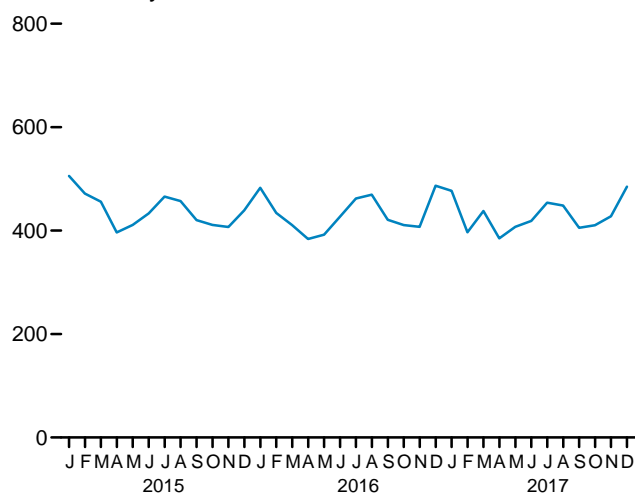
---

**Figure 12.1 Carbon Dioxide Emissions From Energy Consumption by Source**  
(Million Metric Tons of Carbon Dioxide)

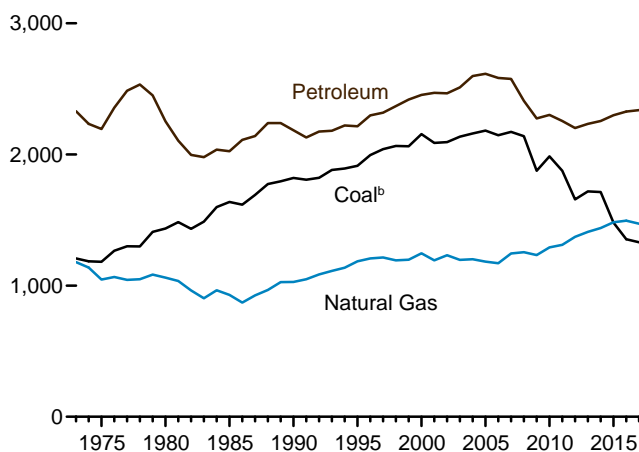
Total,<sup>a</sup> 1973–2017



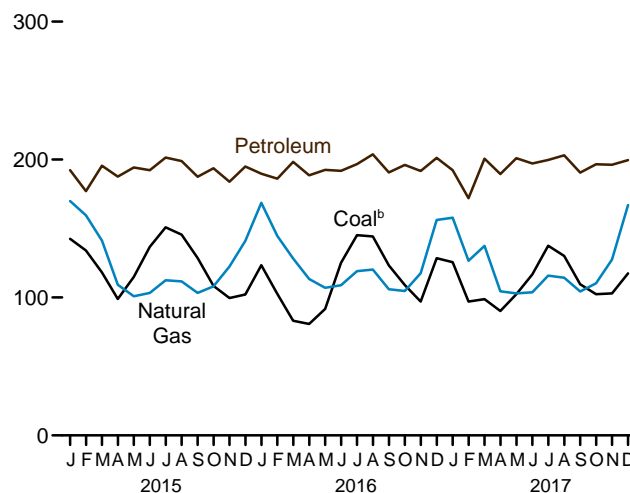
Total,<sup>a</sup> Monthly



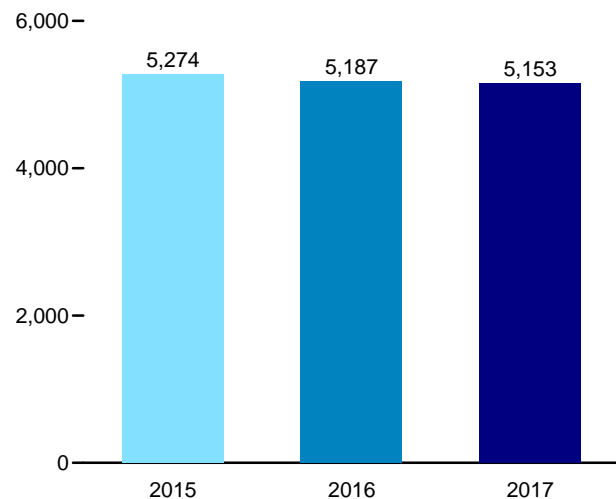
By Major Source, 1973–2017



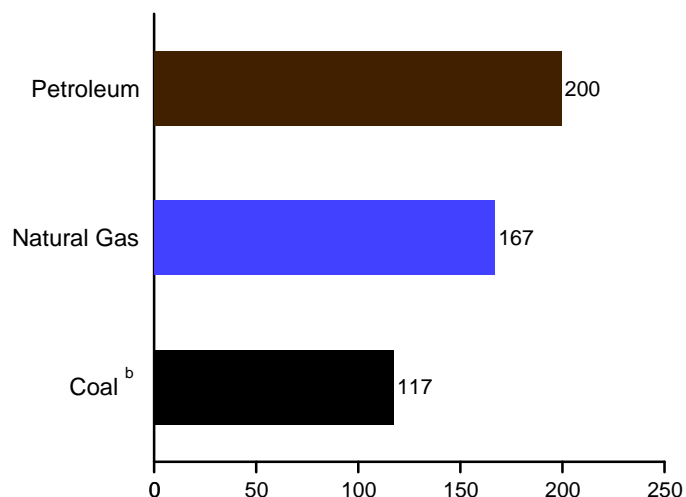
By Major Source, Monthly



Total,<sup>a</sup> January–December



By Major Source, December 2017



<sup>a</sup> Excludes emissions from biomass energy consumption.

<sup>b</sup> Includes 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<sup>a</sup>)

	Coal <sup>b</sup>	Natural Gas <sup>c</sup>	Petroleum										Total <sup>h,i</sup>
			Aviation Gasoline	Distillate Fuel Oil <sup>d</sup>	HGL <sup>e</sup>	Jet Fuel	Kerosene	Lubricants	Motor Gasoline <sup>f</sup>	Petroleum Coke	Residual Fuel Oil	Other <sup>g</sup>	
1973 Total	1,207	1,179	6	480	76	155	32	13	911	54	506	97	4,715
1975 Total	1,181	1,046	5	442	70	146	24	11	911	51	442	93	4,421
1980 Total	1,436	1,061	4	446	80	156	24	13	900	49	452	129	4,750
1985 Total	1,638	929	3	445	83	178	17	12	930	55	216	86	4,593
1990 Total	1,821	1,027	3	470	76	223	6	13	988	70	221	114	5,039
1995 Total	1,913	1,186	3	498	91	222	8	13	1,045	76	152	107	5,324
1996 Total	1,995	1,207	3	524	97	232	9	12	1,063	80	152	125	5,511
1997 Total	2,040	1,214	3	534	95	234	10	13	1,075	80	143	131	5,584
1998 Total	2,064	1,193	2	537	91	238	12	14	1,107	93	158	116	5,637
1999 Total	2,062	1,198	3	555	100	245	11	14	1,128	97	148	119	5,690
2000 Total	2,156	1,246	3	579	104	254	10	14	1,136	87	162	106	5,867
2001 Total	2,088	1,193	2	597	94	243	11	13	1,152	90	145	125	5,762
2002 Total	2,095	1,231	2	586	96	237	6	12	1,183	97	125	121	5,805
2003 Total	2,136	1,196	2	610	93	231	8	11	1,187	96	138	134	5,855
2004 Total	2,160	1,201	2	632	95	240	10	12	1,210	107	155	136	5,971
2005 Total	2,182	1,183	2	639	90	246	10	12	1,209	106	164	135	5,992
2006 Total	2,147	1,170	2	645	85	240	8	11	1,217	106	122	147	5,912
2007 Total	2,172	1,246	2	647	89	238	5	12	1,211	100	129	143	6,005
2008 Total	2,140	1,255	2	610	85	226	2	11	1,143	93	111	126	5,815
2009 Total	1,876	1,233	2	559	83	204	3	10	1,129	87	91	107	5,396
2010 Total	1,986	1,292	2	585	86	210	3	11	1,112	82	96	115	5,591
2011 Total	1,876	1,311	2	599	80	209	2	10	1,078	79	82	114	5,454
2012 Total	1,657	1,372	2	574	84	206	1	9	1,071	79	66	110	5,243
2013 Total	1,718	1,409	2	581	92	210	1	10	1,087	77	57	116	5,372
2014 Total	1,714	1,440	2	614	87	216	1	10	1,095	76	46	108	5,419
2015 January	143	170	(s)	54	9	17	(s)	1	90	7	4	8	506
February	134	160	(s)	53	8	16	(s)	1	83	4	3	9	472
March	118	141	(s)	53	8	19	(s)	1	94	7	4	9	456
April	99	109	(s)	50	7	18	(s)	1	93	7	3	9	397
May	115	101	(s)	49	7	19	(s)	1	96	7	4	11	411
June	137	103	(s)	49	7	20	(s)	1	95	7	3	11	433
July	151	112	(s)	50	7	21	(s)	1	99	7	5	11	466
August	145	112	(s)	50	8	20	(s)	1	99	8	5	9	457
September	129	103	(s)	51	6	18	(s)	1	94	5	4	9	420
October	108	108	(s)	52	8	20	(s)	1	96	6	4	7	411
November	100	122	(s)	47	7	18	(s)	1	92	5	4	9	407
December	102	141	(s)	49	9	20	(s)	1	95	5	5	10	439
Total	1,480	1,483	1	607	91	227	1	11	1,126	76	47	112	5,274
2016 January	123	169	(s)	50	9	18	(s)	1	90	7	5	10	483
February	103	145	(s)	48	8	18	(s)	1	90	6	3	12	434
March	83	128	(s)	51	8	19	(s)	1	98	7	5	9	411
April	81	113	(s)	47	6	19	(s)	1	93	5	7	10	384
May	92	107	(s)	48	7	20	(s)	1	98	5	5	9	392
June	125	109	(s)	48	6	21	(s)	1	97	4	5	10	427
July	145	119	(s)	46	7	21	(s)	1	100	6	6	9	462
August	144	120	(s)	50	6	21	(s)	1	101	8	5	11	469
September	123	106	(s)	49	7	20	(s)	1	96	5	4	10	421
October	109	105	(s)	51	7	20	(s)	1	95	6	5	11	411
November	97	118	(s)	49	7	20	(s)	1	93	9	4	9	407
December	129	156	(s)	52	9	21	(s)	1	96	7	5	10	487
Total	1,354	1,495	1	589	88	237	1	11	1,145	76	59	120	5,187
2017 January	126	158	(s)	49	10	20	(s)	1	88	8	7	10	477
February	97	127	(s)	45	7	17	(s)	1	84	4	4	9	397
March	99	<sup>R</sup> 137	(s)	54	8	21	(s)	1	<sup>R</sup> 97	3	6	11	<sup>R</sup> 438
April	90	<sup>R</sup> 104	(s)	47	7	19	(s)	1	93	6	5	11	385
May	102	103	(s)	51	7	21	(s)	1	100	6	6	10	407
June	117	104	(s)	49	6	21	(s)	1	98	5	6	10	419
July	138	116	(s)	48	7	22	(s)	1	100	9	4	10	<sup>R</sup> 454
August	130	<sup>R</sup> 114	(s)	51	6	22	(s)	1	102	6	5	10	<sup>R</sup> 448
September	110	<sup>R</sup> 104	(s)	49	7	20	(s)	1	94	6	5	9	<sup>R</sup> 405
October	102	<sup>R</sup> 110	(s)	51	7	21	(s)	1	97	3	6	10	<sup>R</sup> 410
November	103	128	(s)	52	8	21	(s)	1	92	7	6	9	428
December	117	167	(s)	51	9	22	(s)	1	96	7	6	9	485
Total	1,331	1,472	1	597	89	247	1	9	1,141	70	64	119	5,153

<sup>a</sup> Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

<sup>b</sup> Includes coal coke net imports.

