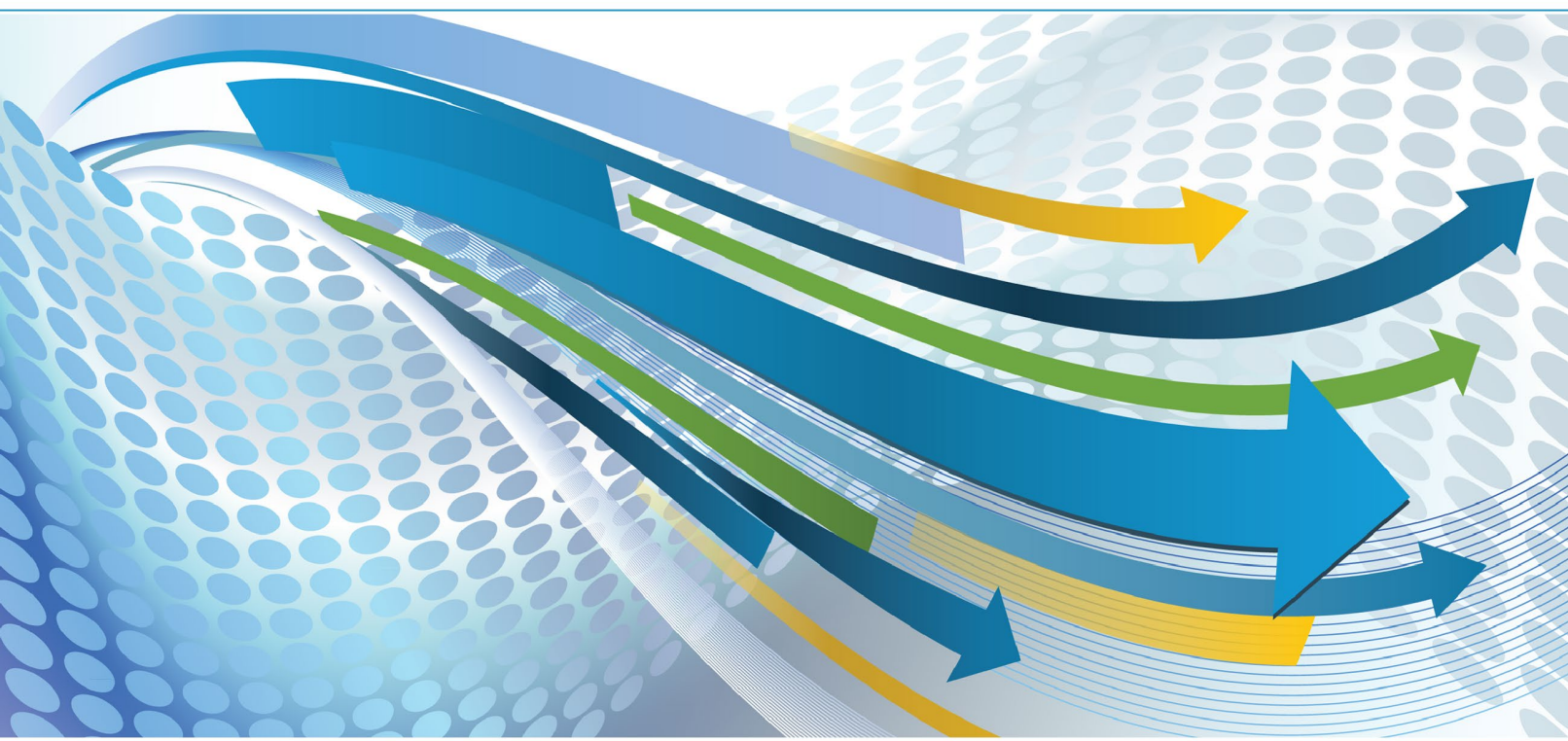


March 2020

Monthly Energy Review



Independent Statistics & Analysis
U.S. Energy Information
Administration

www.eia.gov/mer

Monthly Energy Review

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

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

Important notes about the data

Data displayed: For tables beginning in 1949, annual data are usually displayed only in 5-year increments between 1950 and 2000 in the tables in Portable Document Format (PDF) files; however, all annual data are shown in the Excel 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 present data for a new month. These data are usually preliminary (and sometimes estimated or forecasted) and likely to be revised the following month. The first dissemination of most annual data is also preliminary. It is often based on monthly estimates and is likely to be revised later that year after final data are published from sources, according to source data revision policies and publication schedules. In addition, EIA may revise historical data when a major revision in a source publication is needed, when new data sources become available, or when estimation methodologies are improved. A record of current and historical changes to MER data is available at <https://www.eia.gov/totalenergy/data/monthly/whatsnew.php>.

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 and MER.

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 with greater precision than the PDF files.

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

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Monthly Energy Review

March 2020

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

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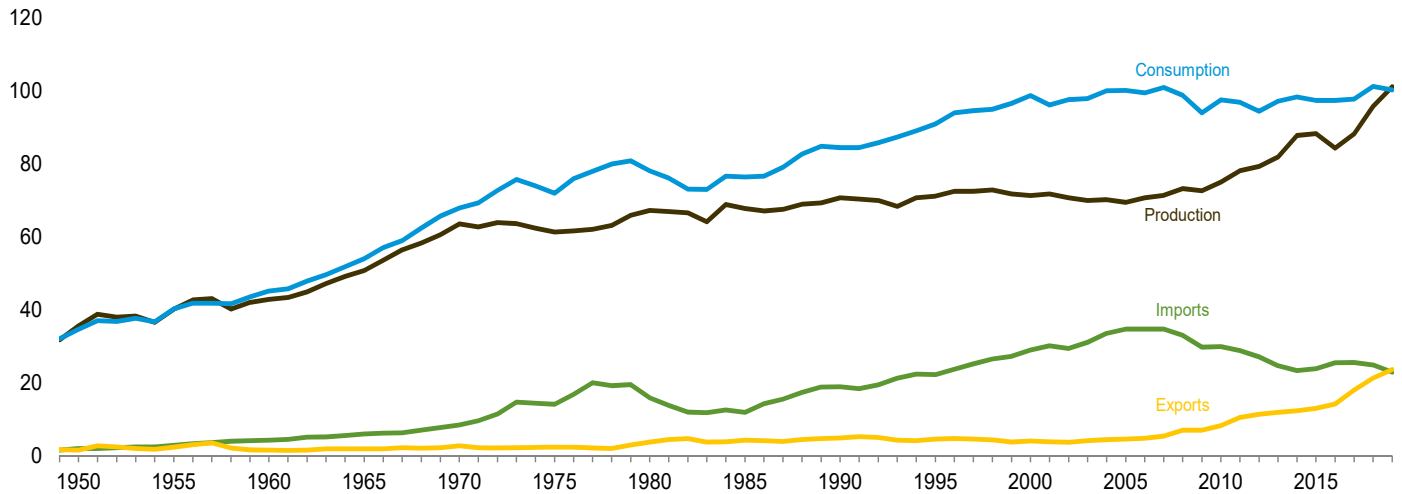
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1. Energy Overview

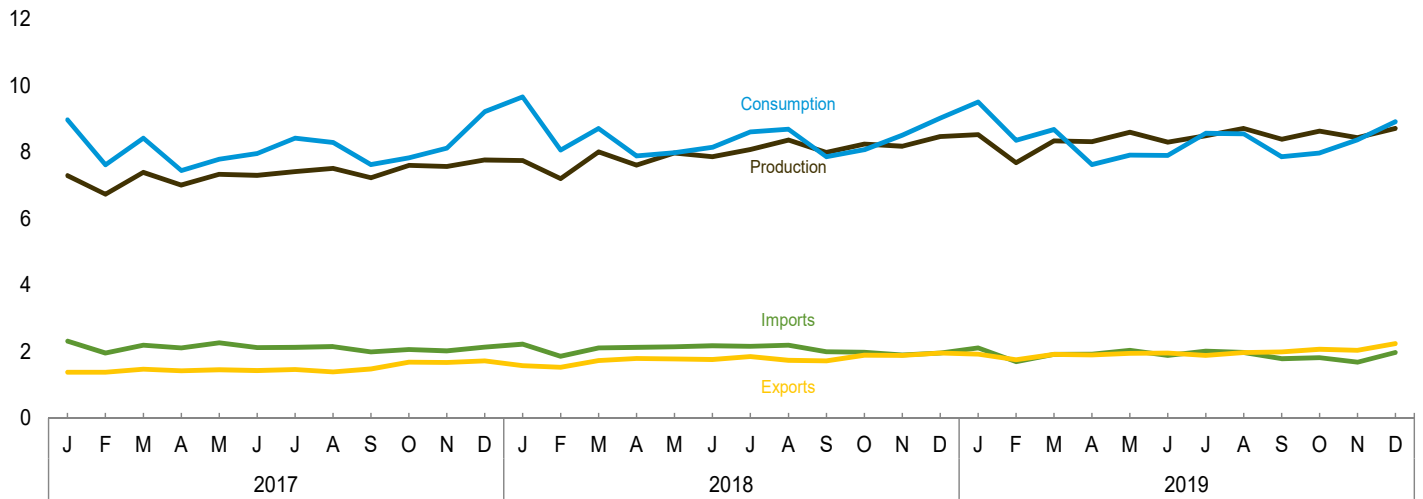
Figure 1.1 Primary Energy Overview

(Quadrillion Btu)

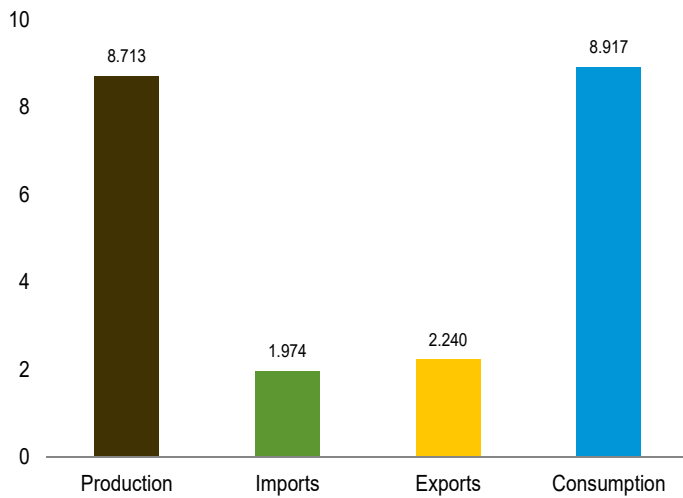
Overview, 1949–2019



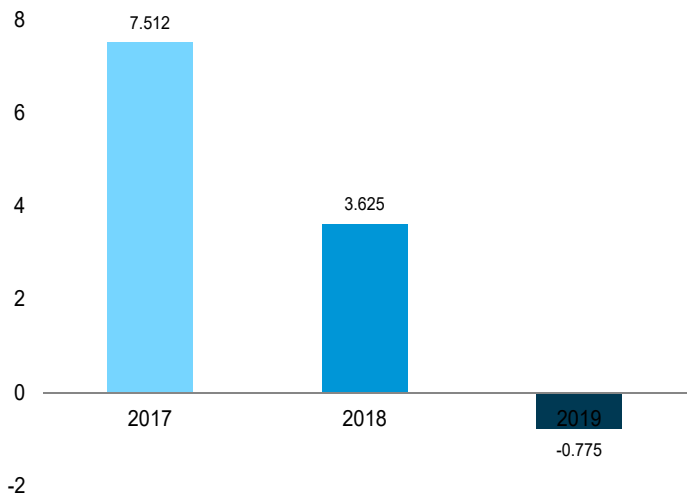
Overview, Monthly



Overview, December 2019



Net Imports, January–December



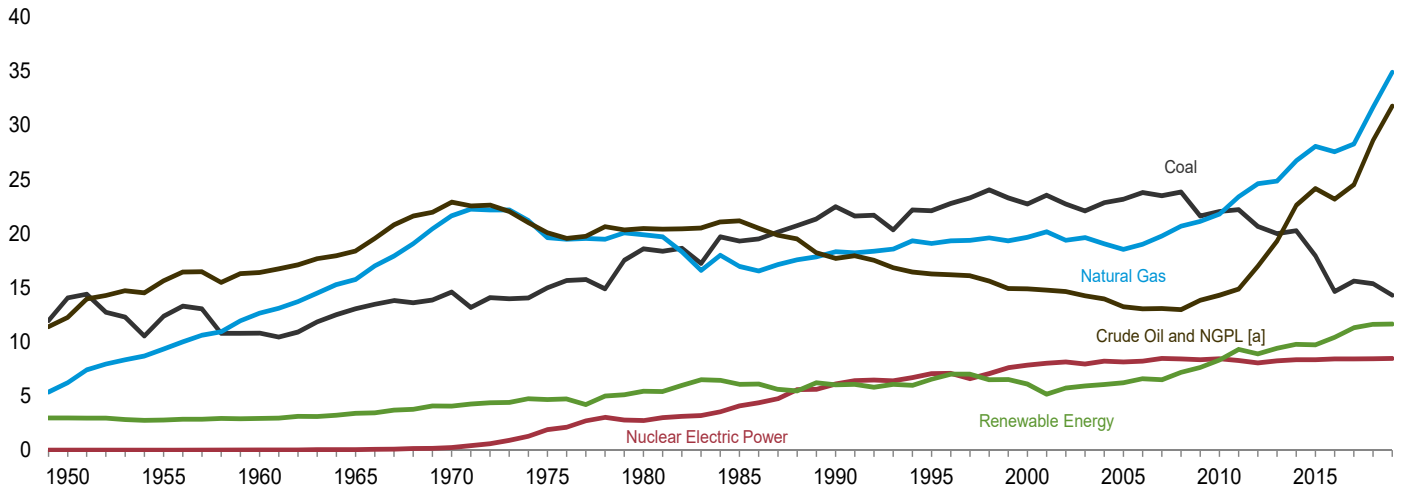
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.

Source: Table 1.1.

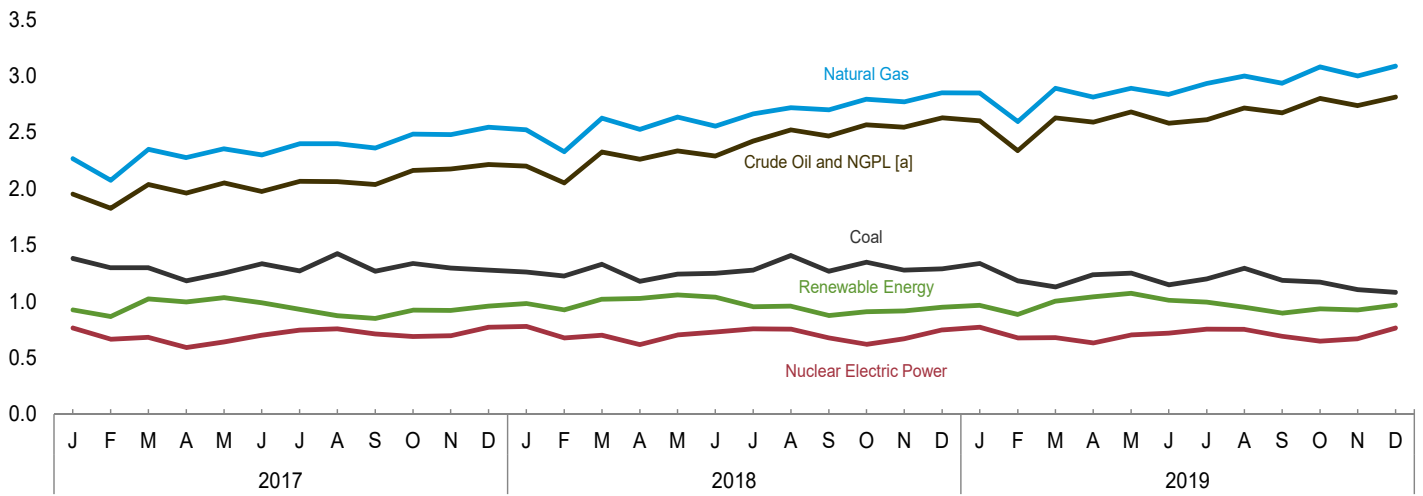
Figure 1.2 Primary Energy Production

(Quadrillion Btu)

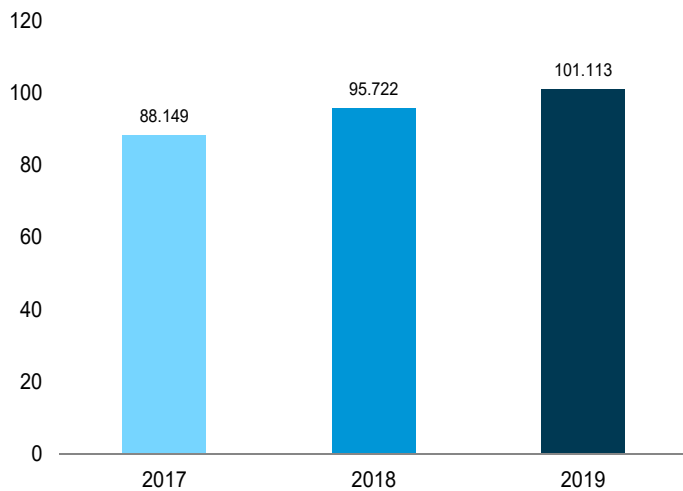
By Source, 1949–2019



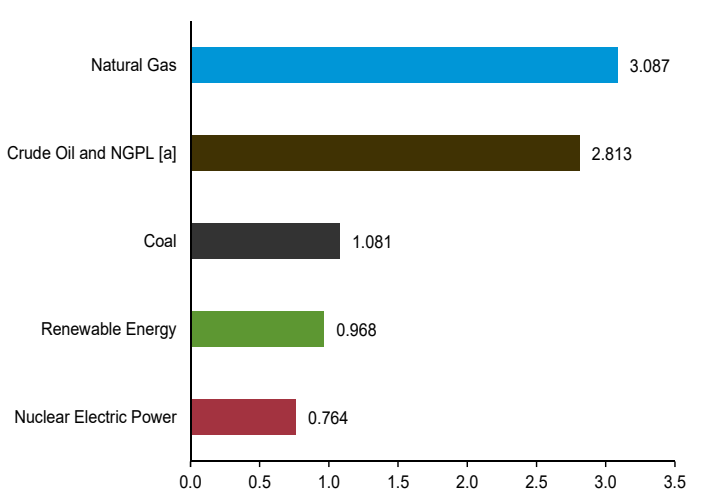
By Source, Monthly



Total, January–December



By Source, December 2019



[a] National gas plant liquids.

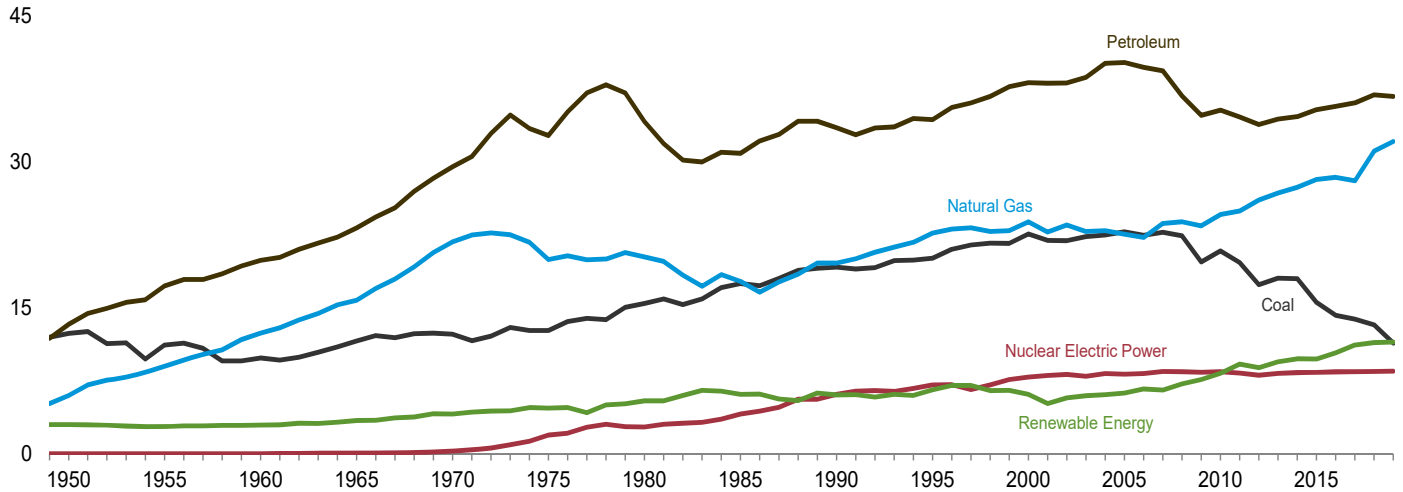
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Source: Table 1.2.

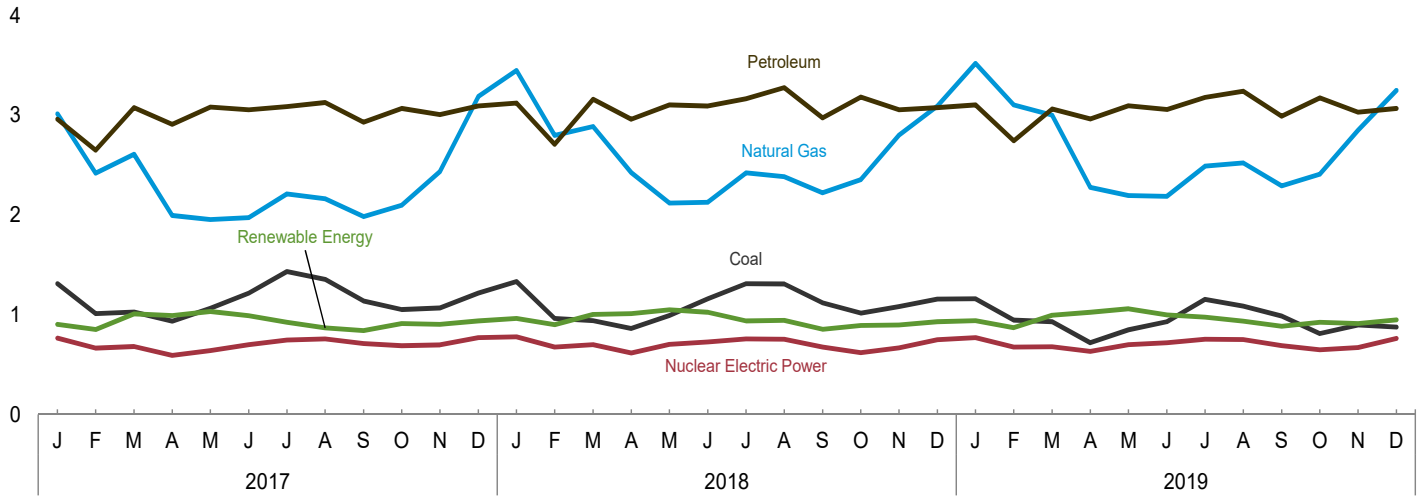
Figure 1.3 Primary Energy Consumption

(Quadrillion Btu)

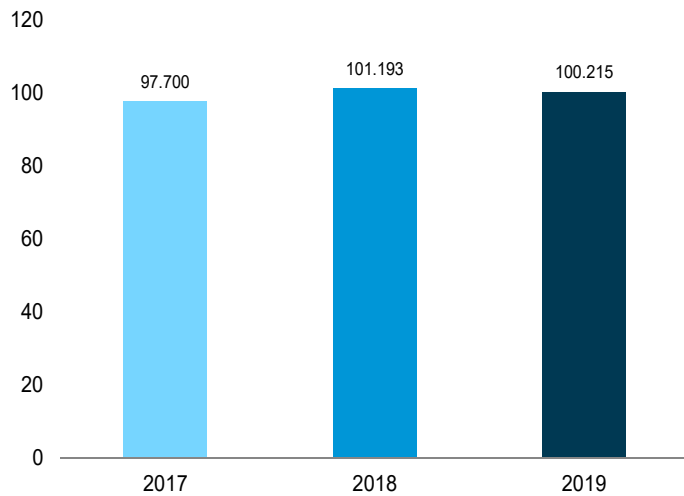
By Source, [a] 1949–2019



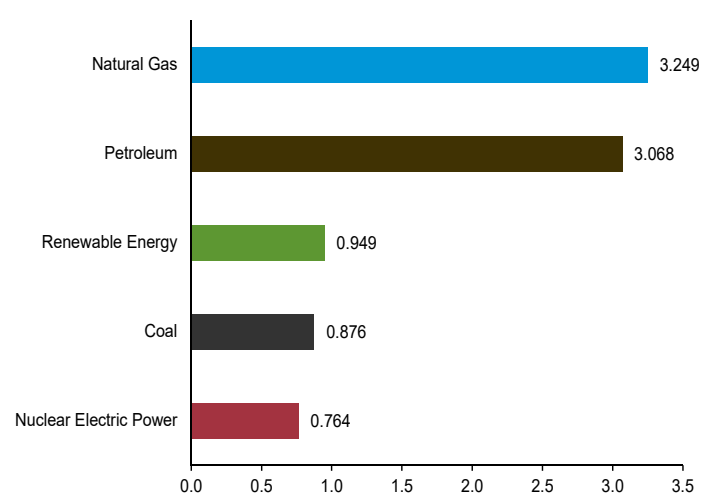
By Source, [a] Monthly



Total, January–December



By Source, [a] December 2019



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

Table 1.3 Primary Energy Consumption by Source
(Quadrillion Btu)

	Fossil Fuels ^a				Nuclear Electric Power	Renewable Energy ^b						Total ^g
	Coal	Natural Gas ^c	Petroleum ^d	Total ^e		Hydro-electric Power ^f	Geo-thermal	Solar	Wind	Bio-mass	Total	
1950 Total	12.347	5.968	13.298	31.615	0.000	1.415	NA	NA	NA	1.562	2.978	34.599
1955 Total	11.167	8.998	17.225	37.380	.000	1.360	NA	NA	NA	1.424	2.784	40.178
1960 Total	9.838	12.385	19.874	42.091	.006	1.608	(s)	NA	NA	1.320	2.928	45.041
1965 Total	11.581	15.769	23.184	50.515	.043	2.059	.002	NA	NA	1.335	3.396	53.953
1970 Total	12.265	21.795	29.499	63.501	.239	2.634	.006	NA	NA	1.431	4.070	67.817
1975 Total	12.663	19.948	32.699	65.323	1.900	3.155	.034	NA	NA	1.499	4.687	71.931
1980 Total	15.423	20.235	34.159	69.782	2.739	2.900	.053	NA	NA	2.475	5.428	78.021
1985 Total	17.478	17.703	30.866	66.035	4.076	2.970	.097	(s)	(s)	3.016	6.084	76.334
1990 Total	19.173	19.603	33.500	72.281	6.104	3.046	.171	.059	.029	2.735	6.040	84.433
1995 Total	20.089	22.671	34.341	77.162	7.075	3.205	.152	.068	.033	3.101	6.559	90.931
2000 Total	22.580	23.824	38.152	84.620	7.862	2.811	.164	.063	.057	3.008	6.104	98.702
2001 Total	21.914	22.773	38.084	82.800	8.029	2.242	.164	.062	.070	2.622	5.160	96.064
2002 Total	21.904	23.510	38.117	83.592	8.145	2.689	.171	.060	.105	2.701	5.726	97.535
2003 Total	22.321	22.831	38.707	83.909	7.960	2.793	.173	.058	.113	2.806	5.944	97.835
2004 Total	22.466	22.923	40.139	85.666	8.223	2.688	.178	.058	.142	3.008	6.075	100.002
2005 Total	22.797	22.565	40.217	85.623	8.161	2.703	.181	.058	.178	3.114	6.234	100.102
2006 Total	22.447	22.239	39.731	84.477	8.215	2.869	.181	.061	.264	3.262	6.637	99.392
2007 Total	22.749	23.663	39.368	85.805	8.459	2.446	.186	.066	.341	3.485	6.523	100.893
2008 Total	22.387	23.843	36.769	83.041	8.426	2.511	.192	.074	.546	3.851	7.175	98.754
2009 Total	19.691	23.416	34.779	77.862	8.355	2.669	.200	.078	.721	3.940	7.608	93.942
2010 Total	20.834	24.575	35.324	80.727	8.434	2.539	.208	.091	.923	4.506	8.267	97.517
2011 Total	19.658	24.955	34.627	79.250	8.269	3.103	.212	.112	1.168	4.609	9.204	96.850
2012 Total	17.378	26.089	33.839	77.310	8.062	2.629	.212	.159	1.340	4.508	8.847	94.380
2013 Total	18.039	26.805	34.398	79.225	8.244	2.562	.214	.225	1.601	4.848	9.451	97.117
2014 Total	17.998	27.383	34.657	80.016	8.338	2.467	.214	.337	1.728	4.994	9.740	98.276
2015 Total	15.549	28.191	35.371	79.093	8.337	2.321	.212	.427	1.777	4.983	9.720	97.378
2016 Total	14.226	28.400	35.705	78.312	8.427	2.472	.210	.570	2.096	5.015	10.362	97.328
2017 January	1.313	3.014	2.960	7.283	.765	.247	.018	.034	.183	.422	.903	8.973
February	1.011	2.420	2.651	6.081	.665	.218	.016	.040	.195	.382	.852	7.615
March	1.029	2.609	3.077	6.714	.681	.270	.018	.063	.230	.428	1.009	8.421
April	.937	1.997	2.910	5.843	.593	.271	.018	.069	.227	.408	.992	7.444
May	1.066	1.955	3.082	6.101	.641	.298	.017	.081	.207	.430	1.033	7.791
June	1.218	1.974	3.056	6.246	.701	.278	.016	.087	.183	.427	.991	7.955
July	1.433	2.213	3.089	6.734	.746	.244	.018	.083	.147	.434	.926	8.423
August	1.356	2.164	3.127	6.643	.757	.201	.018	.080	.125	.444	.869	8.289
September	1.140	1.984	2.930	6.052	.712	.176	.017	.074	.164	.411	.842	7.622
October	1.051	2.099	3.069	6.215	.690	.168	.017	.068	.233	.426	.913	7.829
November	1.069	2.437	3.007	6.509	.697	.189	.017	.050	.222	.426	.904	8.121
December	1.216	3.189	3.092	7.494	.771	.206	.020	.049	.226	.438	.939	9.218
Total	13.837	28.055	36.051	77.915	8.419	2.767	.210	.777	2.343	5.076	11.173	97.700
2018 January	1.334	3.449	3.124	7.903	.780	.229	.018	.049	.233	.435	.963	9.660
February	.963	2.798	2.709	6.469	.677	.227	.016	.056	.211	.390	.900	8.059
March	.941	2.887	3.162	6.988	.701	.236	.018	.074	.241	.436	1.004	8.708
April	.863	2.425	2.961	6.247	.618	.256	.016	.086	.241	.411	1.011	7.885
May	.993	2.119	3.104	6.214	.704	.278	.018	.097	.218	.439	1.049	7.981
June	1.160	2.127	3.092	6.377	.729	.252	.017	.102	.225	.428	1.024	8.145
July	1.311	2.423	3.166	6.898	.758	.229	.018	.097	.150	.444	.938	8.608
August	1.309	2.385	3.277	6.970	.756	.201	.018	.095	.181	.450	.945	8.687
September	1.120	2.223	2.975	6.317	.677	.175	.017	.085	.169	.409	.854	7.858
October	1.017	2.355	3.181	6.551	.621	.178	.017	.072	.193	.431	.892	8.074
November	1.082	2.801	3.054	6.934	.669	.200	.017	.056	.201	.424	.898	8.509
December	1.158	3.094	3.077	7.327	.749	.208	.019	.048	.222	.435	.931	9.018
Total	13.252	31.086	36.882	81.194	8.438	2.667	.209	.917	2.486	5.130	11.409	101.193
2019 January	1.160	R 3.520	3.105	R 7.782	.771	.221	.018	.054	.229	.420	.942	R 9.506
February	.948	R 3.103	2.745	R 6.795	.677	.199	.017	R .058	.210	.388	R .872	R 8.354
March	.932	R 3.000	R 3.064	R 6.996	.680	.233	.018	.086	.238	.419	R .995	R 8.679
April	.720	R 2.277	R 2.964	R 5.960	.633	.232	.017	.098	.271	.406	R 1.024	R 7.625
May	.850	R 2.196	R 3.096	R 6.140	.702	.274	.018	R .105	.237	.427	1.060	R 7.912
June	.931	R 2.188	3.058	R 6.175	.719	.241	.018	R .113	.209	.416	.997	R 7.904
July	R 1.155	R 2.491	R 3.179	R 6.824	.755	.216	.018	.116	.201	.424	R .976	R 8.567
August	R 1.087	R 2.522	3.241	R 6.849	.752	R .192	.018	R .112	.181	.433	R .936	R 8.550
September	R .988	R 2.294	R 2.991	R 6.271	R .691	.149	.018	.097	.222	R .398	.884	R 7.858
October	.813	R 2.409	R 3.174	R 6.394	.649	.149	.017	.087	.257	R .414	.924	R 7.973
November	R .897	R 2.850	R 3.030	R 6.775	.670	.187	.015	.064	R .233	.411	.912	R 8.370
December	.876	3.249	3.068	7.190	.764	.202	.017	.054	.248	.427	.949	8.917
Total	11.357	32.099	36.715	80.150	8.462	2.496	.209	1.044	2.736	4.985	11.470	100.215

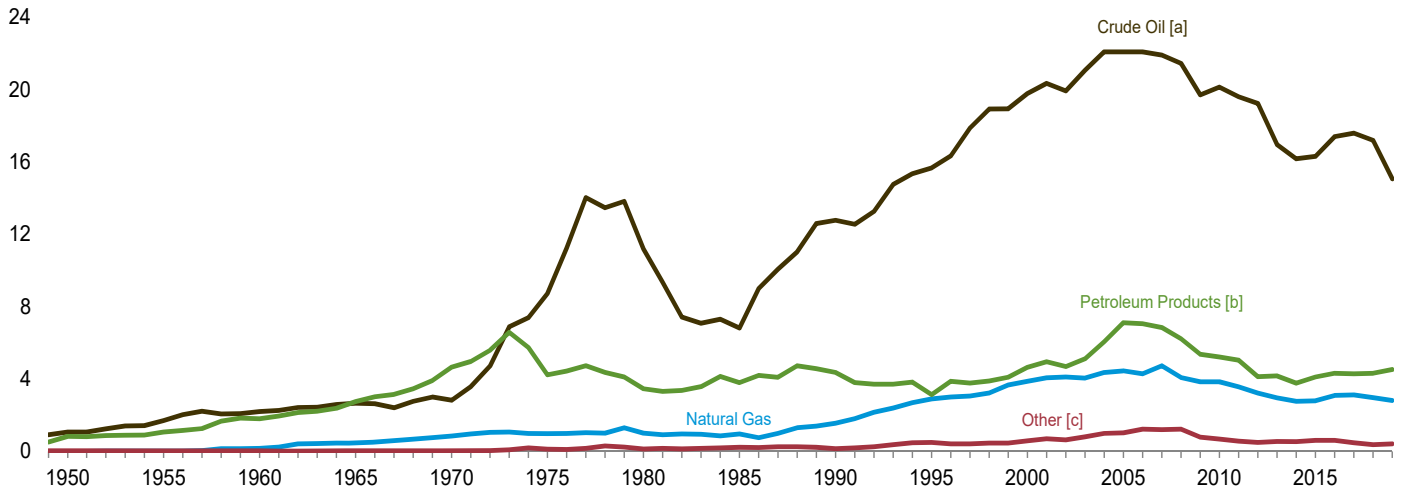
^a Includes non-combustion use of fossil fuels.
^b Most data are estimates. See Tables 10.1–10.2c for notes on series components and estimation; and see Note, "Renewable Energy Production and Consumption," at end of Section 10.
^c Natural gas only; excludes supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
^d Petroleum products supplied; excludes biofuels that have been blended with petroleum—biofuels are included in "Biomass."
^e Includes coal coke net imports. See Tables 1.4a and 1.4b.
^f Conventional hydroelectric power.
^g 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.

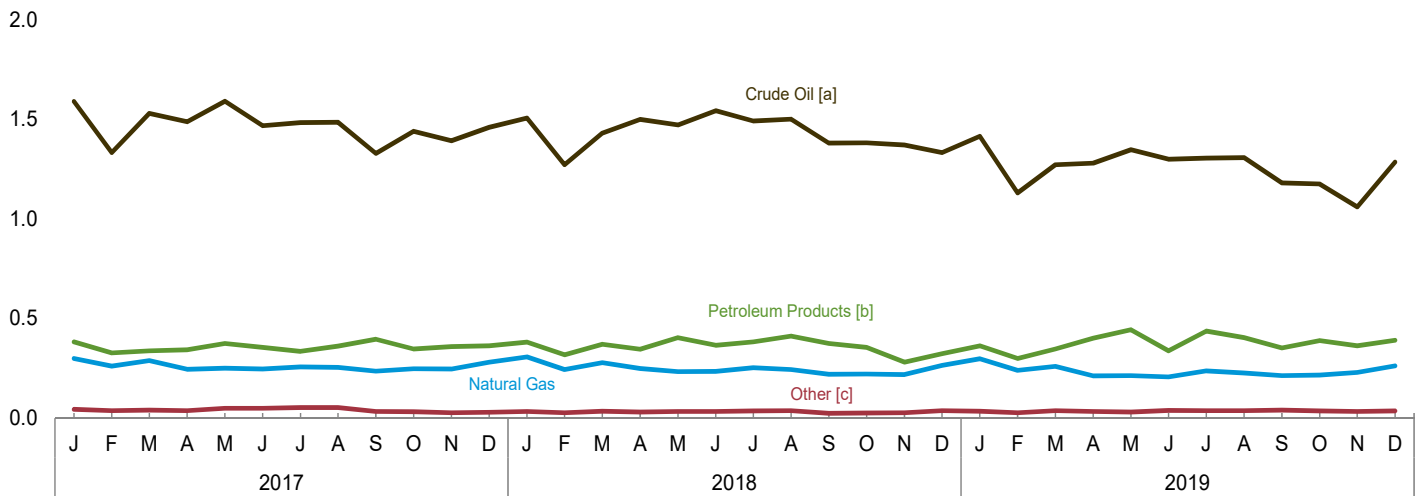
Figure 1.4a Primary Energy Imports

(Quadrillion Btu)

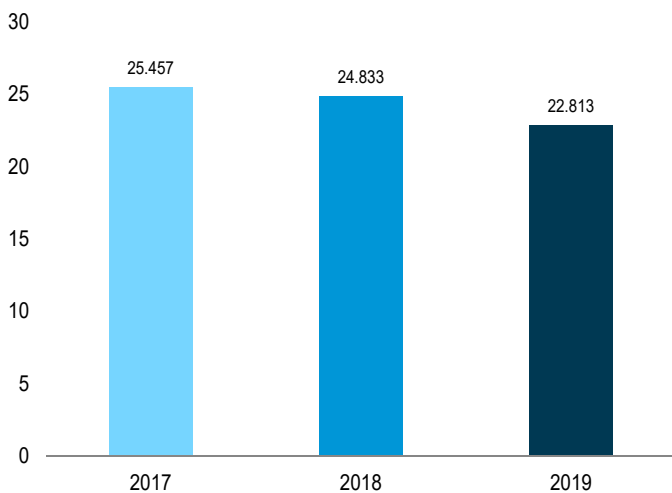
By Source, 1949–2019



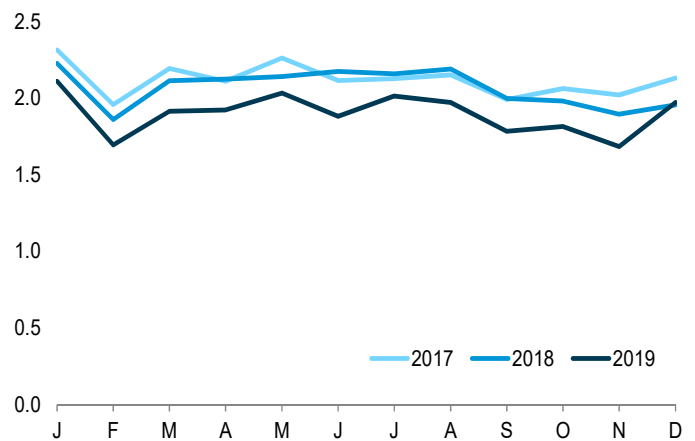
By Source, Monthly



Total, January–December



Total, Monthly



[a] Crude oil and lease condensate, includes imports into the Strategic Petroleum Reserve, which began in 1977.

[b] Petroleum products, unfinished oils, natural gasoline, and gasoline blending components. Does not include biofuels.

[c] Coal, coal coke, biomass, and electricity.

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

Source: Table 1.4a.

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

	Imports								
	Coal	Coal Coke	Natural Gas	Petroleum			Biomass ^c	Electricity	Total
				Crude Oil ^a	Petroleum Products ^b	Total			
1950 Total	0.009	0.011	0.000	1.056	0.830	1.886	NA	0.007	1.913
1955 Total .....	.008	.003	.011	1.691	1.061	2.752	NA	.016	2.790
1960 Total .....	.007	.003	.161	2.196	1.802	3.999	NA	.018	4.188
1965 Total .....	.005	.002	.471	2.654	2.748	5.402	NA	.012	5.892
1970 Total .....	.001	.004	.846	2.814	4.656	7.470	NA	.021	8.342
1975 Total .....	.024	.045	.978	8.721	4.227	12.948	NA	.038	14.032
1980 Total .....	.030	.016	1.006	11.195	3.463	14.658	NA	.085	15.796
1985 Total .....	.049	.014	.952	6.814	3.796	10.609	NA	.157	11.781
1990 Total .....	.067	.019	1.551	12.766	4.351	17.117	NA	.063	18.817
1995 Total .....	.237	.095	2.901	15.669	3.131	18.800	.001	.146	22.180
2000 Total .....	.313	.094	3.869	19.783	4.641	24.424	(s)	.166	28.865
2001 Total .....	.495	.063	4.068	20.348	4.946	25.294	.002	.131	30.052
2002 Total .....	.422	.080	4.104	19.920	4.677	24.597	.002	.125	29.331
2003 Total .....	.626	.068	4.042	21.060	5.105	26.165	.002	.104	31.007
2004 Total .....	.682	.170	4.365	22.082	6.063	28.145	.013	.117	33.492
2005 Total .....	.762	.088	4.450	22.091	7.108	29.198	.012	.150	34.659
2006 Total .....	.906	.101	4.291	22.085	7.054	29.139	.066	.146	34.649
2007 Total .....	.909	.061	4.723	21.914	6.842	28.756	.055	.175	34.679
2008 Total .....	.855	.089	4.084	21.448	6.214	27.662	.085	.195	32.970
2009 Total .....	.566	.009	3.845	19.699	5.367	25.066	.027	.178	29.690
2010 Total .....	.484	.030	3.834	20.140	5.219	25.359	.004	.154	29.866
2011 Total .....	.327	.035	3.555	19.595	5.038	24.633	.019	.178	28.748
2012 Total .....	.212	.028	3.216	19.239	4.122	23.361	.049	.202	27.068
2013 Total .....	.199	.003	2.955	16.957	4.169	21.126	.102	.236	24.623
2014 Total .....	.252	.002	2.763	16.178	3.773	19.951	.046	.227	23.241
2015 Total .....	.256	.003	2.786	16.299	4.111	20.410	.079	.259	23.794
2016 Total .....	.220	.006	3.082	17.392	4.309	21.700	.123	.248	25.378
2017 January .....	.016	(s)	.299	1.590	.383	1.973	.003	.024	2.315
February .....	.013	(s)	.261	1.334	.327	1.661	.004	.019	1.959
March .....	.012	(s)	.288	1.531	.337	1.869	.006	.021	2.195
April .....	.011	(s)	.244	1.489	.342	1.831	.006	.019	2.112
May .....	.023	(s)	.250	1.592	.374	1.965	.008	.017	2.264
June .....	.014	.001	.246	1.468	.355	1.824	.013	.020	2.117
July .....	.021	(s)	.257	1.484	.335	1.819	.012	.020	2.129
August .....	.018	(s)	.254	1.486	.361	1.847	.011	.022	2.153
September .....	.011	(s)	.235	1.329	.396	1.725	.004	.018	1.993
October .....	.012	(s)	.247	1.441	.346	1.787	.004	.013	2.065
November .....	.008	(s)	.246	1.393	.358	1.751	.005	.013	2.023
December .....	.009	(s)	.281	1.460	.362	1.822	.004	.016	2.132
Total .....	.167	.001	3.109	17.597	4.277	21.874	.081	.224	25.457
2018 January .....	.010	(s)	.307	1.507	.381	1.888	.004	.018	2.228
February .....	.007	(s)	.243	1.273	.318	1.591	.003	.016	1.861
March .....	.011	(s)	.278	1.432	.371	1.803	.004	.019	2.114
April .....	.010	.001	.248	1.501	.345	1.847	.004	.015	2.125
May .....	.011	.001	.233	1.472	.404	1.876	.004	.018	2.142
June .....	.010	(s)	.234	1.544	.365	1.909	.004	.019	2.176
July .....	.014	(s)	.253	1.492	.382	1.873	.002	.018	2.161
August .....	.010	(s)	.243	1.502	.411	1.913	.005	.021	2.192
September .....	.005	(s)	.219	1.381	.375	1.756	.003	.015	1.999
October .....	.006	.001	.221	1.382	.354	1.736	.006	.013	1.982
November .....	.008	(s)	.218	1.372	.280	1.652	.005	.013	1.896
December .....	.018	(s)	.264	1.334	.323	1.657	.004	.014	1.958
Total .....	.122	.003	2.961	17.192	4.309	21.501	.048	.199	24.833
2019 January .....	.013	(s)	.298	R 1.416	R .363	R 1.780	.005	.016	R 2.112
February .....	.007	(s)	.239	R 1.131	R .299	R 1.431	.003	.016	R 1.696
March .....	.014	(s)	.259	R 1.273	R .346	R 1.619	.006	.017	R 1.916
April .....	.011	.001	.212	R 1.280	R .401	R 1.682	.006	.015	R 1.925
May .....	.008	(s)	.213	R 1.348	R .443	R 1.791	.005	.016	R 2.034
June .....	.013	(s)	.206	R 1.301	R .337	R 1.638	.007	.018	R 1.883
July .....	.010	(s)	.236	R 1.306	R .437	R 1.743	.007	.019	R 2.015
August .....	.011	.001	.226	R 1.308	R .404	R 1.712	.005	.020	R 1.974
September .....	.013	(s)	.213	R 1.181	R .352	R 1.532	.007	.018	R 1.785
October .....	.015	(s)	.216	R 1.176	R .389	1.564	.007	R .012	R 1.816
November .....	.010	.001	.229	R 1.060	R .362	1.422	.006	R .017	R 1.685
December .....	.011	(s)	.262	1.286	.390	1.676	.007	.018	1.974
Total .....	.137	.003	2.810	15.067	4.523	19.590	.071	.201	22.813

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

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

^c Fuel ethanol (minus denaturant) and biodiesel.

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

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

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

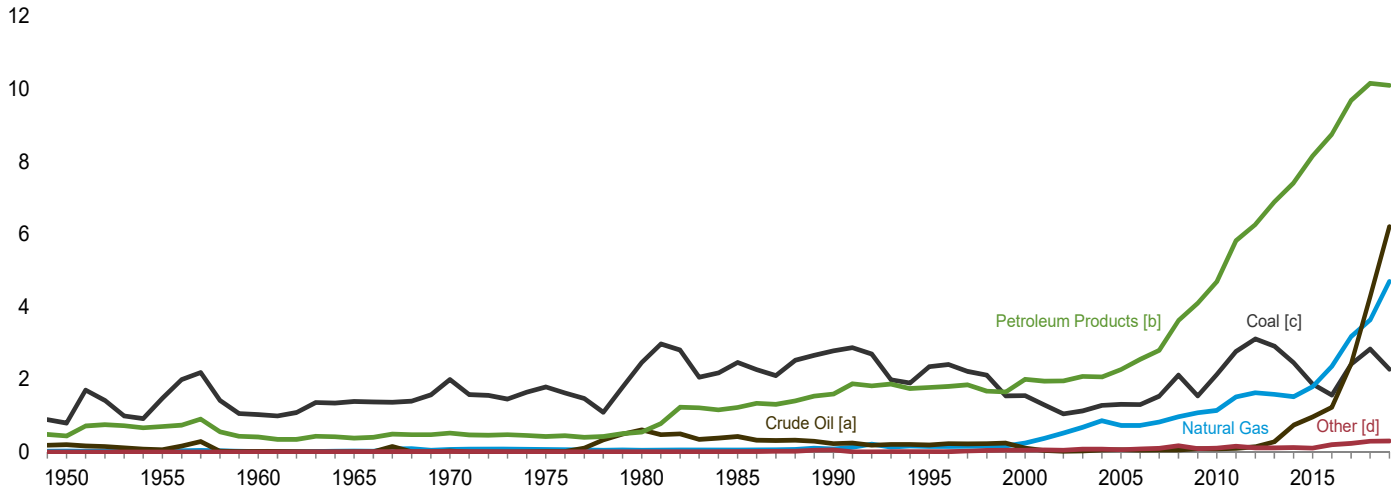
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

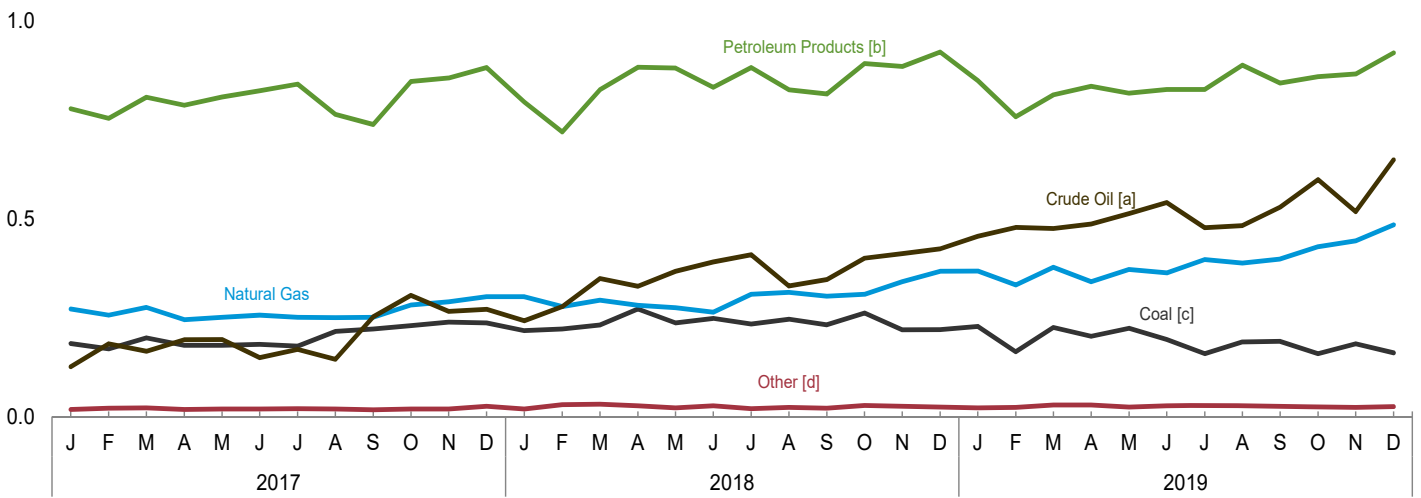
Figure 1.4b Primary Energy Exports

(Quadrillion Btu)

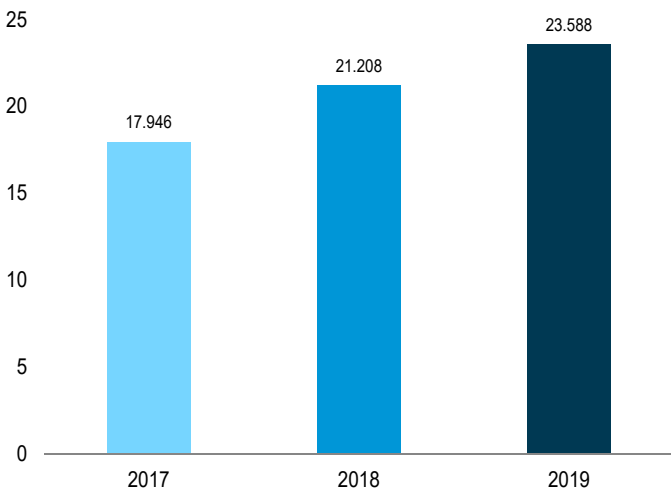
By Source, 1949-2019



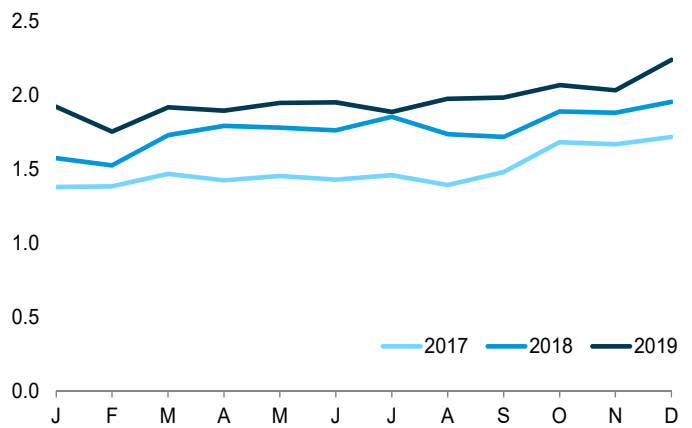
By Source, Monthly



Total, January–December



Total, Monthly



[a] Crude oil and lease condensate.

[b] Petroleum products, unfinished oils, natural gasoline, and gasoline blending components. Does not include biofuels.

[c] Includes coal coke.

[d] Biomass and electricity

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

Source: Table 1.4b.

Table 1.4b Primary Energy Exports by Source
(Quadrillion Btu)

	Exports								
	Coal	Coal Coke	Natural Gas	Petroleum			Biomass ^c	Electricity	Total
				Crude Oil ^a	Petroleum Products ^d	Total			
1950 Total	0.786	0.010	0.027	0.202	0.440	0.642	NA	0.001	1.465
1955 Total	1.465	.013	.032	.067	.707	.774	NA	.002	2.286
1960 Total	1.023	.009	.012	.018	.413	.431	NA	.003	1.477
1965 Total	1.376	.021	.027	.006	.386	.392	NA	.013	1.829
1970 Total	1.936	.061	.072	.029	.520	.549	NA	.014	2.632
1975 Total	1.761	.032	.074	.012	.427	.439	NA	.017	2.323
1980 Total	2.421	.051	.049	.609	.551	1.160	NA	.014	3.695
1985 Total	2.438	.028	.056	.432	1.225	1.657	NA	.017	4.196
1990 Total	2.772	.014	.087	.230	1.594	1.824	NA	.055	4.752
1995 Total	2.318	.034	.156	.200	1.776	1.976	NA	.012	4.496
2000 Total	1.528	.028	.245	.106	2.003	2.110	NA	.051	3.962
2001 Total	1.265	.033	.377	.043	1.956	1.999	(s)	.056	3.731
2002 Total	1.032	.020	.520	.019	1.963	1.982	(s)	.054	3.608
2003 Total	1.117	.018	.686	.026	2.083	2.110	.001	.082	4.013
2004 Total	1.253	.033	.862	.057	2.068	2.125	.001	.078	4.351
2005 Total	1.273	.043	.735	.067	2.276	2.344	.001	.065	4.462
2006 Total	1.264	.040	.730	.052	2.554	2.606	.005	.083	4.727
2007 Total	1.507	.036	.830	.058	2.803	2.861	.036	.069	5.338
2008 Total	2.071	.049	.972	.061	3.626	3.686	.089	.083	6.949
2009 Total	1.515	.032	1.082	.093	4.101	4.194	.035	.062	6.920
2010 Total	2.101	.036	1.147	.088	4.691	4.780	.047	.065	8.176
2011 Total	2.751	.024	1.519	.100	5.820	5.919	.108	.051	10.373
2012 Total	3.087	.024	1.633	.143	6.261	6.404	.078	.041	11.267
2013 Total	2.895	.021	1.587	.284	6.886	7.170	.076	.039	11.788
2014 Total	2.435	.023	1.528	.744	7.414	8.158	.081	.045	12.270
2015 Total	1.852	.021	1.800	.964	8.153	9.118	.080	.031	12.902
2016 Total	1.546	.025	2.356	1.238	8.752	9.990	.181	.021	14.119
2017 January .....	.182	.003	.272	.126	.778	.904	.017	.002	1.380
February .....	.170	.001	.256	.184	.754	.938	.018	.002	1.385
March .....	.197	.002	.276	.165	.807	.972	.018	.003	1.469
April .....	.178	.001	.245	.194	.787	.981	.015	.004	1.424
May .....	.178	.001	.251	.195	.808	1.004	.017	.003	1.454
June .....	.180	.003	.256	.149	.823	.972	.016	.003	1.430
July .....	.177	.001	.251	.170	.840	1.010	.018	.002	1.459
August .....	.211	.004	.250	.145	.764	.910	.017	.003	1.393
September .....	.219	.002	.251	.252	.738	.990	.015	.002	1.480
October .....	.226	.005	.282	.306	.847	1.153	.016	.002	1.684
November .....	.235	.003	.290	.266	.856	1.122	.016	.003	1.670
December .....	.234	.003	.303	.271	.882	1.152	.024	.003	1.719
Total	2.388	.030	3.182	2.424	9.684	12.108	.206	.032	17.946
2018 January .....	.213	.004	.303	.242	.795	1.037	.015	.004	1.575
February .....	.219	.001	.278	.278	.719	.997	.025	.004	1.526
March .....	.229	.002	.294	.349	.826	1.175	.026	.004	1.731
April .....	.269	.003	.281	.329	.883	1.213	.021	.006	1.793
May .....	.234	.002	.275	.367	.881	1.248	.018	.004	1.781
June .....	.246	.002	.264	.391	.832	1.224	.023	.004	1.763
July .....	.232	.002	.309	.409	.882	1.291	.017	.003	1.854
August .....	.244	.001	.314	.330	.826	1.155	.019	.004	1.738
September .....	.230	.001	.304	.346	.815	1.161	.018	.004	1.718
October .....	.259	.002	.309	.400	.892	1.293	.025	.003	1.892
November .....	.216	.003	.341	.412	.885	1.297	.022	.004	1.882
December .....	.217	.003	.367	.424	.921	1.345	.021	.003	1.955
Total	2.809	.029	3.640	4.277	10.158	14.434	.249	.047	21.208
2019 January .....	.226	.003	.368	R .456	R .849	R 1.305	.017	.005	R 1.923
February .....	.163	.001	.333	R .478	R .758	R 1.235	.018	.005	R 1.755
March .....	.224	.001	.377	R .475	R .813	R 1.288	.020	.009	R 1.919
April .....	.201	.002	.341	R .487	R .835	R 1.322	.023	.007	R 1.896
May .....	.221	.002	.372	R .513	R .817	R 1.330	.018	.006	R 1.949
June .....	.193	.002	.363	R .541	R .827	R 1.368	.022	.005	R 1.953
July .....	.158	.002	.397	R .477	R .827	R 1.303	.020	.007	R 1.887
August .....	.187	.002	.388	R .483	R .888	R 1.371	.022	.006	R 1.976
September .....	.188	.003	R .398	R .529	R .843	R 1.372	.020	.006	R 1.986
October .....	.156	.003	.429	R .599	R .859	R 1.457	.019	R .005	R 2.069
November .....	.182	.002	.444	R .518	R .866	R 1.383	R .019	R .004	R 2.035
December .....	.158	.003	.485	.649	.919	1.569	.021	.004	2.240
Total	2.256	.024	4.697	6.204	10.100	16.304	.239	.068	23.588

^a Crude oil and lease condensate.
^b Petroleum products, unfinished oils, natural gasoline, and gasoline blending components. Does not include biofuels.
^c 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.

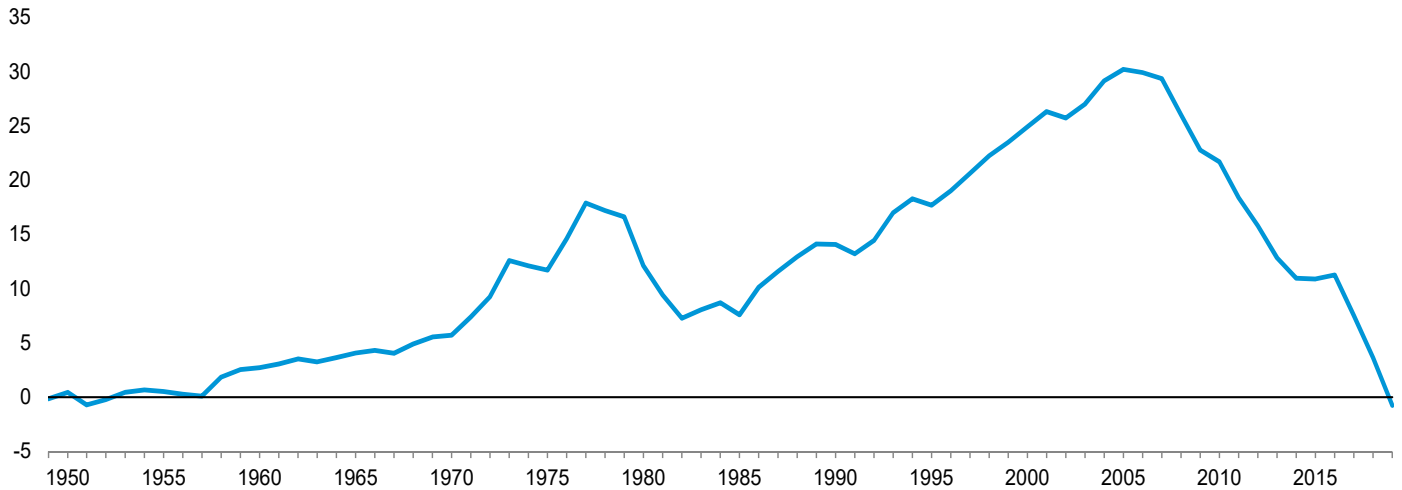
Notes: • See "Primary Energy" in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: See end of section.

The column for "Total Net Imports" has been moved to new Table 1.4c.

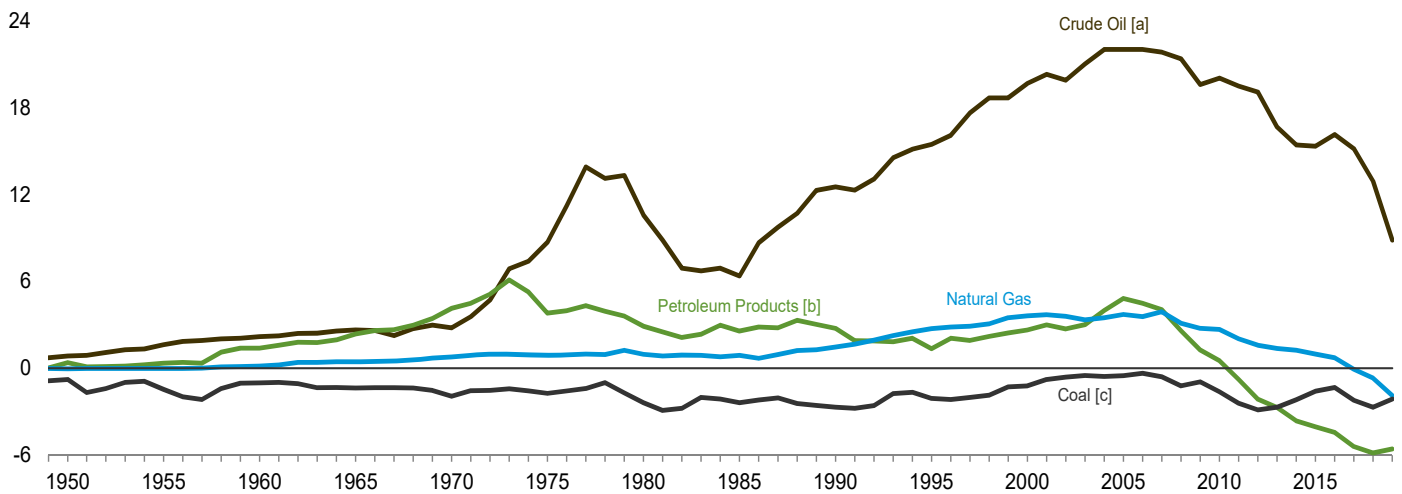
Figure 1.4c Primary Energy Net Imports

(Quadrillion Btu)

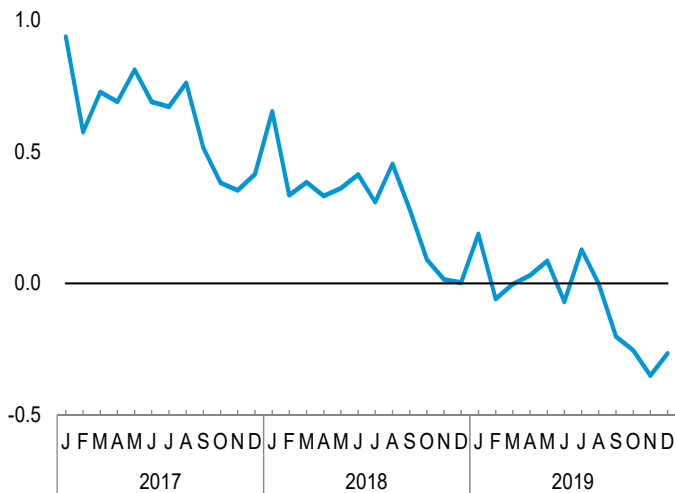
Total, 1949–2019



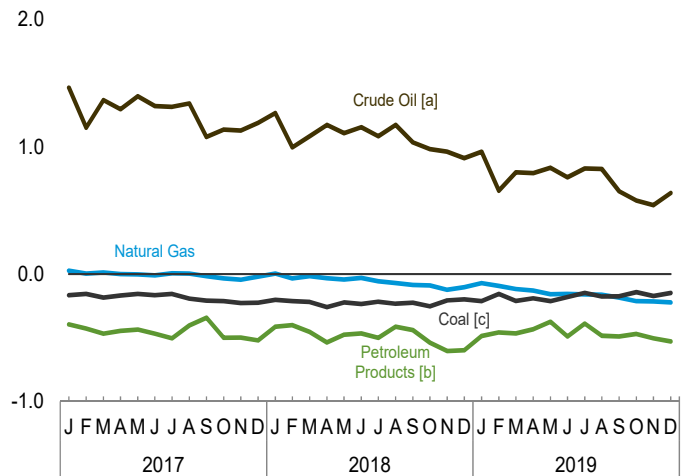
By Major Source, 1949–2019



Total, Monthly



By Major Source, Monthly



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

[b] Petroleum products, unfinished oils, natural gasoline, and gasoline blending components. Does not include biofuels.

[c] Includes coal coke.

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

Source: Table 1.4c.

Table 1.4c Primary Energy Net Imports by Source
(Quadrillion Btu)

	Net Imports ^a								
	Coal	Coal Coke	Natural Gas	Petroleum			Biomass ^d	Electricity	Total
				Crude Oil ^b	Petroleum Products ^c	Total			
1950 Total	-0.777	0.001	-0.027	0.854	0.390	1.244	NA	0.006	0.448
1955 Total	-1.456	-0.10	-0.021	1.624	.354	1.978	NA	.014	.504
1960 Total	-1.017	-.006	.149	2.178	1.389	3.568	NA	.015	2.710
1965 Total	-1.372	-.018	.444	2.648	2.362	5.010	NA	(s)	4.063
1970 Total	-1.935	-.058	.774	2.785	4.136	6.921	NA	.007	5.709
1975 Total	-1.738	.014	.904	8.708	3.800	12.508	NA	.021	11.709
1980 Total	-2.391	-.035	.957	10.586	2.912	13.499	NA	.071	12.101
1985 Total	-2.389	-.013	.896	6.381	2.570	8.952	NA	.140	7.584
1990 Total	-2.705	.005	1.464	12.536	2.757	15.293	NA	.008	14.065
1995 Total	-2.081	.061	2.745	15.469	1.355	16.824	.001	.134	17.684
2000 Total	-1.215	.065	3.623	19.676	2.638	22.314	(s)	.115	24.904
2001 Total	-.771	.029	3.691	20.305	2.990	23.294	.001	.075	26.321
2002 Total	-.610	.061	3.583	19.901	2.714	22.615	.002	.072	25.722
2003 Total	-.491	.051	3.356	21.034	3.021	24.055	.001	.022	26.994
2004 Total	-.571	.138	3.503	22.025	3.995	26.020	.012	.039	29.141
2005 Total	-.512	.044	3.714	22.023	4.831	26.855	.011	.085	30.197
2006 Total	-.358	.061	3.560	22.032	4.501	26.533	.062	.063	29.921
2007 Total	-.598	.025	3.893	21.855	4.040	25.895	.019	.107	29.341
2008 Total	-1.215	.041	3.112	21.388	2.588	23.976	-.004	.112	26.021
2009 Total	-.949	-.024	2.763	19.606	1.266	20.872	-.009	.116	22.770
2010 Total	-1.617	-.006	2.687	20.052	.528	20.580	-.042	.089	21.690
2011 Total	-2.423	.011	2.036	19.495	-.781	18.714	-.089	.127	18.375
2012 Total	-2.875	.004	1.583	19.096	-2.139	16.957	-.029	.161	15.801
2013 Total	-2.696	-.017	1.369	16.673	-2.717	13.956	.026	.197	12.835
2014 Total	-2.183	-.022	1.235	15.434	-3.641	11.793	-.034	.182	10.971
2015 Total	-1.596	-.018	.986	15.335	-4.042	11.292	-.001	.227	10.892
2016 Total	-1.326	-.019	.725	16.154	-4.443	11.710	-.058	.227	11.259
2017 Total	-2.221	-.029	-.073	15.173	-5.407	9.766	-.124	.192	7.512
2018 January	-.203	-.004	.004	1.265	-.414	.851	-.011	.014	.652
February	-.212	-.001	-.035	.995	-.401	.594	-.023	.012	.335
March	-.218	-.002	-.017	1.083	-.455	.628	-.022	.015	.383
April	-.259	-.002	-.033	1.172	-.538	.634	-.017	.010	.332
May	-.223	-.002	-.042	1.106	-.477	.628	-.014	.014	.361
June	-.236	-.001	-.030	1.153	-.467	.685	-.019	.015	.413
July	-.217	-.002	-.056	1.082	-.500	.582	-.014	.015	.308
August	-.234	-.001	-.071	1.172	-.414	.758	-.015	.017	.453
September	-.225	-.001	-.085	1.035	-.440	.595	-.014	.011	.280
October	-.253	-.002	-.089	.982	-.539	.444	-.019	.010	.090
November	-.207	-.003	-.123	.960	-.605	.355	-.016	.009	.014
December	-.198	-.003	-.103	.910	-.598	.312	-.016	.011	.003
Total	-2.688	-.026	-.679	12.915	-5.849	7.066	-.201	.152	3.625
2019 January	-.213	-.003	-.070	R .961	R .486	R .475	-.012	.011	R .188
February	-.156	-.001	-.094	R .654	R .458	R .195	-.015	.011	R -.059
March	-.210	-.001	-.118	R .798	R .467	R .331	-.014	.008	R -.003
April	-.190	-.001	-.130	R .793	R .434	R .359	-.017	.008	R .030
May	-.212	-.002	-.159	R .835	R .374	R .461	-.013	.010	R .085
June	-.180	-.002	-.157	R .760	R .490	R .271	-.015	.012	R -.070
July	-.147	-.002	-.161	R .829	R .390	R .439	-.014	.013	R .128
August	-.177	-.001	-.163	R .825	R .484	R .341	-.017	.014	R -.002
September	-.174	-.002	-.185	R .651	R .491	R .160	-.012	.012	R -.202
October	-.141	-.002	-.213	R .577	R .470	R .107	-.012	R .007	R -.254
November	-.172	-.002	-.215	R .542	R .504	R .039	R -.012	R .012	R -.350
December	-.147	-.003	-.223	.637	-.530	.108	-.014	.014	-.266
Total	-2.119	-.021	-1.887	8.863	-5.577	3.286	-.168	.133	-.775

^a Net imports equal imports minus exports.

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

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

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

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

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

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

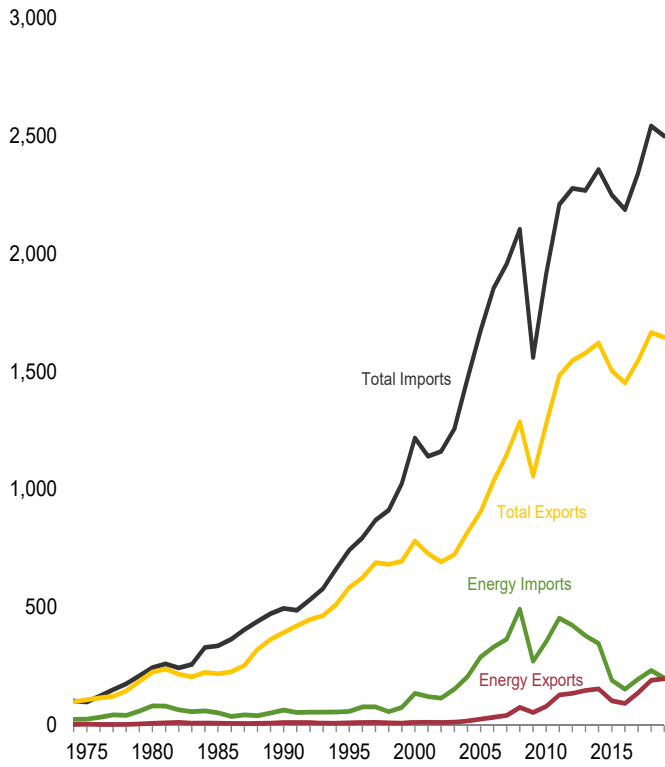
Sources: Tables 1.4a and 1.4b.

This table is new to the *Monthly Energy Review*.

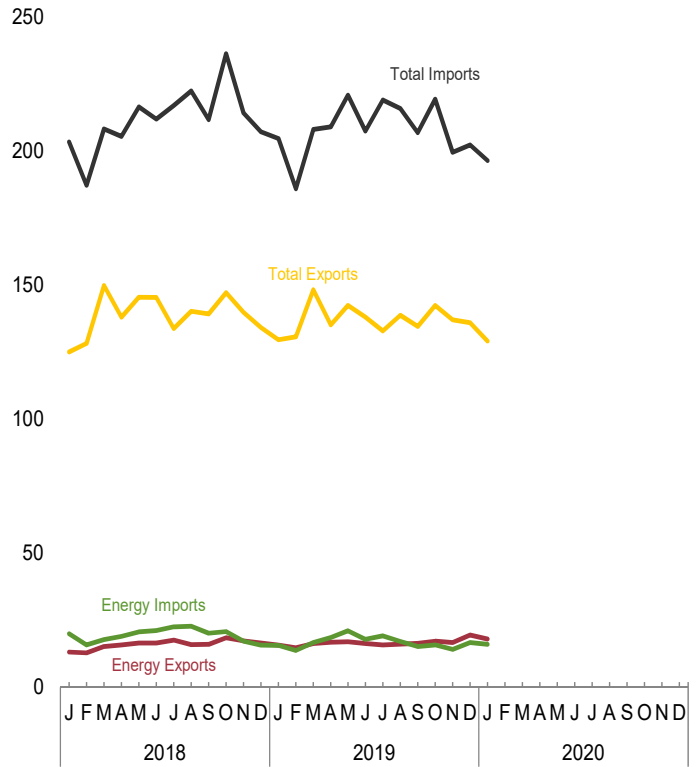
Figure 1.5 Merchandise Trade Value

(Billion Dollars[a])

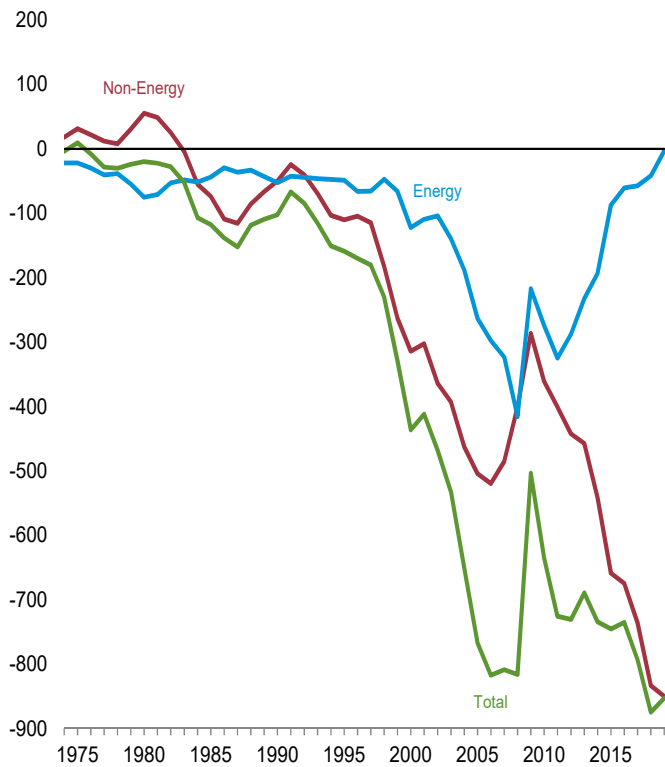
Imports and Exports, 1974–2019



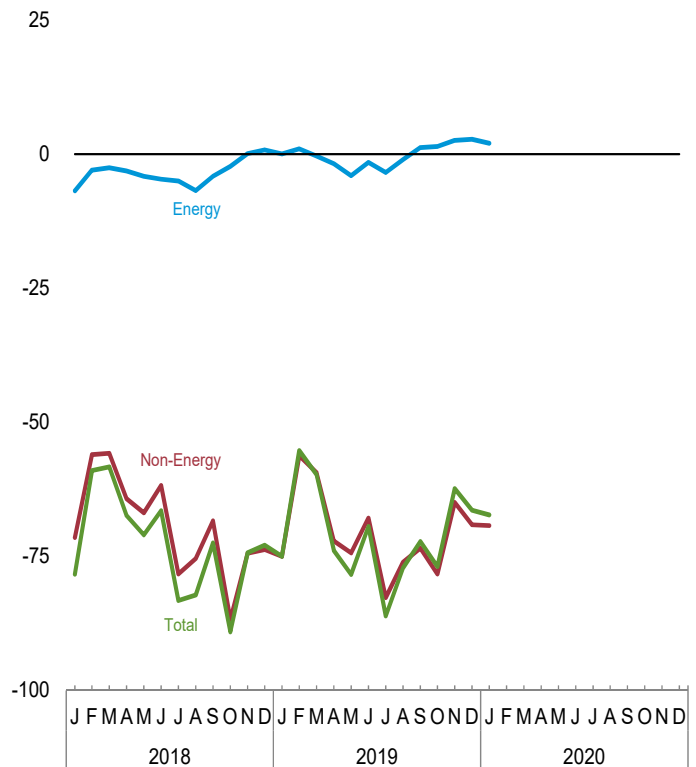
Imports and Exports, Monthly



Trade Balance, 1974–2019



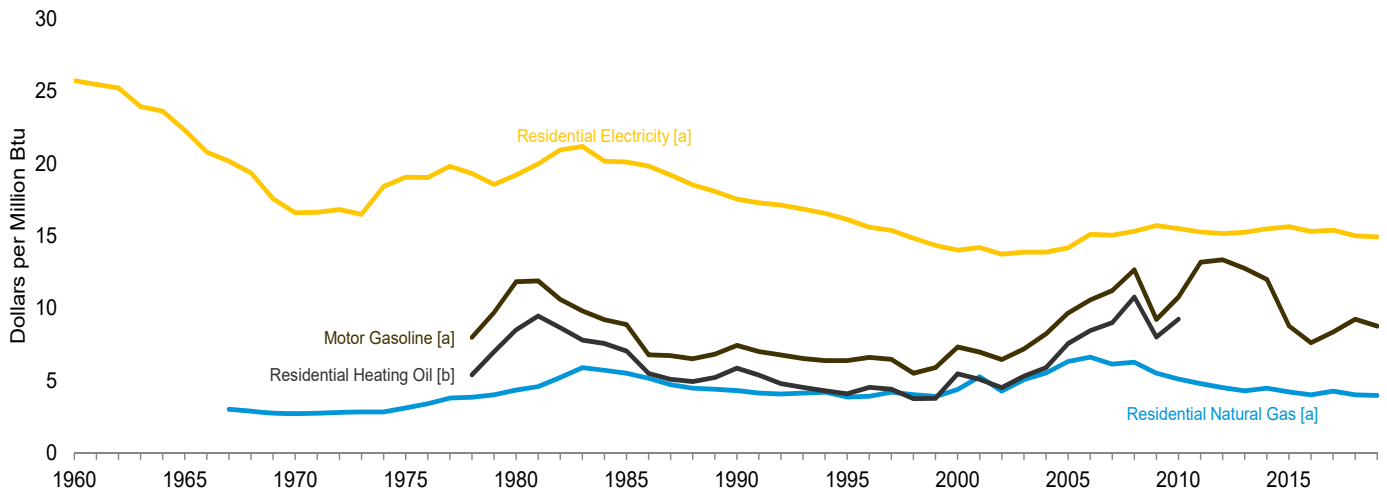
Trade Balance, Monthly



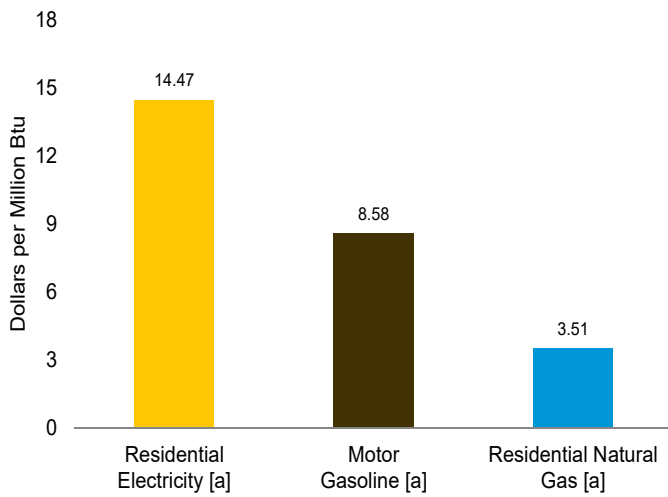
[a] Prices are not adjusted for inflation. See “Nominal Dollars” in Glossary.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.
 Source: Table 1.5.

Figure 1.6 Cost of Fuels to End Users In Real (1982-1984) Dollars

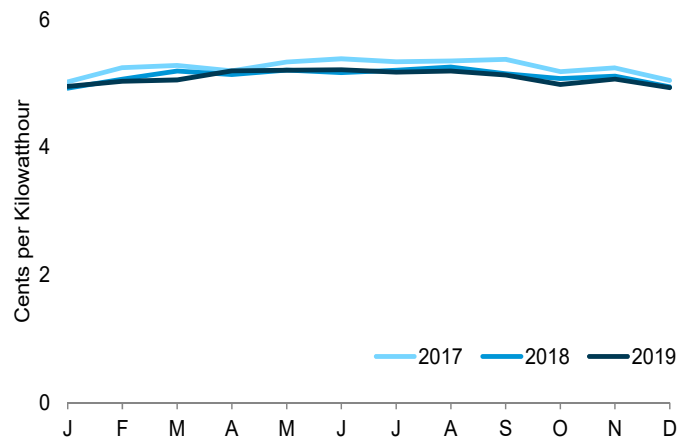
Costs, 1960–2019



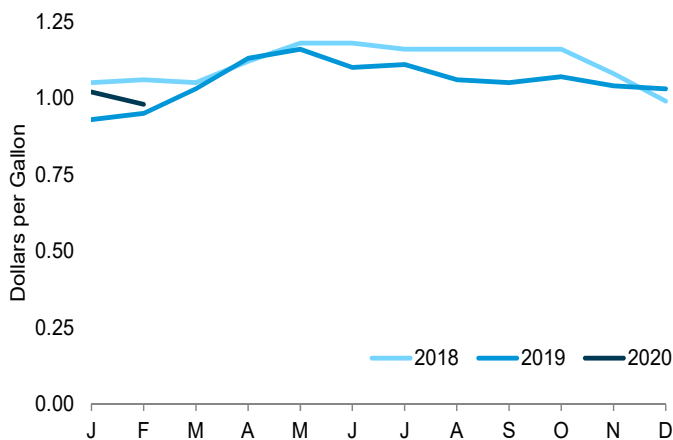
Costs, December 2019



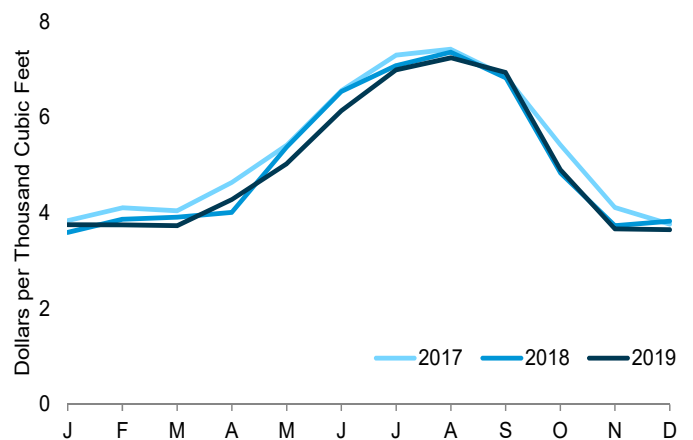
Residential Electricity, [a] Monthly



Motor Gasoline, [a] Monthly



Residential Natural Gas, [a] Monthly



[a] Includes Taxes.

[b] Excludes Taxes.

Note: See "Real Dollars" in Glossary.

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

Source: Tables 1.6.

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

	Consumer Price Index, All Urban Consumers ^a	Motor Gasoline ^b		Residential Heating Oil ^c		Residential Natural Gas ^b		Residential Electricity ^b	
	Index 1982–1984=100	Dollars per Gallon	Dollars per Million Btu	Dollars per Gallon	Dollars per Million Btu	Dollars per Thousand Cubic Feet	Dollars per Million Btu	Cents per Kilowatt-hour	Dollars per Million Btu
1960 Average	29.6	NA	NA	NA	NA	NA	NA	8.8	25.74
1965 Average	31.5	NA	NA	NA	NA	NA	NA	7.6	22.33
1970 Average	38.8	NA	NA	NA	NA	2.81	2.72	5.7	16.62
1975 Average	53.8	NA	NA	NA	NA	3.18	3.12	6.5	19.07
1980 Average	82.4	1.482	11.85	1.182	8.52	4.47	4.36	6.6	19.21
1985 Average	107.6	1.112	8.89	0.979	7.06	5.69	5.52	6.87	20.13
1990 Average	130.7	0.931	7.44	0.813	5.86	4.44	4.31	5.99	17.56
1995 Average	152.4	0.791	6.38	0.569	4.10	3.98	3.87	5.51	16.15
2000 Average	172.2	0.908	7.33	0.761	5.49	4.51	4.39	4.79	14.02
2001 Average	177.1	0.864	6.98	0.706	5.09	5.44	5.28	4.84	14.20
2002 Average	179.9	0.801	6.47	0.628	4.52	4.39	4.28	4.69	13.75
2003 Average	184.0	0.890	7.19	0.736	5.31	5.23	5.09	4.74	13.89
2004 Average	188.9	1.018	8.23	0.819	5.91	5.69	5.55	4.74	13.89
2005 Average	195.3	1.197	9.68	1.051	7.58	6.50	6.33	4.84	14.18
2006 Average	201.6	1.307	10.59	1.173	8.46	6.81	6.63	5.16	15.12
2007 Average	207.342	1.374	11.22	1.250	9.01	6.31	6.14	5.14	15.05
2008 Average	215.303	1.541	12.67	1.495	10.78	6.45	6.28	5.23	15.33
2009 Average	214.537	1.119	9.23	1.112	8.02	5.66	5.52	5.37	15.72
2010 Average	218.056	1.301	10.78	1.283	9.25	5.22	5.11	5.29	15.51
2011 Average	224.939	1.590	13.19	NA	NA	4.90	4.80	5.21	15.27
2012 Average	229.594	1.609	13.35	NA	NA	4.64	4.53	5.17	15.17
2013 Average	232.957	1.538	12.77	NA	NA	4.43	4.31	5.21	15.26
2014 Average	236.736	1.447	12.01	NA	NA	4.63	4.49	5.29	15.50
2015 Average	237.017	1.059	8.80	NA	NA	4.38	4.22	5.34	15.64
2016 Average	240.007	0.918	7.63	NA	NA	4.19	4.03	5.23	15.33
2017 January	242.839	0.992	8.25	NA	NA	3.84	3.70	5.03	14.74
February	243.603	0.969	8.05	NA	NA	4.11	3.96	5.25	15.39
March	243.801	0.979	8.13	NA	NA	4.04	3.90	5.29	15.50
April	244.524	1.014	8.43	NA	NA	4.64	4.47	5.20	15.25
May	244.733	1.000	8.31	NA	NA	5.41	5.22	5.34	15.65
June	244.955	0.980	8.14	NA	NA	6.56	6.32	5.39	15.79
July	244.786	0.958	7.96	NA	NA	7.30	7.04	5.34	15.66
August	245.519	0.992	8.25	NA	NA	7.42	7.16	5.36	15.70
September	246.819	1.089	9.05	NA	NA	6.86	6.61	5.38	15.77
October	246.663	1.032	8.58	NA	NA	5.43	5.23	5.19	15.21
November	246.669	1.057	8.79	NA	NA	4.11	3.96	5.25	15.37
December	246.524	1.023	8.50	NA	NA	3.77	3.63	5.05	14.80
Average	245.120	1.007	8.37	NA	NA	4.45	4.29	5.26	15.41
2018 January	247.867	1.047	8.70	NA	NA	3.59	3.46	4.93	14.45
February	248.991	1.057	8.78	NA	NA	3.87	3.73	5.07	14.87
March	249.554	1.054	8.76	NA	NA	3.91	3.77	5.20	15.23
April	250.546	1.116	9.27	NA	NA	4.01	3.86	5.14	15.07
May	251.588	1.178	9.79	NA	NA	5.37	5.18	5.21	15.28
June	251.989	1.179	9.79	NA	NA	6.54	6.30	5.17	15.15
July	252.006	1.163	9.66	NA	NA	7.08	6.82	5.21	15.27
August	252.146	1.158	9.62	NA	NA	7.36	7.09	5.26	15.41
September	252.439	1.161	9.65	NA	NA	6.83	6.58	5.15	15.10
October	252.885	1.165	9.68	NA	NA	4.84	4.66	5.08	14.89
November	252.038	1.084	9.01	NA	NA	3.73	3.60	5.12	15.00
December	251.233	0.987	8.20	NA	NA	3.83	3.69	4.95	14.50
Average	251.107	1.113	9.25	NA	NA	4.18	4.03	5.13	15.02
2019 January	251.712	0.934	7.77	NA	NA	3.75	R 3.61	R 4.96	R 14.53
February	252.776	0.954	7.93	NA	NA	3.75	3.61	R 5.04	R 14.76
March	254.202	1.031	8.57	NA	NA	3.73	R 3.59	5.06	R 14.83
April	255.548	1.132	9.41	NA	NA	4.28	4.12	R 5.20	R 15.24
May	256.092	1.157	9.62	NA	NA	5.03	R 4.84	5.21	R 15.27
June	256.143	1.099	9.13	NA	NA	6.14	5.91	R 5.22	R 15.29
July	256.571	1.105	9.19	NA	NA	6.99	R 6.73	R 5.18	R 15.18
August	256.558	1.059	8.80	NA	NA	7.24	R 6.97	R 5.20	R 15.23
September	256.759	1.049	8.72	NA	NA	6.94	6.68	5.13	R 15.04
October	257.346	1.065	8.85	NA	NA	4.90	4.72	4.99	14.62
November	257.208	1.045	8.68	NA	NA	R 3.66	R 3.52	5.07	14.86
December	256.974	1.032	8.58	NA	NA	R 3.65	R 3.51	R 4.94	R 14.47
Average	255.657	1.055	8.77	NA	NA	R 4.15	R 3.99	R 5.10	R 14.95
2020 January	257.971	1.020	8.48	NA	NA	NA	NA	NA	NA
February	258.678	0.978	8.13	NA	NA	NA	NA	NA	NA

^a Data are U.S. city averages for all items, and are not seasonally adjusted.
^b Includes taxes.
^c Excludes taxes.
R=Revised. NA=Not available.