<sup>c</sup> Natural gas, excluding supplemental gaseous fuels.

<sup>d</sup> Distillate fuel oil, excluding biodiesel.

<sup>e</sup> Hydrocarbon gas liquids.

<sup>f</sup> Finished motor gasoline, excluding fuel ethanol.

<sup>g</sup> Aviation gasoline blending components, crude oil, motor gasoline blending components, petrochemical feedstocks, special naphthas, still gas, unfinished oils, waxes, and miscellaneous petroleum products.

<sup>h</sup> Includes electric power sector use of geothermal energy and non-biomass waste. See Table 12.6.

<sup>i</sup> Excludes emissions from biomass energy consumption. See Table 12.7.

R=Revised. (s)=Less than 0.5 million metric tons.

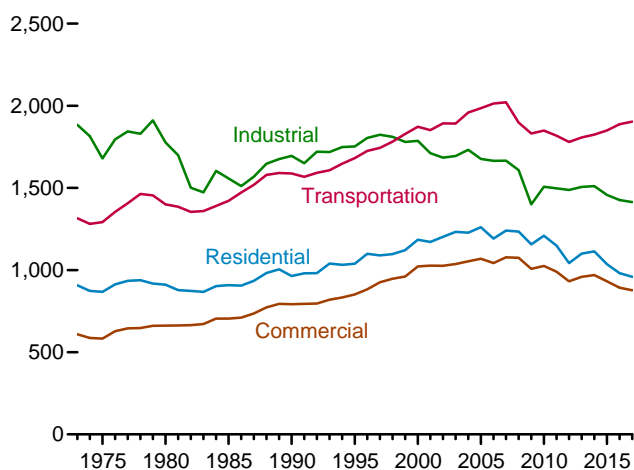
Notes: • Data are estimates for carbon dioxide emissions from energy consumption, plus the relatively small amount of emissions from the non-combustion use of fossil fuels. See "Section 12 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon 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.

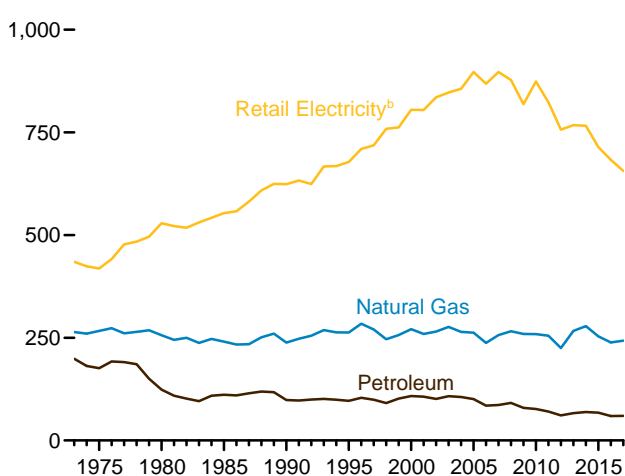
Sources: See end of section.

**Figure 12.2 Carbon Dioxide Emissions From Energy Consumption by Sector**  
(Million Metric Tons of Carbon Dioxide)

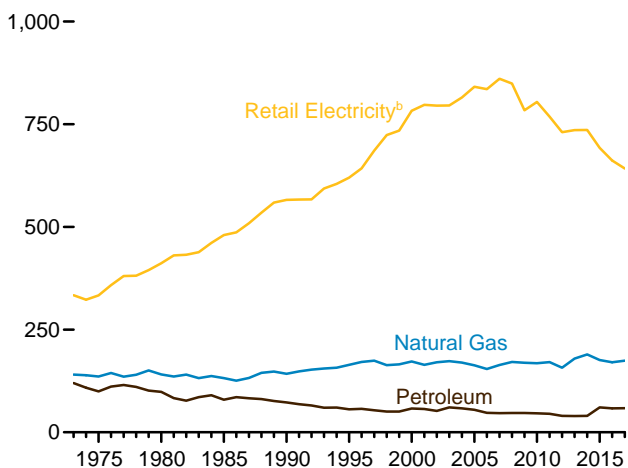
Total<sup>a</sup> by End-Use Sector,<sup>b</sup> 1973–2017



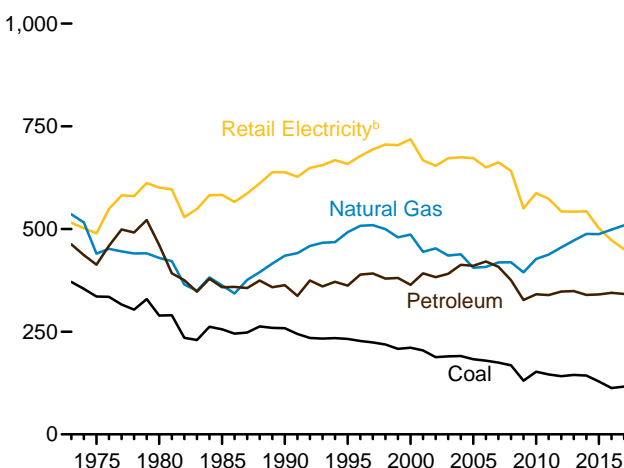
Residential Sector by Major Source, 1973–2017



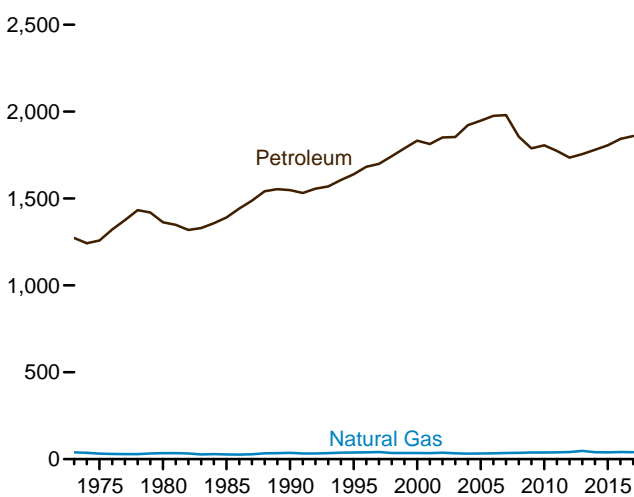
Commercial Sector by Major Source, 1973–2017



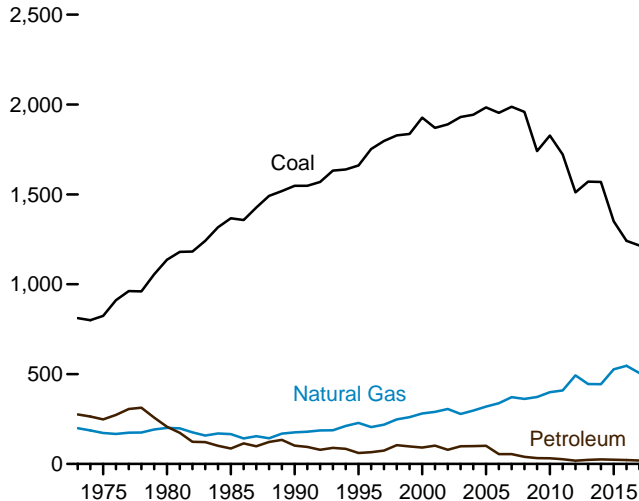
Industrial Sector by Major Source, 1973–2017



Transportation Sector by Major Source, 1973–2017



Electric Power Sector by Major Source, 1973–2017



<sup>a</sup> Excludes emissions from biomass energy consumption.

<sup>b</sup> 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<sup>a</sup>)

	Coal	Natural Gas <sup>b</sup>	Petroleum				Retail Electricity <sup>e</sup>	Total <sup>f</sup>
			Distillate Fuel Oil <sup>c</sup>	HGL <sup>d</sup>	Kerosene	Total		
1973 Total .....	9	264	147	36	16	199	435	907
1975 Total .....	6	266	132	32	12	176	419	867
1980 Total .....	3	256	96	20	8	124	529	911
1985 Total .....	4	241	80	20	11	111	553	909
1990 Total .....	3	238	72	22	5	98	624	963
1995 Total .....	2	263	66	25	5	96	678	1,039
1996 Total .....	2	284	68	30	6	104	710	1,099
1997 Total .....	2	270	64	29	7	99	719	1,090
1998 Total .....	1	247	56	27	8	91	759	1,097
1999 Total .....	1	257	60	33	8	102	762	1,122
2000 Total .....	1	271	66	35	7	108	805	1,185
2001 Total .....	1	259	66	33	7	106	805	1,171
2002 Total .....	1	265	63	34	4	101	835	1,203
2003 Total .....	1	276	68	34	5	108	847	1,232
2004 Total .....	1	264	67	32	6	106	856	1,227
2005 Total .....	1	262	62	32	6	101	897	1,261
2006 Total .....	1	237	52	28	5	85	869	1,191
2007 Total .....	1	257	53	31	3	86	897	1,241
2008 Total .....	NA	266	55	35	2	91	877	1,234
2009 Total .....	NA	259	43	35	2	79	819	1,157
2010 Total .....	NA	259	41	33	2	77	874	1,210
2011 Total .....	NA	255	38	31	1	70	823	1,148
2012 Total .....	NA	225	35	25	1	61	757	1,043
2013 Total .....	NA	267	36	30	1	66	768	1,100
2014 Total .....	NA	278	39	29	1	69	766	1,113
2015 January .....	NA	52	6	3	(s)	8	72	132
February .....	NA	50	5	2	(s)	7	66	123
March .....	NA	35	4	2	(s)	6	57	98
April .....	NA	18	2	2	(s)	4	42	64
May .....	NA	10	2	2	(s)	5	49	63
June .....	NA	7	1	2	(s)	3	65	76
July .....	NA	6	2	2	(s)	4	81	90
August .....	NA	6	2	2	(s)	4	77	87
September .....	NA	6	2	2	(s)	4	64	74
October .....	NA	11	5	2	(s)	7	48	66
November .....	NA	22	5	2	(s)	7	44	74
December .....	NA	32	5	3	(s)	8	51	92
Total .....	NA	253	40	27	1	68	714	1,035
2016 January .....	NA	48	4	3	(s)	7	65	120
February .....	NA	38	4	2	(s)	6	52	96
March .....	NA	25	3	2	(s)	5	41	71
April .....	NA	18	2	2	(s)	5	37	60
May .....	NA	11	2	2	(s)	4	43	58
June .....	NA	7	2	2	(s)	4	65	75
July .....	NA	6	2	2	(s)	4	84	93
August .....	NA	6	1	2	(s)	3	83	91
September .....	NA	6	2	2	(s)	4	64	74
October .....	NA	10	3	2	(s)	5	49	64
November .....	NA	21	3	2	(s)	5	43	69
December .....	NA	44	5	2	(s)	7	62	113
Total .....	NA	239	32	27	1	60	683	981
2017 January .....	NA	46	4	3	(s)	7	63	116
February .....	NA	32	3	2	(s)	R 5	45	82
March .....	NA	32	3	2	(s)	5	R 46	84
April .....	NA	15	R 2	2	(s)	5	40	60
May .....	NA	11	2	2	(s)	4	46	61
June .....	NA	7	2	2	(s)	4	59	70
July .....	NA	6	1	2	(s)	4	78	R 87
August .....	NA	6	2	2	(s)	4	72	R 81
September .....	NA	6	2	2	(s)	4	56	66
October .....	NA	11	2	2	(s)	4	48	63
November .....	NA	26	3	2	(s)	6	46	78
December .....	NA	45	5	3	(s)	7	60	113
Total .....	NA	243	32	27	1	60	656	959

<sup>a</sup> Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

<sup>b</sup> Natural gas, excluding supplemental gaseous fuels.

<sup>c</sup> Distillate fuel oil, excluding biodiesel.

<sup>d</sup> Hydrocarbon gas liquids.

<sup>e</sup> 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.

<sup>f</sup> 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 12.3 Carbon Dioxide Emissions From Energy Consumption: Commercial Sector**  
(Million Metric Tons of Carbon Dioxide<sup>a</sup>)

	Coal	Natural Gas <sup>b</sup>	Petroleum							Retail Electricity <sup>f</sup>	Total <sup>g</sup>
			Distillate Fuel Oil <sup>c</sup>	HGL <sup>d</sup>	Kerosene	Motor Gasoline <sup>e</sup>	Petroleum Coke	Residual Fuel Oil	Total		
1973 Total .....	15	141	47	9	5	6	NA	52	120	334	609
1975 Total .....	14	136	43	8	4	6	NA	39	100	333	583
1980 Total .....	11	141	38	6	3	8	NA	44	98	412	662
1985 Total .....	13	132	46	6	2	7	NA	18	79	480	704
1990 Total .....	12	142	39	6	1	8	0	18	73	566	793
1995 Total .....	11	164	35	7	2	1	(s)	11	56	620	851
1996 Total .....	12	171	35	8	2	2	(s)	11	57	643	883
1997 Total .....	12	174	32	8	2	3	(s)	9	54	686	926
1998 Total .....	9	164	31	7	2	3	(s)	7	50	724	947
1999 Total .....	10	165	32	9	2	2	(s)	6	51	735	960
2000 Total .....	9	173	36	9	2	3	(s)	7	58	783	1,022
2001 Total .....	9	164	37	9	2	3	(s)	6	57	797	1,027
2002 Total .....	9	170	32	9	1	3	(s)	6	52	795	1,026
2003 Total .....	8	173	36	10	1	4	(s)	9	60	796	1,037
2004 Total .....	10	170	34	10	1	3	(s)	10	58	815	1,053
2005 Total .....	9	163	33	8	2	3	(s)	9	55	841	1,069
2006 Total .....	6	154	29	8	1	3	(s)	6	47	835	1,043
2007 Total .....	7	164	28	8	1	4	(s)	6	46	861	1,078
2008 Total .....	8	171	28	10	(s)	3	(s)	6	47	849	1,075
2009 Total .....	7	169	29	9	(s)	4	(s)	6	47	784	1,007
2010 Total .....	7	168	29	9	(s)	3	(s)	5	46	804	1,025
2011 Total .....	6	171	29	9	(s)	3	(s)	4	45	768	990
2012 Total .....	4	157	26	9	(s)	3	(s)	2	40	731	932
2013 Total .....	4	179	25	10	(s)	3	(s)	2	40	736	959
2014 Total .....	4	190	26	10	(s)	4	(s)	1	40	736	970
2015 January .....	(s)	29	4	1	(s)	2	(s)	(s)	7	59	95
February .....	(s)	28	3	1	(s)	2	(s)	(s)	6	56	91
March .....	(s)	21	2	1	(s)	2	(s)	(s)	5	52	79
April .....	(s)	13	1	1	(s)	2	(s)	(s)	4	48	65
May .....	(s)	9	1	1	(s)	2	(s)	(s)	4	56	69
June .....	(s)	7	1	1	(s)	2	0	(s)	4	65	76
July .....	(s)	7	1	1	(s)	2	0	(s)	4	71	82
August .....	(s)	7	1	1	(s)	2	(s)	(s)	4	69	81
September .....	(s)	8	1	1	(s)	2	(s)	(s)	4	62	74
October .....	(s)	11	3	1	(s)	2	(s)	(s)	6	55	72
November .....	(s)	16	3	1	(s)	2	(s)	(s)	6	50	72
December .....	(s)	19	4	1	(s)	2	(s)	(s)	7	49	75
Total .....	3	176	26	9	(s)	25	(s)	(s)	61	692	932
2016 January .....	(s)	28	3	1	(s)	2	(s)	(s)	6	55	89
February .....	(s)	23	3	1	(s)	2	(s)	(s)	6	46	75
March .....	(s)	16	2	1	(s)	2	(s)	(s)	5	43	65
April .....	(s)	13	2	1	(s)	2	(s)	(s)	5	43	60
May .....	(s)	9	2	1	(s)	2	0	(s)	5	49	63
June .....	(s)	8	1	1	(s)	2	(s)	(s)	4	63	74
July .....	(s)	7	1	1	(s)	2	(s)	(s)	4	70	82
August .....	(s)	8	1	1	(s)	2	0	(s)	4	71	83
September .....	(s)	8	1	1	(s)	2	0	(s)	4	61	73
October .....	(s)	10	2	1	(s)	2	0	(s)	5	54	70
November .....	(s)	15	2	1	(s)	2	(s)	(s)	5	48	69
December .....	(s)	25	4	1	(s)	2	(s)	(s)	7	56	88
Total .....	2	170	24	9	(s)	25	(s)	(s)	58	662	893
2017 January .....	(s)	26	3	1	(s)	2	(s)	(s)	6	54	<sup>R</sup> 87
February .....	(s)	20	2	1	(s)	2	(s)	(s)	5	44	69
March .....	(s)	20	2	1	(s)	2	(s)	(s)	5	<sup>R</sup> 48	<sup>R</sup> 74
April .....	(s)	12	2	1	(s)	2	(s)	(s)	5	44	61
May .....	(s)	10	1	1	(s)	2	(s)	(s)	4	51	65
June .....	(s)	8	2	1	(s)	2	(s)	(s)	4	58	70
July .....	(s)	7	1	1	(s)	2	(s)	(s)	4	67	<sup>R</sup> 78
August .....	(s)	8	1	1	(s)	2	(s)	(s)	4	65	<sup>R</sup> 76
September .....	(s)	8	1	1	(s)	2	(s)	(s)	4	56	68
October .....	(s)	11	2	1	(s)	2	(s)	(s)	5	52	68
November .....	(s)	18	3	1	(s)	2	(s)	(s)	5	50	73
December .....	(s)	27	4	1	(s)	2	(s)	(s)	7	54	87
Total .....	2	174	24	9	(s)	25	(s)	(s)	58	642	877

<sup>a</sup> Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

<sup>b</sup> Natural gas, excluding supplemental gaseous fuels.

<sup>c</sup> Distillate fuel oil, excluding biodiesel.

<sup>d</sup> Hydrocarbon gas liquids.

<sup>e</sup> Finished motor gasoline, excluding fuel ethanol.

<sup>f</sup> 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.