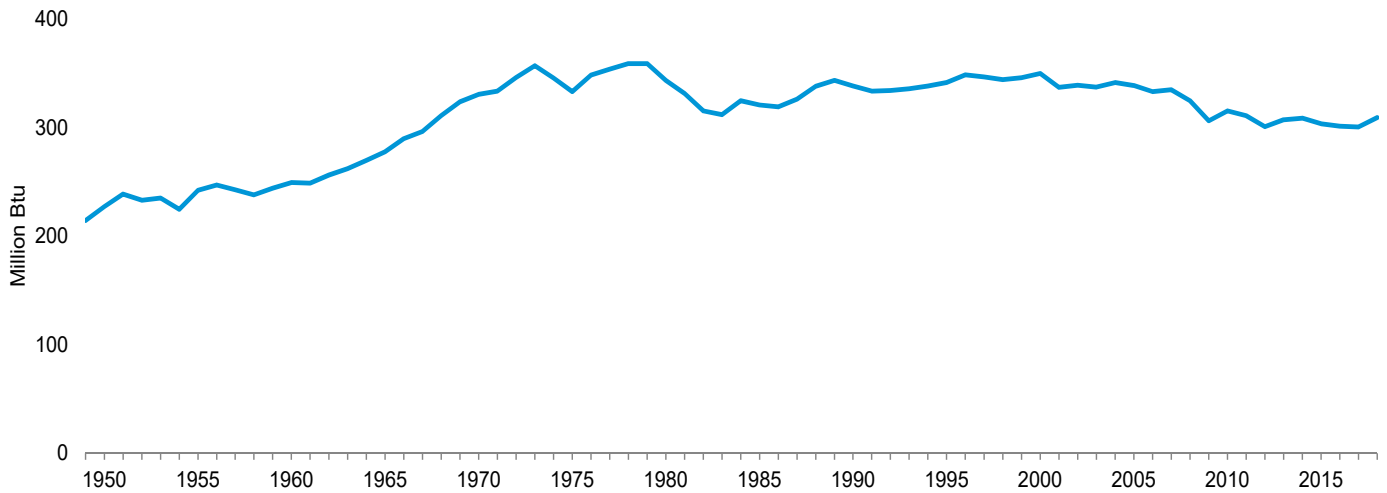
Notes: • See "Real Dollars" in Glossary. • Fuel costs are calculated by using the Urban Consumer Price Index (CPI) developed by the Bureau of Labor Statistics. • Annual averages may not equal average of months due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

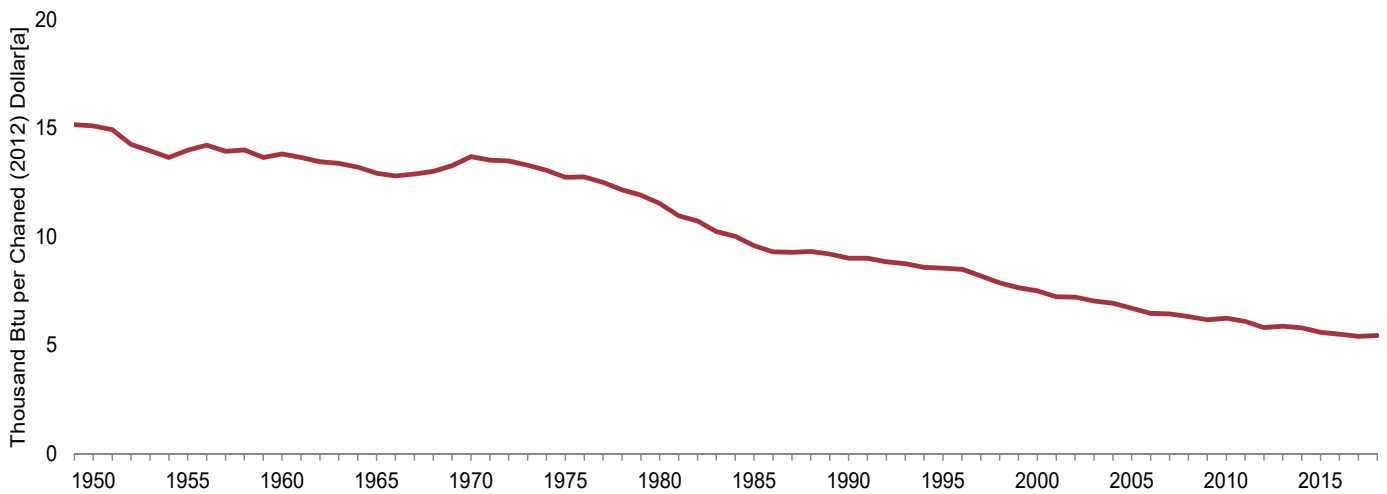
Sources: • **Fuel Prices:** Tables 9.4 (All Grades), 9.8, and 9.10, adjusted by the CPI; and *Monthly Energy Review*, September 2012, Table 9.8c. • **Consumer Price Index, All Urban Consumers:** U.S. Department of Labor, Bureau of Labor Statistics, series ID CUUR0000SA0. • **Conversion Factors:** Tables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

Figure 1.7 Primary Energy Consumption and Energy Expenditures Indicators

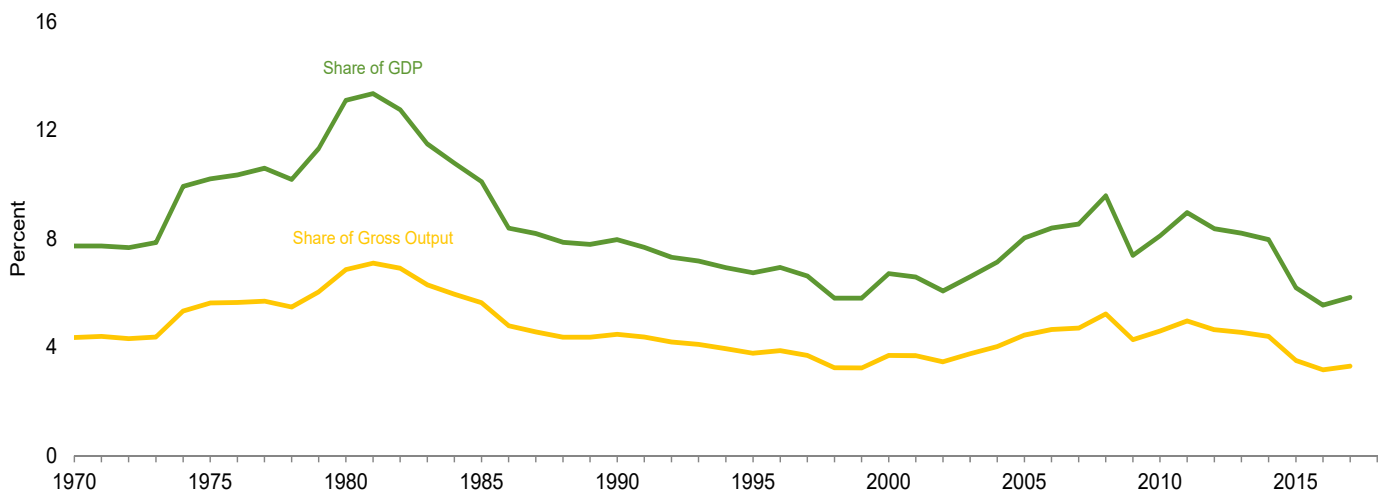
Energy Consumption per Capita, 1949–2019



Primary Energy Consumption per Real Dollar [a] of Gross Domestic Product, 1949–2019



Energy Expenditures as Share of Gross Domestic Product and Gross Output,[b] 1970–2017



[a] See “Chained Dollars” and “Real Dollars” in Glossary.

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

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

Source: Table 1.7.

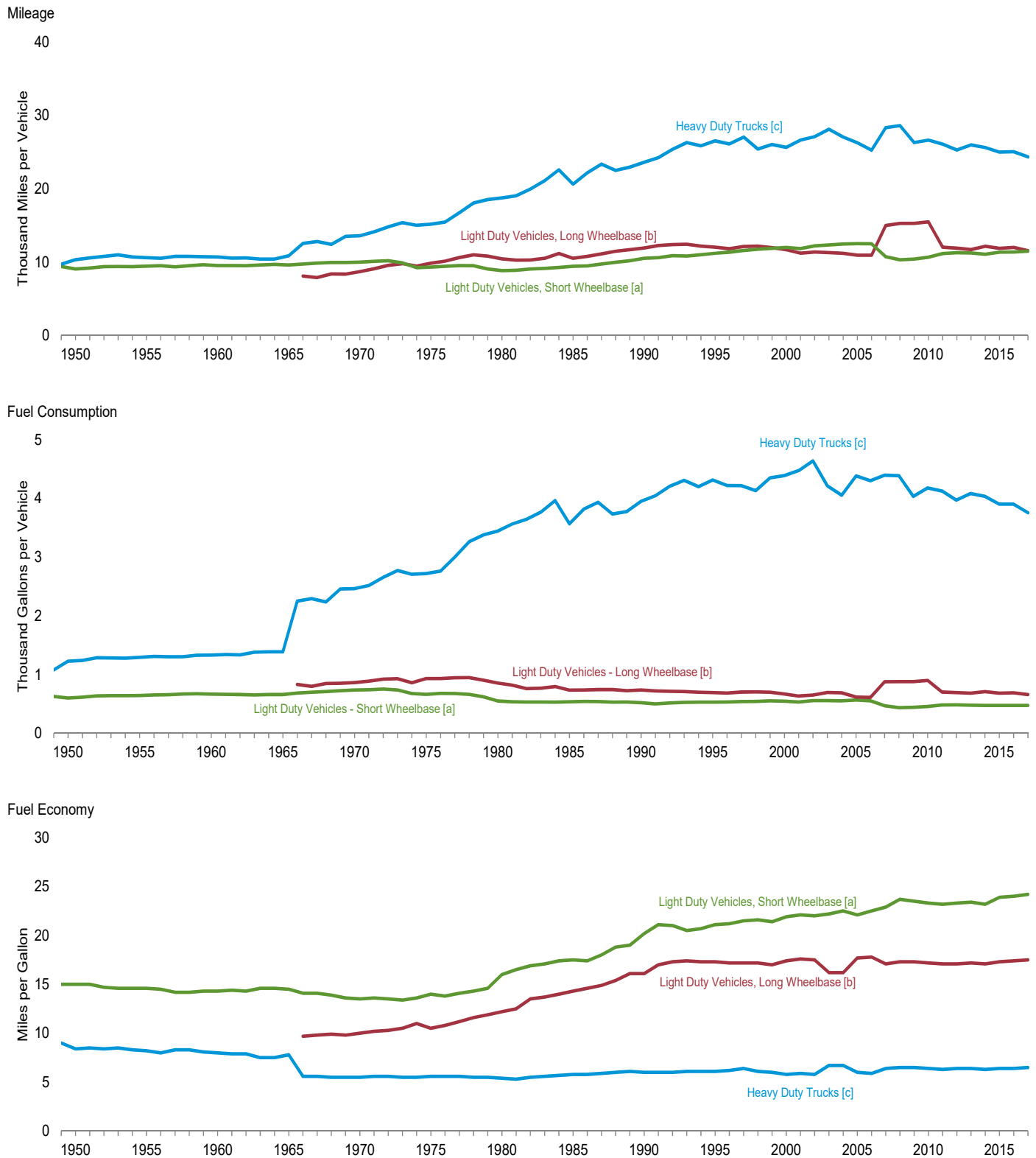
Table 1.7 Primary Energy Consumption, Energy Expenditures, and Carbon Dioxide Emissions Indicators

	Primary Energy Consumption ^a			Energy Expenditures ^b				Carbon Dioxide Emissions ^c		
	Consumption	Consumption per Capita	Consumption per Real Dollar ^d of GDP ^e	Expenditures	Expenditures per Capita	Expenditures as Share of GDP ^e	Expenditures as Share of Gross Output ^f	Emissions	Emissions per Capita	Emissions per Real Dollar ^d of GDP ^e
	Quadrillion Btu	Million Btu	Thousand Btu per Chained (2012) Dollar ^d	Million Nominal Dollars ^g	Nominal Dollars ^g	Percent	Percent	Million Metric Tons Carbon Dioxide	Metric Tons Carbon Dioxide	Metric Tons Carbon Dioxide per Million Chained (2012) Dollars ^d
1950	34.599	227	15.11	NA	NA	NA	NA	2,382	15.6	1,040
1955	40.178	242	13.99	NA	NA	NA	NA	2,685	16.2	935
1960	45.041	249	13.82	NA	NA	NA	NA	2,914	16.1	894
1965	53.953	278	12.94	NA	NA	NA	NA	3,462	17.8	830
1970	67.817	331	13.70	82,875	404	7.7	4.4	4,261	20.8	861
1975	71.931	333	12.74	171,854	796	10.2	5.6	4,426	20.5	784
1980	78.021	343	11.54	374,350	1,647	13.1	6.9	4,750	20.9	703
1981	76.057	331	10.97	427,901	1,865	13.3	7.1	4,627	20.2	668
1982	73.046	315	10.73	426,482	1,841	12.8	6.9	4,394	19.0	646
1983	72.915	312	10.24	417,622	1,786	11.5	6.3	4,371	18.7	614
1984	76.571	325	10.03	435,313	1,846	10.8	6.0	4,596	19.5	602
1985	76.334	321	9.60	438,343	1,842	10.1	5.6	4,587	19.3	577
1986	76.599	319	9.31	384,091	1,599	8.4	4.8	4,598	19.1	559
1987	79.008	326	9.28	397,627	1,641	8.2	4.6	4,756	19.6	559
1988	82.659	338	9.32	411,568	1,683	7.9	4.4	4,981	20.4	562
1989	84.740	343	9.22	439,051	1,779	7.8	4.4	5,068	20.5	551
1990	84.433	338	9.02	474,652	1,901	8.0	4.5	5,040	20.2	538
1991	84.380	334	9.02	472,440	1,867	7.7	4.4	4,995	19.7	534
1992	85.725	334	8.85	476,845	1,859	7.3	4.2	5,095	19.9	526
1993	87.266	336	8.77	492,275	1,894	7.2	4.1	5,186	20.0	521
1994	88.983	338	8.60	504,856	1,919	6.9	3.9	5,264	20.0	508
1995	90.931	341	8.55	514,624	1,933	6.7	3.8	5,323	20.0	501
1996	93.935	349	8.52	560,293	2,080	6.9	3.9	5,512	20.5	500
1997	94.507	347	8.20	567,962	2,083	6.6	3.7	5,583	20.5	485
1998	94.920	344	7.88	526,283	1,908	5.8	3.2	5,631	20.4	468
1999	96.545	346	7.66	558,627	2,002	5.8	3.2	5,693	20.4	451
2000	98.702	350	7.52	687,711	2,437	6.7	3.7	5,867	20.8	447
2001	96.064	337	7.24	696,242	2,443	6.6	3.7	5,765	20.2	435
2002	97.535	339	7.23	663,964	2,308	6.1	3.5	5,809	20.2	431
2003	97.835	337	7.05	755,070	2,603	6.6	3.7	5,860	20.2	422
2004	100.002	342	6.94	871,210	2,975	7.1	4.0	5,979	20.4	415
2005	100.102	339	6.71	1,045,730	3,539	8.0	4.4	5,999	20.3	402
2006	99.392	333	6.48	1,158,821	3,884	8.4	4.6	5,914	19.8	386
2007	100.893	335	6.46	1,233,869	4,096	8.5	4.7	6,003	19.9	384
2008	98.754	325	6.33	1,408,759	4,633	9.6	5.2	5,817	19.1	373
2009	93.942	306	6.18	1,066,293	3,476	7.4	4.3	5,392	17.6	355
2010	97.517	315	6.25	1,214,034	3,925	8.1	4.6	5,585	18.1	358
2011	96.850	311	6.11	1,391,696	4,467	9.0	5.0	5,446	17.5	344
2012	94.380	301	5.83	1,355,024	4,317	8.4	4.6	5,229	16.7	323
2013	97.117	307	5.89	1,376,134	4,354	8.2	4.5	5,356	16.9	325
2014	98.276	309	5.82	1,394,918	4,381	8.0	4.4	5,413	17.0	320
2015	97.378	304	5.60	1,128,062	3,517	6.2	3.5	5,263	16.4	303
2016	97.328	301	5.51	1,038,120	3,213	5.5	3.2	5,170	16.0	293
2017	97.700	300	5.41	1,136,496	3,495	5.8	3.3	5,131	15.8	284
2018	101.193	309	5.45	NA	NA	NA	NA	5,280	16.1	284
2019	100.215	NA	NA	NA	NA	NA	NA	5,138	NA	NA

^a See "Primary Energy Consumption" in Glossary.
^b Expenditures include taxes where data are available.
^c Carbon dioxide emissions from energy consumption. See Table 11.1.
^d See "Chained Dollars" and "Real Dollars" in Glossary.
^e See "Gross Domestic Product (GDP)" in Glossary.
^f Gross output is the value of GDP plus the value of intermediate inputs used to produce GDP. Through 1996, data have been adjusted by EIA based on DOC/BEA's 2012 comprehensive revision.
^g See "Nominal Dollars" in Glossary.
 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 (2012) dollars (see Table C1).
 • **Expenditures:** U.S. Energy Information Administration, "State Energy Price and Expenditure Estimates, 1970 Through 2017" (June 2019), 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 11.1. • **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 (2012) dollars (see Table C1).

Figure 1.8 Motor Vehicle Mileage, Fuel Consumption, and Fuel Economy, 1949-2017



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

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

[c] For 1949–1965, data are for single-unit trucks with 2 axles and 6 or more

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

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

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

Source: Table 1.8.

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

	Light-Duty Vehicles, Short Wheelbase ^a			Light-Duty Vehicles, Long Wheelbase ^b			Heavy-Duty Trucks ^c			All Motor Vehicles ^d		
	Mileage	Fuel Consumption	Fuel Economy	Mileage	Fuel Consumption	Fuel Economy	Mileage	Fuel Consumption	Fuel Economy	Mileage	Fuel Consumption	Fuel Economy
	Miles per Vehicle	Gallons per Vehicle	Miles per Gallon	Miles per Vehicle	Gallons per Vehicle	Miles per Gallon	Miles per Vehicle	Gallons per Vehicle	Miles per Gallon	Miles per Vehicle	Gallons per Vehicle	Miles per Gallon
1950	9,060	603	15.0	(^e)	(^e)	(^e)	10,316	1,229	8.4	9,321	725	12.8
1955	9,447	645	14.6	(^e)	(^e)	(^e)	10,576	1,293	8.2	9,661	761	12.7
1960	9,518	668	14.3	(^e)	(^e)	(^e)	10,693	1,333	8.0	9,732	784	12.4
1965	9,603	661	14.5	(^e)	(^e)	(^e)	10,851	1,387	7.8	9,826	787	12.5
1970	9,989	737	13.5	8,676	866	10.0	13,565	2,467	5.5	9,976	830	12.0
1975	9,309	665	14.0	9,829	934	10.5	15,167	2,722	5.6	9,627	790	12.2
1980	8,813	551	16.0	10,437	854	12.2	18,736	3,447	5.4	9,458	712	13.3
1981	8,873	538	16.5	10,244	819	12.5	19,016	3,565	5.3	9,477	697	13.6
1982	9,050	535	16.9	10,276	762	13.5	19,931	3,647	5.5	9,644	686	14.1
1983	9,118	534	17.1	10,497	767	13.7	21,083	3,769	5.6	9,760	686	14.2
1984	9,248	530	17.4	11,151	797	14.0	22,550	3,967	5.7	10,017	691	14.5
1985	9,419	538	17.5	10,506	735	14.3	20,597	3,570	5.8	10,020	685	14.6
1986	9,464	543	17.4	10,764	738	14.6	22,143	3,821	5.8	10,143	692	14.7
1987	9,720	539	18.0	11,114	744	14.9	23,349	3,937	5.9	10,453	694	15.1
1988	9,972	531	18.8	11,465	745	15.4	22,485	3,736	6.0	10,721	688	15.6
1989	10,157	533	19.0	11,676	724	16.1	22,926	3,776	6.1	10,932	688	15.9
1990	10,504	520	20.2	11,902	738	16.1	23,603	3,953	6.0	11,107	677	16.4
1991	10,571	501	21.1	12,245	721	17.0	24,229	4,047	6.0	11,294	669	16.9
1992	10,857	517	21.0	12,381	717	17.3	25,373	4,210	6.0	11,558	683	16.9
1993	10,804	527	20.5	12,430	714	17.4	26,262	4,309	6.1	11,595	693	16.7
1994	10,992	531	20.7	12,156	701	17.3	25,838	4,202	6.1	11,683	698	16.7
1995	11,203	530	21.1	12,018	694	17.3	26,514	4,315	6.1	11,793	700	16.8
1996	11,330	534	21.2	11,811	685	17.2	26,092	4,221	6.2	11,813	700	16.9
1997	11,581	539	21.5	12,115	703	17.2	27,032	4,218	6.4	12,107	711	17.0
1998	11,754	544	21.6	12,173	707	17.2	25,397	4,135	6.1	12,211	721	16.9
1999	11,848	553	21.4	11,957	701	17.0	26,014	4,352	6.0	12,206	732	16.7
2000	11,976	547	21.9	11,672	669	17.4	25,617	4,391	5.8	12,164	720	16.9
2001	11,831	534	22.1	11,204	636	17.6	26,602	4,477	5.9	11,887	695	17.1
2002	12,202	555	22.0	11,364	650	17.5	27,071	4,642	5.8	12,171	719	16.9
2003	12,325	556	22.2	11,287	697	16.2	28,093	4,215	6.7	12,208	718	17.0
2004	12,460	553	22.5	11,184	690	16.2	27,023	4,057	6.7	12,200	714	17.1
2005	12,510	567	22.1	10,920	617	17.7	26,235	4,385	6.0	12,082	706	17.1
2006	12,485	554	22.5	10,920	612	17.8	25,231	4,304	5.9	12,017	698	17.2
2007	^a 10,710	^a 468	^a 22.9	^b 14,970	^b 877	^b 17.1	^c 28,290	^c 4,398	6.4	11,915	693	17.2
2008	10,290	435	23.7	15,256	880	17.3	28,573	4,387	6.5	11,631	667	17.4
2009	10,391	442	23.5	15,252	882	17.3	26,274	4,037	6.5	11,631	661	17.6
2010	10,650	456	23.3	15,474	901	17.2	26,604	4,180	6.4	11,866	681	17.4
2011	11,150	481	23.2	12,007	702	17.1	26,054	4,128	6.3	11,652	665	17.5
2012	11,262	484	23.3	11,885	694	17.1	25,255	3,973	6.4	11,707	665	17.6
2013	11,244	480	23.4	11,712	683	17.2	25,951	4,086	6.4	11,679	663	17.6
2014	11,048	476	23.2	12,138	710	17.1	25,594	4,036	6.3	11,621	666	17.5
2015	11,327	475	23.9	11,855	684	17.3	24,979	3,904	6.4	11,742	656	17.9
2016	11,370	475	24.0	11,991	689	17.4	25,037	3,904	6.4	11,810	658	17.9
2017	11,467	474	24.2	11,543	659	17.5	24,335	3,758	6.5	11,789	653	18.1

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

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

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

10,000 pounds), and combination trucks.

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

^e Included in "Heavy-Duty Trucks."

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 1.10 Cooling Degree Days by Census Division

	New England ^a	Middle Atlantic ^b	East North Central ^c	West North Central ^d	South Atlantic ^e	East South Central ^f	West South Central ^g	Mountain ^h	Pacific ⁱ	United States
1950 Total	295	401	505	647	1,414	1,420	2,282	682	629	871
1955 Total	532	761	922	1,139	1,636	1,674	2,508	780	558	1,144
1960 Total	318	487	626	871	1,583	1,532	2,367	974	796	1,000
1965 Total	310	498	618	832	1,613	1,552	2,461	780	577	979
1970 Total	423	615	747	980	1,744	1,571	2,282	971	734	1,079
1975 Total	422	584	721	937	1,791	1,440	2,162	903	597	1,049
1980 Total	438	680	769	1,158	1,911	1,754	2,651	1,071	653	1,214
1985 Total	324	509	602	780	1,878	1,522	2,519	1,095	761	1,121
1990 Total	429	562	602	913	2,054	1,563	2,526	1,212	838	1,200
1995 Total	471	704	877	928	2,028	1,613	2,398	1,213	794	1,261
2000 Total	279	458	632	983	1,925	1,674	2,775	1,480	772	1,232
2001 Total	464	623	722	994	1,897	1,478	2,543	1,508	861	1,255
2002 Total	508	772	899	1,045	2,182	1,757	2,515	1,467	783	1,363
2003 Total	475	615	619	907	1,980	1,452	2,496	1,553	978	1,268
2004 Total	368	591	585	722	2,038	1,517	2,482	1,290	828	1,217
2005 Total	598	892	944	1,063	2,098	1,676	2,647	1,372	777	1,388
2006 Total	485	693	734	1,034	2,053	1,648	2,786	1,466	922	1,360
2007 Total	447	694	881	1,102	2,219	1,892	2,475	1,564	828	1,392
2008 Total	462	667	683	818	1,993	1,537	2,501	1,385	918	1,282
2009 Total	350	524	534	698	2,029	1,479	2,590	1,393	894	1,241
2010 Total	635	908	964	1,096	2,269	1,977	2,757	1,358	674	1,456
2011 Total	554	836	859	1,074	2,259	1,727	3,112	1,450	736	1,470
2012 Total	565	815	974	1,221	2,162	1,762	2,915	1,573	917	1,495
2013 Total	540	683	690	892	2,000	1,441	2,536	1,462	892	1,306
2014 Total	420	596	610	814	2,009	1,493	2,474	1,431	1,068	1,299
2015 Total	555	804	729	942	2,405	1,718	2,741	1,478	1,068	1,488
2016 Total	626	888	958	1,073	2,412	1,957	2,882	1,497	928	1,559
2017 January	0	0	0	0	50	20	36	0	7	17
February	0	0	0	3	55	18	67	5	7	22
March	0	0	1	6	56	28	111	32	17	32
April	0	2	7	9	124	74	141	51	25	56
May	3	14	37	51	R 212	135	240	109	46	106
June	72	123	167	206	337	272	445	308	150	241
July	170	251	242	331	469	430	582	414	283	363
August	128	162	148	166	406	341	508	329	281	292
September	66	87	92	127	282	194	368	178	139	184
October	11	22	16	14	159	66	145	92	68	78
November	0	0	0	0	66	6	67	29	21	27
December	0	0	0	0	38	1	6	1	10	10
Total	450	661	709	911	2,254	1,585	2,718	1,548	1,053	1,428
2018 January	0	0	0	0	21	1	4	4	15	8
February	0	0	0	0	81	22	33	3	8	23
March	0	0	0	2	35	15	87	14	9	21
April	0	0	0	0	79	7	58	70	25	33
May	25	65	140	168	265	268	395	137	39	174
June	57	111	192	272	385	376	550	299	117	270
July	254	R 287	257	304	441	430	R 607	415	320	376
August	266	R 297	257	258	439	392	565	344	257	351
September	64	121	122	124	391	338	392	238	142	231
October	0	4	4	6	176	77	142	45	46	70
November	0	0	0	0	66	1	13	5	16	18
December	0	0	0	0	40	2	9	0	9	11
Total	667	R 885	972	1,134	R 2,418	1,928	R 2,856	1,573	1,002	1,585
2019 January	0	0	0	0	30	5	12	0	8	9
February	0	0	0	0	R 66	14	24	0	5	18
March	0	0	0	0	57	10	37	10	7	R 19
April	0	0	1	6	101	31	92	52	26	42
May	3	32	R 48	42	R 294	218	R 291	57	24	129
June	63	112	126	R 174	R 362	R 299	R 438	R 233	116	227
July	273	326	319	R 321	R 482	R 425	R 547	R 395	R 210	R 373
August	R 165	R 216	194	225	R 443	406	624	R 385	R 248	336
September	29	R 88	R 135	R 183	R 376	381	R 525	R 206	131	243
October	0	8	6	2	R 204	80	140	49	R 41	75
November	0	0	0	0	54	1	16	11	R 16	16
December	0	0	0	0	51	5	13	0	10	14
Total	534	781	829	954	2,519	1,874	2,760	1,397	843	1,502

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

^b New Jersey, New York, and Pennsylvania.

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

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

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

^f Alabama, Kentucky, Mississippi, and Tennessee.

^g Arkansas, Louisiana, Oklahoma, and Texas.

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

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

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.

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

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

	Coal	Natural Gas	Petroleum							Total
			Asphalt and Road Oil	Hydrocarbon Gas Liquids ^a	Lubricants	Petrochemical Feedstocks ^b	Petroleum Coke	Special Naphthas	Other ^c	
	Thousand Short Tons	Billion Cubic Feet	Thousand Barrels per Day							
1973 Total	3,523	898	522	684	162	356	56	88	88	1,956
1975 Total	3,105	761	419	654	137	320	54	75	122	1,781
1980 Total	2,612	759	396	890	159	692	52	100	143	2,433
1985 Total	1,536	642	425	982	145	395	58	83	95	2,184
1990 Total	758	675	483	1,071	164	546	72	56	85	2,477
1995 Total	921	868	486	1,357	156	590	62	37	70	2,758
1996 Total	884	896	484	1,413	151	592	65	39	70	2,813
1997 Total	842	909	505	1,447	160	686	62	38	72	2,970
1998 Total	656	938	521	1,441	168	690	97	56	83	3,056
1999 Total	654	906	547	1,578	169	651	106	76	77	3,204
2000 Total	674	918	525	1,543	166	662	90	51	78	3,115
2001 Total	607	839	519	1,386	153	586	97	41	83	2,864
2002 Total	937	836	512	1,474	151	628	86	53	85	2,989
2003 Total	961	808	503	1,397	140	676	84	42	80	2,923
2004 Total	938	818	537	1,458	141	784	95	27	74	3,117
2005 Total	929	761	546	1,369	141	729	91	33	75	2,983
2006 Total	562	573	521	1,424	137	726	126	37	86	3,057
2007 Total	556	587	494	1,444	142	664	123	41	82	2,989
2008 Total	541	597	417	1,279	131	574	117	44	85	2,648
2009 Total	375	513	360	1,401	118	507	108	24	85	2,604
2010 Total	719	654	362	1,600	131	539	36	14	89	2,770
2011 Total	730	680	355	1,630	125	520	34	12	91	2,766
2012 Total	707	706	340	1,751	114	444	37	8	88	2,783
2013 Total	732	721	323	1,871	121	448	34	52	93	2,943
2014 Total	562	725	327	1,780	126	410	10	55	97	2,806
2015 Total	520	703	343	1,920	138	378	10	52	99	2,940
2016 Total	435	727	351	1,939	130	371	10	49	100	2,951
2017 January	38	70	183	2,060	136	367	13	55	101	2,914
February	36	62	242	1,876	128	404	6	55	102	2,814
March	38	66	260	1,964	143	430	5	53	105	2,960
April	38	59	316	1,962	128	424	9	41	100	2,980
May	39	59	367	1,997	131	433	10	48	106	3,093
June	37	57	475	2,129	120	434	8	56	107	3,328
July	39	57	443	2,193	116	398	14	49	105	3,318
August	40	59	543	1,875	92	378	9	55	102	3,054
September	39	57	444	1,894	114	351	11	45	93	2,952
October	39	62	411	2,067	123	368	5	58	96	3,127
November	38	66	308	2,149	122	368	12	59	111	3,129
December	41	72	209	2,169	94	376	12	55	102	3,017
Total	463	746	351	2,029	121	394	9	52	103	3,059
2018 January	39	73	158	2,382	105	351	10	56	101	3,163
February	34	66	203	2,183	135	352	5	52	R 101	R 3,031
March	39	70	278	2,274	132	377	9	53	99	3,223
April	41	65	225	2,174	122	400	9	57	105	3,092
May	42	62	385	2,152	103	383	10	54	105	3,192
June	39	60	476	2,244	131	401	10	45	106	3,413
July	42	61	460	2,417	128	414	9	49	105	3,582
August	42	61	507	2,455	134	432	13	39	105	3,685
September	42	60	385	2,399	99	407	12	45	104	3,451
October	41	63	410	2,289	107	427	13	48	95	3,390
November	41	68	247	2,388	118	376	8	37	106	3,280
December	43	72	182	2,353	91	389	8	41	106	3,170
Total	484	780	327	2,310	117	393	10	48	103	3,308
2019 January	40	75	206	R 2,508	113	366	8	39	103	R 3,343
February	37	67	193	2,523	97	353	3	51	93	3,313
March	41	70	238	2,310	67	336	10	42	92	R 3,096
April	38	63	314	2,274	168	369	7	44	91	3,268
May	43	62	369	2,237	109	358	10	46	89	3,218
June	42	58	409	2,277	105	368	12	50	91	3,313
July	40	59	512	2,514	131	362	12	63	97	3,692
August	39	61	505	2,315	111	400	11	51	R 97	3,489
September	39	59	488	2,507	100	377	9	50	R 91	3,621
October	60	63	444	R 2,491	130	297	8	54	88	R 3,512
November	53	68	306	2,361	107	351	12	49	91	3,277
December	67	72	202	2,466	94	400	12	47	96	3,317
Total	538	778	350	2,398	111	361	10	49	93	3,372

^a Ethane, propane, normal butane, isobutane, natural gasoline, and refinery olefins (ethylene, propylene, butylene, and isobutylene).

^b Includes still gas not burned as refinery fuel.

^c 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.

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 ^a	Lubri-cants	Petro-chemical Feed-stocks ^b	Petro-leum Coke	Special Naphthas	Other ^c	Total		
1973 Total	0.113	0.916	1.264	0.872	0.359	0.726	0.117	0.169	0.185	3.691	4.720	6.2
1975 Total .....	.099	.777	1.014	.822	.304	.652	.113	.144	.256	3.306	4.182	5.8
1980 Total .....	.084	.777	.962	1.128	.354	1.426	.108	.193	.303	4.473	5.334	6.8
1985 Total .....	.049	.662	1.029	1.194	.322	.817	.120	.159	.201	3.843	4.554	6.0
1990 Total .....	.024	.695	1.170	1.345	.362	1.123	.150	.107	.179	4.437	5.156	6.1
1995 Total .....	.029	.892	1.178	1.716	.346	1.214	.129	.071	.145	4.799	5.720	6.3
1996 Total .....	.028	.921	1.176	1.779	.335	1.209	.136	.075	.146	4.855	5.804	6.2
1997 Total .....	.027	.933	1.224	1.821	.354	1.400	.130	.072	.150	5.151	6.111	6.5
1998 Total .....	.021	.969	1.263	1.819	.371	1.403	.203	.107	.174	5.339	6.329	6.7
1999 Total .....	.021	.932	1.324	1.989	.375	1.329	.221	.145	.161	5.545	6.498	6.7
2000 Total .....	.022	.942	1.276	1.928	.369	1.344	.188	.097	.164	5.367	6.330	6.4
2001 Total .....	.019	.863	1.257	1.725	.338	1.192	.203	.078	.174	4.968	5.850	6.1
2002 Total .....	.030	.856	1.240	1.831	.334	1.272	.180	.102	.178	5.138	6.025	6.2
2003 Total .....	.031	.832	1.220	1.748	.309	1.371	.176	.080	.169	5.074	5.936	6.1
2004 Total .....	.030	.840	1.304	1.820	.313	1.592	.199	.051	.156	5.436	6.305	6.3
2005 Total .....	.030	.782	1.323	1.701	.312	1.474	.190	.063	.157	5.220	6.031	6.0
2006 Total .....	.018	.589	1.261	1.754	.303	1.477	.264	.070	.180	5.310	5.917	6.0
2007 Total .....	.018	.603	1.197	1.768	.313	1.351	.256	.078	.173	5.136	5.757	5.7
2008 Total .....	.017	.613	1.012	1.564	.291	1.172	.245	.085	.180	4.550	5.180	5.2
2009 Total .....	.012	.526	.873	1.676	.262	1.031	.226	.046	.179	4.293	4.831	5.1
2010 Total .....	.023	.669	.878	1.935	.291	1.096	.074	.026	.188	4.487	5.178	5.3
2011 Total .....	.023	.695	.859	1.935	.276	1.057	.070	.023	.193	4.413	5.131	5.3
2012 Total .....	.023	.724	.827	2.115	.254	.901	.077	.015	.187	4.375	5.121	5.4
2013 Total .....	.023	.741	.783	2.270	.268	.901	.070	.100	.197	4.590	5.355	5.5
2014 Total .....	.018	.749	.793	2.125	.280	.827	.021	.106	.205	4.357	5.124	5.2
2015 Total .....	.017	.730	.832	2.319	.305	.760	.022	.099	.208	4.545	5.291	5.4
2016 Total .....	.014	.755	.853	2.323	.289	.754	.021	.094	.212	4.547	5.316	5.5
2017 January .....	.001	.073	.038	.209	.026	.063	.002	.009	.018	.364	.438	4.9
February .....	.001	.064	.045	.167	.022	.062	.001	.008	.017	.322	.387	5.1
March .....	.001	.069	.053	.198	.027	.074	.001	.009	.019	.380	.450	5.3
April .....	.001	.062	.063	.192	.023	.071	.002	.006	.017	.375	.438	5.9
May .....	.001	.061	.075	.200	.025	.075	.002	.008	.019	.404	.466	6.0
June .....	.001	.059	.095	.206	.022	.072	.001	.009	.019	.424	.484	6.1
July .....	.001	.059	.091	.224	.022	.069	.002	.008	.019	.434	.495	5.9
August .....	.001	.061	.112	.189	.017	.065	.002	.009	.018	.412	.474	5.7
September .....	.001	.059	.088	.187	.021	.059	.002	.007	.016	.380	.441	5.8
October .....	.001	.064	.085	.209	.023	.063	.001	.009	.017	.407	.473	6.0
November .....	.001	.069	.061	.206	.022	.061	.002	.009	.019	.381	.451	5.6
December .....	.001	.075	.043	.213	.018	.064	.002	.009	.018	.368	.444	4.8
Total .....	.015	.774	.849	2.401	.267	.797	.020	.100	.217	4.651	5.440	5.6
2018 January .....	.001	.076	.032	.238	.020	.060	.002	.009	.018	.379	.457	4.7
February .....	.001	.068	.038	.199	.023	.054	.001	.008	.016	R .338	.408	5.1
March .....	.001	.072	.057	.222	.025	.065	.002	.009	.018	.397	.471	5.4
April .....	.001	.068	.045	.205	.022	.067	.002	.009	.018	.367	.436	5.5
May .....	.001	.065	.079	.213	.019	.066	.002	.009	.019	.407	.473	5.9
June .....	.001	.062	.095	.215	.024	.067	.002	.007	.018	.428	.491	6.0
July .....	.001	.063	.095	.242	.024	.071	.002	.008	.019	.460	.524	6.1
August .....	.001	.063	.104	.247	.025	.074	.002	.006	.019	.478	.542	6.2
September .....	.001	.062	.077	.233	.018	.067	.002	.007	.018	.422	.486	6.2
October .....	.001	.066	.084	.230	.020	.073	.002	.008	.017	.435	.501	6.2
November .....	.001	.071	.049	.231	.021	.062	.001	.006	.018	.390	.462	5.4
December .....	.001	.074	.037	.235	.017	.067	.001	.007	.019	.384	.459	5.1
Total .....	.015	.810	.793	2.710	.259	.794	.020	.092	.218	4.886	5.711	5.6
2019 January .....	.001	.078	.042	.252	.021	.063	.001	.006	.018	.405	.484	5.1
February .....	.001	.070	.036	R .224	.016	.055	(s)	.008	.015	.355	.426	5.1
March .....	.001	.073	.049	.228	.013	.058	.002	.007	.016	.372	.446	5.1
April .....	.001	.065	.063	.216	.031	.061	.001	.007	.016	.394	.461	6.0
May .....	.001	.065	.076	.222	.021	.062	.002	.007	.016	.405	.471	6.0
June .....	.001	.060	.081	.222	.019	.061	.002	.008	.016	.410	R .472	6.0
July .....	.001	.061	.105	.256	.025	.062	.002	.010	.017	.478	R .541	6.3
August .....	.001	.064	.104	.236	.021	.069	.002	.008	.017	.457	.522	6.1
September .....	.001	.061	.097	R .246	.018	.063	.001	.008	.016	R .449	.512	6.5
October .....	.002	R .066	.091	R .253	.024	.052	.001	.009	.016	.446	R .514	6.4
November .....	.002	R .071	.061	.228	.019	.059	.002	.008	.016	.392	R .465	5.6
December .....	.002	.075	.041	.244	.018	.069	.002	.008	.017	.399	.476	5.3
Total .....	.017	.808	.847	2.827	.246	.732	.020	.094	.197	4.963	5.789	5.8

^a Ethane, propane, normal butane, isobutane, natural gasoline, and refinery olefins (ethylene, propylene, butylene, and isobutylene).

^b Includes still gas not burned as refinery fuel.

^c Distillate fuel oil, residual fuel oil, waxes, and miscellaneous products.

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

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).

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 in the industrial sector. 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 estimates non-combustion use ratios of coal tar for 1973 forward. Prior to 1998, estimate ratios are based on coal tar production data from the United States International Trade Commission's *Synthetic Organic Chemicals*. For 1998 forward, coal tar production is estimated using chemicals industry coal, coke, and breeze nonfuel use data from EIA, Form EIA-846, “Manufacturing Energy Consumption Survey” (MECS). For Table 1.11b, coal tar values in Table 1.11a are multiplied by 32.0067 million Btu/short ton, which is the product of 4.95 barrels/short ton (the density of coal tar) and 6.466 million Btu/barrel (the approximate heat content of coal tar).

Natural Gas

EIA assumes that all non-combustion use of natural gas takes place in the industrial sector. EIA estimates non-combustion ratios of natural gas using total natural gas nonfuel use data from MECS, and natural gas used as feedstock for hydrogen production data from EIA, Form EIA-820, “Annual Refinery Report.” For Table 1.11b, natural gas values in Table 1.11a are multiplied by the heat content factors for natural gas end-use sectors consumption shown in Table A4.

Asphalt and 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 Fuel Oil

EIA assumes that all non-combustion use of distillate fuel oil occurs in the industrial sector. EIA estimates non-combustion ratios of distillate fuel oil using total distillate fuel oil nonfuel use data from MECS. Ratios prior to 1985 are assumed to be equal to the 1985 ratio. For Table 1.11b, distillate fuel oil values in Table 1.11a are multiplied by the heat content factors for distillate fuel oil consumption shown in Table A3 and the number of days in the period. Distillate fuel oil is included in "other" petroleum products.

Hydrocarbon Gas Liquids (HGL)

EIA estimates non-combustion ratios of hydrocarbon gas liquids (HGL), which include ethane, propane, normal butane, isobutane, natural gasoline (pentanes plus), and refinery olefins (ethylene, propylene, butylene, and isobutylene). EIA assumes that 100% of ethane, ethylene, and propylene consumption is for non-combustion use; 85% of normal butane, butylene, isobutane, and isobutylene consumption is for non-combustion use; and 50% of natural gasoline consumption is for non-combustion use. Non-combustion use of propane in the industrial sector is estimated using data from the American Petroleum Institute (API), the Propane Education & Research Council (PERC), and EIA's *Petroleum Supply Annual* (PSA). For 1984 through 2009, propane non-combustion ratios are estimated using API propane and propylene chemical industry sales data. Propane non-combustion ratios prior to 1984 are assumed to be equal to the 1984 ratio. For 2010 through 2016, propane non-combustion ratios are estimated by subtracting API data for total odorized propane sales from PSA data for total propane product supplied. Beginning in 2017, propane non-combustion ratios are estimated by subtracting PERC data for total odorized propane sales from PSA data for total propane product supplied. For Table 1.11b, HGL component values 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 is for non-combustion use. For Table 1.11b, lubricants values in Table 1.11a are multiplied by 6.065 million Btu/barrel (the approximate heat content of lubricants) and the number of days in the period.

Petrochemical Feedstocks, Naphtha

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

Petrochemical Feedstocks, Other Oils

EIA assumes all other oils for petrochemical feedstocks are for non-combustion use. For Table 1.11b, other oils petrochemical feedstock values in 1.11a are multiplied by 5.825 million Btu/barrel (the approximate heat content of other oils for petrochemical feedstocks) and the number of days in the period.

Petrochemical Feedstocks, Still Gas

EIA assumes all still gas not burned as refinery fuel or for pipeline gas supplies is for non-combustion use. EIA estimates non-combustion ratios of still gas by subtracting data for all known fuel uses (refinery fuel use from the PSA, and pipeline gas supplies from EIA's *Natural Gas Annual*) from the products supplied values in the PSA. The remainder is assumed to be dispatched to chemical plants as a feedstock for non-combustion use. For Table 1.11b, still gas for petrochemical feedstock values in 1.11a are multiplied by the still gas heat content factors (through 2015, the still gas heat content factor is 6.000 million Btu per fuel oil equivalent barrel; beginning in 2016, the still gas heat content factor is 6.287 million Btu per residual fuel oil equivalent barrel) and the number of days in the period.

Petroleum Coke

EIA assumes all non-combustion use of petroleum coke occurs in the industrial sector. Examples include petroleum coke used in the production of chemicals and metals. EIA estimates non-combustion ratios of petroleum coke by subtracting data for all known fuel use by refineries from PSA and MECS data. Non-combustion ratios prior to 1988 are assumed to be equal to the 1988 ratio. For Table 1.11b, petroleum coke values in 1.11a are multiplied by 5.719 million Btu/barrel (the approximate heat content of marketable petroleum coke) and the number of days in the period.

Residual Fuel Oil

EIA assumes that all non-combustion use of residual fuel oil occurs in the industrial sector. EIA estimates non-combustion ratios of residual fuel oil using total minus chemicals industry residual fuel oil nonfuel use data from MECS. Ratios prior to 1994 are assumed to be equal to the 1994 ratio. For Table 1.11b, residual fuel oil 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. Residual fuel oil is included in "other" petroleum products.

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. 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. Waxes are included in "other" petroleum products.

Miscellaneous Petroleum Products

Miscellaneous products include all finished petroleum products not classified elsewhere. EIA assumes all miscellaneous petroleum products consumption is for non-combustion use. For Table 1.11b, miscellaneous petroleum products 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. Miscellaneous petroleum products are included in "other" petroleum products.

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.

2009–2011: 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 biodiesel consumption (calculated using biodiesel data from U.S. Energy Information Administration (EIA), 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” (the data are converted to Btu by multiplying by the biodiesel heat content factor in Table A1); minus other renewable diesel fuel and other renewables fuels consumption from Table 10.4.

2012 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 biodiesel consumption from Table 10.4; minus other renewable diesel fuel and other renewables fuels consumption from Table 10.4.

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.

2010–2015: 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.

1993–2015: “U.S. International Trade in Goods and Services,” Annual Revisions.

2016–2018: “U.S. International Trade in Goods and Services,” 2018 Annual Revisions.

2019: “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.

1994–2015: “U.S. International Trade in Goods and Services,” Annual Revisions.

2016–2018: “U.S. International Trade in Goods and Services,” 2018 Annual Revisions.

2019: “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.

1993–2015: “U.S. International Trade in Goods and Services,” Annual Revisions.

2016–2018: “U.S. International Trade in Goods and Services,” 2018 Annual Revisions.

2019: “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.

1992–2015: “U.S. International Trade in Goods and Services,” Annual Revisions.

2016–2018: “U.S. International Trade in Goods and Services,” 2018 Annual Revisions.

2019: “U.S. International Trade in Goods and Services,” FT-900, monthly.

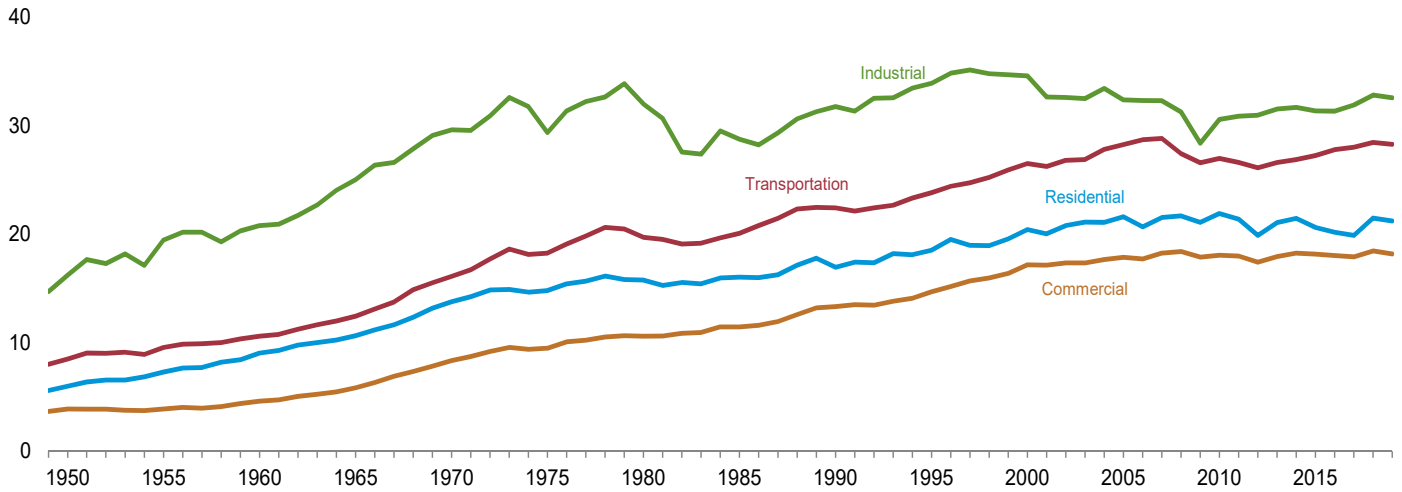
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2. Energy Consumption By Sector

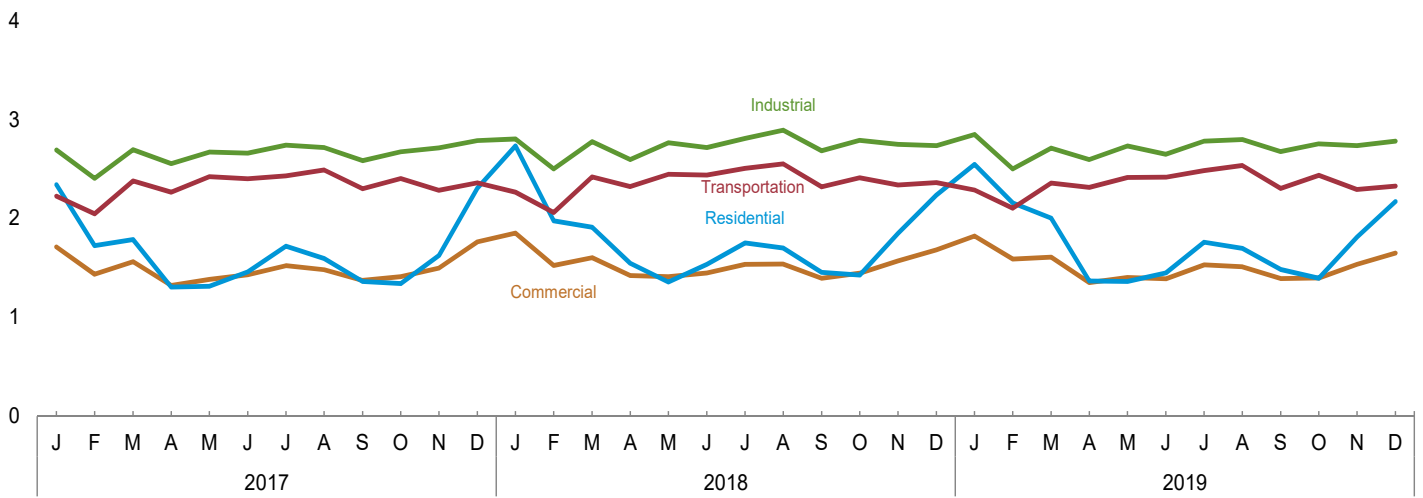
Figure 2.1 Energy Consumption by Sector

(Quadrillion Btu)

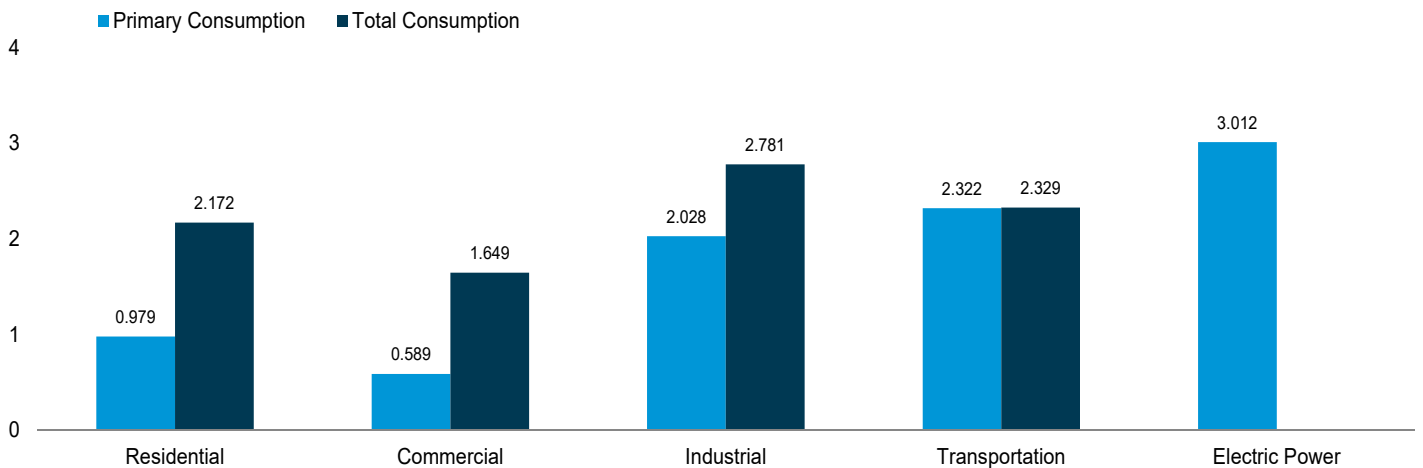
Total Consumption by End-Use Sector, 1949–2019



Total Consumption by End-Use Sector, Monthly



By Sector, December 2019



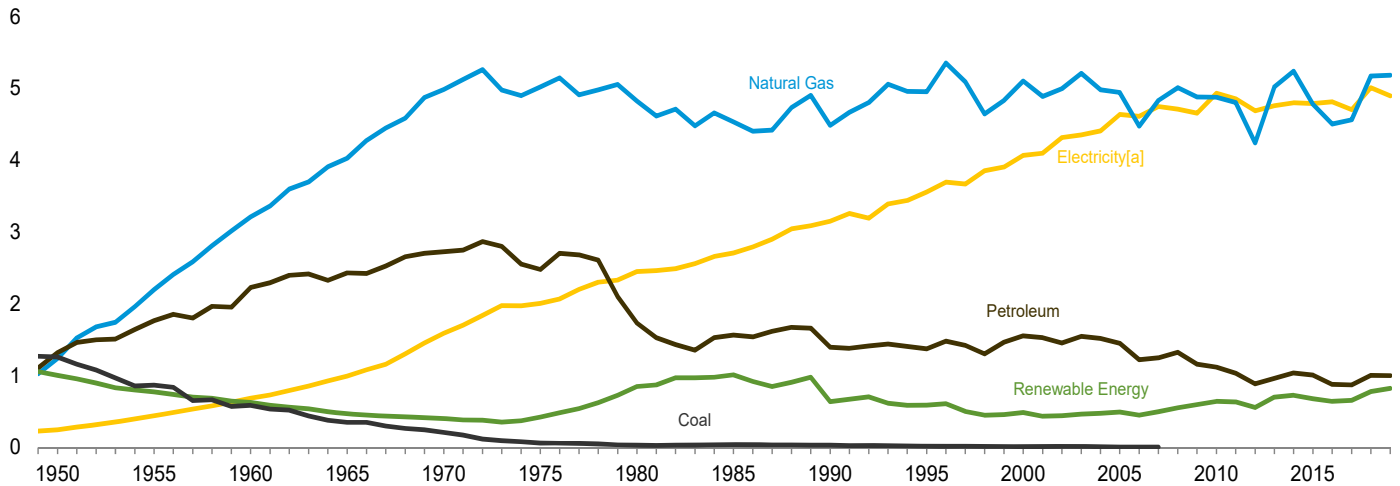
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#consumption>.

Source: Table 2.1.

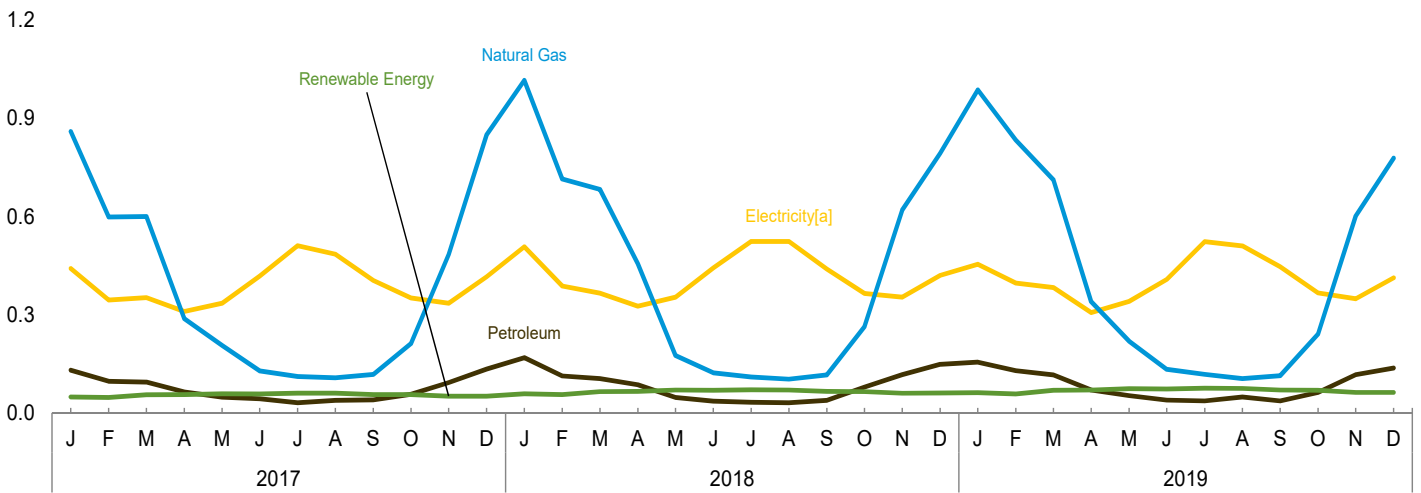
Figure 2.2 Residential Sector Energy Consumption

(Quadrillion Btu)

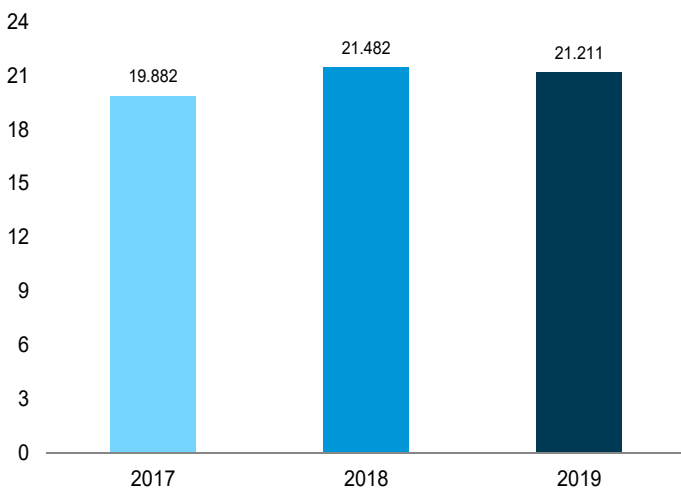
By Major Source, 1949–2019



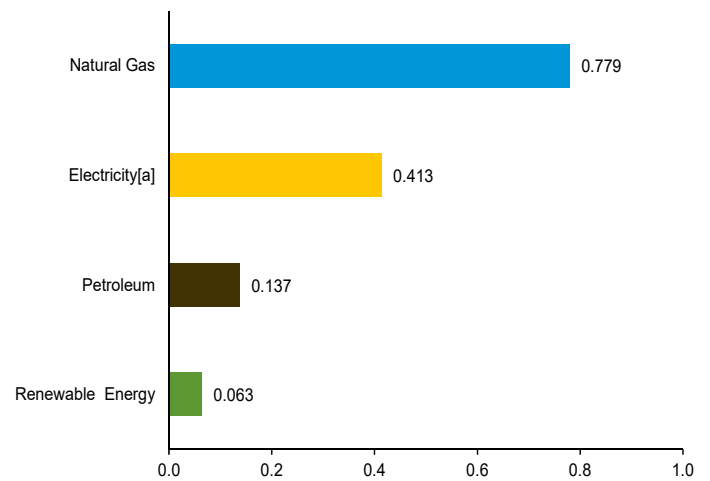
By Major Source, Monthly



Total, January–December



By Major Source, December 2019



[a] Electricity retail sales.

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

Source: Table 2.2.

Table 2.2 Residential Sector Energy Consumption
(Trillion Btu)

	Primary Consumption ^a									Electricity Retail Sales ^e	Electrical System Energy Losses ^f	Total
	Fossil Fuels				Renewable Energy ^b				Total Primary			
	Coal	Natural Gas ^c	Petroleum	Total	Geo-thermal	Solar ^d	Bio-mass	Total				
1950 Total	1,261	1,240	1,322	3,824	NA	NA	1,006	1,006	4,830	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	2,228	6,025	NA	NA	627	627	6,651	687	1,701	9,040
1965 Total	352	4,028	2,432	6,812	NA	NA	468	468	7,280	993	2,367	10,640
1970 Total	209	4,987	2,726	7,922	NA	NA	401	401	8,323	1,591	3,852	13,766
1975 Total	63	5,023	2,479	7,565	NA	NA	425	425	7,990	2,007	4,817	14,814
1980 Total	31	4,825	1,734	6,590	NA	NA	850	850	7,440	2,448	5,866	15,754
1985 Total	39	4,534	1,566	6,139	NA	NA	1,010	1,010	7,149	2,709	6,184	16,042
1990 Total	31	4,487	1,395	5,912	6	55	580	640	6,553	3,153	7,235	16,941
1995 Total	17	4,954	1,374	6,345	7	63	520	589	6,935	3,557	8,026	18,517
2000 Total	11	5,105	1,554	6,670	9	58	420	486	7,156	4,069	9,197	20,422
2001 Total	12	4,889	1,529	6,430	9	55	370	435	6,864	4,100	9,074	20,038
2002 Total	12	4,995	1,457	6,464	10	53	380	443	6,907	4,317	9,562	20,786
2003 Total	12	5,209	1,547	6,768	13	52	400	465	7,233	4,353	9,534	21,120
2004 Total	11	4,981	1,520	6,512	14	51	410	475	6,987	4,408	9,687	21,082
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	1,222	5,704	18	53	380	451	6,155	4,611	9,905	20,671
2007 Total	8	4,835	1,249	6,092	22	55	420	497	6,589	4,750	10,180	21,520
2008 Total	NA	5,010	1,325	6,335	26	58	470	555	6,889	4,711	10,068	21,668
2009 Total	NA	4,883	1,158	6,041	33	60	504	597	6,637	4,657	9,788	21,082
2010 Total	NA	4,878	1,120	5,999	37	65	541	642	6,641	4,933	10,321	21,895
2011 Total	NA	4,805	1,034	5,838	40	71	524	635	6,473	4,855	10,054	21,382
2012 Total	NA	4,242	886	5,128	40	79	438	557	5,684	4,690	9,496	19,870
2013 Total	NA	5,023	963	5,986	40	91	572	703	6,689	4,759	9,604	21,052
2014 Total	NA	5,242	1,036	6,279	40	109	579	728	7,006	4,801	9,638	21,446
2015 Total	NA	4,777	1,007	5,784	40	128	513	680	6,465	4,791	9,362	20,617
2016 Total	NA	4,506	878	5,384	40	161	442	643	6,027	4,815	9,334	20,176
2017 January	NA	860	131	991	3	10	36	49	1,041	441	859	2,341
February	NA	599	97	696	3	11	33	47	743	345	638	1,726
March	NA	600	94	694	3	16	36	55	750	352	685	1,787
April	NA	288	64	352	3	18	35	56	408	310	588	1,306
May	NA	206	48	254	3	20	36	59	313	335	665	1,314
June	NA	128	43	171	3	20	35	58	230	418	814	1,461
July	NA	111	31	142	3	21	36	60	203	511	1,006	1,720
August	NA	107	38	145	3	20	36	60	204	485	907	1,596
September	NA	118	40	159	3	18	35	56	215	405	742	1,362
October	NA	212	57	269	3	16	36	56	325	351	665	1,341
November	NA	484	93	577	3	13	35	51	628	335	662	1,625
December	NA	850	134	984	3	12	36	51	1,035	416	856	2,307
Total	NA	4,563	871	5,435	40	193	425	658	6,093	4,704	9,085	19,882
2018 January	NA	1,016	R 169	R 1,185	3	12	44	59	R 1,245	508	981	R 2,734
February	NA	715	R 113	R 828	3	13	40	56	R 884	388	704	R 1,976
March	NA	683	R 105	R 788	3	18	44	65	R 853	366	692	R 1,911
April	NA	456	R 86	R 542	3	21	43	66	R 609	326	613	R 1,547
May	NA	175	R 47	R 222	3	23	44	70	R 292	354	711	R 1,357
June	NA	123	R 36	R 159	3	23	43	69	R 228	443	864	R 1,535
July	NA	110	R 33	R 143	3	24	44	71	R 214	524	1,014	R 1,752
August	NA	103	R 31	R 134	3	23	44	70	R 204	524	973	R 1,701
September	NA	116	R 38	R 154	3	20	43	66	R 220	440	796	R 1,456
October	NA	264	R 79	R 343	3	18	44	65	R 408	365	654	R 1,428
November	NA	620	R 117	R 737	3	14	43	60	R 797	354	698	R 1,849
December	NA	793	R 149	R 942	3	13	44	61	R 1,003	420	814	R 2,237
Total	NA	5,173	R 1,004	R 6,177	40	222	517	778	R 6,955	5,013	9,514	R 21,482
2019 January	NA	R 987	R 155	R 1,142	3	14	45	62	R 1,204	454	888	R 2,546
February	NA	834	R 129	R 964	3	15	41	58	R 1,022	397	740	R 2,159
March	NA	R 712	R 116	R 827	3	21	45	69	R 896	383	726	R 2,005
April	NA	R 340	R 70	R 410	3	24	43	70	R 480	307	581	R 1,368
May	NA	219	R 53	R 273	3	26	45	74	R 347	341	R 675	R 1,363
June	NA	133	R 39	R 173	3	27	43	73	R 246	408	R 795	R 1,449
July	NA	118	R 37	R 155	3	28	45	76	R 231	523	1,008	R 1,761
August	NA	105	R 49	R 154	3	27	45	75	R 229	R 510	R 960	R 1,699
September	NA	114	R 37	R 151	3	24	43	70	R 221	447	816	R 1,484
October	NA	241	R 63	R 304	3	21	45	69	R 373	367	655	R 1,395
November	NA	R 602	R 117	R 718	3	17	43	63	R 782	R 349	R 681	R 1,811
December	NA	779	137	916	3	15	45	63	979	413	780	2,172
Total	NA	5,184	1,002	6,185	40	256	529	824	7,010	4,897	9,304	21,211

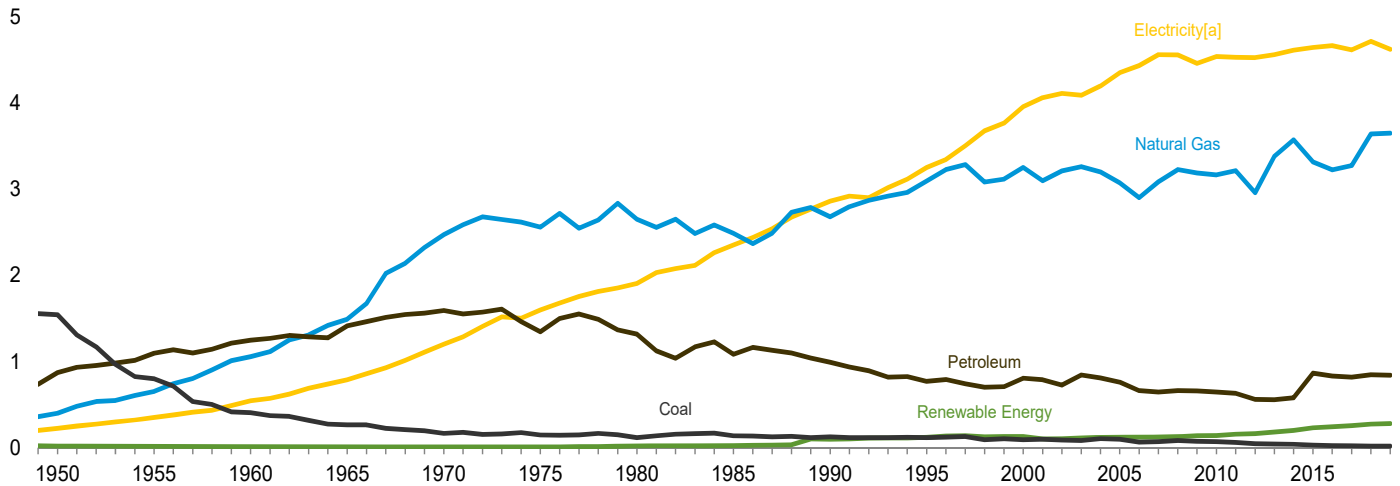
^a See "Primary Energy Consumption" in Glossary.
^b See Table 10.2a for notes on series components.
^c Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
^d Distributed (small-scale) solar photovoltaic (PV) electricity generation in the residential sector and distributed solar thermal energy in the residential, commercial, and industrial sectors. See Tables 10.2a and 10.5.
^e Electricity retail sales to ultimate customers reported by electric utilities and beginning in 1996, other energy service providers.
^f Total losses are calculated as the primary energy consumed by the electric power sector minus the energy content of electricity retail sales. Total losses are allocated to the end-use sectors in proportion to each sector's share of total

electricity retail sales. See Note 1, "Electrical System Energy Losses," at end of section.
R=Revised. NA=Not available.
Notes: • Data are estimates, except for electricity retail sales. • See Note 2, "Other Energy Losses," at end of section. • See Note 3, "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.

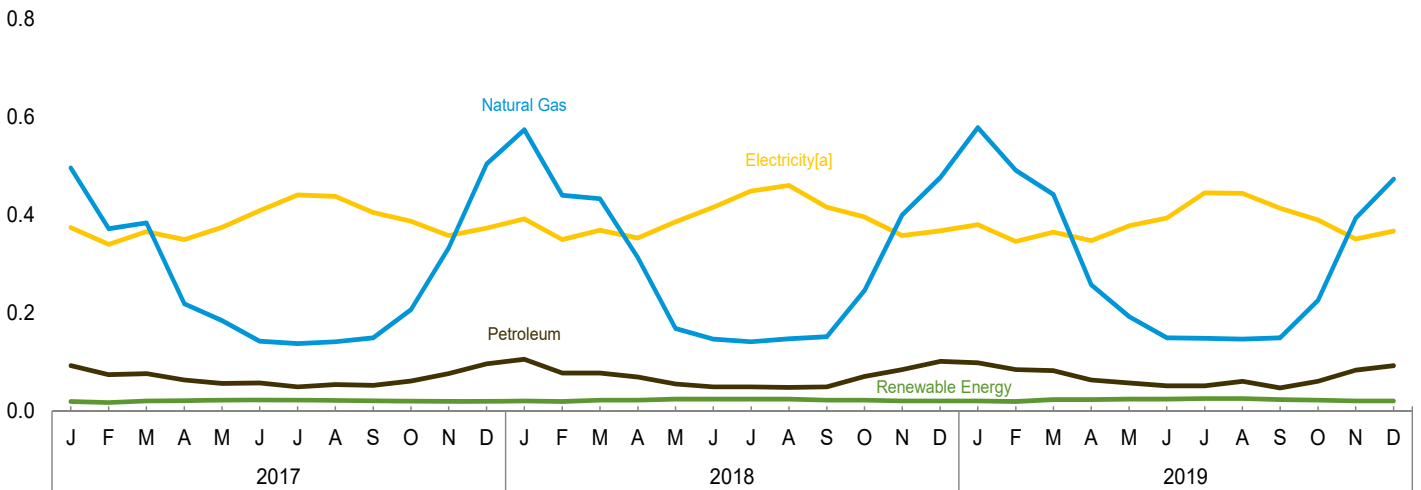
Figure 2.3 Commercial Sector Energy Consumption

(Quadrillion Btu)

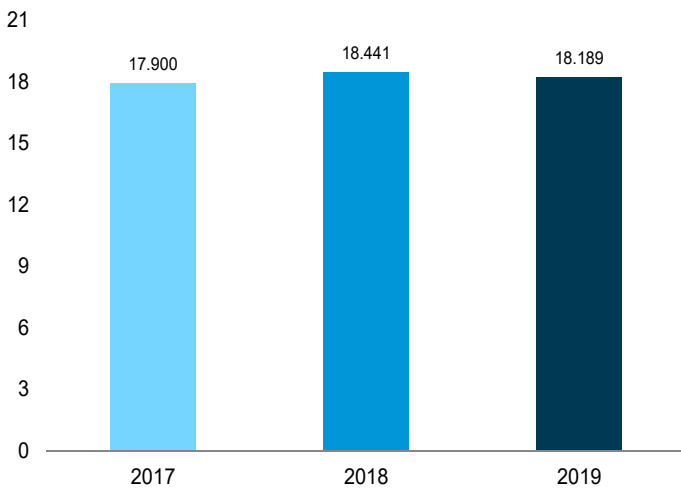
By Major Source, 1949–2019



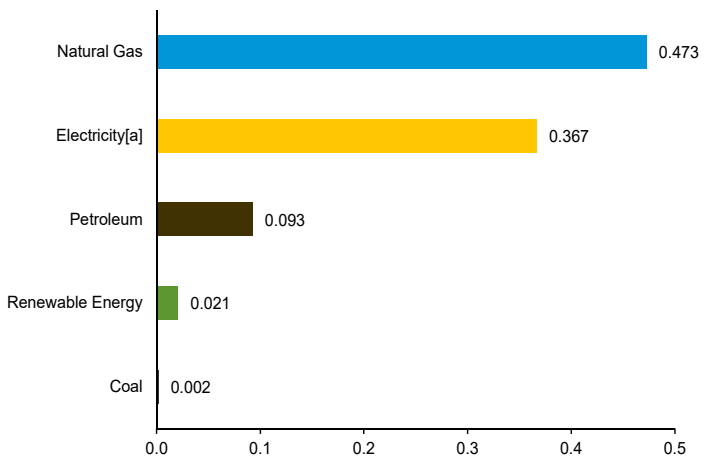
By Major Source, Monthly



Total, January–December



By Major Source, December 2019



[a] Electricity retail sales.

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

Source: Table 2.3.

Table 2.3 Commercial Sector Energy Consumption
(Trillion Btu)

	Primary Consumption ^a										Total Primary	Electricity Retail Sales ^g	Electrical System Energy Losses ^h	Total
	Fossil Fuels				Renewable Energy ^b									
	Coal	Natural Gas ^c	Petroleum ^d	Total	Hydroelectric Power ^e	Geothermal	Solar ^f	Wind	Biomass	Total				
1950 Total	1,542	401	872	2,815	NA	NA	NA	NA	19	19	2,834	225	834	3,893
1955 Total	801	651	1,095	2,547	NA	NA	NA	NA	15	15	2,561	350	984	3,895
1960 Total	407	1,056	1,248	2,711	NA	NA	NA	NA	12	12	2,723	543	1,344	4,610
1965 Total	265	1,490	1,413	3,168	NA	NA	NA	NA	9	9	3,177	789	1,880	5,846
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	9,493
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	2,680	991	3,795	1	3	(s)	—	94	98	3,894	2,860	6,564	13,317
1995 Total	117	3,096	769	3,982	1	5	(s)	—	113	119	4,101	3,252	7,337	14,690
2000 Total	92	3,252	807	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	842	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	17,656
2005 Total	97	3,073	761	3,931	1	14	2	—	105	121	4,052	4,351	9,451	17,854
2006 Total	65	2,902	661	3,627	1	14	3	—	103	120	3,748	4,435	9,525	17,707
2007 Total	70	3,085	646	3,801	1	14	4	—	103	122	3,923	4,560	9,771	18,253
2008 Total	81	3,228	660	3,970	1	15	6	—	109	131	4,100	4,559	9,743	18,402
2009 Total	73	3,187	659	3,919	1	17	8	(s)	112	137	4,056	4,459	9,373	17,888
2010 Total	70	3,165	647	3,881	1	19	12	(s)	111	142	4,023	4,539	9,497	18,059
2011 Total	62	3,216	632	3,910	(s)	20	20	(s)	115	155	4,066	4,531	9,385	17,982
2012 Total	44	2,960	560	3,563	(s)	20	33	1	108	162	3,725	4,528	9,168	17,422
2013 Total	41	3,380	558	3,979	(s)	20	41	1	120	182	4,161	4,562	9,206	17,930
2014 Total	40	3,572	578	4,190	(s)	20	52	1	127	200	4,390	4,614	9,261	18,265
2015 Total	31	3,316	864	4,211	(s)	20	57	1	152	230	4,441	4,643	9,073	18,157
2016 Total	24	3,224	832	4,079	2	20	62	1	158	242	4,321	4,665	9,044	18,030
2017 January	3	496	93	591	(s)	2	4	(s)	14	20	611	374	728	1,713
February	2	372	75	449	(s)	2	4	(s)	12	18	467	340	630	1,437
March	2	384	77	464	(s)	2	6	(s)	13	21	485	366	712	1,563
April	1	219	64	285	(s)	2	7	(s)	13	22	306	350	665	1,322
May	1	185	57	243	(s)	2	8	(s)	13	23	266	375	743	1,384
June	1	143	58	202	(s)	2	8	(s)	13	23	224	409	797	1,431
July	1	138	50	190	(s)	2	8	(s)	13	23	213	441	868	1,522
August	1	142	55	198	(s)	2	8	(s)	13	23	221	438	821	1,481
September	1	150	53	204	(s)	2	7	(s)	12	21	226	405	742	1,373
October	1	207	62	271	(s)	2	6	(s)	13	21	292	387	733	1,412
November	2	333	77	412	(s)	2	5	(s)	13	20	432	358	707	1,497
December	2	504	97	604	(s)	2	5	(s)	13	20	624	373	767	1,763
Total	21	3,273	820	4,113	2	20	76	1	156	255	4,368	4,616	8,916	17,900
2018 January	3	574	R 106	R 683	(s)	2	5	(s)	13	21	R 704	392	757	R 1,853
February	2	440	R 78	R 520	(s)	2	6	(s)	12	20	R 540	350	636	R 1,526
March	2	433	R 78	R 513	(s)	2	8	(s)	13	23	R 536	369	698	R 1,603
April	1	313	R 70	R 384	(s)	2	9	(s)	13	23	R 407	353	663	R 1,423
May	1	169	56	R 226	(s)	2	10	(s)	13	25	R 251	386	775	R 1,412
June	1	147	R 50	199	(s)	2	10	(s)	13	25	224	416	811	R 1,451
July	1	142	50	194	(s)	2	10	(s)	13	25	219	449	868	1,536
August	1	148	49	198	(s)	2	10	(s)	R 14	25	223	460	855	1,538
September	1	152	50	203	(s)	2	9	(s)	12	23	226	416	754	1,396
October	1	246	R 71	R 318	(s)	2	8	(s)	13	23	R 341	396	710	R 1,447
November	2	400	R 85	R 487	(s)	2	6	(s)	13	21	R 507	358	706	R 1,571
December	2	476	R 102	R 579	(s)	2	6	(s)	13	21	R 601	368	713	R 1,683
Total	19	3,640	R 845	R 4,503	2	20	94	2	156	274	R 4,777	4,715	8,949	R 18,441
2019 January	2	R 578	R 99	R 678	NM	2	6	(s)	13	21	R 700	R 380	R 744	R 1,824
February	2	R 491	R 85	R 578	NM	2	R 6	(s)	12	20	R 598	R 346	R 646	R 1,591
March	2	442	R 83	R 527	NM	2	9	(s)	13	24	R 552	365	R 692	R 1,608
April	1	R 258	R 64	R 322	NM	2	10	(s)	12	24	R 346	348	R 659	R 1,353
May	1	R 193	58	R 251	NM	2	11	(s)	12	25	277	378	750	1,405
June	1	150	R 52	R 203	(s)	2	11	(s)	12	25	R 228	R 394	767	1,389
July	1	149	52	202	NM	2	11	(s)	12	26	228	R 445	R 859	R 1,532
August	1	147	61	R 209	NM	2	11	(s)	12	R 26	R 234	444	R 835	R 1,513
September	1	150	R 48	200	NM	2	10	(s)	12	24	223	414	R 755	R 1,392
October	1	226	R 61	288	NM	2	9	(s)	12	23	R 311	R 390	R 695	R 1,397
November	2	R 394	R 84	R 479	R NM	2	7	(s)	12	21	R 500	R 351	685	R 1,536
December	2	473	93	568	(s)	2	6	(s)	12	21	589	367	693	1,649
Total	17	3,650	839	4,506	2	24	107	2	146	280	4,786	4,622	8,781	18,189

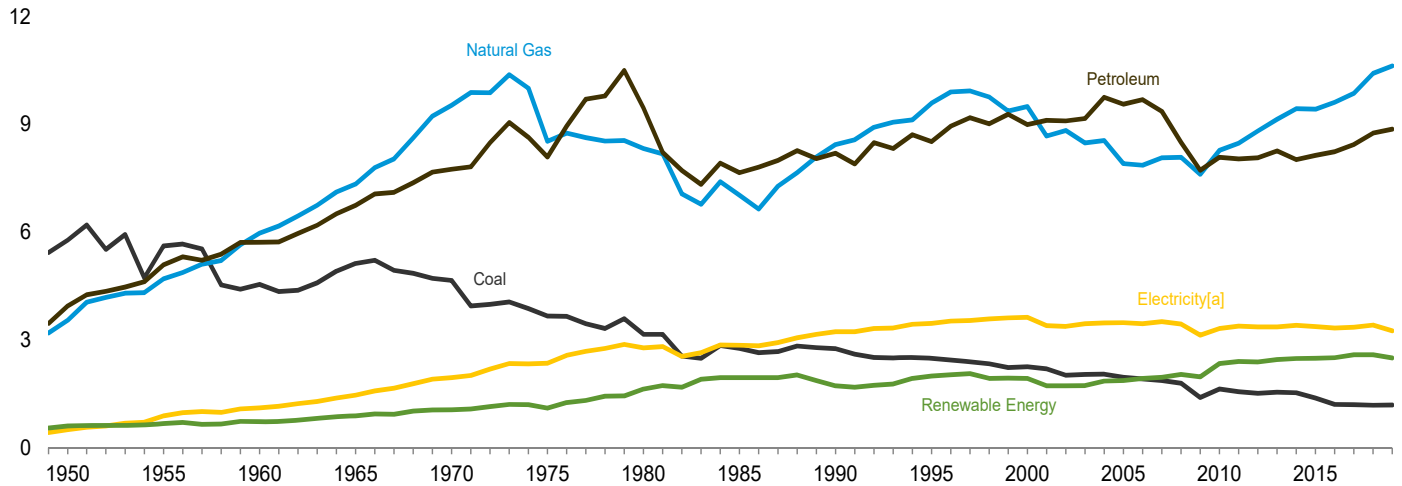
^a See "Primary Energy Consumption" in Glossary.
^b See Table 10.2a for notes on series components and estimation.
^c Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
^d Does not include biofuels that have been 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. NM=Not meaningful. —=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, "Other Energy Losses," at end of section. • See Note 3, "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.

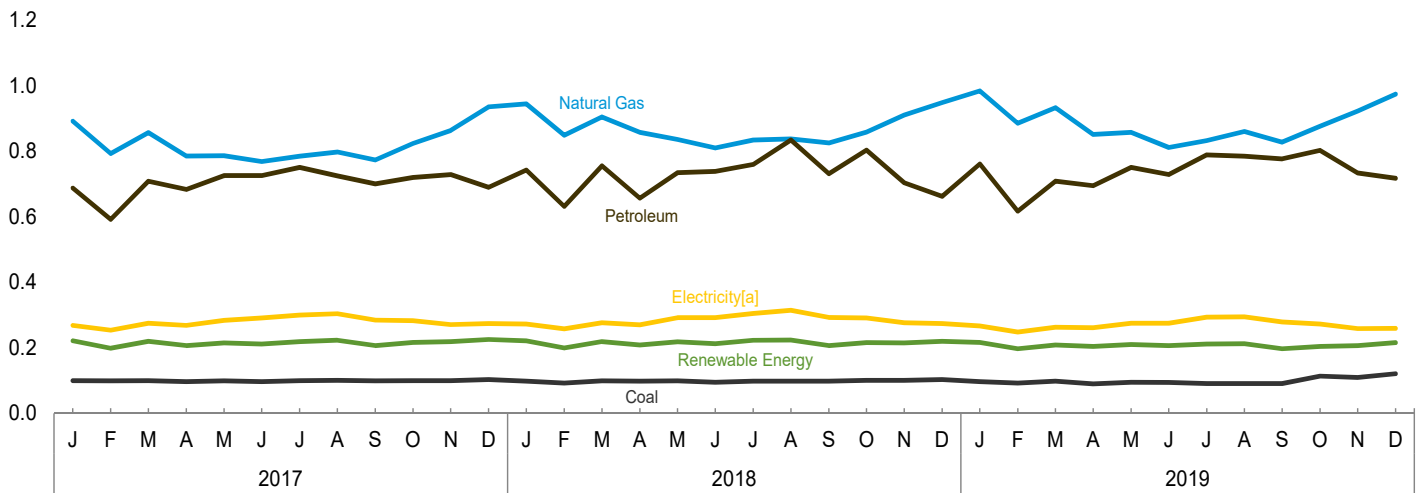
Figure 2.4 Industrial Sector Energy Consumption

(Quadrillion Btu)

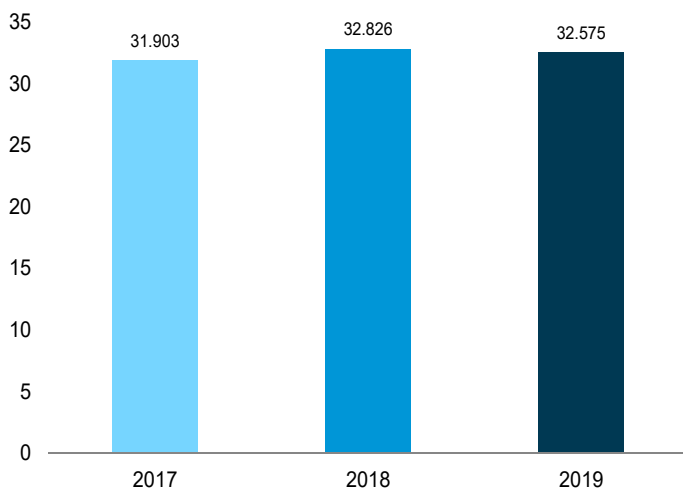
By Major Source, 1949–2019



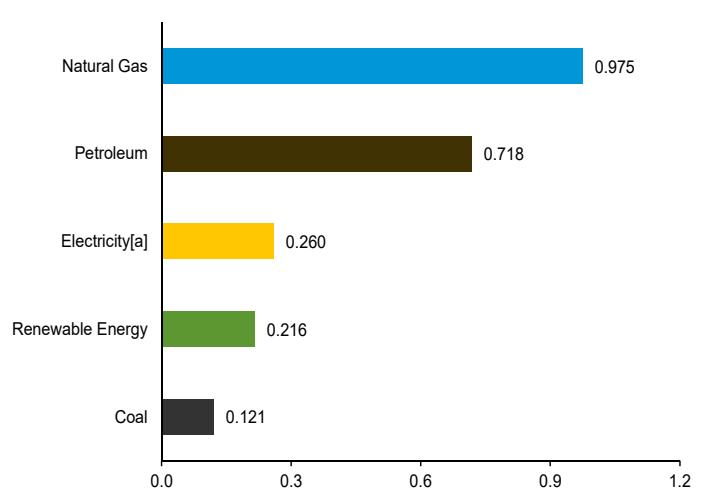
By Major Source, Monthly



Total, January–December



By Major Source, December 2019



[a] Electricity retail sales.