<sup>g</sup> 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<sup>a</sup>)

	Coal	Coal Coke Net Imports	Natural Gas <sup>b</sup>	Petroleum								Retail Elec- tricity <sup>g</sup>	Total <sup>h</sup>
				Distillate Fuel Oil <sup>c</sup>	HGL <sup>d</sup>	Kero- sene	Lubri- cants	Motor Gasoline <sup>e</sup>	Petroleum Coke	Residual Fuel Oil	Other <sup>f</sup>	Total	
1973 Total .....	371	-1	536	106	28	11	7	18	53	142	97	463	1,884
1975 Total .....	336	2	440	97	27	9	6	16	51	115	93	413	1,680
1980 Total .....	289	-4	430	96	54	13	7	11	49	103	129	461	1,776
1985 Total .....	256	-2	363	81	55	3	6	15	54	57	86	358	1,558
1990 Total .....	258	1	435	84	46	1	7	13	67	32	114	363	1,695
1995 Total .....	233	7	492	82	58	1	7	14	68	25	107	362	1,752
1996 Total .....	227	3	508	86	59	1	6	14	72	25	125	389	1,804
1997 Total .....	224	5	509	88	58	1	7	15	70	22	131	392	1,824
1998 Total .....	219	8	500	88	56	2	7	14	80	16	116	379	1,811
1999 Total .....	208	7	480	86	57	1	7	11	85	14	119	381	1,780
2000 Total .....	211	7	486	87	58	1	7	11	77	17	106	364	1,787
2001 Total .....	204	3	444	94	51	2	6	21	79	14	125	392	1,712
2002 Total .....	188	7	453	88	52	1	6	22	79	13	121	383	1,684
2003 Total .....	190	6	435	85	48	2	6	23	78	15	134	391	1,694
2004 Total .....	190	16	438	88	52	2	6	26	85	17	136	413	1,732
2005 Total .....	183	5	406	92	48	3	6	25	82	20	135	410	1,677
2006 Total .....	179	7	408	91	47	2	6	26	85	16	147	421	1,664
2007 Total .....	175	3	418	91	50	1	6	21	83	13	143	408	1,666
2008 Total .....	168	5	419	98	38	(s)	6	17	78	13	126	375	1,608
2009 Total .....	131	-3	395	78	38	(s)	5	16	73	9	107	327	1,400
2010 Total .....	153	-1	427	84	42	1	6	17	68	8	115	341	1,508
2011 Total .....	146	1	438	90	38	(s)	5	17	65	9	114	339	1,498
2012 Total .....	141	(s)	455	93	48	(s)	5	17	70	5	110	348	1,488
2013 Total .....	145	-2	472	92	50	(s)	5	17	65	3	116	349	1,506
2014 Total .....	143	-2	488	100	45	(s)	5	14	64	3	108	340	1,511
2015 January .....	12	(s)	46	9	6	(s)	1	1	6	(s)	8	32	131
February .....	11	(s)	42	10	5	(s)	(s)	1	2	(s)	9	28	122
March .....	11	(s)	43	9	5	(s)	1	1	6	(s)	9	31	123
April .....	10	(s)	40	8	4	(s)	1	1	6	(s)	9	29	116
May .....	11	(s)	39	6	4	(s)	1	1	6	(s)	11	30	122
June .....	11	(s)	38	7	4	(s)	(s)	1	6	(s)	11	30	125
July .....	11	(s)	39	7	4	(s)	1	2	6	(s)	11	30	129
August .....	11	(s)	39	6	5	(s)	(s)	1	7	(s)	9	29	126
September .....	10	(s)	38	8	4	(s)	(s)	1	4	(s)	9	27	118
October .....	11	(s)	40	6	5	(s)	1	1	5	(s)	7	25	115
November .....	10	(s)	41	4	4	(s)	(s)	1	5	(s)	9	24	113
December .....	10	(s)	43	5	5	(s)	(s)	1	4	(s)	10	27	117
Total .....	129	-2	487	85	53	(s)	6	17	65	2	112	341	1,457
2016 January .....	10	(s)	46	8	6	(s)	(s)	1	6	(s)	10	32	126
February .....	10	(s)	42	8	5	(s)	(s)	1	5	(s)	12	33	119
March .....	10	(s)	43	9	4	(s)	1	1	6	(s)	9	30	115
April .....	9	(s)	40	6	4	(s)	(s)	1	4	(s)	10	27	109
May .....	9	(s)	40	6	3	(s)	(s)	1	4	(s)	9	25	111
June .....	9	(s)	39	6	3	(s)	1	1	3	(s)	10	25	116
July .....	9	(s)	40	4	4	(s)	(s)	2	5	(s)	9	24	121
August .....	9	(s)	41	7	3	(s)	(s)	2	7	(s)	11	31	128
September .....	9	(s)	39	7	4	(s)	(s)	1	4	(s)	10	27	117
October .....	9	(s)	40	7	4	(s)	(s)	1	5	(s)	11	30	118
November .....	9	-1	42	8	4	(s)	(s)	1	8	(s)	9	30	117
December .....	10	(s)	46	7	5	(s)	(s)	1	6	(s)	10	31	127
Total .....	113	-2	498	84	50	(s)	6	17	64	4	120	344	1,426
2017 January .....	9	(s)	46	7	6	(s)	(s)	1	7	(s)	10	32	124
February .....	9	(s)	41	7	4	(s)	(s)	1	4	(s)	9	26	107
March .....	9	(s)	44	10	4	(s)	(s)	1	R 3	(s)	11	30	118
April .....	9	(s)	40	6	4	(s)	(s)	1	5	(s)	11	29	111
May .....	9	(s)	41	8	4	(s)	(s)	2	5	(s)	10	29	116
June .....	9	(s)	40	R 6	3	(s)	(s)	1	4	(s)	10	26	114
July .....	10	(s)	41	5	4	(s)	(s)	2	8	(s)	10	29	123
August .....	10	(s)	41	7	3	(s)	(s)	2	5	(s)	10	28	121
September .....	10	(s)	40	7	4	(s)	(s)	1	6	(s)	R 28	38	115
October .....	11	(s)	42	R 7	4	(s)	(s)	1	3	(s)	10	27	116
November .....	10	(s)	44	9	4	(s)	(s)	1	6	(s)	9	31	121
December .....	11	(s)	48	6	5	(s)	(s)	1	6	(s)	9	28	125
Total .....	116	-3	509	86	50	(s)	5	17	61	4	119	342	1,414

<sup>a</sup> Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.  
<sup>b</sup> Natural gas, excluding supplemental gaseous fuels.  
<sup>c</sup> Distillate fuel oil, excluding biodiesel.  
<sup>d</sup> Hydrocarbon gas liquids.  
<sup>e</sup> Finished motor gasoline, excluding fuel ethanol.  
<sup>f</sup> Aviation gasoline blending components, crude oil, motor gasoline blending components, petrochemical feedstocks, special naphthas, still gas, unfinished oils, waxes, and miscellaneous petroleum products.  
<sup>g</sup> 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.  
<sup>h</sup> 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, plus the relatively small amount of emissions from the non-combustion 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<sup>a</sup>)

		Natural Gas <sup>b</sup>	Petroleum							Retail Elec- tricity <sup>f</sup>	Total <sup>g</sup>	
			Aviation Gasoline	Distillate Fuel Oil <sup>c</sup>	HGL <sup>d</sup>	Jet Fuel	Lubri- cants	Motor Gasoline <sup>e</sup>	Residual Fuel Oil			Total
1973 Total .....	(s)	39	6	163	3	152	6	886	57	1,273	2	1,315
1975 Total .....	(s)	32	5	155	3	145	6	889	56	1,258	2	1,292
1980 Total .....	(h)	34	4	204	1	155	6	881	110	1,363	2	1,400
1985 Total .....	(h)	28	3	232	2	178	6	908	62	1,391	3	1,421
1990 Total .....	(h)	36	3	268	1	223	7	967	80	1,548	3	1,588
1995 Total .....	(h)	38	3	307	1	222	6	1,029	72	1,640	3	1,681
1996 Total .....	(h)	39	3	327	1	232	6	1,047	67	1,683	3	1,725
1997 Total .....	(h)	41	3	341	1	234	6	1,057	56	1,700	3	1,744
1998 Total .....	(h)	35	2	352	1	238	7	1,090	53	1,743	3	1,782
1999 Total .....	(h)	36	3	365	1	245	7	1,115	52	1,789	3	1,828
2000 Total .....	(h)	36	3	377	1	254	7	1,122	70	1,833	4	1,873
2001 Total .....	(h)	35	2	387	1	243	6	1,128	46	1,813	4	1,852
2002 Total .....	(h)	37	2	394	1	237	6	1,158	53	1,852	4	1,892
2003 Total .....	(h)	33	2	408	1	231	6	1,161	45	1,854	5	1,892
2004 Total .....	(h)	32	2	433	1	240	6	1,181	58	1,922	5	1,959
2005 Total .....	(h)	33	2	444	2	246	6	1,182	66	1,948	5	1,986
2006 Total .....	(h)	33	2	467	2	240	5	1,188	71	1,976	5	2,014
2007 Total .....	(h)	35	2	469	1	238	6	1,186	78	1,980	5	2,021
2008 Total .....	(h)	37	2	424	3	226	5	1,124	73	1,856	5	1,898
2009 Total .....	(h)	38	2	405	2	204	5	1,109	62	1,789	5	1,832
2010 Total .....	(h)	38	2	426	2	210	5	1,091	70	1,806	5	1,849
2011 Total .....	(h)	39	2	437	2	209	5	1,058	61	1,774	4	1,818
2012 Total .....	(h)	41	2	416	2	206	5	1,051	53	1,735	4	1,780
2013 Total .....	(h)	47	2	424	3	210	5	1,066	46	1,756	4	1,807
2014 Total .....	(h)	40	2	443	3	216	5	1,077	35	1,781	4	1,825
2015 January .....	(h)	5	(s)	35	(s)	17	1	87	3	143	(s)	148
February .....	(h)	4	(s)	34	(s)	16	(s)	80	(s)	131	(s)	136
March .....	(h)	4	(s)	37	(s)	19	1	91	3	152	(s)	156
April .....	(h)	3	(s)	38	(s)	18	(s)	89	2	149	(s)	152
May .....	(h)	3	(s)	38	(s)	19	1	93	3	154	(s)	157
June .....	(h)	3	(s)	39	(s)	20	(s)	91	2	154	(s)	157
July .....	(h)	3	(s)	41	(s)	21	1	95	4	161	(s)	165
August .....	(h)	3	(s)	41	(s)	20	(s)	95	4	160	(s)	163
September .....	(h)	3	(s)	39	(s)	18	(s)	90	3	151	(s)	155
October .....	(h)	3	(s)	38	(s)	20	(s)	93	3	155	(s)	158
November .....	(h)	3	(s)	34	(s)	18	(s)	88	4	145	(s)	149
December .....	(h)	4	(s)	35	(s)	20	(s)	92	4	151	(s)	156
Total .....	(h)	40	1	449	3	227	5	1,084	37	1,806	4	1,850
2016 January .....	(h)	5	(s)	34	(s)	18	(s)	87	4	143	(s)	148
February .....	(h)	4	(s)	33	(s)	18	(s)	86	2	140	(s)	144
March .....	(h)	3	(s)	37	(s)	19	(s)	94	5	156	(s)	160
April .....	(h)	3	(s)	36	(s)	19	(s)	89	6	151	(s)	154
May .....	(h)	3	(s)	38	(s)	20	(s)	94	4	157	(s)	160
June .....	(h)	3	(s)	39	(s)	21	(s)	93	4	157	(s)	161
July .....	(h)	3	(s)	39	(s)	21	(s)	96	5	162	(s)	166
August .....	(h)	3	(s)	41	(s)	21	(s)	97	4	164	(s)	167
September .....	(h)	3	(s)	38	(s)	20	(s)	92	3	153	(s)	157
October .....	(h)	3	(s)	39	(s)	20	(s)	91	4	155	(s)	158
November .....	(h)	3	(s)	36	(s)	20	(s)	89	4	150	(s)	153
December .....	(h)	4	(s)	36	(s)	21	(s)	93	4	154	(s)	159
Total .....	(h)	41	1	445	3	237	5	1,103	49	1,843	4	1,888
2017 January .....	(h)	4	(s)	33	(s)	20	(s)	85	6	145	(s)	150
February .....	(h)	3	(s)	32	(s)	17	(s)	81	3	134	(s)	138
March .....	(h)	4	(s)	38	(s)	21	(s)	94	5	158	(s)	162
April .....	(h)	3	(s)	37	(s)	19	(s)	90	4	150	(s)	154
May .....	(h)	3	(s)	40	(s)	21	(s)	96	5	162	(s)	165
June .....	(h)	3	(s)	39	(s)	21	(s)	95	5	161	(s)	164
July .....	(h)	3	(s)	40	(s)	22	(s)	96	3	162	(s)	165
August .....	(h)	3	(s)	41	(s)	22	(s)	98	4	166	(s)	170
September .....	(h)	3	(s)	38	(s)	20	(s)	90	4	153	(s)	156
October .....	(h)	3	(s)	39	(s)	21	(s)	93	5	160	(s)	163
November .....	(h)	3	(s)	37	(s)	21	(s)	88	6	153	(s)	156
December .....	(h)	4	(s)	36	(s)	22	(s)	92	5	155	(s)	160
Total .....	(h)	40	1	451	3	247	4	1,099	55	1,860	4	1,904

<sup>a</sup> Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

<sup>b</sup> Natural gas, excluding supplemental gaseous fuels.

<sup>c</sup> Distillate fuel oil, excluding biodiesel.

<sup>d</sup> Hydrocarbon gas liquids.

<sup>e</sup> Finished motor gasoline, excluding fuel ethanol.

<sup>f</sup> 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.

<sup>g</sup> Excludes emissions from biomass energy consumption. See Table 12.7.

<sup>h</sup> Beginning in 1978, the small amounts of coal consumed for transportation are reported as industrial sector consumption.

R=Revised. (s)=Less than 0.5 million metric tons.

Notes: • Data are estimates for carbon dioxide emissions from energy consumption, plus the relatively small amount of emissions from the non-combustion 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<sup>a</sup>)

	Coal	Natural Gas <sup>b</sup>	Petroleum				Geo-thermal	Non-Biomass Waste <sup>d</sup>	Total <sup>e</sup>
			Distillate Fuel Oil <sup>c</sup>	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	1	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 .....	72	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	62	(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	547	4	12	6	22	(s)	11	1,821
2017 January .....	116	35	(s)	1	(s)	2	(s)	1	155
February .....	88	<sup>R</sup> 31	(s)	1	(s)	1	(s)	1	121
March .....	89	<sup>R</sup> 37	(s)	1	(s)	1	(s)	1	<sup>R</sup> 129
April .....	81	34	(s)	(s)	(s)	1	(s)	1	117
May .....	93	39	(s)	1	(s)	2	(s)	1	134
June .....	108	47	(s)	1	(s)	2	(s)	1	157
July .....	128	59	(s)	1	(s)	2	(s)	1	<sup>R</sup> 189
August .....	121	<sup>R</sup> 57	(s)	1	(s)	2	(s)	1	<sup>R</sup> 180
September .....	100	<sup>R</sup> 47	(s)	1	(s)	1	(s)	1	150
October .....	92	43	(s)	1	(s)	1	(s)	1	137
November .....	93	<sup>R</sup> 36	(s)	1	(s)	1	(s)	1	132
December .....	107	42	1	1	1	2	(s)	1	152
Total .....	1,216	506	4	10	5	19	(s)	11	1,753

<sup>a</sup> Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

<sup>b</sup> Natural gas, excluding supplemental gaseous fuels.

<sup>c</sup> Distillate fuel oil, excluding biodiesel.

<sup>d</sup> 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.

<sup>e</sup> Excludes emissions from biomass energy consumption. See Table 12.7.

<sup>R</sup>=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 12.7 Carbon Dioxide Emissions From Biomass Energy Consumption**  
(Million Metric Tons of Carbon Dioxide<sup>a</sup>)

	By Source					By Sector					
	Wood <sup>b</sup>	Biomass Waste <sup>c</sup>	Fuel Ethanol <sup>d</sup>	Bio-diesel	Total	Residential	Commercial <sup>e</sup>	Industrial <sup>f</sup>	Transportation	Electric Power <sup>g</sup>	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	199	42	73	2	316	41	10	149	74	42	316
2011 Total	201	42	73	8	324	42	11	151	80	40	324
2012 Total	200	42	73	8	324	39	10	153	80	42	324
2013 Total	220	45	75	13	353	54	11	156	87	43	353
2014 Total	226	47	76	13	362	55	12	158	88	49	362
2015 January	18	4	6	(s)	29	R 3	1	14	6	4	29
February	17	3	6	1	27	3	1	12	7	4	27
March	R 17	4	7	1	29	R 3	1	13	7	4	29
April	17	4	6	1	28	3	1	13	7	4	28
May	18	4	7	1	30	R 3	1	13	8	4	30
June	17	4	7	2	29	3	1	13	8	4	29
July	18	4	7	1	R 30	R 3	1	13	8	4	R 30
August	18	4	7	1	31	R 3	1	13	8	4	31
September	17	4	7	1	29	3	1	13	8	4	29
October	17	4	7	1	29	R 3	1	13	8	4	29
November	17	4	7	1	29	3	1	13	7	4	29
December	18	4	7	1	30	R 3	1	13	8	4	30
Total	210	47	79	14	350	41	R 13	157	90	48	350
2016 January	17	4	6	1	28	3	1	13	7	4	28
February	16	4	6	1	R 27	3	1	13	7	4	R 27
March	17	4	7	1	29	3	1	13	8	4	29
April	16	4	6	1	27	3	1	12	7	4	27
May	16	4	7	2	29	3	1	13	8	4	29
June	R 16	4	7	2	29	3	1	13	8	4	29
July	17	4	7	2	30	3	1	13	9	4	30
August	17	4	7	2	30	3	1	13	9	4	30
September	16	4	7	2	28	3	1	12	8	4	28
October	16	4	7	2	R 28	3	1	13	8	3	R 28
November	R 16	4	7	2	29	3	1	13	8	4	29
December	19	4	7	2	32	3	1	15	9	4	32
Total	R 200	46	81	20	R 346	R 33	14	155	98	47	R 346
2017 January	R 17	4	6	1	29	3	1	13	7	4	29
February	16	4	6	1	R 26	R 2	1	12	7	4	R 26
March	17	4	7	1	29	3	1	13	8	4	29
April	16	4	7	2	28	3	1	13	8	4	28
May	R 16	4	7	2	29	3	1	13	9	4	29
June	17	3	7	2	29	3	1	13	9	4	29
July	R 17	4	7	2	30	3	1	13	9	4	30
August	18	4	7	2	R 30	3	1	13	9	4	R 30
September	16	3	7	2	28	3	1	12	8	4	28
October	17	4	7	2	29	3	1	13	8	4	29
November	17	4	7	2	29	3	1	13	8	4	29
December	18	4	7	1	30	3	1	14	8	4	30
Total	201	44	82	18	345	31	14	155	97	48	345

<sup>a</sup> Metric tons of carbon dioxide can be converted to metric tons of carbon equivalent by multiplying by 12/44.

<sup>b</sup> Wood and wood-derived fuels.

<sup>c</sup> Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass.

<sup>d</sup> Fuel ethanol minus denaturant.

<sup>e</sup> Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

<sup>f</sup> Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

<sup>g</sup> 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.

R=Revised. 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 (CO<sub>2</sub>), 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. CO<sub>2</sub> emissions. The vast majority of CO<sub>2</sub> emissions come from fossil fuel combustion, with smaller amounts from the non-combustion use of fossil fuels, as well as from electricity generation using geothermal energy and non-biomass waste. Other sources of CO<sub>2</sub> 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. CO<sub>2</sub> emissions from energy consumption, plus the non-combustion use of fossil fuels (excluded are estimates for CO<sub>2</sub> emissions from biomass energy consumption, which appear in MER Table 12.7).

For annual U.S. estimates for emissions of CO<sub>2</sub> 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/](http://www.eia.gov/environment/emissions/ghg_report/).

**Note 2. Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion.** Carbon dioxide (CO<sub>2</sub>) emissions from the combustion of biomass to produce energy are excluded from the energy-related CO<sub>2</sub> 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 CO<sub>2</sub> emissions from biomass can potentially lead to confusion in accounting for and understanding the flow of CO<sub>2</sub> emissions within energy and non-energy systems. In recognition of this issue, reporting of CO<sub>2</sub> emissions from biomass combustion alongside other energy-related CO<sub>2</sub> 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 CO<sub>2</sub> emissions from biomass and energy-related CO<sub>2</sub> 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, hydrocarbon gas liquids (HGL), jet fuel, kerosene, 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 HGL (ethane/ethylene, propane/propylene, normal butane/butylene, isobutane/isobutylene, and natural gasoline) and "other petroleum" (aviation gasoline blending components, crude oil, motor gasoline blending components, naphthas for petrochemical feedstock use, other oils for petrochemical feedstock use, 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., natural gasoline—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 Non-Combustion Use**

The following fuels have industrial non-combustion uses as chemical feedstocks and other products: coal, natural gas, asphalt and road oil, distillate fuel oil, hydrocarbon gas liquids (ethane/ethylene, propane/propylene, normal butane/butylene, isobutane/isobutylene, and natural gasoline), lubricants (which have industrial and transportation non-combustion uses), naphthas for petrochemical feedstock use, other oils for petrochemical feedstock use, petroleum coke, residual fuel oil, special naphthas, still gas, waxes, and miscellaneous petroleum products. In the non-combustion 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 non-combustion 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/ggprt/documentation/pdf/0638\(2008\).pdf](http://www.eia.gov/environment/archive/1605/ggprt/documentation/pdf/0638(2008).pdf).

To obtain monthly estimates of non-combustion use and associated carbon sequestration, monthly patterns for industrial consumption and product supplied data series are used. For coal non-combustion 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. See Tables 1.11a and 1.11b for estimates of fossil fuel non-combustion uses.

## **Step 4. Determine Carbon Dioxide Emissions From Energy Consumption**

Carbon dioxide (CO<sub>2</sub>) 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 non-combustion use in Step 3) by the CO<sub>2</sub> emissions factors at [http://www.eia.gov/environment/archive/1605/ggprt/excel/CO2\\_coeffis\\_09\\_v2.xls](http://www.eia.gov/environment/archive/1605/ggprt/excel/CO2_coeffis_09_v2.xls).