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

Source: Table 2.4.

Table 2.4 Industrial Sector Energy Consumption
(Trillion Btu)

	Primary Consumption ^a										Total Primary	Electricity Retail Sales ⁱ	Electrical System Energy Losses ^j	Total ^k
	Fossil Fuels ^b				Renewable Energy ^c									
	Coal	Natural Gas ^d	Petroleum ^e	Total ^f	Hydroelectric Power ^g	Geothermal	Solar ^h	Wind	Bio-mass	Total				
1950 Total	5,781	3,546	3,943	13,271	69	NA	NA	NA	532	602	13,872	500	1,852	16,224
1955 Total	5,620	4,701	5,093	15,404	38	NA	NA	NA	631	669	16,073	887	2,495	19,455
1960 Total	4,543	5,973	5,720	16,231	39	NA	NA	NA	680	719	16,949	1,107	2,739	20,795
1965 Total	5,127	7,339	6,750	19,197	33	NA	NA	NA	855	888	20,085	1,463	3,487	25,035
1970 Total	4,656	9,536	7,754	21,888	34	NA	NA	NA	1,019	1,053	22,941	1,948	4,716	29,605
1975 Total	3,667	8,532	8,092	20,304	32	NA	NA	NA	1,063	1,096	21,400	2,346	5,632	29,379
1980 Total	3,155	8,333	9,463	20,916	33	NA	NA	NA	1,600	1,633	22,549	2,781	6,664	31,993
1985 Total	2,760	7,032	7,655	17,433	33	NA	NA	NA	1,918	1,951	19,384	2,855	6,518	28,757
1990 Total	2,756	8,443	8,199	19,402	31	2	(s)	—	1,684	1,717	21,120	3,226	7,404	31,749
1995 Total	2,488	9,592	8,524	20,665	55	3	(s)	—	1,934	1,992	22,657	3,455	7,796	33,908
2000 Total	2,256	9,500	8,998	20,820	42	4	(s)	—	1,881	1,928	22,748	3,631	8,208	34,587
2001 Total	2,192	8,676	9,110	20,007	33	5	(s)	—	1,681	1,719	21,726	3,400	7,526	32,653
2002 Total	2,019	8,832	9,096	20,007	39	5	(s)	—	1,676	1,720	21,727	3,379	7,484	32,590
2003 Total	2,041	8,488	9,164	19,745	43	3	(s)	—	1,678	1,725	21,469	3,454	7,565	32,489
2004 Total	2,047	8,550	9,753	20,488	33	4	(s)	—	1,815	1,852	22,340	3,473	7,631	33,444
2005 Total	1,954	7,907	9,567	19,472	32	4	(s)	—	1,834	1,871	21,343	3,477	7,554	32,374
2006 Total	1,914	7,861	9,693	19,529	29	4	1	—	1,892	1,926	21,455	3,451	7,411	32,317
2007 Total	1,865	8,074	9,363	19,326	16	5	1	—	1,937	1,958	21,284	3,507	7,515	32,306
2008 Total	1,793	8,083	8,502	18,420	17	5	1	—	2,012	2,035	20,455	3,444	7,362	31,261
2009 Total	1,392	7,609	7,720	16,698	18	4	2	—	1,948	1,972	18,670	3,130	6,580	28,380
2010 Total	1,631	8,278	8,084	17,987	16	4	3	—	2,320	2,343	20,330	3,314	6,934	30,578
2011 Total	1,561	8,481	8,040	18,092	17	4	4	(s)	2,375	2,401	20,493	3,382	7,005	30,881
2012 Total	1,513	8,819	8,069	18,405	22	4	7	(s)	2,349	2,383	20,787	3,363	6,810	30,961
2013 Total	1,546	9,140	8,260	18,930	33	4	9	(s)	2,403	2,449	21,379	3,362	6,785	31,525
2014 Total	1,530	9,441	8,021	18,971	12	4	11	1	2,456	2,484	21,455	3,404	6,832	31,691
2015 Total	1,380	9,426	8,141	18,929	13	4	14	(s)	2,460	2,491	21,420	3,366	6,578	31,364
2016 Total	1,205	9,617	8,241	19,044	12	4	19	1	2,467	2,503	21,547	3,333	6,461	31,341
2017 January	100	892	688	1,677	1	(s)	1	(s)	220	222	1,899	269	524	2,692
February	99	793	592	1,483	1	(s)	1	(s)	196	199	1,682	254	471	2,407
March	100	857	709	1,665	1	(s)	2	(s)	216	220	1,884	275	535	2,695
April	97	786	684	1,566	1	(s)	2	(s)	203	207	1,773	269	512	2,554
May	99	787	726	1,610	1	(s)	2	(s)	211	215	1,825	284	562	2,672
June	97	769	726	1,589	1	(s)	2	(s)	208	212	1,801	291	567	2,660
July	100	785	751	1,635	1	(s)	2	(s)	216	219	1,854	300	590	2,743
August	101	798	725	1,621	1	(s)	2	(s)	220	223	1,844	304	569	2,718
September	99	774	701	1,571	1	(s)	2	(s)	204	207	1,778	285	522	2,585
October	100	824	720	1,640	1	(s)	2	(s)	214	217	1,857	283	536	2,675
November	100	864	729	1,689	1	(s)	1	(s)	216	219	1,908	271	535	2,714
December	103	936	690	1,725	1	(s)	1	(s)	223	226	1,951	274	563	2,787
Total	1,195	9,864	8,441	19,471	13	4	22	1	2,547	2,587	22,058	3,358	6,487	31,903
2018 January	98	945	R 743	R 1,782	1	(s)	1	(s)	219	222	R 2,004	273	527	R 2,804
February	93	849	R 632	R 1,573	1	(s)	1	(s)	197	200	R 1,773	258	469	R 2,500
March	99	905	R 756	R 1,758	1	(s)	2	(s)	216	219	R 1,977	277	524	R 2,778
April	98	858	R 657	R 1,610	1	(s)	2	(s)	205	209	R 1,819	270	508	R 2,597
May	99	836	R 735	1,669	1	(s)	2	(s)	214	218	1,887	292	587	R 2,766
June	95	810	R 739	1,643	1	(s)	2	(s)	209	213	R 1,855	292	569	R 2,717
July	98	835	760	1,691	1	(s)	3	(s)	219	223	1,914	305	590	2,809
August	98	838	835	1,769	1	(s)	2	(s)	220	224	1,993	315	584	2,892
September	98	826	R 732	1,655	1	(s)	2	(s)	204	207	1,862	293	530	R 2,684
October	101	859	R 804	R 1,762	1	(s)	2	(s)	213	216	R 1,978	291	522	R 2,791
November	101	911	R 704	R 1,713	1	(s)	2	(s)	212	215	R 1,928	277	546	R 2,751
December	103	949	R 663	R 1,712	1	(s)	1	(s)	217	220	R 1,932	274	531	R 2,737
Total	1,180	10,422	R 8,761	R 20,336	10	4	24	1	R 2,546	R 2,586	R 22,922	3,417	6,487	R 32,826
2019 January	97	R 985	R 762	R 1,842	1	(s)	2	(s)	214	217	R 2,059	267	R 523	R 2,849
February	93	R 886	R 617	R 1,596	1	(s)	2	(s)	194	197	R 1,793	R 248	R 462	R 2,502
March	98	R 934	R 709	R 1,740	1	(s)	2	(s)	205	209	R 1,949	263	R 500	R 2,712
April	90	R 852	R 695	R 1,636	1	(s)	3	(s)	201	205	R 1,841	261	494	R 2,595
May	95	R 858	R 751	R 1,702	1	(s)	3	(s)	206	210	R 1,913	275	545	R 2,733
June	94	812	R 729	R 1,633	1	(s)	3	(s)	202	207	R 1,840	R 275	R 536	R 2,651
July	91	R 833	R 789	R 1,711	1	(s)	3	(s)	207	212	R 1,923	294	R 567	R 2,783
August	91	R 861	R 785	R 1,736	1	(s)	3	(s)	209	213	R 1,949	295	554	R 2,798
September	91	828	R 777	R 1,693	1	(s)	3	(s)	194	197	R 1,891	R 279	R 509	R 2,678
October	114	R 877	R 803	R 1,792	1	(s)	2	(s)	202	205	R 1,997	273	R 486	R 2,756
November	110	R 923	R 734	R 1,765	1	(s)	2	(s)	204	207	R 1,972	259	R 506	R 2,737
December	121	975	718	1,812	1	(s)	2	(s)	213	216	2,028	260	493	2,781
Total	1,186	10,626	8,867	20,659	10	4	28	1	2,451	2,495	23,154	3,249	6,173	32,575

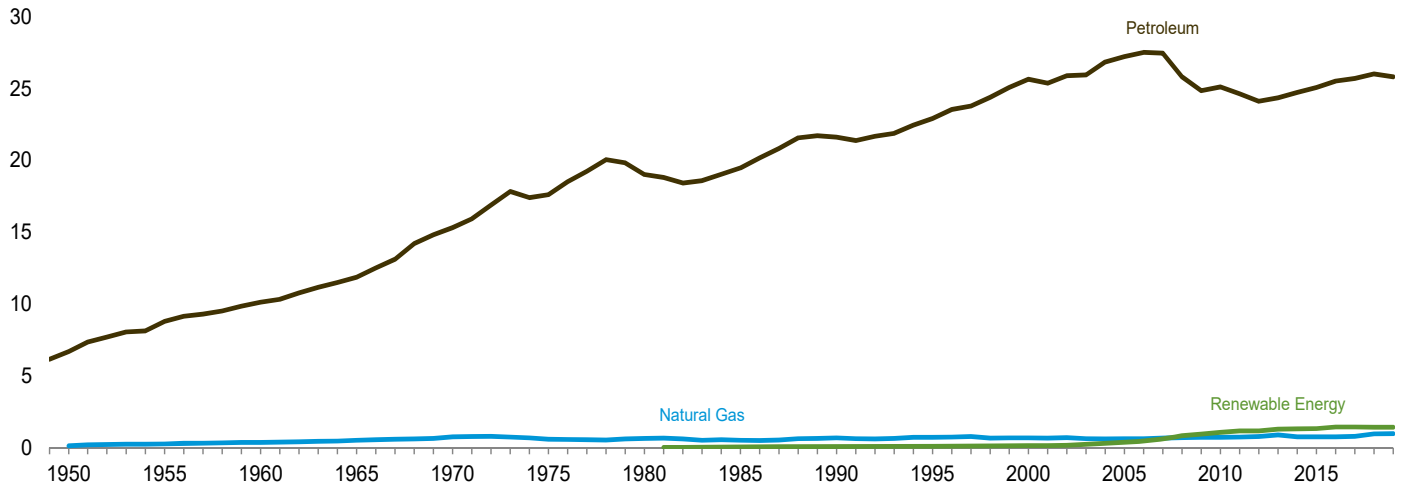
^a See "Primary Energy Consumption" in Glossary.
^b Includes non-combustion use of fossil fuels.
^c See Table 10.2b for notes on series components and estimation.
^d Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
^e Does not include biofuels that have been blended with petroleum—biofuels are included in "Biomass."
^f Includes coal coke net imports, which are not separately displayed. See Tables 1.4a and 1.4b.
^g Conventional hydroelectric power.
^h Solar photovoltaic (PV) electricity net generation in the industrial sector, both utility-scale and distributed (small-scale). See Tables 10.2b and 10.5.
ⁱ Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.
^j 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, "Other Energy Losses," at end of section. • See Note 3, "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.

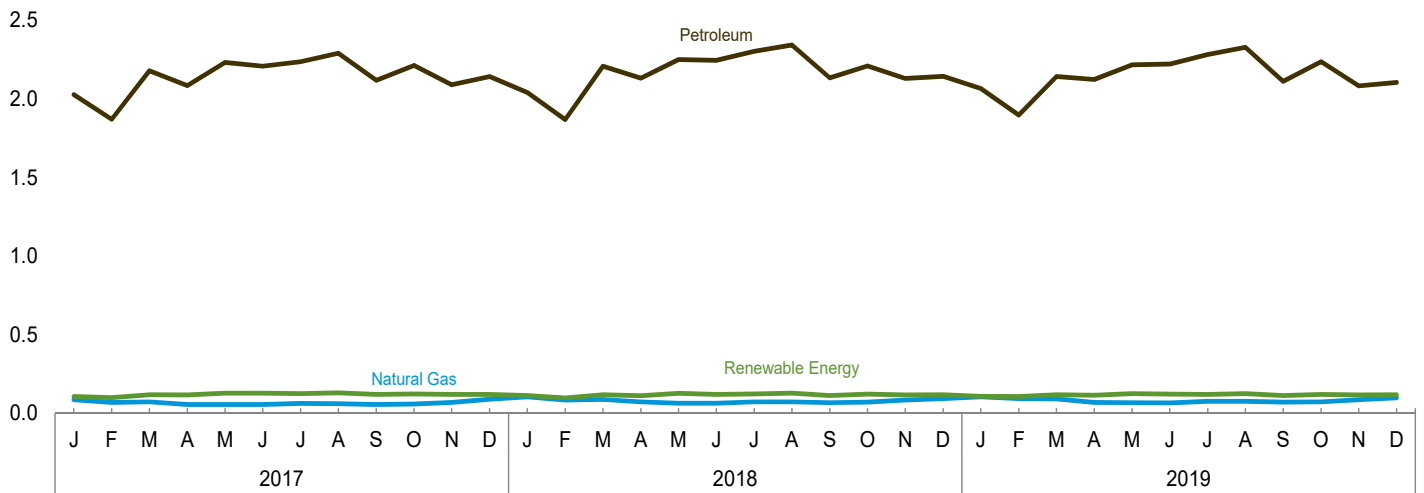
Figure 2.5 Transportation Sector Energy Consumption

(Quadrillion Btu)

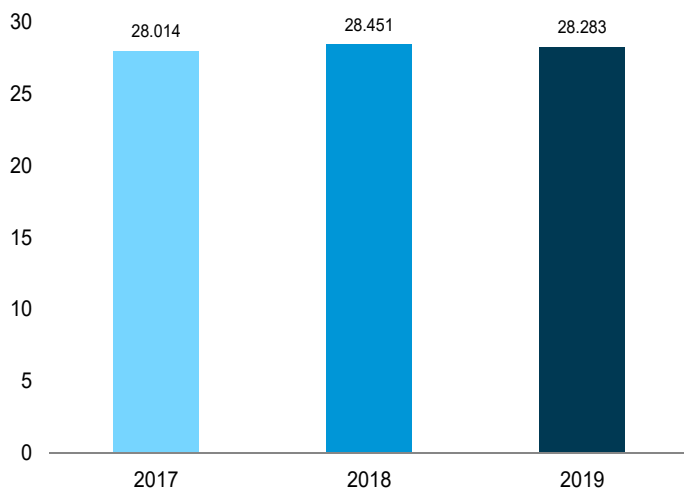
By Major Source, 1949–2019



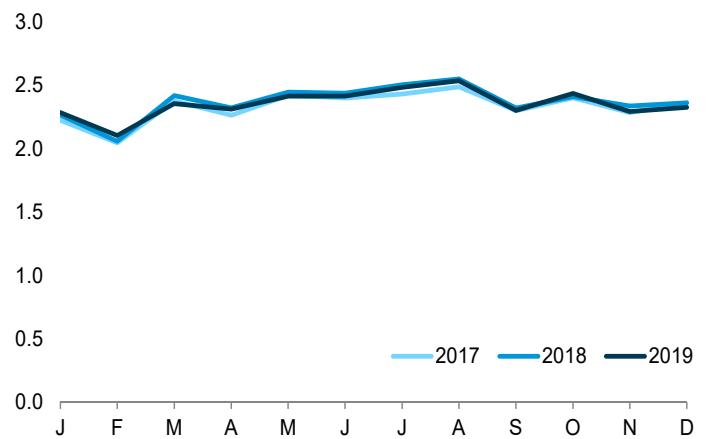
By Major Source, Monthly



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 ^a					Total Primary	Electricity Retail Sales ^e	Electrical System Energy Losses ^f	Total
	Fossil Fuels				Renewable Energy ^b				
	Coal	Natural Gas ^c	Petroleum ^d	Total	Biomass				
1950 Total	1,564	130	6,690	8,383	NA	8,383	23	86	8,492
1955 Total	421	254	8,799	9,474	NA	9,474	20	56	9,550
1960 Total	75	359	10,125	10,560	NA	10,560	10	26	10,596
1965 Total	16	517	11,866	12,399	NA	12,399	10	24	12,432
1970 Total	7	745	15,311	16,062	NA	16,062	11	26	16,098
1975 Total	1	595	17,615	18,211	NA	18,211	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	20,042	14	32	20,088
1990 Total	(g)	679	21,626	22,305	60	22,366	16	37	22,419
1995 Total	(g)	724	22,920	23,644	112	23,757	17	38	23,812
2000 Total	(g)	672	25,649	26,321	135	26,456	18	42	26,515
2001 Total	(g)	658	25,379	26,037	142	26,179	20	43	26,242
2002 Total	(g)	699	25,879	26,578	170	26,747	19	42	26,808
2003 Total	(g)	627	25,950	26,577	230	26,807	23	51	26,881
2004 Total	(g)	602	26,856	27,458	290	27,748	25	54	27,826
2005 Total	(g)	624	27,217	27,840	339	28,179	26	56	28,261
2006 Total	(g)	625	27,518	28,143	475	28,618	25	54	28,697
2007 Total	(g)	663	27,462	28,126	602	28,727	28	60	28,815
2008 Total	(g)	692	25,823	26,515	825	27,339	26	56	27,421
2009 Total	(g)	715	24,860	25,575	935	26,510	27	56	26,592
2010 Total	(g)	719	25,103	25,822	1,075	26,897	26	55	26,978
2011 Total	(g)	734	24,626	25,360	1,159	26,518	26	54	26,599
2012 Total	(g)	780	24,111	24,890	1,160	26,050	25	51	26,126
2013 Total	(g)	887	24,362	25,249	1,284	26,533	26	53	26,612
2014 Total	(g)	760	24,727	25,487	1,302	26,789	26	53	26,869
2015 Total	(g)	745	25,082	25,827	1,334	27,161	26	51	27,238
2016 Total	(g)	757	25,511	26,268	1,443	27,710	26	50	27,786
2017 January	(g)	86	2,027	2,113	107	2,219	2	4	2,226
February	(g)	69	1,871	1,940	101	2,041	2	4	2,047
March	(g)	74	2,180	2,255	118	2,372	2	4	2,379
April	(g)	57	2,085	2,142	117	2,260	2	4	2,265
May	(g)	56	2,232	2,288	129	2,416	2	4	2,422
June	(g)	56	2,209	2,266	129	2,395	2	4	2,401
July	(g)	63	2,238	2,301	125	2,426	2	4	2,432
August	(g)	62	2,292	2,353	131	2,484	2	4	2,490
September	(g)	56	2,119	2,175	120	2,295	2	4	2,301
October	(g)	60	2,214	2,274	123	2,397	2	4	2,403
November	(g)	69	2,091	2,160	120	2,280	2	4	2,286
December	(g)	90	2,143	2,234	120	2,354	2	5	2,361
Total	(g)	799	25,702	26,500	1,439	27,939	26	50	28,014
2018 January	(g)	105	R 2,041	R 2,147	113	R 2,260	3	5	R 2,267
February	(g)	85	R 1,869	R 1,955	99	R 2,054	2	4	R 2,060
March	(g)	88	R 2,208	R 2,296	119	R 2,415	2	4	R 2,421
April	(g)	74	R 2,132	R 2,206	112	R 2,318	2	4	R 2,324
May	(g)	65	R 2,250	R 2,314	127	R 2,441	2	4	R 2,447
June	(g)	65	R 2,246	R 2,311	121	R 2,432	2	4	R 2,439
July	(g)	74	R 2,303	R 2,377	124	R 2,500	2	4	R 2,507
August	(g)	73	R 2,343	R 2,416	129	R 2,545	2	4	R 2,552
September	(g)	68	R 2,135	R 2,203	113	R 2,315	2	4	R 2,321
October	(g)	72	R 2,211	R 2,282	122	R 2,405	2	4	R 2,411
November	(g)	85	R 2,131	R 2,216	117	R 2,333	2	4	R 2,339
December	(g)	94	R 2,144	R 2,238	119	R 2,357	2	4	R 2,364
Total	(g)	948	R 26,013	R 26,961	1,415	R 28,375	26	50	R 28,451
2019 January	(g)	106	R 2,067	R 2,173	108	R 2,280	2	4	R 2,287
February	(g)	93	R 1,897	R 1,991	107	R 2,098	2	4	R 2,105
March	(g)	91	R 2,142	R 2,232	119	R 2,351	2	4	R 2,358
April	(g)	70	R 2,124	R 2,193	115	R 2,308	2	4	R 2,314
May	(g)	R 68	R 2,217	R 2,284	126	R 2,410	2	4	R 2,416
June	(g)	67	R 2,222	R 2,289	122	R 2,410	2	4	R 2,417
July	(g)	76	R 2,283	R 2,359	121	R 2,480	2	4	R 2,486
August	(g)	77	R 2,328	R 2,406	125	R 2,530	2	4	R 2,537
September	(g)	71	R 2,113	R 2,184	113	R 2,297	2	4	R 2,303
October	(g)	74	R 2,237	R 2,311	121	R 2,432	2	3	R 2,437
November	(g)	R 87	R 2,084	R 2,171	117	R 2,288	2	4	R 2,294
December	(g)	98	2,106	2,204	118	2,322	2	4	2,329
Total	(g)	978	25,818	26,796	1,410	28,207	26	50	28,283

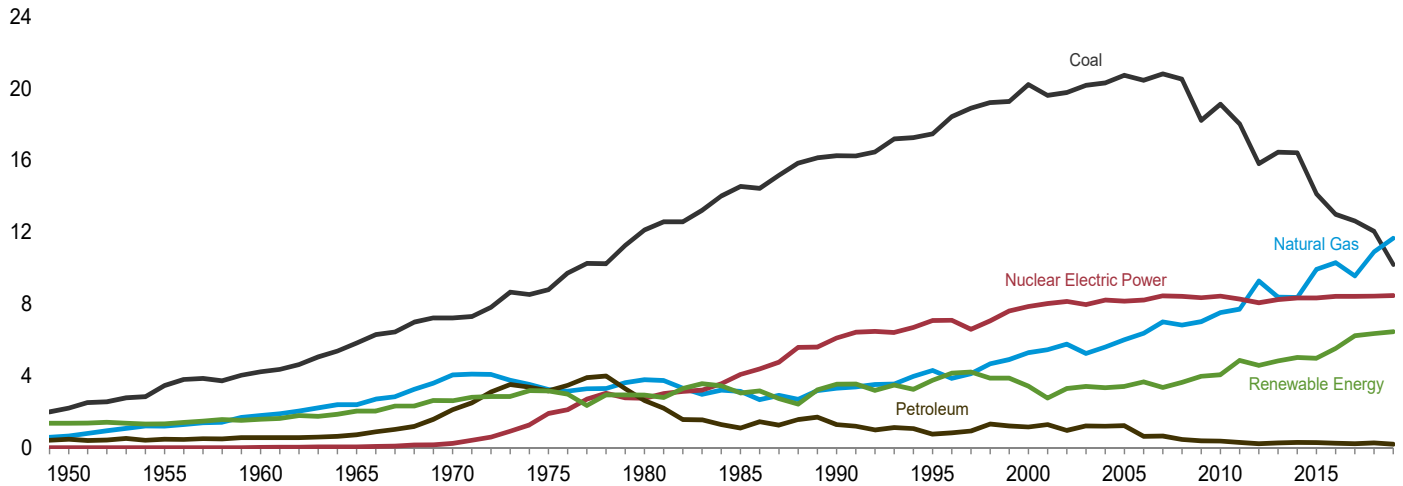
^a See "Primary Energy Consumption" in Glossary.
^b See Table 10.2b for notes on series components.
^c Natural gas only; does not include supplemental gaseous fuels—see Note 3, "Supplemental Gaseous Fuels," at end of Section 4. Data are for natural gas consumed in the operation of pipelines (primarily in compressors) and small amounts consumed as vehicle fuel—see Table 4.3.
^d Does not include biofuels that have been blended with petroleum—biofuels are included in "Biomass." Includes non-combustion use of lubricants.
^e Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.
^f Total losses are calculated as the primary energy consumed by the electric power sector minus the energy content of electricity retail sales. Total losses are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See Note 1, "Electrical System Energy Losses," at end of

section.
^g Beginning in 1978, the small amounts of coal consumed for transportation are reported as industrial sector consumption.
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, "Other Energy Losses," at end of section. • See Note 3, "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.

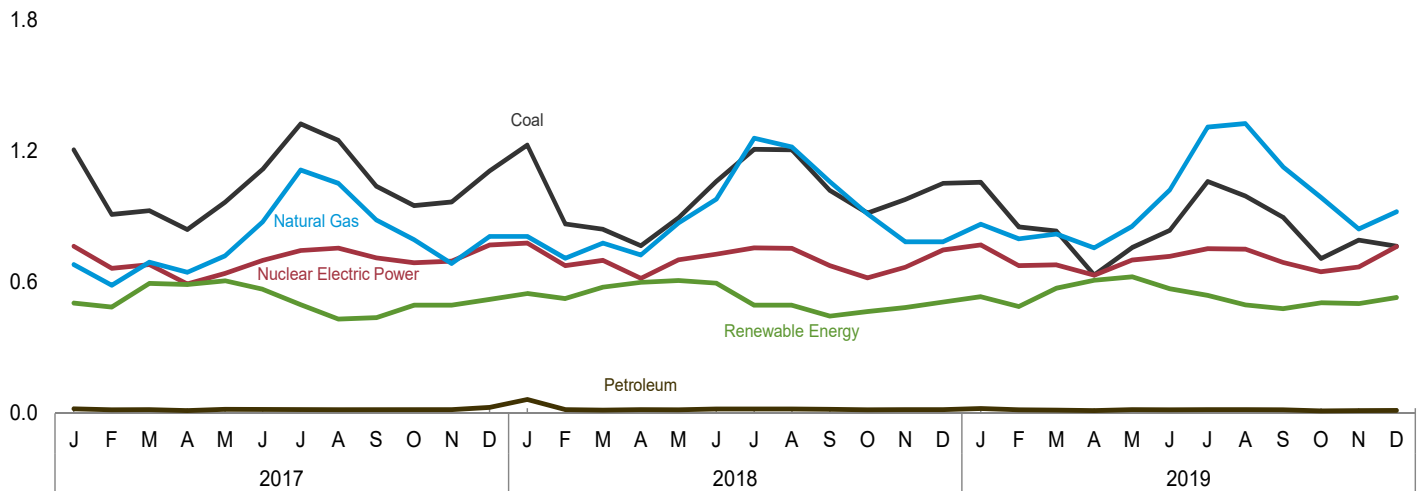
Figure 2.6 Electric Power Sector Energy Consumption

(Quadrillion Btu)

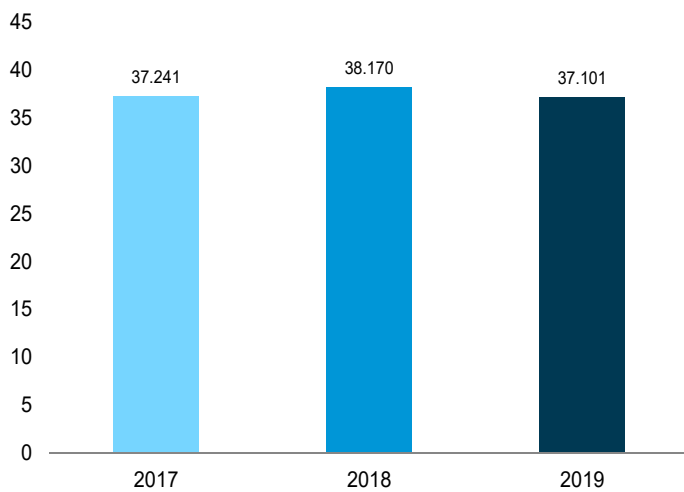
By Major Source, 1949–2019



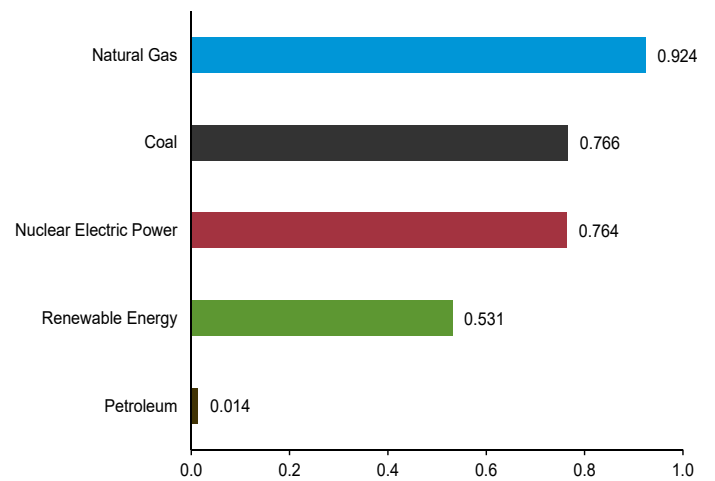
By Major Source, Monthly



Total, January–December



By Major Source, December 2019



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

Table 2.6 Electric Power Sector Energy Consumption
(Trillion Btu)

	Primary Consumption ^a												Elec- tricity Net Imports ^f	Total Primary
	Fossil Fuels				Nuclear Electric Power	Renewable Energy ^b								
	Coal	Natural Gas ^c	Petro- leum	Total		Hydro- electric Power ^d	Geo- thermal	Solar ^e	Wind	Bio- mass	Total			
1950 Total	2,199	651	472	3,322	0	1,346	NA	NA	NA	5	1,351	6	4,679	
1955 Total	3,458	1,194	471	5,123	0	1,322	NA	NA	NA	3	1,325	14	6,461	
1960 Total	4,228	1,785	553	6,565	6	1,569	(s)	NA	NA	2	1,571	15	8,158	
1965 Total	5,821	2,395	722	8,938	43	2,026	2	NA	NA	3	2,031	(s)	11,012	
1970 Total	7,227	4,054	2,117	13,399	239	2,600	6	NA	NA	4	2,609	7	16,253	
1975 Total	8,786	3,240	3,166	15,191	1,900	3,122	34	NA	NA	2	3,158	21	20,270	
1980 Total	12,123	3,778	2,634	18,534	2,739	2,867	53	NA	NA	4	2,925	71	24,269	
1985 Total	14,542	3,135	1,090	18,767	4,076	2,937	97	(s)	(s)	14	3,049	140	26,032	
1990 Total	16,261	3,309	1,289	20,859	6,104	3,014	161	4	29	317	3,524	8	930,495	
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 Total	14,138	9,926	276	24,341	8,337	2,308	148	228	1,776	525	4,985	227	37,890	
2016 Total	12,996	10,301	244	23,542	8,427	2,459	146	328	2,094	505	5,531	227	37,727	
2017 January	1,207	681	21	1,909	765	245	13	19	183	46	505	22	3,201	
February	912	587	16	1,515	665	217	11	23	195	41	487	17	2,684	
March	929	693	17	1,639	681	268	13	39	230	45	595	17	2,932	
April	842	646	13	1,501	593	269	12	43	227	39	590	15	2,700	
May	967	722	19	1,708	641	297	12	52	207	40	607	15	2,971	
June	1,118	877	19	2,015	701	277	11	56	182	42	569	18	3,303	
July	1,326	1,115	18	2,460	746	243	12	52	147	44	498	18	3,722	
August	1,251	1,054	18	2,322	757	200	12	50	125	45	432	20	3,531	
September	1,040	886	17	1,942	712	175	12	47	164	40	438	15	3,108	
October	951	796	16	1,763	690	167	11	44	233	40	496	11	2,960	
November	968	687	17	1,672	697	188	12	31	222	42	495	11	2,874	
December	1,111	810	27	1,948	771	205	14	31	226	45	522	14	3,255	
Total	12,622	9,555	218	22,395	8,419	2,752	147	486	2,341	510	6,235	192	37,241	
2018 January	1,229	810	64	2,103	780	228	12	30	233	46	549	14	3,446	
February	868	711	17	1,596	677	226	12	35	211	42	526	12	2,811	
March	843	780	15	1,638	701	235	12	46	241	44	578	15	2,932	
April	768	725	17	1,510	618	255	11	55	241	39	600	10	2,738	
May	896	873	16	1,785	704	276	13	62	218	40	609	14	3,112	
June	1,062	981	20	2,063	729	251	12	67	225	42	597	15	3,403	
July	1,209	1,260	20	2,489	758	228	12	61	150	44	495	15	3,756	
August	1,207	1,221	20	2,448	756	200	12	60	181	43	496	17	3,717	
September	1,021	1,061	19	2,101	677	174	12	54	169	37	446	11	3,235	
October	917	914	16	1,848	621	177	12	45	193	39	466	10	2,944	
November	980	786	18	1,784	669	199	12	34	201	40	485	9	2,946	
December	1,054	786	18	1,858	749	207	13	28	221	41	510	11	3,128	
Total	12,053	10,911	260	23,224	8,438	2,655	145	577	2,484	496	6,356	152	38,170	
2019 January	1,059	867	22	1,948	771	220	13	33	229	40	534	11	3,264	
February	854	800	16	1,670	677	198	12	R 35	R 210	35	R 489	11	2,846	
March	835	R 822	15	1,673	680	232	13	53	238	37	573	8	2,935	
April	634	758	12	R 1,404	633	231	11	62	271	35	R 610	8	2,655	
May	759	857	17	1,633	702	273	12	65	237	39	625	10	2,970	
June	R 839	R 1,023	16	1,878	719	240	12	72	209	37	R 571	12	3,180	
July	1,062	R 1,312	18	R 2,392	755	215	13	R 74	201	39	541	13	3,701	
August	995	1,328	18	2,341	752	R 191	13	71	181	41	R 497	14	R 3,603	
September	R 898	1,129	16	R 2,042	R 691	148	12	61	R 222	37	480	12	R 3,226	
October	R 709	R 989	11	R 1,710	649	148	11	55	256	35	506	R 7	R 2,872	
November	R 794	R 845	12	R 1,651	670	186	10	R 40	R 233	34	R 503	R 12	R 2,837	
December	766	924	14	1,704	764	201	11	32	248	39	531	14	3,012	
Total	10,203	11,655	189	22,047	8,462	2,484	142	652	2,733	448	6,459	133	37,101	

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

Notes: • Data are for fuels consumed to produce electricity and useful thermal output. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • See Note 3, "Energy Consumption Data and Surveys," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#consumption> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: See end of section.

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

Fiscal Year ^a	Agri-culture	Defense	DHS ^b	Energy	GSA ^c	HHS ^d	Interior	Justice	NASA ^e	Postal Service	Trans- portation	Veterans Affairs	Other ^f	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	18.3	31.9	18.5	10.1	7.3	22.7	10.8	50.9	5.5	30.6	22.7	1,132.3
2004	7.0	960.7	23.5	31.4	18.3	8.8	8.7	17.5	9.9	50.5	5.2	29.9	20.4	1,191.7
2005	7.5	933.2	18.9	29.6	18.4	9.6	8.6	18.8	10.3	53.5	5.0	30.0	23.2	1,166.4
2006	6.8	843.7	17.1	32.9	18.2	9.3	8.1	23.5	10.2	51.8	4.6	29.3	20.9	1,076.4
2007	6.8	864.6	17.1	31.5	19.1	9.9	7.5	20.7	10.6	45.8	5.6	30.0	21.0	1,090.2
2008	6.5	910.8	21.7	32.1	18.8	10.3	7.1	19.0	10.8	47.1	7.7	29.0	22.4	1,143.2
2009	6.6	874.3	18.6	31.1	18.6	10.8	7.9	16.5	10.2	44.2	4.3	29.9	21.8	1,094.8
2010	6.8	889.9	21.2	31.7	18.8	10.4	7.3	15.7	10.1	43.3	5.7	30.2	21.8	1,112.7
2011	8.3	890.3	20.3	33.1	18.5	10.5	7.3	13.9	10.1	43.0	6.7	30.6	21.4	1,114.1
2012	6.7	828.5	20.1	30.3	16.3	10.0	6.7	15.1	8.9	40.8	5.6	29.7	20.5	1,039.3
2013	7.3	749.5	18.9	28.9	16.4	10.5	6.2	15.3	8.7	41.9	5.3	29.9	20.4	959.3
2014	6.3	730.6	18.5	29.4	17.0	9.5	6.2	15.6	8.3	43.0	5.2	31.4	20.6	941.5
2015	6.2	734.5	17.9	30.1	16.3	9.0	6.8	16.2	8.4	44.0	6.0	30.7	19.8	945.8
2016	6.2	709.2	18.1	28.9	15.8	8.7	6.4	15.6	8.5	43.9	6.0	30.3	19.5	917.2
2017	6.3	707.9	19.2	28.8	15.0	8.8	5.9	15.5	8.6	43.7	6.6	29.1	19.7	915.1
2018	6.1	690.6	16.8	27.3	15.4	10.0	6.1	16.2	8.4	45.5	5.8	29.7	18.8	896.8

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

^b U.S. Department of Homeland Security.

^c General Services Administration.

^d U.S. Department of Health and Human Services.

^e National Aeronautics and Space Administration.

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

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.

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

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

Fiscal Year ^a	Coal	Natural Gas ^b	Petroleum						Other Mobility Fuels ^f	Electricity	Purchased Steam and Other ^g	Total
			Aviation Gasoline	Fuel Oil ^c	Jet Fuel	LPG ^d	Motor Gasoline ^e	Total				
1975	77.9	166.2	22.0	376.0	707.4	5.6	63.2	1,174.2	0.0	141.5	5.1	1,565.0
1976	71.3	151.8	11.6	329.7	610.0	4.7	60.4	1,016.4	.0	139.3	4.6	1,383.4
1977	68.4	141.2	8.8	348.5	619.2	4.1	61.4	1,042.1	.0	141.1	5.7	1,398.5
1978	66.0	144.7	6.2	332.3	601.1	3.0	60.1	1,002.9	.0	141.0	6.4	1,360.9
1979	65.1	148.9	4.7	327.1	618.6	3.7	59.1	1,013.1	.0	141.2	7.1	1,375.4
1980	63.5	147.3	4.9	307.7	638.7	3.8	56.5	1,011.6	.2	141.9	6.8	1,371.2
1981	65.1	142.2	4.6	351.3	653.3	3.5	53.2	1,066.0	.2	144.5	6.2	1,424.2
1982	68.6	146.2	3.6	349.4	672.7	3.7	53.1	1,082.5	.2	147.5	6.2	1,451.4
1983	62.4	147.8	2.6	329.5	673.4	3.8	51.6	1,060.8	.2	151.5	9.0	1,431.8
1984	65.3	157.4	1.9	342.9	693.7	3.9	51.2	1,093.6	.2	155.9	10.1	1,482.5
1985	64.8	149.9	1.9	292.6	705.7	3.8	50.4	1,054.3	.2	167.2	13.9	1,450.3
1986	63.8	140.9	1.4	271.6	710.2	3.6	45.3	1,032.1	.3	155.8	13.7	1,406.7
1987	67.0	145.6	1.0	319.5	702.3	3.6	43.1	1,069.5	.4	169.9	13.9	1,466.3
1988	60.2	144.6	6.0	284.8	617.2	2.7	41.2	951.9	.4	171.2	32.0	1,360.3
1989	48.7	152.4	.8	245.3	761.7	3.5	41.1	1,052.4	2.2	188.6	20.6	1,464.7
1990	44.3	159.4	.5	245.2	732.4	3.8	37.2	1,019.1	2.6	193.6	19.1	1,438.0
1991	45.9	154.1	.4	232.6	774.5	3.0	34.1	1,044.7	6.0	192.7	18.3	1,461.7
1992	51.7	151.2	1.0	200.6	628.2	3.0	35.6	868.4	8.4	192.5	22.5	1,294.8
1993	38.3	152.9	.7	187.0	612.4	3.5	34.5	838.1	5.8	193.1	18.6	1,246.8
1994	35.0	143.9	.6	198.5	550.7	3.2	29.5	782.6	7.7	190.9	18.2	1,178.2
1995	31.7	149.4	.3	178.4	522.3	3.0	31.9	735.9	8.4	184.8	18.2	1,128.5
1996	23.3	147.3	.2	170.5	513.0	3.1	27.6	714.4	18.7	184.0	20.1	1,107.7
1997	22.5	153.8	.3	180.0	475.7	2.6	39.0	697.6	14.5	183.6	19.2	1,091.2
1998	23.9	140.4	.2	174.5	445.5	3.5	43.0	666.8	5.9	181.4	18.8	1,037.1
1999	21.2	137.4	.1	162.1	444.7	2.4	41.1	650.4	.4	180.0	21.5	1,010.9
2000	22.7	133.8	.2	171.3	403.1	2.5	43.9	621.0	1.8	193.6	20.2	993.1
2001	18.8	133.7	.2	176.9	415.2	3.1	42.5	638.0	4.8	188.4	18.6	1,002.3
2002	16.9	133.7	.2	165.6	472.9	2.8	41.3	682.8	3.2	188.3	18.5	1,043.4
2003	18.1	135.5	.3	190.8	517.9	3.2	46.3	758.4	3.3	193.8	23.2	1,132.3
2004	17.4	135.3	.2	261.4	508.2	2.9	44.1	816.9	3.1	197.1	22.0	1,191.7
2005	17.1	135.7	.4	241.4	492.2	3.4	48.8	786.1	5.6	197.6	24.3	1,166.4
2006	23.5	132.6	.6	209.3	442.6	2.7	48.3	703.6	2.1	196.7	18.2	1,076.4
2007	20.4	131.5	.4	212.9	461.1	2.7	46.5	723.7	2.9	194.9	16.7	1,090.2
2008	20.8	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	122.2	.3	134.4	418.9	1.8	46.8	602.2	3.7	184.3	20.9	945.8
2016	10.2	115.4	.3	129.7	403.9	1.7	46.5	582.2	3.6	184.5	21.4	917.2
2017	9.1	115.1	.3	135.1	400.1	1.5	46.4	583.5	2.7	181.7	23.0	915.1
2018	6.2	125.8	.3	127.8	383.2	1.7	45.5	558.4	3.0	179.8	23.6	896.8

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

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

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

^d Liquefied petroleum gases, primarily propane.

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

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

^g Other types of energy used in facilities. Primarily includes chilled water, but also includes small amounts of renewable energy such as wood and solar thermal.

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.

Sources: 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)".

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. Other Energy Losses. Similar to electrical system energy losses, there are also other energy losses from energy consumption not separately identified. There are losses in the production of energy, the transformation of one form of energy to another form of energy, and the distribution and use of energy. For example, there are transformation losses in the process of refining crude oil into usable petroleum products, processing natural gas into marketable dry gas, and in the process of converting energy from the sun into usable energy with solar panels. All uses of primary energy have efficiency losses, usually in the form of heat, when energy is converted to do useful work. Examples include when motor gasoline is burned to move vehicles, when natural gas is burned to heat homes, or in any household appliance that uses electricity. The Lawrence Livermore National Laboratory estimates primary energy losses by end-use sector by applying an end-use efficiency factor to EIA's *Monthly Energy Review* consumption data. <https://flowcharts.llnl.gov/>.

Note 3. 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.

2009–2011: 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 biodiesel consumption (calculated using biodiesel data from U.S. Energy Information Administration (EIA), 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" (the data are converted to Btu by multiplying by the biodiesel heat content factor in Table A1); minus other renewable diesel fuel and other renewable fuels consumption from Table 10.4.

2012 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 biodiesel consumption from Table 10.4; minus other renewable diesel fuel and other renewable fuels consumption from Table 10.4.

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.

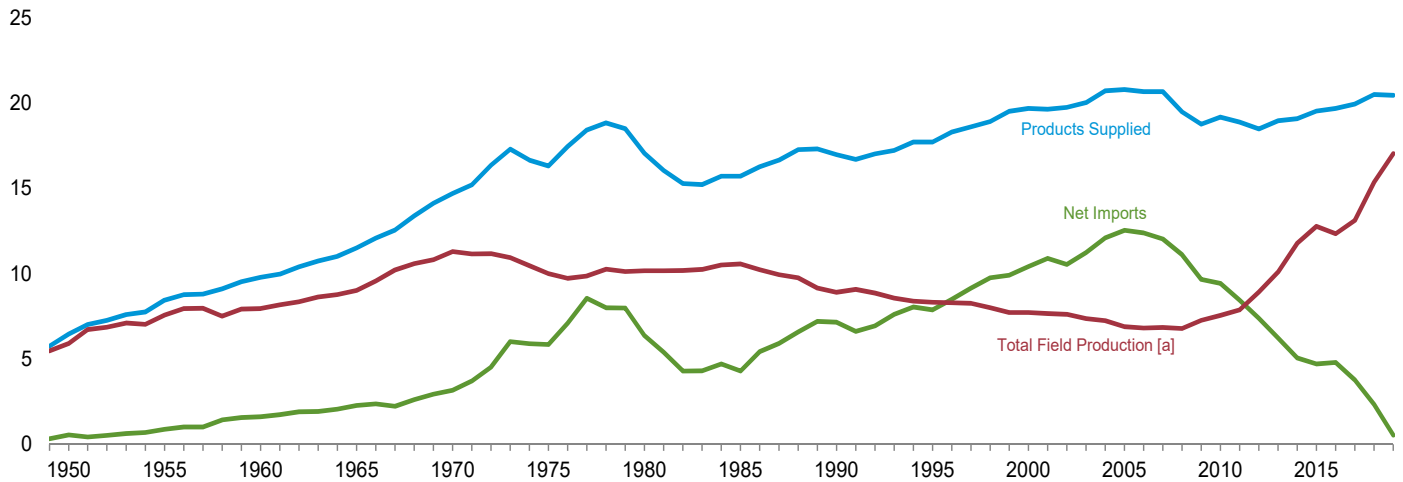
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3. Petroleum

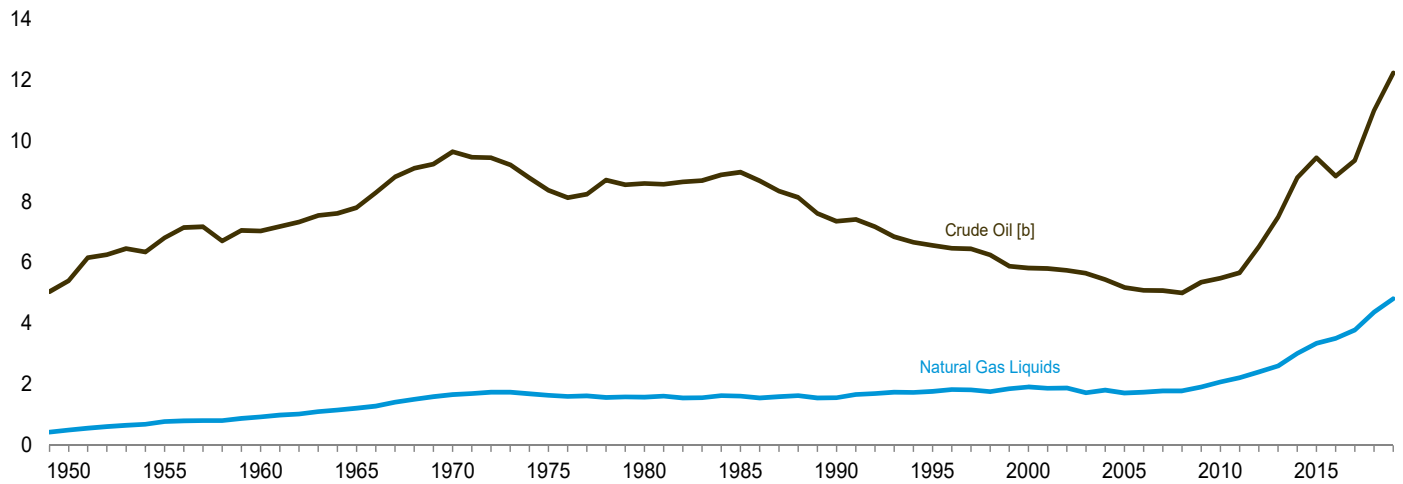
Figure 3.1 Petroleum Overview

(Million Barrels Per Day)

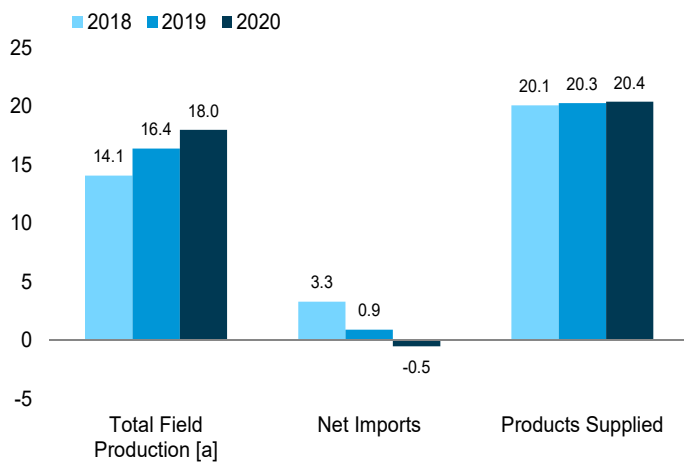
Overview, 1949–2019



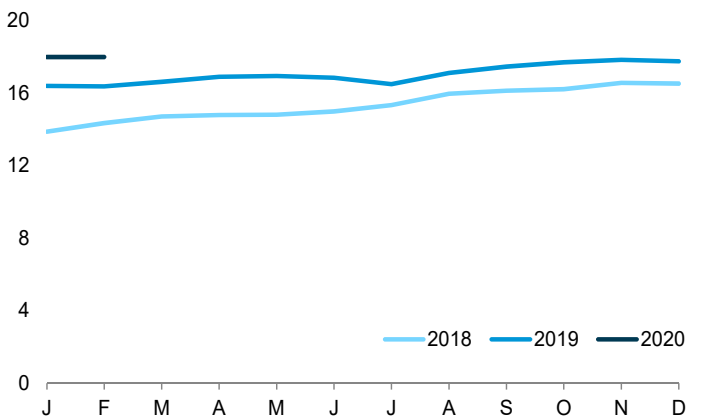
Crude Oil and Natural Gas Liquids Field Production, 1949–2019



Overview, January–February



Total Field Production [a], Monthly



[a] Crude oil, including lease condensate, and natural gas liquids field production.

[b] Includes lease condensate.

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

Table 3.1 Petroleum Overview
(Thousand Barrels per Day)

	Field Production ^a					Renewable Fuels and Oxygenates ^e	Processing Gain ^f	Trade			Stock Change ⁱ	Adjustments ^{c,j}	Petroleum Products Supplied
	Crude Oil ^{b,c}			Natural Gas Liquids	Total ^c			Imports ^g	Exports	Net Imports ^h			
	48 States ^d	Alaska	Total										
1950 Average	5,407	0	5,407	499	5,906	NA	2	850	305	545	-56	-51	6,458
1955 Average	6,807	0	6,807	771	7,578	NA	34	1,248	368	880	(s)	-37	8,455
1960 Average	7,034	2	7,035	929	7,965	NA	146	1,815	202	1,613	-83	-8	9,797
1965 Average	7,774	30	7,804	1,210	9,014	NA	220	2,468	187	2,281	-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	^k 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	4,317	683	5,000	1,784	6,783	NA	993	12,915	1,802	11,114	195	803	19,498
2009 Average	4,711	645	5,357	1,910	7,267	746	979	11,691	2,024	9,667	107	221	18,771
2010 Average	4,885	600	5,484	2,074	7,558	907	1,068	11,793	2,353	9,441	39	246	19,180
2011 Average	5,105	561	5,667	2,216	7,883	1,016	1,076	11,436	2,986	8,450	-129	333	18,887
2012 Average	5,993	526	6,518	2,408	8,926	964	1,059	10,598	3,205	7,393	147	291	18,487
2013 Average	6,978	515	7,493	2,606	10,099	1,002	1,087	9,859	3,621	6,237	-139	403	18,967
2014 Average	8,291	496	8,787	3,015	11,801	1,055	1,081	9,241	4,176	5,065	267	366	19,100
2015 Average	8,956	483	9,439	3,342	12,781	1,095	1,062	9,449	4,738	4,711	429	314	19,534
2016 Average	8,349	490	8,839	3,509	12,348	1,158	1,118	10,055	5,261	4,795	130	398	19,687
2017 Average	8,857	495	9,352	3,783	13,135	1,198	1,111	10,144	6,376	3,768	-370	376	19,958
2018 January	9,510	508	10,018	3,853	13,871	1,210	1,102	10,280	6,461	3,819	-386	157	20,545
February	9,768	513	10,281	4,061	14,342	1,228	1,097	9,586	6,907	2,679	-128	206	19,679
March	9,992	512	10,504	4,200	14,704	1,214	1,096	9,822	7,337	2,485	-482	776	20,756
April	10,013	497	10,510	4,286	14,796	1,205	1,113	10,375	7,797	2,578	120	464	20,037
May	9,964	496	10,460	4,352	14,811	1,230	1,141	10,227	7,717	2,510	173	728	20,247
June	10,198	451	10,649	4,337	14,986	1,260	1,133	10,726	7,824	2,902	-129	381	20,790
July	10,496	395	10,891	4,452	15,343	1,273	1,169	10,193	7,963	2,231	175	842	20,682
August	10,933	428	11,361	4,602	15,962	1,289	1,185	10,434	7,164	3,270	619	271	21,358
September	11,026	471	11,498	4,638	16,136	1,214	1,141	9,889	7,415	2,474	1,312	431	20,883
October	11,145	487	11,631	4,588	16,219	1,220	1,116	9,468	8,011	1,457	-469	254	20,734
November	11,502	497	11,999	4,563	16,562	1,240	1,149	9,272	8,281	991	-230	570	20,747
December	11,542	496	12,038	4,483	16,521	1,222	1,210	9,021	8,301	720	48	678	20,303
Average	10,512	479	10,990	4,369	15,360	1,234	1,138	9,943	7,601	2,341	51	483	20,504
2019 January	E 11,360	E 496	E 11,856	4,545	E 16,401	1,190	1,110	9,693	8,104	1,589	260	423	20,452
February	E 11,181	E 488	E 11,669	4,706	E 16,375	1,198	1,020	8,628	8,453	176	-616	809	20,194
March	E 11,411	E 481	E 11,892	4,728	E 16,620	1,163	1,042	8,837	7,996	842	-136	402	20,204
April	E 11,647	E 475	E 12,123	4,787	E 16,909	1,215	1,060	9,506	8,488	1,017	591	501	20,112
May	E 11,639	E 474	E 12,113	4,838	E 16,951	1,231	1,064	9,803	8,220	1,583	1,328	759	20,259
June	E 11,605	E 455	E 12,060	4,793	E 16,853	1,244	1,089	9,239	8,732	506	-71	840	20,604
July	E 11,375	E 448	E 11,823	4,679	E 16,502	1,246	1,078	9,551	8,085	1,466	147	597	20,742
August	E 12,003	E 382	E 12,385	4,727	E 17,112	1,220	1,112	9,360	8,511	849	-243	527	21,062
September	E 12,029	E 449	E 12,479	4,989	E 17,467	1,158	1,103	8,668	8,757	-89	-87	560	20,221
October	RE 12,199	E 475	RE 12,674	5,022	RE 17,696	1,182	1,025	8,580	8,969	-389	-505	R 752	20,772
November	RE 12,379	RE 484	RE 12,863	4,972	RE 17,835	1,211	1,136	8,064	8,836	-771	-269	R 910	20,590
December	RE 12,298	RE 481	RE 12,779	R 4,971	RE 17,750	R 1,232	R 1,150	R 9,173	R 9,660	R -487	R -52	R 594	R 20,290
Average	RE 11,764	E 466	RE 12,229	R 4,813	RE 17,042	R 1,208	R 1,077	R 9,098	R 8,567	R 531	R 34	R 638	R 20,462
2020 January	E 12,488	E 483	E 12,971	E 5,018	E 17,989	E 1,133	E 1,075	E 8,728	E 8,837	E -109	E 540	E 672	E 20,220
February	E 12,546	E 478	E 13,024	E 4,972	E 17,996	E 1,120	E 1,042	E 8,246	E 9,158	E -913	E -619	E 645	E 20,508
2-Month Average	E 12,516	E 481	E 12,997	E 4,996	E 17,992	E 1,126	E 1,059	E 8,495	E 8,993	E -497	E -20	E 659	E 20,359
2019 2-Month Average	E 11,275	E 492	E 11,767	4,621	E 16,389	1,194	1,067	9,187	8,269	918	-156	606	20,329
2018 2-Month Average	9,633	510	10,143	3,951	14,094	1,219	1,100	9,951	6,673	3,278	-264	180	20,134

^a 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."

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

^d United States excluding Alaska and Hawaii.
^e Renewable fuels and oxygenate plant net production.
^f Refinery and blender net production minus refinery and blender net inputs.
 See Table 3.2.

^g Includes Strategic Petroleum Reserve imports. See Table 3.3b.
^h Net imports equal imports minus exports.
ⁱ 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.

^j 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.

^k 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.

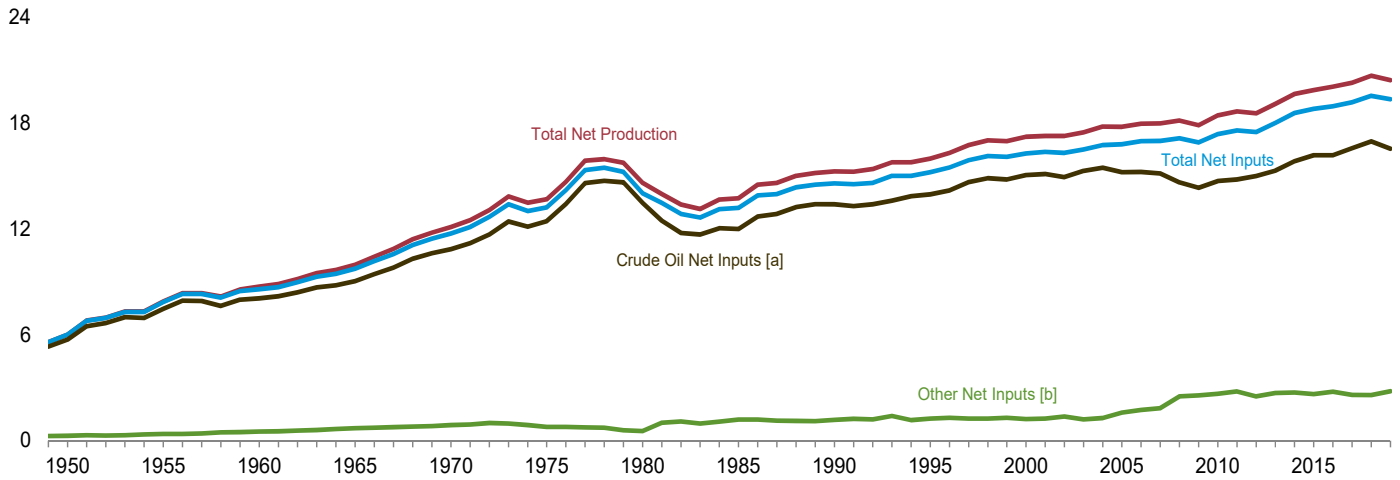
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

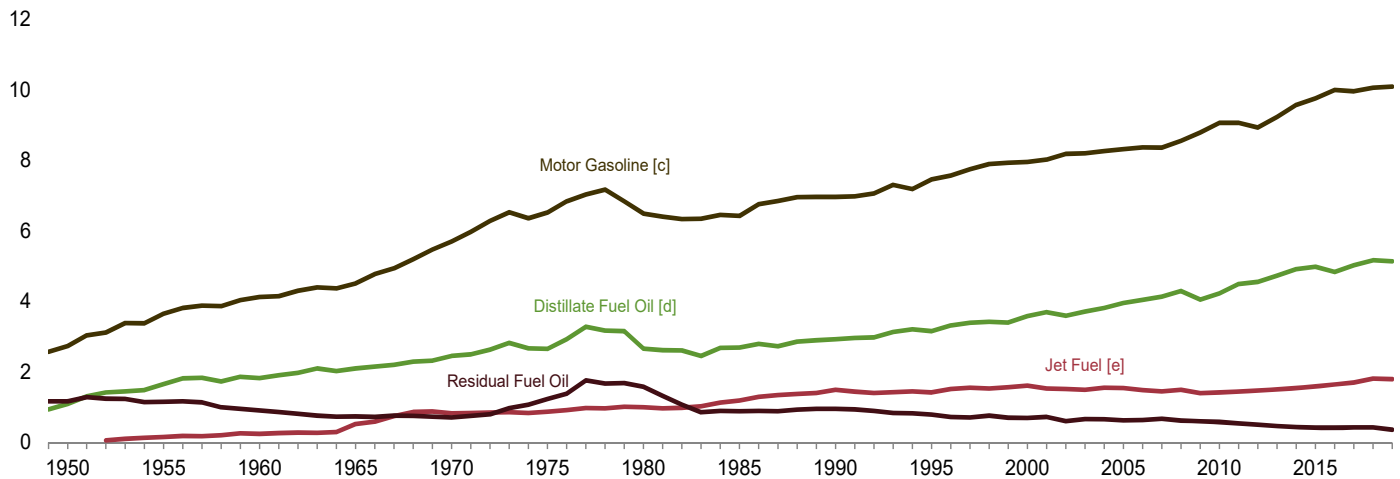
Figure 3.2 Refinery and Blender Net Inputs and Net Production

(Million Barrels per Day)

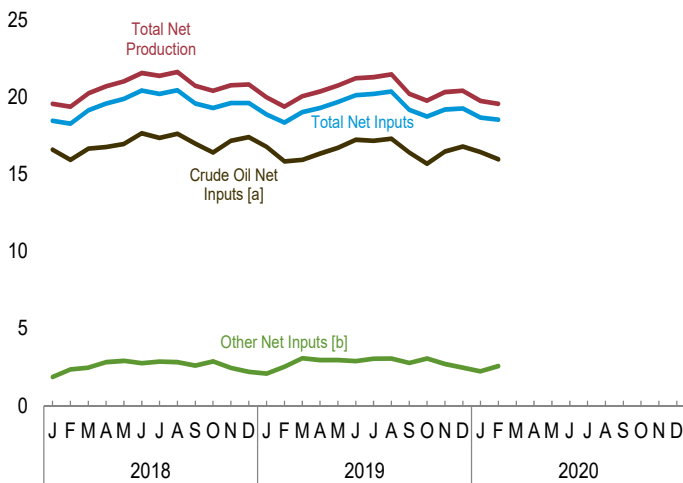
Net Inputs and Net Production, 1949–2019



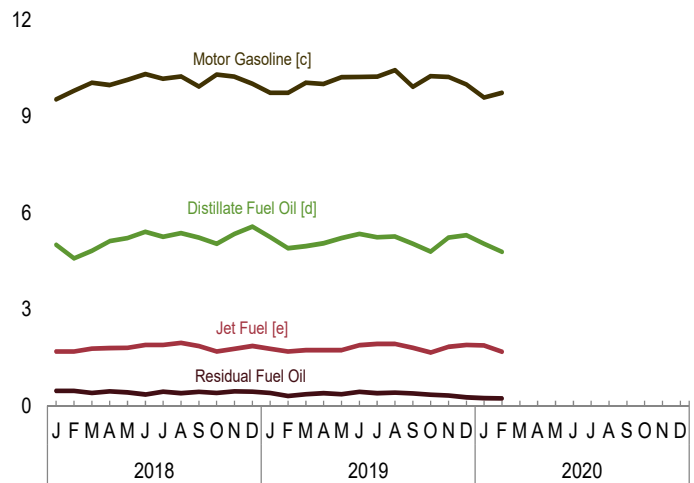
Net Production, Selected Products, 1949–2019



Net Inputs and Net Production, Monthly



Net Production, Selected Products, Monthly



[a] Includes lease condensate.

[b] Natural gas liquids and other liquids.

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

[d] Beginning in 2009, includes renewable diesel fuel (including biodiesel)

blended into distillate fuel oil.

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

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

Source: Table 3.2.

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

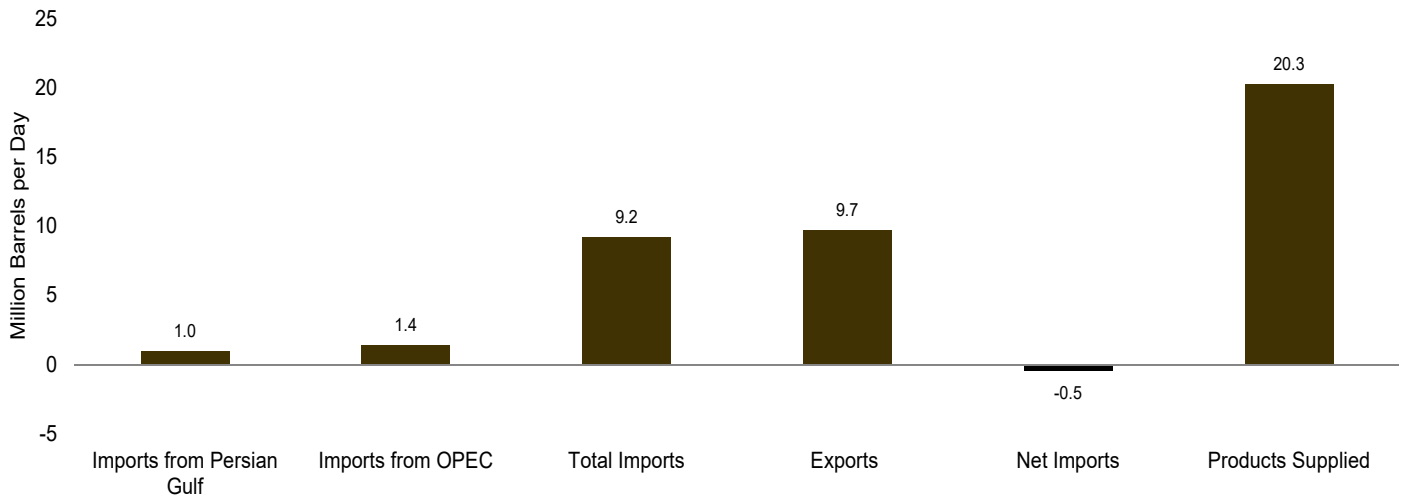
	Refinery and Blender Net Inputs ^a				Refinery and Blender Net Production ^b									
	Crude Oil ^c	Natural Gas Liquids ^d	Other Liquids ^e	Total	Distillate Fuel Oil ^f	Hydrocarbon Gas Liquids			Total ^h	Jet Fuel ⁱ	Motor Gasoline ^j	Residual Fuel Oil	Other Products ^k	Total
						Propane/Propylene		Total ^g						
						Propane	Propylene							
1950 Average	5,739	259	19	6,018	1,093	NA	NA	NA	80	(i)	2,735	1,165	947	6,019
1955 Average	7,480	345	32	7,857	1,651	NA	NA	NA	119	155	3,648	1,152	1,166	7,891
1960 Average	8,067	455	61	8,583	1,823	NA	NA	NA	212	241	4,126	908	1,420	8,729
1965 Average	9,043	618	88	9,750	2,096	NA	NA	NA	293	523	4,507	736	1,814	9,970
1970 Average	10,870	763	121	11,754	2,454	E 184	E 55	239	345	827	5,699	706	2,082	12,113
1975 Average	12,442	710	72	13,225	2,653	E 179	E 60	238	311	871	6,518	1,235	2,097	13,685
1980 Average	13,481	462	81	14,025	2,661	E 202	E 72	273	330	999	6,492	1,580	2,559	14,622
1985 Average	12,002	509	681	13,192	2,686	E 223	E 72	295	391	1,189	6,419	882	2,183	13,750
1990 Average	13,409	467	713	14,589	2,925	299	105	404	499	1,488	6,959	950	2,452	15,272
1995 Average	13,973	471	775	15,220	3,155	352	151	503	654	1,416	7,459	788	2,522	15,994
2000 Average	15,067	380	849	16,295	3,580	366	217	583	705	1,606	7,951	696	2,705	17,243
2001 Average	15,128	429	825	16,382	3,695	352	204	556	667	1,530	8,022	721	2,651	17,285
2002 Average	14,947	429	941	16,316	3,592	347	225	572	671	1,514	8,183	601	2,712	17,273
2003 Average	15,304	419	791	16,513	3,707	341	229	570	658	1,488	8,194	660	2,780	17,487
2004 Average	15,475	422	866	16,762	3,814	341	243	584	645	1,547	8,265	655	2,887	17,814
2005 Average	15,220	441	1,149	16,811	3,954	311	229	540	573	1,546	8,318	628	2,782	17,800
2006 Average	15,242	501	1,238	16,981	4,040	302	241	543	627	1,481	8,364	635	2,827	17,975
2007 Average	15,156	505	1,337	16,999	4,133	330	232	562	655	1,448	8,358	673	2,728	17,994
2008 Average	14,648	485	2,019	17,153	4,294	312	207	519	630	1,493	8,548	620	2,561	18,146
2009 Average	14,336	485	2,082	16,904	4,048	291	246	537	623	1,396	8,786	598	2,431	17,882
2010 Average	14,724	442	2,219	17,385	4,223	282	278	560	659	1,418	9,059	585	2,509	18,452
2011 Average	14,806	490	2,300	17,596	4,492	270	282	552	619	1,449	9,058	537	2,518	18,673
2012 Average	14,999	509	1,997	17,505	4,550	276	277	553	630	1,471	8,926	501	2,487	18,564
2013 Average	15,312	496	2,211	18,019	4,733	284	281	564	623	1,499	9,234	467	2,550	19,106
2014 Average	15,848	511	2,214	18,574	4,916	306	281	587	653	1,541	9,570	435	2,537	19,654
2015 Average	16,188	517	2,119	18,824	4,983	283	276	559	615	1,590	9,754	417	2,527	19,886
2016 Average	16,187	536	2,238	18,961	4,834	307	280	587	632	1,650	9,995	418	2,550	20,079
2017 Average	16,590	566	2,031	19,187	5,024	307	285	592	628	1,702	9,954	427	2,563	20,298
2018 January	16,599	630	1,233	18,463	5,006	296	304	600	393	1,687	9,529	467	2,483	19,565
February	15,936	629	1,718	18,283	4,584	295	274	568	409	1,688	9,797	462	2,440	19,380
March	16,665	556	1,923	19,144	4,823	295	276	571	632	1,781	10,053	403	2,550	20,240
April	16,766	497	2,326	19,589	5,120	307	286	593	800	1,795	9,974	450	2,563	20,703
May	16,969	454	2,465	19,887	5,214	300	292	591	855	1,804	10,138	415	2,602	21,028
June	17,666	456	2,309	20,430	5,410	321	286	607	874	1,893	10,314	348	2,724	21,563
July	17,357	442	2,414	20,213	5,257	320	286	607	870	1,894	10,174	444	2,742	21,382
August	17,623	504	2,316	20,443	5,369	310	293	604	880	1,955	10,243	391	2,790	21,629
September	16,991	565	2,035	19,591	5,230	296	294	590	650	1,856	9,927	429	2,639	20,732
October	16,412	687	2,196	19,295	5,035	279	294	574	464	1,691	10,301	397	2,522	20,411
November	17,162	746	1,704	19,612	5,350	294	314	608	395	1,769	10,240	450	2,558	20,762
December	17,409	732	1,474	19,615	5,576	303	313	616	373	1,856	10,020	440	2,561	20,826
Average	16,969	575	2,011	19,555	5,168	301	293	594	634	1,806	10,061	425	2,599	20,693
2019 January	16,785	681	1,407	18,873	5,252	297	292	589	374	1,771	9,735	398	2,452	19,983
February	15,837	590	1,930	18,357	4,902	257	289	545	427	1,689	9,730	306	2,321	19,376
March	15,939	509	2,575	19,023	4,968	288	261	549	629	1,728	10,051	357	2,331	20,065
April	16,338	484	2,478	19,300	5,054	295	272	567	805	1,728	10,010	388	2,376	20,360
May	16,719	460	2,509	19,688	5,213	295	283	577	867	1,729	10,217	363	2,362	20,752
June	17,233	431	2,463	20,127	5,349	300	290	591	859	1,883	10,231	430	2,464	21,216
July	17,175	448	2,591	20,214	5,243	292	286	579	852	1,922	10,240	390	2,644	21,291
August	17,300	481	2,577	20,358	5,266	295	284	579	807	1,924	10,435	410	2,628	21,470
September	16,404	601	2,183	19,188	5,035	272	282	553	613	1,799	9,922	383	2,465	20,217
October	15,681	711	2,352	18,744	4,793	252	281	533	409	1,653	10,254	340	2,320	19,769
November	16,482	743	1,973	19,198	5,232	294	287	581	272	1,833	10,227	319	2,450	20,333
December	R 16,793	R 715	R 1,750	R 19,258	R 5,309	R 316	R 280	R 596	R 348	R 1,890	R 9,997	R 264	R 2,599	R 20,408
Average	R 16,562	571	R 2,234	R 19,368	R 5,136	R 288	R 282	R 570	R 606	R 1,796	R 10,090	R 363	R 2,452	R 20,444
2020 January	E 16,448	F 634	RE 1,597	RF 18,680	E 5,040	NA	NA	RE 665	F 372	E 1,874	E 9,586	E 236	RE 2,646	RE 19,754
February	E 15,963	F 580	E 1,987	F 18,530	E 4,788	NA	NA	E 490	F 434	E 1,678	E 9,734	E 227	E 2,711	E 19,572
2-Month Average	E 16,214	F 608	E 1,786	F 18,607	E 4,918	NA	NA	E 580	F 402	E 1,779	E 9,657	E 232	E 2,677	E 19,666
2019 2-Month Average	16,335	638	1,655	18,628	5,086	278	290	568	400	1,732	9,733	354	2,390	19,695
2018 2-Month Average	16,285	630	1,463	18,378	4,806	295	290	585	401	1,688	9,656	465	2,462	19,477

^a See "Refinery and Blender Net Inputs" in Glossary.
^b See "Refinery and Blender Net Production" in Glossary.
^c Includes lease condensate.
^d Ethane, propane, normal butane, isobutane, and natural gasoline (pentanes plus).
^e 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).
^f Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.
^g Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures."
^h Ethane, propane, normal butane, isobutane, and refinery olefins (ethylene, propylene, butylene, and isobutylene).
ⁱ 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

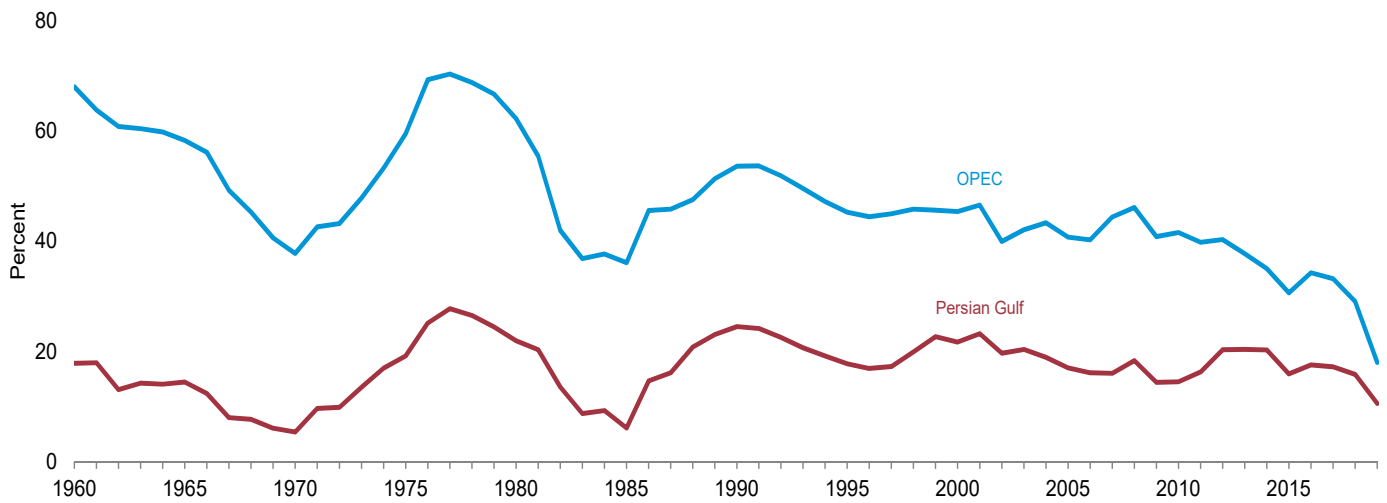
fuel is included in the products from which it was blended—gasoline, kerosene, and distillate fuel oil. Beginning in 2005, naphtha-type jet fuel is included in "Other Products.")
^j Finished motor gasoline. Through 1963, also includes aviation gasoline and special naphthas. Beginning in 1993, also includes fuel ethanol blended into motor gasoline.
^k Asphalt and road oil, kerosene, lubricants, petrochemical feedstocks, petroleum coke, still gas (refinery gas), waxes, and miscellaneous products. Through 1964, also includes kerosene-type jet fuel. Beginning in 1964, also includes finished aviation gasoline and special naphthas. Beginning in 2005, also includes naphtha-type jet fuel.
R=Revised. E=Estimate. F=Forecast. NA=Not available.
Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: See end of section.

Figure 3.3a Petroleum Trade: Overview

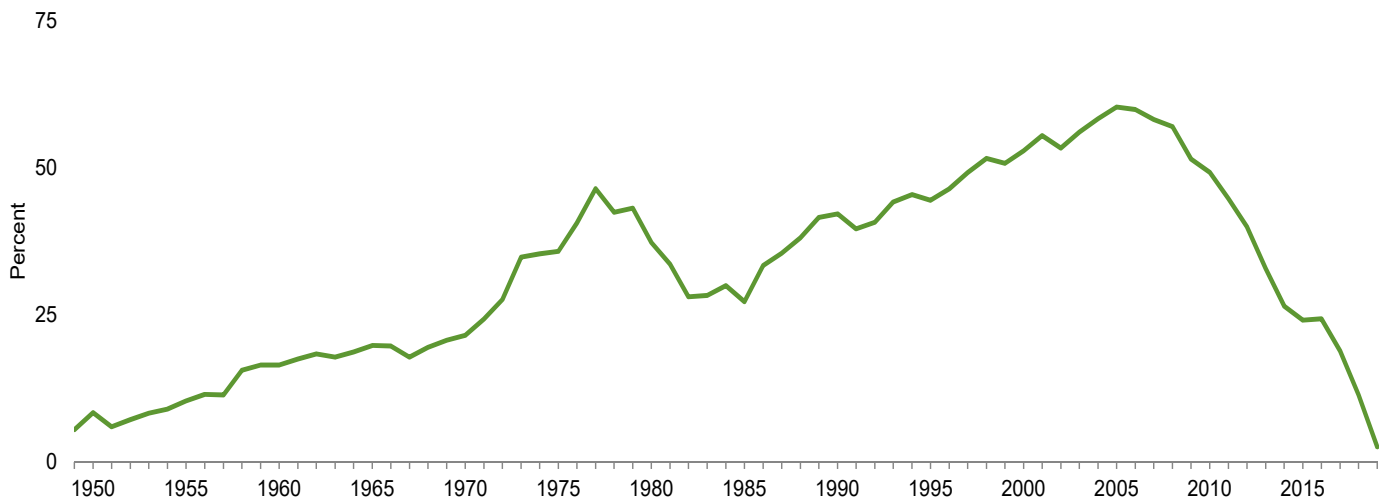
Overview, December 2019



Imports From OPEC and Persian Gulf as Share of Total Imports, 1960–2019



Net Imports as Share of Products Supplied, 1949–2019



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

Table 3.3a Petroleum Trade: Overview

	Imports From Persian Gulf ^a	Imports From OPEC ^b	Imports	Exports	Net Imports	Products Supplied	As Share of Products Supplied				As Share of Total Imports	
							Imports From Persian Gulf ^a	Imports From OPEC ^b	Imports	Net Imports	Imports From Persian Gulf ^a	Imports From OPEC ^b
							Thousand Barrels per Day						Percent
1950 Average	NA	NA	850	305	545	6,458	NA	NA	13.2	8.4	NA	NA
1955 Average	NA	NA	1,248	368	880	8,455	NA	NA	14.8	10.4	NA	NA
1960 Average	326	1,233	1,815	202	1,613	9,797	3.3	12.6	18.5	16.5	17.9	68.0
1965 Average	359	1,439	2,468	187	2,281	11,512	3.1	12.5	21.4	19.8	14.5	58.3
1970 Average	184	1,294	3,419	259	3,161	14,697	1.3	8.8	23.3	21.5	5.4	37.8
1975 Average	1,165	3,601	6,056	209	5,846	16,322	7.1	22.1	37.1	35.8	19.2	59.5
1980 Average	1,519	4,300	6,909	544	6,365	17,056	8.9	25.2	40.5	37.3	22.0	62.2
1985 Average	311	1,830	5,067	781	4,286	15,726	2.0	11.6	32.2	27.3	6.1	36.1
1990 Average	1,966	4,296	8,018	857	7,161	16,988	11.6	25.3	47.2	42.2	24.5	53.6
1995 Average	1,573	4,002	8,835	949	7,886	17,725	8.9	22.6	49.8	44.5	17.8	45.3
2000 Average	2,488	5,203	11,459	1,040	10,419	19,701	12.6	26.4	58.2	52.9	21.7	45.4
2001 Average	2,761	5,528	11,871	971	10,900	19,649	14.1	28.1	60.4	55.5	23.3	46.6
2002 Average	2,269	4,605	11,530	984	10,546	19,761	11.5	23.3	58.3	53.4	19.7	39.9
2003 Average	2,501	5,162	12,264	1,027	11,238	20,034	12.5	25.8	61.2	56.1	20.4	42.1
2004 Average	2,493	5,701	13,145	1,048	12,097	20,731	12.0	27.5	63.4	58.4	19.0	43.4
2005 Average	2,334	5,587	13,714	1,165	12,549	20,802	11.2	26.9	65.9	60.3	17.0	40.7
2006 Average	2,211	5,517	13,707	1,317	12,390	20,687	10.7	26.7	66.3	59.9	16.1	40.2
2007 Average	2,163	5,980	13,468	1,433	12,036	20,680	10.5	28.9	65.1	58.2	16.1	44.4
2008 Average	2,370	5,954	12,915	1,802	11,114	19,498	12.2	30.5	66.2	57.0	18.4	46.1
2009 Average	1,689	4,776	11,691	2,024	9,667	18,771	9.0	25.4	62.3	51.5	14.4	40.9
2010 Average	1,711	4,906	11,793	2,353	9,441	19,180	8.9	25.6	61.5	49.2	14.5	41.6
2011 Average	1,861	4,555	11,436	2,986	8,450	18,887	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 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 Average	1,746	3,366	10,144	6,376	3,768	19,958	8.7	16.9	50.8	18.9	17.2	33.2
2018 January	1,591	3,009	10,280	6,461	3,819	20,545	7.7	14.6	50.0	18.6	15.5	29.3
February	1,554	2,740	9,586	6,907	2,679	19,679	7.9	13.9	48.7	13.6	16.2	28.6
March	1,738	2,845	9,822	7,337	2,485	20,756	8.4	13.7	47.3	12.0	17.7	29.0
April	1,899	3,523	10,375	7,797	2,578	20,037	9.5	17.6	51.8	12.9	18.3	34.0
May	1,567	2,731	10,227	7,717	2,510	20,247	7.7	13.5	50.5	12.4	15.3	26.7
June	1,487	3,041	10,726	7,824	2,902	20,790	7.2	14.6	51.6	14.0	13.9	28.3
July	1,489	2,971	10,193	7,963	2,231	20,682	7.2	14.4	49.3	10.8	14.6	29.1
August	1,599	2,857	10,434	7,164	3,270	21,358	7.5	13.4	48.9	15.3	15.3	27.4
September	1,645	2,996	9,889	7,415	2,474	20,083	8.2	14.9	49.2	12.3	16.6	30.3
October	1,563	2,729	9,468	8,011	1,457	20,734	7.5	13.2	45.7	7.0	16.5	28.8
November	1,567	2,703	9,272	8,281	991	20,747	7.6	13.0	44.7	4.8	16.9	29.2
December	1,237	2,516	9,021	8,301	720	20,303	6.1	12.4	44.4	3.5	13.7	27.9
Average	1,578	2,888	9,943	7,601	2,341	20,504	7.7	14.1	48.5	11.4	15.9	29.0
2019 January	1,298	2,542	9,693	8,104	1,589	20,452	6.3	12.4	47.4	7.8	13.4	26.2
February	1,272	1,803	8,628	8,453	176	20,194	6.3	8.9	42.7	0.9	14.7	20.9
March	1,096	1,643	8,837	7,996	842	20,204	5.4	8.1	43.7	4.2	12.4	18.6
April	947	1,566	9,506	8,488	1,017	20,112	4.7	7.8	47.3	5.1	10.0	16.5
May	912	1,693	9,803	8,220	1,583	20,259	4.5	8.4	48.4	7.8	9.3	17.3
June	995	1,699	9,239	8,732	506	20,604	4.8	8.2	44.8	2.5	10.8	18.4
July	890	1,420	9,551	8,085	1,466	20,742	4.3	6.8	46.0	7.1	9.3	14.9
August	794	1,660	9,360	8,511	849	21,062	3.8	7.9	44.4	4.0	8.5	17.7
September	980	1,601	8,668	8,757	-89	20,221	4.8	7.9	42.9	-0.4	11.3	18.5
October	741	1,301	8,580	8,969	-389	20,772	3.6	6.3	41.3	-1.9	8.6	15.2
November	684	1,320	8,064	8,836	-771	20,590	3.3	6.4	39.2	-3.7	8.5	16.4
December	^R 962	^R 1,411	^R 9,173	^R 9,660	^R -487	^R 20,290	^R 4.7	^R 7.0	^R 45.2	^R -2.4	^R 10.5	^R 15.4
Average	^R 962	^R 1,638	^R 9,098	^R 8,567	^R 531	^R 20,462	^R 4.7	^R 8.0	^R 44.5	^R 2.6	^R 10.6	^R 18.0
2020 January	NA	NA	^E 8,728	^E 8,837	^E -109	^E 20,220	NA	NA	^E 43.2	^E -0.5	NA	NA
February	NA	NA	^E 8,246	^E 9,158	^E -913	^E 20,508	NA	NA	^E 40.2	^E -4.5	NA	NA
2-Month Average	NA	NA	^E 8,495	^E 8,993	^E -497	^E 20,359	NA	NA	^E 41.7	^E -2.4	NA	NA
2019 2-Month Average	1,286	2,192	9,187	8,269	918	20,329	6.3	10.8	45.2	4.5	14.0	23.9
2018 2-Month Average	1,574	2,881	9,951	6,673	3,278	20,134	7.8	14.3	49.4	16.3	15.8	29.0

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

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

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

Notes: • For the feature article "Measuring Dependence on Imported Oil," published in the August 1995 *Monthly Energy Review*, see http://www.eia.gov/totalenergy/data/monthly/pdf/historical/imported_oil.pdf. • Beginning in October 1977, data include Strategic Petroleum Reserve imports. See Table 3.3b. • Annual averages may not equal average of months due to independent rounding. • U.S. geographic coverage is the 50 states and the District of Columbia. U.S. exports include shipments to U.S. territories, and imports include

receipts from U.S. territories.