Coal—CO<sub>2</sub> 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—CO<sub>2</sub> emissions for coal coke net imports are calculated.

Natural Gas—CO<sub>2</sub> 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—CO<sub>2</sub> emissions are calculated for each petroleum product. Total petroleum emissions are the sum of the product emissions. Total HGL emissions are the sum of the emissions for the component products (ethane/ethylene, propane/propylene, normal butane/butylene, isobutane/isobutylene, and natural gasoline); residential, commercial, and transportation sector HGL 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 HGL emissions are estimated as total HGL emissions minus emissions by the other sectors.

Geothermal and Non-Biomass Waste—Annual CO<sub>2</sub> 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—CO<sub>2</sub> 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 CO<sub>2</sub> 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	<sup>a</sup> 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	<sup>b</sup> 5.359; <sup>b</sup> 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	<sup>c</sup> 6.287; <sup>c</sup> 6.000
Hydrogen	<sup>a</sup> 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			

<sup>a</sup> Per residual fuel oil equivalent barrel (6.287 million Btu per barrel).

<sup>b</sup> 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.”

<sup>c</sup> 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 <sup>a</sup>	Petroleum Products		Total	Crude Oil <sup>a</sup>	Petroleum Products		Total
	Crude Oil <sup>a</sup>	Natural Gas Plant Liquids		Motor Gasoline <sup>b</sup>	Total Products			Motor Gasoline <sup>c</sup>	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 .....	5.722	3.714	6.053	5.222	5.491	5.929	5.724	5.218	5.184	5.245
2017 .....	P 5.722	RP 3.700	RP 6.061	P 5.222	RP 5.492	RP 5.939	RP 5.736	RP 5.221	RP 5.154	RP 5.257
2018 .....	E 5.722	E 3.700	E 6.061	E 5.222	E 5.492	E 5.939	E 5.736	E 5.221	E 5.154	E 5.257

<sup>a</sup> Includes lease condensate.

<sup>b</sup> Excludes fuel ethanol, methyl tertiary butyl ether (MTBE), and other oxygenates blended into motor gasoline.

<sup>c</sup> 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.

R=Revised. 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 <sup>a</sup> Consumption by Sector						Distillate Fuel Oil Consumption <sup>f</sup>	Hydrocarbon Gas Liquids Consumption <sup>g</sup>	Motor Gasoline (Finished) Consumption <sup>h</sup>	Petroleum Coke Consumption <sup>i</sup>	Fuel Ethanol <sup>j</sup>	Fuel Ethanol Feedstock Factor <sup>k</sup>
	Residential	Commercial <sup>b</sup>	Industrial <sup>b</sup>	Transportation <sup>b,c</sup>	Electric Power <sup>d,e</sup>	Total <sup>b,c</sup>						
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	<sup>g</sup> 3.779	5.253	6.024	NA	NA
1975 .....	5.253	5.649	5.513	5.392	6.250	5.494	5.825	3.739	5.253	6.024	NA	NA
1980 .....	5.321	5.751	5.366	5.441	6.254	5.479	5.825	3.746	5.253	6.024	3.563	6.586
1981 .....	5.283	5.693	5.299	5.433	6.258	5.448	5.825	3.715	5.253	6.024	3.563	6.562
1982 .....	5.266	5.698	5.247	5.423	6.258	5.415	5.825	3.678	5.253	6.024	3.563	6.539
1983 .....	5.140	5.591	5.254	5.416	6.255	5.406	5.825	3.633	5.253	6.024	3.563	6.515
1984 .....	5.307	5.657	5.207	5.418	6.251	5.395	5.825	3.677	5.253	6.024	3.563	6.492
1985 .....	5.263	5.598	5.199	5.423	6.247	5.387	5.825	3.676	5.253	6.024	3.563	6.469
1986 .....	5.268	5.632	5.269	5.426	6.257	5.418	5.825	3.710	5.253	6.024	3.563	6.446
1987 .....	5.239	5.594	5.233	5.429	6.249	5.403	5.825	3.734	5.253	6.024	3.563	6.423
1988 .....	5.257	5.597	5.228	5.433	6.250	5.410	5.825	3.719	5.253	6.024	3.563	6.400
1989 .....	5.194	5.549	5.219	5.438	<sup>d</sup> 6.240	5.410	5.825	3.747	5.253	6.024	3.563	6.377
1990 .....	5.145	5.553	5.253	5.442	6.244	5.411	5.825	3.712	5.253	6.024	3.563	6.355
1991 .....	5.094	5.528	5.167	5.441	6.246	5.384	5.825	3.708	5.253	6.024	3.563	6.332
1992 .....	5.124	5.513	5.168	5.443	6.238	5.378	5.825	3.722	5.253	6.024	3.563	6.309
1993 .....	5.102	<sup>b</sup> 5.504	<sup>b</sup> 5.177	<sup>b</sup> 5.422	6.230	<sup>b</sup> 5.370	5.825	3.709	<sup>h</sup> 5.232	6.024	3.563	6.287
1994 .....	5.095	5.512	5.149	5.424	6.213	5.360	<sup>i</sup> 5.820	3.730	5.231	6.024	3.563	6.264
1995 .....	5.060	5.475	5.121	5.418	6.187	5.342	5.820	3.718	5.218	6.024	3.563	6.242
1996 .....	4.995	5.430	5.114	5.420	6.194	5.336	5.820	3.708	5.218	6.024	3.563	6.220
1997 .....	4.986	5.388	5.119	5.416	6.198	5.336	5.820	3.704	5.215	6.024	3.563	6.198
1998 .....	4.972	5.362	5.136	5.414	6.210	5.349	5.819	3.697	5.215	6.024	3.563	6.176
1999 .....	4.899	5.288	5.091	5.413	6.204	5.328	5.819	3.706	5.213	6.024	3.563	6.167
2000 .....	4.905	5.313	5.056	5.423	6.188	5.326	5.819	3.692	5.214	6.024	3.563	6.159
2001 .....	4.934	5.322	5.141	5.413	6.199	5.346	5.819	3.685	5.214	6.024	3.563	6.151
2002 .....	4.883	5.290	5.092	5.411	6.172	5.324	5.819	3.671	5.211	6.024	3.563	6.143
2003 .....	4.918	5.312	5.143	5.404	6.182	5.338	5.819	3.688	5.203	6.024	3.563	6.106
2004 .....	4.949	5.323	5.144	5.410	6.134	5.341	5.818	3.677	5.201	<sup>i</sup> 5.982	3.563	6.069
2005 .....	4.913	5.359	5.179	5.412	6.126	5.353	5.818	3.674	5.198	5.982	3.563	6.032
2006 .....	4.883	5.296	5.159	5.409	6.038	5.336	5.803	3.644	5.191	5.987	3.563	5.995
2007 .....	4.830	5.270	5.122	5.384	6.064	5.309	5.784	3.641	5.155	5.996	3.563	5.959
2008 .....	4.769	5.156	5.147	5.355	6.013	5.287	5.780	3.645	5.126	5.992	3.563	5.922
2009 .....	4.661	5.216	5.014	<sup>c</sup> 5.328	5.987	<sup>c</sup> 5.236	5.781	3.595	5.101	6.017	3.563	5.901
2010 .....	4.660	5.193	4.982	5.321	5.956	5.222	5.778	3.599	5.078	6.059	3.561	5.880
2011 .....	4.659	5.179	4.955	5.317	5.900	5.211	5.776	3.543	5.068	6.077	3.560	5.859
2012 .....	4.704	5.118	4.910	5.305	5.925	5.191	5.774	3.558	5.063	6.084	3.560	5.838
2013 .....	4.636	5.044	4.869	5.301	5.892	5.174	5.774	3.579	5.062	6.089	3.559	5.817
2014 .....	4.689	5.039	4.870	5.299	5.906	5.177	5.773	3.558	5.060	6.100	3.558	5.797
2015 .....	4.745	5.064	4.831	5.303	5.915	5.172	5.773	3.576	5.060	6.085	3.558	5.776
2016 .....	<sup>E</sup> 4.633	<sup>E</sup> 5.038	<sup>E</sup> 4.869	<sup>E</sup> 5.305	5.885	5.181	5.773	3.543	5.059	6.104	3.558	5.755
2017 .....	<sup>RE</sup> 4.629	<sup>RE</sup> 5.039	<sup>RE</sup> 4.842	<sup>RE</sup> 5.310	<sup>RP</sup> 5.896	<sup>RP</sup> 5.177	<sup>P</sup> 5.773	<sup>RP</sup> 3.527	<sup>RP</sup> 5.058	<sup>RP</sup> 6.126	<sup>RP</sup> 3.556	5.735
2018 .....	<sup>E</sup> 4.629	<sup>E</sup> 5.039	<sup>E</sup> 4.842	<sup>E</sup> 5.310	<sup>E</sup> 5.896	<sup>E</sup> 5.177	<sup>E</sup> 5.773	<sup>E</sup> 3.527	<sup>E</sup> 5.058	<sup>E</sup> 6.126	<sup>E</sup> 3.556	5.715

<sup>a</sup> 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.

<sup>b</sup> Beginning in 1993, includes fuel ethanol blended into motor gasoline.

<sup>c</sup> Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

<sup>d</sup> 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.

<sup>e</sup> Electric power sector factors are weighted average heat contents for distillate fuel oil, petroleum coke, and residual fuel oil; they exclude other liquids.

<sup>f</sup> 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.

<sup>g</sup> 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 hydrocarbon gas liquids are calculated by using heat content values shown in Table A1.

<sup>h</sup> 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.

<sup>i</sup> 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.

<sup>j</sup> 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 (natural gasoline, 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.

<sup>k</sup> 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.

R=Revised. 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 <sup>a</sup>			Imports	Exports
	Marketed	Dry	End-Use Sectors <sup>b</sup>	Electric Power Sector <sup>c</sup>	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	<sup>c</sup> 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	1,038	1,035	1,037	1,025	1,009
2016 .....	1,127	1,037	1,037	1,034	1,037	1,025	1,009
2017 .....	E 1,127	E 1,037	E 1,037	E 1,034	E 1,037	E 1,025	E 1,009
2018 .....	E 1,127	E 1,037	E 1,037	E 1,034	E 1,037	E 1,025	E 1,009

<sup>a</sup> Consumption factors are for natural gas, plus a small amount of supplemental gaseous fuels.

<sup>b</sup> Residential, commercial, industrial, and transportation sectors.