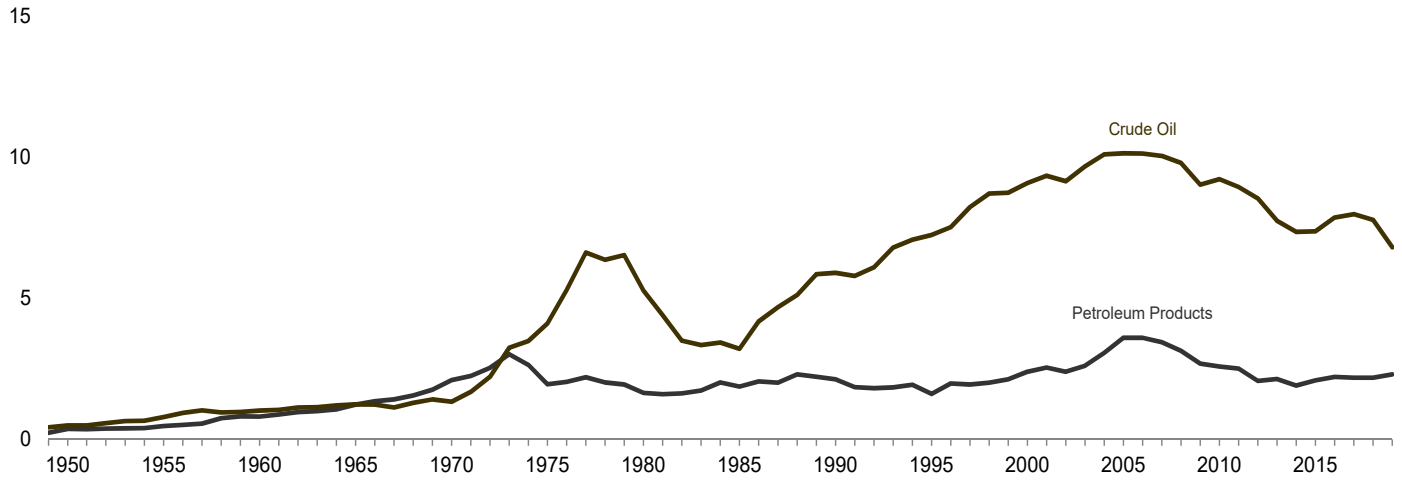
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: • **1949–1975:** Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976–1980:** U.S. Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • **1981–2018:** EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • **2019 and 2020:** 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.

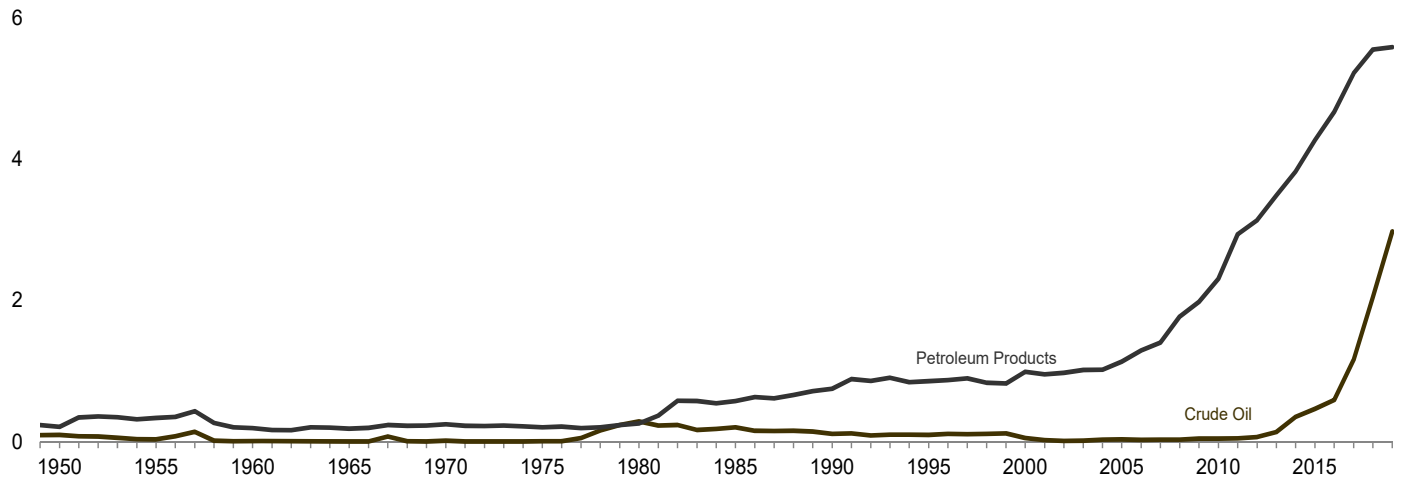
Figure 3.3b Petroleum Trade: Imports and Exports by Type

(Million Barrels per Day)

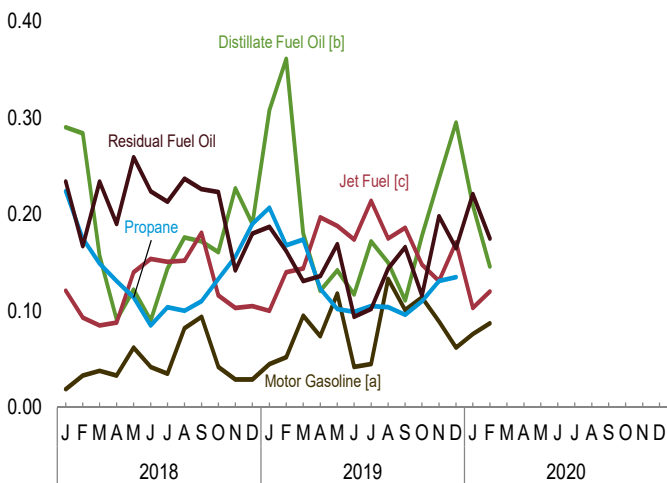
Imports Overview, 1949–2019



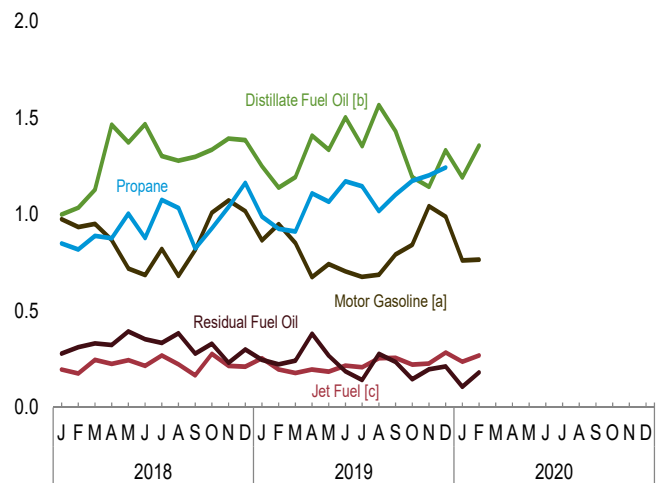
Exports Overview, 1949–2019



Imports, Selected Products, Monthly



Exports, Selected Products, Monthly



[a] Includes fuel ethanol blended into motor gasoline.

[b] Includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

[c] Includes kerosene-type jet fuel only.

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

Sources: Tables 3.3b and 3.3e.

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

	Crude Oil ^a		Distillate Fuel Oil	Hydrocarbon Gas Liquids				Jet Fuel ^e	Motor Gasoline ^f	Residual Fuel Oil	Other ^g	Total
	SPR ^b	Total		Propane/Propylene			Total ^d					
				Propane	Propylene	Total ^c						
1950 Average	--	487	7	NA	NA	--	--	(^e)	(s)	329	27	850
1955 Average	--	782	12	NA	NA	--	--	(^e)	13	417	24	1,248
1960 Average	--	1,015	35	NA	NA	NA	4	34	27	637	62	1,815
1965 Average	--	1,238	36	NA	NA	NA	21	81	28	946	119	2,468
1970 Average	--	1,324	147	NA	NA	26	58	144	67	1,528	150	3,419
1975 Average	--	4,105	155	NA	NA	60	185	133	184	1,223	70	6,056
1980 Average	44	5,263	142	NA	NA	84	226	80	140	939	120	6,909
1985 Average	118	3,201	200	NA	NA	67	235	39	381	510	501	5,067
1990 Average	27	5,894	278	NA	NA	115	197	108	342	504	695	8,018
1995 Average	--	7,230	193	95	6	102	192	106	265	187	662	8,835
2000 Average	8	9,071	295	154	7	161	256	162	427	352	897	11,459
2001 Average	11	9,328	344	140	6	145	250	148	454	295	1,051	11,871
2002 Average	16	9,140	267	137	8	145	199	107	498	249	1,069	11,530
2003 Average	--	9,665	333	159	9	168	271	109	518	327	1,041	12,264
2004 Average	77	10,088	325	198	11	209	305	127	496	426	1,377	13,145
2005 Average	52	10,126	329	219	14	233	374	190	603	530	1,562	13,714
2006 Average	8	10,118	365	201	26	228	360	186	475	350	1,854	13,707
2007 Average	7	10,031	304	162	20	182	276	217	413	372	1,856	13,468
2008 Average	19	9,783	213	162	23	185	275	103	302	349	1,891	12,915
2009 Average	56	9,013	225	126	21	147	194	81	223	331	1,623	11,691
2010 Average	--	9,213	228	93	29	121	179	98	134	366	1,574	11,793
2011 Average	--	8,935	179	82	28	110	183	69	105	328	1,637	11,436
2012 Average	--	8,527	126	85	31	116	170	55	44	256	1,421	10,598
2013 Average	--	7,730	155	103	24	127	182	84	45	225	1,438	9,859
2014 Average	--	7,344	195	89	19	108	143	94	49	173	1,242	9,241
2015 Average	--	7,363	200	104	19	124	156	132	71	192	1,335	9,449
2016 Average	--	7,850	147	120	22	142	180	147	59	205	1,468	10,055
2017 Average	--	7,969	151	133	23	156	196	160	32	189	1,448	10,144
2018 January	--	8,018	290	224	15	240	273	121	19	234	1,325	10,280
February	--	7,498	284	175	22	197	230	93	33	167	1,281	9,586
March	--	7,620	157	149	23	172	216	85	38	234	1,471	9,822
April	--	8,254	91	131	10	141	168	88	33	190	1,552	10,375
May	--	7,834	122	114	21	135	158	140	62	259	1,652	10,227
June	--	8,487	90	85	21	105	136	154	42	224	1,593	10,726
July	--	7,936	144	104	21	125	161	151	35	213	1,553	10,193
August	--	7,989	176	100	21	121	160	152	82	237	1,638	10,434
September	--	7,593	172	110	14	124	172	181	94	227	1,451	9,889
October	--	7,354	161	133	15	147	197	116	42	223	1,374	9,468
November	--	7,542	227	156	13	169	228	103	29	142	1,003	9,272
December	--	7,097	190	190	15	206	268	105	29	180	1,152	9,021
Average	--	7,768	175	139	18	157	197	124	45	211	1,422	9,943
2019 January	--	7,520	308	207	15	223	290	100	45	187	1,241	9,693
February	--	6,652	361	169	13	182	242	140	52	162	1,020	8,628
March	--	6,759	180	174	10	185	252	144	95	131	1,274	8,837
April	--	7,025	121	123	18	142	204	197	74	136	1,748	9,506
May	--	7,158	142	102	21	123	176	188	118	169	1,852	9,803
June	--	7,141	117	99	13	112	157	174	43	94	1,513	9,239
July	--	6,935	172	105	16	121	179	214	45	102	1,903	9,551
August	--	6,944	150	104	17	121	177	175	133	144	1,635	9,360
September	--	6,478	111	96	12	107	165	186	101	166	1,461	8,668
October	--	6,243	178	110	15	125	192	148	114	116	1,588	8,580
November	--	5,816	237	131	13	143	190	131	89	198	1,402	8,064
December	--	R 6,831	R 295	R 135	R 15	R 150	R 201	R 171	R 62	R 165	R 1,449	R 9,173
Average	--	R 7,795	R 197	R 129	R 15	R 144	R 202	R 164	R 81	R 147	R 1,511	R 9,098
2020 January	--	E 6,589	E 209	NA	NA	E 174	NA	E 103	E 76	E 221	NA	E 8,728
February	--	E 6,473	E 146	NA	NA	E 133	NA	E 120	E 87	E 175	NA	E 8,246
2-Month Average	--	E 6,533	E 178	NA	NA	E 154	NA	E 111	E 82	E 199	NA	E 8,495
2019 2-Month Average	--	7,108	333	189	14	203	267	119	49	175	1,136	9,187
2018 2-Month Average	--	7,771	287	201	19	219	253	108	25	202	1,304	9,951

^a Includes lease condensate.

^b "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.

^c Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

^d 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.

^e 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.")

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

^g Asphalt and road oil, aviation gasoline blending components, kerosene, lubricants, 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. • **1981–2018:** EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • **2019 and 2020:** EIA, *Petroleum Supply Monthly*, monthly reports; and, for the current two months, *Weekly Petroleum Status Report* data system and *Monthly Energy Review* data system calculations.

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

	Algeria ^a	Angola ^b	Ecuador ^c	Iraq	Kuwait ^d	Libya ^e	Nigeria ^f	Saudi Arabia ^d	Venezuela	Other ^g	Total OPEC
1960 Average	(a)	(b)	(c)	22	182	(e)	(f)	84	911	34	1,233
1965 Average	(a)	(b)	(c)	16	74	42	(f)	158	994	155	1,439
1970 Average	8	(b)	(c)	-	48	47	(f)	30	989	172	1,294
1975 Average	282	(b)	(c)	2	16	232	762	715	702	832	3,601
1980 Average	488	(b)	(c)	28	27	554	857	1,261	481	577	4,300
1985 Average	187	(b)	(c)	46	21	4	293	168	605	439	1,830
1990 Average	280	(b)	(c)	518	86	-	800	1,339	1,025	199	4,296
1995 Average	234	(b)	(c)	-	218	-	627	1,344	1,480	98	4,002
2000 Average	225	(b)	(c)	620	272	-	896	1,572	1,546	72	5,203
2001 Average	278	(b)	(c)	795	250	-	885	1,662	1,553	105	5,528
2002 Average	264	(b)	(c)	459	228	-	621	1,552	1,398	83	4,605
2003 Average	382	(b)	(c)	481	220	-	867	1,774	1,376	61	5,162
2004 Average	452	(b)	(c)	656	250	20	1,140	1,558	1,554	70	5,701
2005 Average	478	(b)	(c)	531	243	56	1,166	1,537	1,529	47	5,587
2006 Average	657	(b)	(c)	553	185	87	1,114	1,463	1,419	38	5,517
2007 Average	670	508	(c)	484	181	117	1,134	1,485	1,361	39	5,980
2008 Average	548	513	221	627	210	103	988	1,529	1,189	26	5,954
2009 Average	493	460	185	450	182	79	809	1,004	1,063	50	4,776
2010 Average	510	393	212	415	197	70	1,023	1,096	988	3	4,906
2011 Average	358	346	206	459	191	15	818	1,195	951	16	4,555
2012 Average	242	233	180	476	305	61	441	1,365	960	9	4,271
2013 Average	115	216	236	341	328	59	281	1,329	806	10	3,720
2014 Average	110	154	215	369	311	6	92	1,166	789	23	3,237
2015 Average	108	136	231	229	204	7	81	1,059	827	12	2,894
2016 Average	182	168	239	424	210	16	235	1,106	796	69	3,446
2017 January	232	118	247	622	105	31	332	1,345	749	10	3,793
February	234	64	141	413	251	22	223	1,338	751	9	3,445
March	193	30	278	544	219	30	342	1,173	764	21	3,593
April	153	84	180	811	101	45	332	1,160	857	21	3,743
May	196	105	230	619	174	87	294	1,132	767	66	3,669
June	254	178	212	587	162	38	320	1,045	663	108	3,567
July	215	189	166	756	206	108	241	795	686	37	3,399
August	229	296	193	456	87	35	397	739	606	125	3,163
September	145	171	223	502	127	59	292	676	620	65	2,880
October	144	124	163	708	119	176	441	591	562	127	3,154
November	120	77	193	611	117	72	470	780	558	47	3,044
December	149	172	253	605	78	73	323	719	513	55	2,939
Average	189	135	207	604	145	65	334	955	674	58	3,366
2018 January	234	71	161	699	100	76	349	744	528	46	3,009
February	119	34	123	617	177	38	386	667	472	107	2,740
March	107	10	136	721	131	79	153	760	561	187	2,845
April	208	169	225	834	107	87	275	904	632	84	3,523
May	134	118	162	583	49	40	102	872	559	112	2,731
June	147	193	173	421	92	75	267	847	643	182	3,041
July	243	188	288	485	63	44	43	876	625	117	2,971
August	198	146	183	421	83	19	66	1,039	592	109	2,857
September	200	73	172	485	36	61	113	1,043	708	106	2,996
October	178	94	111	377	-	32	182	1,108	570	76	2,729
November	162	28	196	392	101	(s)	180	1,001	563	81	2,703
December	183	-	192	226	16	121	177	930	576	95	2,516
Average	176	94	177	521	79	56	189	901	586	108	2,888
2019 January	98	8	238	429	21	60	181	770	631	106	2,542
February	51	-	154	422	106	36	33	663	289	49	1,803
March	136	10	124	275	129	25	142	666	69	65	1,643
April	125	43	128	265	61	88	137	583	114	22	1,566
May	142	46	183	366	57	111	243	462	11	72	1,693
June	122	123	154	355	26	55	251	579	(s)	33	1,699
July	75	-	198	360	20	39	193	454	-	82	1,420
August	63	47	329	249	46	66	380	461	-	19	1,660
September	49	71	187	400	-	69	245	458	-	123	1,601
October	23	75	247	252	-	86	128	444	-	46	1,301
November	34	25	269	283	41	90	211	355	-	13	1,320
December	16	11	235	436	43	34	163	470	-	4	1,411
Average	78	38	204	341	45	63	193	530	92	53	1,638

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

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

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

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

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

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

^g Includes these countries for the dates indicated: Congo-Brazzaville (June 2018 forward), Equatorial Guinea (May 2017 forward), Gabon (1975-1994 and July 2016 forward), Indonesia (1962-2008 and January-November 2016), Iran (1960 forward), Qatar (1961-2018), and United Arab Emirates (1967 forward).

- =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 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. • 1981-2018: EIA, *Petroleum Supply Annual*, annual reports. • 2019: EIA, *Petroleum Supply Monthly*, monthly reports.

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

	Brazil	Canada	Colombia	Mexico	Nether-lands	Norway	Russia ^a	United Kingdom	U.S. Virgin Islands	Other	Total Non-OPEC
1960 Average	1	120	42	16	NA	NA	–	(s)	NA	NA	581
1965 Average	–	323	51	48	1	–	–	(s)	–	606	1,029
1970 Average	2	766	46	42	39	–	3	11	189	1,027	2,126
1975 Average	5	846	9	71	19	17	14	14	406	1,052	2,454
1980 Average	3	455	4	533	2	144	1	176	388	903	2,609
1985 Average	61	770	23	816	58	32	8	310	247	913	3,237
1990 Average	49	934	182	755	55	102	45	189	282	1,128	3,721
1995 Average	8	1,332	219	1,068	15	273	25	383	278	1,233	4,833
2000 Average	51	1,807	342	1,373	30	343	72	366	291	1,581	6,257
2001 Average	82	1,828	296	1,440	43	341	90	324	268	1,631	6,343
2002 Average	116	1,971	260	1,547	66	393	210	478	236	1,649	6,925
2003 Average	108	2,072	195	1,623	87	270	254	440	288	1,766	7,103
2004 Average	104	2,138	176	1,665	101	244	298	380	330	2,008	7,444
2005 Average	156	2,181	196	1,662	151	233	410	396	328	2,413	8,127
2006 Average	193	2,353	155	1,705	174	196	369	272	328	2,446	8,190
2007 Average	200	2,455	155	1,532	128	142	414	277	346	1,839	7,489
2008 Average	258	2,493	200	1,302	168	102	465	236	320	1,416	6,961
2009 Average	309	2,479	276	1,210	140	108	563	245	277	1,307	6,915
2010 Average	272	2,535	365	1,284	108	89	612	256	253	1,112	6,887
2011 Average	253	2,729	433	1,206	100	113	624	159	186	1,077	6,881
2012 Average	226	2,946	433	1,035	99	75	477	149	12	874	6,327
2013 Average	151	3,142	389	919	89	54	460	147	–	786	6,138
2014 Average	160	3,388	318	842	85	45	330	117	–	720	6,004
2015 Average	215	3,765	395	758	57	61	371	123	–	811	6,554
2016 Average	167	3,780	483	669	60	76	441	122	(s)	812	6,610
2017 January	206	4,285	345	730	75	134	361	143	–	673	6,952
February	240	4,098	401	607	80	34	331	96	–	700	6,588
March	229	4,147	338	630	48	12	379	120	–	689	6,590
April	168	3,892	417	680	62	86	308	123	–	844	6,579
May	132	4,159	424	810	49	73	401	167	–	847	7,061
June	202	3,837	334	784	72	122	503	126	–	779	6,759
July	376	3,824	357	668	45	64	358	113	–	752	6,555
August	258	4,023	388	581	74	186	448	67	–	924	6,950
September	250	3,984	374	430	93	118	450	149	–	1,024	6,872
October	230	3,976	270	654	51	71	355	83	–	897	6,587
November	228	4,046	337	841	43	38	384	61	–	854	6,832
December	166	4,373	363	767	59	7	389	88	–	784	6,995
Average	224	4,054	362	682	62	79	389	111	–	814	6,778
2018 January	272	4,442	512	669	68	57	386	79	–	786	7,271
February	187	4,263	477	713	50	56	297	110	–	692	6,846
March	84	4,195	364	784	91	91	356	84	–	929	6,977
April	184	4,278	282	632	64	122	243	205	–	843	6,852
May	123	4,467	437	608	78	72	491	180	–	1,039	7,496
June	283	4,553	240	886	53	85	439	152	–	995	7,685
July	179	4,173	319	681	43	166	454	164	–	1,042	7,222
August	249	4,239	319	935	68	39	515	175	–	1,038	7,577
September	77	4,038	229	771	44	74	519	207	–	935	6,893
October	230	4,193	229	718	89	138	271	106	–	765	6,739
November	93	4,384	259	601	49	136	254	155	–	640	6,569
December	92	4,277	333	635	49	94	271	132	–	620	6,505
Average	171	4,292	333	719	62	94	375	146	–	862	7,055
2019 January	142	4,628	380	569	100	88	321	122	–	800	7,150
February	91	4,298	420	720	97	69	221	47	–	861	6,825
March	162	4,404	412	712	60	80	361	118	–	884	7,194
April	155	4,435	472	680	115	111	566	182	–	1,223	7,939
May	261	4,425	459	656	195	134	562	266	–	1,152	8,110
June	217	4,375	395	571	73	186	534	156	–	1,034	7,540
July	341	4,660	377	670	117	35	491	182	–	1,258	8,131
August	201	4,376	383	744	133	84	614	146	–	1,018	7,699
September	186	4,259	283	589	120	123	474	179	–	853	7,067
October	290	4,404	266	551	95	39	675	122	–	837	7,278
November	128	3,959	284	705	78	46	640	139	–	764	6,744
December	153	4,784	340	641	76	48	696	81	–	943	7,762
Average	195	4,420	372	650	105	87	515	145	–	970	7,460

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

NA=Not available. –=No data reported. (s)=Less than 500 barrels per day.

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

states and the District of Columbia.

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

Sources: • **1960–1972**: Bureau of Mines, *Minerals Yearbook*, annual reports. • **1973–1975**: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976–1980**: U.S. Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • **1981–2018**: EIA, *Petroleum Supply Annual*, annual reports. • **2019**: EIA, *Petroleum Supply Monthly*, monthly reports.

Table 3.3e Petroleum Trade: Exports by Type
(Thousand Barrels per Day)

	Crude Oil ^a	Distillate Fuel Oil	Hydrocarbon Gas Liquids		Jet Fuel ^d	Motor Gasoline ^e	Residual Fuel Oil	Other ^f	Total
			Propane ^b	Total ^c					
1950 Average	95	34	NA	4	(^d)	68	44	58	305
1955 Average	32	67	NA	12	(s)	95	93	69	368
1960 Average	8	27	NA	8	(s)	37	51	71	202
1965 Average	3	10	NA	21	3	2	41	108	187
1970 Average	14	2	13	27	6	1	54	154	259
1975 Average	6	1	13	26	2	2	15	158	209
1980 Average	287	3	10	21	1	1	33	197	544
1985 Average	204	67	48	64	13	10	197	225	781
1990 Average	109	109	28	41	43	55	211	287	857
1995 Average	95	183	38	59	26	104	136	12	949
2000 Average	50	173	53	78	32	144	139	46	1,040
2001 Average	20	119	31	45	29	133	191	433	971
2002 Average	9	112	55	67	15	124	177	479	984
2003 Average	12	107	37	59	20	125	197	506	1,027
2004 Average	27	110	28	45	40	124	205	497	1,048
2005 Average	32	138	37	60	53	136	251	496	1,165
2006 Average	25	215	45	68	41	142	283	544	1,317
2007 Average	27	268	42	70	41	127	330	569	1,433
2008 Average	29	528	53	101	61	172	355	555	1,802
2009 Average	44	587	85	139	69	195	415	574	2,024
2010 Average	42	656	109	164	84	296	405	706	2,353
2011 Average	47	854	124	249	97	479	424	835	2,986
2012 Average	67	1,007	171	314	132	409	388	886	3,205
2013 Average	134	1,134	302	468	156	373	362	994	3,621
2014 Average	351	1,101	423	703	163	442	364	1,052	4,176
2015 Average	465	1,176	615	966	168	476	326	1,161	4,738
2016 Average	591	1,179	799	1,211	175	635	298	1,171	5,261
2017 Average	1,158	1,381	914	1,404	184	749	308	1,192	6,376
2018 January	1,362	999	849	1,456	197	975	279	1,194	6,461
February	1,735	1,034	818	1,436	176	934	313	1,278	6,907
March	1,969	1,128	889	1,427	247	951	332	1,281	7,337
April	1,919	1,464	876	1,670	226	867	323	1,329	7,797
May	2,067	1,372	1,003	1,753	245	720	394	1,167	7,717
June	2,279	1,467	877	1,619	215	686	353	1,205	7,824
July	2,307	1,302	1,075	1,663	269	821	334	1,267	7,963
August	1,859	1,278	1,033	1,660	223	681	384	1,079	7,164
September	2,015	1,298	823	1,582	166	815	279	1,260	7,415
October	2,256	1,334	928	1,614	277	1,009	330	1,190	8,011
November	2,400	1,392	1,038	1,659	215	1,072	231	1,313	8,281
December	2,391	1,385	1,163	1,671	211	1,017	301	1,325	8,301
Average	2,048	1,289	949	1,602	223	879	321	1,240	7,601
2019 January	2,575	1,249	988	1,572	254	866	247	1,340	8,104
February	2,990	1,139	925	1,560	197	949	223	1,394	8,453
March	2,684	1,192	911	1,628	179	852	243	1,219	7,996
April	2,843	1,408	1,108	1,854	197	675	381	1,131	8,488
May	2,900	1,334	1,065	1,778	185	743	268	1,011	8,220
June	3,159	1,502	1,171	1,867	217	705	187	1,096	8,732
July	2,694	1,353	1,145	1,843	209	676	142	1,167	8,085
August	2,727	1,566	1,017	1,813	254	687	277	1,187	8,511
September	3,092	1,430	1,102	1,859	257	792	236	1,092	8,757
October	3,383	1,192	1,174	2,055	222	843	146	1,128	8,969
November	3,023	1,143	1,202	2,073	228	1,043	198	1,128	8,836
December	R 3,669	R 1,331	R 1,242	R 1,945	R 284	R 989	R 213	R 1,230	R 9,660
Average	R 2,978	R 1,321	R 1,088	R 1,822	R 224	R 817	R 230	R 1,176	R 8,567
2020 January	E 3,413	E 1,191	NA	NA	E 237	E 761	E 107	NA	E 8,837
February	E 3,595	E 1,356	NA	NA	E 269	E 765	E 182	NA	E 9,158
2-Month Average	E 3,501	E 1,271	NA	NA	E 252	E 763	E 143	NA	E 8,993
2019 2-Month Average	2,772	1,197	958	1,566	227	905	236	1,366	8,269
2018 2-Month Average	1,539	1,015	835	1,446	187	955	295	1,234	6,673

^a Includes lease condensate.
^b Through 1983, also includes 40% of "Butane-Propane Mixtures." Through 2012, also includes propylene.
^c Ethane, propane, normal butane, isobutane, and natural gasoline (pentanes plus). Through 2012, also includes refinery olefins (ethylene, propylene, butylene, and isobutylene).
^d Beginning in 1965, includes kerosene-type jet fuel. (Through 1964, kerosene-type jet fuel is included with kerosene in "Other.") For 1953–2004, also includes naphtha-type jet fuel. (Through 1952, naphtha-type jet fuel is included in the products from which it was blended: motor gasoline, kerosene, and distillate fuel oil. Beginning in 2005, naphtha-type jet fuel is included in "Other.")
^e Finished motor gasoline. Through 1952, also includes naphtha-type jet fuel. Through 1963, also includes aviation gasoline and special naphthas. Through 1980, also includes motor gasoline blending components.
^f Asphalt and road oil, 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. (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. • 1981–2018: EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • 2019 and 2020: 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 3.3f Petroleum Trade: Exports by Country of Destination
(Thousand Barrels per Day)

	Brazil	Canada	China	India	Japan	Mexico	Netherlands	Singapore	South Korea	United Kingdom	Other	Total
1960 Average	4	34	NA	NA	62	18	6	NA	NA	12	NA	202
1965 Average	3	26	NA	NA	40	27	10	NA	NA	12	NA	187
1970 Average	7	31	NA	NA	69	33	15	NA	NA	12	NA	259
1975 Average	6	22	NA	1	27	42	23	NA	NA	7	NA	209
1980 Average	4	108	-	1	32	28	23	6	2	7	335	544
1985 Average	3	74	-	2	108	61	44	24	27	14	424	781
1990 Average	2	91	-	6	92	89	54	15	60	11	438	857
1995 Average	16	73	2	3	76	125	33	46	57	14	505	949
2000 Average	28	110	3	3	90	358	42	36	20	10	342	1,040
2001 Average	23	112	6	3	62	274	45	67	14	13	352	971
2002 Average	26	106	14	3	74	254	23	81	11	12	380	984
2003 Average	27	141	24	7	69	228	15	51	10	6	447	1,027
2004 Average	27	158	13	11	63	209	36	41	12	14	464	1,048
2005 Average	39	181	12	11	56	268	25	43	16	21	492	1,165
2006 Average	42	159	11	8	58	255	83	45	21	28	607	1,317
2007 Average	46	189	14	14	54	279	81	71	16	9	660	1,433
2008 Average	54	264	13	10	54	333	131	77	18	17	830	1,802
2009 Average	55	223	44	30	58	322	192	115	23	33	928	2,024
2010 Average	123	233	52	10	88	448	165	128	13	19	1,073	2,353
2011 Average	157	351	73	17	79	570	248	121	15	35	1,320	2,986
2012 Average	166	416	85	36	89	565	239	115	16	41	1,435	3,205
2013 Average	179	549	129	41	117	532	274	136	13	36	1,616	3,621
2014 Average	217	809	89	70	150	559	241	124	46	53	1,817	4,176
2015 Average	188	955	191	78	166	690	226	122	65	89	1,968	4,738
2016 Average	260	935	203	140	250	880	265	147	108	92	1,980	5,261
2017 January	270	809	333	102	323	1,120	155	252	124	89	2,067	5,645
February	317	827	611	249	379	980	306	306	159	93	2,233	6,461
March	312	794	387	193	323	883	268	291	128	187	2,288	6,054
April	405	885	452	191	377	909	152	192	251	167	2,297	6,277
May	393	957	384	166	249	887	320	125	197	170	2,383	6,232
June	414	936	272	211	256	1,087	292	237	175	184	2,188	6,252
July	410	980	208	140	316	1,125	269	188	137	195	2,324	6,291
August	415	824	354	239	264	1,022	167	162	179	152	1,889	5,665
September	476	872	531	235	463	1,074	261	174	240	175	1,789	6,289
October	492	655	773	264	393	1,133	312	278	150	211	2,426	7,086
November	444	999	499	217	390	1,377	194	143	257	316	2,308	7,144
December	391	918	576	200	468	1,365	322	182	116	288	2,309	7,136
Average	395	871	447	200	350	1,081	251	210	176	186	2,209	6,376
2018 January	363	997	523	141	407	1,137	275	193	56	155	2,215	6,461
February	349	1,135	606	203	323	1,154	238	232	175	223	2,268	6,907
March	399	959	703	400	318	1,261	230	94	238	305	2,429	7,337
April	400	1,115	558	205	350	1,238	369	218	213	319	2,812	7,797
May	308	1,162	494	268	279	1,067	229	291	377	265	2,977	7,717
June	450	1,062	554	500	344	1,008	295	223	451	260	2,678	7,824
July	354	1,127	513	241	495	1,343	322	125	413	233	2,797	7,963
August	358	933	130	291	443	1,088	301	176	478	291	2,675	7,164
September	380	965	52	265	572	1,153	418	200	385	267	2,756	7,415
October	554	1,023	107	378	459	1,358	462	176	555	303	2,637	8,011
November	401	875	62	308	789	1,354	503	263	445	267	3,011	8,281
December	476	937	203	362	807	1,169	399	43	772	372	2,761	8,301
Average	400	1,024	374	297	466	1,194	337	185	382	272	2,670	7,601
2019 January	465	871	147	446	645	1,187	619	48	309	365	3,001	8,104
February	339	1,143	171	458	333	1,251	455	208	604	345	3,147	8,453
March	567	925	150	694	523	1,294	349	140	515	284	2,556	7,996
April	422	1,135	75	599	553	1,231	464	136	458	293	3,123	8,488
May	465	959	291	463	614	994	312	133	508	370	3,111	8,220
June	575	841	361	438	527	1,042	509	94	760	274	3,311	8,732
July	461	926	287	263	628	^a 1,205	365	80	734	269	2,868	8,085
August	460	1,019	325	422	617	1,072	370	51	615	383	3,177	8,511
September	585	1,009	291	386	664	1,073	478	178	630	300	3,163	8,757
October	418	1,163	36	561	601	1,193	553	136	628	285	3,394	8,969
November	491	1,117	133	431	661	1,388	354	168	614	391	3,088	8,836
December	583	1,021	63	463	694	1,316	606	303	616	463	3,531	9,660
Average	487	1,009	194	469	590	1,187	453	139	582	335	3,122	8,567

^a The July 2019 value for U.S. petroleum exports to Mexico incorrectly includes 17 thousand barrels per day of crude oil, which should be 0. The U.S. Energy Information Administration will revise the incorrect data in the 2019 *Petroleum Supply Annual* (currently scheduled for release in August 2020) and in the following month's *Monthly Energy Review*. See "Notice about petroleum export data from Census" at <https://www.eia.gov/petroleum/supply/monthly/notice.php>.

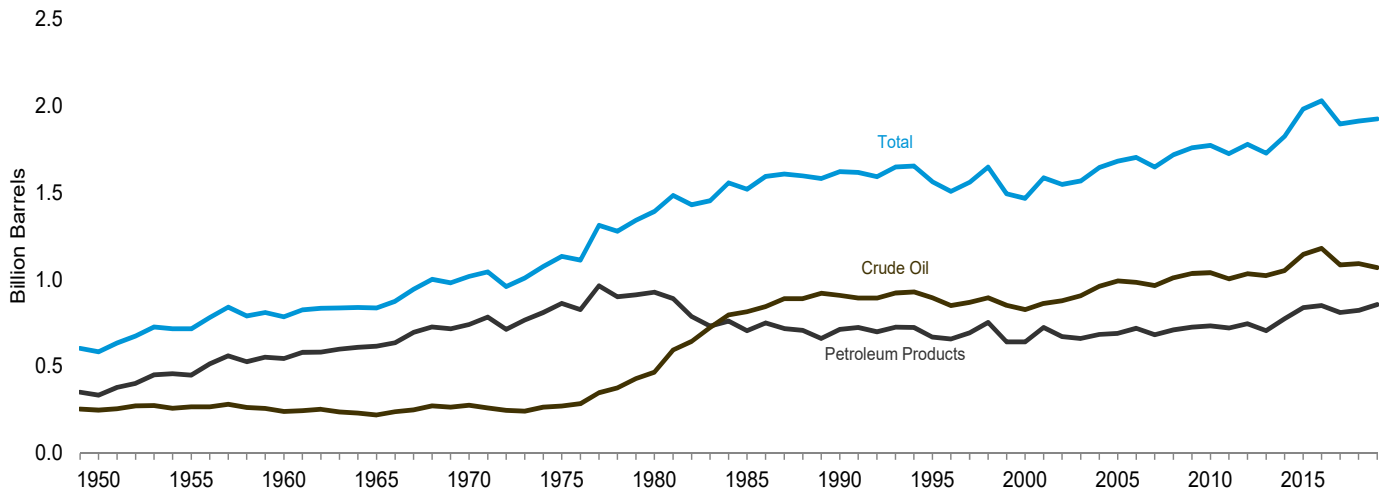
NA=Not available. - =No data reported.
Notes: • Totals may not equal sum of components due to independent rounding. • U.S. geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1960 and monthly data beginning in 1981.

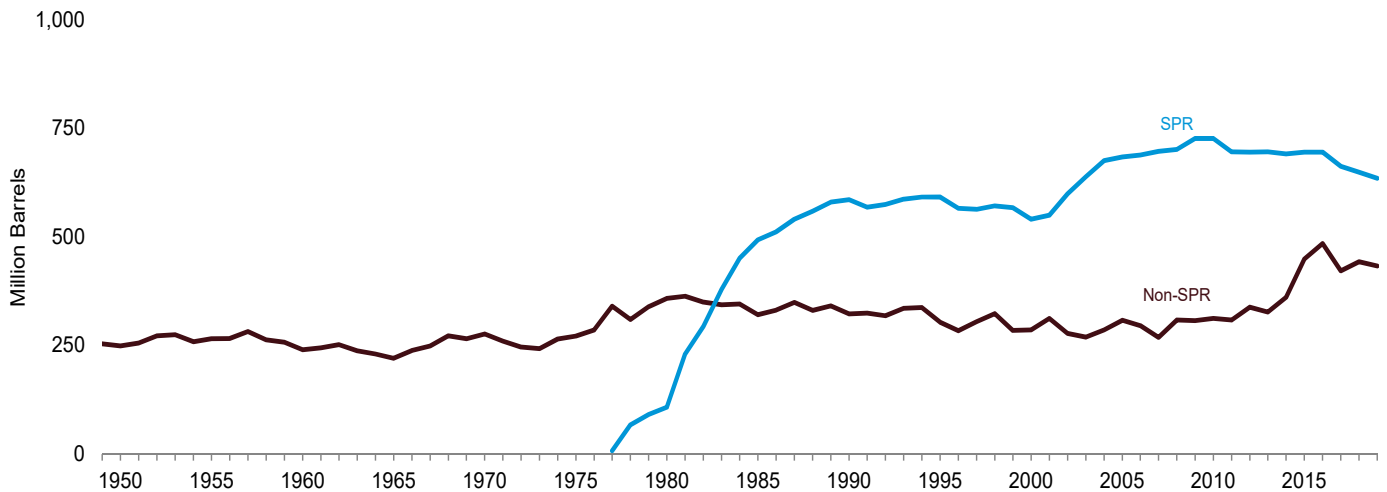
Sources: • **1960–1972:** Bureau of Mines, *Minerals Yearbook*, annual reports. • **1973–1975:** Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976–1980:** U.S. Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • **1981–2018:** EIA, *Petroleum Supply Annual*, annual reports. • **2019:** EIA, *Petroleum Supply Monthly*, monthly reports.

Figure 3.4 Petroleum Stocks

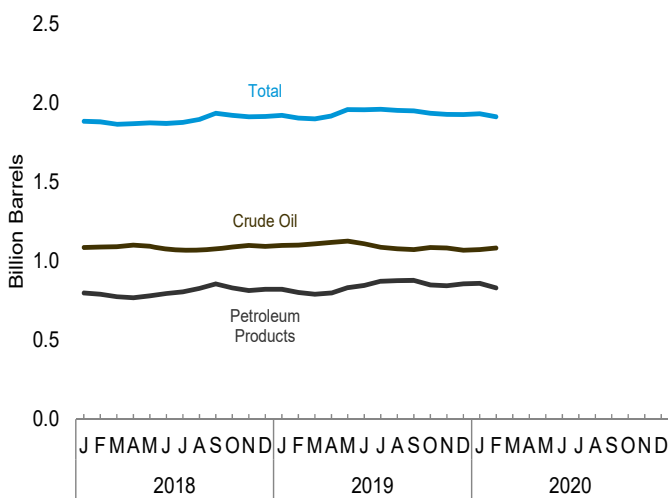
Overview, 1949–2019



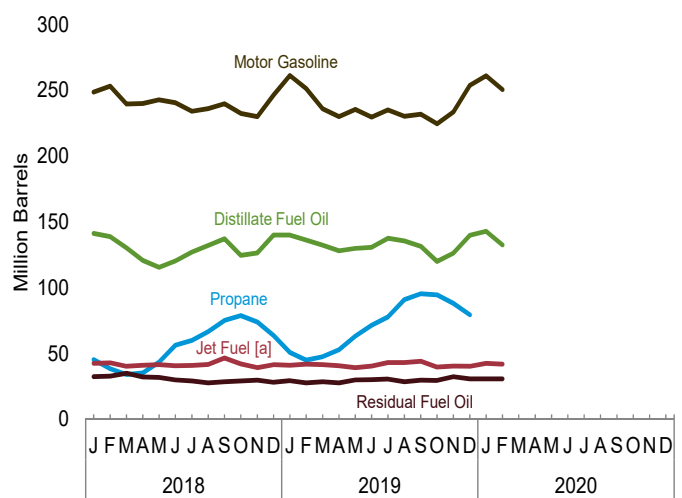
SPR and Non-SPR Crude Oil Stocks, 1949–2019



Overview, Monthly



Selected Products, Monthly



[a] Includes kerosene-type jet fuel only.

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

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

Source: Table 3.4.

Table 3.4 Petroleum Stocks
(Million Barrels)

	Crude Oil ^a			Distillate Fuel Oil ^e	Hydrocarbon Gas Liquids				Jet Fuel ^h	Motor Gasoline ⁱ	Residual Fuel Oil	Other ^j	Total
	SPR ^b	Non-SPR ^{c,d}	Total ^d		Propane/Propylene			Total ^g					
					Propane	Propylene	Total ^f						
1950 Year	--	248	248	72	NA	NA	NA	2	(^h)	116	41	104	583
1955 Year	--	266	266	111	NA	NA	NA	7	3	165	39	123	715
1960 Year	--	240	240	138	NA	NA	NA	23	7	195	45	137	785
1965 Year	--	220	220	155	NA	NA	NA	35	19	175	56	176	836
1970 Year	--	276	276	195	NA	NA	44	74	28	209	54	181	1,018
1975 Year	--	271	271	209	NA	NA	82	133	30	235	74	181	1,133
1980 Year	108	358	466	205	NA	NA	71	137	42	261	92	189	1,392
1985 Year	493	321	814	144	NA	NA	39	82	40	223	50	165	1,519
1990 Year	586	323	908	132	NA	NA	49	104	52	220	49	156	1,621
1995 Year	592	303	895	130	NA	NA	43	100	40	202	37	158	1,563
2000 Year	541	286	826	118	NA	NA	41	88	45	196	36	159	1,468
2001 Year	550	312	862	145	NA	NA	66	128	42	210	41	158	1,586
2002 Year	599	278	877	134	NA	NA	53	113	39	209	31	144	1,548
2003 Year	638	269	907	137	NA	NA	50	101	39	207	38	140	1,568
2004 Year	676	286	961	126	NA	NA	55	111	40	218	42	146	1,645
2005 Year	685	308	992	136	NA	NA	57	117	42	208	37	148	1,682
2006 Year	689	296	984	144	NA	NA	62	125	39	212	42	157	1,703
2007 Year	697	268	965	134	NA	NA	52	106	39	218	39	146	1,648
2008 Year	702	308	1,010	146	NA	NA	55	127	38	214	36	149	1,719
2009 Year	727	307	1,034	166	NA	NA	50	113	43	223	37	142	1,758
2010 Year	727	312	1,039	164	46	4	49	120	43	219	41	145	1,772
2011 Year	696	308	1,004	149	48	7	55	127	41	223	34	146	1,725
2012 Year	695	338	1,033	135	63	5	68	152	40	231	34	154	1,779
2013 Year	696	327	1,023	128	40	5	45	125	37	228	38	149	1,728
2014 Year	691	361	1,052	136	72	6	78	174	38	240	34	151	1,825
2015 Year	695	449	1,144	161	91	5	96	194	40	235	42	164	1,982
2016 Year	695	485	1,180	166	77	7	84	200	43	239	41	161	2,030
2017 Year	663	422	1,084	146	62	5	67	190	41	237	29	167	1,895
2018 January	664	421	1,085	141	45	5	50	156	43	249	32	177	1,883
February	665	424	1,089	139	39	5	43	141	43	253	33	181	1,879
March	665	425	1,090	130	34	4	38	139	40	240	35	190	1,864
April	664	437	1,101	121	35	4	39	145	41	240	32	188	1,868
May	660	434	1,094	116	44	4	48	162	42	243	32	185	1,873
June	660	415	1,075	121	57	4	60	181	41	241	30	181	1,869
July	660	410	1,070	127	60	4	64	196	41	234	29	177	1,875
August	660	408	1,068	132	67	4	70	214	42	236	28	174	1,894
September	660	417	1,077	137	75	4	79	225	47	240	29	178	1,933
October	655	434	1,089	125	79	5	84	225	42	233	29	176	1,919
November	650	449	1,099	127	74	6	80	209	39	230	30	178	1,912
December	649	443	1,092	140	64	7	71	189	42	247	28	176	1,913
2019 January	649	449	1,098	140	51	7	58	166	41	261	29	184	1,920
February	649	452	1,101	136	45	8	53	155	42	251	28	189	1,902
March	649	459	1,108	132	48	8	56	163	42	236	29	188	1,898
April	649	469	1,117	128	53	8	61	179	41	230	28	192	1,916
May	645	480	1,125	130	63	7	70	206	39	236	30	191	1,957
June	645	464	1,109	131	72	7	78	229	41	230	30	186	1,955
July	645	442	1,087	138	78	6	84	241	43	235	31	185	1,959
August	645	431	1,076	136	91	6	97	260	43	230	29	178	1,952
September	645	426	1,071	132	96	7	103	267	44	232	30	173	1,949
October	641	444	1,085	120	95	7	101	257	40	225	30	177	1,934
November	635	447	1,082	126	88	7	96	237	41	234	33	173	1,926
December	635	R 433	R 1,068	R 140	R 80	R 8	R 87	218	40	R 254	R 31	173	R 1,924
2020 January	E 635	E 436	E 1,071	E 143	NA	NA	E 83	RF 197	E 43	E 261	E 31	RE 184	E 1,929
February	E 635	E 446	E 1,081	E 133	NA	NA	E 69	F 179	E 42	E 251	E 31	E 195	E 1,911

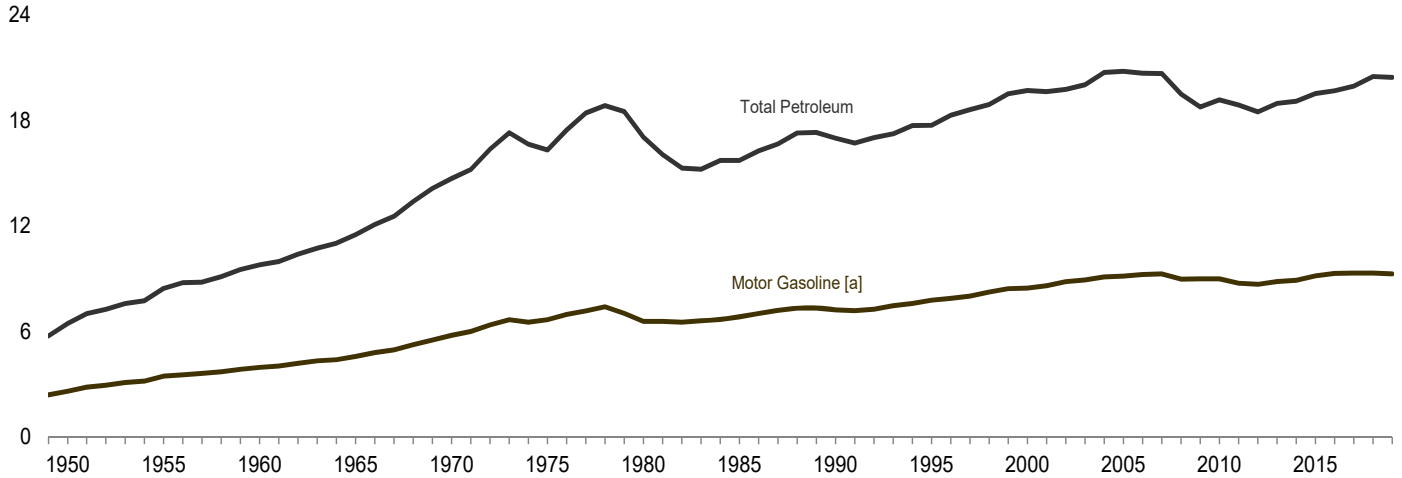
^a Includes lease condensate.
^b "SPR" is the Strategic Petroleum Reserve, which began in October 1977. Crude oil stocks in the SPR include non-U.S. stocks held under foreign or commercial storage agreements.
^c All crude oil stocks other than those in "SPR."
^d Beginning in 1981, includes stocks of Alaskan crude oil in transit.
^e Excludes stocks in the Northeast Home Heating Oil Reserve. Beginning in 2009, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.
^f Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."
^g 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.
^h 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.")
ⁱ Includes finished motor gasoline and motor gasoline blending components; excludes oxygenates. Through 1963, also includes aviation gasoline and special naphthas.

^j 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. • **1981–2018:** EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • **2019 and 2020:** 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.

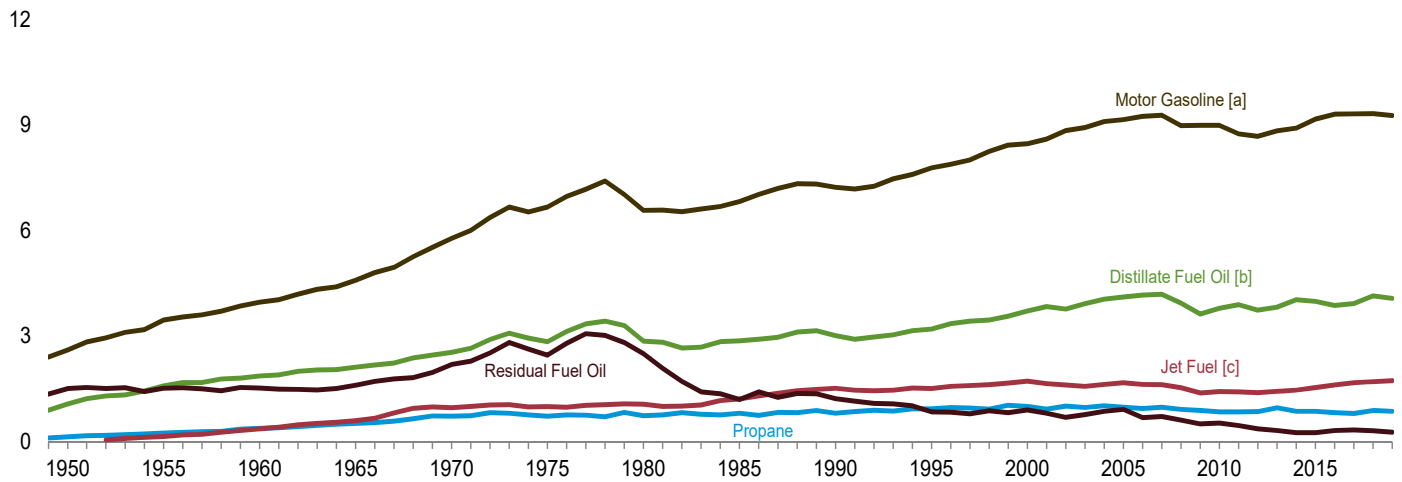
Figure 3.5 Petroleum Products Supplied by Type

(Million Barrels per Day)

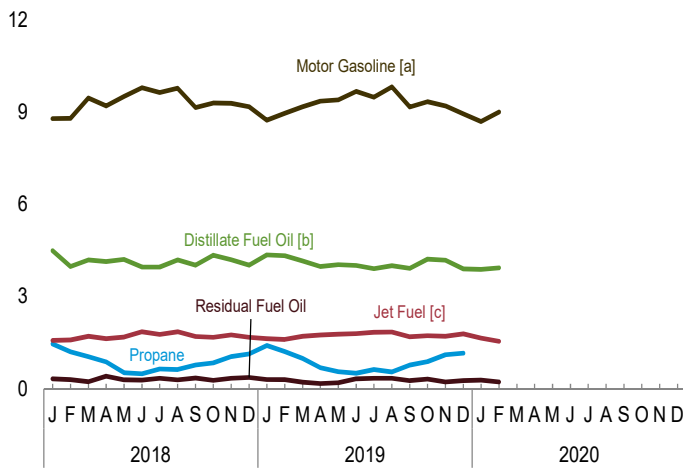
Total Petroleum and Motor Gasoline, 1949–2019



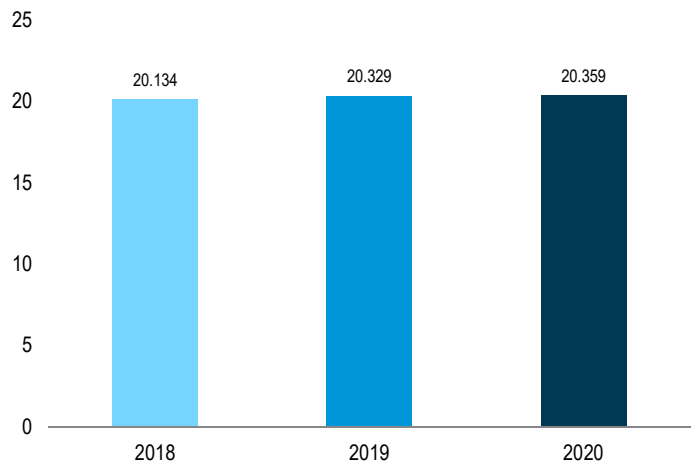
Selected Products, 1949–2019



Selected Products, Monthly



Total, January–February



[a] Beginning in 1993, includes fuel ethanol blended into motor gasoline.

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

[c] Beginning in 2005, includes kerosene-type jet fuel only.

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 ^a	Hydrocarbon Gas Liquids				Jet Fuel ^d	Kerosene	Lubricants	Motor Gasoline ^e	Petroleum Coke	Residual Fuel Oil	Other ^f	Total
				Propane/Propylene			Total ^c								
				Propane	Propylene	Total ^b									
1950 Average	180	108	1,082	E 146	E 13	E 158	234	(^d)	323	106	2,616	41	1,517	250	6,458
1955 Average	254	192	1,592	E 251	E 22	E 273	404	154	320	116	3,463	67	1,526	366	8,455
1960 Average	302	161	1,872	E 386	E 33	E 419	621	371	271	117	3,969	149	1,529	435	9,797
1965 Average	368	120	2,126	E 523	E 45	E 568	841	602	267	129	4,593	202	1,608	657	11,512
1970 Average	447	55	2,540	E 727	E 55	E 782	1,224	967	263	136	5,785	212	2,204	866	14,697
1975 Average	419	39	2,851	E 730	E 60	E 790	1,352	1,001	159	137	6,675	247	2,462	982	16,322
1980 Average	396	35	2,866	E 742	E 72	E 813	1,590	1,068	158	159	6,579	237	2,508	1,460	17,056
1985 Average	425	27	2,868	E 810	E 72	E 883	1,721	1,218	114	145	6,831	264	1,202	909	15,726
1990 Average	483	24	3,021	E 812	E 105	E 917	1,705	1,522	43	164	7,235	339	1,229	1,225	16,988
1995 Average	486	21	3,207	E 938	E 157	E 1,096	2,100	1,514	54	156	7,789	365	852	1,180	17,725
2000 Average	525	20	3,722	E 1,011	E 224	E 1,235	2,434	1,725	67	166	8,472	406	909	1,255	19,701
2001 Average	519	19	3,847	E 932	E 210	E 1,142	2,200	1,655	72	153	8,610	437	811	1,325	19,649
2002 Average	512	18	3,776	E 1,015	E 233	E 1,248	2,295	1,614	43	151	8,848	463	700	1,342	19,761
2003 Average	503	16	3,927	E 977	E 238	E 1,215	2,205	1,578	55	140	8,935	455	772	1,448	20,034
2004 Average	537	17	4,058	E 1,021	E 255	E 1,276	2,264	1,630	64	141	9,105	524	865	1,525	20,731
2005 Average	546	19	4,118	E 986	E 243	E 1,229	2,146	1,679	70	141	9,159	515	920	1,489	20,802
2006 Average	521	18	4,169	E 947	E 268	E 1,215	2,135	1,633	54	137	9,253	522	689	1,557	20,687
2007 Average	494	17	4,196	E 983	E 252	E 1,235	2,191	1,622	32	142	9,286	490	723	1,487	20,680
2008 Average	417	15	3,945	E 924	E 230	E 1,154	2,044	1,539	14	131	8,989	464	622	1,317	19,498
2009 Average	360	14	3,631	E 893	E 267	E 1,160	2,127	1,393	18	118	8,997	427	511	1,175	18,771
2010 Average	362	15	3,800	852	308	1,160	2,265	1,432	20	131	8,993	376	535	1,251	19,180
2011 Average	355	15	3,899	851	301	1,153	2,241	1,425	12	125	8,753	361	461	1,240	18,887
2012 Average	340	14	3,741	862	312	1,175	2,297	1,398	5	114	8,682	360	369	1,165	18,487
2013 Average	323	12	3,827	969	307	1,275	2,501	1,434	5	121	8,843	354	319	1,227	18,967
2014 Average	327	12	4,037	870	297	1,167	2,442	1,470	9	126	8,921	347	257	1,151	19,100
2015 Average	343	11	3,995	865	297	1,162	2,552	1,548	6	138	9,178	349	259	1,153	19,534
2016 Average	351	11	3,877	833	297	1,130	2,536	1,614	9	130	9,317	345	326	1,170	19,687
2017 Average	351	11	3,932	803	314	1,117	2,643	1,682	5	121	9,327	316	342	1,228	19,958
2018 January	158	10	4,491	1,461	312	1,773	3,517	1,568	35	105	8,788	339	323	1,211	20,545
February	203	7	3,979	1,207	298	1,505	3,143	1,590	3	135	8,796	198	299	1,326	19,679
March	278	13	4,196	1,049	331	1,380	3,119	1,706	6	132	9,465	292	236	1,313	20,756
April	225	12	4,139	879	286	1,165	2,861	1,630	3	122	9,206	304	408	1,126	20,037
May	385	12	4,209	524	307	831	2,578	1,685	8	103	9,515	305	296	1,153	20,247
June	476	14	3,959	488	328	816	2,624	1,857	2	131	9,797	353	280	1,295	20,790
July	460	16	3,963	648	305	953	2,854	1,773	2	128	9,640	323	346	1,177	20,682
August	507	15	4,196	625	316	941	2,905	1,858	2	134	9,778	440	292	1,232	21,358
September	385	9	4,022	771	301	1,072	2,900	1,704	(s)	99	9,153	402	349	1,060	20,083
October	410	16	4,348	838	263	1,101	2,925	1,675	1	107	9,294	414	273	1,271	20,734
November	247	7	4,204	1,047	300	1,348	3,297	1,756	1	118	9,290	270	342	1,213	20,747
December	182	12	4,019	1,137	301	1,438	3,356	1,676	1	91	9,179	269	367	1,150	20,303
Average	327	12	4,146	888	304	1,192	3,007	1,707	5	117	9,329	327	318	1,210	20,504
2019 January	206	11	4,355	1,405	300	1,705	3,671	1,629	26	113	8,743	286	304	1,109	20,452
February	193	9	4,331	1,215	269	1,484	3,582	1,603	16	97	8,963	126	301	973	20,194
March	238	12	4,155	985	280	1,265	3,202	1,709	4	67	9,174	323	217	1,103	20,204
April	314	11	3,980	689	300	989	2,893	1,750	2	168	9,356	237	169	1,231	20,112
May	369	16	4,041	559	332	891	2,748	1,781	1	109	9,401	326	196	1,271	20,259
June	409	15	4,011	504	306	810	2,738	1,799	(s)	105	9,674	392	326	1,134	20,604
July	512	19	3,907	625	323	948	3,003	1,840	1	131	9,484	404	341	1,099	20,742
August	505	12	4,002	548	291	839	2,790	1,847	(s)	111	9,821	347	341	1,286	21,062
September	488	14	3,915	776	270	1,047	3,050	1,690	5	100	9,169	289	270	1,232	20,221
October	444	14	4,222	883	306	1,189	3,158	1,726	2	130	9,337	244	320	1,172	20,772
November	306	12	4,186	1,111	277	1,389	3,261	1,709	12	107	9,199	355	220	1,222	20,590
December	202	R 9	R 3,901	R 1,163	R 285	R 1,448	R 3,467	R 1,783	R 13	R 94	R 8,945	R 373	R 269	R 1,234	R 20,290
Average	350	13	R 4,082	R 870	R 295	1,166	R 3,128	R 1,740	7	R 111	R 9,274	R 310	R 273	R 1,174	R 20,462
2020 January	F 204	RF 8	E 3,883	NA	NA	E 1,430	RF 3,457	E 1,649	RF 6	RF 133	E 8,697	RF 365	E 285	RE 1,532	E 20,220
February	F 219	F 7	E 3,933	NA	NA	E 1,653	F 3,637	E 1,548	F 3	F 132	E 9,007	F 188	E 219	E 1,614	E 20,508
2-Month Average	F 211	F 8	E 3,907	NA	NA	E 1,538	F 3,544	E 1,600	F 5	F 132	E 8,847	F 279	E 253	E 1,572	E 20,359
2019 2-Month Average	200	10	4,343	1,315	285	1,600	3,629	1,617	21	105	8,848	210	303	1,044	20,329
2018 2-Month Average	179	8	4,248	1,340	305	1,646	3,340	1,578	20	119	8,792	272	312	1,265	20,134

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

^b Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

^c 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.

^d 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.")

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

^f Petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1981, also includes negative barrels per day of distillate and residual fuel oil reclassified

as unfinished oils, and other products (from both primary and secondary supply) reclassified as gasoline blending components. Beginning in 1983, also includes crude oil burned as fuel. Beginning in 2005, also includes naphtha-type jet fuel.

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

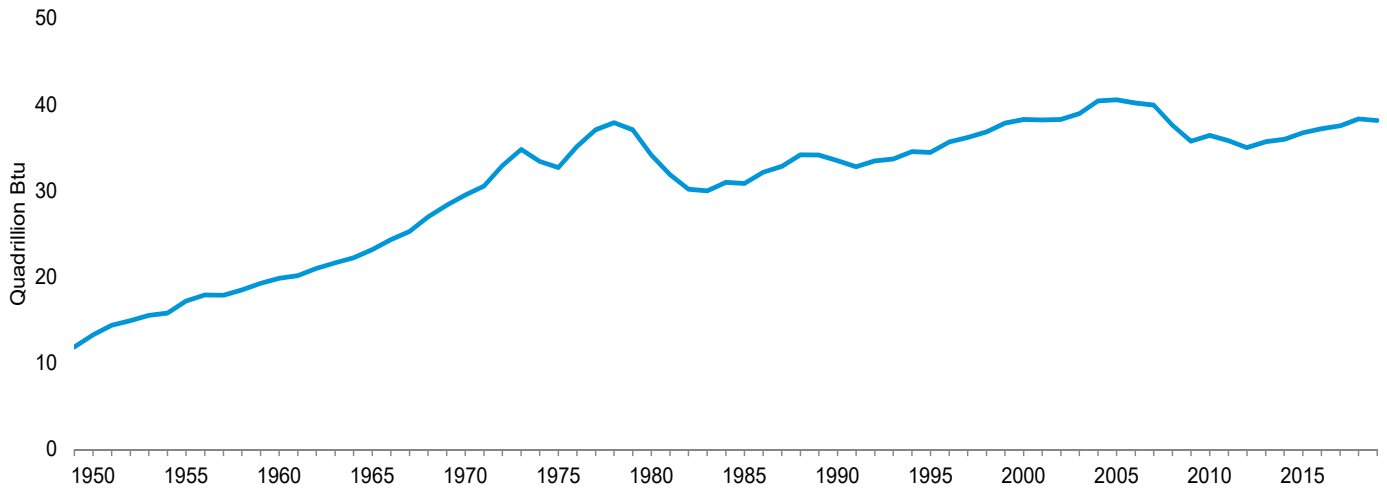
Notes: • Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent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

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

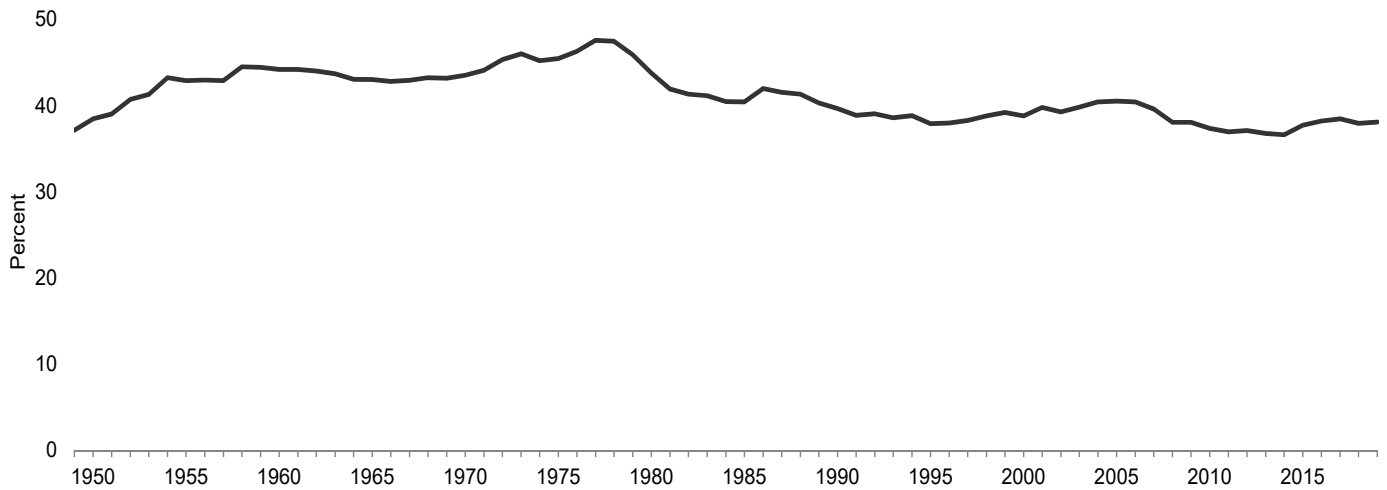
Sources: See end of section.

Figure 3.6 Heat Content of Petroleum Products Supplied by Type

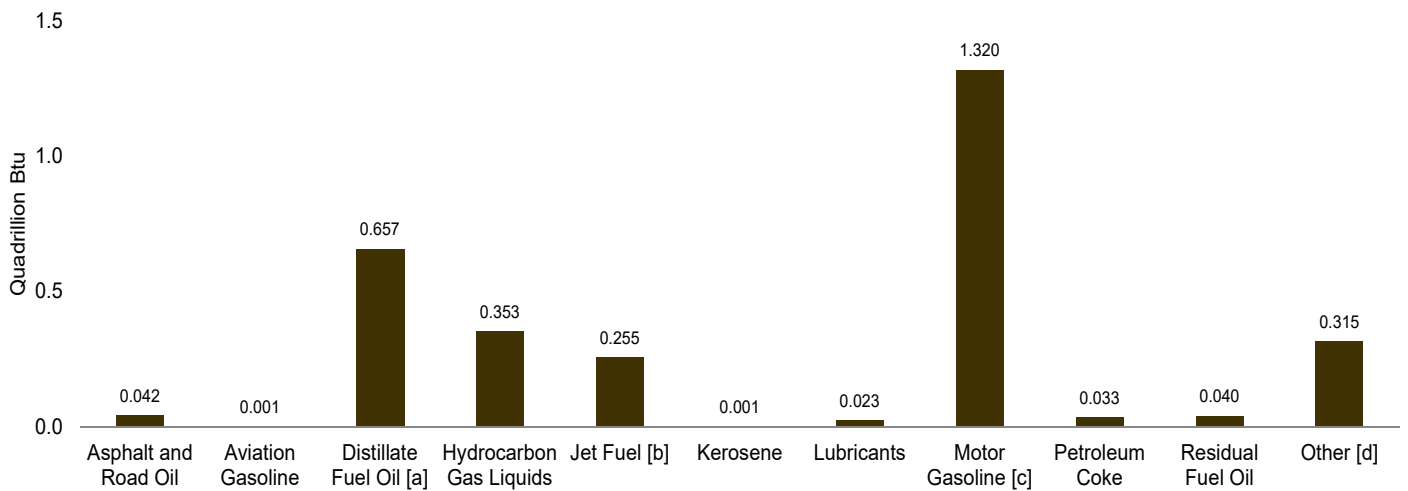
Total, 1949–2019



Petroleum Products Supplied as Share of Total Energy Consumption, 1949–2019



By Product, February 2020



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

[b] Includes kerosene-type jet fuel only.

[c] Includes fuel ethanol blended into motor gasoline.

[d] All petroleum products not separately displayed.

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

Sources: Tables 1.1 and 3.6.

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

	Asphalt and Road Oil	Aviation Gasoline	Distillate Fuel Oil ^a	Hydrocarbon Gas Liquids				Jet Fuel ^d	Kerosene	Lubricants	Motor Gasoline ^e	Petroleum Coke	Residual Fuel Oil	Other ^f	Total
				Propane/Propylene			Total ^c								
				Propane	Propylene	Total ^b									
1950 Total	435	199	2,300	E 204	E 18	E 222	326	(d)	668	236	5,015	90	3,482	546	13,298
1955 Total	615	354	3,385	E 352	E 30	E 383	562	301	662	258	6,640	147	3,502	798	17,225
1960 Total	734	298	3,992	E 543	E 47	E 589	866	739	563	259	7,631	328	3,517	947	19,874
1965 Total	890	222	4,519	E 733	E 63	E 796	1,170	1,215	553	286	8,806	444	3,691	1,390	23,184
1970 Total	1,082	100	5,401	E 1,019	E 77	E 1,096	1,667	1,973	544	301	11,091	465	5,057	1,817	29,499
1975 Total	1,014	71	6,061	E 1,024	E 84	E 1,108	1,811	2,047	329	304	12,798	542	5,649	2,071	32,699
1980 Total	962	64	6,110	E 1,043	E 100	E 1,143	2,135	2,190	329	354	12,648	522	5,772	3,073	34,159
1985 Total	1,029	50	6,098	E 1,136	E 101	E 1,237	2,252	2,497	236	322	13,098	582	2,759	1,945	30,866
1990 Total	1,170	45	6,422	E 1,138	E 147	E 1,285	2,259	3,129	88	362	13,872	745	2,820	2,589	33,500
1995 Total	1,178	40	6,812	E 1,316	E 220	E 1,536	2,791	3,132	112	346	14,794	802	1,955	2,499	34,458
2000 Total	1,276	36	7,927	E 1,421	E 315	E 1,735	3,216	3,580	140	369	16,127	895	2,091	2,636	38,292
2001 Total	1,257	35	8,170	E 1,306	E 294	E 1,600	2,895	3,426	150	338	16,345	961	1,861	2,793	38,231
2002 Total	1,240	34	8,020	E 1,423	E 326	E 1,749	3,006	3,340	90	334	16,790	1,018	1,605	2,816	38,293
2003 Total	1,220	30	8,341	E 1,370	E 333	E 1,702	2,905	3,265	113	309	16,949	1,000	1,772	3,043	38,947
2004 Total	1,304	31	8,642	E 1,435	E 358	E 1,793	2,976	3,383	133	313	17,316	1,148	1,990	3,205	40,441
2005 Total	1,323	35	8,745	E 1,382	E 341	E 1,723	2,812	3,475	144	312	17,358	1,125	2,111	3,122	40,561
2006 Total	1,261	33	8,831	E 1,328	E 375	E 1,703	2,768	3,379	111	303	17,511	1,141	1,581	3,276	40,196
2007 Total	1,197	32	8,858	E 1,379	E 352	E 1,731	2,835	3,358	67	313	17,428	1,072	1,659	3,134	39,952
2008 Total	1,012	28	8,346	E 1,299	E 323	E 1,622	2,656	3,193	30	291	16,799	1,017	1,432	2,788	37,591
2009 Total	873	27	7,657	E 1,252	E 374	E 1,626	2,707	2,883	36	262	16,714	937	1,173	2,483	35,752
2010 Total	878	27	8,011	1,194	431	1,625	2,885	2,963	41	291	16,632	831	1,228	2,645	36,431
2011 Total	859	27	8,211	1,194	422	1,615	2,799	2,950	25	276	16,175	801	1,058	2,621	35,803
2012 Total	827	25	7,898	1,212	438	1,651	2,893	2,901	11	254	16,085	802	849	2,474	35,018
2013 Total	783	22	8,051	1,358	429	1,787	3,166	2,969	11	268	16,332	786	731	2,583	35,703
2014 Total	793	22	8,492	1,219	416	1,635	3,066	3,042	19	280	16,473	772	590	2,430	35,977
2015 Total	832	21	8,402	1,212	416	1,628	3,224	3,204	13	305	16,941	776	595	2,435	36,748
2016 Total	853	20	8,170	1,171	417	1,588	3,178	3,350	18	289	17,238	771	751	2,553	37,192
2017 Total	849	21	8,263	1,126	440	1,566	3,280	3,481	11	267	17,201	708	784	2,667	37,533
2018 January	32	1	802	174	37	211	375	276	6	20	1,377	64	63	223	3,240
February	38	1	642	130	32	162	303	252	(s)	23	1,245	34	53	220	2,811
March	57	2	749	125	39	164	324	300	1	25	1,483	55	46	242	3,284
April	45	2	715	101	33	134	285	277	1	22	1,396	56	77	201	3,077
May	79	2	751	62	36	99	266	296	1	19	1,491	58	58	213	3,235
June	95	2	684	56	38	94	261	316	(s)	24	1,485	65	53	232	3,217
July	95	3	707	77	36	113	296	312	(s)	24	1,510	61	67	218	3,293
August	104	2	749	74	38	112	303	327	(s)	25	1,532	84	57	228	3,410
September	77	1	695	89	35	123	293	290	(s)	18	1,388	74	66	190	3,091
October	84	3	776	100	31	131	308	294	(s)	20	1,456	79	53	233	3,307
November	49	1	726	121	35	155	339	299	(s)	21	1,409	50	65	217	3,175
December	37	2	718	135	36	171	357	295	(s)	17	1,438	51	72	213	3,200
Total	793	22	8,715	1,245	426	1,670	3,710	3,533	11	259	17,209	730	729	2,630	38,341
2019 January	42	2	778	167	36	203	394	286	5	21	R 1,369	54	59	205	3,216
February	36	1	R 698	131	29	160	341	255	3	16	1,268	22	53	163	R 2,855
March	49	2	742	117	33	151	336	300	1	13	1,437	61	42	204	R 3,187
April	63	2	R 687	79	35	114	290	298	(s)	31	R 1,418	44	32	220	R 3,083
May	76	2	721	67	39	106	285	313	(s)	21	R 1,472	62	38	234	3,226
June	81	2	693	58	35	93	279	306	(s)	19	R 1,466	72	62	203	R 3,183
July	105	3	697	74	38	113	318	323	(s)	25	R 1,485	77	66	204	3,304
August	104	2	714	65	35	100	296	325	(s)	21	R 1,538	66	66	237	R 3,369
September	97	2	676	89	31	121	312	287	1	18	1,390	53	51	219	R 3,107
October	91	2	754	105	36	142	335	303	(s)	24	R 1,462	46	62	217	R 3,299
November	61	2	723	128	32	160	333	291	2	19	R 1,394	65	41	219	R 3,151
December	41	1	R 696	R 138	R 34	R 172	R 366	R 313	2	R 18	R 1,401	R 71	R 52	R 228	R 3,190
Total	847	24	R 8,581	R 1,220	R 413	R 1,633	R 3,885	R 3,601	14	R 246	R 17,101	R 693	R 626	R 2,553	R 38,170
2020 January	F 42	F 1	E 693	NA	NA	E 170	RF 359	E 290	F 1	RF 25	RE 1,362	RF 69	E 56	RE 305	RE 3,204
February	F 42	F 1	E 657	NA	NA	E 184	F 353	E 255	F 1	F 23	E 1,320	F 33	E 40	E 315	E 3,040
2-Month Total	F 84	F 2	E 1,350	NA	NA	E 354	F 712	E 544	F 2	F 48	E 2,682	F 103	E 96	E 620	E 6,243
2019 2-Month Total	78	3	1,476	298	65	363	735	541	7	38	2,637	76	112	368	6,071
2018 2-Month Total	70	2	1,444	304	69	373	678	528	7	43	2,622	98	116	443	6,051

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

^b Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

^c 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.

^d 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.")

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

^f 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.

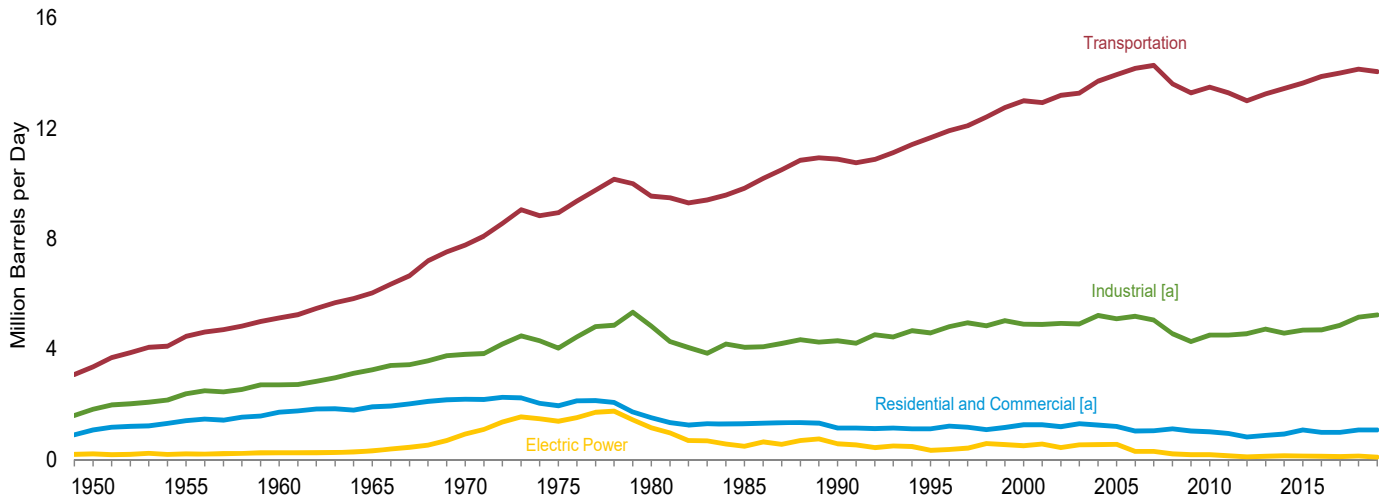
Notes: • Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent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

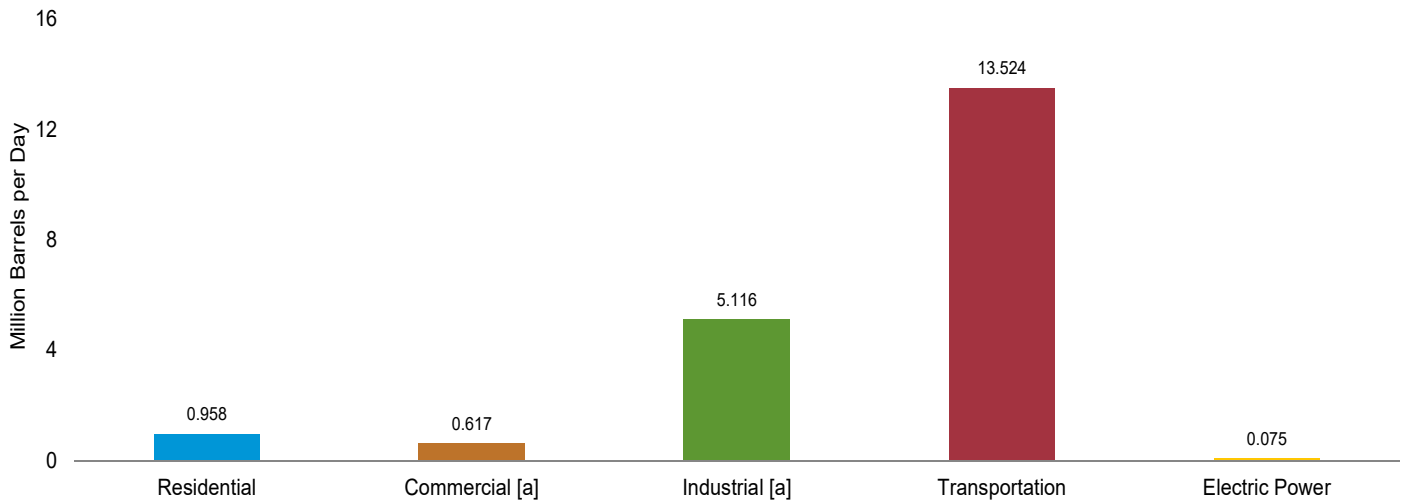
Sources: See end of section.

Figure 3.7 Petroleum Consumption by Sector

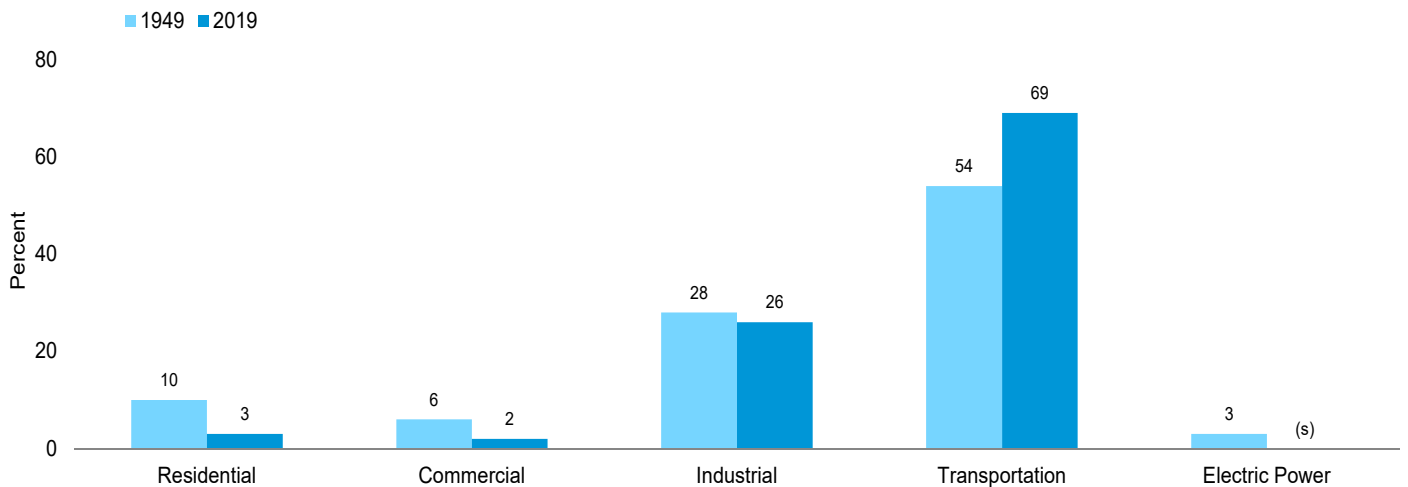
By Sector, 1949–2019



By Sector, December 2019



Sector Shares, 1949 and 2019



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

(s)=Less than 0.5 percent.

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

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

	Residential Sector				Commercial Sector ^a							
	Distillate Fuel Oil	HGL ^b		Total	Distillate Fuel Oil	HGL ^b		Kero-sene	Motor Gasoline ^{c,d}	Petroleum Coke	Residual Fuel Oil	Total
		Propane	Kero-sene			Propane	Kero-sene					
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	378	14	658	185	100	2	28	(s)	27	343	
2011 Average	248	351	9	608	186	102	2	24	(s)	23	336	
2012 Average	228	281	4	513	168	96	1	21	(s)	14	300	
2013 Average	233	331	4	568	163	108	(s)	22	(s)	11	304	
2014 Average	253	349	7	609	169	114	1	29	(s)	3	318	
2015 Average	262	318	5	584	171	106	1	^d 204	(s)	2	483	
2016 Average	206	306	7	518	154	107	1	203	(s)	2	467	
2017 January	332	578	19	929	248	179	3	178	(s)	3	611	
February	273	480	7	760	204	154	1	189	(s)	2	550	
March	232	441	2	674	173	144	(s)	196	(s)	2	516	
April	192	265	2	458	143	100	(s)	195	(s)	2	440	
May	133	202	2	337	99	85	(s)	200	(s)	1	386	
June	165	123	1	289	123	65	(s)	205	(s)	1	394	
July	101	111	(s)	212	76	62	(s)	201	(s)	1	340	
August	132	117	1	249	98	63	(s)	205	(s)	1	368	
September	132	136	11	279	99	68	2	197	(s)	1	367	
October	168	226	1	395	125	91	(s)	196	(s)	1	414	
November	259	419	3	680	193	139	(s)	191	(s)	2	526	
December	350	598	1	948	261	184	(s)	194	(s)	3	642	
Average	205	307	4	517	153	111	1	196	(s)	2	462	
2018 January	R 465	679	27	R 1,171	R 296	R 208	4	R 187	(s)	3	R 699	
February	R 332	552	2	R 886	R 211	177	(s)	R 187	(s)	2	R 578	
March	R 249	500	5	R 754	R 158	164	1	R 202	(s)	R 1	R 526	
April	R 237	385	2	R 625	R 151	135	(s)	R 196	(s)	R 1	R 484	
May	R 141	175	6	R 321	R 90	82	1	R 203	0	1	R 376	
June	R 113	139	1	R 253	R 72	73	(s)	R 209	0	1	R 354	
July	R 102	124	2	R 228	R 65	70	(s)	R 205	0	1	341	
August	R 86	126	2	R 214	R 55	70	(s)	R 208	0	R (s)	334	
September	R 123	146	(s)	R 269	R 79	75	(s)	R 195	(s)	1	R 349	
October	R 255	279	1	R 535	R 162	R 109	(s)	R 198	(s)	R 1	R 471	
November	R 340	503	1	R 844	R 217	164	(s)	R 198	(s)	2	R 581	
December	R 451	576	1	R 1,028	R 287	183	(s)	R 195	(s)	3	R 668	
Average	R 241	348	4	R 593	R 153	126	1	R 199	(s)	R 1	R 480	
2019 January	R 408	R 655	20	R 1,084	R 259	203	3	R 186	(s)	R 2	R 654	
February	R 376	617	13	R 1,006	R 239	193	2	R 191	(s)	2	R 627	
March	R 300	514	3	R 818	R 191	167	(s)	R 195	(s)	R 1	R 556	
April	R 200	307	1	R 508	R 127	115	(s)	R 199	(s)	1	R 443	
May	R 151	220	1	R 372	R 96	94	(s)	R 200	0	1	R 391	
June	R 132	144	(s)	R 275	R 84	75	(s)	R 206	0	1	R 365	
July	R 123	125	1	R 249	R 78	70	(s)	R 202	0	1	R 351	
August	R 188	128	(s)	R 317	R 120	71	(s)	R 209	0	1	R 401	
September	R 109	R 148	4	R 261	R 69	76	1	R 195	0	1	R 341	
October	R 164	R 279	2	R 445	R 104	R 109	(s)	R 199	0	1	R 413	
November	R 332	499	10	R 841	R 212	R 163	1	R 196	0	2	R 574	
December	381	567	11	958	242	180	1	190	(s)	2	617	
Average	238	349	5	592	151	126	1	197	(s)	1	477	

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

^b Hydrocarbon gas liquids.

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

^d 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.

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

	Industrial Sector ^a													Total
	Asphalt and Road Oil	Distillate Fuel Oil	Hydrocarbon Gas Liquids				Kerosene	Lubricants	Motor Gasoline ^{d,e}	Petroleum Coke	Residual Fuel Oil	Other ^f		
			Propane/Propylene		Total ^b	Total ^c								
			Propane	Propylene										
1950 Average	180	328	12	13	24	100	132	43	131	41	617	250	1,822	
1955 Average	254	466	59	22	81	212	116	47	173	67	686	366	2,387	
1960 Average	302	476	98	33	131	333	78	48	198	149	689	435	2,708	
1965 Average	368	541	152	45	197	470	80	62	179	202	689	657	3,247	
1970 Average	447	577	201	55	256	699	89	70	150	203	708	866	3,808	
1975 Average	419	630	242	60	302	863	58	68	116	246	658	982	4,038	
1980 Average	396	621	445	72	516	1,293	87	82	82	234	586	1,460	4,842	
1985 Average	425	526	497	72	569	1,408	21	75	114	261	326	909	4,065	
1990 Average	483	541	471	105	576	1,364	6	84	97	325	179	1,225	4,304	
1995 Average	486	532	566	157	723	1,727	7	80	105	328	147	1,180	4,594	
2000 Average	525	563	500	224	724	1,923	8	86	79	361	105	1,255	4,903	
2001 Average	519	611	444	210	654	1,713	11	79	155	390	89	1,325	4,892	
2002 Average	512	566	521	233	754	1,801	7	78	163	383	83	1,342	4,934	
2003 Average	503	551	463	238	701	1,691	12	72	171	375	96	1,448	4,918	
2004 Average	537	570	535	255	790	1,778	14	73	195	423	108	1,525	5,222	
2005 Average	546	594	506	243	749	1,666	19	72	187	404	123	1,489	5,100	
2006 Average	521	594	521	268	789	1,710	14	71	198	425	104	1,557	5,193	
2007 Average	494	595	536	252	787	1,744	6	73	161	412	84	1,487	5,056	
2008 Average	417	637	389	230	619	1,510	2	67	131	394	84	1,317	4,559	
2009 Average	360	509	383	267	650	1,617	2	61	128	363	57	1,175	4,272	
2010 Average	362	547	369	308	677	1,782	4	61	140	310	52	1,251	4,510	
2011 Average	355	586	393	301	694	1,783	2	58	138	295	59	1,240	4,515	
2012 Average	340	602	480	312	792	1,915	1	53	136	319	30	1,165	4,562	
2013 Average	323	601	525	307	831	2,058	1	57	142	295	21	1,227	4,724	
2014 Average	327	648	401	297	698	1,974	1	59	114	290	18	1,151	4,582	
2015 Average	343	555	437	297	734	2,124	1	64	140	295	15	1,153	4,689	
2016 Average	351	548	416	297	712	2,119	1	61	142	289	23	1,170	4,702	
2017 January	183	539	558	333	891	2,286	2	64	131	360	34	1,133	4,732	
February	242	652	297	371	667	2,017	1	60	138	180	17	1,180	4,486	
March	260	748	302	313	615	2,139	(s)	67	143	139	21	1,288	4,804	
April	316	477	367	308	674	2,154	(s)	60	143	265	18	1,338	4,771	
May	367	610	256	331	588	2,160	(s)	61	147	293	22	1,227	4,887	
June	475	519	351	306	657	2,286	(s)	56	150	221	22	1,345	5,074	
July	443	370	460	298	758	2,410	(s)	54	147	397	18	1,251	5,090	
August	543	547	418	278	697	2,064	(s)	43	150	247	21	1,195	4,811	
September	444	590	593	269	862	2,138	1	54	144	301	19	1,137	4,829	
October	411	616	296	315	611	2,292	(s)	58	144	138	20	1,214	4,894	
November	308	695	393	317	710	2,339	(s)	57	140	347	28	1,219	5,134	
December	209	509	262	338	599	2,331	(s)	44	142	337	21	1,214	4,808	
Average	351	572	380	314	694	2,220	1	56	143	269	22	1,228	4,862	
2018 January	158	R 736	568	312	880	2,624	4	R 50	R 138	279	18	1,211	R 5,216	
February	203	R 569	473	298	771	2,409	(s)	63	R 138	144	19	1,326	R 4,871	
March	278	R 716	380	331	711	2,450	1	62	R 148	252	R 14	1,313	R 5,233	
April	225	R 593	353	286	639	2,335	(s)	57	R 144	259	R 24	1,126	R 4,764	
May	385	R 682	261	307	568	2,315	1	48	R 149	272	R 17	1,153	R 5,022	
June	476	R 492	271	328	599	2,407	(s)	62	R 153	300	17	1,295	R 5,203	
July	460	R 486	448	305	754	2,655	(s)	60	R 151	265	20	1,177	R 5,273	
August	507	R 631	423	316	739	2,703	(s)	63	R 153	384	R 17	1,232	5,690	
September	385	R 587	544	301	845	2,674	(s)	R 47	R 143	349	20	1,060	R 5,264	
October	410	R 664	444	263	R 707	2,531	(s)	R 51	R 146	378	R 17	1,271	R 5,468	
November	247	R 580	374	300	675	2,624	(s)	55	R 145	226	22	1,213	R 5,113	
December	182	R 398	372	301	673	2,592	(s)	43	R 144	218	23	1,150	R 4,748	
Average	327	R 595	409	304	713	2,528	1	55	R 146	278	19	1,210	R 5,159	
2019 January	206	R 809	542	300	R 842	2,807	3	53	R 137	233	18	1,109	R 5,376	
February	193	R 757	399	269	668	R 2,766	2	R 46	R 140	76	18	973	R 4,971	
March	238	R 659	298	280	578	2,515	(s)	32	R 144	280	14	1,103	R 4,984	
April	314	R 557	261	300	561	R 2,465	(s)	79	R 146	207	11	1,231	R 5,011	
May	369	R 593	239	332	571	2,429	(s)	51	R 147	279	12	1,271	R 5,152	
June	409	R 529	281	306	587	2,514	(s)	49	R 151	356	20	1,134	R 5,163	
July	512	R 453	424	323	747	2,802	(s)	R 62	R 148	356	20	1,099	R 5,452	
August	505	R 434	344	291	635	R 2,585	(s)	52	R 154	303	20	1,286	R 5,340	
September	488	R 558	R 547	270	R 817	R 2,820	(s)	47	R 144	247	16	1,232	R 5,552	
October	444	R 701	R 489	306	R 796	R 2,765	(s)	61	R 146	233	19	1,172	R 5,542	
November	306	R 600	443	277	721	2,593	1	50	R 144	334	14	1,222	R 5,264	
December	202	417	410	285	695	2,714	1	44	140	346	16	1,234	5,116	
Average	350	588	390	295	685	2,648	1	52	145	272	16	1,174	5,246	

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

^b Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

^c Ethane, propane, normal butane, isobutane, natural gasoline (pentanes plus), and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unrefined stream.

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

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

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

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

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

Sources: See end of section.

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

	Transportation Sector								Electric Power Sector ^a			
	Aviation Gasoline	Distillate Fuel Oil ^c	HGL ^b	Jet Fuel ^e	Lubricants	Motor Gasoline ^{f,g}	Residual Fuel Oil	Total	Distillate Fuel Oil ^h	Petroleum Coke	Residual Fuel Oil ⁱ	Total
			Propane ^d									
1950 Average	108	226	2	(^e)	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	^d 5	1,432	70	8,824	389	13,499	38	65	67	170
2011 Average	15	2,849	5	1,425	67	8,591	338	13,291	30	66	41	137
2012 Average	14	2,719	5	1,398	61	8,525	291	13,013	25	41	33	99
2013 Average	12	2,804	5	1,434	65	8,679	253	13,253	26	59	34	119
2014 Average	12	2,928	5	1,470	67	8,778	195	13,455	39	57	41	137
2015 Average	11	2,974	5	1,548	74	8,835	202	13,649	33	54	41	128
2016 Average	11	2,944	5	1,614	70	8,973	271	13,887	26	57	31	113
2017 January	9	2,588	5	1,588	72	8,198	476	12,936	30	58	28	116
February	9	2,781	5	1,517	68	8,680	234	13,295	25	49	26	99
March	10	2,948	5	1,676	76	8,986	273	13,975	26	41	24	91
April	11	2,930	5	1,644	68	8,957	239	13,853	21	27	24	72
May	12	3,088	5	1,669	70	9,203	307	14,353	25	52	26	104
June	17	3,134	5	1,762	64	9,417	296	14,694	23	57	30	110
July	13	3,074	5	1,734	62	9,247	242	14,375	22	54	26	101
August	14	3,206	5	1,762	49	9,397	294	14,727	20	47	30	97
September	10	3,078	5	1,627	61	9,037	254	14,071	22	45	27	95
October	9	3,079	5	1,751	65	9,017	274	14,201	23	36	27	86
November	11	2,985	5	1,685	65	8,779	341	13,872	24	47	24	96
December	12	2,806	5	1,756	50	8,911	239	13,779	50	46	51	147
Average	11	2,976	5	1,682	64	8,988	290	14,016	26	47	29	101
2018 January	10	R 2,824	6	1,568	56	R 8,463	R 185	R 13,111	169	60	118	348
February	7	R 2,844	6	1,590	R 71	R 8,471	R 255	R 13,244	24	54	23	101
March	13	R 3,050	6	1,706	70	R 9,115	199	R 14,159	23	40	21	84
April	12	R 3,132	6	1,630	R 64	R 8,866	359	R 14,069	26	45	24	94
May	12	R 3,267	6	1,685	R 54	R 9,164	R 252	R 14,439	30	33	25	89
June	14	R 3,253	6	1,857	R 69	R 9,435	233	R 14,868	30	54	29	113
July	16	R 3,286	6	1,773	68	R 9,284	R 288	R 14,731	23	58	28	110
August	15	R 3,399	6	1,858	71	R 9,417	R 245	R 15,009	25	56	30	111
September	9	R 3,209	6	1,704	R 52	R 8,814	R 296	R 14,090	24	53	33	110
October	16	R 3,241	6	1,675	57	R 8,950	R 227	R 14,172	25	36	28	89
November	7	R 3,037	6	1,756	R 62	R 8,947	R 294	R 14,109	30	44	25	99
December	12	R 2,856	6	1,676	R 48	R 8,839	R 320	R 13,759	27	51	22	100
Average	12	R 3,118	6	1,707	62	R 8,984	263	R 14,153	38	49	34	121
2019 January	11	R 2,842	6	1,629	60	R 8,420	250	R 13,218	36	52	34	122
February	9	R 2,935	6	1,603	51	R 8,632	259	R 13,495	24	50	21	95
March	12	R 2,982	6	1,709	36	R 8,836	R 182	R 13,762	22	42	20	84
April	11	R 3,076	6	1,750	R 89	R 9,011	137	R 14,080	20	30	21	71
May	16	R 3,176	6	1,781	55	R 9,053	159	R 14,248	24	47	24	96
June	15	R 3,241	6	1,799	R 58	R 9,317	279	R 14,713	25	35	27	88
July	19	R 3,229	6	1,840	70	R 9,134	R 292	R 14,588	24	48	29	101
August	12	R 3,236	6	1,847	59	R 9,458	288	R 14,906	24	44	31	99
September	14	R 3,156	6	1,690	53	R 8,830	226	R 13,976	22	42	27	91
October	14	R 3,231	6	1,726	69	R 8,992	R 275	R 14,312	23	11	26	60
November	12	R 3,018	6	1,709	57	R 8,859	180	R 13,841	R 25	21	24	R 70
December	9	2,837	6	1,783	50	8,615	226	13,524	24	26	25	75
Average	13	3,081	6	1,740	59	8,931	229	14,059	24	37	26	88

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

^b Hydrocarbon gas liquids.

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

^d There is a discontinuity in this time series between 2009 and 2010 due to a change in data sources.

^e 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.)

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

^g 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.

^h 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.

ⁱ 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.

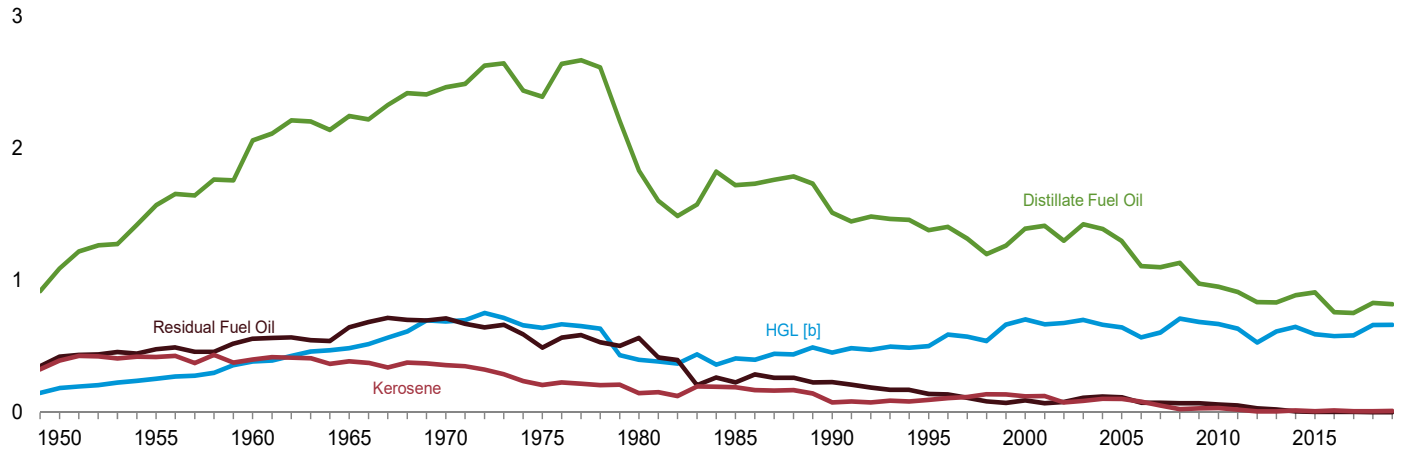
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

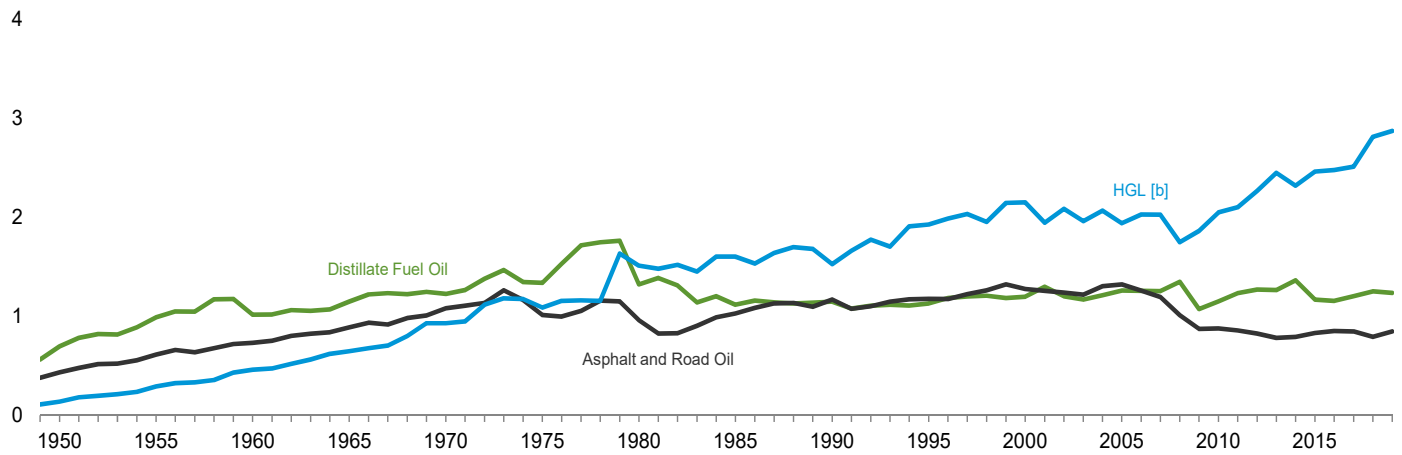
Figure 3.8a Heat Content of Petroleum Consumption by End-Use Sector, 1949-2019

(Quadrillion Btu)

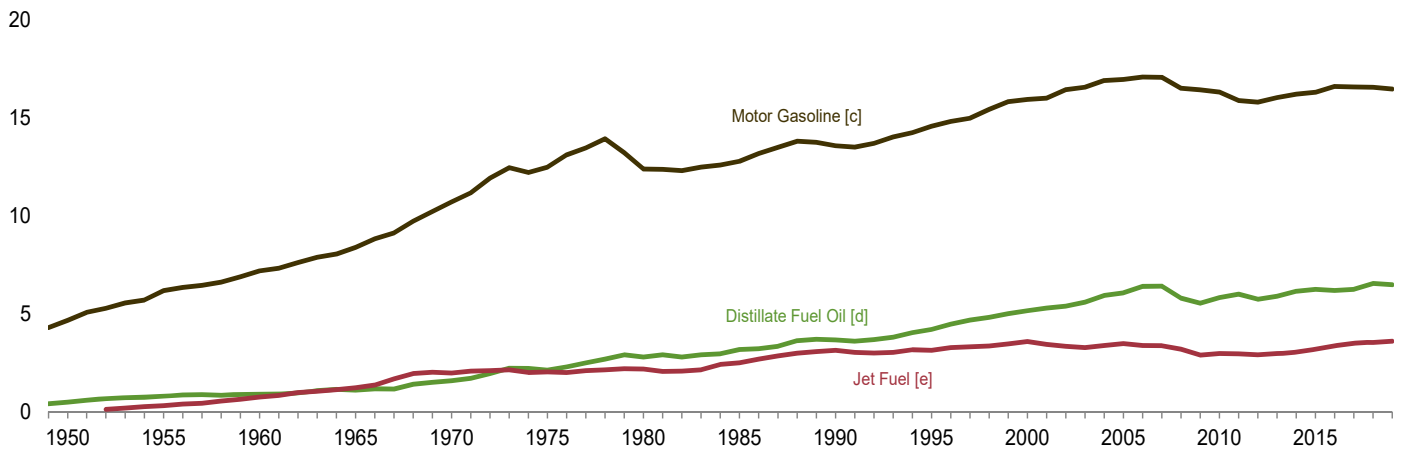
Residential and Commercial [a] Sectors, Selected Products



Industrial [a] Sector, Selected Products



Transportation Sector, Selected Products



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

[b] Hydrocarbon gas liquids.

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

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

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

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

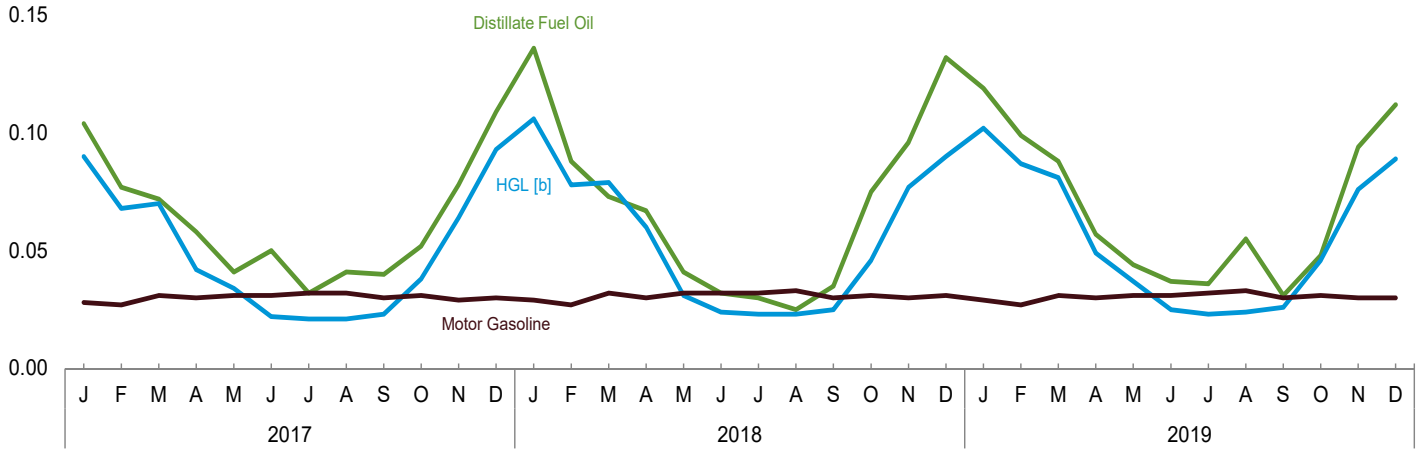
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.

Sources: Tables 3.8a–3.8c.

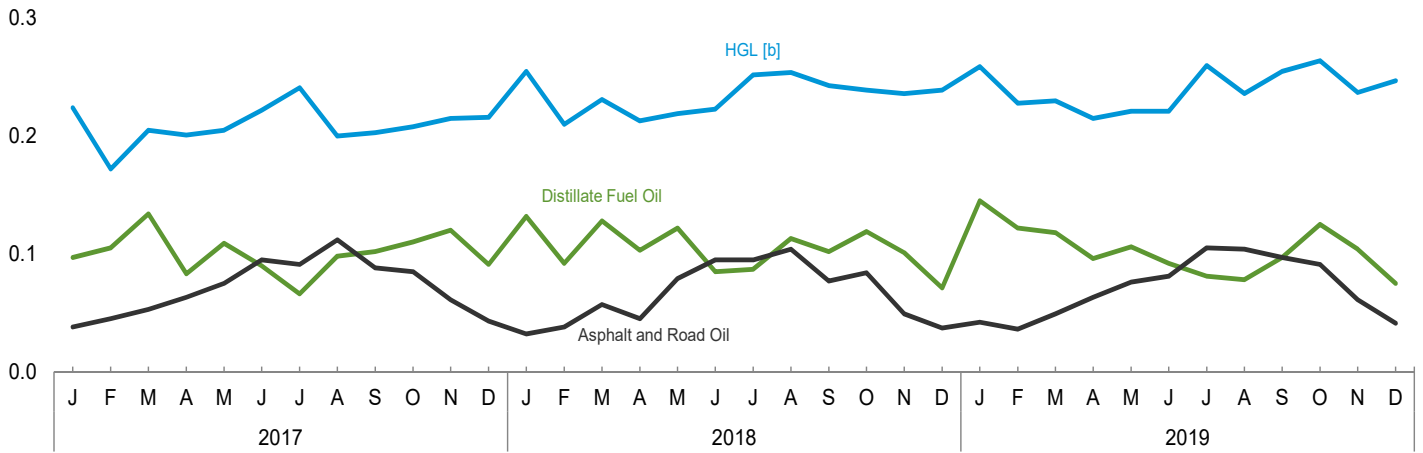
Figure 3.8b Heat Content of Petroleum Consumption by End-Use Sector, Monthly

(Quadrillion Btu)

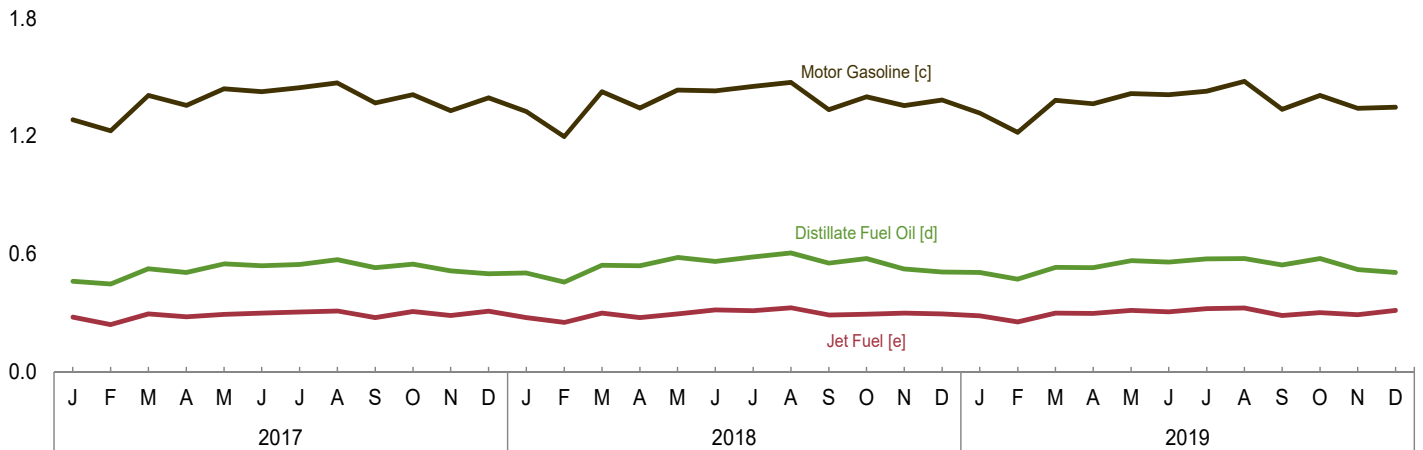
Residential and Commercial [a] Sectors, Selected Products



Industrial [a] Sector, Selected Products



Transportation Sector, Selected Products



- [a] Includes combined-heat-and-power plants and a small number of electricity-only plants.
- [b] Hydrocarbon gas liquids.
- [c] Includes fuel ethanol blended into motor gasoline.
- [d] Includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.
- [e] Includes kerosene-type jet fuel only.

Note: Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term “petroleum consumption” in Tables 3.7a–3.8c. Other measurements of consumption by fuel type or sector may differ. For example, jet fuel product supplied may not equal jet fuel consumed by U.S.-flagged aircraft.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.
 Sources: Tables 3.8a–3.8c.

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

	Residential Sector				Commercial Sector ^a						
	Distillate Fuel Oil	HGL ^b	Kero-sene	Total	Distillate Fuel Oil	HGL ^b	Kero-sene	Motor Gasoline ^{c,d}	Petroleum Coke	Residual Fuel Oil	Total
		Propane				Propane					
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	2,228	494	81	48	67	NA	559	1,248
1965 Total	1,713	386	334	2,432	534	103	54	77	NA	645	1,413
1970 Total	1,878	549	298	2,726	587	143	61	86	NA	714	1,592
1975 Total	1,807	512	161	2,479	587	130	49	89	NA	492	1,346
1980 Total	1,316	312	107	1,734	518	88	41	107	NA	565	1,318
1985 Total	1,092	315	159	1,566	631	95	33	96	NA	228	1,083
1990 Total	978	353	64	1,395	536	102	12	111	0	230	991
1995 Total	904	395	74	1,374	478	109	22	18	(s)	141	769
2000 Total	904	556	95	1,554	490	151	30	44	(s)	92	807
2001 Total	907	526	95	1,529	508	143	31	37	(s)	70	790
2002 Total	859	538	60	1,457	444	141	16	45	(s)	80	726
2003 Total	931	545	70	1,547	496	157	19	60	(s)	111	842
2004 Total	923	512	85	1,520	470	152	20	45	(s)	122	810
2005 Total	853	514	84	1,450	447	132	22	46	(s)	116	762
2006 Total	709	446	66	1,222	400	123	15	48	(s)	75	662
2007 Total	721	484	44	1,249	381	122	9	60	(s)	75	648
2008 Total	750	553	21	1,325	384	158	4	45	(s)	71	663
2009 Total	582	548	28	1,158	395	139	4	52	(s)	71	662
2010 Total	562	530	29	1,120	391	140	5	52	(s)	62	650
2011 Total	523	493	19	1,034	391	143	3	44	(s)	54	635
2012 Total	482	396	8	886	355	136	1	39	(s)	31	562
2013 Total	491	463	8	963	344	152	1	40	(s)	24	561
2014 Total	533	490	14	1,036	357	160	2	54	1	8	581
2015 Total	551	446	10	1,007	360	148	1	^d 376	1	4	890
2016 Total	435	430	14	878	326	150	2	375	(s)	4	858
2017 January	59	69	3	131	44	21	(s)	28	(s)	1	95
February	44	52	1	97	33	17	(s)	27	(s)	(s)	77
March	41	52	(s)	94	31	17	(s)	31	(s)	(s)	79
April	33	31	(s)	64	25	12	(s)	30	(s)	(s)	66
May	24	24	(s)	48	18	10	(s)	31	(s)	(s)	59
June	29	14	(s)	43	21	7	(s)	31	(s)	(s)	60
July	18	13	(s)	31	14	7	(s)	32	(s)	(s)	53
August	24	14	(s)	38	18	8	(s)	32	(s)	(s)	57
September	23	16	2	40	17	8	(s)	30	(s)	(s)	55
October	30	27	(s)	57	22	11	(s)	31	(s)	(s)	64
November	45	48	(s)	93	33	16	(s)	29	(s)	(s)	79
December	63	71	(s)	134	47	22	(s)	30	(s)	1	100
Total	432	431	8	871	323	156	1	361	(s)	4	845
2018 January	R 83	81	5	R 169	R 53	25	1	29	(s)	1	R 108
February	R 54	59	(s)	R 113	R 34	19	(s)	R 27	(s)	(s)	R 80
March	R 45	60	1	R 105	R 28	19	(s)	R 32	(s)	(s)	R 80
April	R 41	44	(s)	R 86	R 26	16	(s)	R 30	(s)	(s)	R 72
May	R 25	21	1	R 47	R 16	10	(s)	R 32	0	(s)	58
June	R 19	16	(s)	R 36	R 12	8	(s)	R 32	0	(s)	53
July	R 18	15	(s)	R 33	12	8	(s)	32	0	(s)	52
August	R 15	15	(s)	R 31	10	8	(s)	R 33	0	(s)	51
September	R 21	17	(s)	R 38	14	9	(s)	R 30	(s)	(s)	52
October	R 46	33	(s)	R 79	R 29	13	(s)	31	(s)	(s)	R 73
November	R 59	58	(s)	R 117	R 37	19	(s)	30	(s)	(s)	R 87
December	R 81	69	(s)	R 149	R 51	22	(s)	R 31	(s)	R (s)	R 104
Total	R 508	487	9	R 1,004	R 323	176	1	R 366	(s)	R 3	R 870
2019 January	R 73	78	4	R 155	R 46	24	1	29	(s)	R (s)	R 101
February	R 61	66	2	R 129	R 39	21	(s)	27	(s)	(s)	R 87
March	R 54	61	1	R 116	R 34	20	(s)	R 31	(s)	(s)	R 85
April	R 35	35	(s)	R 70	R 22	13	(s)	30	(s)	(s)	R 66
May	R 27	26	(s)	R 53	R 17	11	(s)	31	0	(s)	R 60
June	R 23	17	(s)	R 39	R 14	9	(s)	31	0	(s)	R 54
July	R 22	15	(s)	R 37	R 14	8	(s)	R 32	0	(s)	R 54
August	R 34	15	(s)	R 49	R 21	8	(s)	R 33	0	(s)	R 63
September	R 19	17	1	R 37	R 12	9	(s)	R 30	0	(s)	51
October	R 29	R 33	(s)	R 63	R 19	13	(s)	31	0	(s)	R 63
November	R 58	57	2	R 117	R 37	19	(s)	R 30	0	(s)	R 86
December	68	67	2	137	43	21	(s)	30	(s)	(s)	95
Total	501	489	11	1,002	319	177	2	364	(s)	3	864

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

^b Hydrocarbon gas liquids.

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

^d 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.

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

	Industrial Sector ^a												Total
	Asphalt and Road Oil	Distillate Fuel Oil	Hydrocarbon Gas Liquids				Kero-sene	Lubri-cants	Motor Gaso-line ^{d,e}	Petro-leum Coke	Resid-ual Fuel Oil	Other ^f	
			Propane/Propylene			Total ^c							
			Pro-pane	Prop-y-lene	Total ^b								
1950 Total	435	698	17	18	34	138	274	94	251	90	1,416	546	3,943
1955 Total	615	991	83	30	113	293	241	103	332	147	1,573	798	5,093
1960 Total	734	1,016	137	47	184	461	161	107	381	328	1,584	947	5,720
1965 Total	890	1,150	213	63	276	649	165	137	342	444	1,582	1,390	6,750
1970 Total	1,082	1,226	282	77	359	930	185	155	288	446	1,624	1,817	7,754
1975 Total	1,014	1,339	339	84	423	1,126	119	149	223	540	1,509	2,071	8,092
1980 Total	962	1,324	625	100	726	1,718	181	182	158	516	1,349	3,073	9,463
1985 Total	1,029	1,119	696	101	798	1,813	44	166	218	575	748	1,944	7,655
1990 Total	1,170	1,150	660	147	807	1,781	12	186	185	714	411	2,588	8,199
1995 Total	1,178	1,130	794	220	1,014	2,269	15	178	200	721	337	2,498	8,525
2000 Total	1,276	1,199	703	315	1,017	2,498	16	190	150	796	241	2,635	8,999
2001 Total	1,257	1,299	623	294	917	2,212	23	174	295	858	203	2,793	9,113
2002 Total	1,240	1,203	730	326	1,056	2,313	14	172	308	842	190	2,816	9,099
2003 Total	1,220	1,169	649	333	982	2,185	24	159	323	825	220	3,043	9,169
2004 Total	1,304	1,213	752	358	1,109	2,292	28	161	371	937	249	3,205	9,760
2005 Total	1,323	1,262	709	341	1,050	2,138	39	160	354	894	281	3,122	9,574
2006 Total	1,261	1,258	731	375	1,106	2,171	30	156	374	938	239	3,276	9,703
2007 Total	1,197	1,256	751	352	1,103	2,207	13	161	302	910	193	3,134	9,373
2008 Total	1,012	1,348	547	323	870	1,904	4	150	245	870	194	2,788	8,514
2009 Total	873	1,073	537	374	911	1,992	4	135	238	805	130	2,483	7,733
2010 Total	878	1,153	517	431	948	2,208	7	136	260	694	120	2,645	8,100
2011 Total	859	1,236	551	422	973	2,157	4	127	254	663	135	2,621	8,056
2012 Total	827	1,271	674	438	1,113	2,355	2	118	252	717	70	2,474	8,086
2013 Total	783	1,266	736	429	1,165	2,544	1	125	263	663	48	2,583	8,278
2014 Total	793	1,366	562	416	978	2,409	3	131	210	653	41	2,430	8,035
2015 Total	832	1,170	612	416	1,028	2,624	2	142	258	663	34	2,435	8,159
2016 Total	853	1,157	584	417	1,001	2,591	2	135	262	653	52	2,553	8,259
2017 January	38	97	66	40	106	237	(s)	12	20	69	7	209	689
February	45	105	32	40	72	183	(s)	10	20	32	3	196	594
March	53	134	36	37	73	221	(s)	13	22	27	4	237	710
April	63	83	42	35	78	216	(s)	11	22	49	3	239	685
May	75	109	31	39	70	221	(s)	12	23	56	4	226	727
June	95	90	40	35	76	225	(s)	10	23	41	4	240	728
July	91	66	55	35	90	251	(s)	10	23	76	3	231	753
August	112	98	50	33	83	213	(s)	8	23	48	4	221	726
September	88	102	68	31	99	217	(s)	10	22	56	4	204	702
October	85	110	35	37	73	239	(s)	11	23	27	4	224	722
November	61	120	45	36	82	230	(s)	10	21	64	5	217	730
December	43	91	31	40	71	234	(s)	8	22	65	4	224	692
Total	849	1,205	532	440	972	2,687	1	125	264	610	50	2,667	8,459
2018 January	32	R 132	68	37	105	268	1	9	R 22	54	R 3	223	R 745
February	38	R 92	51	32	83	224	(s)	11	19	25	3	220	R 633
March	57	R 128	45	39	85	244	(s)	12	23	48	3	242	R 758
April	45	R 103	41	33	74	224	(s)	10	R 22	48	5	201	R 658
May	79	R 122	31	36	68	234	(s)	9	23	52	3	213	R 737
June	95	R 85	31	38	69	236	(s)	11	23	56	3	232	741
July	95	R 87	53	36	90	272	(s)	11	R 24	51	4	218	R 761
August	104	113	50	38	88	279	(s)	12	24	74	3	228	836
September	77	R 102	63	35	97	267	(s)	8	R 22	65	4	190	734
October	84	R 119	53	31	84	261	(s)	R 10	R 23	72	3	233	R 805
November	49	R 101	43	35	78	261	(s)	10	22	42	4	217	R 706
December	37	R 71	44	36	80	266	(s)	8	R 23	42	R 4	213	R 665
Total	793	R 1,254	573	426	999	3,038	1	R 122	R 269	629	R 43	2,630	R 8,779
2019 January	42	R 145	64	36	100	291	(s)	10	21	45	4	205	R 764
February	36	R 122	43	29	72	253	(s)	8	R 20	14	3	163	R 619
March	49	R 118	R 36	33	69	255	(s)	6	22	54	3	204	R 710
April	63	R 96	30	35	65	241	(s)	14	22	38	2	220	R 696
May	76	R 106	28	39	68	247	(s)	10	23	54	2	234	R 753
June	81	R 92	32	35	68	253	(s)	9	23	66	4	203	R 730
July	105	R 81	51	38	89	294	(s)	12	23	68	4	204	R 790
August	104	R 78	41	35	76	272	(s)	10	24	58	4	237	R 786
September	97	R 97	63	31	94	286	(s)	9	R 22	46	3	219	R 778
October	91	R 125	58	36	R 95	R 288	(s)	R 12	R 23	44	4	217	R 804
November	61	R 104	51	32	83	256	(s)	9	R 22	62	3	219	R 735
December	41	75	49	34	83	276	(s)	8	22	66	3	228	720
Total	847	1,238	547	413	960	3,211	1	116	268	614	38	2,553	8,886

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

^b Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."

^c 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.

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

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

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

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

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

Sources: See end of section.

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

	Transportation Sector								Electric Power Sector ^a			
	Aviation Gasoline	Distillate Fuel Oil ^c	HGL ^b	Jet Fuel ^e	Lubricants	Motor Gasoline ^{f,g}	Residual Fuel Oil	Total	Distillate Fuel Oil ^h	Petroleum Coke	Residual Fuel Oil ⁱ	Total
			Propane ^d									
1950 Total	199	480	3	(^e)	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	15,311	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	14,576	911	23,036	108	81	566	755
2000 Total	36	5,159	12	3,580	179	15,933	888	25,787	175	99	871	1,144
2001 Total	35	5,286	14	3,426	164	16,013	586	25,524	170	103	1,003	1,276
2002 Total	34	5,387	14	3,340	162	16,437	677	26,051	127	175	659	961
2003 Total	30	5,584	18	3,265	150	16,565	571	26,184	161	175	869	1,205
2004 Total	31	5,925	19	3,383	152	16,901	740	27,150	111	211	879	1,201
2005 Total	35	6,068	28	3,475	151	16,958	837	27,553	114	231	876	1,222
2006 Total	33	6,390	28	3,379	147	17,088	906	27,972	73	203	361	637
2007 Total	32	6,411	22	3,358	152	17,066	994	28,034	89	163	397	648
2008 Total	28	5,792	40	3,193	141	16,510	926	26,630	73	146	240	459
2009 Total	27	5,537	28	2,883	127	16,425	791	25,817	70	132	181	382
2010 Total	27	5,826	^d 7	2,963	155	16,320	892	26,190	80	137	154	370
2011 Total	27	5,997	7	2,950	148	15,877	776	25,783	64	138	93	295
2012 Total	25	5,736	7	2,901	135	15,795	671	25,270	52	85	77	214
2013 Total	22	5,894	7	2,969	143	16,030	581	25,646	55	123	77	255
2014 Total	22	6,154	7	3,042	149	16,209	447	26,030	82	118	95	295
2015 Total	21	6,251	7	3,204	163	^g 16,308	463	26,416	70	112	94	276
2016 Total	20	6,197	7	3,350	154	16,601	623	26,953	55	118	71	244
2017 January	1	462	1	279	14	1,284	93	2,133	5	10	5	21
February	1	448	1	241	12	1,228	41	1,972	4	8	5	16
March	2	526	1	295	14	1,408	53	2,298	5	7	5	17
April	2	506	1	280	12	1,358	45	2,203	4	5	4	13
May	2	550	1	293	13	1,442	60	2,361	5	9	5	19
June	3	541	1	300	12	1,428	56	2,338	4	10	6	19
July	2	548	1	305	12	1,448	47	2,363	4	10	5	18
August	2	572	1	310	9	1,472	57	2,422	4	8	6	18
September	1	531	1	277	11	1,370	48	2,239	4	8	5	17
October	1	549	1	308	12	1,412	53	2,337	4	6	5	16
November	2	515	1	287	12	1,331	64	2,211	4	8	4	17
December	2	500	1	309	9	1,396	47	2,263	9	8	10	27
Total	21	6,248	7	3,481	142	16,576	665	27,140	55	97	66	218
2018 January	1	^R 504	1	276	^R 10	^R 1,326	36	^R 2,154	30	11	23	64
February	1	^R 458	1	252	12	^R 1,199	45	^R 1,968	4	9	4	17
March	2	^R 544	1	300	13	^R 1,428	39	^R 2,327	4	7	4	15
April	2	^R 541	1	277	12	^R 1,344	68	^R 2,244	4	8	4	17
May	2	^R 583	1	296	10	^R 1,436	49	^R 2,376	5	6	5	16
June	2	^R 562	1	316	13	^R 1,431	44	^R 2,367	5	9	6	20
July	3	^R 586	1	312	13	^R 1,455	58	^R 2,427	4	10	6	20
August	2	^R 606	1	327	13	^R 1,475	48	^R 2,472	4	10	6	20
September	1	^R 554	1	290	10	^R 1,336	56	^R 2,248	4	9	6	19
October	3	^R 578	1	294	11	^R 1,402	44	^R 2,333	4	6	6	16
November	1	^R 524	1	299	11	^R 1,357	55	^R 2,248	5	8	5	18
December	2	^R 509	1	295	9	^R 1,385	62	^R 2,263	5	9	4	18
Total	22	^R 6,550	8	3,533	^R 137	^R 16,573	^R 604	^R 27,427	81	101	78	260
2019 January	2	^R 507	1	286	11	^R 1,319	49	^R 2,175	6	9	7	22
February	1	^R 473	1	255	9	^R 1,221	46	^R 2,005	4	8	4	16
March	2	^R 532	1	300	7	^R 1,384	35	^R 2,261	4	8	4	15
April	2	^R 531	1	298	16	^R 1,366	26	^R 2,239	3	5	4	12
May	2	^R 566	1	313	11	^R 1,418	31	^R 2,342	4	8	5	17
June	2	^R 560	1	306	10	^R 1,412	53	^R 2,343	4	6	5	16
July	3	^R 576	1	323	13	^R 1,430	57	^R 2,403	4	9	6	18
August	2	^R 577	1	325	11	^R 1,481	56	^R 2,453	4	8	6	18
September	2	^R 545	1	287	10	^R 1,338	43	^R 2,226	4	7	5	16
October	2	^R 577	1	303	13	^R 1,408	^R 54	^R 2,358	4	2	5	11
November	2	^R 521	1	291	10	^R 1,343	34	^R 2,201	4	4	5	12
December	1	506	1	313	9	1,349	44	2,224	4	5	5	14
Total	24	6,471	8	3,601	130	16,469	526	27,229	51	78	59	189

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

^b Hydrocarbon gas liquids.

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

^d There is a discontinuity in this time series between 2009 and 2010 due to a change in data sources.

^e 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.)

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

^g 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.

^h 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.

ⁱ 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 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.

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 3.2 Sources

1949–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports; and U.S. Energy Information Administration (EIA) estimates. (For 1967–1975, refinery and blender net production estimates for propylene are equal to "Propane/Propylene Production at Refineries for Chemical Use"; and estimates for propane are equal to total propane/propylene minus propylene.)

1976–1980: EIA, Energy Data Reports, *Petroleum Statement, Annual*, annual reports, and estimates. (Refinery and blender net production estimates for propylene are equal to "Propane/Propylene Production at Refineries for Chemical Use"; and estimates for propane are equal to total propane/propylene minus propylene.)

1981–2018: EIA, *Petroleum Supply Annual*, annual reports, unpublished revisions, and estimates. (For 1981–1985, refinery and blender net production estimates for propylene are equal to "Propane/Propylene Production at Refineries for Petrochemical Use"; and estimates for propane are equal to total propane/propylene minus propylene. For 1986–1988, refinery and blender net production estimates for propylene are created using the 1989 annual propylene share of "Net Refinery Production of Propane/Propylene"; and estimates for propane are equal to total propane/propylene minus propylene.)

2019 and 2020: 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.

Table 3.5 Sources

1949–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports; and U.S. Energy Information Administration (EIA) estimates. (For 1949–1966, product supplied estimates for total propane/propylene are created using sales and shipments data from Bureau of Mines, Mineral Industry Surveys, *Sales of Liquefied Petroleum Gases and Ethane*, annual reports, and *Shipments of Liquefied Petroleum Gases and Ethane*, annual reports—annual growth rates of sales and shipments are applied to the 1967 total propane/propylene product supplied value to create historical annual estimates. For 1949–1966, product supplied estimates for propylene are created using the 1967 annual propylene share of total propane/propylene product supplied; and estimates for propane are equal to total propane/propylene minus propylene. For 1967–1975, product supplied estimates for propylene are equal to propylene refinery and blender net production from Table 3.2; and estimates for propane are equal to total propane/propylene minus propylene.)

1976–1980: EIA, Energy Data Reports, *Petroleum Statement, Annual*, annual reports, and estimates. (Product supplied estimates for propylene are equal to propylene refinery and blender net production from Table 3.2; and estimates for propane are equal to total propane/propylene minus propylene.)

1981–2018: EIA, *Petroleum Supply Annual*, annual reports, unpublished revisions, and estimates. (For 1981–1992, product supplied estimates for propylene are equal to propylene refinery and blender net production from Table 3.2; and estimates for propane are equal to total propane/propylene minus propylene. For 1993–2009, product supplied

estimates for propylene are equal to propylene refinery and blender net production from Table 3.2, plus propylene imports from Table 3.3b; and estimates for propane are equal to total propane/propylene minus propylene.)

2019 and 2020: 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.

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 factor 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.

2009–2011: Consumption data for biodiesel are calculated using biodiesel data from U.S. Energy Information Administration (EIA), 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” (the data are converted to Btu by multiplying by the biodiesel heat content factor in Table A1). Consumption data for other renewable diesel fuel are set equal to refinery and blender net inputs data from EIA-810, “Monthly Refinery Report,” and EIA-815, “Monthly Bulk Terminal and Blender Report” (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 consumption data for biodiesel and other renewable diesel fuel, 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 values for distillate fuel oil (excluding biodiesel and other renewable diesel fuel), biodiesel, and other renewable diesel fuel.

2012 forward: Consumption data for biodiesel are from Table 10.4. Consumption data for other renewable diesel fuel are set equal to refinery and blender net inputs data from EIA-810, “Monthly Refinery Report,” and EIA-815, “Monthly Bulk Terminal and Blender Report” (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 consumption data for biodiesel and other renewable diesel fuel, 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 the values for distillate fuel oil (excluding biodiesel and other renewable diesel fuel), biodiesel, and other renewable diesel fuel.

Hydrocarbon Gas Liquids (HGL)—Propane

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

Hydrocarbon Gas Liquids (HGL)—Propylene

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

Hydrocarbon Gas Liquids (HGL)—Propane/Propylene Total

Prior to the current two months, total propane/propylene product supplied is the sum of the data in trillion Btu for propane and propylene.

For the current two months, product supplied data in thousand barrels per day for total propane/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 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 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.

1981–2018: EIA, *Petroleum Supply Annual (PSA)*, annual reports, and unpublished revisions.

2019: 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 product 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 product 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 product supplied minus the amount consumed by the residential, commercial, industrial, and electric power sectors.

Hydrocarbon Gas Liquids (HGL)—Propane

Annual residential sector propane consumption: Through 2002, annual residential sector propane consumption is estimated by applying the average of the state residential shares for 2003–2008 to the combined residential and commercial propane sales. Beginning in 2003, annual residential sector propane consumption is assumed to equal propane retail sales to the residential sector and sales to retailers/cylinder markets.

Monthly residential sector propane consumption: Beginning in 1973, annual residential sector propane consumption is split into the estimated portion for residential space heating and water heating, and the estimated portion for all other residential uses. The annual values in thousand barrels for residential space heating and water heating are allocated to the months in proportion to U.S. heating degree days in Table 1.9. The annual values in thousand barrels for all other residential uses are allocated to the months by dividing the annual values by the number of days in the year and then multiplying by the number of days in the month. Monthly total residential sector propane consumption is the sum of the monthly values for residential space heating and water heating and for all other residential uses.

Annual commercial sector propane consumption: Through 2002, annual commercial sector propane consumption is equal to the combined residential and commercial propane sales minus residential sector propane consumption. Beginning in 2003, annual commercial sector propane consumption is assumed to equal commercial sector propane sales.

Monthly commercial sector propane consumption: Beginning in 1973, annual commercial sector propane consumption is split into the estimated portion for commercial space heating and water heating, and the estimated portion for all other commercial uses. The annual values in thousand barrels for commercial space heating and water heating are allocated to the months in proportion to U.S. heating degree days in Table 1.9. The annual values in thousand barrels for all other commercial uses are allocated to the months by dividing the annual values by the number of days in the year and then multiplying by the number of days in the month. Monthly total commercial sector propane consumption is the sum of the monthly values for commercial space heating and water heating and for all other commercial uses.

Annual transportation sector propane consumption: Through 2009, annual transportation sector propane consumption is assumed to equal the transportation portion of propane sales for internal combustion engines (these sales are 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). Beginning in 2010, annual transportation sector propane consumption is from EIA, *Annual Energy Outlook*, Table 37, "Transportation Sector Energy Use by Fuel Type within a Mode."

Monthly transportation sector propane consumption: Beginning in 1973, the annual values in thousand barrels for transportation sector propane consumption are allocated to the months by dividing the annual values by the number of days in the year and then multiplying by the number of days in the month.

Annual and monthly industrial sector propane consumption: Industrial sector propane consumption is estimated as the difference between propane total product supplied from Table 3.5 and the sum of the estimated propane consumption by the residential, commercial, and transportation sectors.

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 and 2009: 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.

2010–2016: Propane consumption is from API, "Sales of Natural Gas Liquids and Liquefied Refinery Gases," table on sales of odorized propane by end use; and EIA, *Annual Energy Outlook*, Table 37, "Transportation Sector Energy Use by Fuel Type Within a Mode." EIA adjusts the data to estimate withheld values. Other LPG consumption is from EIA, PSA, annual reports, and is allocated to the industrial sector.

2017 forward: Propane consumption is from Propane Education & Research Council, "Retail Propane Sales Report," data on propane sales by sector; and EIA, *Annual Energy Outlook*, Table 37, "Transportation Sector Energy Use by Fuel Type Within a Mode." EIA adjusts the data to estimate withheld values. Other LPG consumption is from EIA, PSA, annual reports, and is allocated to the industrial sector.

Hydrocarbon Gas Liquids (HGL)—Propylene

Industrial sector propylene consumption is equal to propylene product supplied in Table 3.5.

Hydrocarbon Gas Liquids (HGL)—Propane/Propylene Total

Industrial sector total propane/propylene consumption is the sum of the industrial sector consumption values for propane and propylene.

Hydrocarbon Gas Liquids (HGL)—Total

The residential, commercial, and transportation sector total HGL consumption values are equal to the propane consumption values for those sectors. The industrial sector total HGL consumption value is equal to total HGL product supplied in Table 3.5 minus propane consumption in the residential, commercial, and transportation sectors.

Jet Fuel

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

Kerosene

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

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

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

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

Lubricants

1973–2009: 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 through 2009.

2010 forward: The consumption of lubricants in the industrial sector is estimated by EIA based on Kline & Company data on finished lubricant demand for industrial (less marine and railroad) use. The consumption of lubricants in the transportation sector is estimated by EIA based on Kline & Company data on finished lubricant demand for consumer total, commercial total, marine, and railroad use. Estimates for lubricant consumption from 2010 forward are not compatible with data before 2010.

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 product 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 product 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 product 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

Residential and commercial sector consumption data in thousand barrels per day for propane are from Table 3.7a, and are converted to trillion Btu by multiplying by the propane heat content factor in Table A1. The residential and commercial sector total HGL consumption values are equal to the propane consumption values for those sectors.

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

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

Hydrocarbon Gas Liquids (HGL)—Propylene

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

Hydrocarbon Gas Liquids (HGL)—Propane/Propylene Total

Total industrial sector propane/propylene consumption is the sum of the data in trillion Btu for propane and propylene.

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.

2009–2011: Consumption data for biodiesel are calculated using biodiesel data from U.S. Energy Information Administration (EIA), 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” (the data are converted to Btu by multiplying by the biodiesel heat content factor in Table A1). Consumption data for other renewable diesel fuel are set equal to refinery and blender net inputs data from EIA-810, “Monthly Refinery Report,” and EIA-815, “Monthly Bulk Terminal and Blender Report” (the data are converted to Btu by multiplying by the other renewable diesel fuel heat content factor in Table A1). Transportation sector distillate fuel oil consumption data from Table 3.7c, minus consumption data for biodiesel and other renewable diesel fuel, are converted to Btu by multiplying by the distillate fuel heat content factors in Table A3. Total transportation sector distillate fuel oil consumption is the sum of the values for distillate fuel oil (excluding biodiesel and other renewable diesel fuel), biodiesel, and other renewable diesel fuel.

2012 forward: Consumption data for biodiesel are from Table 10.4. Consumption data for other renewable diesel fuel are set equal to refinery and blender net inputs data from EIA-810, “Monthly Refinery Report,” and EIA-815, “Monthly Bulk Terminal and Blender Report” (the data are converted to Btu by multiplying by the other renewable diesel fuel heat content factor in Table A1). Transportation sector distillate fuel oil consumption data from Table 3.7c, minus consumption data for biodiesel and other renewable diesel fuel, 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 the values for distillate fuel oil (excluding biodiesel and other renewable diesel fuel), biodiesel, and other renewable diesel fuel.

Hydrocarbon Gas Liquids (HGL)—Propane

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

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

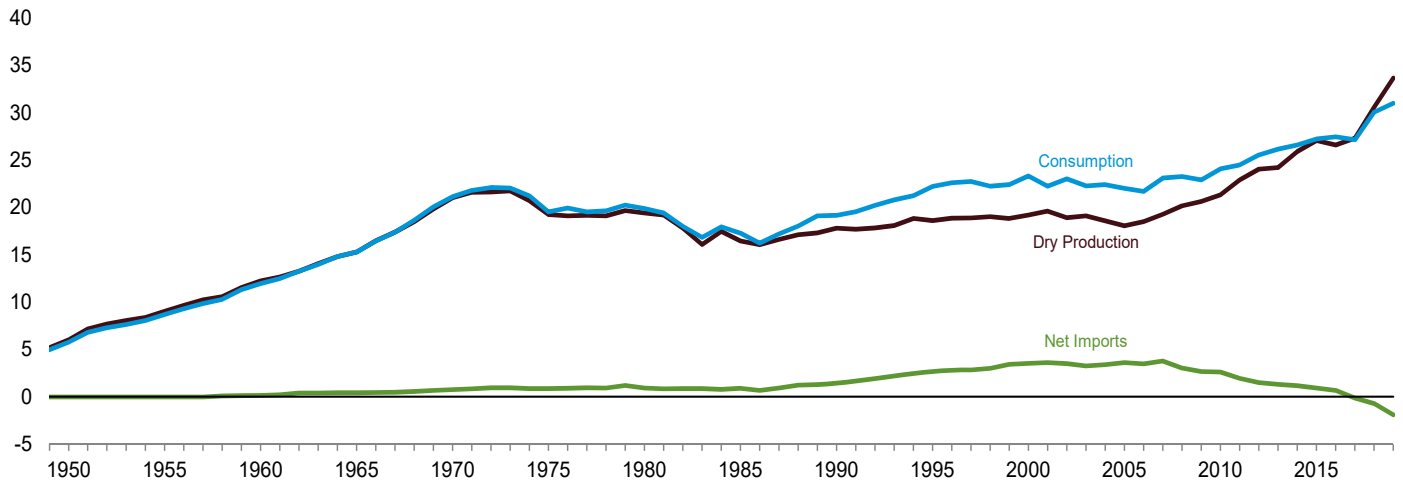
Transportation sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under "Transportation Sector" in Table 3.8c. Electric power sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under "Electric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

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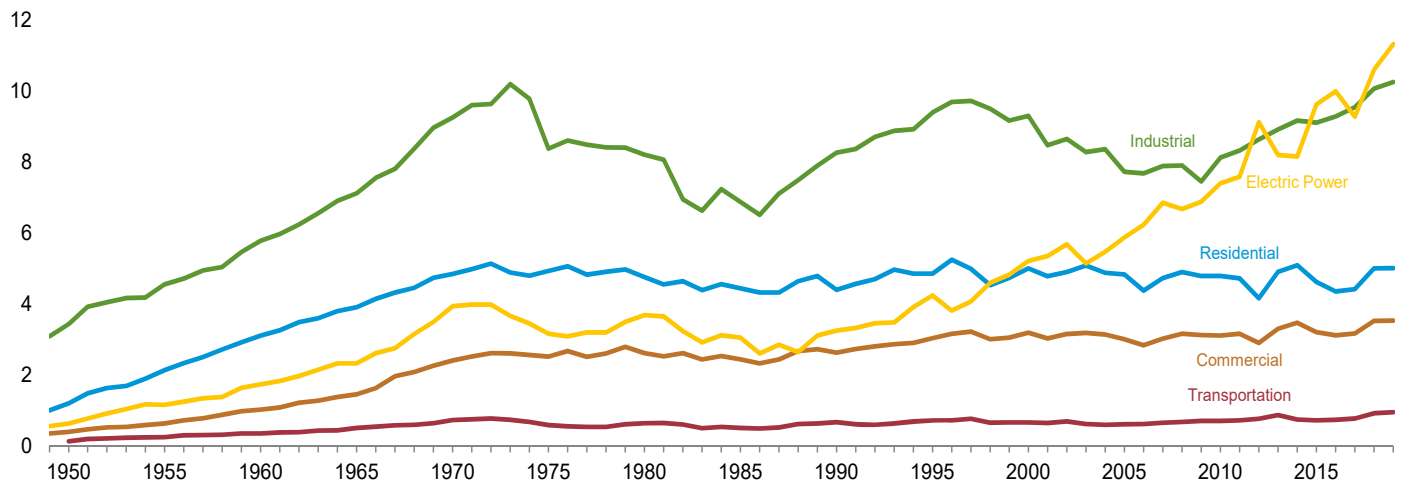
4. Natural Gas

Figure 4.1 Natural Gas
(Trillion Cubic Feet)

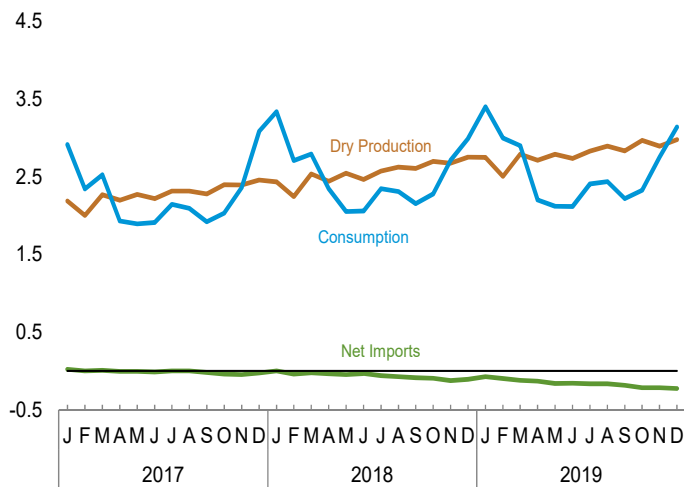
Overview, 1949–2019



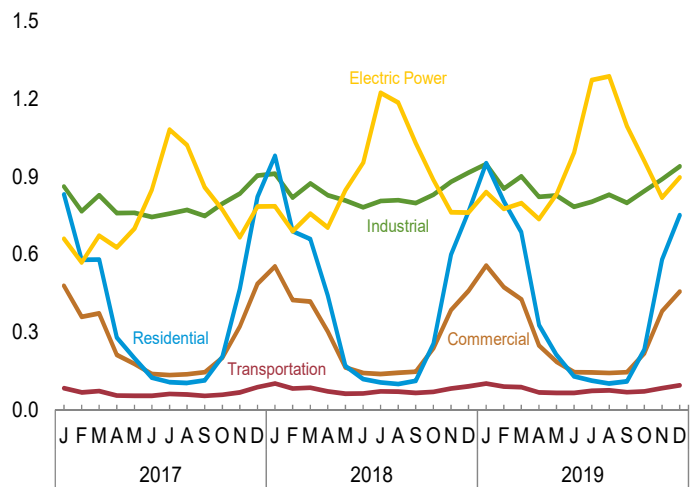
Consumption by Sector, 1949–2019



Overview, Monthly



Consumption by Sector, Monthly



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

Table 4.1 Natural Gas Overview
(Billion Cubic Feet)

	Gross Withdrawals ^a	Marketed Production (Wet) ^b	NGPL Production ^c	Dry Gas Production ^d	Supplemental Gaseous Fuels ^e	Trade			Net Storage Withdrawals ^f	Balancing Item ^g	Consumption ^h
						Imports	Exports	Net Imports			
1950 Total	8,480	6,282	260	6,022	NA	0	26	-26	-54	-175	5,767
1955 Total	11,720	9,405	377	9,029	NA	11	31	-20	-68	-247	8,694
1960 Total	15,088	12,771	543	12,228	NA	156	11	144	-132	-274	11,967
1965 Total	17,963	16,040	753	15,286	NA	456	26	430	-118	-319	15,280
1970 Total	23,786	21,921	906	21,014	NA	821	70	751	-398	-228	21,139
1975 Total	21,104	20,109	872	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	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 Total	32,915	28,772	1,707	27,065	59	2,718	1,784	935	-547	-268	27,244
2016 Total	32,592	28,400	1,808	26,592	57	3,006	2,335	671	340	-216	27,444
2017 January	2,724	2,339	152	2,187	5	292	270	22	687	12	2,914
February	2,493	2,143	139	2,003	5	255	253	1	292	39	2,341
March	2,797	2,426	158	2,268	5	281	273	7	281	-39	2,524
April	2,690	2,350	153	2,198	5	238	242	-4	-236	-30	1,932
May	2,779	2,429	158	2,271	5	244	249	-5	-348	-32	1,892
June	2,688	2,373	154	2,219	5	240	253	-14	-287	-13	1,911
July	2,754	2,478	161	2,317	6	251	249	2	-155	-27	2,142
August	2,770	2,476	161	2,315	6	248	247	1	-201	-26	2,094
September	2,763	2,438	158	2,280	5	229	249	-19	-323	-22	1,921
October	2,911	2,564	167	2,398	6	241	280	-38	-254	-79	2,032
November	2,897	2,559	166	2,393	6	240	288	-47	90	-84	2,358
December	3,025	2,628	171	2,458	6	274	300	-26	707	-60	3,084
Total	33,292	29,204	1,897	27,306	66	3,033	3,154	-121	254	-360	27,146
2018 January	2,986	2,612	178	2,435	6	300	300	(s)	913	-18	3,335
February	2,746	2,410	164	2,246	5	237	276	-38	477	16	2,706
March	3,085	2,721	185	2,535	6	271	291	-21	292	-20	2,793
April	2,979	2,617	178	2,439	6	242	279	-37	-37	-24	2,346
May	3,097	2,730	186	2,544	6	227	272	-45	-433	-20	2,051
June	2,961	2,645	180	2,465	6	228	262	-34	-358	-21	2,059
July	3,097	2,759	188	2,571	6	247	306	-59	-194	21	2,345
August	3,165	2,815	192	2,623	6	237	311	-74	-244	-3	2,308
September	3,142	2,797	190	2,607	6	214	302	-88	-344	-29	2,152
October	3,270	2,895	197	2,698	6	215	307	-92	-299	-34	2,279
November	3,235	2,870	195	2,675	6	212	338	-125	212	-57	2,710
December	3,365	2,952	201	2,751	6	257	363	-106	329	14	2,993
Total	37,129	32,823	2,235	30,589	69	2,889	3,607	-719	312	-176	30,075
2019 January	E 3,357	E 2,952	205	E 2,747	5	291	365	-74	709	13	3,400
February	E 3,051	E 2,694	191	E 2,504	5	233	330	-97	568	18	2,999
March	E 3,387	E 3,001	213	E 2,788	6	253	374	-121	245	-19	2,900
April	E 3,307	E 2,920	208	E 2,712	5	207	338	-132	-382	-3	2,201
May	E 3,392	E 3,004	216	E 2,788	4	208	369	-161	-472	-37	2,121
June	E 3,299	E 2,943	208	E 2,736	6	201	360	-159	-431	-36	2,115
July	E 3,384	E 3,040	210	E 2,830	5	230	393	-163	-254	-10	R 2,407
August	E 3,445	E 3,105	213	E 2,893	5	220	385	-165	-286	-10	2,437
September	E 3,401	E 3,047	215	E 2,832	4	208	R 394	R -186	-419	R -14	2,216
October	RE 3,577	RE 3,193	224	RE 2,969	5	211	425	-215	-346	R -86	2,327
November	RE 3,503	RE 3,107	215	RE 2,893	5	224	440	-216	150	R -78	R 2,753
December	E 3,610	E 3,199	222	E 2,977	6	256	481	-225	418	-37	3,139
Total	E 40,712	E 36,205	2,538	E 33,667	61	2,741	4,655	-1,913	-500	-301	31,015

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

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

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

^d Marketed production (wet) minus NGPL production.

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

^f Net withdrawals from underground storage. For 1980–2017, also includes net withdrawals of liquefied natural gas in above-ground tanks. See Note 4, "Natural Gas Storage," at end of section.

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

^h See Note 6, "Natural Gas Consumption

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

	Imports									Exports ^a				
	Algeria ^b	Canada ^c	Egypt ^b	Mexico ^c	Nigeria ^b	Qatar ^b	Trinidad and Tobago ^b	Other ^{b,d}	Total	Canada ^c	Japan ^b	Mexico ^c	Other ^{b,e}	Total
1950 Total	0	0	0	0	0	0	0	0	0	3	0	23	0	26
1955 Total	0	11	0	(s)	0	0	0	0	11	11	0	20	0	31
1960 Total	0	109	0	47	0	0	0	0	156	6	0	6	0	11
1965 Total	0	405	0	52	0	0	0	0	456	18	0	8	0	26
1970 Total	1	779	0	(s)	0	0	0	0	821	11	44	15	0	70
1975 Total	5	948	0	0	0	0	0	0	953	10	53	9	0	73
1980 Total	86	797	0	102	0	0	0	0	985	(s)	45	4	0	49
1985 Total	24	926	0	0	0	0	0	0	950	(s)	53	2	0	55
1990 Total	84	1,448	0	0	0	0	0	0	1,532	17	53	16	0	86
1995 Total	18	2,816	0	7	0	0	0	0	2,841	28	65	61	0	154
2000 Total	47	3,544	0	12	13	46	99	21	3,782	73	66	106	0	244
2001 Total	65	3,729	0	10	38	23	98	14	3,977	167	66	141	0	373
2002 Total	27	3,785	0	2	8	35	151	8	4,015	189	63	263	0	516
2003 Total	53	3,437	0	0	50	14	378	11	3,944	271	66	343	0	680
2004 Total	120	3,607	0	0	12	12	462	46	4,259	395	62	397	0	854
2005 Total	97	3,700	73	9	8	3	439	11	4,341	358	65	305	0	729
2006 Total	17	3,590	120	13	57	0	389	0	4,186	341	61	322	0	724
2007 Total	77	3,783	115	54	95	18	448	18	4,608	482	47	292	2	822
2008 Total	0	3,589	55	43	12	3	267	15	3,984	559	39	365	0	963
2009 Total	0	3,271	160	28	13	13	236	29	3,751	701	31	338	3	1,072
2010 Total	0	3,280	73	30	42	46	190	81	3,741	739	33	333	32	1,137
2011 Total	0	3,117	35	3	2	91	129	92	3,469	937	18	499	52	1,506
2012 Total	0	2,963	3	(s)	0	34	112	26	3,138	971	14	620	14	1,619
2013 Total	0	2,786	0	1	3	7	70	17	2,883	911	0	661	0	1,572
2014 Total	0	2,635	0	1	0	0	43	16	2,695	770	13	729	3	1,514
2015 Total	0	2,626	0	1	0	0	71	20	2,718	701	8	1,054	20	1,784
2016 Total	0	2,918	0	1	0	0	84	3	3,006	771	11	1,405	148	2,335
2017 January	0	279	0	(s)	3	0	10	0	292	99	11	134	27	270
February	0	246	0	(s)	0	0	8	0	255	88	4	128	34	253
March	0	276	0	(s)	0	0	5	0	281	100	0	141	33	273
April	0	233	0	(s)	0	0	5	0	238	81	7	125	29	242
May	0	239	0	(s)	0	0	5	0	244	64	4	134	47	249
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	249
August	0	240	0	(s)	0	0	8	0	248	66	4	142	35	247
September	0	227	0	(s)	0	0	2	0	229	70	0	135	44	249
October	0	239	0	(s)	0	0	2	0	241	68	7	139	66	280
November	0	234	0	(s)	0	0	6	0	240	74	0	145	69	288
December	0	263	0	1	3	0	8	0	274	81	14	140	65	300
Total	0	2,955	0	1	6	0	70	0	3,033	917	53	1,671	513	3,154
2018 January	0	283	0	(s)	0	0	14	3	300	91	4	147	58	300
February	0	230	0	1	0	0	7	0	237	76	7	140	52	276
March	0	264	0	(s)	0	0	4	3	271	68	0	161	63	291
April	0	239	0	(s)	0	0	3	0	242	63	11	142	64	279
May	0	225	0	(s)	0	0	2	0	227	40	13	151	68	272
June	0	226	0	(s)	0	0	3	0	228	51	10	164	37	262
July	0	241	0	1	0	0	5	0	247	57	13	172	64	306
August	0	231	0	1	0	0	5	0	237	66	10	175	60	311
September	0	211	0	(s)	0	0	3	0	214	70	17	161	54	302
October	0	209	0	(s)	0	0	6	0	215	65	3	159	80	307
November	0	210	0	(s)	0	0	3	0	212	90	24	147	77	338
December	0	242	0	(s)	3	0	12	0	257	100	14	151	98	363
Total	0	2,811	0	3	3	0	66	6	2,889	836	126	1,871	775	3,607
2019 January	0	276	0	(s)	0	0	12	3	291	87	17	165	95	365
February	0	226	0	(s)	0	0	7	0	233	92	10	142	86	330
March	0	249	0	(s)	0	0	3	0	253	93	7	157	117	374
April	0	204	0	(s)	0	0	3	0	207	71	14	150	102	338
May	0	208	0	(s)	0	0	0	0	208	70	7	174	117	369
June	0	201	0	(s)	0	0	0	0	201	62	15	173	110	360
July	0	228	0	(s)	0	0	3	0	230	69	21	192	111	393
August	0	217	0	(s)	0	0	3	0	220	78	R 18	182	R 107	385
September	0	208	0	(s)	0	0	0	0	208	72	28	174	R 121	R 394
October	0	205	0	(s)	0	0	6	0	211	76	25	178	147	425
November	0	221	0	(s)	0	0	3	0	224	91	18	162	169	440
December	0	244	0	1	3	0	7	0	256	109	21	161	189	481
Total	0	2,687	0	2	3	0	47	3	2,741	971	201	2,009	R 1,473	4,655

^a Includes re-exports.
^b As liquefied natural gas.
^c By pipeline, except for small amounts of: liquefied natural gas (LNG) imported from Canada in 1973, 1977, 1981, and 2013 forward; LNG exported to Canada in 2007 and 2012 forward; compressed natural gas (CNG) imported from Canada in 2014 forward; CNG exported to Canada in 2013 forward; and LNG exported to Mexico beginning in 1998. See Note 9, "Natural Gas Imports and Exports," at end of section.
^d Australia in 1997–2001 and 2004; Brunei in 2002; Equatorial Guinea in 2007; Indonesia in 1986 and 2000; Malaysia in 1999 and 2002–2005; Norway in 2008–2016; Oman in 2000–2005; Peru in 2010 and 2011; United Arab Emirates in 1996–2000; United Kingdom in 2018; Yemen in 2010–2015; and Other (unassigned) in 2004–2015.
^e Argentina in 2016–2019; Bahamas in 2017–2019; Bangladesh 2019; Barbados in 2016–2019; Belgium in 2019; Brazil in 2010–2012, and 2014–2019; Chile in 2011, 2016–2019; China in 2011, 2016–2019; Colombia in 2018 and 2019; Dominican Republic in 2016–2019; Egypt in 2015–2018; France in 2018 and 2019; Greece in 2018 and 2019; Haiti 2019; India in 2010–2012, 2016–2019; Israel 2018; Italy in 2016–2019; Jamaica 2018 and 2019; Jordan in 2016–2019; Kuwait in 2016–2019; Lithuania in 2017 and 2019; Malaysia in 2019; Malta in 2017–2019; Netherlands in 2017–2019; Pakistan in 2017–2019; Panama in 2018 and 2019; Poland in 2017–2019; Portugal in 2012, 2016–2019; Russia in 2007; Singapore in

2018 and 2019; South Korea in 2009–2011, 2016–2019; Spain in 2010–2011, 2016–2019; Taiwan in 2015, 2017–2019; Thailand in 2017 and 2019; Turkey in 2015–2019; United Arab Emirates in 2016–2019; and United Kingdom in 2010, 2011, 2017–2019.

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."
• **1988–2018:** EIA, *Natural Gas Annual*, annual reports. • **2019 forward:** EIA, *Natural Gas Monthly*, February 2020, Tables 4 and 5; and U.S. Department of Energy, Office of Fossil Energy, "Natural Gas Imports and Exports."

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

	End-Use Sectors										Electric Power Sector ^{f,g}	Total
	Residential	Commercial ^a	Lease and Plant Fuel	Industrial			Total	Transportation				
				Other Industrial		Pipelines and Distribution ^d		Vehicle Fuel	Total			
				CHP ^b	Non-CHP ^c					Total		
1950 Total	1,198	388	928	(h)	2,498	2,498	3,426	126	NA	126	629	5,767
1955 Total	2,124	629	1,131	(h)	3,411	3,411	4,542	245	NA	245	1,153	8,694
1960 Total	3,103	1,020	1,237	(h)	4,535	4,535	5,771	347	NA	347	1,725	11,967
1965 Total	3,903	1,444	1,156	(h)	5,955	5,955	7,112	501	NA	501	2,321	15,280
1970 Total	4,837	2,399	1,399	(h)	7,851	7,851	9,249	722	NA	722	3,932	21,139
1975 Total	4,924	2,508	1,396	(h)	6,968	6,968	8,365	583	NA	583	3,158	19,538
1980 Total	4,752	2,611	1,026	(h)	7,172	7,172	8,198	635	NA	635	3,682	19,877
1985 Total	4,433	2,432	966	(h)	5,901	5,901	6,867	504	NA	504	3,044	17,281
1990 Total	4,391	2,623	1,236	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 Total	4,613	3,202	1,576	1,222	6,300	7,522	9,098	678	39	718	9,613	27,244
2016 Total	4,347	3,110	1,545	1,209	6,519	7,729	9,274	687	42	729	9,985	27,444
2017 January	831	479	127	107	628	735	862	79	4	83	660	2,914
February	579	359	116	97	554	650	767	63	4	67	569	2,341
March	580	372	132	103	594	697	828	68	4	72	672	2,524
April	279	212	127	99	533	632	760	51	4	55	627	1,932
May	199	178	132	102	527	629	761	50	4	54	700	1,892
June	124	138	129	104	510	615	744	50	4	54	851	1,911
July	107	134	134	112	512	624	758	57	4	61	1,082	2,142
August	104	137	134	108	529	637	772	55	4	59	1,022	2,094
September	114	145	132	103	513	616	748	51	4	54	859	1,921
October	205	201	139	104	553	657	796	53	4	58	773	2,032
November	468	322	139	104	592	696	835	63	4	67	666	2,358
December	822	487	143	115	647	761	904	83	4	87	785	3,084
Total	4,412	3,164	1,584	1,257	6,693	7,949	9,533	722	48	770	9,266	27,146
2018 January	981	554	134	115	663	778	912	97	4	102	786	3,335
February	690	424	124	101	595	696	819	78	4	82	690	2,706
March	659	418	140	105	629	734	874	81	4	85	757	2,793
April	441	302	134	102	592	694	828	67	4	71	704	2,346
May	169	164	140	105	563	668	808	58	4	62	848	2,051
June	119	142	136	107	539	646	782	58	4	63	953	2,059
July	106	138	142	116	549	665	806	67	4	71	1,224	2,345
August	100	143	144	116	549	665	809	66	4	70	1,186	2,308
September	112	147	144	110	544	654	798	61	4	65	1,030	2,152
October	255	237	149	110	572	681	830	65	4	69	888	2,279
November	599	386	147	113	620	732	880	78	4	82	763	2,710
December	765	459	151	115	649	764	916	86	4	91	762	2,993
Total	4,996	3,515	1,684	1,314	7,063	8,377	10,062	863	50	913	10,589	30,075
2019 January	952	557	E 151	121	677	797	949	E 98	E 4	E 102	841	3,400
February	805	474	E 138	106	610	716	854	E 86	E 4	E 90	R 776	2,999
March	686	427	E 154	111	636	747	901	E 83	E 4	E 87	798	2,900
April	328	249	E 150	106	566	672	822	E 63	E 4	E 67	736	2,201
May	212	186	E 154	109	564	673	827	E 61	E 4	E 65	831	2,121
June	129	145	E 151	108	R 525	633	784	E 61	E 4	E 65	993	2,115
July	113	144	E 156	114	533	647	803	E 69	E 4	E 73	R 1,273	R 2,407
August	102	142	E 159	115	556	671	830	E 70	E 5	E 75	1,288	2,437
September	110	145	E 156	110	533	642	799	E 64	E 4	E 68	1,095	2,216
October	233	218	RE 164	R 111	R 571	682	845	E 67	E 4	E 71	960	2,327
November	R 580	R 380	RE 159	R 116	R 615	R 731	R 890	RE 79	E 4	RE 83	R 819	R 2,753
December	751	456	E 164	122	654	776	940	E 90	E 5	E 95	897	3,139
Total	5,000	3,521	E 1,858	1,349	7,039	8,388	10,245	E 890	E 51	E 941	11,307	31,015

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

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

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

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

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

^f The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

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

^h Included in "Non-CHP."
ⁱ For 1989–1992, a small amount of consumption at independent power producers may be counted in both "Other Industrial" and "Electric Power Sector." See Note 7, "Natural Gas Consumption, 1989–1992," at end of section.

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

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

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

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

Sources: • Residential, Commercial, Lease and Plant Fuel, Other Industrial Total and Pipelines and Distribution: 1949–2018—U.S. Energy Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports and unpublished revisions. 2019 forward—EIA, *Natural Gas Monthly (NGM)*, February 2020, 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). 1999–2018—EIA, NGA, annual reports. 2019 forward—EIA, NGM, February 2020, Table 2. • Transportation Total: Calculated as pipelines and distribution plus vehicle fuel. • Electric Power Sector: Table 7.4b. • Total Consumption: Calculated as the sum of residential, commercial, industrial total, transportation total, and electric power sector.

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

	Natural Gas in Underground Storage, End of Period			Change in Working Gas From Same Period Previous Year		Storage Activity		
	Base Gas	Working Gas	Total ^a	Volume	Percent	Withdrawals	Injections	Net ^{b,c}
1950 Total	NA	NA	NA	NA	NA	175	230	-54
1955 Total	863	505	1,368	40	8.7	437	505	-68
1960 Total	NA	NA	2,184	NA	NA	713	844	-132
1965 Total	1,848	1,242	3,090	83	7.2	960	1,078	-118
1970 Total	2,326	1,678	4,004	257	18.1	1,459	1,857	-398
1975 Total	3,162	2,212	5,374	162	7.9	1,760	2,104	-344
1980 Total	3,642	2,655	6,297	-99	-3.6	1,910	1,896	14
1985 Total	3,842	2,607	6,448	-270	-9.4	2,359	2,128	231
1990 Total	3,868	3,068	6,936	555	22.1	1,934	2,433	-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 Total	4,372	3,667	8,038	525	16.7	3,100	3,638	-539
2016 Total	4,380	3,297	7,677	-370	-10.1	3,325	2,977	348
2017 January	4,378	2,622	7,000	-316	-10.8	787	113	675
February	4,377	2,337	6,715	-197	-7.8	422	137	285
March	4,378	2,063	6,440	-424	-17.0	449	175	274
April	4,379	2,291	6,670	-354	-13.4	122	352	-230
May	4,385	2,627	7,011	-340	-11.5	90	430	-341
June	4,354	2,907	7,261	-279	-8.8	105	386	-281
July	4,356	3,054	7,410	-264	-8.0	154	303	-150
August	4,355	3,250	7,605	-191	-5.6	158	353	-196
September	4,355	3,567	7,923	-138	-3.7	103	419	-317
October	4,354	3,816	8,170	-196	-4.9	131	378	-247
November	4,353	3,709	8,062	-267	-6.7	285	199	86
December	4,360	3,033	7,392	-264	-8.0	785	91	695
Total	4,360	3,033	7,392	-264	-8.0	3,590	3,337	254
2018 January	4,357	2,141	6,498	-482	-18.4	1,037	141	896
February	4,357	1,673	6,030	-665	-28.4	599	133	467
March	4,353	1,390	5,743	-672	-32.6	449	164	285
April	4,350	1,427	5,777	-864	-37.7	224	256	-32
May	4,352	1,847	6,199	-779	-29.7	66	489	-423
June	4,354	2,195	6,549	-712	-24.5	88	436	-349
July	4,354	2,381	6,736	-673	-22.0	175	362	-186
August	4,355	2,617	6,972	-633	-19.5	172	407	-235
September	4,356	2,950	7,306	-617	-17.3	130	464	-334
October	4,357	3,236	7,593	-580	-15.2	131	422	-291
November	4,356	3,030	7,386	-679	-18.3	418	213	205
December	4,361	2,708	7,069	-324	-10.7	511	191	320
Total	4,361	2,708	7,069	-324	-10.7	3,999	3,676	324
2019 January	4,366	1,994	6,360	-147	-6.8	804	95	709
February	4,366	1,426	5,792	-246	-14.7	672	104	568
March	4,361	1,185	5,545	-205	-14.8	435	190	245
April	4,367	1,559	5,927	133	9.3	104	486	-382
May	4,372	2,031	6,403	184	9.9	85	557	-472
June	4,375	2,461	6,835	266	12.1	92	523	-431
July	4,374	2,714	7,088	333	14.0	162	416	-254
August	4,377	2,998	7,374	381	14.6	168	453	-286
September	4,378	3,415	7,793	465	15.7	109	529	-419
October	4,379	3,762	8,141	526	16.2	116	461	-346
November	4,380	3,610	7,990	580	19.1	351	201	150
December	4,380	3,189	7,568	480	17.7	556	138	418
Total	4,380	3,189	7,568	480	17.7	3,653	4,153	-500

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

^b For 1980–2018, data differ from those shown on Table 4.1, which includes liquefied natural gas storage for that period.

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

R=Revised. 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 2020, 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." **1996–2018**—EIA, NGA, annual reports. **2019 forward**—EIA, NGM, February 2020, Table 8.

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:

Total underground storage capacity, including active and inactive fields (billion cubic feet)										
Decade	Year-0	Year-1	Year-2	Year-3	Year-4	Year-5	Year-6	Year-7	Year-8	Year-9
1970s						6,280	6,544	6,678	6,890	6,929
1980s	7,434	7,805	7,915	7,985	8,043	8,087	8,145	8,124	8,124	8,120
1990s	7,794	7,993	7,932	7,989	8,043	7,953	7,980	8,332	8,179	8,229
2000s	8,241	8,182	8,207	8,206	8,255	8,268	8,330	8,402	8,499	8,656
2010s	8,764	8,849	8,991	9,173	9,233	9,231	9,239	9,261	9,241	

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 1980–2017 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) 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, and 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), 2017 (1,569 million cubic feet), 2018 (1,885 million cubic feet), and 2019 (226 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, Bahamas, Bangladesh, Barbados, Belgium, Brazil, Chile, China, Columbia, Dominican Republic, Egypt, France, Greece, Haiti, India, Israel, Italy, Jamaica, Japan, Jordan, Kuwait, Lithuania, Malaysia, Malta, Netherlands, Pakistan, Panama, Poland, Portugal, Russia, Singapore, 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.

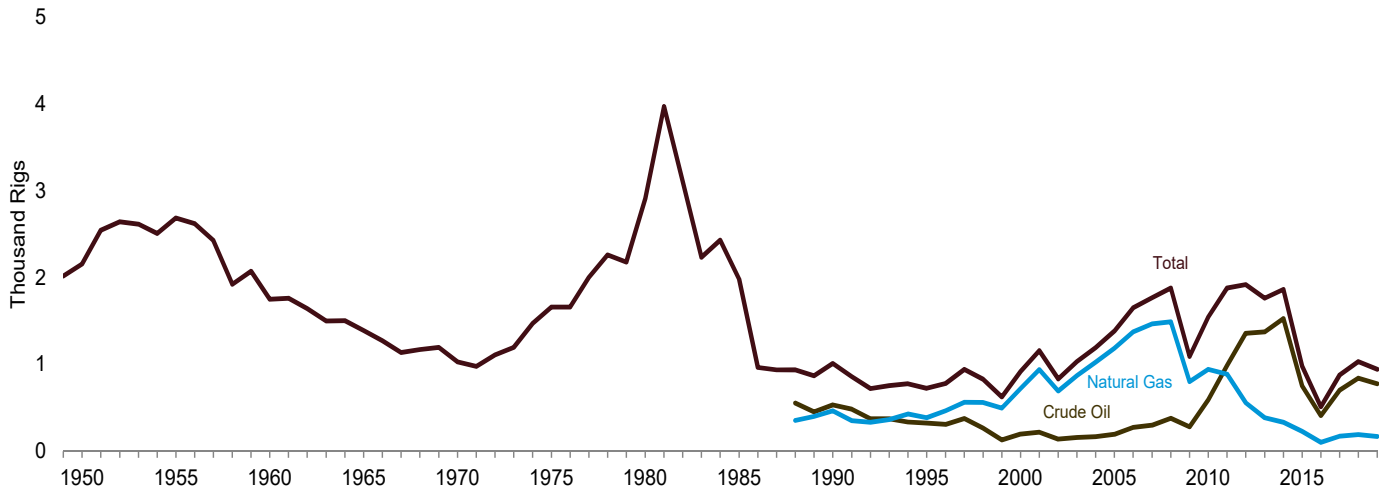
Preliminary monthly data are EIA estimates. For a discussion of estimation procedures, see EIA's *Natural Gas Monthly*. Preliminary data are revised after publication of EIA's *U.S. Imports and Exports of Natural Gas*.

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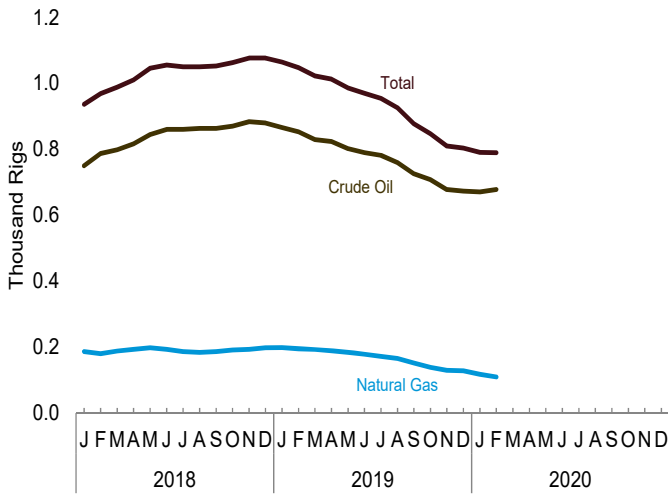
5. Crude Oil and Natural Gas Resource Development

Figure 5.1 Crude Oil and Natural Gas Resource Development Indicators

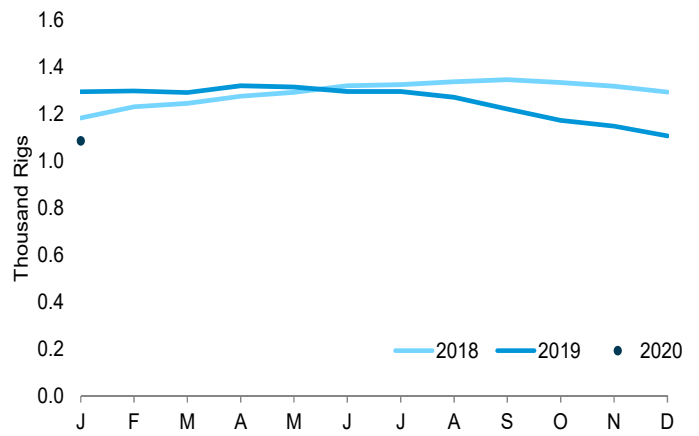
Rotary Rigs in Operation by Type, 1949–2019



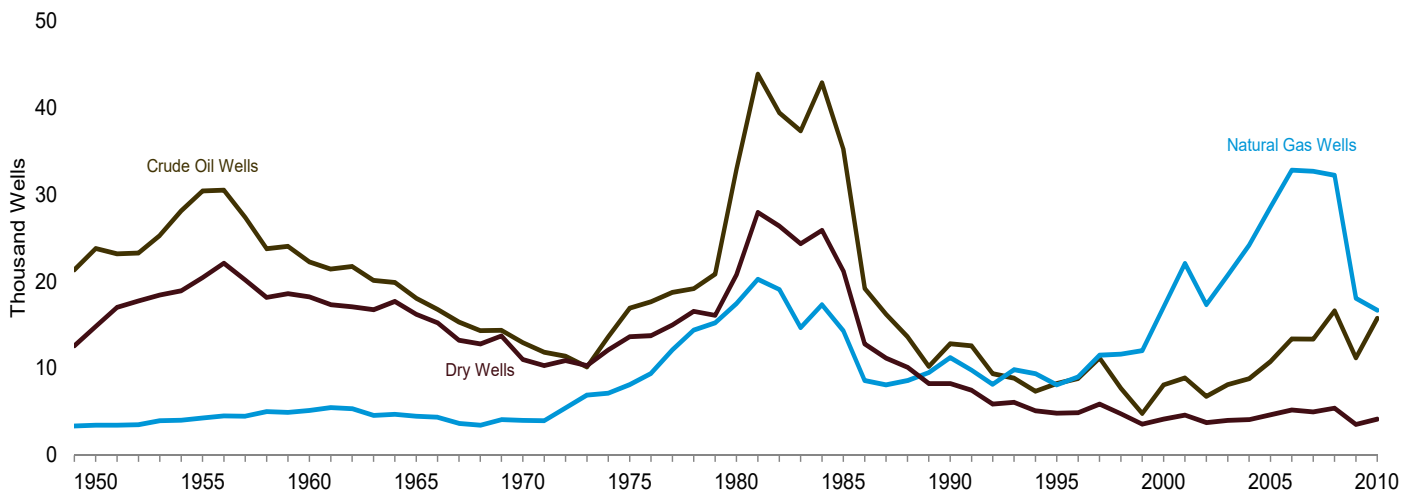
Rotary Rigs in Operation by Type, Monthly



Active Well Service Rig Count, Monthly



Total Wells Drilled by Type, 1949–2010



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

Sources: Tables 5.1 and 5.2.