<sup>c</sup> 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=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 <sup>a</sup>	Waste Coal Supplied <sup>b</sup>	Consumption					Imports	Exports		Imports and Exports
			Residential and Commercial Sectors <sup>c</sup>	Industrial Sector		Electric Power Sector <sup>e,f</sup>	Total				
				Coke Plants	Other <sup>d</sup>						
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	<sup>b</sup> 10.391	23.650	26.800	22.347	<sup>e</sup> 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 .....	<sup>a</sup> 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	26.329	22.371	19.909	20.168	25.000	25.466	24.800	
2008 .....	20.208	12.121	<sup>c</sup> 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 .....	19.977	11.496	20.078	28.608	21.055	19.153	19.459	22.327	25.655	24.800	
2017 .....	<sup>E</sup> 19.977	<sup>E</sup> 11.496	<sup>E</sup> 20.078	<sup>E</sup> 28.608	<sup>E</sup> 21.055	<sup>E</sup> 19.153	<sup>E</sup> 19.459	<sup>E</sup> 22.327	<sup>E</sup> 25.655	<sup>E</sup> 24.800	
2018 .....	<sup>E</sup> 19.977	<sup>E</sup> 11.496	<sup>E</sup> 20.078	<sup>E</sup> 28.608	<sup>E</sup> 21.055	<sup>E</sup> 19.153	<sup>E</sup> 19.459	<sup>E</sup> 22.327	<sup>E</sup> 25.655	<sup>E</sup> 24.800	

<sup>a</sup> 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).

<sup>b</sup> 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."

<sup>c</sup> 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.

<sup>d</sup> Includes transportation. Excludes coal synfuel plants.

<sup>e</sup> 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.

<sup>f</sup> Electric power sector factors are for anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and, beginning in 1998, coal synfuel.

<sup>E</sup>=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 <sup>a</sup> for Electricity Net Generation						Heat Content <sup>j</sup> of Electricity <sup>k</sup>
	Fossil Fuels <sup>b</sup>				Nuclear <sup>h</sup>	Noncombustible Renewable Energy <sup>g,i</sup>	
	Coal <sup>c</sup>	Petroleum <sup>d</sup>	Natural Gas <sup>e</sup>	Total Fossil Fuels <sup>f,g</sup>			
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	<sup>b</sup> 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 .....	10,493	10,811	7,870	9,232	10,459	9,232	3,412
2017 .....	<sup>E</sup> 10,493	<sup>E</sup> 10,811	<sup>E</sup> 7,870	<sup>E</sup> 9,232	<sup>E</sup> 10,459	<sup>E</sup> 9,232	3,412
2018 .....	<sup>E</sup> 10,493	<sup>E</sup> 10,811	<sup>E</sup> 7,870	<sup>E</sup> 9,232	<sup>E</sup> 10,459	<sup>E</sup> 9,232	3,412

<sup>a</sup> The values in columns 1–6 of this table are for net heat rates. See "Heat Rate" in Glossary.

<sup>b</sup> 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.

<sup>c</sup> Includes anthracite, bituminous coal, subbituminous coal, lignite, and, beginning in 2002, waste coal and coal synfuel.

<sup>d</sup> Includes distillate fuel oil, residual fuel oil, jet fuel, kerosene, petroleum coke, and waste oil.

<sup>e</sup> Includes natural gas and supplemental gaseous fuels.

<sup>f</sup> 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).

<sup>g</sup> 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.

<sup>h</sup> Used as the thermal conversion factor for nuclear electricity net generation.

<sup>i</sup> 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.

<sup>j</sup> See "Heat Content" in Glossary.

<sup>k</sup> 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.

<sup>E</sup>=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 Petroleum and Natural Gas 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**.

**Hydrocarbon Gas Liquids.** • 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 hydrocarbon gas liquids consumed (see Table A1) weighted by the quantities consumed. The component products of

hydrocarbon gas liquids are ethane (including ethylene), propane (including propylene), normal butane (including butylene), isobutane (including isobutylene), butane-propane mixtures, ethane-propane mixtures, and natural gasoline (pentanes plus). 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.

**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.”

**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 State-ment, 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 Petro-leum 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.

**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](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](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](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](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), natural gasoline 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 natural gasoline used as denaturant is from PSA/PSM, Table 1, data for renewable fuels and oxygenate plant net production of natural gasoline, 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 liquids produced (see **Natural Gas 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 Industrial, Commercial, and Institutional Coal Users” (formerly called “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 Industrial, Commercial, and Institutional Coal Users” (formerly called “Quarterly Survey of Non-Electric Sector Coal Data”).

#### **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 Industrial, Commercial, and Institutional Coal Users” (formerly called “Quarterly Survey of Non-Electric Sector Coal Data”).

**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 of Industrial, Commercial, and Institutional Coal Users” (formerly called “Quarterly Survey of Non-Electric Sector Coal Data”), 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 Industrial, Commercial, and Institutional Coal Users” (formerly

called “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 Industrial, Commercial, and Institutional Coal Users” (formerly called “Quarterly Survey of Non-Electric Sector Coal Data”); 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 Industrial, Commercial, and Institutional Coal Users” (formerly called “Quarterly Survey of Non-Electric Sector Coal Data”); 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 Industrial, Commercial, and Institutional Coal Users” (formerly called “Quarterly Survey of Non-Electric Sector Coal Data”), and predecessor forms. 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
<b>Mass</b>	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 <sup>a</sup>	kilograms (kg)
	1 pound uranium oxide (lb U <sub>3</sub> O <sub>8</sub> )	=	0.384 647 <sup>b</sup>	kilograms uranium (kgU)
	1 ounce, avoirdupois (avdp oz)	=	28.349 52	grams (g)
<b>Volume</b>	1 barrel of oil (bbl)	=	0.158 987 3	cubic meters (m <sup>3</sup> )
	1 cubic yard (yd <sup>3</sup> )	=	0.764 555	cubic meters (m <sup>3</sup> )
	1 cubic foot (ft <sup>3</sup> )	=	0.028 316 85	cubic meters (m <sup>3</sup> )
	1 U.S. gallon (gal)	=	3.785 412	liters (L)
	1 ounce, fluid (fl oz)	=	29.573 53	milliliters (mL)
	1 cubic inch (in <sup>3</sup> )	=	16.387 06	milliliters (mL)
<b>Length</b>	1 mile (mi)	=	1.609 344 <sup>a</sup>	kilometers (km)
	1 yard (yd)	=	0.914 4 <sup>a</sup>	meters (m)
	1 foot (ft)	=	0.304 8 <sup>a</sup>	meters (m)
	1 inch (in)	=	2.54 <sup>a</sup>	centimeters (cm)
<b>Area</b>	1 acre	=	0.404 69	hectares (ha)
	1 square mile (mi <sup>2</sup> )	=	2.589 988	square kilometers (km <sup>2</sup> )
	1 square yard (yd <sup>2</sup> )	=	0.836 127 4	square meters (m <sup>2</sup> )
	1 square foot (ft <sup>2</sup> )	=	0.092 903 04 <sup>a</sup>	square meters (m <sup>2</sup> )
	1 square inch (in <sup>2</sup> )	=	6.451 6 <sup>a</sup>	square centimeters (cm <sup>2</sup> )
<b>Energy</b>	1 British thermal unit (Btu) <sup>c</sup>	=	1,055.055 852 62 <sup>a</sup>	joules (J)
	1 calorie (cal)	=	4.186 8 <sup>a</sup>	joules (J)
	1 kilowatthour (kWh)	=	3.6 <sup>a</sup>	megajoules (MJ)
<b>Temperature<sup>d</sup></b>	32 degrees Fahrenheit (°F)	=	0 <sup>a</sup>	degrees Celsius (°C)
	212 degrees Fahrenheit (°F)	=	100 <sup>a</sup>	degrees Celsius (°C)

<sup>a</sup>Exact conversion.

<sup>b</sup>Calculated by the U.S. Energy Information Administration.

<sup>c</sup>The Btu used in this table is the International Table Btu adopted by the Fifth International Conference on Properties of Steam, London, 1956.

<sup>d</sup>To 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 <sup>1</sup>	deka	da	10 <sup>-1</sup>	deci	d
10 <sup>2</sup>	hecto	h	10 <sup>-2</sup>	centi	c
10 <sup>3</sup>	kilo	k	10 <sup>-3</sup>	milli	m
10 <sup>6</sup>	mega	M	10 <sup>-6</sup>	micro	μ
10 <sup>9</sup>	giga	G	10 <sup>-9</sup>	nano	n
10 <sup>12</sup>	tera	T	10 <sup>-12</sup>	pico	p
10 <sup>15</sup>	peta	P	10 <sup>-15</sup>	femto	f
10 <sup>18</sup>	exa	E	10 <sup>-18</sup>	atto	a
10 <sup>21</sup>	zetta	Z	10 <sup>-21</sup>	zepto	z
10 <sup>24</sup>	yotta	Y	10 <sup>-24</sup>	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
<b>Petroleum</b>	1 barrel (bbl)	=	42 <sup>a</sup> U.S. gallons (gal)
<b>Coal</b>	1 short ton	=	2,000 <sup>a</sup> pounds (lb)
	1 long ton	=	2,240 <sup>a</sup> pounds (lb)
	1 metric ton (t)	=	1,000 <sup>a</sup> kilograms (kg)
<b>Wood</b>	1 cord (cd)	=	1.25 <sup>b</sup> shorts tons
	1 cord (cd)	=	128 <sup>a</sup> cubic feet (ft <sup>3</sup> )

<sup>a</sup>Exact conversion.