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

	Rotary Rigs in Operation ^a					Active Well Service Rig Count ^c
	By Site		By Type		Total ^b	
	Onshore	Offshore	Crude Oil	Natural Gas		
1950 Average	NA	NA	NA	NA	2,154	NA
1955 Average	NA	NA	NA	NA	2,686	NA
1960 Average	NA	NA	NA	NA	1,748	NA
1965 Average	NA	NA	NA	NA	1,388	NA
1970 Average	NA	NA	NA	NA	1,028	NA
1975 Average	1,554	106	NA	NA	1,660	2,486
1980 Average	2,678	231	NA	NA	2,909	4,089
1985 Average	1,774	206	NA	NA	1,980	4,716
1990 Average	902	108	532	464	1,010	3,658
1995 Average	622	101	323	385	723	3,041
2000 Average	778	140	197	720	918	2,692
2001 Average	1,003	153	217	939	1,156	2,267
2002 Average	717	113	137	691	830	1,830
2003 Average	924	108	157	872	1,032	1,967
2004 Average	1,095	97	165	1,025	1,192	2,064
2005 Average	1,287	94	194	1,184	1,381	2,222
2006 Average	1,559	90	274	1,372	1,649	2,364
2007 Average	1,695	72	297	1,466	1,768	2,388
2008 Average	1,814	65	379	1,491	1,879	2,515
2009 Average	1,046	44	278	801	1,089	1,722
2010 Average	1,514	31	591	943	1,546	1,854
2011 Average	1,846	32	984	887	1,879	2,075
2012 Average	1,871	48	1,357	558	1,919	2,113
2013 Average	1,705	56	1,373	383	1,761	2,064
2014 Average	1,804	57	1,527	333	1,862	2,024
2015 Average	943	35	750	226	978	1,481
2016 Average	486	23	408	100	509	1,061
2017 Average	856	20	703	172	876	1,187
2018 January	919	18	750	187	937	1,183
February	952	17	788	180	969	1,232
March	976	13	799	188	989	1,246
April	995	16	817	193	1,011	1,276
May	1,026	20	845	198	1,046	1,293
June	1,037	19	861	193	1,056	1,321
July	1,032	18	861	187	1,050	1,326
August	1,031	19	864	184	1,050	1,338
September	1,033	20	864	187	1,053	1,347
October	1,041	21	870	192	1,063	1,334
November	1,055	22	884	193	1,077	1,319
December	1,054	24	880	198	1,077	1,294
Average	1,013	19	841	190	1,032	1,292
2019 January	1,044	21	866	199	1,065	1,295
February	1,029	20	853	195	1,048	1,299
March	1,001	22	830	193	1,023	1,292
April	990	22	824	189	1,013	1,321
May	965	21	802	184	986	1,316
June	945	24	790	179	970	1,297
July	930	25	782	172	955	1,297
August	900	26	760	166	926	1,272
September	852	26	726	152	878	1,221
October	825	23	708	139	848	1,173
November	788	22	678	130	810	1,149
December	781	23	673	128	804	1,108
Average	920	23	774	169	943	1,253
2020 January	770	21	671	118	791	R 1,086
February	768	23	678	110	790	NA
2-Month Average	769	22	674	114	791	NA
2019 2-Month Average	1,036	20	859	197	1,056	1,297
2018 2-Month Average	935	17	769	183	953	1,208

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

^b Sum of rigs drilling for crude oil, rigs drilling for natural gas, and other rigs (not shown) drilling for miscellaneous purposes, such as service wells, injection wells, and stratigraphic tests. Therefore, "Total" values may not equal the sum of "Crude Oil" and "Natural Gas." "Total" values may not equal the sum of "Onshore" and "Offshore" due to independent rounding.

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

and working every day of the month.

R=Revised. NA=Not available.

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

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

Sources: • **Rotary Rigs in Operation:** Baker Hughes, Inc., Houston, TX, "North America Rig Count," used with permission. See <http://phx.corporate-ir.net/phoenix.zhtml?c=79687&p=irol-reports&other>. • **Active Well Service Rig Count:** Assoc. of Energy Service Companies, Friendswood, TX. See <https://www.aesc.net/aesc-rig-counts.html>.

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.

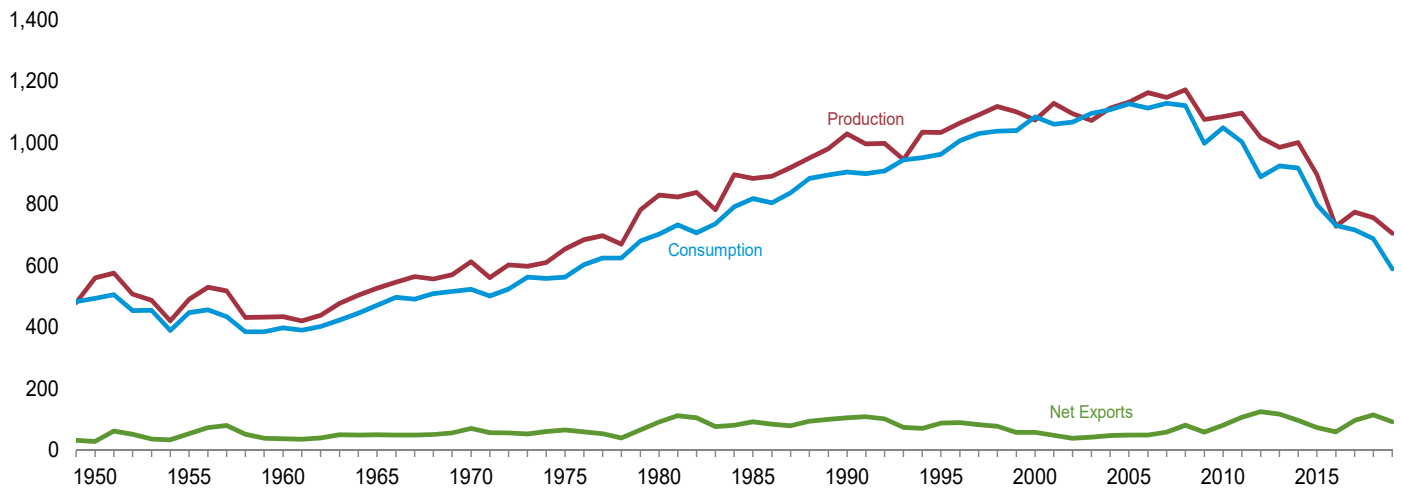
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6. Coal

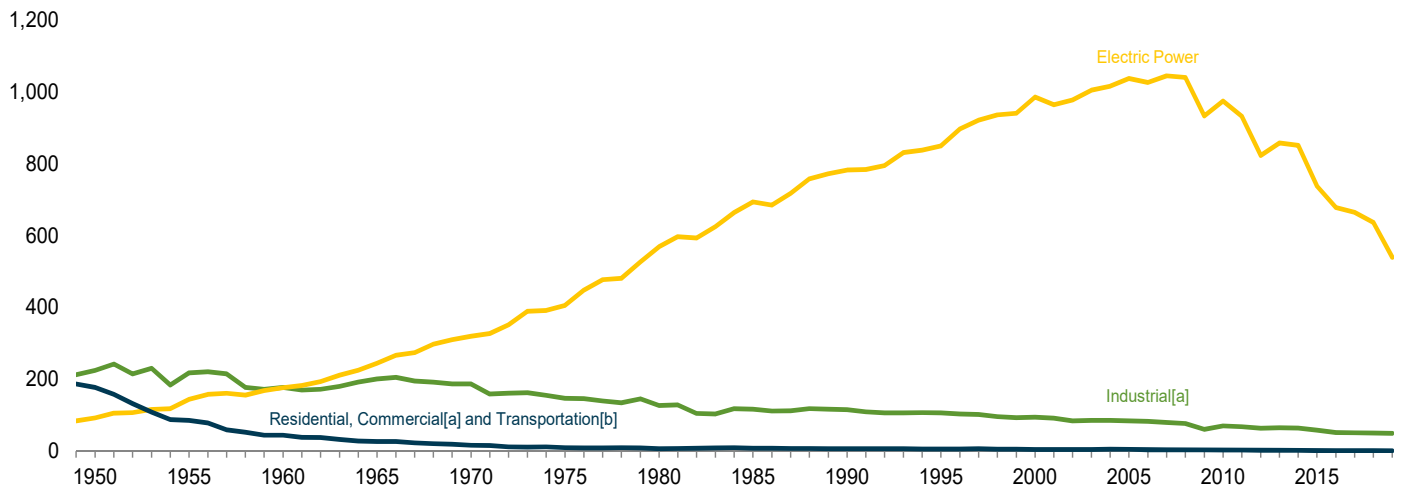
Figure 6.1 Coal

(Million Short Tons)

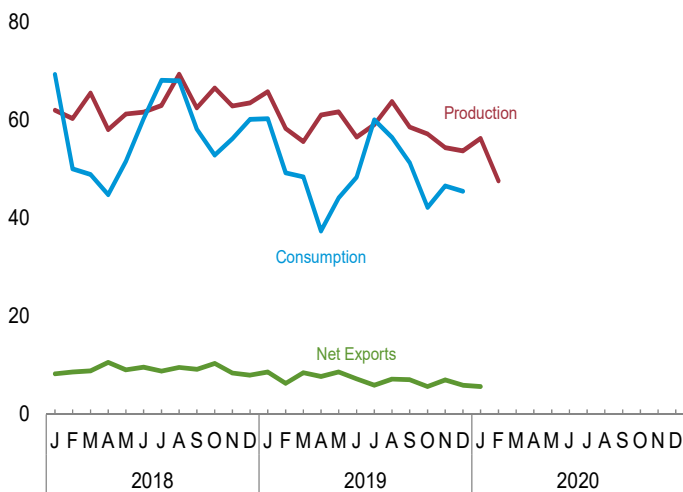
Overview, 1949–2019



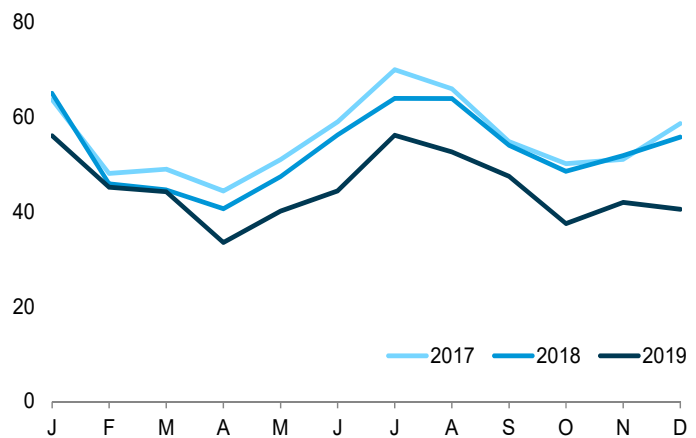
Consumption by Sector, 1949–2019



Overview, Monthly



Electric Power Sector Consumption, Monthly



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

[b] For 1978 forward, small amounts of transportation sector use are

included in "Industrial."

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

Sources: Tables 6.1 and 6.2.

Table 6.1 Coal Overview
(Thousand Short Tons)

	Production ^a	Waste Coal Supplied ^b	Trade			Stock Change ^{d,e}	Losses and Unaccounted for ^{e,f}	Consumption
			Imports	Exports	Net Imports ^c			
1950 Total	560,388	NA	365	29,360	-28,995	27,829	9,462	494,102
1955 Total	490,838	NA	337	54,429	-54,092	-3,974	-6,292	447,012
1960 Total	434,329	NA	262	37,981	-37,719	-3,194	1,722	398,081
1965 Total	526,954	NA	184	51,032	-50,848	1,897	2,244	471,965
1970 Total	612,661	NA	36	71,733	-71,697	11,100	6,633	523,231
1975 Total	654,641	NA	940	66,309	-65,369	32,154	-5,522	562,640
1980 Total	829,700	NA	1,194	91,742	-90,548	25,595	10,827	702,730
1985 Total	883,638	NA	1,952	92,680	-90,727	-27,934	2,796	818,049
1990 Total	1,029,076	3,339	2,699	105,804	-103,104	26,542	-1,730	904,498
1995 Total	1,032,974	8,561	9,473	88,547	-79,074	-275	632	962,104
2000 Total	1,073,612	9,089	12,513	58,489	-45,976	-48,309	938	1,084,095
2001 Total	1,127,689	10,085	19,787	48,666	-28,879	41,630	7,120	1,060,146
2002 Total	1,094,283	9,052	16,875	39,601	-22,726	10,215	4,040	1,066,355
2003 Total	1,071,753	10,016	25,044	43,014	-17,970	-26,659	-4,403	1,094,861
2004 Total	1,112,099	11,299	27,280	47,998	-20,718	-11,462	6,887	1,107,255
2005 Total	1,131,498	13,352	30,460	49,942	-19,482	-9,702	9,092	1,125,978
2006 Total	1,162,750	14,409	36,246	49,647	-13,401	42,642	8,824	1,112,292
2007 Total	1,146,635	14,076	36,347	59,163	-22,816	5,812	4,085	1,127,998
2008 Total	1,171,809	14,146	34,208	81,519	-47,311	12,354	5,740	1,120,548
2009 Total	1,074,923	13,666	22,639	59,097	-36,458	39,668	14,985	997,478
2010 Total	1,084,368	13,651	19,353	81,716	-62,363	-13,039	182	1,048,514
2011 Total	1,095,628	13,209	13,088	107,259	-94,171	211	11,506	1,002,948
2012 Total	1,016,458	11,196	9,159	125,746	-116,586	6,902	14,980	889,185
2013 Total	984,842	11,279	8,906	117,659	-108,753	-38,525	1,451	924,442
2014 Total	1,000,049	12,090	11,350	97,257	-85,907	-2,601	11,101	917,731
2015 Total	896,941	9,969	11,318	73,958	-62,640	40,704	5,452	798,115
2016 Total	728,364	10,138	9,850	60,271	-50,421	-45,441	2,452	731,071
2017 Total	774,609	9,951	7,777	96,953	-89,176	-26,033	4,562	716,856
2018 January	61,971	1,033	500	8,772	-8,273	-13,423	-1,100	69,255
February	60,269	854	349	9,022	-8,673	-2,777	5,202	50,025
March	65,504	929	518	9,426	-8,908	5,076	3,580	48,869
April	58,046	714	494	11,092	-10,598	1,256	2,119	44,788
May	61,211	772	544	9,645	-9,102	-1,154	2,462	51,573
June	61,572	790	509	10,138	-9,629	-6,774	-739	60,246
July	62,967	878	692	9,532	-8,840	-12,580	-498	68,084
August	69,325	908	484	10,052	-9,569	-5,740	-1,572	67,977
September	62,438	808	263	9,483	-9,220	-2,528	-1,603	58,158
October	66,532	719	304	10,681	-10,377	3,868	195	52,811
November	62,857	887	400	8,872	-8,472	-185	-714	56,171
December	63,474	871	898	8,916	-8,018	-1,947	-1,875	60,148
Total	756,167	10,162	5,954	115,632	-109,678	-36,910	5,455	688,105
2019 January	65,733	914	625	9,285	-8,661	-4,050	1,818	60,218
February	58,224	769	358	6,707	-6,349	1,032	2,390	53,274
March	55,580	836	706	9,217	-8,512	-1,711	1,198	48,417
April	61,007	632	537	8,285	-7,749	10,072	6,444	37,375
May	61,653	706	408	9,085	-8,678	8,024	1,525	44,132
June	56,515	741	660	7,945	-7,285	1,645	32	48,358
July	59,035	794	511	6,489	-5,978	6,541	-393	59,998
August	63,758	774	519	7,706	-7,187	276	601	56,468
September	58,564	627	651	7,723	-7,072	1,092	-300	51,326
October	57,653	778	742	6,426	-5,684	9,139	1,417	42,191
November	54,373	778	466	7,491	-7,025	4,306	2,768	46,588
December	53,164	778	515	6,491	-5,976	5,332	-2,828	45,462
Total	705,259	9,126	6,697	92,852	-86,155	28,617	9,858	589,754
2020 January	56,243	NA	535	6,234	-5,699	NA	NA	NA
February	47,568	NA	NA	NA	NA	NA	NA	NA
2-Month Total	103,811	NA	NA	NA	NA	NA	NA	NA
2019 2-Month Total	123,956	1,684	983	15,993	-15,010	-3,018	4,208	109,440
2018 2-Month Total	122,240	1,887	849	17,795	-16,946	-16,200	4,102	119,280

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

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

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

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

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

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

quantities lost or to data reporting problems.

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

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

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

Sources: See end of section.

Table 6.2 Coal Consumption by Sector
(Thousand Short Tons)

	End-Use Sectors										Electric Power Sector ^{e,f}	Total
	Residential	Commercial			Coke Plants	Industrial			Transportation			
		CHP ^a	Other ^b	Total		Other Industrial	Total	Total				
					CHP ^c	Non-CHP ^d	Total	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 Total	(i)	683	500	1,183	16,485	14,720	20,129	34,849	51,333	(h)	678,554	731,071
2017 Total	(i)	610	451	1,061	17,538	12,975	20,289	33,264	50,801	(h)	664,993	716,856
2018 January	(i)	76	65	142	1,458	1,242	1,453	2,695	4,153	(h)	64,960	69,255
February	(i)	59	50	109	1,288	1,122	1,608	2,730	4,018	(h)	45,897	50,025
March	(i)	57	47	104	1,482	1,109	1,612	2,721	4,203	(h)	44,562	48,869
April	(i)	47	22	69	1,549	960	1,607	2,567	4,116	(h)	40,603	44,788
May	(i)	39	23	62	1,596	979	1,581	2,561	4,156	(h)	47,356	51,573
June	(i)	36	27	63	1,465	969	1,595	2,564	4,029	(h)	56,154	60,246
July	(i)	40	16	56	1,600	962	1,572	2,534	4,135	(h)	63,894	68,084
August	(i)	42	17	59	1,577	949	1,583	2,532	4,108	(h)	63,810	67,977
September	(i)	45	15	60	1,585	943	1,583	2,525	4,110	(h)	53,987	58,158
October	(i)	42	34	76	1,549	891	1,822	2,713	4,262	(h)	48,474	52,811
November	(i)	47	40	87	1,558	1,015	1,705	2,720	4,278	(h)	51,806	56,171
December	(i)	47	38	85	1,630	1,093	1,627	2,720	4,350	(h)	55,714	60,148
Total	(i)	577	395	972	18,337	12,233	19,347	31,580	49,917	(h)	637,217	688,105
2019 January	(i)	58	54	112	1,515	1,095	1,514	2,609	4,124	(h)	55,983	60,218
February	(i)	R 52	R 50	102	1,393	R 1,000	1,584	2,584	3,977	(h)	45,142	R 49,221
March	(i)	54	51	105	1,556	944	1,645	2,589	4,145	(h)	44,167	48,417
April	(i)	39	23	62	1,450	918	1,426	2,343	3,793	(h)	33,520	37,375
May	(i)	40	24	64	1,624	R 912	R 1,422	2,334	3,958	(h)	R 40,110	R 44,132
June	(i)	31	20	50	1,586	R 882	R 1,462	2,345	3,931	(h)	R 44,376	R 48,358
July	(i)	40	9	50	1,498	R 867	R 1,460	2,327	3,825	(h)	R 56,123	R 59,998
August	(i)	42	10	51	1,487	R 885	R 1,460	2,344	3,832	(h)	R 52,585	R 56,468
September	(i)	42	10	52	1,469	R 845	R 1,498	2,343	3,813	(h)	R 47,461	R 51,326
October	(i)	38	F 21	F 59	F 2,266	R 960	F 1,409	F 2,369	F 4,635	(h)	R 37,497	R 42,191
November	(i)	44	F 41	F 85	F 2,008	R 971	F 1,561	F 2,533	F 4,541	(h)	R 41,962	R 46,588
December	(i)	46	F 35	F 80	F 2,536	964	F 1,393	F 2,357	F 4,893	(h)	40,489	45,462
Total	(i)	526	E 348	E 874	E 20,388	11,244	E 17,833	E 29,078	E 49,465	(h)	539,415	589,754

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

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

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

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

^e The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

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

^g Included in "Commercial Other."

^h Included in "Industrial Non-CHP."

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

R=Revised. E=Estimate. F=Forecast.

Notes: • CHP monthly values are from Table 7.4c; electric power sector monthly values are from Table 7.4b; all other monthly values are estimates derived from collected quarterly and annual data. See Note 2, "Coal Consumption," at end of section. • Data values preceded by "F" are derived from EIA's Short-Term Integrated Forecasting System. See Note 4, "Coal Forecast Values," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

Table 6.3 Coal Stocks by Sector
(Thousand Short Tons)

	Producers and Distributors	End-Use Sectors					Electric Power Sector ^{c,d}	Total
		Residential ^a and Commercial	Industrial			Total		
			Coke Plants	Other ^b	Total			
1950 Year	NA	2,462	16,809	26,182	42,991	45,453	31,842	77,295
1955 Year	NA	998	13,422	15,880	29,302	30,300	41,391	71,691
1960 Year	NA	666	11,122	11,637	22,759	23,425	51,735	75,160
1965 Year	NA	353	10,640	13,122	23,762	24,115	54,525	78,640
1970 Year	NA	300	9,045	11,781	20,826	21,126	71,908	93,034
1975 Year	12,108	233	8,797	8,529	17,326	17,559	110,724	140,391
1980 Year	24,379	NA	9,067	11,951	21,018	21,018	183,010	228,407
1985 Year	33,133	NA	3,420	10,438	13,857	13,857	156,376	203,367
1990 Year	33,418	NA	3,329	8,716	12,044	12,044	156,166	201,629
1995 Year	34,444	NA	2,632	5,702	8,334	8,334	126,304	169,083
2000 Year	31,905	NA	1,494	4,587	6,081	6,081	102,296	140,282
2001 Year	35,900	NA	1,510	6,006	7,516	7,516	138,496	181,912
2002 Year	43,257	NA	1,364	5,792	7,156	7,156	141,714	192,127
2003 Year	38,277	NA	905	4,718	5,623	5,623	121,567	165,468
2004 Year	41,151	NA	1,344	4,842	6,186	6,186	106,669	154,006
2005 Year	34,971	NA	2,615	5,582	8,196	8,196	101,137	144,304
2006 Year	36,548	NA	2,928	6,506	9,434	9,434	140,964	186,946
2007 Year	33,977	NA	1,936	5,624	7,560	7,560	151,221	192,758
2008 Year	34,688	498	2,331	6,007	8,338	8,336	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 Year	25,309	360	1,675	3,637	5,312	5,672	162,009	192,990
2017 Year	23,999	310	1,718	3,242	4,960	5,270	137,687	166,956
2018 January	24,769	298	1,648	3,125	4,773	5,072	123,692	153,533
February	24,938	287	1,578	3,008	4,586	4,873	120,945	150,756
March	24,736	275	1,508	2,891	4,399	4,674	126,422	155,832
April	23,417	268	1,544	2,893	4,437	4,705	128,965	157,088
May	22,841	262	1,580	2,895	4,474	4,736	128,356	155,933
June	22,997	256	1,616	2,896	4,512	4,768	121,394	149,159
July	21,025	257	1,681	2,939	4,619	4,876	110,677	136,579
August	21,806	259	1,746	2,981	4,727	4,985	104,048	130,839
September	22,537	260	1,811	3,023	4,834	5,094	100,680	128,311
October	21,878	256	1,809	3,102	4,911	5,166	105,134	132,179
November	22,419	251	1,808	3,180	4,988	5,239	104,336	131,994
December	21,692	247	1,807	3,258	5,065	5,312	103,043	130,047
2019 January	F 21,391	238	1,873	3,116	4,989	5,227	99,378	125,996
February	F 23,051	229	1,939	2,974	4,913	5,142	98,835	127,029
March	F 23,158	221	2,005	2,832	4,837	5,058	97,102	125,318
April	F 21,343	214	2,102	2,879	4,981	5,196	108,852	135,390
May	F 22,193	208	2,199	2,926	5,126	5,333	115,888	143,414
June	F 21,878	201	2,296	2,974	5,270	5,471	117,710	145,060
July	F 21,977	211	2,352	3,046	5,398	5,609	R 110,933	R 138,519
August	F 22,500	221	2,407	3,107	5,514	5,736	R 110,560	R 138,795
September	F 23,073	231	2,463	3,168	5,631	5,862	R 110,952	R 139,887
October	F 24,213	F 214	F 2,055	F 3,500	F 5,554	F 5,769	R 119,045	R 149,026
November	F 24,567	F 206	F 2,082	F 3,443	F 5,525	F 5,731	R 123,033	R 153,332
December	F 24,438	F 200	F 2,144	F 3,385	F 5,529	F 5,729	128,497	158,664

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

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

^c The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

^d Excludes waste coal. Through 1998, data are for electric utilities only.

Beginning in 1999, data are for electric utilities and independent power producers.

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

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

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

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

Sources: See end of section.

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.

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, STIFS.

Residential and Commercial

1949–1976: DOI, BOM, *Minerals Yearbook*.

January–September 1977: DOI, BOM, Form 6-1400, “Monthly Coal Report, Retail Dealers—Upper Lake Docks.”

October 1977–1979: EIA, Form EIA-2, “Monthly Coal Report, Retail Dealers—Upper Lake Docks.”

2008 forward: EIA, Form EIA-3, “Quarterly 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

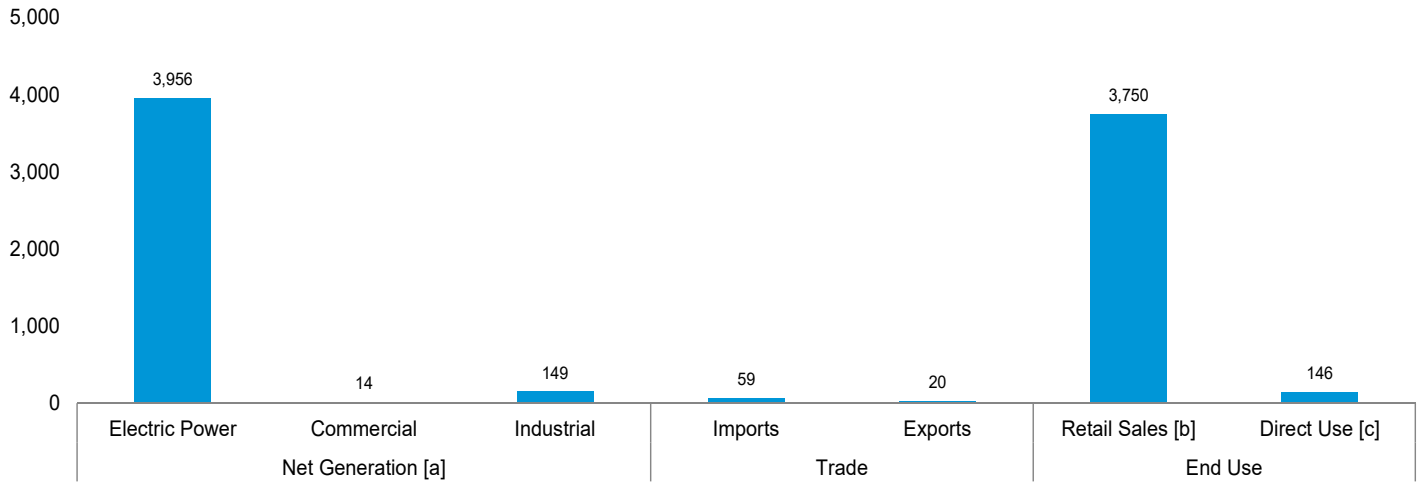
1949 forward: Table 7.5.

7. Electricity

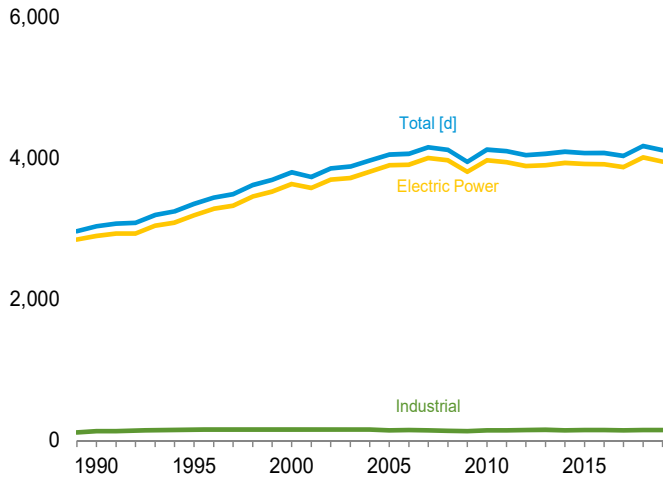
Figure 7.1 Electricity Overview

(Billion Kilowatthours)

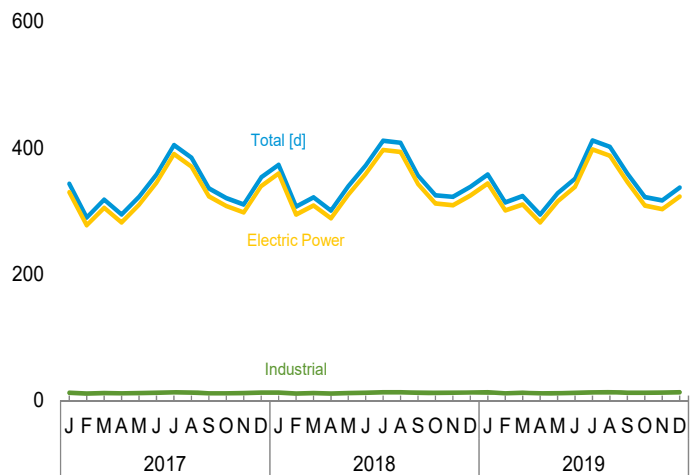
Overview, 2019



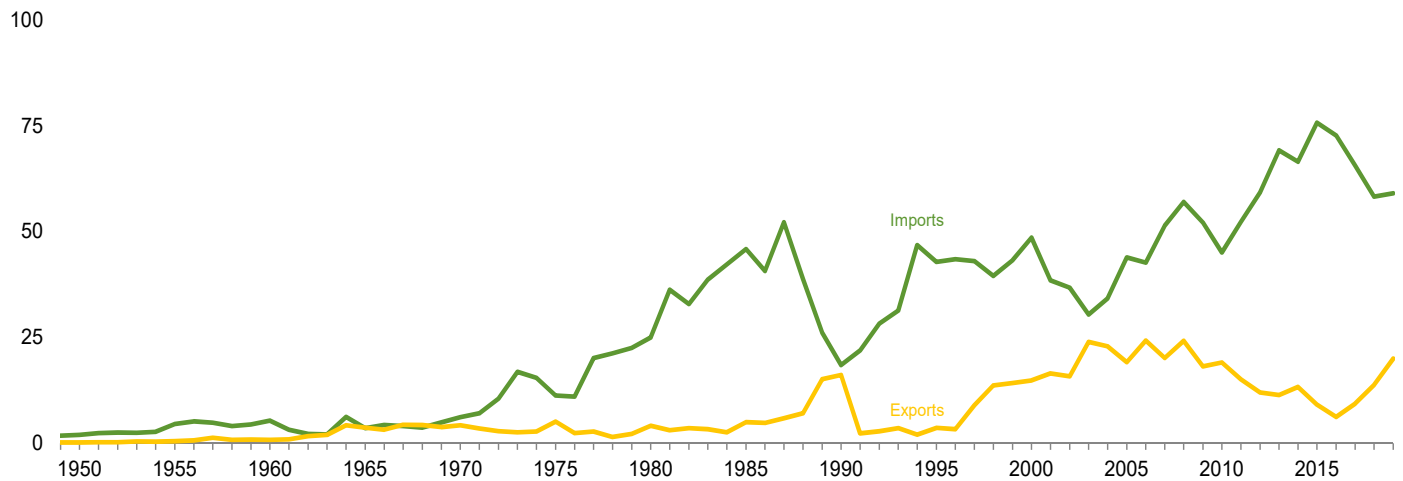
Net Generation [a] by Sector, 1989–2019



Net Generation [a] by Sector, Monthly



Trade, 1949–2019



[a] Data are for utility-scale facilities.

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

[c] See "Direct Use" in Glossary.

[d] Includes commercial sector.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#electricity>.
Source: Table 7.1.

Table 7.1 Electricity Overview
(Billion Kilowatthours)

	Net Generation ^a				Trade			T&D Losses ^f and Unaccounted for ^g	End Use		
	Electric Power Sector ^b	Com- mercial Sector ^c	Indus- trial Sector ^d	Total	Imports ^e	Exports ^e	Net Imports ^e		Retail Sales ^h	Direct Use ⁱ	Total
1950 Total	329	NA	5	334	2	(s)	2	44	291	NA	291
1955 Total	547	NA	3	550	5	(s)	4	58	497	NA	497
1960 Total	756	NA	4	759	5	1	5	76	688	NA	688
1965 Total	1,055	NA	3	1,058	4	4	(s)	104	954	NA	954
1970 Total	1,532	NA	3	1,535	6	4	2	145	1,392	NA	1,392
1975 Total	1,918	NA	3	1,921	11	5	6	180	1,747	NA	1,747
1980 Total	2,286	NA	3	2,290	25	4	21	216	2,094	NA	2,094
1985 Total	2,470	NA	3	2,473	46	5	41	190	2,324	NA	2,324
1990 Total	2,901	6	^d 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 Total	3,919	13	146	4,078	76	9	67	244	3,759	141	3,900
2016 Total	3,918	13	146	4,077	73	6	67	241	3,762	140	3,902
2017 January	330	1	12	343	7	(s)	7	19	318	E 12	330
February	278	1	11	290	6	1	5	8	276	E 11	287
March	305	1	12	318	6	1	5	20	291	E 12	303
April	282	1	11	294	6	1	4	15	273	E 11	284
May	310	1	12	323	5	1	4	23	292	E 11	303
June	345	1	12	358	6	1	5	23	329	E 12	341
July	390	1	13	404	6	1	5	29	368	E 13	380
August	370	1	13	384	7	1	6	17	360	E 13	373
September	323	1	11	336	5	1	5	7	322	E 11	333
October	308	1	12	320	4	1	3	13	300	E 11	311
November	298	1	12	310	4	1	3	19	283	E 11	295
December	340	1	13	353	5	1	4	33	312	E 13	325
Total	3,877	13	144	4,034	66	9	56	226	3,723	141	3,864
2018 January	359	1	13	373	5	1	4	20	345	E 12	357
February	295	1	11	307	5	1	4	7	293	E 11	304
March	309	1	12	322	6	1	4	17	297	E 12	309
April	288	1	11	301	5	2	3	14	279	E 11	290
May	326	1	12	339	5	1	4	28	303	E 12	315
June	359	1	12	372	5	1	4	26	338	E 12	350
July	397	1	13	411	5	1	4	28	375	E 13	388
August	393	1	13	408	6	1	5	19	381	E 13	394
September	343	1	12	356	4	1	3	10	337	E 12	349
October	312	1	12	325	4	1	3	7	309	E 12	321
November	309	1	12	322	4	1	3	22	291	E 12	303
December	325	1	13	338	4	1	3	17	312	E 12	325
Total	4,014	13	147	4,174	58	14	44	215	3,860	144	4,004
2019 January	344	1	13	358	5	1	3	25	324	E 13	336
February	301	1	11	314	5	1	3	14	291	E 11	302
March	310	1	12	324	5	3	2	17	297	E 12	309
April	282	1	12	295	4	2	2	17	269	E 11	280
May	315	1	12	328	5	2	3	28	292	E 12	R 304
June	338	1	12	351	5	2	4	27	316	E 12	328
July	397	1	13	412	6	2	4	32	370	E 13	383
August	387	1	13	R 402	6	2	4	26	367	E 13	380
September	346	1	12	R 360	5	2	4	R 16	R 335	E 12	347
October	309	1	12	322	4	1	R 2	R 10	R 302	E 12	R 314
November	303	1	13	317	R 5	1	R 4	26	281	E 12	R 294
December	323	1	13	337	5	1	4	23	305	E 13	318
Total	3,956	14	149	4,118	59	20	39	262	3,750	E 146	3,896

^a Electricity net generation at utility-scale facilities. Does not include distributed (small-scale) solar photovoltaic (PV) generation shown on Table 10.6. See Note 1, "Coverage of Electricity Statistics," at end of section.

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

^c Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.

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

^e Electricity transmitted across U.S. borders. Net imports equal imports minus exports.

^f Transmission and distribution losses (electricity losses that occur between the point of generation and delivery to the customer). See Note 1, "Electrical System Energy Losses," at end of Section 2.

^g Data collection frame differences and nonsampling error.

^h Electricity retail sales to ultimate customers by electric utilities and, beginning

in 1996, other energy service providers.

ⁱ Use of electricity that is 1) self-generated, 2) produced by either the same entity that consumes the power or an affiliate, and 3) used in direct support of a service or industrial process located within the same facility or group of facilities that house the generating equipment. Direct use is exclusive of station use.

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

Notes: • See Note 1, "Coverage of Electricity Statistics," and Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section.

• 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.

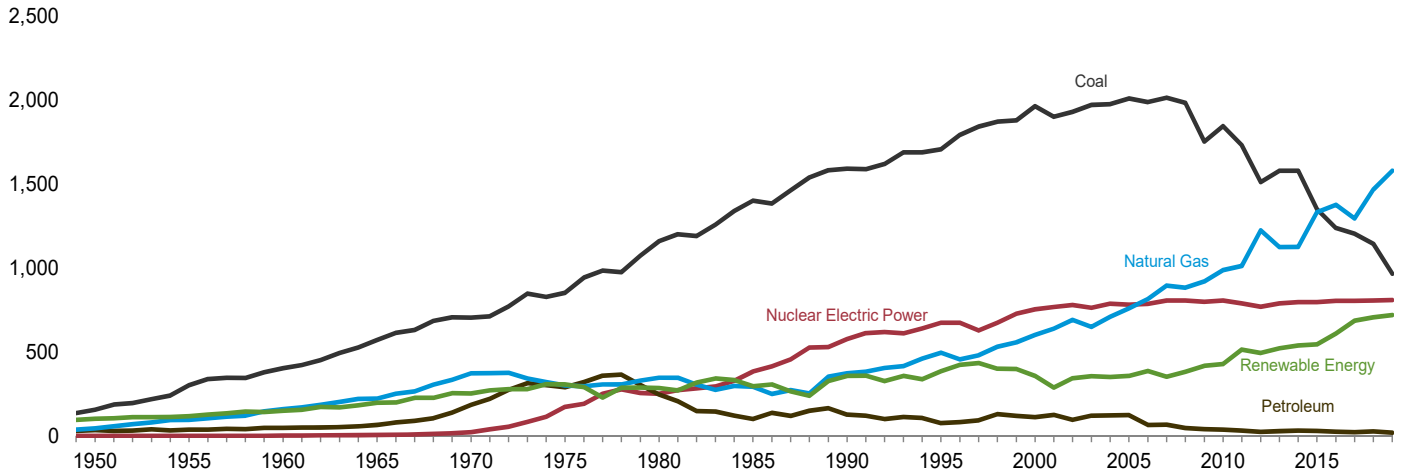
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

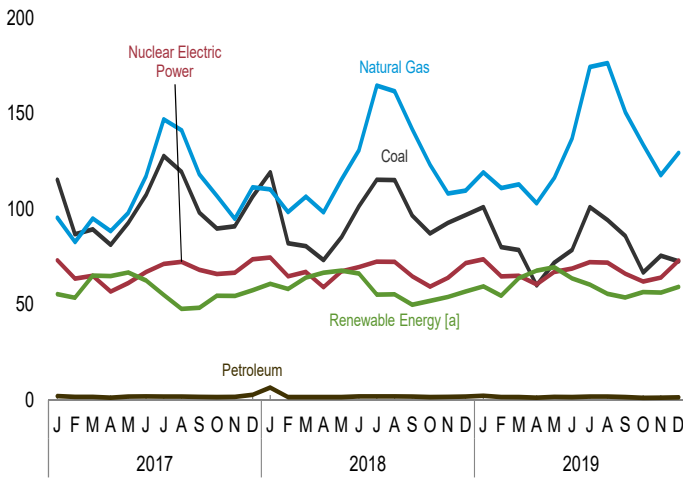
Figure 7.2 Electricity Net Generation

(Billion Kilowatthours)

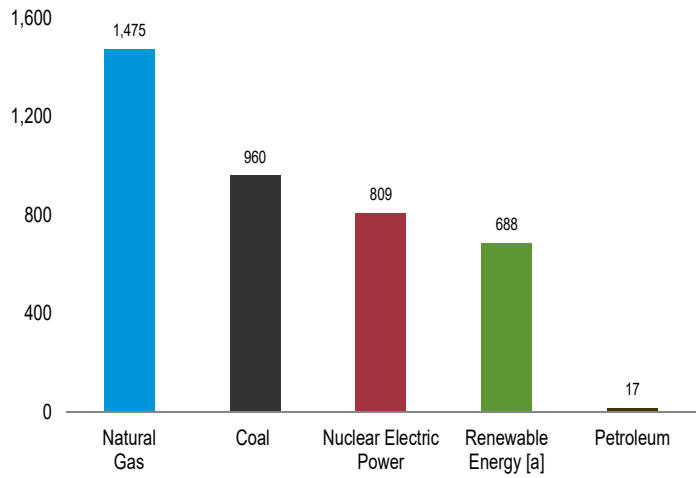
Total (All Sectors), Major Sources, 1949–2019



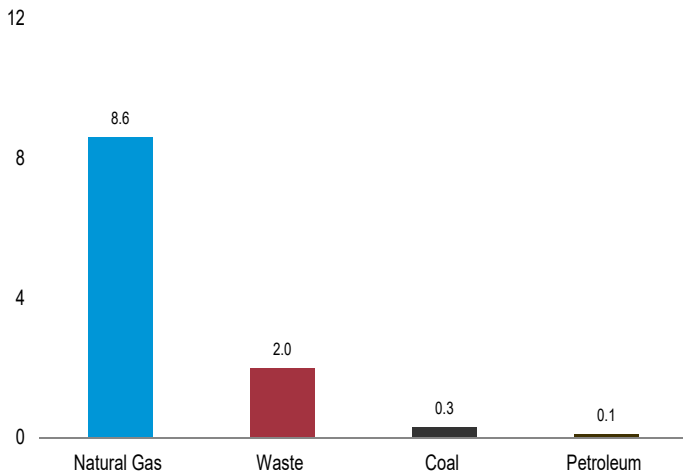
Total (All Sectors), Major Sources, Monthly



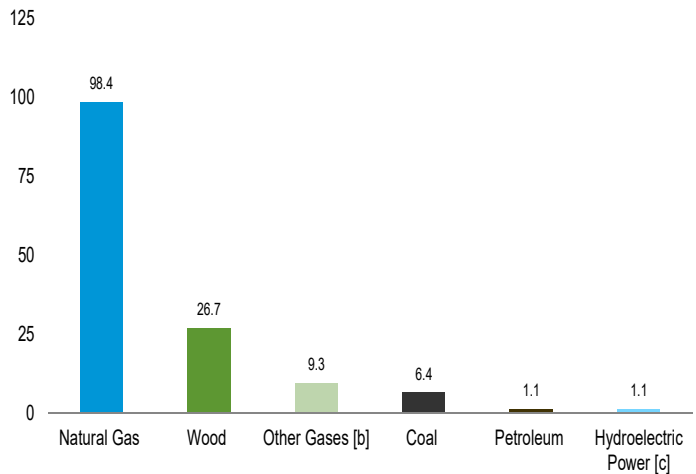
Electric Power Sector, Major Sources, 2019



Commercial Sector, Major Sources, 2019



Industrial Sector, Major Sources, 2019



[a] Conventional hydroelectric power, wood, waste, geothermal, solar, and wind.

[b] Blast furnace gas, and other manufactured and waste derived from fossil fuels.

[c] Conventional hydroelectric power.

Note: Data are for utility-scale facilities.

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

Sources: Tables 7.2a-7.2c.

Table 7.2a Electricity Net Generation: Total (All Sectors)
(Sum of Tables 7.2b and 7.2c; Million Kilowatthours)

	Fossil Fuels				Nuclear Electric Power	Hydro-electric Pumped Storage ^e	Renewable Energy						Total ⁱ
	Coal ^a	Petroleum ^b	Natural Gas ^c	Other Gases ^d			Conventional Hydro-electric Power ^f	Biomass		Geo-thermal	Solar ⁱ	Wind	
								Wood ^g	Waste ^h				
1950 Total	154,520	33,734	44,559	NA	0	{	100,885	390	NA	NA	NA	NA	334,088
1955 Total	301,363	37,138	95,285	NA	0	{	116,236	276	NA	NA	NA	NA	550,299
1960 Total	403,067	47,987	157,970	NA	518	{	149,440	140	NA	33	NA	NA	759,156
1965 Total	570,926	64,801	221,559	NA	3,657	{	196,984	269	NA	189	NA	NA	1,058,386
1970 Total	704,394	184,183	372,890	NA	21,804	{	250,957	136	220	525	NA	NA	1,535,111
1975 Total	852,786	289,095	299,778	NA	172,505	{	303,153	18	174	3,246	NA	NA	1,920,755
1980 Total	1,161,562	245,994	346,240	NA	251,116	{	279,182	275	158	5,073	NA	NA	2,289,600
1985 Total	1,402,128	100,202	291,946	NA	383,691	{	284,311	743	640	9,325	11	6	2,473,002
1990 Total ^k	1,594,011	126,460	372,765	10,383	576,862	-3,508	292,866	32,522	13,260	15,434	367	2,789	3,037,827
1995 Total	1,709,426	74,554	496,058	13,870	673,402	-2,725	310,833	36,521	20,405	13,378	497	3,164	3,353,487
2000 Total	1,966,265	111,221	601,038	13,955	753,893	-5,539	275,573	37,595	23,131	14,093	493	5,593	3,802,105
2001 Total	1,903,956	124,880	639,129	9,039	768,826	-8,823	216,961	35,200	14,548	13,741	543	6,737	3,736,644
2002 Total	1,933,130	94,567	691,006	11,463	780,064	-8,743	264,329	38,665	15,044	14,491	555	10,354	3,858,452
2003 Total	1,973,737	119,406	649,908	15,600	763,733	-8,535	275,806	37,529	15,812	14,424	534	11,187	3,883,185
2004 Total	1,978,301	121,145	710,100	15,252	788,528	-8,488	268,417	38,117	15,421	14,811	575	14,144	3,970,555
2005 Total	2,012,873	122,225	760,960	13,464	781,986	-6,558	270,321	38,856	15,420	14,692	550	17,811	4,055,423
2006 Total	1,990,511	64,166	816,441	14,177	787,219	-6,558	289,246	38,762	16,099	14,568	508	26,589	4,064,702
2007 Total	2,016,456	65,739	896,590	13,453	806,425	-6,896	247,510	39,014	16,525	14,637	612	34,450	4,156,745
2008 Total	1,985,801	46,243	882,981	11,707	806,208	-6,288	254,831	37,300	17,734	14,840	864	55,363	4,119,388
2009 Total	1,755,904	38,937	920,979	10,632	798,855	-4,627	273,445	36,050	18,443	15,009	891	73,886	3,950,331
2010 Total	1,847,290	37,061	987,697	11,313	806,968	-5,501	260,203	37,172	18,917	15,219	1,212	94,652	4,125,060
2011 Total	1,733,430	30,182	1,013,689	11,566	790,204	-6,421	319,355	37,449	19,222	15,316	1,818	120,177	4,100,141
2012 Total	1,514,043	23,190	1,225,894	11,898	763,331	-4,950	276,240	37,799	19,823	15,562	4,327	140,822	4,047,765
2013 Total	1,581,115	27,164	1,124,836	12,853	789,016	-4,681	268,565	40,028	20,830	15,775	9,036	167,840	4,065,964
2014 Total	1,581,710	30,232	1,126,609	12,022	797,166	-6,174	259,367	42,340	21,650	15,877	17,691	181,655	4,093,606
2015 Total	1,352,398	28,249	1,333,482	13,117	797,178	-5,091	249,080	41,929	21,703	15,918	24,893	190,719	4,077,601
2016 Total	1,239,149	24,205	1,378,307	12,807	805,694	-6,686	267,812	40,947	21,813	15,826	36,054	226,993	4,076,675
2017 January	115,333	2,065	95,473	1,046	73,121	-435	26,788	3,505	1,948	1,383	2,030	19,840	343,190
February	86,822	1,597	82,694	977	63,560	-508	23,643	3,186	1,694	1,239	2,555	21,198	289,653
March	89,365	1,649	95,022	1,060	65,093	-521	29,272	3,457	1,854	1,385	4,245	24,993	317,935
April	81,335	1,277	88,418	1,001	56,743	-439	29,390	3,149	1,755	1,337	4,696	24,613	294,325
May	92,777	1,818	98,067	1,055	61,313	-423	32,384	3,189	1,859	1,283	5,663	22,450	322,518
June	107,508	1,902	117,317	992	67,011	-568	30,222	3,439	1,795	1,214	6,175	19,809	357,916
July	127,697	1,806	146,994	1,048	71,314	-759	26,491	3,703	1,813	1,355	5,753	15,960	404,387
August	119,488	1,734	141,209	1,134	72,384	-638	21,851	3,753	1,808	1,345	5,434	13,621	384,342
September	98,203	1,637	118,112	1,060	68,098	-606	19,067	3,294	1,696	1,297	5,115	17,855	335,861
October	89,775	1,528	106,852	999	65,995	-463	18,284	3,306	1,717	1,229	4,821	25,306	320,376
November	90,986	1,658	94,883	1,001	66,618	-478	20,565	3,430	1,795	1,289	3,409	24,082	310,315
December	106,546	2,719	111,373	1,096	73,700	-656	22,377	3,738	1,877	1,571	3,389	24,575	353,452
Total	1,205,835	21,390	1,296,415	12,469	804,950	-6,495	300,333	41,152	21,610	15,927	53,286	254,303	4,034,271
2018 January	119,284	6,520	110,265	1,097	74,649	-547	25,064	3,698	1,817	1,341	3,319	25,597	373,212
February	82,050	1,558	98,492	1,092	64,790	-315	24,902	3,241	1,716	1,274	3,896	23,188	306,879
March	80,626	1,472	106,503	1,158	67,033	-490	25,861	3,554	1,822	1,367	5,056	26,462	321,530
April	73,346	1,538	98,354	1,099	59,133	-377	28,115	3,108	1,726	1,188	6,057	26,429	300,743
May	85,227	1,557	115,268	1,167	67,320	-390	30,444	3,358	1,732	1,383	6,849	23,952	338,936
June	101,503	1,901	130,808	1,091	69,688	-433	27,597	3,476	1,720	1,300	7,415	24,701	371,870
July	115,376	1,901	164,722	1,172	72,456	-644	25,100	3,753	1,750	1,370	6,755	16,445	411,265
August	115,129	1,927	161,650	1,301	72,282	-747	22,017	3,634	1,758	1,367	6,695	19,845	408,004
September	96,544	1,854	141,762	1,104	64,725	-603	19,166	3,286	1,590	1,328	5,961	18,518	356,239
October	87,264	1,577	123,116	1,016	59,397	-492	19,548	3,223	1,743	1,273	4,970	21,193	324,911
November	92,819	1,661	108,142	1,045	63,954	-343	21,913	3,271	1,724	1,331	3,743	22,014	322,349
December	96,793	1,761	109,647	1,120	71,657	-522	22,797	3,405	1,799	1,446	3,110	24,305	338,458
Total	1,145,962	25,226	1,468,727	13,463	807,084	-5,905	292,524	41,005	20,896	15,967	63,825	272,650	4,174,398
2019 January	101,008	2,198	R 119,307	1,115	73,701	-323	R 24,210	3,533	R 1,612	R 1,422	R 3,655	R 25,122	R 357,754
February	80,104	R 1,552	R 111,005	1,110	64,715	-389	R 21,826	R 3,165	R 1,454	R 1,308	R 3,827	R 23,000	R 313,680
March	78,516	R 1,462	R 112,945	1,251	65,080	-409	R 25,546	R 3,257	R 1,590	R 1,437	R 5,910	R 26,116	R 323,782
April	R 60,008	1,234	R 103,006	1,071	60,581	-103	R 25,483	R 3,027	1,464	R 1,239	R 6,835	R 29,711	R 294,577
May	71,883	1,690	R 116,236	1,101	67,124	-368	R 30,061	3,365	1,542	R 1,347	R 7,191	R 25,973	R 328,269
June	R 78,610	1,531	R 136,994	R 1,025	68,805	-385	R 26,469	R 3,339	1,554	R 1,362	R 8,006	R 22,947	R 351,363
July	100,981	1,775	R 174,341	1,290	72,199	-622	R 23,730	R 3,569	1,587	R 1,412	R 8,169	R 22,024	R 411,616
August	R 94,177	1,771	R 176,458	1,202	71,911	-579	R 21,041	3,717	1,602	R 1,409	R 7,888	R 19,869	R 401,665
September	85,918	1,580	R 150,753	1,139	R 66,064	-671	R 16,324	R 3,282	R 1,506	R 1,384	R 6,752	R 24,385	R 359,545
October	R 66,829	R 1,153	R 133,667	997	62,033	-373	R 16,292	R 3,081	R 1,565	R 1,277	R 6,131	R 28,136	R 321,875
November	R 75,560	R 1,250	R 117,762	1,196	64,125	-509	R 20,520	3,107	R 1,497	1,112	R 4,377	R 25,603	R 316,672
December	72,554	1,370	129,342	1,136	73,074	-529	22,206	3,407	1,588	1,301	3,494	27,183	337,253
Total	966,148	18,567	1,581,815	13,634	809,409	-5,261	273,707	39,851	18,561	16,011	72,234	300,071	4,118,051

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

^b Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

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

^d Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

^e Pumped storage facility production minus energy used for pumping.

^f Through 1989, hydroelectric pumped storage is included in "Conventional Hydroelectric Power."

^g Wood and wood-derived fuels.

^h Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

ⁱ Electricity net generation from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include distributed (small-scale) solar photovoltaic generation. See Table 10.6.

^j Includes batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^k Through 1988, all data except hydroelectric are for electric utilities only; hydroelectric data through 1988 include industrial plants as well as electric utilities. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

^l Revised. NA=Not available.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section, "Table 7.2b Sources" and "Table 7.2c Sources."

Table 7.2b Electricity Net Generation: Electric Power Sector
(Subset of Table 7.2a; Million Kilowatthours)

	Fossil Fuels				Nuclear Electric Power	Hydro-electric Pumped Storage ^e	Renewable Energy						Total ^j	
	Coal ^a	Petroleum ^b	Natural Gas ^c	Other Gases ^d			Conventional Hydro-electric Power ^f	Biomass		Geo-thermal	Solar ⁱ	Wind		
								Wood ^g	Waste ^h					
1950 Total	154,520	33,734	44,559	NA	0	{ }	95,938	390	NA	NA	NA	NA	NA	329,141
1955 Total	301,363	37,138	95,285	NA	0	{ }	112,975	276	NA	NA	NA	NA	NA	547,038
1960 Total	403,067	47,987	157,970	NA	518	{ }	145,833	140	NA	33	NA	NA	NA	755,549
1965 Total	570,926	64,801	221,559	NA	3,657	{ }	193,851	269	NA	189	NA	NA	NA	1,055,252
1970 Total	704,394	184,183	372,890	NA	21,804	{ }	247,714	136	220	525	NA	NA	NA	1,531,868
1975 Total	852,786	289,095	299,778	NA	172,505	{ }	300,047	18	174	3,246	NA	NA	NA	1,917,649
1980 Total	1,161,562	245,994	346,240	NA	251,116	{ }	276,021	275	158	5,073	NA	NA	NA	2,286,439
1985 Total	1,402,128	100,202	291,946	NA	383,691	{ }	281,149	743	640	9,325	11	6	6	2,469,841
1990 Total^k	1,572,109	118,864	309,486	621	576,862	-3,508	289,753	7,032	11,500	15,434	367	2,789	2,901,322	2,901,322
1995 Total	1,686,056	68,146	419,179	1,927	673,402	-2,725	305,410	7,597	17,986	13,378	497	3,164	3,194,230	3,194,230
2000 Total	1,943,111	105,192	517,978	2,028	753,893	-5,539	271,338	8,916	20,307	14,093	493	5,593	3,637,529	3,637,529
2001 Total	1,882,826	119,149	554,940	586	768,826	-8,823	213,749	8,294	12,944	13,741	543	6,737	3,580,053	3,580,053
2002 Total	1,910,613	89,733	607,683	1,970	780,064	-8,743	260,491	9,009	13,145	14,491	555	10,354	3,698,458	3,698,458
2003 Total	1,952,714	113,697	567,303	2,647	763,733	-8,535	271,512	9,528	13,808	14,424	534	11,187	3,721,159	3,721,159
2004 Total	1,957,188	114,678	627,172	3,568	788,528	-8,488	265,064	9,736	13,062	14,811	575	14,144	3,808,360	3,808,360
2005 Total	1,992,054	116,482	683,829	3,777	781,986	-6,558	267,040	10,570	13,031	14,692	550	17,811	3,902,192	3,902,192
2006 Total	1,969,737	59,708	734,417	4,254	787,219	-6,558	286,254	10,341	13,927	14,568	508	26,589	3,908,077	3,908,077
2007 Total	1,998,390	61,306	814,752	4,042	806,425	-6,896	245,843	10,711	14,294	14,637	612	34,450	4,005,343	4,005,343
2008 Total	1,968,838	42,881	802,372	3,200	806,208	-6,288	253,096	10,638	15,379	14,840	864	55,363	3,974,349	3,974,349
2009 Total	1,741,123	35,811	841,006	3,058	798,855	-4,627	271,506	10,738	15,954	15,009	891	73,886	3,809,837	3,809,837
2010 Total	1,827,738	34,679	901,389	2,967	806,968	-5,501	258,455	11,446	16,376	15,219	1,206	94,636	3,972,386	3,972,386
2011 Total	1,717,891	28,202	926,290	2,939	790,204	-6,421	317,531	10,733	15,989	15,316	1,227	120,121	3,948,186	3,948,186
2012 Total	1,500,557	20,072	1,132,791	2,984	769,331	-4,950	273,859	11,050	16,555	15,562	4,164	140,749	3,890,358	3,890,358
2013 Total	1,567,722	24,510	1,028,949	4,322	789,016	-4,681	265,058	12,302	16,918	15,775	8,724	167,742	3,937,715	3,937,715
2014 Total	1,568,774	28,043	1,033,172	3,358	797,166	-6,174	258,046	15,027	17,602	15,877	17,304	181,496	3,937,003	3,937,003
2015 Total	1,340,993	26,505	1,237,656	3,715	797,178	-5,091	247,636	14,563	17,823	15,918	24,456	190,547	3,919,294	3,919,294
2016 Total	1,229,663	22,710	1,279,380	3,912	805,694	-6,686	266,326	13,420	18,183	15,826	35,497	226,790	3,918,078	3,918,078
2017 January	114,572	1,947	86,885	349	73,121	-435	26,635	1,189	1,646	1,383	2,011	19,822	329,751	329,751
February	86,158	1,491	75,045	308	63,560	-508	23,513	1,061	1,423	1,239	2,526	21,179	277,548	277,548
March	88,688	1,519	86,855	358	65,093	-521	29,126	1,216	1,544	1,385	4,200	24,968	304,996	304,996
April	80,743	1,179	80,578	300	56,743	-439	29,221	975	1,465	1,337	4,646	24,591	281,892	281,892
May	92,141	1,720	90,021	350	61,313	-423	32,205	977	1,554	1,283	5,605	22,429	309,762	309,762
June	106,825	1,793	108,833	324	67,011	-568	30,083	1,093	1,515	1,214	6,109	19,791	344,618	344,618
July	127,019	1,687	137,841	369	71,314	-759	26,363	1,239	1,513	1,355	5,690	15,948	390,204	390,204
August	118,810	1,610	132,376	360	72,384	-638	21,741	1,271	1,508	1,345	5,374	13,611	370,387	370,387
September	97,560	1,543	110,219	346	68,098	-606	18,978	1,088	1,422	1,297	5,059	17,840	323,400	323,400
October	89,114	1,427	98,826	326	65,995	-463	18,171	1,083	1,436	1,229	4,771	25,283	307,760	307,760
November	90,347	1,543	86,819	352	66,618	-478	20,421	1,163	1,496	1,289	3,372	24,059	297,585	297,585
December	105,860	2,582	102,457	383	73,700	-656	22,255	1,286	1,564	1,571	3,358	24,552	339,548	339,548
Total	1,197,838	20,039	1,196,754	4,126	804,950	-6,495	298,711	13,641	18,084	15,927	52,723	254,074	3,877,452	3,877,452
2018 January	118,557	6,348	101,453	344	74,649	-547	24,962	1,320	1,532	1,341	3,288	25,568	359,431	359,431
February	81,399	1,451	90,688	337	64,790	-315	24,794	1,137	1,455	1,274	3,863	23,164	294,618	294,618
March	79,983	1,368	98,582	348	67,033	-490	25,752	1,200	1,534	1,367	5,009	26,433	308,730	308,730
April	72,787	1,446	90,603	354	59,133	-377	27,990	948	1,450	1,188	6,002	26,404	288,497	288,497
May	84,634	1,453	107,003	389	67,320	-390	30,319	1,038	1,456	1,383	6,788	23,930	325,893	325,893
June	100,894	1,795	122,158	316	69,688	-433	27,502	1,168	1,460	1,300	7,347	24,681	358,508	358,508
July	114,749	1,784	155,240	359	72,456	-644	25,003	1,271	1,480	1,370	6,691	16,430	396,829	396,829
August	114,516	1,829	152,128	392	72,282	-747	21,908	1,217	1,483	1,367	6,634	19,829	393,474	393,474
September	95,962	1,762	132,974	332	64,725	-603	19,060	1,044	1,341	1,328	5,911	18,501	342,898	342,898
October	86,736	1,473	114,513	254	59,397	-492	19,426	989	1,465	1,273	4,926	21,168	311,728	311,728
November	92,258	1,565	99,401	311	63,954	-343	21,781	1,030	1,453	1,331	3,711	21,990	309,043	309,043
December	96,173	1,656	100,742	349	71,657	-522	22,651	1,022	1,514	1,413	3,083	24,280	324,639	324,639
Total	1,138,648	23,928	1,365,485	4,086	807,084	-5,905	291,148	13,385	17,623	15,934	63,253	272,379	4,014,287	4,014,287
2019 January	100,368	2,088	R 109,910	381	73,701	-323	R 24,088	1						

Table 7.2c Electricity Net Generation: Commercial and Industrial Sectors

(Subset of Table 7.2a; Million Kilowatthours)

	Commercial Sector ^a					Industrial Sector ^b							
	Coal ^c	Petroleum ^d	Natural Gas ^e	Biomass	Total ^g	Coal ^c	Petroleum ^d	Natural Gas ^e	Other Gases ^h	Hydroelectric Power ⁱ	Biomass		Total ^k
				Waste ^f							Wood ^j	Waste ^f	
1950 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,946	NA	NA	4,946
1955 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,261	NA	NA	3,261
1960 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,607	NA	NA	3,607
1965 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,134	NA	NA	3,134
1970 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,244	NA	NA	3,244
1975 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,106	NA	NA	3,106
1980 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,161	NA	NA	3,161
1985 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,161	NA	NA	3,161
1990 Total	796	589	3,272	812	5,837	21,107	7,008	60,007	9,641	2,975	25,379	949	130,830
1995 Total	998	379	5,162	1,519	8,232	22,372	6,030	71,717	11,943	5,304	28,868	900	151,025
2000 Total	1,097	432	4,262	1,985	7,903	22,056	5,597	78,798	11,927	4,135	28,652	839	156,673
2001 Total	995	438	4,434	1,007	7,416	20,135	5,293	79,755	8,454	3,145	26,888	596	149,175
2002 Total	992	431	4,310	1,053	7,415	21,525	4,403	79,013	9,493	3,825	29,643	846	152,580
2003 Total	1,206	423	3,899	1,289	7,496	19,817	5,285	78,705	12,953	4,222	27,988	715	154,530
2004 Total	1,340	499	3,969	1,562	8,270	19,773	5,967	78,959	11,684	3,248	28,367	797	153,925
2005 Total	1,353	375	4,249	1,657	8,492	19,466	5,368	72,882	9,687	3,195	28,271	733	144,739
2006 Total	1,310	235	4,355	1,599	8,371	19,464	4,223	77,669	9,923	2,899	28,400	572	148,254
2007 Total	1,371	189	4,257	1,599	8,273	16,694	4,243	77,580	9,411	1,590	28,287	631	143,128
2008 Total	1,261	142	4,188	1,534	7,926	15,703	3,219	76,421	8,507	1,676	26,641	821	137,113
2009 Total	1,096	163	4,225	1,748	8,165	13,686	2,963	75,748	7,574	1,868	25,292	740	132,329
2010 Total	1,111	124	4,725	1,672	8,592	18,441	2,258	81,583	8,343	1,668	25,706	869	144,082
2011 Total	1,049	89	5,487	2,315	10,080	14,490	1,891	81,911	8,624	1,799	26,691	917	141,875
2012 Total	883	196	6,603	2,319	11,301	12,603	2,922	86,500	8,913	2,353	26,725	948	146,107
2013 Total	839	124	7,154	2,567	12,234	12,554	2,531	88,733	8,531	3,463	27,691	1,346	150,015
2014 Total	595	255	7,227	2,681	12,520	12,341	1,934	86,209	8,664	1,282	27,239	1,367	144,083
2015 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 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	14	681	213	1,098	720	104	7,907	696	126	2,308	89	12,341
February	32	8	597	188	963	632	98	7,052	668	115	2,118	83	11,142
March	33	10	652	214	1,071	644	120	7,515	702	131	2,239	95	11,868
April	20	5	574	202	976	573	93	7,266	701	146	2,169	88	11,457
May	19	7	619	225	1,069	616	91	7,428	704	155	2,205	80	11,686
June	21	6	718	207	1,135	662	104	7,765	668	124	2,340	73	12,164
July	25	7	786	222	1,277	653	112	8,367	679	115	2,457	79	12,956
August	23	9	766	218	1,202	655	116	8,067	774	93	2,475	82	12,754
September	27	7	701	202	1,107	615	86	7,191	715	75	2,204	72	11,354
October	24	6	661	197	1,079	637	94	7,366	673	84	2,217	85	11,537
November	29	8	611	207	1,020	610	108	7,453	649	121	2,261	91	11,710
December	35	24	674	218	1,114	651	113	8,242	713	99	2,446	95	12,790
Total	329	112	8,042	2,515	13,060	7,669	1,239	91,619	8,343	1,383	27,440	1,012	143,758
2018 January	40	42	671	203	1,114	687	130	8,141	752	83	2,369	81	12,667
February	32	8	626	184	995	619	99	7,178	755	89	2,097	77	11,265
March	27	9	647	204	1,058	616	95	7,274	811	87	2,349	84	11,742
April	24	9	585	199	989	535	83	7,166	744	102	2,158	77	11,258
May	21	7	656	203	1,076	572	97	7,608	778	101	2,316	73	11,967
June	20	7	737	202	1,163	590	98	7,913	775	74	2,299	57	12,199
July	21	11	875	205	1,298	606	106	8,606	813	78	2,473	65	13,138
August	23	9	892	208	1,318	590	89	8,630	909	91	2,406	66	13,213
September	24	8	771	193	1,156	558	85	8,017	773	90	2,234	56	12,185
October	20	7	668	204	1,055	507	97	7,935	762	108	2,230	74	12,127
November	25	13	622	193	993	536	83	8,120	734	116	2,238	78	12,313
December	24	10	669	205	1,095	596	95	8,236	771	130	2,375	80	12,724
Total	303	140	8,419	2,404	13,312	7,011	1,157	94,823	9,377	1,149	27,544	868	146,798
2019 January	33	14	719	188	1,167	607	96	8,677	734	102	2,292	73	13,023
February	28	9	670	163	1,064	539	82	7,492	734	87	2,086	69	11,443
March	32	9	702	181	1,157	525	81	7,903	870	101	2,249	80	12,204
April	21	8	644	157	1,046	497	88	7,650	733	94	2,151	72	11,645
May	19	8	682	145	1,084	500	86	7,791	764	102	2,193	63	11,874
June	14	7	690	165	1,106	504	89	7,923	764	97	2,255	65	11,985
July	NM	10	813	164	1,247	566	149	8,554	882	94	2,354	61	13,068
August	18	13	841	168	1,268	555	93	8,651	798	87	2,406	65	13,082
September	21	11	738	162	1,141	525	95	8,206	781	81	2,154	56	12,313
October	20	10	701	165	1,099	508	74	8,161	770	83	2,118	74	12,176
November	21	9	710	161	1,099	529	83	8,556	825	91	2,189	74	12,727
December	26	10	738	170	1,145	513	84	8,870	762	102	2,302	79	13,105
Total	275	117	8,647	1,989	13,624	6,367	1,102	98,434	9,328	1,120	26,749	832	148,645

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

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

^c Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

^d Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

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

^f Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^g Includes a small amount of conventional hydroelectric power, geothermal, other gases, solar photovoltaic (PV) energy, wind, wood, and other, which are not separately displayed. Does not include distributed (small-scale) solar photovoltaic generation, shown on Table 10.6.

^h Blast furnace gas, and other manufactured and waste gases derived from

fossil fuels. Through 2010, also includes propane gas.

ⁱ Conventional hydroelectric power.

^j Wood and wood-derived fuels.

^k Includes photovoltaic (PV) energy, wind, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels). Does not include distributed (small-scale) solar photovoltaic generation shown on Table 10.6.

R=Revised. NA=Not available. NM=Not meaningful.

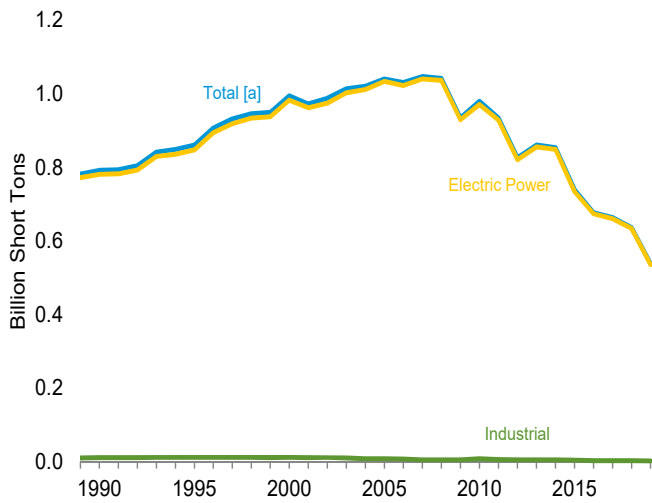
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is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

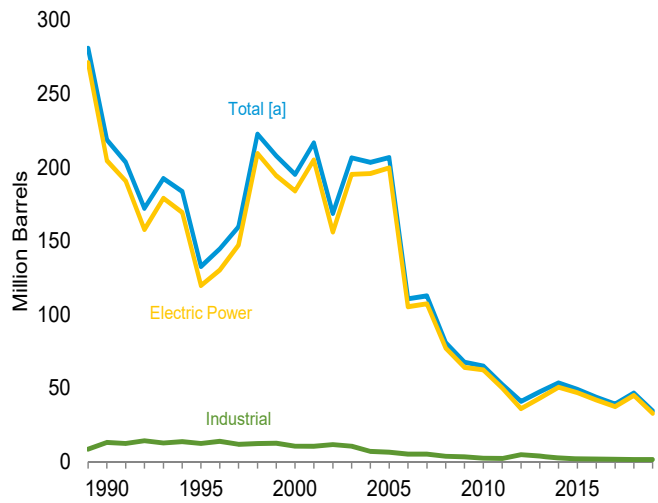
Sources: See end of section.

Figure 7.3 Consumption of Selected Combustible Fuels for Electricity Generation

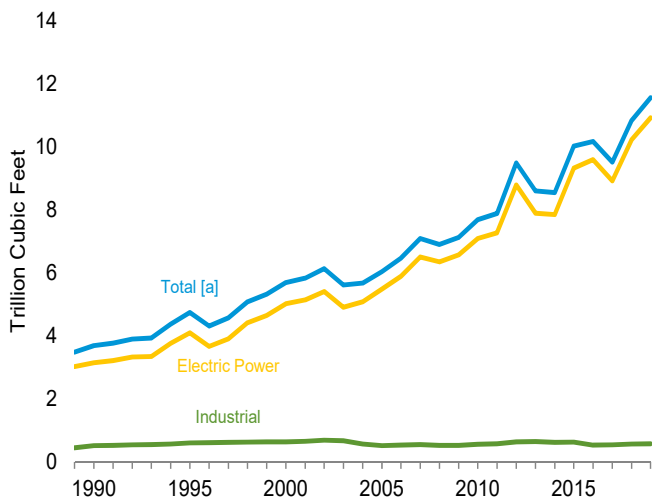
Coal by Sector, 1989–2019



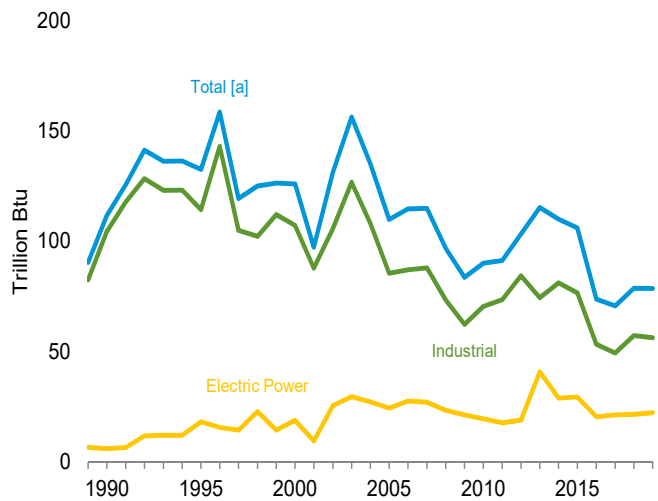
Petroleum by Sector, 1989–2019



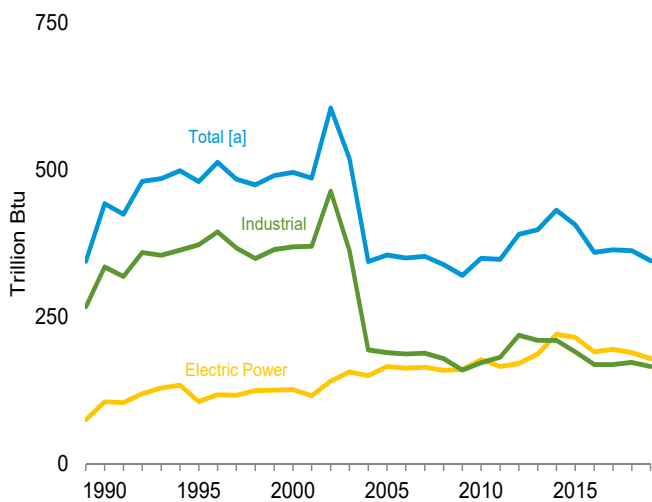
Natural Gas by Sector, 1989–2019



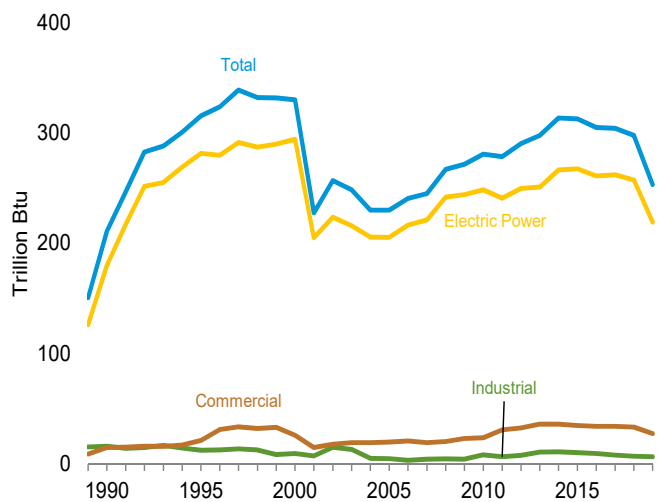
Other Gases [b] by Sector, 1989–2019



Wood by Sector, 1989–2019



Waste by Sector, 1989–2019



[a] Includes commercial sector.

[b] Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

Note: Data are for utility-scale facilities.

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

Sources: Tables 7.3a-7.3c.

Table 7.3a Consumption of Combustible Fuels for Electricity Generation: Total (All Sectors) (Sum of Tables 7.3b and 7.3c)

	Coal ^a Thousand Short Tons	Petroleum					Natural Gas ^f Billion Cubic Feet	Other Gases ^g	Biomass		Other ⁱ
		Distillate Fuel Oil ^b Thousand Barrels	Residual Fuel Oil ^c Thousand Barrels	Other Liquids ^d Thousand Barrels	Petroleum Coke ^e Thousand Short Tons	Total ^e Thousand Barrels			Wood ^h	Waste ⁱ	
1950 Total	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1955 Total	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1960 Total	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1965 Total	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1970 Total	320,182	24,123	311,381	NA	636	338,686	3,932	NA	1	2	NA
1975 Total	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1980 Total	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1985 Total	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1990 Total ^k	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 Total	739,594	12,438	14,124	2,363	4,044	49,145	10,017	106	407	313	204
2016 Total	677,371	9,662	11,195	1,548	4,253	43,671	10,170	74	360	305	199
2017 January	63,460	940	846	151	368	3,775	679	6	31	27	16
February	47,985	714	724	104	277	2,928	587	6	28	24	14
March	48,840	814	738	105	265	2,984	690	6	31	26	16
April	44,279	658	718	103	168	2,317	647	6	27	25	15
May	50,898	808	811	94	329	3,357	720	6	28	26	16
June	58,852	707	908	148	350	3,512	873	6	30	26	16
July	69,769	689	811	93	344	3,312	1,105	6	33	26	17
August	65,761	655	930	124	300	3,211	1,043	6	33	26	17
September	54,713	692	820	110	276	3,004	878	6	29	24	15
October	50,015	731	844	100	228	2,816	792	6	29	24	15
November	50,882	751	711	129	293	3,054	686	6	30	25	15
December	58,457	1,548	1,581	285	292	4,875	806	6	33	26	16
Total	663,911	9,707	10,442	1,547	3,490	39,144	9,508	71	364	304	190
2018 January	64,845	5,238	3,644	585	377	11,353	806	6	33	26	16
February	45,793	676	658	117	305	2,976	706	6	29	24	15
March	44,474	735	650	112	255	2,770	772	7	32	26	16
April	40,515	794	707	100	271	2,956	723	7	27	25	15
May	47,293	958	786	118	212	2,923	868	7	30	25	16
June	56,078	916	873	106	338	3,583	974	6	31	25	16
July	63,818	754	874	125	367	3,590	1,245	7	34	25	16
August	63,737	803	931	136	352	3,631	1,209	8	32	25	17
September	53,914	752	976	136	325	3,488	1,052	6	29	23	15
October	48,422	798	874	142	229	2,956	909	6	28	24	16
November	51,702	920	754	125	271	3,154	784	6	29	24	16
December	55,624	879	679	182	321	3,347	782	6	30	25	16
Total	636,213	14,223	12,407	1,985	3,623	46,727	10,831	79	362	298	190
2019 January	55,831	1,124	1,025	274	329	4,066	860	6	31	R 22	17
February	45,056	668	591	152	283	R 2,828	794	6	27	19	14
March	44,038	697	614	138	266	2,780	816	7	28	22	16
April	33,432	618	618	161	182	2,308	755	6	26	20	15
May	40,061	771	744	138	298	3,140	R 852	6	30	21	16
June	44,274	775	808	148	218	2,822	1,013	6	28	21	16
July	R 56,062	767	900	152	314	3,390	1,295	7	31	22	17
August	52,512	R 763	967	163	278	3,281	1,309	7	33	22	17
September	R 47,418	702	800	159	259	R 2,957	1,115	7	29	21	16
October	R 37,435	R 728	795	R 174	82	R 2,107	R 981	6	26	21	16
November	R 41,918	R 760	714	133	130	R 2,255	R 842	7	26	21	R 16
December	40,429	754	774	162	167	2,526	919	6	30	22	16
Total	538,465	9,128	9,349	1,953	2,806	34,460	11,551	79	346	253	192

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

^b Fuel oil nos. 1, 2, and 4. For 1949–1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980–2000, electric utility data also include small amounts of kerosene and jet fuel.

^c Fuel oil nos. 5 and 6. For 1949–1979, data are for steam plant use of petroleum. For 1980–2000, electric utility data also include a small amount of fuel oil no. 4.

^d Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

^e Petroleum coke is converted from short tons to barrels by multiplying by 5.

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

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

^h Wood and wood-derived fuels.

ⁱ Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and

tire-derived fuels).

^j Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

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

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)

	Petroleum					Natural Gas ⁱ	Other Gases ^g	Biomass		Other ^j	
	Coal ^a	Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e			Total ^e	Wood ^h		Waste ⁱ
1950 Total	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1955 Total	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1960 Total	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1965 Total	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1970 Total	320,182	24,123	311,381	NA	636	338,686	3,932	NA	1	2	NA
1975 Total	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1980 Total	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1985 Total	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1990 Total ^k	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 Total	735,433	12,056	13,893	2,086	3,789	46,978	9,322	29	215	268	127
2016 Total	674,239	9,421	11,056	1,284	4,018	41,853	9,590	20	191	261	126
2017 January	63,179	907	832	131	352	3,629	629	2	17	24	11
February	47,731	693	714	81	262	2,797	542	2	16	21	9
March	48,581	789	726	89	245	2,830	642	2	18	22	10
April	44,059	637	707	90	152	2,192	600	2	14	21	9
May	50,667	784	802	77	313	3,227	673	2	14	22	10
June	58,625	686	899	131	330	3,366	823	2	16	22	10
July	69,531	663	804	76	322	3,151	1,051	2	17	22	11
August	65,528	627	922	107	278	3,047	991	2	18	22	11
September	54,487	665	812	94	260	2,870	831	2	15	21	10
October	49,781	709	833	81	210	2,675	744	2	15	21	10
November	50,652	729	691	112	274	2,904	638	2	16	21	10
December	58,212	1,509	1,557	265	275	4,707	754	2	18	22	11
Total	661,033	9,398	10,299	1,332	3,273	37,394	8,917	21	195	262	121
2018 January	64,579	5,148	3,615	566	362	11,142	753	2	19	22	11
February	45,555	654	644	90	294	2,855	660	2	16	21	10
March	44,241	712	637	95	241	2,649	725	2	17	22	11
April	40,315	772	697	83	256	2,834	676	2	14	21	10
May	47,076	928	779	96	197	2,790	819	2	15	22	10
June	55,862	889	864	89	320	3,439	922	2	17	22	11
July	63,599	715	868	87	350	3,423	1,189	2	18	22	11
August	63,526	767	922	122	338	3,500	1,152	2	17	22	11
September	53,708	716	969	127	310	3,359	999	2	15	19	10
October	48,243	772	862	125	212	2,820	858	1	14	21	10
November	51,493	884	739	109	258	3,023	733	1	14	21	10
December	55,397	840	664	168	305	3,198	729	2	15	22	11
Total	633,593	13,795	12,259	1,757	3,444	45,030	10,214	21	189	257	125
2019 January	55,603	1,088	1,011	257	315	3,929	805	2	17	18	11
February	R 44,850	646	581	129	272	2,717	R 745	2	14	17	10
March	43,857	671	604	120	253	2,660	765	2	14	19	11
April	33,261	593	610	133	167	2,171	706	2	13	18	10
May	39,874	743	737	117	283	3,011	R 801	2	16	19	11
June	44,093	746	801	129	204	2,696	961	2	15	R 18	11
July	55,851	731	896	135	289	3,205	R 1,239	2	16	19	11
August	52,305	727	960	144	263	3,144	1,253	2	18	19	12
September	R 47,223	R 663	794	140	243	R 2,809	1,063	2	15	18	11
October	R 37,252	694	789	157	68	R 1,978	929	1	13	18	11
November	R 41,724	R 730	707	110	116	R 2,124	R 788	2	12	18	11
December	40,237	727	765	142	152	2,396	863	2	15	19	11
Total	536,130	8,759	9,254	1,713	2,623	32,841	10,918	22	179	219	132

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal symfuel.

^b Fuel oil nos. 1, 2, and 4. For 1949–1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980–2000, electric utility data also include small amounts of kerosene and jet fuel.

^c Fuel oil nos. 5 and 6. For 1949–1979, data are for steam plant use of petroleum. For 1980–2000, electric utility data also include a small amount of fuel oil no. 4.

^d Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

^e Petroleum coke is converted from short tons to barrels by multiplying by 5.

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

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

^h Wood and wood-derived fuels.

ⁱ Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^j Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^k Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities 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 ^a				Industrial Sector ^b						
	Coal ^c	Petroleum ^d	Natural Gas ^e	Biomass	Coal ^c	Petroleum ^d	Natural Gas ^e	Other Gases ^g	Biomass		Other ⁱ
				Waste ^f					Wood ^h	Waste ^f	
Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu				
1990 Total	417	953	28	15	10,740	13,103	517	104	335	16	36
1995 Total	569	649	43	21	12,171	12,265	601	114	373	13	40
2000 Total	514	823	37	26	11,706	10,459	640	107	369	10	45
2001 Total	532	1,023	36	15	10,636	10,530	654	88	370	7	44
2002 Total	477	834	33	18	11,855	11,608	685	106	464	15	43
2003 Total	582	894	38	19	10,440	10,424	668	127	362	13	46
2004 Total	377	766	33	19	7,687	6,919	566	108	194	5	41
2005 Total	377	585	34	20	7,504	6,440	518	85	189	5	46
2006 Total	347	333	35	21	7,408	5,066	536	87	187	3	45
2007 Total	361	258	34	19	5,089	5,041	554	88	188	4	41
2008 Total	369	166	33	20	5,075	3,617	520	73	179	5	39
2009 Total	317	190	34	23	4,674	3,328	520	62	160	4	42
2010 Total	314	172	39	24	8,125	2,422	555	70	172	8	55
2011 Total	347	137	47	31	5,735	2,145	572	74	182	7	57
2012 Total	307	279	63	33	4,665	4,761	633	84	219	8	54
2013 Total	513	335	67	36	4,670	3,892	642	74	210	11	50
2014 Total	202	462	72	36	4,629	2,594	623	81	210	11	54
2015 Total	163	260	70	35	3,999	1,907	625	77	191	10	58
2016 Total	111	116	46	34	3,021	1,701	534	53	169	10	53
2017 January	11	22	4	3	270	124	47	4	14	1	4
February	9	14	4	3	245	117	42	4	13	1	4
March	9	16	4	3	250	139	45	4	14	1	4
April	6	10	4	3	214	115	43	4	13	1	4
May	6	16	4	3	224	114	44	4	14	1	4
June	6	14	4	3	221	132	46	4	14	1	4
July	7	16	5	3	230	145	49	4	15	1	5
August	7	20	5	3	227	143	47	5	15	1	5
September	8	15	4	3	218	119	42	4	13	1	4
October	7	14	4	3	227	127	43	4	14	1	4
November	8	16	4	3	222	135	44	4	14	1	4
December	9	33	4	3	236	134	49	4	15	1	4
Total	95	204	50	34	2,783	1,545	541	49	169	8	49
2018 January	11	68	4	3	255	144	48	5	15	1	4
February	9	16	4	3	230	105	42	5	13	1	3
March	8	13	4	3	224	108	43	5	15	1	4
April	7	15	4	3	193	107	43	5	13	1	4
May	6	18	4	3	211	115	46	5	15	1	4
June	6	18	5	3	210	126	47	5	15	(s)	4
July	6	27	6	3	212	140	51	5	16	1	4
August	7	24	6	3	204	108	52	6	15	1	4
September	7	19	5	3	199	110	48	5	14	(s)	3
October	6	17	4	3	173	120	47	5	14	1	4
November	7	24	4	3	202	108	48	4	14	1	4
December	7	21	4	3	221	128	49	5	15	1	4
Total	87	279	53	33	2,534	1,418	565	57	173	7	46
2019 January	10	25	5	3	218	112	51	4	14	1	4
February	8	15	4	2	198	97	44	4	13	1	3
March	9	17	4	2	172	103	47	5	14	1	3
April	6	16	4	2	165	121	45	4	13	1	3
May	6	18	4	2	R 181	112	47	5	14	(s)	3
June	4	18	4	2	176	109	47	4	14	(s)	3
July	6	25	5	2	205	160	50	5	15	(s)	3
August	5	22	5	2	202	115	51	5	15	1	4
September	6	27	5	2	189	120	48	5	13	(s)	4
October	6	24	4	2	R 177	R 104	48	5	13	1	3
November	6	R 24	4	2	R 188	107	50	5	14	1	3
December	7	22	5	2	184	108	52	5	14	1	3
Total	78	252	54	27	2,257	1,368	579	56	166	7	40

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

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

^c Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

^d Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

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

^f Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

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

^h Wood and wood-derived fuels.

ⁱ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous

technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

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

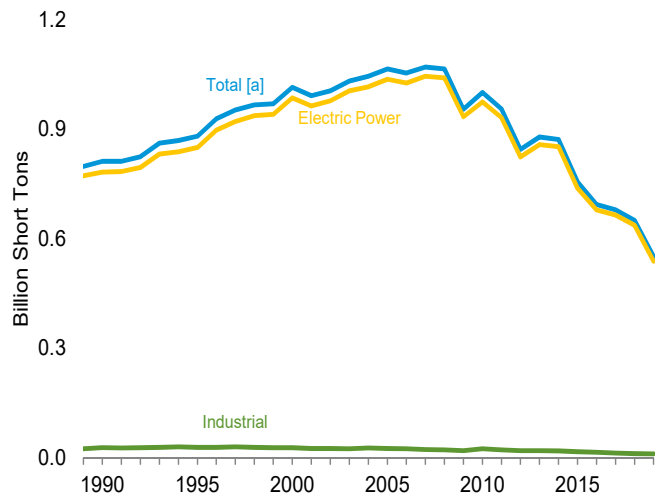
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Data are for fuels consumed to produce electricity. Through 1988, data are not available. •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

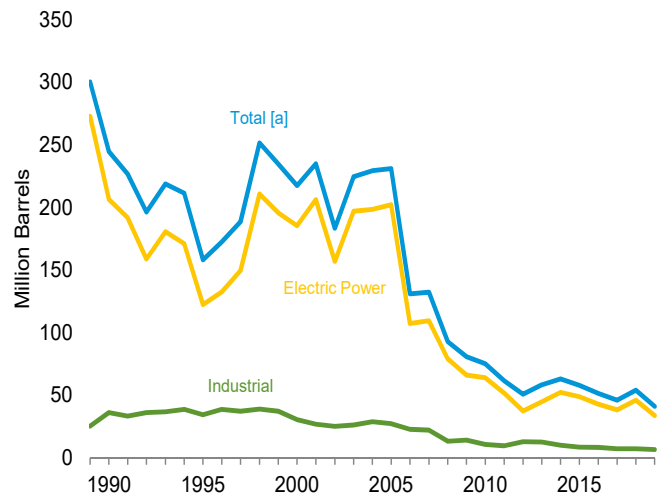
Sources: • **1989–1997:** U.S. Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • **1998–2000:** EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • **2001–2003:** EIA, Form EIA-906, "Power Plant Report." • **2004–2007:** EIA, Form EIA-906,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

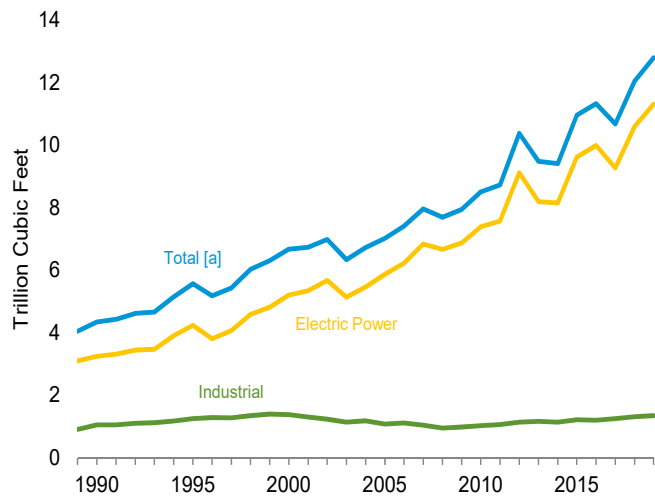
Coal by Sector, 1989–2019



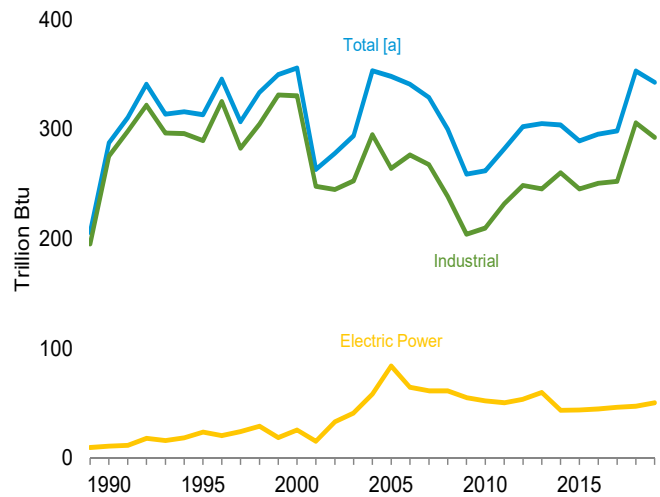
Petroleum by Sector, 1989–2019



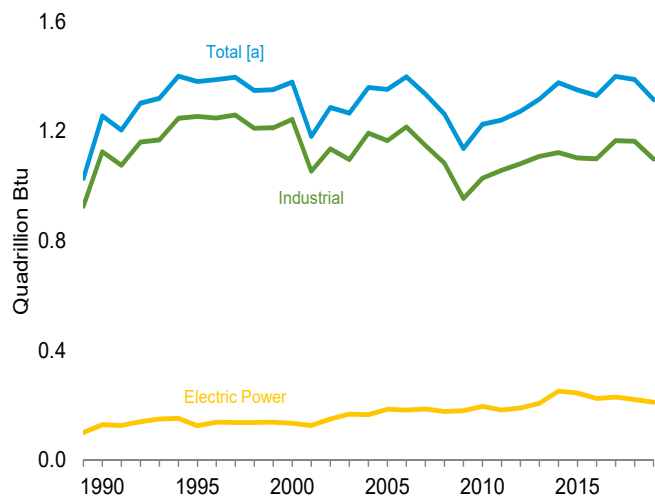
Natural Gas by Sector, 1989–2019



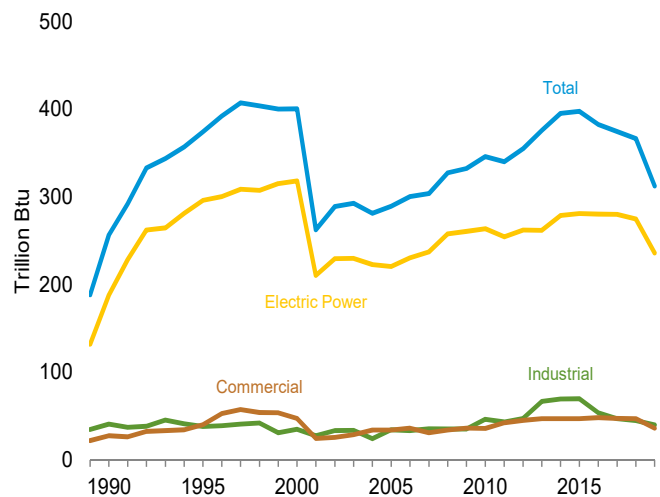
Other Gases [b] by Sector, 1989–2019



Wood by Sector, 1989–2019



Waste by Sector, 1989–2019



[a] Includes commercial sector.

[b] Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

Note: Data are for utility-scale facilities.

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

Sources: Tables 7.4a-7.4c.

Table 7.4a Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output: Total (All Sectors) (Sum of Tables 7.4b and 7.4c)

	Coal ^a Thousand Short Tons	Petroleum					Natural Gas ^f Billion Cubic Feet	Other Gases ^g	Biomass		Other ^j
		Distillate Fuel Oil ^b Thousand Barrels	Residual Fuel Oil ^c Thousand Barrels	Other Liquids ^d Thousand Barrels	Petroleum Coke ^e Thousand Barrels	Total ^e Thousand Barrels			Wood ^h Trillion Btu	Waste ⁱ Trillion Btu	
1950 Total	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1955 Total	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1960 Total	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1965 Total	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1970 Total	320,182	24,123	311,381	NA	NA	338,686	3,932	NA	1	2	NA
1975 Total	405,962	38,907	467,221	NA	NA	506,479	3,158	NA	(s)	2	NA
1980 Total	569,274	29,051	391,163	NA	NA	421,110	3,682	NA	3	2	NA
1985 Total	693,841	14,635	158,779	NA	NA	174,571	3,044	NA	8	7	NA
1990 Total ^k	811,538	20,194	209,081	1,332	2,832	244,765	4,346	288	1,256	257	86
1995 Total	881,012	21,697	112,168	1,322	4,590	158,140	5,572	313	1,382	374	97
2000 Total	1,015,398	34,572	156,673	2,904	4,669	217,494	6,677	356	1,380	401	109
2001 Total	991,635	33,724	177,137	1,418	4,532	234,940	6,731	263	1,182	263	229
2002 Total	1,005,144	24,749	118,637	3,257	7,353	183,409	6,986	278	1,287	289	252
2003 Total	1,031,778	31,825	152,859	4,576	7,067	224,593	6,337	294	1,266	293	262
2004 Total	1,044,798	23,520	157,478	4,764	8,721	229,364	6,727	353	1,360	282	254
2005 Total	1,065,281	24,446	156,915	4,270	9,113	231,193	7,021	348	1,353	289	237
2006 Total	1,053,783	14,655	69,846	3,396	8,622	131,005	7,404	341	1,399	300	247
2007 Total	1,069,606	17,042	74,616	4,237	7,299	132,389	7,962	329	1,336	304	239
2008 Total	1,064,503	14,137	43,477	3,765	6,314	92,948	7,689	300	1,263	328	212
2009 Total	955,190	14,800	33,672	3,218	5,828	80,830	7,938	259	1,137	333	228
2010 Total	1,001,411	15,247	26,944	2,777	6,053	75,231	8,502	262	1,226	346	237
2011 Total	956,470	11,735	16,877	2,540	6,092	61,610	8,724	282	1,241	340	261
2012 Total	845,066	9,945	13,571	2,185	5,021	50,805	10,371	302	1,273	355	252
2013 Total	879,078	10,277	14,199	2,212	6,338	58,378	9,479	305	1,318	376	236
2014 Total	871,741	15,107	16,615	2,908	5,695	63,106	9,410	304	1,378	395	236
2015 Total	756,226	12,924	16,136	3,008	5,188	58,009	10,952	290	1,351	398	237
2016 Total	693,958	10,278	12,231	2,173	5,352	51,441	11,322	296	1,330	383	238
2017 January	64,930	987	943	207	449	4,381	781	26	121	35	19
February	49,183	741	790	148	347	3,412	678	23	108	30	17
March	50,132	846	825	139	355	3,584	787	25	119	33	19
April	45,408	687	787	146	242	2,829	736	24	110	31	18
May	52,034	836	878	136	406	3,881	813	26	112	31	19
June	60,005	726	973	183	441	4,087	968	24	116	30	19
July	70,971	710	870	129	430	3,861	1,209	25	122	31	21
August	66,975	678	988	163	390	3,780	1,145	25	124	31	21
September	55,817	723	894	139	352	3,517	975	24	111	28	18
October	51,238	758	919	139	314	3,386	889	25	115	30	18
November	52,142	797	873	164	373	3,696	782	25	118	32	18
December	59,743	1,678	1,769	340	368	5,629	913	26	125	33	19
Total	678,578	10,168	11,508	2,033	4,467	46,043	10,677	299	1,400	375	226
2018 January	66,279	5,607	3,894	668	466	12,497	913	28	123	33	19
February	47,079	707	759	164	382	3,542	801	28	109	31	18
March	45,728	782	723	148	327	3,286	873	30	118	33	19
April	41,610	825	774	138	354	3,508	816	27	109	31	18
May	48,374	998	853	159	281	3,417	963	30	115	31	19
June	57,159	946	962	149	413	4,122	1,071	29	115	29	20
July	64,895	798	927	184	448	4,151	1,352	30	123	29	19
August	64,801	843	1,001	169	429	4,157	1,315	34	122	30	20
September	54,975	800	1,030	163	399	3,988	1,151	29	110	27	17
October	49,406	831	989	183	306	3,532	1,008	31	112	31	19
November	52,868	981	879	167	342	3,739	886	28	115	31	19
December	56,853	947	795	284	404	4,048	888	29	119	32	19
Total	650,027	15,066	13,584	2,578	4,552	53,988	12,038	353	1,390	367	226
2019 January	R 57,136	1,329	1,139	330	402	4,810	973	30	120	28	20
February	R 46,195	728	668	202	R 348	R 3,339	894	29	107	26	17
March	45,165	745	698	178	343	3,337	921	31	109	28	18
April	34,476	654	690	213	257	2,844	852	28	106	25	18
May	R 41,062	912	820	188	376	3,799	951	27	110	25	19
June	R 45,289	807	878	189	291	3,330	1,112	27	107	25	19
July	R 57,031	804	950	185	393	3,906	1,399	30	112	25	19
August	R 53,511	805	1,035	202	349	3,788	1,415	29	117	26	20
September	R 48,349	R 748	870	200	350	R 3,569	1,215	28	106	24	18
October	R 38,495	R 762	R 858	R 215	R 141	R 2,539	R 1,081	28	104	27	18
November	R 42,977	R 805	798	265	182	R 2,777	R 946	28	106	27	18
December	41,499	786	857	203	237	3,032	1,030	29	113	28	19
Total	551,185	9,884	10,261	2,570	3,671	41,071	12,790	343	1,316	313	223

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

^b Fuel oil nos. 1, 2, and 4. For 1949–1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980–2000, electric utility data also include small amounts of kerosene and jet fuel.

^c Fuel oil nos. 5 and 6. For 1949–1979, data are for steam plant use of petroleum. For 1980–2000, electric utility data also include a small amount of fuel oil no. 4.

^d Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

^e Petroleum coke is converted from short tons to barrels by multiplying by 5.

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

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

^h Wood and wood-derived fuels.

ⁱ Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes

non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^j Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

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

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

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

Sources: See "Table 7.4b Sources" at end of section and sources for Table 7.4c.

Table 7.4b Consumption of Combustible Fuels for Electricity Generation and Useful Thermal Output: Electric Power Sector (Subset of Table 7.4a)

	Coal ^a Thousand Short Tons	Petroleum					Natural Gas ⁱ Billion Cubic Feet	Other Gases ^g	Biomass		Other ^j
		Distillate Fuel Oil ^b Thousand Barrels	Residual Fuel Oil ^c Thousand Barrels	Other Liquids ^d Thousand Barrels	Petroleum Coke ^e Thousand Short Tons	Total ^e Thousand Barrels			Wood ^h Trillion Btu	Waste ⁱ Trillion Btu	
1950 Total	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1955 Total	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1960 Total	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1965 Total	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1970 Total	320,182	24,123	311,381	NA	636	338,686	3,932	NA	1	2	NA
1975 Total	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1980 Total	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1985 Total	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1990 Total ^k	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 Total	738,444	12,193	14,929	2,131	3,907	48,787	9,613	44	244	281	136
2016 Total	678,554	9,510	11,242	1,322	4,138	42,763	9,985	45	224	281	139
2017 January	63,595	916	856	147	362	3,728	660	4	20	26	12
February	48,048	697	730	87	272	2,872	569	3	18	22	10
March	48,925	794	733	90	256	2,898	672	4	21	24	11
April	44,358	640	716	90	162	2,255	627	4	17	22	10
May	50,952	789	812	78	324	3,297	700	4	17	24	11
June	58,920	690	910	133	340	3,435	851	4	18	24	11
July	69,882	667	815	77	332	3,220	1,082	4	20	24	12
August	65,883	630	932	109	289	3,118	1,022	4	21	23	12
September	54,780	675	822	95	270	2,942	859	4	18	22	11
October	50,099	713	847	82	221	2,746	773	4	18	22	10
November	51,013	734	707	113	285	2,979	666	4	19	23	11
December	58,538	1,536	1,585	276	286	4,828	785	4	21	24	12
Total	664,993	9,481	10,464	1,375	3,399	38,318	9,266	46	229	280	132
2018 January	64,960	5,254	3,672	594	373	11,385	786	4	21	24	12
February	45,897	659	653	91	302	2,916	690	4	19	23	11
March	44,562	717	647	96	251	2,715	757	4	20	24	12
April	40,603	777	707	84	267	2,904	704	4	16	23	11
May	47,356	937	790	97	204	2,844	848	4	17	23	11
June	56,154	895	875	90	322	3,471	953	4	19	23	12
July	63,894	719	877	88	360	3,486	1,224	4	21	23	12
August	63,810	771	932	123	348	3,566	1,186	4	20	23	12
September	53,987	723	982	128	318	3,422	1,030	4	17	21	10
October	48,474	777	875	127	222	2,888	888	4	17	23	11
November	51,806	893	752	110	267	3,089	763	4	17	23	11
December	55,714	845	683	227	315	3,327	762	4	18	23	11
Total	637,217	13,967	12,446	1,855	3,549	46,013	10,589	47	221	275	136
2019 January	55,983	1,111	1,039	270	324	4,038	841	4	20	20	12
February	45,142	659	597	130	R 281	R 2,793	R 776	5	17	18	11
March	44,167	680	620	120	263	2,733	798	5	17	21	12
April	33,520	600	625	134	178	2,250	736	4	16	19	11
May	R 40,110	752	751	118	292	3,080	831	4	19	20	13
June	R 44,376	752	815	130	212	2,758	993	4	17	19	12
July	R 56,123	737	907	137	299	3,274	R 1,273	5	19	20	13
August	R 52,585	735	970	146	271	3,206	1,288	4	21	20	13
September	R 47,461	R 669	812	141	252	R 2,882	1,095	4	18	19	12
October	R 37,497	R 700	805	159	70	2,017	960	4	15	20	12
November	R 41,962	R 736	722	112	126	R 2,200	R 819	4	15	20	12
December	40,489	733	781	143	164	2,476	897	4	18	20	12
Total	539,415	8,865	9,443	1,739	2,732	33,709	11,307	50	211	236	144

^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

^b Fuel oil nos. 1, 2, and 4. For 1949–1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980–2000, electric utility data also include small amounts of kerosene and jet fuel.

^c Fuel oil nos. 5 and 6. For 1949–1979, data are for steam plant use of petroleum. For 1980–2000, electric utility data also include a small amount of fuel oil no. 4.

^d Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.

^e Petroleum coke is converted from short tons to barrels by multiplying by 5.

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

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

^h Wood and wood-derived fuels.

ⁱ Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and

tire-derived fuels).

^j Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

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

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)

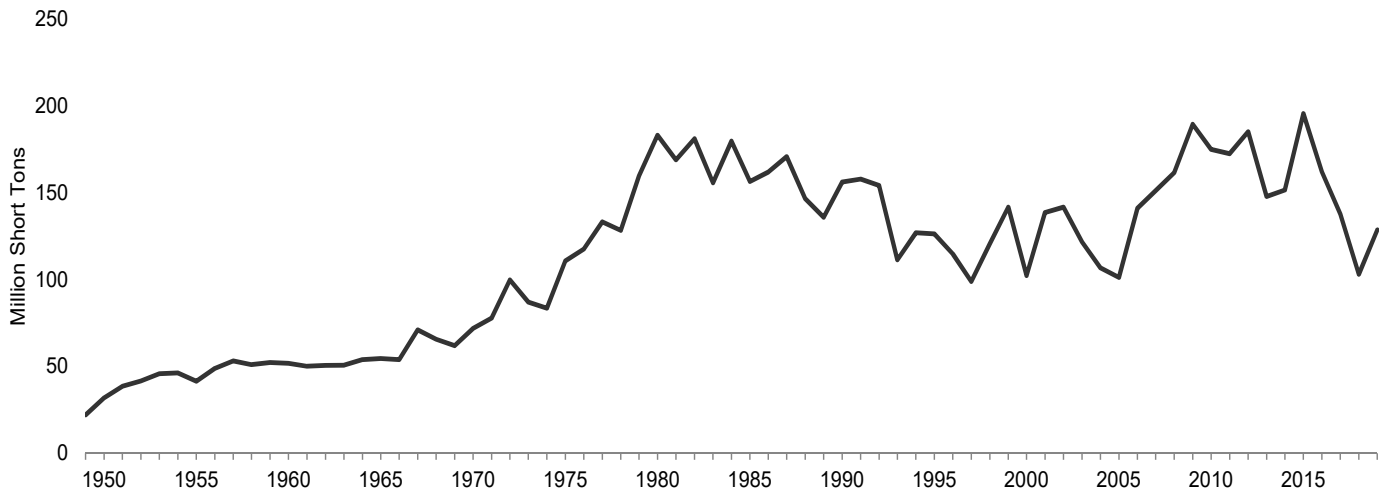
	Commercial Sector ^a				Industrial Sector ^b						
	Coal ^c	Petroleum ^d	Natural Gas ^e	Biomass	Coal ^c	Petroleum ^d	Natural Gas ^e	Other Gases ^g	Biomass		Other ⁱ
				Waste ^f					Wood ^h	Waste ^f	
Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu				
1990 Total	1,191	2,056	46	28	27,781	36,159	1,055	275	1,125	41	86
1995 Total	1,419	1,245	78	40	29,363	34,448	1,258	290	1,255	38	95
2000 Total	1,547	1,615	85	47	28,031	30,520	1,386	331	1,244	35	108
2001 Total	1,448	1,832	79	25	25,755	26,817	1,310	248	1,054	27	101
2002 Total	1,405	1,250	74	26	26,232	25,163	1,240	245	1,136	34	92
2003 Total	1,816	1,449	58	29	24,846	26,212	1,144	253	1,097	34	103
2004 Total	1,917	2,009	72	34	26,613	28,857	1,191	295	1,193	24	94
2005 Total	1,922	1,630	68	34	25,875	27,380	1,084	264	1,166	34	94
2006 Total	1,886	935	68	36	25,262	22,706	1,115	277	1,216	33	102
2007 Total	1,927	752	70	31	22,537	22,207	1,050	268	1,148	36	98
2008 Total	2,021	671	66	34	21,902	13,222	955	239	1,084	35	60
2009 Total	1,798	521	76	36	19,766	14,228	990	204	955	35	82
2010 Total	1,720	437	86	36	24,638	10,740	1,029	210	1,029	47	91
2011 Total	1,668	333	87	43	22,319	9,610	1,063	232	1,057	43	94
2012 Total	1,450	457	111	45	20,065	12,853	1,149	249	1,082	47	81
2013 Total	1,356	887	118	47	19,761	12,697	1,170	246	1,109	67	69
2014 Total	1,063	758	119	47	19,076	10,112	1,145	260	1,122	70	72
2015 Total	798	622	116	47	16,984	8,600	1,222	246	1,103	70	73
2016 Total	683	404	127	48	14,720	8,273	1,209	251	1,100	54	70
2017 January	71	68	14	4	1,264	584	107	22	100	5	5
February	58	43	12	4	1,077	496	97	20	89	4	5
March	66	50	12	4	1,141	637	103	21	98	5	5
April	42	24	10	4	1,008	550	99	20	93	4	5
May	39	34	11	4	1,043	550	102	22	95	3	5
June	40	27	13	4	1,045	625	104	20	97	3	6
July	47	30	15	4	1,042	611	112	21	101	3	6
August	43	45	15	4	1,050	618	108	22	102	3	6
September	45	35	13	4	991	539	103	20	92	3	5
October	42	33	13	4	1,098	607	104	21	97	4	5
November	52	38	12	4	1,077	679	104	21	98	5	5
December	66	88	14	4	1,139	713	115	22	103	5	5
Total	610	516	154	48	12,975	7,209	1,257	253	1,166	47	65
2018 January	76	186	12	4	1,242	926	115	24	101	5	5
February	59	48	11	4	1,122	578	101	24	90	4	5
March	57	42	11	4	1,109	530	105	26	98	5	5
April	47	36	10	4	960	568	102	23	93	4	5
May	39	34	10	4	979	539	105	25	97	4	5
June	36	33	11	4	969	618	107	26	96	2	5
July	40	55	13	4	962	610	116	26	101	3	5
August	42	46	13	4	949	545	116	30	102	3	6
September	45	39	11	4	943	528	110	25	93	2	5
October	42	36	11	4	891	608	110	27	95	4	5
November	47	62	11	4	1,015	588	113	24	97	4	5
December	47	65	11	4	1,093	656	115	25	100	5	5
Total	577	681	135	47	12,233	7,294	1,314	306	1,164	45	62
2019 January	58	78	12	4	1,095	693	121	26	99	4	5
February	R 52	R 46	11	3	R 1,000	R 499	106	24	90	4	4
March	54	53	11	3	944	551	111	26	92	4	5
April	39	40	10	3	918	553	106	24	90	3	4
May	40	138	10	3	R 912	581	109	23	91	2	4
June	31	31	11	3	R 882	541	108	23	89	3	4
July	40	50	12	3	R 867	583	114	26	92	2	5
August	42	45	12	3	R 885	537	115	24	95	2	5
September	42	56	11	3	R 845	632	110	24	87	2	5
October	38	45	11	3	R 960	R 477	R 111	25	R 88	4	4
November	44	55	11	3	R 971	R 521	R 116	24	91	4	5
December	46	50	12	3	964	505	122	24	94	4	5
Total	526	687	134	36	11,244	6,676	1,349	293	1,099	40	54

^a Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.
^b Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.
^c Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal symfuel.
^d Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.
^e Natural gas, plus a small amount of supplemental gaseous fuels.
^f Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).
^g Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.
^h Wood and wood-derived fuels.
ⁱ Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous

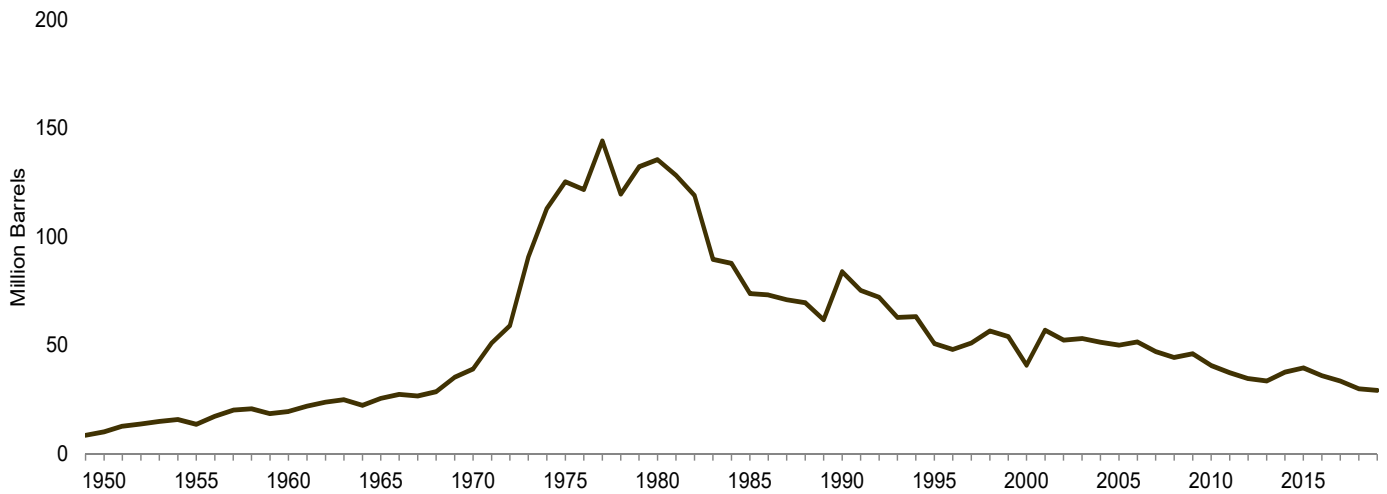
technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).
R=Revised.
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants 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

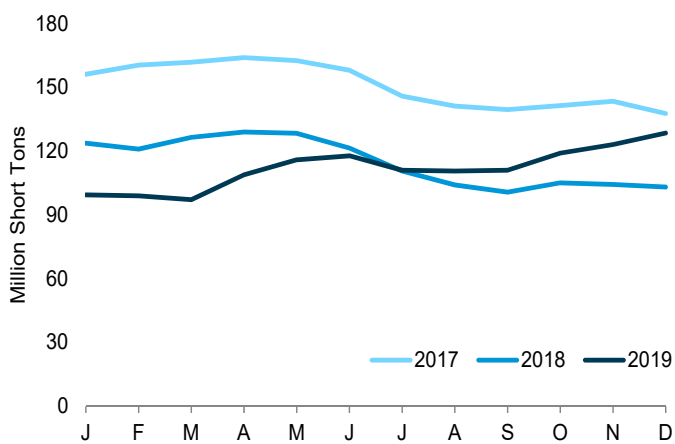
Coal, 1949–2019



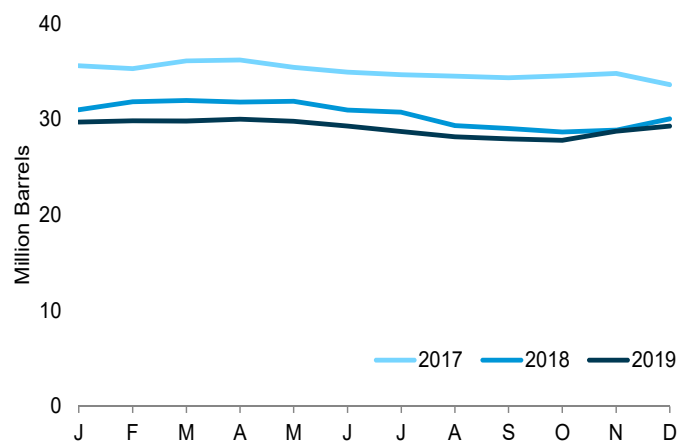
Total Petroleum, 1949–2019



Coal, Monthly



Total Petroleum, Monthly



Note: Data are for utility-sale facilities.

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

Source: Table 7.5.

Table 7.5 Stocks of Coal and Petroleum: Electric Power Sector

	Coal ^a Thousand Short Tons	Petroleum				Total ^{e,f} Thousand Barrels
		Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e	
		Thousand Barrels			Thousand Short Tons	
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 ^g	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 Year	195,548	17,955	12,566	2,363	1,340	39,586
2016 Year	162,009	17,855	11,789	2,195	845	36,064
2017 January	156,214	17,718	11,858	2,186	768	35,601
February	160,502	17,588	11,744	2,168	756	35,277
March	161,815	17,336	12,681	2,157	785	36,099
April	163,937	17,362	12,439	2,168	844	36,187
May	162,542	17,265	12,170	2,143	772	35,439
June	158,014	17,082	11,993	2,133	742	34,916
July	145,811	17,150	11,740	2,143	724	34,655
August	141,204	17,091	11,531	2,129	749	34,497
September	139,571	16,844	11,382	2,120	798	34,334
October	141,463	16,806	11,292	2,128	862	34,537
November	143,424	16,980	11,381	2,140	859	34,796
December	137,687	16,356	10,930	2,008	864	33,612
2018 January	123,692	15,728	9,786	1,884	720	30,999
February	120,945	16,080	10,343	1,937	692	31,823
March	126,422	16,041	10,309	1,945	736	31,977
April	128,965	15,970	10,217	1,956	731	31,798
May	128,356	16,138	10,151	2,038	709	31,870
June	121,394	15,885	10,169	1,946	591	30,955
July	110,677	15,869	9,605	1,911	668	30,723
August	104,048	15,422	8,944	1,847	625	29,338
September	100,680	15,449	8,692	1,848	608	29,028
October	105,134	15,505	8,685	1,759	541	28,654
November	104,336	15,787	8,520	1,767	557	28,857
December	103,043	16,645	8,805	1,887	539	30,035
2019 January	99,378	R 16,571	R 8,637	R 1,852	528	R 29,698
February	98,835	R 16,519	R 8,955	R 1,827	506	R 29,831
March	97,102	R 16,502	R 8,991	R 1,825	498	R 29,811
April	108,852	R 16,640	R 8,983	R 1,834	510	R 30,009
May	115,888	R 16,712	R 8,990	R 1,866	445	R 29,791
June	117,710	R 16,609	R 8,866	R 1,848	389	R 29,267
July	R 110,933	R 16,504	R 8,614	R 1,827	355	R 28,721
August	110,560	R 16,284	R 8,162	R 1,799	381	R 28,151
September	R 110,952	R 16,318	R 8,350	R 1,791	293	R 27,925
October	R 119,045	R 16,364	R 8,246	R 1,765	283	R 27,792
November	R 123,033	R 16,202	R 8,655	R 1,768	425	R 28,750
December	128,497	16,628	8,657	1,782	443	29,284

^a Anthracite, bituminous coal, subbituminous coal, and lignite; excludes waste coal.

^b Fuel oil nos. 1, 2 and 4. For 1973–1979, data are for gas turbine and internal combustion plant stocks of petroleum. For 1980–2000, electric utility data also include small amounts of kerosene and jet fuel.

^c Fuel oil nos. 5 and 6. For 1973–1979, data are for steam plant stocks of petroleum. For 1980–2000, electric utility data also include a small amount of fuel oil no. 4.

^d Jet fuel and kerosene. Through 2003, data also include a small amount of waste oil.

^e Petroleum coke is converted from short tons to barrels by multiplying by 5.

^f Distillate fuel oil and residual fuel oil. Beginning in 1970, also includes petroleum coke. Beginning in 2002, also includes other liquids.

^g Through 1998, data are for electric utilities only. Beginning in 1999, data are for electric utilities and independent power producers.

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.

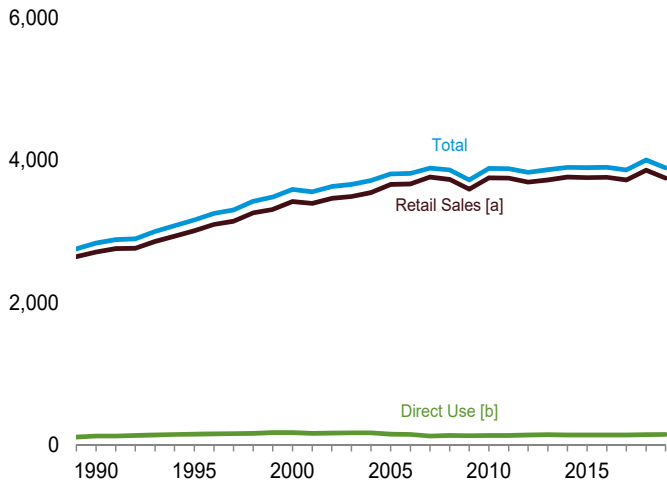
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

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."

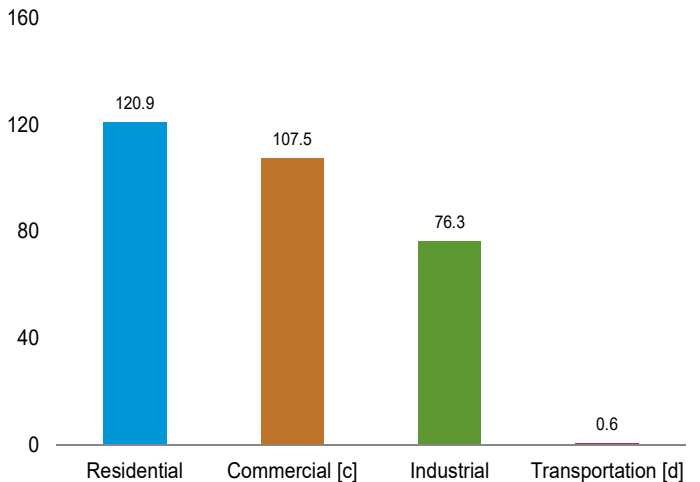
Figure 7.6 Electricity End Use

(Billion Kilowatthours)

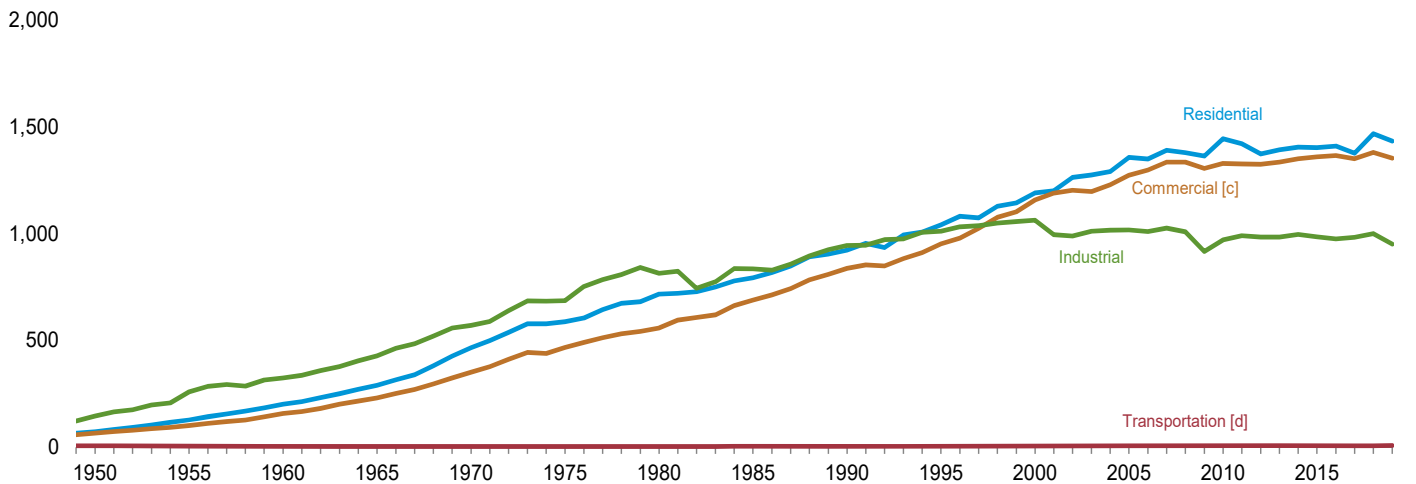
Electricity End Use Overview, 1989–2019



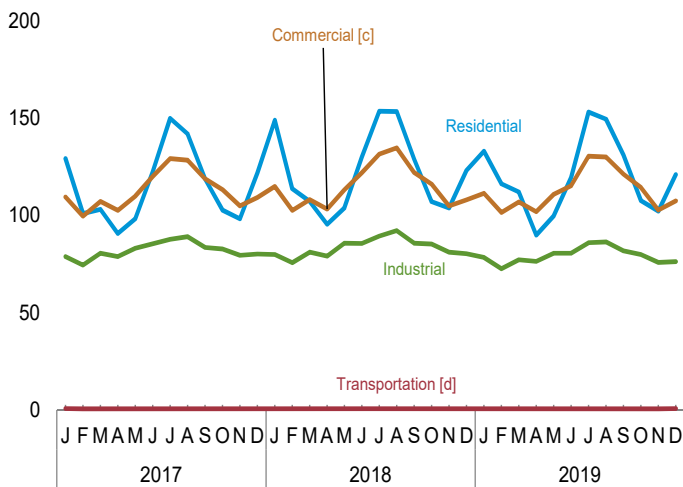
Retail Sales [a] by Sector, December 2019



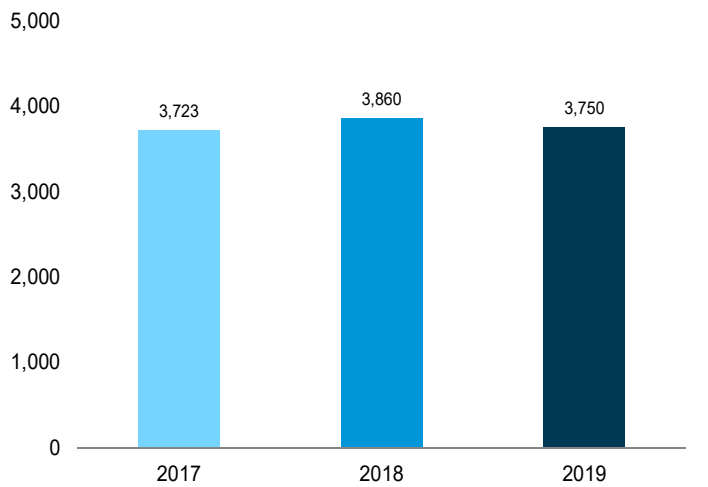
Retail Sales [a] by Sector, 1949–2019



Retail Sales [a] by Sector, Monthly



Retail Sales [a] Total, January–December



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

[b] See “Direct Use” in Glossary.

[c] Commercial sector, including public street and highway lighting, inter-

departmental sales, and other sales to public authorities.

[d] Transportation sector, including sales to railroads and railways.

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

Source: Table 7.6.

Table 7.6 Electricity End Use
(Million Kilowatthours)

	Retail Sales ^a					Direct Use ^f	Total End Use ^g
	Residential	Commercial ^b	Industrial ^c	Transportation ^d	Total Retail Sales ^e		
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
2015 Total	1,404,096	1,360,752	986,508	7,637	3,758,992	141,168	3,900,160
2016 Total	1,411,058	1,367,191	976,715	7,497	3,762,462	139,844	3,902,306
2017 January	129,212	109,488	78,809	667	318,177	E 12,093	330,270
February	100,968	99,640	74,534	635	275,777	E 10,892	286,669
March	103,096	107,173	80,530	645	291,444	E 11,643	303,087
April	90,725	102,589	78,899	589	272,801	E 11,188	283,989
May	98,281	109,872	83,134	583	291,871	E 11,478	303,348
June	122,543	120,013	85,399	628	328,583	E 11,967	340,550
July	149,900	129,277	87,806	630	367,613	E 12,763	380,376
August	142,007	128,481	89,134	640	360,263	E 12,558	372,820
September	118,779	118,789	83,540	618	321,726	E 11,213	332,939
October	102,811	113,287	82,815	626	299,539	E 11,353	310,892
November	98,321	104,973	79,456	598	283,347	E 11,455	294,802
December	122,005	109,306	80,242	664	312,216	E 12,512	324,728
Total	1,378,648	1,352,888	984,298	7,523	3,723,356	141,114	3,864,470
2018 January	148,918	114,926	79,964	745	344,552	E 12,404	356,957
February	113,752	102,686	75,730	634	292,802	E 11,036	303,838
March	107,219	108,109	81,127	620	297,074	E 11,521	308,596
April	95,454	103,332	79,157	599	278,543	E 11,023	289,566
May	103,848	113,176	85,717	587	303,328	E 11,740	315,068
June	129,913	122,012	85,615	623	338,163	E 12,027	350,190
July	153,566	131,522	89,384	634	375,107	E 12,994	388,101
August	153,497	134,849	92,189	680	381,215	E 13,079	394,294
September	128,910	122,034	85,758	640	337,342	E 12,008	349,351
October	107,049	116,134	85,380	631	309,194	E 11,865	321,059
November	103,790	104,984	81,195	616	290,584	E 11,977	302,561
December	123,181	107,999	80,380	655	312,215	E 12,439	324,653
Total	1,469,096	1,381,761	1,001,597	7,665	3,860,119	144,114	4,004,233
2019 January	R 133,011	R 111,433	R 78,390	R 673	R 323,507	E 12,772	R 336,279
February	R 116,249	R 101,547	R 72,568	R 702	R 291,066	E 11,258	R 302,323
March	R 112,140	R 106,889	R 77,198	689	R 296,916	E 12,026	R 308,942
April	R 89,864	R 101,960	R 76,413	614	R 268,851	E 11,423	R 280,274
May	R 99,810	R 110,889	R 80,657	R 611	R 291,967	E 11,664	R 303,631
June	R 119,519	R 115,338	R 80,618	R 612	R 316,087	E 11,783	R 327,870
July	R 153,141	R 130,429	R 86,057	R 646	R 370,272	E 12,885	R 383,157
August	R 149,549	R 130,101	R 86,345	R 657	R 366,651	E 12,916	R 379,567
September	R 131,123	R 121,318	R 81,767	R 681	R 334,890	E 12,109	R 346,999
October	R 107,636	R 114,372	R 79,939	546	R 302,493	E 11,949	R 314,442
November	R 102,167	R 102,810	R 75,869	618	R 281,464	E 12,445	R 293,909
December	120,938	107,459	76,327	650	305,373	E 12,827	318,200
Total	1,435,147	1,354,545	952,149	7,697	3,749,538	E 146,057	3,895,595

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

^b Commercial sector, including public street and highway lighting, interdepartmental sales, and other sales to public authorities.

^c Industrial sector. Through 2002, excludes agriculture and irrigation; beginning in 2003, includes agriculture and irrigation.

^d Transportation sector, including sales to railroads and railways.

^e The sum of "Residential," "Commercial," "Industrial," and "Transportation."

^f Use of electricity that is 1) self-generated, 2) produced by either the same entity that consumes the power or an affiliate, and 3) used in direct support of a service or industrial process located within the same facility or group of facilities

that house the generating equipment. Direct use is exclusive of station use.

^g The sum of "Total Retail Sales" and "Direct Use."

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.

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.

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 2011–2015: National Energy Board of Canada; California Independent System Operator; and EIA estimates for Texas transfers.

2016 forward: EIA, Form EIA-111, "Quarterly Electricity Imports and Exports Report"; and for forecast values, EIA Short-Term Integrated Forecasting System (STIFS).

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".

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".

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".

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".

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)* March 2020, Table 5.1.

Retail Sales, Commercial

1949–2002: Data are estimates. See estimation methodology at http://www.eia.gov/state/seds/sep_use/notes/use_elec.pdf.

2003: EIA, Form EIA-861, "Annual Electric Utility Report."

2004 forward: EIA, EPM, March 2020, Table 5.1.

Retail Sales, Transportation

1949–2002: Data are estimates. See estimation methodology at http://www.eia.gov/state/seds/sep_use/notes/use_elec.pdf.

2003: EIA, Form EIA-861, "Annual Electric Utility Report."

2004 forward: EIA, EPM March 2020, 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."

2001–2018: EIA, *Electric Power Annual 2018*, October 2019, Table 2.2.

2019: Sum of monthly estimates.

Direct Use, Monthly

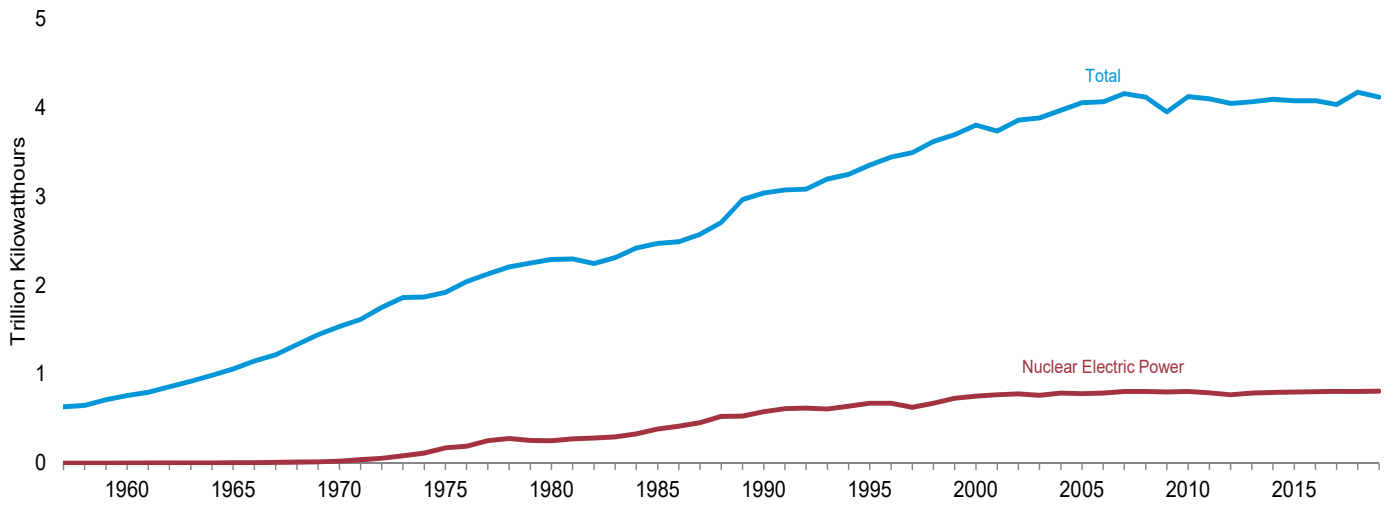
1989 forward: Annual shares are calculated as annual direct use divided by annual commercial and industrial net generation (on Table 7.1). Then monthly direct use estimates are calculated as the annual share multiplied by the monthly commercial and industrial net generation values. For 2019, the 2018 annual share is used.

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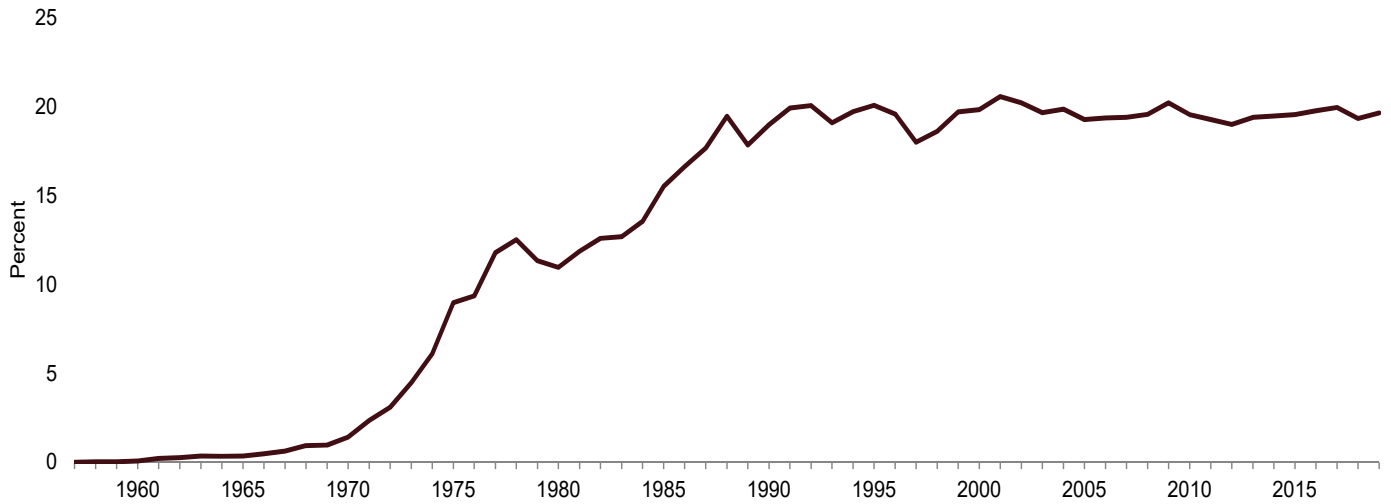
8. Nuclear Energy

Figure 8.1 Nuclear Energy Overview

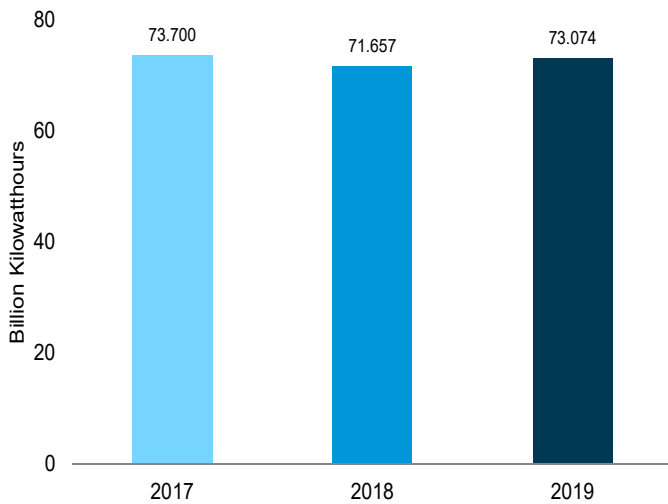
Electricity Net Generation, 1957–2019



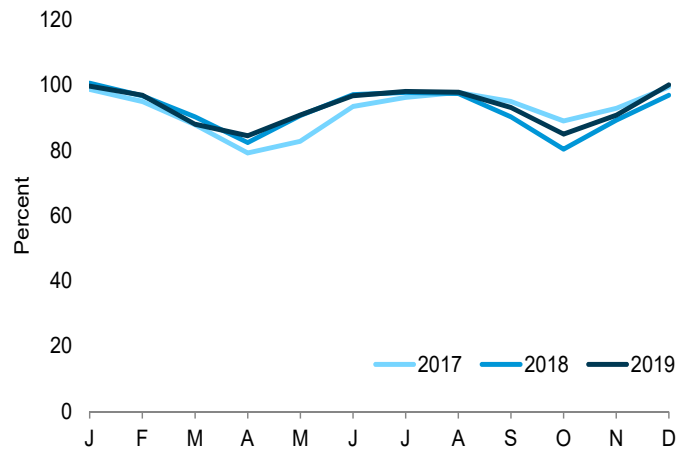
Nuclear Share of Electricity Net Generation, 1957–2019



Nuclear Electricity Net Generation—December



Capacity Factor, Monthly



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

Sources: Tables 7.2a and 8.1.

Table 8.1 Nuclear Energy Overview

	Total Operable Units ^{a,b}	Net Summer Capacity of Operable Units ^{b,c}	Nuclear Electricity Net Generation	Nuclear Share of Electricity Net Generation	Capacity Factor ^d
	Number	Million Kilowatts	Million Kilowatthours	Percent	
1957 Total	1	0.055	10	(s)	NA
1960 Total	3	.411	518	.1	NA
1965 Total	13	.793	3,657	.3	NA
1970 Total	20	7.004	21,804	1.4	NA
1975 Total	57	37.267	172,505	9.0	55.9
1980 Total	71	51.810	251,116	11.0	56.3
1985 Total	96	79.397	383,691	15.5	58.0
1990 Total	112	99.624	576,862	19.0	66.0
1995 Total	109	99.515	673,402	20.1	77.4
2000 Total	104	97.860	753,893	19.8	88.1
2001 Total	104	98.159	768,826	20.6	89.4
2002 Total	104	98.657	780,064	20.2	90.3
2003 Total	104	99.209	763,733	19.7	87.9
2004 Total	104	99.628	788,528	19.9	90.1
2005 Total	104	99.988	781,986	19.3	89.3
2006 Total	104	100.334	787,219	19.4	89.6
2007 Total	104	100.266	806,425	19.4	91.8
2008 Total	104	100.755	806,208	19.6	^d 91.1
2009 Total	104	101.004	798,855	20.2	90.3
2010 Total	104	101.167	806,968	19.6	91.1
2011 Total	104	^c 101.419	790,204	19.3	89.1
2012 Total	104	101.885	769,331	19.0	86.1
2013 Total	100	99.240	789,016	19.4	89.9
2014 Total	99	98.569	797,166	19.5	91.7
2015 Total	99	98.672	797,178	19.6	92.3
2016 Total	99	99.565	805,694	19.8	92.3
2017 January	99	99.610	73,121	21.3	98.7
February	99	99.610	63,560	21.9	95.0
March	99	99.610	65,093	20.5	87.8
April	99	99.610	56,743	19.3	79.2
May	99	99.610	61,313	19.0	82.8
June	99	99.610	67,011	18.7	93.5
July	99	99.629	71,314	17.6	96.2
August	99	99.629	72,384	18.8	97.7
September	99	99.629	68,098	20.3	95.0
October	99	99.629	65,995	20.6	89.0
November	99	99.629	66,618	21.5	92.9
December	99	99.629	73,700	20.9	99.4
Total	99	99.629	804,950	20.0	92.3
2018 January	99	99.731	74,649	20.0	100.6
February	99	99.731	64,790	21.1	96.7
March	99	99.731	67,033	20.8	90.3
April	99	99.731	59,133	19.7	82.4
May	99	99.731	67,320	19.9	90.7
June	99	99.731	69,688	18.7	97.1
July	99	99.731	72,456	17.6	97.7
August	99	99.731	72,282	17.7	97.4
September	98	99.278	64,725	18.2	90.3
October	98	99.278	59,397	18.3	80.4
November	98	99.433	63,954	19.8	89.3
December	98	99.433	71,657	21.2	96.9
Total	98	99.433	807,084	19.3	92.5
2019 January	98	^{RE} 99.392	73,701	20.6	^{RE} 99.7
February	98	^{RE} 99.392	64,715	20.6	^E 96.9
March	98	^{RE} 99.392	65,080	20.1	^E 88.0
April	98	^{RE} 99.547	60,581	20.6	^E 84.5
May	97	^{RE} 98.873	67,124	20.4	^{RE} 90.9
June	97	^{RE} 98.873	68,805	19.6	^{RE} 96.7
July	97	^{RE} 98.873	72,199	17.5	^E 98.1
August	97	^{RE} 98.873	71,911	17.9	^{RE} 97.8
September	96	^{RE} 98.070	^R 66,064	^R 18.4	^{RE} 93.1
October	96	^{RE} 98.070	62,033	19.3	^E 85.0
November	96	^E 98.070	64,125	20.2	^E 90.8
December	96	^E 98.070	73,074	21.7	^E 100.1
Total	96	^E 98.070	809,409	19.7	^E 93.5

^a Total of nuclear generating units holding full-power licenses, or equivalent permission to operate, at end of period. See Note 1, "Operable Nuclear Reactors," at end of section.

^b At end of period.

^c For the definition of "Net Summer Capacity," see Note 2, "Nuclear Capacity," at end of section. Beginning in 2011, monthly capacity values are estimated in two steps: 1) uprates and derates reported on Form EIA-860M are added to specific months; and 2) the difference between the resulting year-end capacity (from data reported on Form EIA-860M) and final capacity (reported on Form EIA-860) is allocated to the month of January.

^d Beginning in 2008, capacity factor data are calculated using a new

methodology. For an explanation of the method of calculating the capacity factor, see Note 2, "Nuclear Capacity," at end of section.

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.

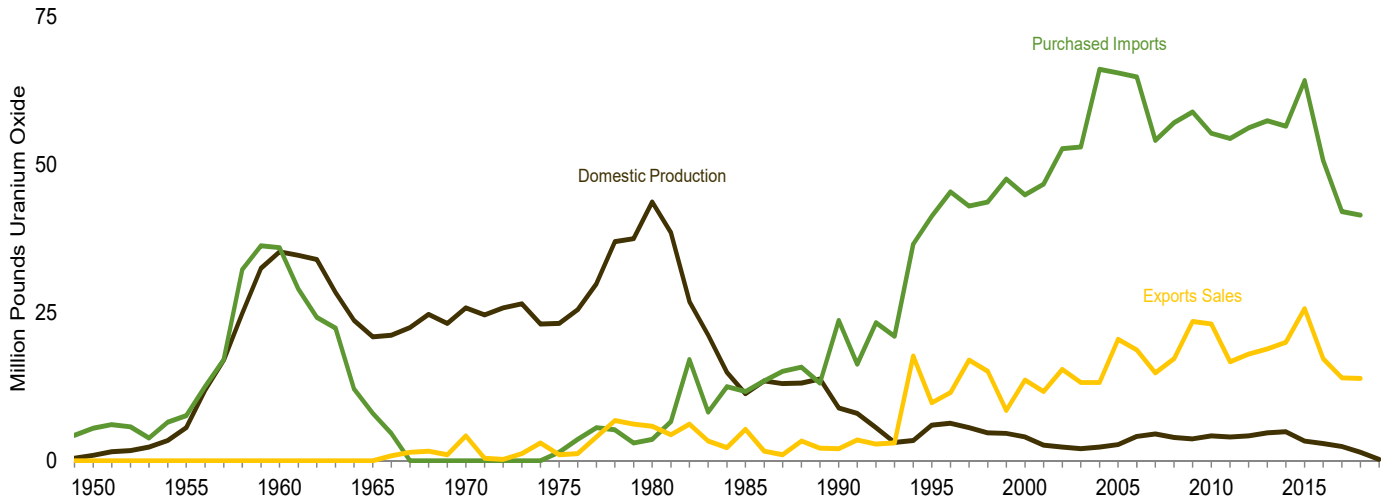
• Geographic coverage is the 50 states and the District of Columbia.

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.

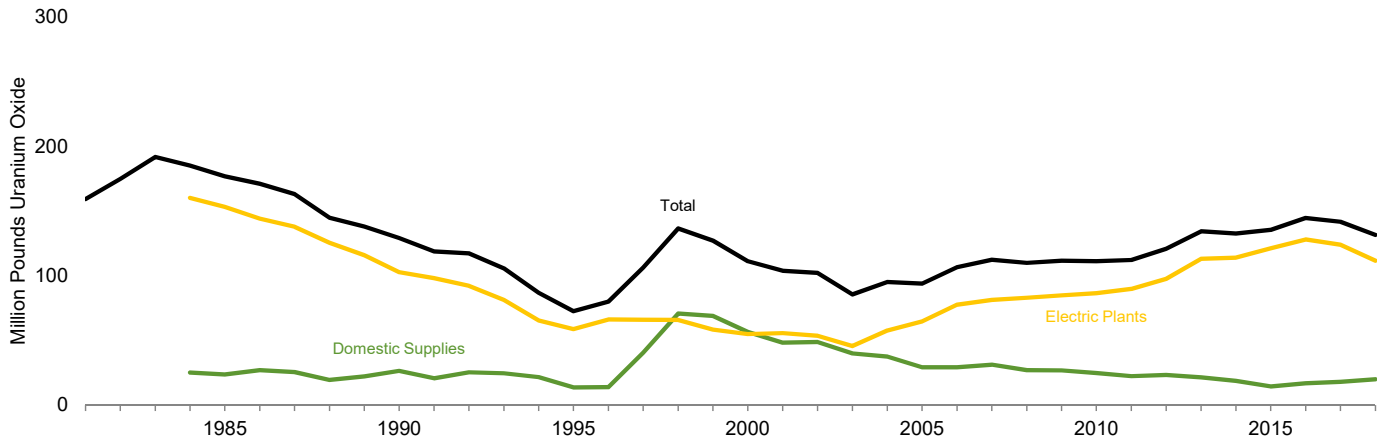
Sources: See end of section.

Figure 8.2 Uranium Overview

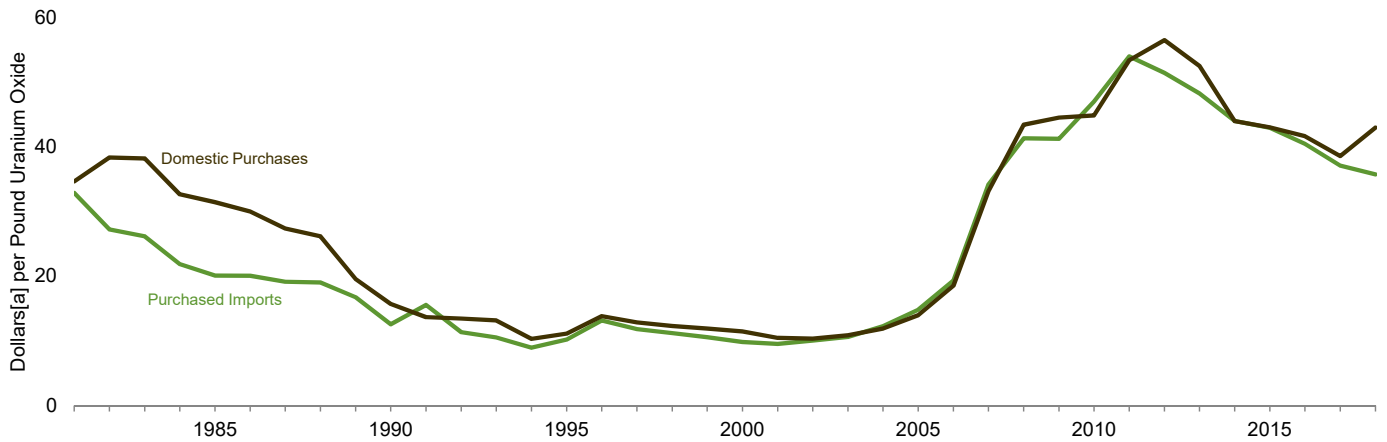
Production and Trade, 1949–2019



Inventories, End of Year 1981–2018



Average Prices, 1981–2018



[a] Prices are not adjusted for inflation. See “Nominal Dollars” in Glossary.
Note: See “Uranium Oxide” in Glossary.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#nuclear>.
Source: Table 8.2.

Table 8.2 Uranium Overview

	Domestic Concentrate Production ^a	Purchased Imports ^b	Export ^b Sales	Electric Plant Purchases From Domestic Suppliers	Loaded Into U.S. Nuclear Reactors ^c	Inventories			Average Price	
						Domestic Suppliers	Electric Plants	Total	Purchased Imports	Domestic Purchases
						Million Pounds Uranium Oxide						Dollars^{d} per Pound Uranium Oxide
1950	0.92	5.5	0.0	NA	NA	NA	NA	NA	NA	NA
1955	5.56	7.6	.0	NA	NA	NA	NA	NA	NA	NA
1960	35.28	36.0	.0	NA	NA	NA	NA	NA	NA	NA
1965	20.88	8.0	.0	NA	NA	NA	NA	NA	NA	NA
1970	25.81	.0	4.2	NA	NA	NA	NA	NA	--	NA
1975	23.20	1.4	1.0	NA	NA	NA	NA	NA	NA	NA
1980	43.70	3.6	5.8	NA	NA	NA	NA	NA	NA	NA
1981	38.47	6.6	4.4	32.6	NA	NA	NA	159.2	32.90	34.65
1982	26.87	17.1	6.2	27.1	NA	NA	NA	174.8	27.23	38.37
1983	21.16	8.2	3.3	24.2	NA	NA	NA	191.8	26.16	38.21
1984	14.88	12.5	2.2	22.5	NA	25.0	160.2	185.2	21.86	32.65
1985	11.31	11.7	5.3	21.7	NA	23.7	153.2	176.9	20.08	31.43
1986	13.51	13.5	1.6	18.9	NA	27.0	144.1	171.1	20.07	30.01
1987	12.99	15.1	1.0	20.8	NA	25.4	137.8	163.2	19.14	27.37
1988	13.13	15.8	3.3	17.6	NA	19.3	125.5	144.8	19.03	26.15
1989	13.84	13.1	2.1	18.4	NA	22.2	115.8	138.1	16.75	19.56
1990	8.89	23.7	2.0	20.5	NA	26.4	102.7	129.1	12.55	15.70
1991	7.95	16.3	3.5	26.8	34.6	20.7	98.0	118.7	15.55	13.66
1992	5.65	23.3	2.8	23.4	43.0	25.2	92.1	117.3	11.34	13.45
1993	3.06	21.0	3.0	15.5	45.1	24.5	81.2	105.7	10.53	13.14
1994	3.35	36.6	17.7	22.7	40.4	21.5	65.4	86.9	8.95	10.30
1995	6.04	41.3	9.8	22.3	51.1	13.7	58.7	72.5	10.20	11.11
1996	6.32	45.4	11.5	23.7	46.2	13.9	66.1	80.0	13.15	13.81
1997	5.64	43.0	17.0	19.4	48.2	40.4	65.9	106.2	11.81	12.87
1998	4.70	43.7	15.1	21.6	38.2	70.7	65.8	136.5	11.19	12.31
1999	4.61	47.6	8.5	21.4	58.8	68.8	58.3	127.1	10.55	11.88
2000	3.98	44.9	13.6	24.3	51.5	56.5	54.8	111.3	9.84	11.45
2001	2.64	46.7	11.7	27.5	52.7	48.1	55.6	103.8	9.51	10.45
2002	^{e,E} 2.34	52.7	15.4	22.7	57.2	48.7	53.5	102.1	10.05	10.35
2003	^{e,E} 2.00	53.0	13.2	21.7	62.3	39.9	45.6	85.5	10.59	10.84
2004	2.28	66.1	13.2	28.2	50.1	37.5	57.7	95.2	12.25	11.91
2005	2.69	65.5	20.5	27.3	58.3	29.1	64.7	93.8	14.83	13.98
2006	4.11	64.8	18.7	27.9	51.7	29.1	77.5	106.6	19.31	18.54
2007	4.53	54.1	14.8	18.5	45.5	31.2	81.2	112.4	34.18	33.13
2008	3.90	57.1	17.2	20.4	51.3	27.0	83.0	110.0	41.30	43.43
2009	3.71	58.9	23.5	17.6	49.4	26.8	84.8	111.5	41.23	44.53
2010	4.23	55.3	23.1	16.2	44.3	24.7	86.5	111.3	47.01	44.88
2011	3.99	54.4	16.7	19.8	50.9	22.3	89.8	112.1	54.00	53.41
2012	4.15	56.2	18.0	21.5	49.5	23.3	97.6	120.9	51.44	56.51
2013	4.66	57.4	18.9	23.3	42.6	21.3	113.1	134.4	48.27	52.51
2014	4.89	56.5	20.0	20.5	50.5	18.7	114.0	132.7	44.03	43.99
2015	3.34	64.2	25.7	19.6	47.4	14.3	121.1	135.5	42.95	43.03
2016	2.92	50.7	17.2	18.8	41.7	16.7	128.0	144.6	40.45	41.64
2017	2.44	42.1	14.0	14.0	45.5	17.8	123.9	141.7	37.09	38.57
2018	^R 1.45	41.5	13.9	11.1	^P 50.2	^P 19.9	^P 111.6	^P 131.5	35.73	42.98
2019 .....	.17	-	-	-	-	-	-	-	-	-

^a See "Uranium Concentrate" in Glossary.

^b Import quantities through 1970 are reported for fiscal years. Prior to 1968, the Atomic Energy Commission was the sole purchaser of all imported uranium oxide. Trade data prior to 1982 were for transactions conducted by uranium suppliers only. For 1982 forward, transactions by uranium buyers (consumers) have been included. Buyer imports and exports prior to 1982 are believed to be small.

^c Does not include any fuel rods removed from reactors and later reloaded.

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

^e Value has been rounded to avoid disclosure of individual company data.

R=Revised. P=Preliminary. E=Estimate. NA=Not available. -- =Not applicable.

Note: See "Uranium Oxide" in Glossary.

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

Sources: • **1949–1966:** U.S. Department of Energy, Grand Junction Office, *Statistical Data of the Uranium Industry*, Report No. GJO-100, annual reports.

• **1967–2002:** U.S. Energy Information Administration (EIA), *Uranium Industry Annual*, annual reports. • **2003–2015:** EIA, "Domestic Uranium Production Report," annual reports; and EIA, "Uranium Marketing Annual Report," annual reports.

• **2016 forward:** EIA, "Domestic Uranium Production Report, Fourth-Quarter 2019" (February 2020), Table 1; and EIA, "2018 Uranium Marketing Annual Report" (May 2019), Tables 5, 18, 19, 21, and 22.

-- Data not available.

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.

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

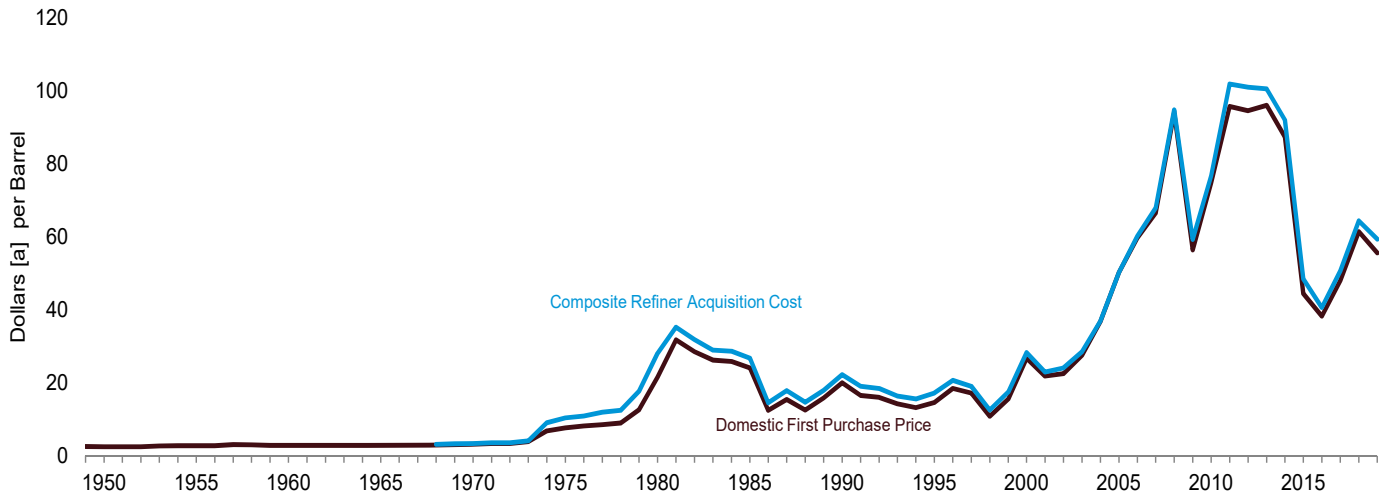
1973–2007: Calculated by EIA using the method described above in Note 2.

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.”

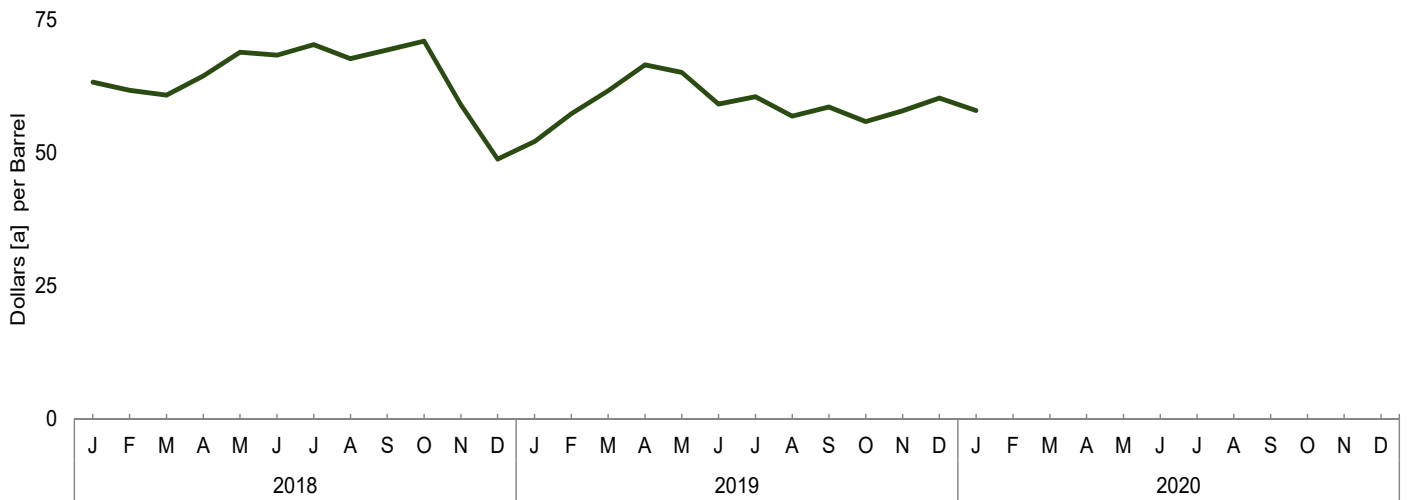
9. Energy Prices

Figure 9.1 Petroleum Prices

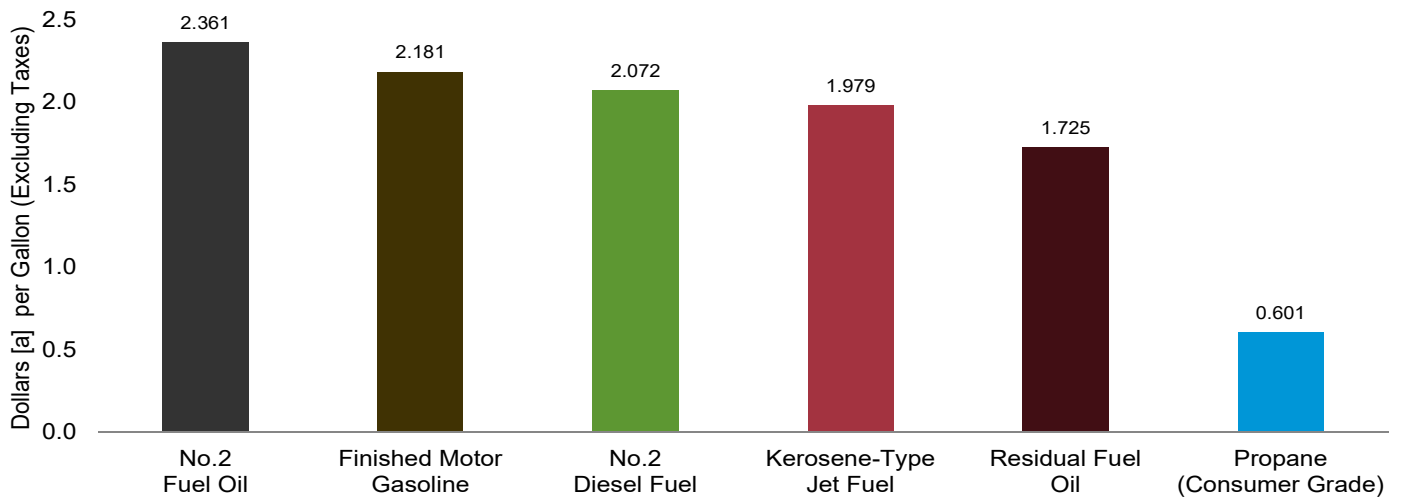
Crude Oil Prices, 1949–2019



Composite Refiner Acquisition Cost, Monthly



Refiner Prices to End Users: Select Products, December 2019



[a] Prices are not adjusted for inflation. See “Nominal Dollars” in Glossary.

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

Sources: Tables 9.1, 9.5 and 9.7.

Table 9.1 Crude Oil Price Summary
(Dollars^a per Barrel)

	Domestic First Purchase Price ^c	F.O.B. Cost of Imports ^d	Landed Cost of Imports ^e	Refiner Acquisition Cost ^b		
				Domestic	Imported	Composite
1950 Average	2.51	NA	NA	NA	NA	NA
1955 Average	2.77	NA	NA	NA	NA	NA
1960 Average	2.88	NA	NA	NA	NA	NA
1965 Average	2.86	NA	NA	NA	NA	NA
1970 Average	3.18	NA	NA	^E 3.46	^E 2.96	^E 3.40
1975 Average	7.67	11.18	12.70	8.39	13.93	10.38
1980 Average	21.59	32.37	33.67	24.23	33.89	28.07
1985 Average	24.09	25.84	26.67	26.66	26.99	26.75
1990 Average	20.03	20.37	21.13	22.59	21.76	22.22
1995 Average	14.62	15.69	16.78	17.33	17.14	17.23
2000 Average	26.72	26.27	27.53	29.11	27.70	28.26
2001 Average	21.84	20.46	21.82	24.33	22.00	22.95
2002 Average	22.51	22.63	23.91	24.65	23.71	24.10
2003 Average	27.56	25.86	27.69	29.82	27.71	28.53
2004 Average	36.77	33.75	36.07	38.97	35.90	36.98
2005 Average	50.28	47.60	49.29	52.94	48.86	50.24
2006 Average	59.69	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	98.47	92.77	94.74
2009 Average	56.35	57.78	60.23	59.49	59.17	59.29
2010 Average	74.71	74.19	76.50	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
2015 Average	44.39	41.91	45.38	49.94	46.38	48.39
2016 Average	38.29	36.37	38.56	42.41	38.75	40.66
2017 January	48.19	44.62	47.05	51.81	48.12	49.99
February	49.41	45.91	48.08	53.15	49.38	51.24
March	46.39	44.09	46.26	50.60	46.53	48.65
April	47.23	43.60	46.00	51.34	47.47	49.47
May	45.19	43.92	46.15	49.58	47.21	48.47
June	42.17	41.34	43.85	46.26	44.03	45.25
July	43.42	42.09	44.82	47.59	44.76	46.27
August	44.96	44.18	46.93	48.76	47.62	48.22
September	47.17	46.50	49.80	51.07	50.46	50.78
October	49.12	47.22	51.11	53.71	51.40	52.67
November	55.19	52.11	56.10	58.92	56.30	57.75
December	56.98	53.68	56.96	61.10	57.44	59.53
Average	48.05	45.58	48.50	52.05	49.12	50.68
2018 January	62.25	55.73	58.25	66.08	59.71	63.25
February	61.18	53.42	56.76	64.68	58.03	61.74
March	60.68	53.35	56.32	64.03	56.82	60.81
April	63.50	58.56	60.62	67.14	61.24	64.41
May	66.16	62.95	65.15	71.29	65.89	68.91
June	62.80	63.09	65.48	69.63	66.82	68.35
July	67.00	62.35	65.44	73.33	66.62	70.29
August	62.64	61.41	64.16	69.45	65.48	67.68
September	63.54	61.56	63.69	71.09	66.70	69.29
October	65.18	60.23	61.78	73.07	67.79	70.99
November	55.65	44.66	47.16	62.47	54.40	59.01
December	47.63	36.91	39.14	53.25	42.80	48.83
Average	61.40	56.31	58.89	67.05	60.95	64.38
2019 January	47.85	48.72	49.25	53.86	49.57	52.11
February	52.51	54.14	56.12	57.89	56.50	57.35
March	57.47	57.54	59.48	61.97	61.14	61.64
April	63.01	61.31	63.62	67.24	65.42	66.52
May	59.68	60.70	63.69	65.17	65.03	65.11
June	54.22	54.50	57.40	59.81	58.16	59.16
July	56.47	54.51	56.97	61.47	59.18	60.53
August	53.63	51.98	54.91	57.88	55.41	56.90
September	55.07	52.68	55.06	59.41	57.31	58.60
October	53.14	^R 50.37	^R 53.72	56.69	54.45	55.86
November	54.96	^R 51.35	^R 54.08	^R 59.42	^R 55.27	^R 57.88
December	^R 58.41	^R 51.23	^R 53.15	^R 62.23	^R 56.85	^R 60.27
Average	55.55	54.26	56.54	60.25	57.90	59.33
2020 January	NA	NA	NA	^E 61.24	^E 53.62	^E 57.94

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
^b See Note 1, "Crude Oil Refinery Acquisition Costs," at end of section.
^c See Note 2, "Crude Oil Domestic First Purchase Prices," at end of section.
^d See Note 3, "Crude Oil F.O.B. Costs," at end of section.
^e See Note 4, "Crude Oil Landed Costs," at end of section.
^R=Revised, ^{NA}=Not available, ^E=Estimate.
Notes: • Domestic first purchase prices and refinery acquisition costs for the current two months are preliminary. F.O.B. and landed costs for the current three months are preliminary. • Through 1980, F.O.B. and landed costs reflect the

period of reporting; beginning in 1981, they reflect the period of loading. • Annual averages are the averages of the monthly prices, weighted by volume.
• Geographic coverage is the 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, and all U.S. Territories and Possessions.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: See end of section.

Table 9.2 F.O.B. Costs of Crude Oil Imports From Selected Countries
(Dollars^a per Barrel)

	Selected Countries							Persian Gulf Nations ^b	Total OPEC ^c	Total Non-OPEC ^c
	Angola	Colombia	Mexico	Nigeria	Saudi Arabia	United Kingdom	Venezuela			
1973 Average ^d	W	W	—	7.81	3.25	—	5.39	3.68	5.43	4.80
1975 Average	10.97	—	11.44	11.82	10.87	—	11.04	10.88	11.34	10.62
1980 Average	33.45	W	31.06	35.93	28.17	34.36	24.81	28.92	32.21	32.85
1985 Average	26.30	—	25.33	28.04	22.04	27.64	23.64	23.31	25.67	25.96
1990 Average	20.23	20.75	19.26	22.46	20.36	23.43	19.55	18.54	20.40	20.32
1995 Average	16.58	16.73	15.64	17.40	W	16.94	13.86	W	15.36	16.02
2000 Average	27.90	29.04	25.39	28.70	24.62	27.21	24.45	24.72	25.56	26.77
2001 Average	23.25	24.25	18.89	24.85	18.98	23.30	18.01	18.89	19.73	21.04
2002 Average	24.09	24.64	21.60	25.38	23.92	24.50	20.13	23.38	22.18	22.93
2003 Average	28.22	28.89	24.83	29.40	25.03	28.76	23.81	25.17	25.36	26.21
2004 Average	37.26	37.73	31.55	38.71	34.08	37.30	31.78	33.08	33.95	33.58
2005 Average	52.48	51.89	43.00	55.95	47.96	54.48	46.39	47.21	49.60	45.79
2006 Average	62.23	59.77	52.91	65.69	56.09	66.03	55.80	56.02	59.18	55.35
2007 Average	67.80	67.93	61.35	76.64	W	69.96	64.10	69.93	69.58	62.69
2008 Average	95.66	91.17	84.61	102.06	93.03	96.33	88.06	91.44	93.15	87.15
2009 Average	57.07	57.90	56.47	64.61	57.87	65.63	55.58	59.53	58.53	57.16
2010 Average	78.18	72.56	72.46	80.83	76.44	W	70.30	75.65	75.23	73.24
2011 Average	111.82	100.21	100.90	115.35	107.08	—	97.23	106.47	105.34	98.49
2012 Average	111.23	106.43	101.84	114.51	106.65	—	100.15	105.45	104.39	95.71
2013 Average	107.71	101.24	98.40	110.06	101.16	W	97.52	100.62	100.57	93.67
2014 Average	W	80.75	86.55	W	95.60	—	84.51	94.03	89.76	82.95
2015 Average	W	47.52	44.90	W	47.53	—	40.73	46.95	43.25	41.19
2016 Average	42.68	35.28	36.22	46.20	39.30	W	34.71	38.76	38.51	34.81
2017 January	—	47.92	45.50	W	W	—	45.94	47.61	47.30	43.25
February	W	46.97	45.91	W	51.03	—	45.69	50.01	49.11	43.63
March	W	46.05	42.10	W	48.54	—	42.47	47.78	46.83	41.73
April	W	46.76	44.32	W	50.00	W	43.71	48.93	47.16	41.46
May	W	44.70	44.85	W	47.95	—	42.27	47.14	46.08	42.66
June	W	41.30	41.86	48.88	45.41	—	39.16	44.45	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	43.26
October	—	52.69	49.01	58.58	55.44	—	52.51	50.92	53.93	44.21
November	—	W	54.66	W	60.22	W	55.88	59.12	58.89	48.57
December	—	W	55.32	W	62.09	—	58.27	60.36	61.52	49.87
Average	W	48.34	46.66	54.77	51.30	W	45.60	50.16	49.55	43.30
2018 January	W	61.24	58.75	W	65.03	W	62.07	63.50	64.12	51.34
February	W	59.66	56.74	W	63.19	W	55.72	61.90	61.07	49.79
March	—	W	56.73	W	65.04	W	56.84	61.90	60.90	49.09
April	W	65.95	57.68	W	68.33	W	63.28	66.05	66.09	53.73
May	—	W	63.32	W	70.57	W	66.56	69.66	70.07	58.99
June	W	W	64.46	W	71.32	W	64.82	70.18	69.44	59.81
July	W	68.32	66.21	—	70.62	—	62.93	70.30	67.64	59.85
August	W	67.29	63.08	W	71.08	W	63.09	70.11	68.40	57.46
September	W	W	68.15	W	72.90	W	68.94	72.05	71.80	56.39
October	W	W	73.91	W	74.73	W	68.44	74.61	73.26	54.18
November	—	64.87	63.76	W	62.34	W	53.25	63.44	60.58	36.18
December	—	50.04	52.70	W	57.79	—	46.46	55.74	53.04	28.95
Average	74.44	62.51	62.75	71.41	68.23	71.65	61.25	66.55	65.61	51.41
2019 January	—	53.27	54.81	W	W	W	48.38	58.54	55.22	46.13
February	—	56.59	58.52	W	W	W	W	62.58	63.09	51.47
March	—	61.28	60.66	W	67.34	W	—	65.62	65.95	55.66
April	—	67.09	63.13	W	70.60	W	—	68.89	70.54	59.56
May	W	65.40	62.16	70.81	W	69.74	—	66.11	67.97	59.17
June	W	61.09	58.75	W	W	W	—	62.67	63.47	51.82
July	W	W	58.93	W	W	W	—	62.08	63.82	52.32
August	—	59.37	50.72	W	59.24	W	—	57.90	59.51	50.47
September	—	W	56.73	W	60.27	W	—	58.79	59.66	51.05
October	—	W	51.74	W	W	W	—	^R 56.42	^R 58.30	^R 48.76
November	—	^R 59.42	^R 51.24	W	W	W	—	^R 57.45	^R 60.70	^R 49.21
December	—	59.21	55.24	—	W	—	—	W	61.40	50.04
Average	66.97	60.76	56.75	67.21	63.56	65.21	48.72	61.40	62.20	52.38

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
^b Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, and the Neutral Zone (between Kuwait and Saudi Arabia).
^c See "Organization of the Petroleum Exporting Countries (OPEC)" in Glossary for exact years of each country's membership. On this table, "Total OPEC" for all years includes Algeria, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela; Angola is included in "Total OPEC" 2007 forward; Gabon is included in "Total OPEC" 1974–1995 and July 2016 forward; Ecuador is included in "Total OPEC" 1973–1992 and 2008 forward; Indonesia is included in "Total OPEC" 1973–2008 and 2016.
^d Based on October, November, and December data only.
^R=Revised. —=No data reported. W=Value withheld to avoid disclosure of individual company data.
Notes: • The Free on Board (F.O.B.) cost at the country of origin excludes all

costs related to insurance and transportation. See "F.O.B. (Free on Board)" in Glossary, and Note 3, "Crude Oil F.O.B. Costs," at end of section. • Values for the current two months are preliminary. • Through 1980, prices reflect the period of reporting; beginning in 1981, prices reflect the period of loading.
• Annual averages are averages of the monthly prices, including prices not published, weighted by volume. • Cargoes that are purchased on a "netback" basis, or under similar contractual arrangements whereby the actual purchase price is not established at the time the crude oil is acquired for importation into the United States, are not included in the published data until the actual prices have been determined and reported. • U.S. geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual and monthly data beginning in 1973.
Sources: See end of section.