<sup>b</sup>Calculated 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 <sup>a</sup>
	United States <sup>b</sup>	World	United States as Share of World	Billion Nominal Dollars <sup>d</sup>	Billion Chained (2009) Dollars <sup>e</sup>	Implicit Price Deflator <sup>c</sup> (2009 = 1.00000)	Billion Nominal Dollars <sup>d</sup>
	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	3,350.7	5.8	743.7	3,976.7	.18702	NA
1970 .....	205.1	3,713.3	5.5	1,075.9	4,722.0	.22784	NA
1975 .....	216.0	4,088.8	5.3	1,688.9	5,385.4	.31361	NA
1980 .....	227.2	4,445.4	5.1	2,862.5	6,450.4	.44377	NA
1981 .....	229.5	4,526.8	5.1	3,211.0	6,617.7	.48520	NA
1982 .....	231.7	4,607.2	5.0	3,345.0	6,491.3	.51530	NA
1983 .....	233.8	4,688.6	5.0	3,638.1	6,792.0	.53565	NA
1984 .....	235.8	4,767.7	4.9	4,040.7	7,285.0	.55466	NA
1985 .....	237.9	4,849.9	4.9	4,346.7	7,593.8	.57240	NA
1986 .....	240.1	4,934.2	4.9	4,590.2	7,860.5	.58395	NA
1987 .....	242.3	5,021.1	4.8	4,870.2	8,132.6	.59885	8,639.9
1988 .....	244.5	5,108.7	4.8	5,252.6	8,474.5	.61982	9,359.5
1989 .....	246.8	5,196.0	4.8	5,657.7	8,786.4	.64392	9,969.6
1990 .....	249.6	5,284.3	4.7	5,979.6	8,955.0	.66773	10,511.1
1991 .....	253.0	5,367.5	4.7	6,174.0	8,948.4	.68996	10,676.5
1992 .....	256.5	5,452.2	4.7	6,539.3	9,266.6	.70569	11,242.4
1993 .....	259.9	5,534.4	4.7	6,878.7	9,521.0	.72248	11,857.6
1994 .....	263.1	5,614.5	4.7	7,308.8	9,905.4	.73785	12,647.2
1995 .....	266.3	5,695.8	4.7	7,664.1	10,174.8	.75324	13,451.6
1996 .....	269.4	5,776.3	4.7	8,100.2	10,561.0	.76699	14,259.9
1997 .....	272.6	5,854.8	4.7	8,608.5	11,034.9	.78012	15,355.4
1998 .....	275.9	5,932.0	4.7	9,089.2	11,525.9	.78859	16,171.3
1999 .....	279.0	6,008.6	4.6	9,660.6	12,065.9	.80065	17,244.8
2000 .....	282.2	6,084.7	4.6	10,284.8	12,559.7	.81887	18,564.6
2001 .....	285.0	6,160.9	4.6	10,621.8	12,682.2	.83754	18,863.1
2002 .....	287.6	6,237.2	4.6	10,977.5	12,908.8	.85039	19,175.0
2003 .....	290.1	6,313.9	4.6	11,510.7	13,271.1	.86735	20,135.1
2004 .....	292.8	6,390.6	4.6	12,274.9	13,773.5	.89120	21,697.3
2005 .....	295.5	6,467.4	4.6	13,093.7	14,234.2	.91988	23,514.9
2006 .....	298.4	6,545.2	4.6	13,855.9	14,613.8	.94814	24,888.0
2007 .....	301.2	6,623.5	4.5	14,477.6	14,873.7	.97337	26,151.3
2008 .....	304.1	6,702.2	4.5	14,718.6	14,830.4	.99246	26,825.7
2009 .....	306.8	6,780.8	4.5	14,418.7	14,418.7	1.00000	24,657.2
2010 .....	309.3	6,858.6	4.5	14,964.4	14,783.8	1.01221	26,093.5
2011 .....	311.6	6,936.0	4.5	15,517.9	15,020.6	1.03311	27,536.0
2012 .....	314.0	7,013.9	4.5	16,155.3	15,354.6	1.05214	28,663.2
2013 .....	316.2	7,092.1	4.5	16,691.5	15,612.2	1.06913	29,601.2
2014 .....	318.6	7,170.0	4.4	17,427.6	16,013.3	1.08832	31,034.0
2015 .....	321.0	7,247.9	4.4	18,120.7	16,471.5	1.10012	31,431.4
2016 .....	323.4	7,326.0	4.4	18,624.5	16,716.2	1.11416	32,084.9
2017 .....	325.7	7,405.1	4.4	19,386.8	17,092.7	1.13422	NA

<sup>a</sup> Gross output is the value of gross domestic product (GDP) plus the value of intermediate inputs used to produce GDP.

<sup>b</sup> Resident population of the 50 states and the District of Columbia estimated for July 1 of each year.

<sup>c</sup> The gross domestic product implicit price deflator is used to convert nominal dollars to chained (2009) dollars.

<sup>d</sup> See "Nominal Dollars" in Glossary.

<sup>e</sup> See "Chained Dollars" in Glossary.

R=Revised. 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 2017). • **World Population: 1950 forward**—DOC, U.S. Census Bureau, International Database (December 2017). • **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 (January 2018), Tables 1.1.5, 1.1.6, and 1.1.9. • **U.S. Gross Output: 1987 forward**—DOC, BEA, GDP by Industry data (November 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 <sup>b</sup>	Total
	Coal	Natural Gas	Petroleum	Total	Conventional Hydroelectric Power	Biomass	Total		
						Wood <sup>a</sup>			
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	<sup>a</sup> 1.261	2.703	.009	32.665

<sup>a</sup> 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.

<sup>b</sup> 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.<sup>1</sup> 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.<sup>2</sup>

### 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.<sup>3</sup>

---

<sup>1</sup>Direct use of noncombustible renewables in the form of heat (e.g., solar thermal heating) is estimated separately and is measured in Btu.

<sup>2</sup>There 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.

<sup>3</sup>Based 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 <sup>a</sup>			Geothermal <sup>b</sup>				Wind <sup>c</sup>		
	Trans- formed Into Electricity <sup>d,e</sup>	Adjustment for Fossil Fuel Equivalence <sup>f</sup>	Total Primary Energy <sup>g</sup>	Direct Consump- tion <sup>h</sup>	Trans- formed Into Electricity <sup>d,i</sup>	Adjustment for Fossil Fuel Equivalence <sup>f</sup>	Total Primary Energy <sup>j</sup>	Trans- formed Into Electricity <sup>d,i</sup>	Adjustment for Fossil Fuel Equivalence <sup>f</sup>	Total Primary Energy <sup>g</sup>
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 .....	<sup>e</sup> 928	1,909	2,837	9	<sup>i</sup> 50	102	162	<sup>i</sup> 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 .....	914	1,559	2,472	64	54	92	210	774	1,321	2,096
2017 .....	1,024	1,746	2,770	64	55	93	211	868	1,480	2,347

<sup>a</sup> Conventional hydroelectricity net generation. Through 1989, also includes hydroelectric pumped storage.

<sup>b</sup> Geothermal heat pump and direct use energy; and geothermal electricity net generation.

<sup>c</sup> Wind electricity net generation.

<sup>d</sup> Electricity net generation in kilowatthours (kWh) multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

<sup>e</sup> 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.

<sup>f</sup> 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).

<sup>g</sup> Electricity net generation in kilowatthours multiplied by the total fossil fuels

heat rate factors (see Table A6).

<sup>h</sup> Geothermal heat pump and direct use energy.

<sup>i</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

<sup>j</sup> 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).

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 <sup>a</sup>						Total <sup>b</sup>		
	Distributed <sup>c</sup>			Utility-Scale <sup>d</sup>		Total Primary Energy <sup>i</sup>	Captured Energy <sup>j</sup>	Adjustment for Fossil Fuel Equivalence <sup>g</sup>	Total Primary Energy <sup>i</sup>
	Direct Consumption <sup>e</sup>	Transformed Into Electricity <sup>f</sup>	Adjustment for Fossil Fuel Equivalence <sup>g</sup>	Transformed Into Electricity <sup>f,h</sup>	Adjustment for Fossil Fuel Equivalence <sup>g</sup>				
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)	<sup>h</sup> 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	64	109	123	210	570	2,056	3,291	5,347
2017 .....	64	82	140	181	308	775	2,336	3,768	6,104

<sup>a</sup> Solar thermal direct use energy; and solar photovoltaic (PV) and solar thermal electricity net generation.

<sup>b</sup> 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.

<sup>c</sup> Distributed (small-scale) facilities (electric generators have a combined generator nameplate capacity of less than 1 megawatt).

<sup>d</sup> Utility-scale facilities (combined generator nameplate capacity of 1 megawatt or more).

<sup>e</sup> Solar thermal direct use energy.

<sup>f</sup> Electricity net generation in kilowatthours (kWh) multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

<sup>g</sup> 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).

<sup>h</sup> Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

<sup>i</sup> 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).

<sup>j</sup> 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 **natural gasoline**. 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 nonfossil 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 (C<sub>4</sub>H<sub>10</sub>):** 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* (C<sub>4</sub>H<sub>10</sub>): 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* (C<sub>4</sub>H<sub>10</sub>): 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 (C<sub>4</sub>H<sub>8</sub>):** 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 (CO<sub>2</sub>):** 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 (casing head) 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 natural gasoline 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 Fuel:** 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 **kilowatthours** (kWh) or megawatthours (MWh).

**Electricity Generation, Gross:** The total amount of electric energy produced by generating units and measured at the generating terminal in **kilowatthours** (kWh) or megawatthours (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 kilowatthours, while heat energy is usually measured in British thermal units.

**Energy Consumption:** The use of energy as a source of heat or power or as an input in the manufacturing process.

**Energy 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 (C<sub>2</sub>H<sub>6</sub>):** 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 (C<sub>2</sub>H<sub>5</sub>OH):** 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 (C<sub>2</sub>H<sub>4</sub>):** 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 **natural gasoline** 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 kilowatthour 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 kilowatthour**. *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 (C<sub>4</sub>H<sub>10</sub>):** 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 (C<sub>4</sub>H<sub>8</sub>):** 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 (C<sub>5</sub>H<sub>12</sub>):** 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**.

**Kilowatthour (kWh):** A measure of electricity defined as a unit of work or energy, measured as 1 **kilowatt** (1,000 **watts**) of power expended for 1 hour. One kilowatthour is equivalent to 3,412 Btu. See **Watthour**.

**Landed 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 (CH<sub>4</sub>):** 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 (CH<sub>3</sub>OH):** A light, volatile **alcohol** eligible for gasoline blending. See **Motor Gasoline Blending and Oxygenates**.

**Methyl Tertiary Butyl Ether (MTBE) ((CH<sub>3</sub>)<sub>3</sub>COCH<sub>3</sub>):** 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 natural gasoline. *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.

**Non-Combustion Use:** Fossil fuels (coal, natural gas, and petroleum products) that are not burned to release energy and instead used directly as construction materials, chemical, feedstocks, lubricants, solvents, waxes, and other products.

**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 (C<sub>4</sub>H<sub>10</sub>):** 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<sub>n</sub>H<sub>2n</sub> 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), Equatorial Guinea (2017), 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 (CO<sub>2</sub>)**. 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, hydrocarbon gas liquids, 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 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 kilowatt-hour). Also includes all non-combustion use of fossil fuels. 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 (C<sub>3</sub>H<sub>8</sub>):** 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 (C<sub>3</sub>H<sub>6</sub>):** 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 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 (PV) Energy** 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.