Table 9.3 Landed Costs of Crude Oil Imports From Selected Countries
(Dollars^a per Barrel)

	Selected Countries								Persian Gulf Nations ^b	Total OPEC ^c	Total Non-OPEC ^c
	Angola	Canada	Colombia	Mexico	Nigeria	Saudi Arabia	United Kingdom	Venezuela			
1973 Average ^d	W	5.33	W	—	9.08	5.37	—	5.99	5.91	6.85	5.64
1975 Average	11.81	12.84	—	12.61	12.70	12.50	—	12.36	12.64	12.70	12.70
1980 Average	34.76	30.11	W	31.77	37.15	29.80	35.68	25.92	30.59	33.56	33.99
1985 Average	27.39	25.71	—	25.63	28.96	24.72	28.36	24.43	25.50	26.86	26.53
1990 Average	21.51	20.48	22.34	19.64	23.33	21.82	22.65	20.31	20.55	21.23	20.98
1995 Average	17.66	16.65	17.45	16.19	18.25	16.84	17.91	14.81	16.78	16.61	16.95
2000 Average	29.57	26.69	29.68	26.03	30.04	26.58	29.26	26.05	26.77	27.29	27.80
2001 Average	25.13	20.72	25.88	19.37	26.55	20.98	25.32	19.81	20.73	21.52	22.17
2002 Average	25.43	22.98	25.28	22.09	26.45	24.77	26.35	21.93	24.13	23.83	23.97
2003 Average	30.14	26.76	30.55	25.48	31.07	27.50	30.62	25.70	27.54	27.70	27.68
2004 Average	39.62	34.51	39.03	32.25	40.95	37.11	39.28	33.79	36.53	36.84	35.29
2005 Average	54.31	44.73	53.42	43.47	57.55	50.31	55.28	47.87	49.68	51.36	47.31
2006 Average	64.85	53.90	62.13	53.76	68.26	59.19	67.44	57.37	58.92	61.21	57.14
2007 Average	71.27	60.38	70.91	62.31	78.01	70.78	72.47	66.13	69.83	71.14	63.96
2008 Average	98.18	90.00	93.43	85.97	104.83	94.75	96.95	90.76	93.59	95.49	90.59
2009 Average	61.32	57.60	58.50	57.35	68.01	62.14	63.87	57.78	62.15	61.90	58.58
2010 Average	80.61	72.80	74.25	72.86	83.14	79.29	80.29	72.43	78.60	78.28	74.68
2011 Average	114.05	89.92	102.57	101.21	116.43	108.83	118.45	100.14	108.01	107.84	98.64
2012 Average	114.95	84.24	107.02	102.45	116.88	108.15	W	101.58	107.74	107.56	95.05
2013 Average	110.81	84.41	103.00	99.06	112.87	102.60	111.23	99.34	102.53	102.98	91.99
2014 Average	99.25	81.30	88.29	87.48	102.16	94.91	W	86.88	95.30	93.10	84.67
2015 Average	51.73	41.99	49.53	45.51	54.70	49.78	W	42.87	49.43	47.44	44.09
2016 Average	44.65	36.27	38.86	36.64	48.11	42.14	W	35.50	41.20	40.54	37.09
2017 January	—	44.70	49.17	46.35	54.74	50.40	W	47.53	49.35	49.22	45.76
February	W	44.97	49.66	46.57	54.42	52.27	—	46.28	50.92	50.48	46.26
March	W	43.00	48.29	42.97	W	50.36	W	43.91	49.58	48.91	44.03
April	W	43.05	48.38	44.65	W	50.18	W	44.53	49.03	48.47	44.31
May	W	44.24	45.92	45.51	51.83	49.17	W	43.50	47.37	47.36	45.23
June	50.74	41.76	44.89	42.36	50.36	47.97	W	40.88	46.86	45.77	42.67
July	50.20	41.60	46.72	45.17	50.89	48.22	—	42.25	47.48	46.91	43.36
August	52.23	43.18	48.56	46.86	53.18	51.43	W	46.16	49.71	49.55	45.41
September	56.59	45.14	52.43	49.63	57.99	55.03	W	50.98	52.93	53.53	47.42
October	W	45.68	53.95	50.28	59.35	58.34	W	53.05	55.14	55.71	48.21
November	61.03	51.16	59.52	55.47	64.27	61.66	62.24	57.19	59.63	59.83	53.67
December	W	51.15	61.58	56.01	67.20	63.52	—	58.80	61.48	62.13	53.90
Average	54.17	44.93	50.60	47.73	56.48	52.56	56.11	47.02	51.42	51.26	46.67
2018 January	66.55	51.17	63.25	59.86	69.15	64.81	W	62.79	63.83	64.78	54.69
February	W	48.27	62.55	57.37	69.60	65.30	68.19	55.98	63.21	62.93	53.05
March	70.27	47.01	63.59	56.99	70.59	66.77	W	57.72	63.72	63.53	51.07
April	W	52.22	66.34	58.62	W	69.44	73.82	63.62	67.09	66.95	56.32
May	W	58.19	70.63	64.03	79.38	71.28	W	67.45	70.85	71.50	61.72
June	76.28	58.57	70.64	65.38	W	72.17	72.88	65.81	71.49	70.65	62.95
July	75.55	59.00	71.20	66.82	W	72.56	—	63.67	71.62	70.54	62.54
August	75.45	56.78	68.79	64.18	W	72.85	72.41	64.12	71.64	70.48	60.79
September	75.83	52.35	73.88	69.79	W	72.56	W	70.73	72.26	72.45	58.76
October	W	47.96	74.22	74.76	W	73.75	W	69.31	72.24	72.19	57.15
November	—	28.06	66.20	64.52	68.03	65.87	W	55.70	64.99	63.30	38.56
December	—	21.62	54.71	53.89	62.21	60.39	W	48.93	58.67	57.11	30.89
Average	73.42	48.34	66.75	63.48	71.93	69.40	73.28	62.46	67.55	67.22	54.27
2019 January	—	40.33	56.26	56.12	W	61.69	W	51.82	59.80	57.46	45.44
February	—	50.24	59.69	59.72	W	66.37	W	52.72	64.07	62.76	53.71
March	—	54.61	64.65	61.82	W	67.50	W	55.25	65.81	65.30	57.85
April	W	59.01	69.08	64.18	75.99	69.74	73.00	—	68.83	69.89	62.21
May	72.84	58.49	68.17	62.81	72.66	68.10	71.30	W	67.11	68.90	62.19
June	W	50.84	65.87	59.32	69.41	65.06	65.41	—	63.71	65.12	55.30
July	W	51.14	64.10	59.50	67.57	64.14	64.63	—	63.83	64.76	54.97
August	—	50.68	59.22	51.59	65.76	61.59	W	—	60.87	61.75	52.99
September	W	50.64	58.77	57.73	66.34	61.59	64.40	—	61.03	61.58	53.27
October	W	R 49.64	57.62	53.03	R 65.73	R 62.36	63.06	—	R 59.89	R 60.99	R 51.90
November	W	R 49.19	R 60.91	R 52.57	R 69.20	R 63.38	W	—	R 60.38	R 62.13	R 51.97
December	—	48.35	62.53	56.67	W	63.61	—	—	61.02	62.15	51.42
Average	68.58	51.10	62.83	57.97	68.81	64.67	66.66	52.48	63.04	63.31	54.61

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
^b Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, United Arab Emirates, and the Neutral Zone (between Kuwait and Saudi Arabia).
^c See "Organization of the Petroleum Exporting Countries (OPEC)" in Glossary for exact years of each country's membership. On this table, "Total OPEC" for all years includes Algeria, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, and Venezuela; Angola is included in "Total OPEC" 2007 forward; Gabon is included in "Total OPEC" 1974–1995 and July 2016 forward; Ecuador is included in "Total OPEC" 1973–1992 and 2008 forward; Indonesia is included in "Total OPEC" 1973–2008 and 2016.
^d Based on October, November, and December data only.
 R=Revised. —=No data reported. W=Value withheld to avoid disclosure of individual company data.
 Notes: • See "Landed Costs" in Glossary, and Note 4, "Crude Oil Landed Costs," at end of section. • Values for the current two months are preliminary. • Through 1980, prices reflect the period of reporting; beginning in 1981, prices

reflect the period of loading. • Annual averages are averages of the monthly prices, including prices not published, weighted by volume. • Cargoes that are purchased on a "netback" basis, or under similar contractual arrangements whereby the actual purchase price is not established at the time the crude oil is acquired for importation into the United States, are not included in the published data until the actual prices have been determined and reported. • U.S. geographic coverage is the 50 states and the District of Columbia.
 Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual and monthly data beginning in 1973.
 Sources: • **October 1973–September 1977:** Federal Energy Administration, Form FEA-F701-M-0, "Transfer Pricing Report." • **October 1977–December 1977:** U.S. Energy Information Administration (EIA), Form FEA-F701-M-0, "Transfer Pricing Report." • **1978–2007:** EIA, *Petroleum Marketing Annual 2008*, Table 22. • **2008 forward:** EIA, *Petroleum Marketing Monthly*, March 2020, Table 22.

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

(Dollars^a per Gallon, Including Taxes)

	Platt's / Bureau of Labor Statistics Data				U.S. Energy Information Administration Data			
	Motor Gasoline by Grade				Regular Motor Gasoline by Area Type			On-Highway Diesel Fuel
	Leaded Regular	Unleaded Regular	Unleaded Premium ^b	All Grades ^c	Conventional Gasoline Areas ^d	Reformulated Gasoline Areas ^e	All Areas	
1950 Average	0.268	NA	NA	NA	--	--	--	--
1955 Average	.291	NA	NA	NA	--	--	--	--
1960 Average	.311	NA	NA	NA	--	--	--	--
1965 Average	.312	NA	NA	NA	--	--	--	--
1970 Average	.357	NA	NA	NA	--	--	--	--
1975 Average	.567	NA	NA	NA	--	--	--	--
1980 Average	1.191	1.245	NA	1.221	--	--	--	--
1985 Average	1.115	1.202	1.340	1.196	--	--	--	NA
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 Average	--	2.448	2.866	2.510	2.334	2.629	2.429	2.707
2016 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
March	--	2.572	3.101	2.631	2.488	2.808	2.591	2.988
April	--	2.737	3.258	2.795	2.652	2.978	2.757	3.096
May	--	2.907	3.423	2.963	2.808	3.096	2.901	3.244
June	--	2.914	3.440	2.970	2.802	3.078	2.891	3.253
July	--	2.873	3.399	2.930	2.770	3.015	2.849	3.233
August	--	2.862	3.384	2.919	2.768	2.983	2.836	3.218
September	--	2.873	3.400	2.930	2.769	2.979	2.836	3.262
October	--	2.887	3.431	2.945	2.785	3.017	2.860	3.365
November	--	2.671	3.251	2.733	2.561	2.829	2.647	3.300
December	--	2.414	3.015	2.479	2.263	2.581	2.366	3.123
Average	--	2.735	3.270	2.794	2.631	2.904	2.719	3.178
2019 January	--	2.289	2.874	2.352	2.145	2.464	2.248	2.980
February	--	2.353	2.901	2.412	2.223	2.495	2.309	2.997
March	--	2.564	3.079	2.620	2.443	2.673	2.516	3.076
April	--	2.835	3.382	2.894	2.694	3.023	2.798	3.121
May	--	2.901	3.471	2.963	2.731	3.136	2.859	3.161
June	--	2.752	3.328	2.814	2.601	2.963	2.716	3.089
July	--	2.776	3.327	2.836	2.640	2.954	2.740	3.045
August	--	2.655	3.222	2.716	2.521	2.836	2.621	3.005
September	--	2.630	3.214	2.694	2.489	2.814	2.592	3.016
October	--	2.673	3.297	2.741	2.497	2.907	2.627	3.053
November	--	2.620	3.254	2.687	2.480	2.853	2.598	3.069
December	--	2.587	3.190	2.652	2.469	2.744	2.555	3.055
Average	--	2.636	3.212	2.698	2.501	2.827	2.604	3.056
2020 January	--	2.567	3.157	2.631	R 2.459	2.740	2.548	3.048
February	--	2.465	3.071	2.530	2.348	2.645	2.442	2.910

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
^b The 1981 average (available in Web file) is based on September through December data only.
^c Also includes grades of motor gasoline not shown separately.
^d Any area that does not require the sale of reformulated gasoline.
^e "Reformulated Gasoline Areas" are ozone nonattainment areas designated by the U.S. Environmental Protection Agency that require the use of reformulated gasoline (RFG). Areas are reclassified each time a shift in or out of an RFG program occurs due to federal or state regulations.
R=Revised. NA=Not available. --=Not applicable.
Notes: • See Note 5, "Motor Gasoline Prices," at end of section. • See "Motor Gasoline Grades," "Motor Gasoline, Conventional," "Motor Gasoline, Oxygenated," and "Motor Gasoline, Reformulated" in Glossary. • Geographic coverage: for columns 1-4, current coverage is 85 urban areas; for columns 5-7, coverage is the 50 states and the District of Columbia; for column 8, coverage is the 48 contiguous

states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: • **Motor Gasoline by Grade, Monthly Data: October 1973 forward**—U.S. Department of Labor, Bureau of Labor Statistics (BLS), *U.S. City Average Gasoline Prices*. • **Motor Gasoline by Grade, Annual Data: 1949-1973**—Platt's Oil Price Handbook and Oilmanac, 1974, 51st Edition. **1974 forward**—calculated by the U.S. Energy Information Administration (EIA) as simple averages of the BLS monthly data. • **Regular Motor Gasoline by Area Type:** EIA, calculated as simple averages of weighted weekly estimates from "Weekly U.S. Retail Gasoline Prices, Regular Grade." • **On-Highway Diesel Fuel:** EIA, calculated as simple averages of weighted weekly estimates from "Weekly Retail On-Highway Diesel Prices."

Table 9.5 Refiner Prices of Residual Fuel Oil
(Dollars^a per Gallon, Excluding Taxes)

	Residual Fuel Oil Sulfur Content Less Than or Equal to 1%		Residual Fuel Oil Sulfur Content Greater Than 1%		Average	
	Sales for Resale	Sales to End Users	Sales for Resale	Sales to End Users	Sales for Resale	Sales to End Users
1978 Average	0.293	0.314	0.245	0.275	0.263	0.298
1980 Average .....	.608	.675	.479	.523	.528	.607
1985 Average .....	.610	.644	.560	.582	.577	.610
1990 Average .....	.472	.505	.372	.400	.413	.444
1995 Average .....	.383	.436	.338	.377	.363	.392
2000 Average .....	.627	.708	.512	.566	.566	.602
2001 Average .....	.523	.642	.428	.492	.476	.531
2002 Average .....	.546	.640	.508	.544	.530	.569
2003 Average .....	.728	.804	.588	.651	.661	.698
2004 Average .....	.764	.835	.601	.692	.681	.739
2005 Average	1.115	1.168	.842	.974	.971	1.048
2006 Average	1.202	1.342	1.085	1.173	1.136	1.218
2007 Average	1.406	1.436	1.314	1.350	1.350	1.374
2008 Average	1.918	2.144	1.843	1.889	1.866	1.964
2009 Average	1.337	1.413	1.344	1.306	1.342	1.341
2010 Average	1.756	1.920	1.679	1.619	1.697	1.713
2011 Average	2.389	2.736	2.316	2.257	2.336	2.401
2012 Average	2.548	3.025	2.429	2.433	2.457	2.592
2013 Average	2.363	2.883	2.249	2.353	2.278	2.482
2014 Average	2.153	2.694	1.996	2.221	2.044	2.325
2015 Average .....	.971	1.529	.999	1.227	.996	1.285
2016 Average .....	.736	1.138	.746	.897	.745	.945
2017 January	1.099	W	1.121	1.249	1.119	1.309
February	1.174	W	1.115	1.243	1.121	1.291
March	1.103	W	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
Average	1.112	W	1.117	1.237	1.116	1.287
2018 January	1.301	W	1.311	1.476	1.310	1.507
February	1.221	W	1.325	1.415	1.319	1.490
March	1.227	W	1.306	1.386	1.302	1.452
April	1.311	W	1.349	1.438	1.348	1.504
May	1.462	W	1.501	1.615	1.500	1.667
June	1.487	W	1.558	1.643	1.553	1.731
July	1.543	W	1.583	1.709	1.581	1.767
August	1.499	W	1.552	1.680	1.549	1.764
September	1.520	W	1.561	1.696	1.560	1.761
October	1.620	W	1.703	1.816	1.700	1.875
November	1.360	W	1.562	1.731	1.556	1.827
December	1.252	W	1.295	1.467	1.293	1.608
Average	1.397	W	1.466	1.587	1.463	1.662
2019 January	1.626	W	1.326	1.417	1.357	1.425
February	1.808	W	1.458	1.553	1.508	1.568
March	W	W	1.542	1.606	1.581	1.639
April	W	W	1.549	1.648	1.577	1.685
May	W	W	1.502	1.607	1.505	1.635
June	W	W	1.367	1.527	1.372	1.601
July	1.455	W	1.492	1.572	1.489	1.625
August	1.331	W	1.235	1.345	1.247	1.466
September	W	W	1.325	1.511	1.337	1.560
October	1.535	W	1.188	1.393	1.263	1.543
November	1.681	W	^R 1.220	^R 1.364	^R 1.353	^R 1.594
December	1.758	W	1.397	1.419	1.558	1.725

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
^R=Revised. 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 2020, Table 16.

Table 9.6 Refiner Prices of Petroleum Products for Resale
(Dollars^a per Gallon, Excluding Taxes)

	Finished Motor Gasoline ^b	Finished Aviation Gasoline	Kerosene-Type Jet Fuel	Kerosene	No. 2 Fuel Oil	No. 2 Diesel Fuel	Propane (Consumer Grade)
1978 Average	0.434	0.537	0.386	0.404	0.369	0.365	0.237
1980 Average	.941	1.128	.868	.864	.803	.801	.415
1985 Average	.835	1.130	.794	.874	.776	.772	.398
1990 Average	.786	1.063	.773	.839	.697	.694	.386
1995 Average	.626	.975	.539	.580	.511	.538	.344
2000 Average	.963	1.330	.880	.969	.886	.898	.595
2001 Average	.886	1.256	.763	.821	.756	.784	.540
2002 Average	.828	1.146	.716	.752	.694	.724	.431
2003 Average	1.002	1.288	.871	.955	.881	.883	.607
2004 Average	1.288	1.627	1.208	1.271	1.125	1.187	.751
2005 Average	1.670	2.076	1.723	1.757	1.623	1.737	.933
2006 Average	1.969	2.490	1.961	2.007	1.834	2.012	1.031
2007 Average	2.182	2.758	2.171	2.249	2.072	2.203	1.194
2008 Average	2.586	3.342	3.020	2.851	2.745	2.994	1.437
2009 Average	1.767	2.480	1.719	1.844	1.657	1.713	.921
2010 Average	2.165	2.874	2.185	2.299	2.147	2.214	1.212
2011 Average	2.867	3.739	3.014	3.065	2.907	3.034	1.467
2012 Average	2.929	3.919	3.080	3.163	3.031	3.109	1.033
2013 Average	2.812	3.869	2.953	3.084	2.966	3.028	1.048
2014 Average	2.618	3.687	2.763	2.882	2.741	2.812	1.165
2015 Average	1.726	2.764	1.592	1.735	1.565	1.667	.555
2016 Average	1.454	2.404	1.295	1.383	1.239	1.378	.523
2017 January	1.627	2.614	1.561	1.761	1.560	1.636	.788
February	1.625	2.592	1.592	1.657	1.553	1.641	.792
March	1.634	2.618	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	1.795	1.961	1.781	1.936	.997
December	1.720	2.691	1.846	2.034	1.841	1.918	.991
Average	1.689	2.682	1.603	1.730	1.600	1.691	.800
2018 January	1.849	2.900	1.969	2.209	1.990	2.042	.990
February	1.823	2.893	1.911	2.088	1.889	1.972	.889
March	1.889	2.904	1.893	1.969	1.848	1.952	.827
April	2.054	3.085	2.032	2.075	1.982	2.099	.792
May	2.205	3.181	2.175	2.205	2.143	2.258	.867
June	2.135	3.138	2.152	2.145	2.089	2.203	.807
July	2.148	3.111	2.140	2.133	2.079	2.192	.854
August	2.118	3.085	2.148	2.169	2.114	2.203	.907
September	2.136	3.124	2.214	2.246	2.214	2.282	.951
October	2.090	3.099	2.296	2.437	2.281	2.379	.948
November	1.732	2.762	2.100	2.206	2.098	2.130	.826
December	1.514	2.463	1.811	1.954	1.796	1.794	.798
Average	1.980	3.006	2.073	2.160	2.002	2.130	.877
2019 January	1.483	2.394	1.822	2.021	1.813	1.789	.775
February	1.624	2.527	1.925	2.111	1.907	1.950	.772
March	1.881	2.874	1.960	2.087	1.958	2.020	.754
April	2.138	3.100	2.022	2.073	1.993	2.100	.660
May	2.110	3.021	2.061	2.057	1.989	2.106	.595
June	1.909	2.841	1.879	1.914	1.824	1.874	.493
July	1.984	2.988	1.938	1.969	1.847	1.938	.478
August	1.820	2.854	1.864	1.861	1.795	1.865	.458
September	1.854	2.829	1.898	1.984	1.901	1.955	.477
October	1.871	2.857	1.931	2.003	1.926	1.984	.544
November	^R 1.819	2.783	1.922	^R 2.046	1.884	1.974	^R .655
December	1.757	2.734	1.933	2.087	1.919	1.942	.626

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

^b See Note 5, "Motor Gasoline Prices," at end of section.

R=Revised.

Notes: • Sales for resale are those made to purchasers other than ultimate consumers. Sales to end users are shown in Table 9.7; they are sales made directly to ultimate consumers, including bulk consumers (such as agriculture, industry, and electric utilities) and residential and commercial consumers. • Values for the current month are preliminary. • Through 1982, prices are U.S. Energy

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

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1978 and monthly data beginning in 1982.

Sources: • **1978–2007:** EIA, *Petroleum Marketing Annual 2007*, Table 4. • **2008 forward:** EIA, *Petroleum Marketing Monthly*, March 2020, Table 4.

Table 9.7 Refiner Prices of Petroleum Products to End Users
(Dollars^a per Gallon, Excluding Taxes)

	Finished Motor Gasoline ^b	Finished Aviation Gasoline	Kerosene-Type Jet Fuel	Kerosene	No. 2 Fuel Oil	No. 2 Diesel Fuel	Propane (Consumer Grade)
1978 Average	0.484	0.516	0.387	0.421	0.400	0.377	0.335
1980 Average	1.035	1.084	.868	.902	.788	.818	.482
1985 Average	.912	1.201	.796	1.030	.849	.789	.717
1990 Average	.883	1.120	.766	.923	.734	.725	.745
1995 Average	.765	1.005	.540	.589	.562	.560	.492
2000 Average	1.106	1.306	.899	1.123	.927	.935	.603
2001 Average	1.032	1.323	.775	1.045	.829	.842	.506
2002 Average	.947	1.288	.721	.990	.737	.762	.419
2003 Average	1.156	1.493	.872	1.224	.933	.944	.577
2004 Average	1.435	1.819	1.207	1.160	1.173	1.243	.839
2005 Average	1.829	2.231	1.735	1.957	1.705	1.786	1.089
2006 Average	2.128	2.682	1.998	2.244	1.982	2.096	1.358
2007 Average	2.345	2.849	2.165	2.263	2.241	2.267	1.489
2008 Average	2.775	3.273	3.052	3.283	2.986	3.150	1.892
2009 Average	1.888	2.442	1.704	2.675	1.962	1.834	1.220
2010 Average	2.301	3.028	2.201	3.063	2.462	2.314	1.481
2011 Average	3.050	3.803	3.054	3.616	3.193	3.117	1.709
2012 Average	3.154	3.971	3.104	3.843	3.358	3.202	1.139
2013 Average	3.049	3.932	2.979	3.842	3.335	3.122	1.028
2014 Average	2.855	3.986	2.772	W	3.329	2.923	1.097
2015 Average	2.003	W	1.629	W	2.016	1.819	.481
2016 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	1.831	W	2.134	2.047	1.011
December	2.034	W	1.869	W	2.263	2.037	1.028
Average	1.976	W	1.629	W	2.010	1.811	.772
2018 January	2.108	W	2.012	W	2.206	2.144	.971
February	2.127	W	1.970	W	2.365	2.107	.948
March	2.160	W	1.924	W	2.484	2.076	.842
April	2.315	W	2.080	W	2.486	2.201	.839
May	2.494	W	2.221	3.219	2.478	2.368	.916
June	2.469	W	2.196	3.292	2.413	2.340	.883
July	2.442	W	2.176	W	2.436	2.316	.956
August	2.421	W	2.183	3.272	2.499	2.327	.989
September	2.428	W	2.257	3.189	2.612	2.388	1.062
October	2.441	W	2.349	W	2.696	2.500	.988
November	2.205	W	2.162	W	2.431	2.282	.876
December	1.973	W	1.852	W	2.222	1.981	.794
Average	2.303	W	2.119	3.113	2.380	2.256	.925
2019 January	1.854	W	1.827	W	2.195	1.960	.756
February	1.949	W	1.956	W	2.367	2.080	.784
March	2.137	W	2.005	W	2.376	2.158	.761
April	2.487	W	2.063	W	2.461	2.259	.686
May	2.520	W	2.141	W	2.389	2.272	.599
June	2.366	W	1.907	3.312	2.156	2.078	.464
July	2.375	W	1.973	3.260	2.206	2.100	.487
August	2.252	W	1.901	W	2.155	2.037	.461
September	2.242	W	1.937	3.203	2.200	2.101	.473
October	2.289	W	1.965	W	2.174	2.134	.516
November	2.229	W	1.979	W	2.321	2.126	.635
December	2.181	W	1.979	W	2.361	2.072	.601

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

^b See Note 5, "Motor Gasoline Prices," at end of section.

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.

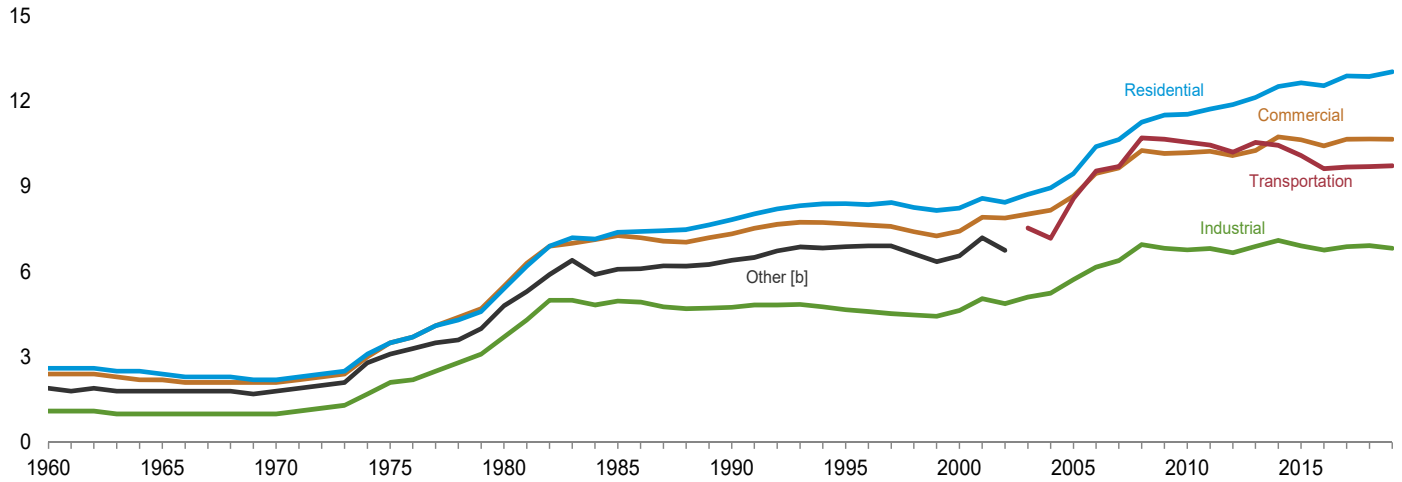
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1978 and monthly data beginning in 1982.

Sources: • 1978–2007: EIA, *Petroleum Marketing Annual 2007*, Table 2. • 2008 forward: EIA, *Petroleum Marketing Monthly*, March 2020, Table 2.

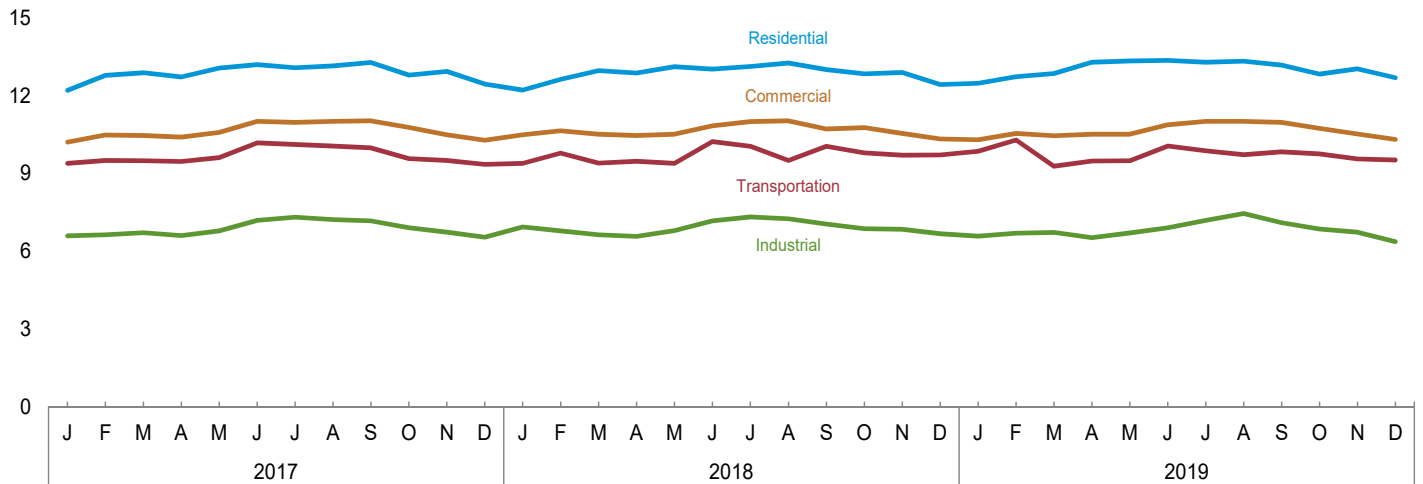
Figure 9.2 Average Retail Prices of Electricity

(Cents [a] per Kilowatthour)

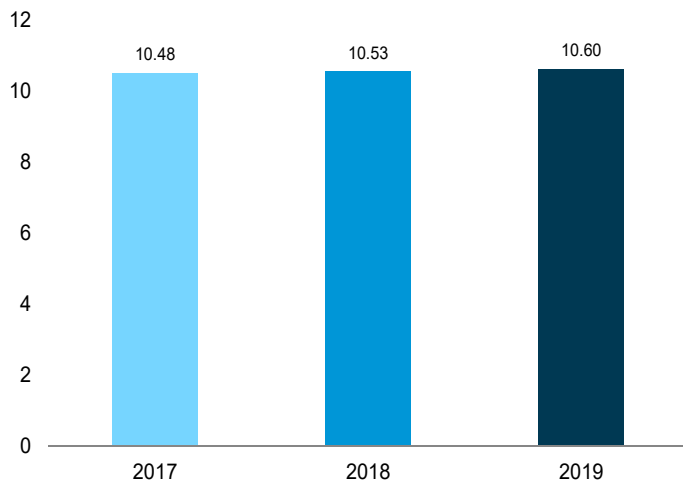
By Sector, 1960–2019



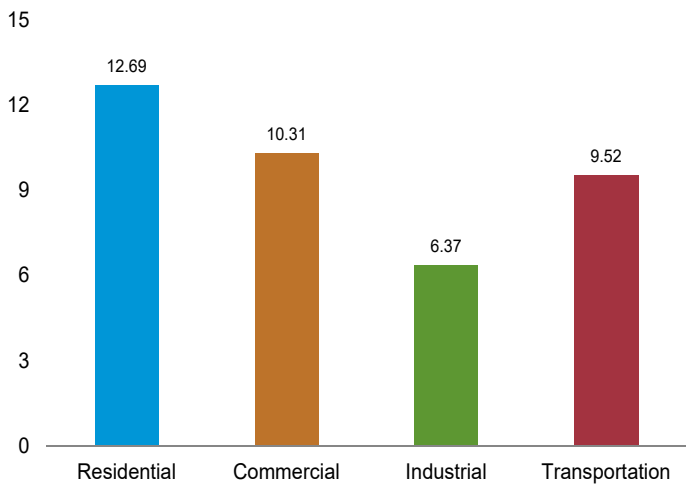
By Sector, Monthly



Total, January–December



By Sector, December 2019



[a] Prices are not adjusted for inflation. See “Nominal Dollars” in Glossary.
 [b] Public street and highway lighting, interdepartmental sales, other sales to public authorities, agricultural and irrigation, and transportation including railroads and railways.

Note: Includes taxes.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#prices>.
 Source: Table 9.8.

Table 9.8 Average Retail Prices of Electricity
(Cents^a per Kilowatthour, Including Taxes)

	Residential	Commercial ^b	Industrial ^c	Transportation ^d	Other ^e	Total
1960 Average	2.60	2.40	1.10	NA	1.90	1.80
1965 Average	2.40	2.20	1.00	NA	1.80	1.70
1970 Average	2.20	2.10	1.00	NA	1.80	1.70
1975 Average	3.50	3.50	2.10	NA	3.10	2.90
1980 Average	5.40	5.50	3.70	NA	4.80	4.70
1985 Average	7.39	7.27	4.97	NA	6.09	6.44
1990 Average	7.83	7.34	4.74	NA	6.40	6.57
1995 Average	8.40	7.69	4.66	NA	6.88	6.89
2000 Average	8.24	7.43	4.64	NA	6.56	6.81
2001 Average	8.58	7.92	5.05	NA	7.20	7.29
2002 Average	8.44	7.89	4.88	NA	6.75	7.20
2003 Average	8.72	8.03	5.11	7.54	---	7.44
2004 Average	8.95	8.17	5.25	7.18	---	7.61
2005 Average	9.45	8.67	5.73	8.57	---	8.14
2006 Average	10.40	9.46	6.16	9.54	---	8.90
2007 Average	10.65	9.65	6.39	9.70	---	9.13
2008 Average	11.26	10.26	6.96	10.71	---	9.74
2009 Average	11.51	10.16	6.83	10.66	---	9.82
2010 Average	11.54	10.19	6.77	10.56	---	9.83
2011 Average	11.72	10.24	6.82	10.46	---	9.90
2012 Average	11.88	10.09	6.67	10.21	---	9.84
2013 Average	12.13	10.26	6.89	10.55	---	10.07
2014 Average	12.52	10.74	7.10	10.45	---	10.44
2015 Average	12.65	10.64	6.91	10.09	---	10.41
2016 Average	12.55	10.43	6.76	9.63	---	10.27
2017 January	12.21	10.21	6.59	9.39	---	10.13
February	12.79	10.48	6.63	9.50	---	10.28
March	12.89	10.46	6.71	9.49	---	10.28
April	12.72	10.40	6.60	9.46	---	10.07
May	13.07	10.59	6.78	9.61	---	10.34
June	13.20	11.01	7.19	10.18	---	10.83
July	13.08	10.97	7.31	10.12	---	10.95
August	13.15	11.01	7.22	10.06	---	10.91
September	13.28	11.03	7.17	9.99	---	10.86
October	12.80	10.78	6.91	9.57	---	10.40
November	12.94	10.49	6.73	9.50	---	10.28
December	12.45	10.28	6.54	9.35	---	10.17
Average	12.89	10.66	6.88	9.68	---	10.48
2018 January	12.22	10.49	6.94	9.39	---	10.41
February	12.63	10.65	6.78	9.78	---	10.42
March	12.97	10.51	6.63	9.40	---	10.34
April	12.88	10.46	6.57	9.47	---	10.18
May	13.12	10.51	6.80	9.39	---	10.35
June	13.03	10.84	7.18	10.23	---	10.75
July	13.13	11.00	7.32	10.05	---	10.99
August	13.26	11.03	7.25	9.50	---	11.01
September	13.01	10.72	7.05	10.05	---	10.66
October	12.85	10.77	6.88	9.79	---	10.41
November	12.90	10.54	6.85	9.70	---	10.35
December	12.43	10.33	6.67	9.71	---	10.21
Average	12.87	10.67	6.92	9.70	---	10.53
2019 January	R 12.48	R 10.30	6.58	9.86	---	10.29
February	R 12.73	R 10.54	6.69	R 10.29	---	10.45
March	R 12.86	R 10.45	R 6.72	9.28	---	R 10.39
April	R 13.29	R 10.51	R 6.52	R 9.48	---	R 10.30
May	R 13.34	R 10.51	R 6.70	R 9.49	---	R 10.42
June	R 13.36	R 10.88	R 6.91	R 10.06	---	R 10.80
July	R 13.29	R 11.01	R 7.19	R 9.88	---	R 11.06
August	R 13.33	R 11.01	R 7.45	R 9.72	---	R 11.12
September	R 13.18	10.97	R 7.10	R 9.84	---	R 10.89
October	12.84	10.74	R 6.86	R 9.75	---	R 10.46
November	13.04	R 10.52	6.73	9.56	---	R 10.41
December	12.69	10.31	6.37	9.52	---	10.27
Average	13.04	10.66	6.83	9.73	---	10.60

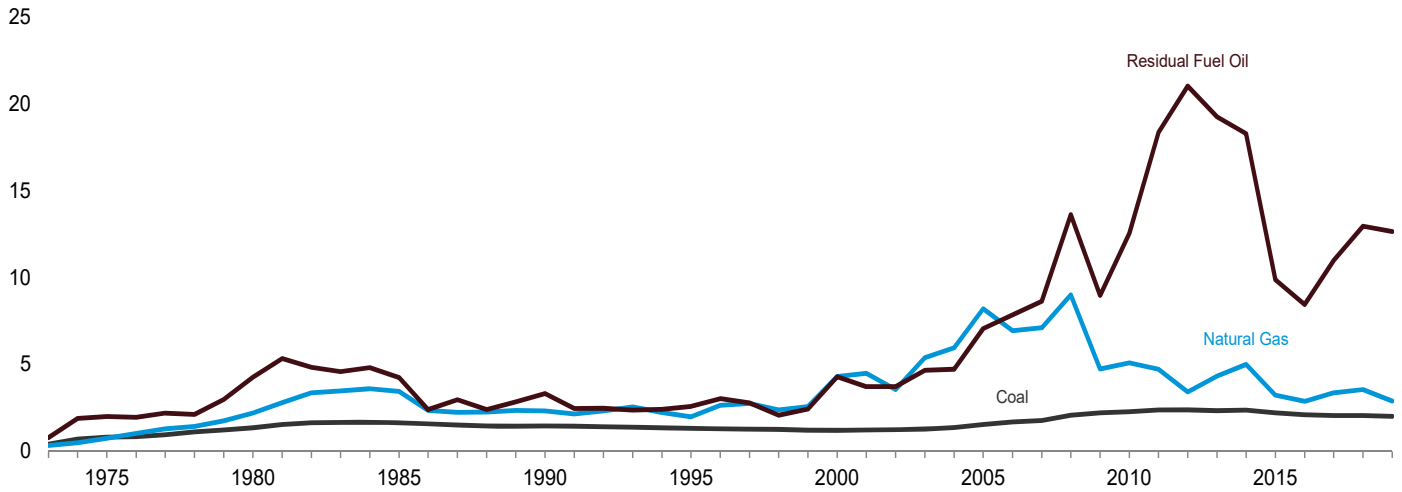
^a Prices are not adjusted for inflation. See "Nominal Price" in Glossary.
^b Commercial sector. For 1960–2002, prices exclude public street and highway lighting, interdepartmental sales, and other sales to public authorities.
^c Industrial sector. For 1960–2002, prices exclude agriculture and irrigation.
^d Transportation sector, including railroads and railways.
^e Public street and highway lighting, interdepartmental sales, other sales to public authorities, agriculture and irrigation, and transportation including railroads and railways.
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 2020, Table 5.3.

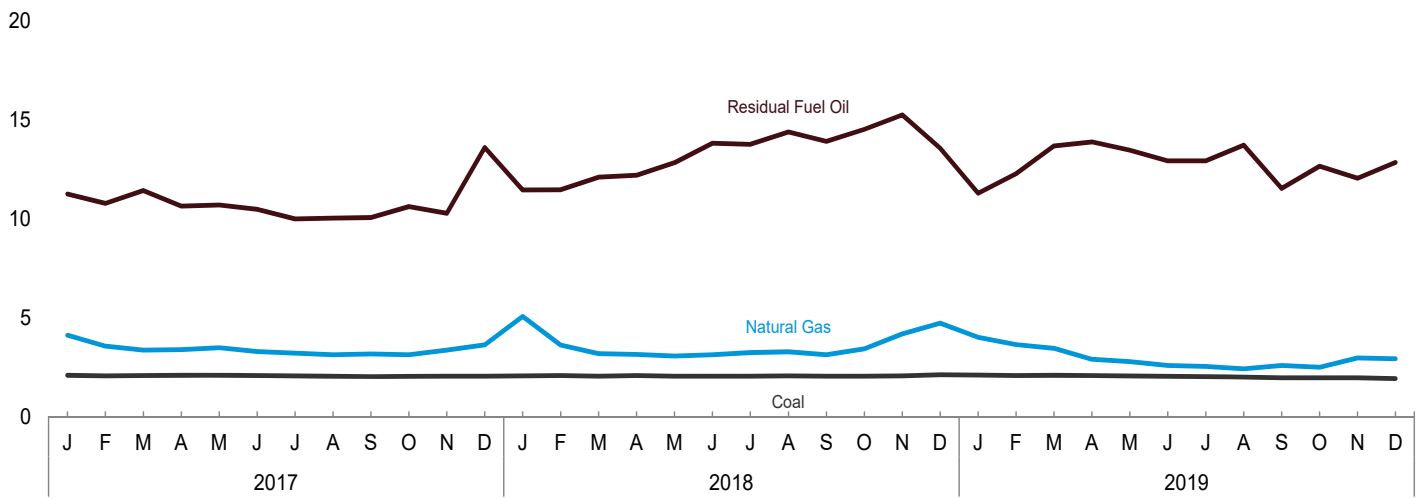
Figure 9.3 Cost of Fossil-Fuel Receipts at Electric Generating Plants

(Dollars [a] per Million Btu, Including Taxes)

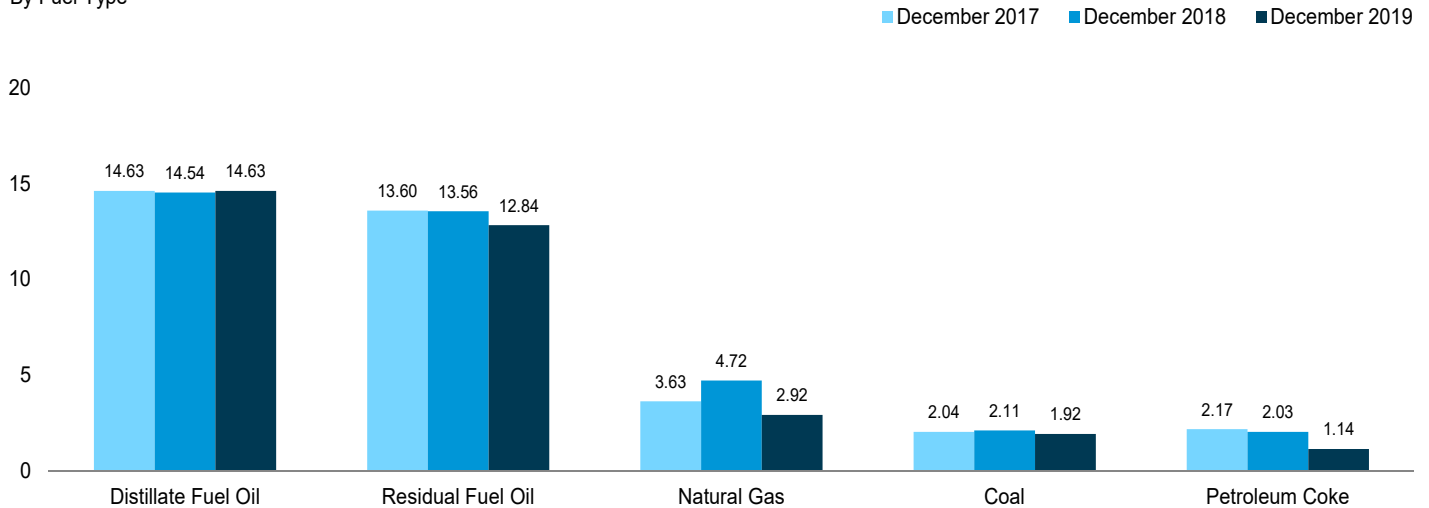
Costs, 1973–2019



Costs, Monthly



By Fuel Type



[a] Prices are not adjusted for inflation. See “Nominal Dollars” in Glossary.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#prices>.
Source: Table 9.9.

Table 9.9 Cost of Fossil-Fuel Receipts at Electric Generating Plants

(Dollars^a per Million Btu, Including Taxes)

	Coal	Petroleum				Natural Gas ^e	All Fossil Fuels ^f
		Residual Fuel Oil ^b	Distillate Fuel Oil ^c	Petroleum Coke	Total ^d		
1973 Average	0.41	0.79	NA	NA	0.80	0.34	0.48
1975 Average	.81	2.01	NA	NA	2.02	.75	1.04
1980 Average	1.35	4.27	NA	NA	4.35	2.20	1.93
1985 Average	1.65	4.24	NA	NA	4.32	3.44	2.09
1990 Average	1.45	3.32	5.38	.80	3.35	2.32	1.69
1995 Average	1.32	2.59	3.99	.65	2.57	1.98	1.45
2000 Average	1.20	4.29	6.65	.58	4.18	4.30	1.74
2001 Average	1.23	3.73	6.30	.78	3.69	4.49	1.73
2002 Average ^g	1.25	3.73	5.34	.78	3.34	3.56	1.86
2003 Average	1.28	4.66	6.82	.72	4.33	5.39	2.28
2004 Average	1.36	4.73	8.02	.83	4.29	5.96	2.48
2005 Average	1.54	7.06	11.72	1.11	6.44	8.21	3.25
2006 Average	1.69	7.85	13.28	1.33	6.23	6.94	3.02
2007 Average	1.77	8.64	14.85	1.51	7.17	7.11	3.23
2008 Average	2.07	13.62	21.46	2.11	10.87	9.01	4.12
2009 Average	2.21	8.98	13.22	1.61	7.02	4.74	3.04
2010 Average	2.27	12.57	16.61	2.28	9.54	5.09	3.26
2011 Average	2.39	18.35	22.46	3.03	12.48	4.72	3.29
2012 Average	2.38	21.03	23.49	2.24	12.48	3.42	2.83
2013 Average	2.34	19.26	23.03	2.18	11.57	4.33	3.09
2014 Average	2.37	18.30	21.88	1.98	11.60	5.00	3.31
2015 Average	2.22	9.89	14.06	1.84	6.74	3.23	2.65
2016 Average	2.11	8.45	10.90	1.65	5.24	2.87	2.47
2017 January	2.09	11.25	13.02	2.14	7.80	4.11	2.88
February	2.06	10.77	12.98	2.00	6.37	3.56	2.63
March	2.07	11.42	12.35	2.06	7.66	3.35	2.66
April	2.08	10.64	13.00	2.00	7.01	3.38	2.65
May	2.09	10.69	12.22	2.05	6.69	3.48	2.70
June	2.07	10.48	11.56	2.11	6.18	3.29	2.64
July	2.06	9.99	11.82	2.09	5.97	3.21	2.64
August	2.05	10.03	12.95	2.08	6.31	3.13	2.56
September	2.02	10.06	14.52	2.10	6.42	3.16	2.56
October	2.03	10.61	14.11	2.31	6.88	3.13	2.54
November	2.04	10.28	14.61	2.49	8.04	3.35	2.62
December	2.04	13.60	14.63	2.17	8.90	3.63	2.80
Average	2.06	11.00	13.22	2.13	7.10	3.37	2.65
2018 January	2.06	11.45	16.07	2.38	11.95	5.06	3.59
February	2.07	11.46	15.19	2.43	8.61	3.61	2.82
March	2.04	12.10	15.02	2.54	8.00	3.18	2.59
April	2.07	12.20	16.19	2.56	8.35	3.14	2.61
May	2.04	12.83	16.73	2.41	10.61	3.06	2.59
June	2.04	13.81	16.59	2.73	9.50	3.13	2.64
July	2.05	13.76	16.21	2.71	8.40	3.23	2.73
August	2.06	14.38	16.93	2.79	8.48	3.28	2.72
September	2.05	13.91	17.39	2.94	9.06	3.12	2.65
October	2.04	14.52	17.76	2.48	10.61	3.43	2.76
November	2.06	15.25	16.39	2.21	9.91	4.18	3.05
December	2.11	13.56	14.54	2.03	9.51	4.72	3.29
Average	2.06	12.97	16.16	2.54	9.68	3.55	2.83
2019 January	2.10	11.29	14.12	2.08	8.40	4.01	2.99
February	2.07	12.27	R 15.12	2.27	R 9.46	3.64	2.85
March	2.08	13.68	R 15.70	2.43	R 10.43	3.45	2.79
April	2.07	13.89	R 16.38	2.71	R 11.05	2.89	2.49
May	2.06	13.47	16.18	2.24	9.42	2.77	2.43
June	2.03	12.92	R 14.87	2.18	9.57	2.59	2.36
July	2.02	12.93	15.10	2.01	7.94	2.53	2.33
August	2.00	13.72	14.83	1.72	6.88	2.41	2.25
September	1.96	11.53	15.11	1.67	9.15	2.59	2.33
October	R 1.96	12.65	15.38	1.57	10.51	R 2.49	R 2.27
November	R 1.97	12.04	15.29	1.46	7.65	2.96	R 2.48
December	1.92	12.84	14.63	1.14	8.54	2.92	2.46
Average	2.02	12.66	15.19	1.91	8.98	2.89	2.49

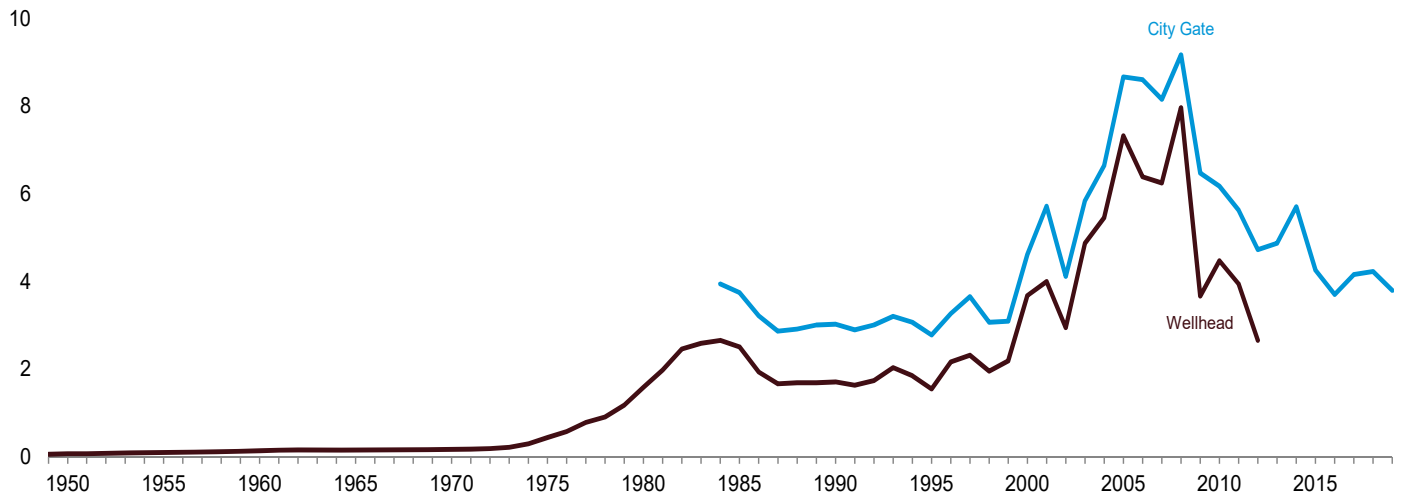
^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
^b For 1973–2001, electric utility data are for heavy oil (fuel oil nos. 5 and 6, and small amounts of fuel oil no. 4).
^c For 1973–2001, electric utility data are for light oil (fuel oil nos. 1 and 2).
^d For all years, includes residual fuel oil and distillate fuel oil. For 1990 forward, also includes petroleum coke. For 1973–2012, also includes jet fuel, kerosene, and waste oil. For 1983–2012, also includes other petroleum, such as propane and refined motor oil.
^e Natural gas, plus a small amount of supplemental gaseous fuels. For 1973–2000, data also include a small amount of blast furnace gas and other gases derived from fossil fuels.
^f Weighted average of costs shown under "Coal," "Petroleum," and "Natural Gas."
^g Through 2001, data are for electric utilities only. Beginning in 2002, data also include independent power producers, and electric generating plants in the

commercial and industrial sectors.
R=Revised. NA=Not available.
Notes: • Receipts are purchases of fuel. • Yearly costs are averages of monthly values, weighted by quantities in Btu. • For this table, there are several breaks in the data series related to what plants and fuels are covered. Beginning in 2013, data cover all regulated generating plants; plus unregulated plants whose total fossil-fueled nameplate generating capacity is 50 megawatts or more for coal, and 200 megawatts or more for natural gas, residual fuel oil, distillate fuel oil, and petroleum coke. For data coverage before 2013, see EIA, *Electric Power Monthly*, Appendix C, Form EIA-923 notes, "Receipts and cost and quality of fossil fuels" section. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual and monthly data beginning in 1973.
Sources: See end of section.

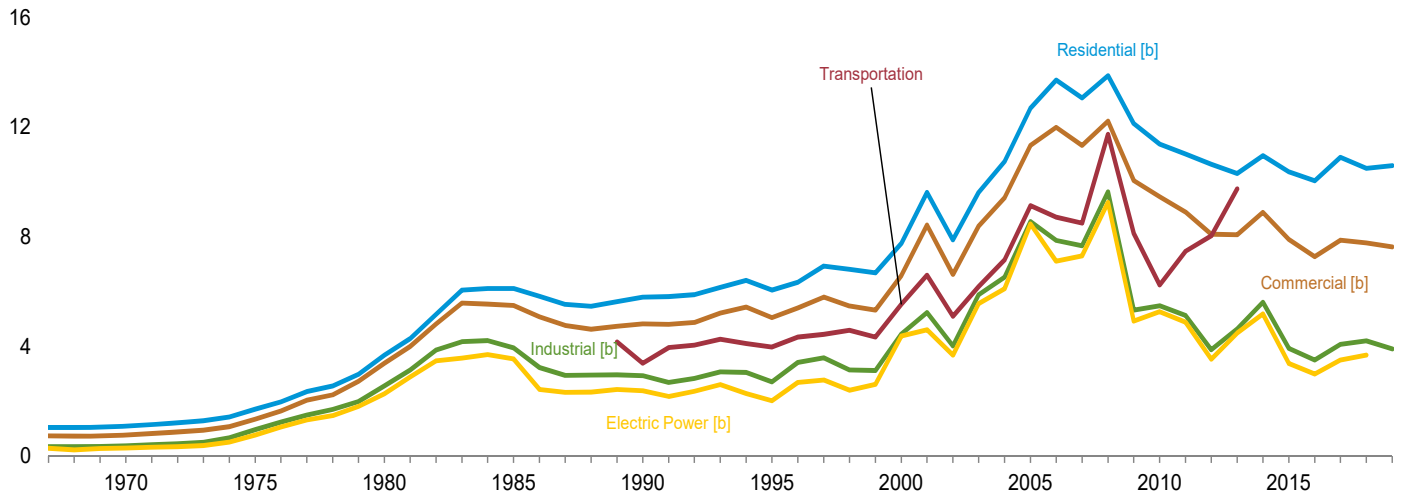
Figure 9.4 Natural Gas Prices

(Dollars [a] per Thousand Cubic Feet)

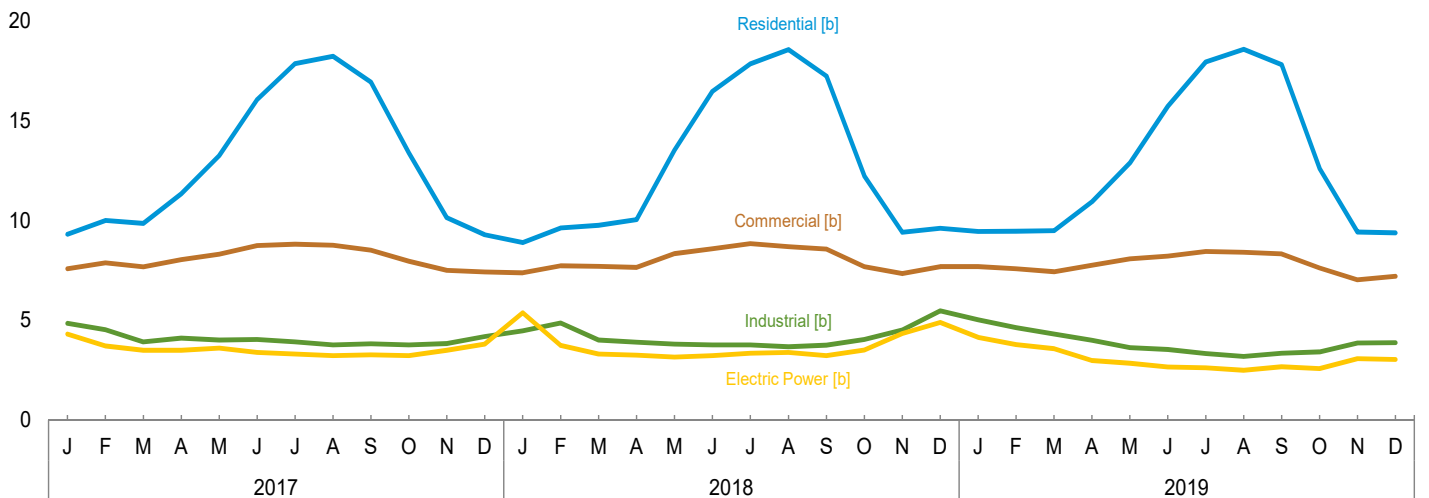
Wellhead and Citygate, 1949–2019



Consuming Sectors, 1967–2019



Consuming Sectors, Monthly



[a] Prices are not adjusted for inflation. See “Nominal Dollars” in Glossary.
 [b] Includes taxes.

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

Table 9.10 Natural Gas Prices
(Dollars^a per Thousand Cubic Feet)

	Wellhead Price ^f	City-gate Price ^g	Consuming Sectors ^b									
			Residential		Commercial ^c		Industrial ^d		Transportation	Electric Power ^e		
			Price ^h	Percentage of Sector ⁱ	Price ^h	Percentage of Sector ⁱ	Price ^h	Percentage of Sector ⁱ	Vehicle Fuel ^j Price ^h	Price ^h	Percentage of Sector ^{i,k}	
1950 Average	0.07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1955 Average	.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1960 Average	.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1965 Average	.16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1970 Average	.17	NA	1.09	NA	.77	NA	.37	NA	NA	.29	NA	NA
1975 Average	.44	NA	1.71	NA	1.35	NA	.96	NA	NA	.77	96.1	NA
1980 Average	1.59	NA	3.68	NA	3.39	NA	2.56	NA	NA	2.27	96.9	NA
1985 Average	2.51	3.75	6.12	NA	5.50	NA	3.95	68.8	NA	3.55	94.0	NA
1990 Average	1.71	3.03	5.80	99.2	4.83	86.6	2.93	35.2	3.39	2.38	76.8	NA
1995 Average	1.55	2.78	6.06	99.0	5.05	76.7	2.71	24.5	3.98	2.02	71.4	NA
2000 Average	3.68	4.62	7.76	92.6	6.59	63.9	4.45	19.8	5.54	4.38	50.5	NA
2001 Average	4.00	5.72	9.63	92.4	8.43	66.0	5.24	20.8	6.60	4.61	40.2	NA
2002 Average	2.95	4.12	7.89	97.9	6.63	77.4	4.02	22.7	5.10	3.68	83.9	NA
2003 Average	4.88	5.85	9.63	97.5	8.40	78.2	5.89	22.1	6.19	5.57	91.2	NA
2004 Average	5.46	6.65	10.75	97.7	9.43	78.0	6.53	23.6	7.16	6.11	89.8	NA
2005 Average	7.33	8.67	12.70	98.1	11.34	82.1	8.56	24.0	9.14	8.47	91.3	NA
2006 Average	6.39	8.61	13.73	98.1	12.00	80.8	7.87	23.4	8.72	7.11	93.4	NA
2007 Average	6.25	8.16	13.08	98.0	11.34	80.4	7.68	22.2	8.50	7.31	92.2	NA
2008 Average	7.97	9.18	13.89	97.5	12.23	79.7	9.65	20.4	11.75	9.26	101.1	NA
2009 Average	3.67	6.48	12.14	97.4	10.06	77.8	5.33	18.8	8.13	4.93	101.1	NA
2010 Average	4.48	6.18	11.39	97.4	9.47	77.5	5.49	18.0	6.25	5.27	100.8	NA
2011 Average	3.95	5.63	11.03	96.3	8.91	67.3	5.13	16.3	7.48	4.89	101.2	NA
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	NA
2013 Average	NA	4.88	10.32	95.7	8.08	65.8	4.64	16.6	9.76	4.49	94.9	NA
2014 Average	NA	5.71	10.97	95.5	8.90	65.8	5.62	15.9	NA	5.19	94.6	NA
2015 Average	NA	4.26	10.38	95.6	7.91	65.7	3.93	14.8	NA	3.38	94.6	NA
2016 Average	NA	3.71	10.05	95.8	7.28	64.8	3.51	14.9	NA	2.99	95.6	NA
2017 January	NA	4.21	9.32	95.9	7.58	70.5	4.85	15.2	NA	4.31	94.6	NA
February	NA	4.13	10.01	95.8	7.89	69.0	4.53	15.2	NA	3.72	95.5	NA
March	NA	3.84	9.86	95.7	7.68	67.7	3.92	15.1	NA	3.51	95.6	NA
April	NA	4.20	11.34	95.7	8.04	65.0	4.11	14.7	NA	3.50	96.0	NA
May	NA	4.42	13.25	95.5	8.31	60.8	4.02	14.2	NA	3.61	96.8	NA
June	NA	4.82	16.06	95.6	8.75	58.2	4.05	14.8	NA	3.40	96.0	NA
July	NA	4.73	17.86	95.8	8.81	57.2	3.92	14.8	NA	3.32	R 95.2	NA
August	NA	4.61	18.22	95.6	8.76	55.9	3.78	14.4	NA	3.24	R 95.6	NA
September	NA	4.52	16.92	96.1	8.52	56.2	3.83	13.9	NA	3.27	R 95.2	NA
October	NA	4.03	13.39	96.4	7.97	61.5	3.78	14.4	NA	3.24	95.2	NA
November	NA	3.97	10.14	96.1	7.51	65.8	3.84	14.8	NA	3.50	94.9	NA
December	NA	4.00	9.29	96.5	7.42	69.1	4.19	15.2	NA	3.81	94.8	NA
Average	NA	4.16	10.91	95.9	7.88	65.4	4.08	14.8	NA	3.51	95.4	NA
2018 January	NA	4.36	8.90	96.1	7.39	71.4	4.48	15.0	NA	5.38	94.4	NA
February	NA	3.99	9.63	96.0	7.74	69.2	4.87	14.6	NA	3.75	94.4	NA
March	NA	3.69	9.76	95.9	7.71	68.5	4.02	15.1	NA	3.32	95.1	NA
April	NA	3.65	10.05	95.6	7.65	65.4	3.91	14.8	NA	3.26	95.9	NA
May	NA	4.14	13.52	94.8	8.34	60.0	3.81	13.9	NA	3.16	94.8	NA
June	NA	4.49	16.47	95.7	8.58	57.7	3.78	13.8	NA	3.23	96.3	NA
July	NA	4.50	17.84	95.8	8.84	56.3	3.77	13.6	NA	3.35	95.2	NA
August	NA	5.25	18.56	95.6	8.69	55.1	3.68	13.9	NA	3.39	95.8	NA
September	NA	4.72	17.23	96.2	8.57	56.8	3.76	13.8	NA	3.23	96.3	NA
October	NA	4.10	12.23	96.5	7.69	61.2	4.04	14.1	NA	3.52	96.4	NA
November	NA	4.28	9.41	96.4	7.34	66.6	4.52	14.2	NA	4.34	94.6	NA
December	NA	4.72	9.61	96.2	7.70	69.0	5.48	14.3	NA	4.89	95.6	NA
Average	NA	4.23	10.50	96.0	7.78	65.8	4.21	14.3	NA	3.68	95.5	NA
2019 January	NA	4.04	9.45	96.3	7.70	70.4	5.03	13.6	NA	4.16	90.7	NA
February	NA	3.85	9.47	96.1	7.58	69.6	4.64	14.0	NA	3.79	89.7	NA
March	NA	4.01	9.49	96.0	7.44	69.4	4.32	13.6	NA	3.59	89.7	NA
April	NA	3.68	10.94	95.6	7.76	64.5	4.00	12.9	NA	2.99	88.4	NA
May	NA	3.65	12.88	95.7	8.08	61.1	3.64	12.5	NA	2.85	90.4	NA
June	NA	4.05	15.72	95.6	8.22	58.9	3.55	12.3	NA	2.67	R 88.6	NA
July	NA	4.16	17.94	95.9	8.45	56.4	3.34	12.9	NA	2.62	86.0	NA
August	NA	4.20	18.58	96.0	8.41	56.0	3.20	12.2	NA	2.50	86.2	NA
September	NA	4.13	17.81	96.2	8.33	56.6	3.35	12.1	NA	2.68	87.3	NA
October	NA	3.40	12.62	96.8	7.63	60.5	3.43	11.9	NA	2.58	87.3	NA
November	NA	3.44	R 9.42	96.6	7.03	66.4	3.87	12.6	NA	R 3.08	89.7	NA
December	NA	3.49	9.38	96.4	7.21	68.6	3.88	12.8	NA	3.05	90.7	NA
Average	NA	3.80	10.60	96.2	7.64	65.7	3.91	12.8	NA	2.99	88.5	NA

a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
b See Note 8, "Natural Gas Prices," at end of section.
c Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.
d Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.
e The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 2001, data are for electric utilities only; beginning in 2002, data also include independent power producers.
f See "Natural Gas Wellhead Price" in Glossary.
g See "Citygate" in Glossary.
h Includes taxes.
i The percentage of the sector's consumption in Table 4.3 for which price data are available. For details on how the percentages are derived, see Table 9.10 sources at end of section.

j Much of the natural gas delivered for vehicle fuel represents deliveries to fueling stations that are used primarily or exclusively by fleet vehicles. Thus, the prices are often those associated with the cost of gas in the operation of fleet vehicles.
k Percentages exceed 100% when reported natural gas receipts are greater than reported natural gas consumption—this can occur when combined-heat-and-power plants report fuel receipts related to non-electric generating activities.
R=Revised. NA=Not available. E=Estimate.
Notes: • Prices are for natural gas, plus a small amount of supplemental gaseous fuels. • Prices are intended to include all taxes. See Note 8, "Natural Gas Prices," at end of section. • Wellhead annual and year-to-date prices are simple averages of the monthly prices; all other annual and year-to-date prices are volume-weighted averages of the monthly prices. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1976.
Sources: See end of section.

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 2020, 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 2020, 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 2020, 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 2020, 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 2020, Table 4.1; and Form EIA-923, "Power Plant Operations Report."

Table 9.10 Sources

All Prices Except Vehicle Fuel and Electric Power

1949–2015: U.S. Energy Information Administration (EIA), *Natural Gas Annual* (NGA), annual reports and unpublished revisions.

2016 forward: EIA, *Natural Gas Monthly* (NGM), January 2020, Table 3.

Vehicle Fuel Price

1989–2013: 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, November 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

1987–2015: 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.

2016 forward: EIA, NGM, February 2020, Table 3.

Percentage of Industrial Sector

1982–2015: 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.

2016 forward: EIA, NGM, February 2020, 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).

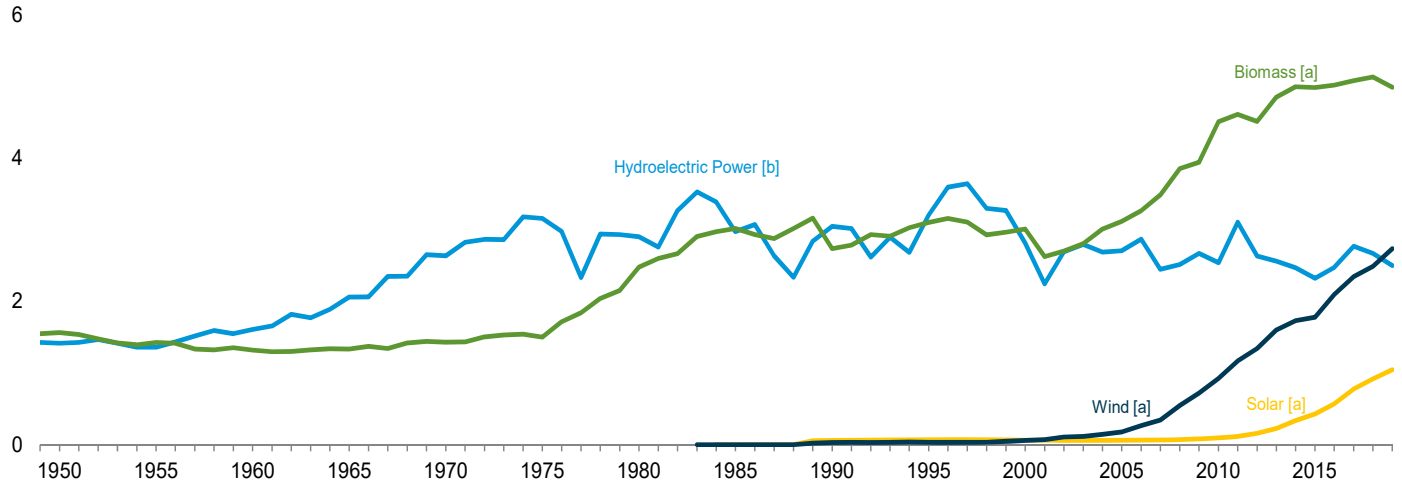
2008 forward: Calculated by EIA as the quantity of natural gas receipts by electric utilities and independent power producers reported on Form EIA-923, "Power Plant Operations Report," divided by the quantity of natural gas consumed by the electric power sector (see MER, Table 7.4b).

10. Renewable Energy

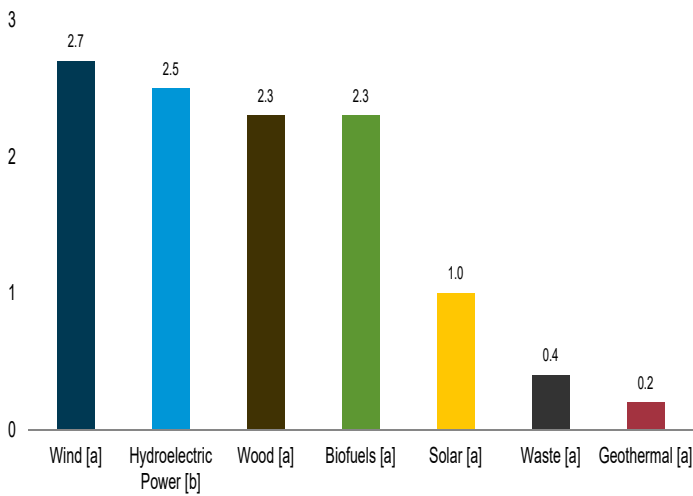
Figure 10.1 Renewable Energy Consumption

(Quadrillion Btu)

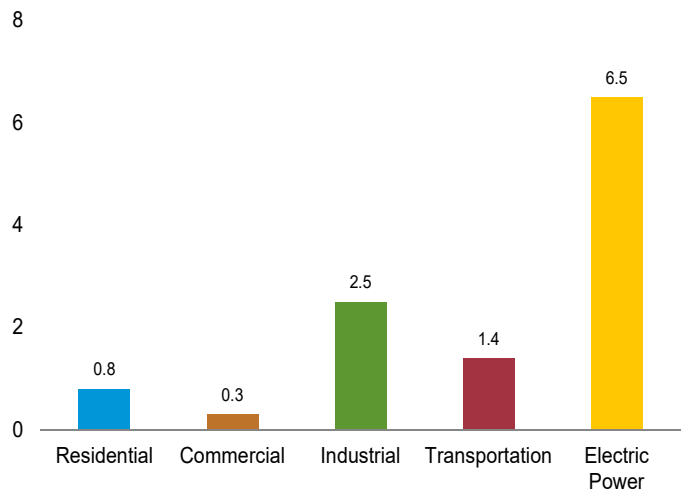
Major Sources, 1949–2019



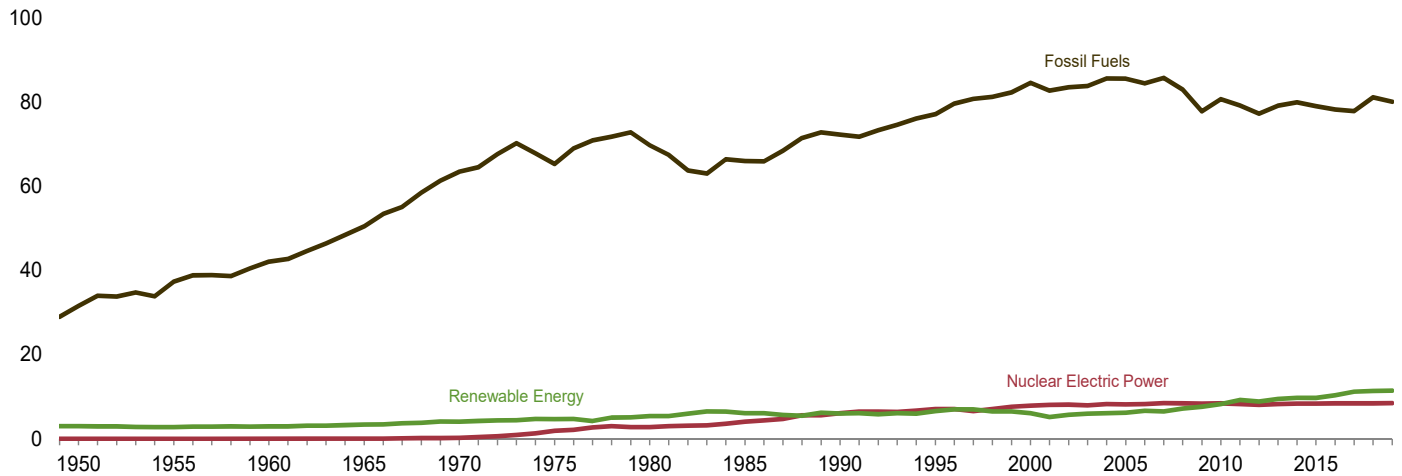
By Source, 2019



By Sector, 2019



Compared With Other Resources, 1949–2019



[a] See Table 10.1 for definition.
 [b] Conventional hydroelectric power.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#renewable>.
 Sources: Tables 1.3 and 10.1–10.2c.

Table 10.1 Renewable Energy Production and Consumption by Source
(Trillion Btu)

	Production ^a				Consumption								
	Biomass			Total Renewable Energy ^e	Hydro-electric Power ^f	Geo-thermal ^g	Solar ^h	Wind ⁱ	Biomass				Total Renewable Energy
	Wood ^b	Bio-fuels ^c	Total ^d						Wood ^j	Waste ^k	Bio-fuels ^l	Total	
1950 Total	1,562	NA	1,562	2,978	1,415	NA	NA	NA	1,562	NA	NA	1,562	2,978
1955 Total	1,424	NA	1,424	2,784	1,360	NA	NA	NA	1,424	NA	NA	1,424	2,784
1960 Total	1,320	NA	1,320	2,928	1,608	(s)	NA	NA	1,320	NA	NA	1,320	2,928
1965 Total	1,335	NA	1,335	3,396	2,059	2	NA	NA	1,335	NA	NA	1,335	3,396
1970 Total	1,429	NA	1,431	4,070	2,634	6	NA	NA	1,429	2	NA	1,431	4,070
1975 Total	1,497	NA	1,499	4,687	3,155	34	NA	NA	1,497	2	NA	1,499	4,687
1980 Total	2,474	NA	2,475	5,428	2,900	53	NA	NA	2,474	2	NA	2,475	5,428
1985 Total	2,687	93	3,016	6,084	2,970	97	(s)	(s)	2,687	236	93	3,016	6,084
1990 Total	2,216	111	2,735	6,040	3,046	171	59	29	2,216	408	111	2,735	6,040
1995 Total	2,370	198	3,099	6,557	3,205	152	68	33	2,370	531	200	3,101	6,559
2000 Total	2,262	233	3,006	6,102	2,811	164	63	57	2,262	511	236	3,008	6,104
2001 Total	2,006	254	2,624	5,162	2,242	164	62	70	2,006	364	253	2,622	5,160
2002 Total	1,995	308	2,705	5,731	2,689	171	60	105	1,995	402	303	2,701	5,726
2003 Total	2,002	401	2,805	5,942	2,793	173	58	113	2,002	401	403	2,806	5,944
2004 Total	2,121	486	2,996	6,063	2,688	178	58	142	2,121	389	498	3,008	6,075
2005 Total	2,137	561	3,101	6,221	2,703	181	58	178	2,137	403	574	3,114	6,234
2006 Total	2,099	716	3,212	6,586	2,869	181	61	264	2,099	397	766	3,262	6,637
2007 Total	2,089	970	3,472	6,510	2,446	186	66	341	2,089	413	983	3,485	6,523
2008 Total	2,059	1,374	3,868	7,192	2,511	192	74	546	2,059	435	1,357	3,851	7,175
2009 Total	1,935	1,570	3,957	7,625	2,669	200	78	721	1,935	452	1,553	3,940	7,608
2010 Total	2,217	1,868	4,553	8,314	2,539	208	91	923	2,217	468	1,821	4,506	8,267
2011 Total	2,213	2,029	4,704	9,300	3,103	212	112	1,168	2,213	462	1,934	4,609	9,204
2012 Total	2,151	1,929	4,547	8,886	2,629	212	159	1,340	2,151	467	1,890	4,508	8,847
2013 Total	2,338	1,981	4,816	9,418	2,562	214	225	1,601	2,338	496	2,014	4,848	9,451
2014 Total	2,401	2,103	5,020	9,766	2,467	214	337	1,728	2,401	516	2,077	4,994	9,740
2015 Total	2,312	2,161	4,992	9,729	2,321	212	427	1,777	2,312	518	2,153	4,983	9,720
2016 Total	2,297	2,275	5,075	10,423	2,472	210	570	2,096	2,224	503	2,287	5,015	10,362
2017 January	202	197	444	926	247	18	34	183	196	45	181	422	903
February	181	177	397	867	218	16	40	195	175	40	168	382	852
March	201	197	441	1,022	270	18	63	230	194	43	191	428	1,009
April	188	183	412	996	271	18	69	227	182	41	185	408	992
May	192	197	431	1,034	298	17	81	207	187	41	202	430	1,033
June	195	192	426	990	278	16	87	183	188	40	199	427	991
July	202	196	439	931	244	18	83	147	196	41	196	434	926
August	205	203	449	873	201	18	80	125	198	41	205	444	869
September	190	192	420	851	176	17	74	164	183	38	190	411	842
October	196	201	437	924	168	17	68	233	190	40	196	426	913
November	197	203	442	920	189	17	50	222	190	42	194	426	904
December	209	205	457	958	206	20	49	226	200	43	195	438	939
Total	2,356	2,344	5,196	11,293	2,767	210	777	2,343	2,278	495	2,304	5,076	11,173
2018 January	211	200	454	982	229	18	49	233	205	43	187	435	963
February	191	184	415	926	227	16	56	211	184	40	166	390	900
March	206	202	451	1,020	236	18	74	241	200	43	192	436	1,004
April	196	191	428	1,028	256	16	86	241	189	41	181	411	1,011
May	205	202	448	1,058	278	18	97	218	197	41	201	439	1,049
June	204	200	443	1,039	252	17	102	225	195	39	194	428	1,024
July	212	210	461	955	229	18	97	150	205	39	199	444	938
August	212	212	465	959	201	18	95	181	204	40	206	450	945
September	199	194	429	875	175	17	85	169	190	37	182	409	854
October	204	204	450	910	178	17	72	193	195	41	196	431	892
November	203	198	442	916	200	17	56	201	194	41	189	424	898
December	210	200	453	949	208	19	48	222	201	42	191	435	931
Total	2,454	2,397	5,338	11,617	2,667	209	917	2,486	2,360	487	2,283	5,130	11,409
2019 January	209	195	443	965	221	18	54	229	203	38	178	420	942
February	191	177	402	886	199	17	58	210	182	35	171	388	872
March	^R 200	191	429	1,004	233	18	86	238	192	38	189	419	^R 995
April	^R 195	193	^R 423	^R 1,041	232	17	98	271	^R 187	35	185	406	^R 1,024
May	201	202	438	^R 1,072	274	18	^R 105	237	193	35	199	427	1,060
June	197	197	429	1,010	241	18	^R 113	209	188	35	193	416	997
July	203	203	442	993	216	18	116	201	195	35	194	424	^R 976
August	211	199	446	^R 949	^R 192	18	^R 112	181	200	36	197	433	^R 936
September	196	182	412	^R 898	149	18	97	222	187	34	178	^R 398	884
October	196	192	425	934	149	17	87	257	187	37	190	^R 414	924
November	^R 196	192	^R 425	925	187	15	64	^R 233	187	37	188	411	912
December	204	203	446	968	202	17	54	248	196	38	193	427	949
Total	2,399	2,327	5,160	11,645	2,496	209	1,044	2,736	2,297	433	2,254	4,985	11,470

^a For hydroelectric power, geothermal, solar, wind, and biomass waste, production equals consumption.

^b Wood and wood-derived fuels. Through 2015, wood production equals consumption. Beginning in 2016, wood production equals consumption plus densified biomass exports.

^c Total biomass inputs to the production of fuel ethanol and biodiesel.

^d Includes biomass waste.

^e Hydroelectric power, geothermal, solar, wind, and biomass.

^f Conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^g 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.

^h 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.

ⁱ Wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^j Wood and wood-derived fuels.

^k 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).

^l Fuel ethanol (minus denaturant), biodiesel, other renewable diesel fuel, and other renewable fuels 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: • Production data are estimates. Consumption data are estimates, except for hydroelectric power in 1949–1978 and 1989 forward, and wind. • See Note, "Renewable Energy Production and Consumption," at end of section.

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

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

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

Sources: • **Production:** Tables 10.2a–10.4 and U.S. Energy Information Administration, Form EIA-63C, "Densified Biomass Fuel Report."

• **Consumption:** Tables 10.2a–10.2c.

Table 10.2a Renewable Energy Consumption: Residential and Commercial Sectors
(Trillion Btu)

	Residential Sector				Commercial Sector ^a								Total
	Geo-thermal ^b	Solar ^c	Biomass	Total	Hydro-electric Power ^e	Geo-thermal ^f	Solar ^g	Wind ^h	Biomass			Total	
			Wood ^d						Wood ^d	Waste ⁱ	Fuel Ethanol ^{j,k}		
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	443	(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	3	—	65	36	1	103	120
2007 Total	22	55	420	497	1	14	4	—	70	31	2	103	122
2008 Total	26	58	470	555	1	15	6	—	73	34	2	109	131
2009 Total	33	60	504	597	1	17	8	(s)	73	36	3	112	137
2010 Total	37	65	541	642	1	19	12	(s)	72	36	3	111	142
2011 Total	40	71	524	635	(s)	20	20	(s)	69	43	3	115	155
2012 Total	40	79	438	557	(s)	20	33	1	61	45	3	108	162
2013 Total	40	91	572	703	(s)	20	41	1	70	47	3	120	182
2014 Total	40	109	579	728	(s)	20	52	1	76	47	4	127	200
2015 Total	40	128	513	680	(s)	20	57	1	79	47	^k 26	152	230
2016 Total	40	161	442	643	2	20	62	1	84	48	26	158	242
2017 January	3	10	36	49	(s)	2	4	(s)	7	4	2	14	20
February	3	11	33	47	(s)	2	4	(s)	7	4	2	12	18
March	3	16	36	55	(s)	2	6	(s)	7	4	2	13	21
April	3	18	35	56	(s)	2	7	(s)	7	4	2	13	22
May	3	20	36	59	(s)	2	8	(s)	7	4	2	13	23
June	3	20	35	58	(s)	2	8	(s)	7	4	2	13	23
July	3	21	36	60	(s)	2	8	(s)	7	4	2	13	23
August	3	20	36	60	(s)	2	8	(s)	7	4	2	13	23
September	3	18	35	56	(s)	2	7	(s)	7	4	2	12	21
October	3	16	36	56	(s)	2	6	(s)	7	4	2	13	21
November	3	13	35	51	(s)	2	5	(s)	7	4	2	13	20
December	3	12	36	51	(s)	2	5	(s)	7	4	2	13	20
Total	40	193	425	658	2	20	76	1	84	48	25	156	255
2018 January	3	12	44	59	(s)	2	5	(s)	7	4	2	13	21
February	3	13	40	56	(s)	2	6	(s)	7	4	2	12	20
March	3	18	44	65	(s)	2	8	(s)	7	4	2	13	23
April	3	21	43	66	(s)	2	9	(s)	7	4	2	13	23
May	3	23	44	70	(s)	2	10	(s)	7	4	2	13	25
June	3	23	43	69	(s)	2	10	(s)	7	4	2	13	25
July	3	24	44	71	(s)	2	10	(s)	7	4	2	13	25
August	3	23	44	70	(s)	2	10	(s)	7	4	2	R 14	25
September	3	20	43	66	(s)	2	9	(s)	7	4	2	12	23
October	3	18	44	65	(s)	2	8	(s)	7	4	2	13	23
November	3	14	43	60	(s)	2	6	(s)	7	4	2	13	21
December	3	13	44	61	(s)	2	6	(s)	7	4	2	13	21
Total	40	222	517	778	2	20	94	2	84	47	25	156	274
2019 January	3	14	45	62	NM	2	6	(s)	7	4	2	13	21
February	3	15	41	58	NM	2	^R 6	(s)	7	3	2	12	20
March	3	21	45	69	NM	2	9	(s)	7	3	2	13	24
April	3	24	43	70	NM	2	10	(s)	7	3	2	12	24
May	3	26	45	74	NM	2	11	(s)	7	3	2	12	25
June	3	27	43	73	(s)	2	11	(s)	7	3	2	12	25
July	3	28	45	76	NM	2	11	(s)	7	3	2	12	26
August	3	27	45	75	NM	2	11	(s)	7	3	2	12	^R 26
September	3	24	43	70	NM	2	10	(s)	7	3	2	12	24
October	3	21	45	69	NM	2	9	(s)	7	3	2	12	23
November	3	17	43	63	^R NM	2	7	(s)	7	3	2	12	21
December	3	15	45	63	(s)	2	6	(s)	7	3	2	12	21
Total	40	256	529	824	2	24	107	2	84	36	26	146	280

^a Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^b Geothermal heat pump and direct use energy.
^c Distributed (small-scale) solar photovoltaic (PV) electricity generation in the residential sector (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6) and distributed solar thermal energy in the residential, commercial, and industrial sectors. See Table 10.5.

^d Wood and wood-derived fuels.
^e Conventional hydroelectricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^f Geothermal heat pump and direct use energy. Beginning in December 2018, also includes geothermal electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6).

^g 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.

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

ⁱ Municipal solid waste from biogenic sources, landfill gas, sludge waste,

agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^j The fuel ethanol (minus denaturant) portion of motor fuels, such as E10, consumed by the commercial sector.

^k 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.

^RRevised. ^{NA}Not available. ^{NM}Not meaningful. [—]No data reported. ^(s)Less than 0.5 trillion Btu.

Notes: • Residential sector data are estimates. Commercial sector data are estimates, except for hydroelectric power, wind, and biomass waste. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

Table 10.2b Renewable Energy Consumption: Industrial and Transportation Sectors
(Trillion Btu)

	Industrial Sector ^a										Transportation Sector				
	Hydro-electric Power ^b	Geo-thermal ^c	Solar ^d	Wind ^e	Biomass					Total	Total	Biomass			Total
					Wood ^f	Waste ^g	Fuel Ethanol ^{h,i}	Losses and Co-products ^j	Total			Fuel Ethanol ^k	Bio-diesel ^l	Other ^m	
1950 Total	69	NA	NA	NA	532	NA	NA	NA	532	602	NA	NA	NA	NA	
1955 Total	38	NA	NA	NA	631	NA	NA	NA	631	669	NA	NA	NA	NA	
1960 Total	39	NA	NA	NA	680	NA	NA	NA	680	719	NA	NA	NA	NA	
1965 Total	33	NA	NA	NA	855	NA	NA	NA	855	888	NA	NA	NA	NA	
1970 Total	34	NA	NA	NA	1,019	NA	NA	NA	1,019	1,053	NA	NA	NA	NA	
1975 Total	32	NA	NA	NA	1,063	NA	NA	NA	1,063	1,096	NA	NA	NA	NA	
1980 Total	33	NA	NA	NA	1,600	NA	NA	NA	1,600	1,633	NA	NA	NA	NA	
1985 Total	33	NA	NA	NA	1,645	230	1	42	1,918	1,951	50	NA	NA	50	
1990 Total	31	2	(s)	–	1,442	192	1	49	1,684	1,717	60	NA	NA	60	
1995 Total	55	3	(s)	–	1,652	195	2	86	1,934	1,992	112	NA	NA	112	
2000 Total	42	4	(s)	–	1,636	145	1	99	1,881	1,928	135	NA	NA	135	
2001 Total	33	5	(s)	–	1,443	129	3	108	1,681	1,719	141	1	NA	142	
2002 Total	39	5	(s)	–	1,396	146	3	130	1,676	1,720	168	2	NA	170	
2003 Total	43	3	(s)	–	1,363	142	4	168	1,678	1,725	228	2	NA	230	
2004 Total	33	4	(s)	–	1,476	132	6	201	1,815	1,852	286	3	NA	290	
2005 Total	32	4	(s)	–	1,452	148	7	227	1,834	1,871	327	12	NA	339	
2006 Total	29	4	1	–	1,472	130	10	280	1,892	1,926	442	33	NA	475	
2007 Total	16	5	1	–	1,413	145	10	369	1,937	1,958	557	45	NA	602	
2008 Total	17	5	1	–	1,339	143	12	519	2,012	2,035	786	39	NA	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	(s)	1,075	
2011 Total	17	4	4	(s)	1,438	165	17	756	2,375	2,401	1,045	113	1	1,159	
2012 Total	22	4	7	(s)	1,462	159	17	711	2,349	2,383	1,045	115	1	1,160	
2013 Total	33	4	9	(s)	1,489	187	18	709	2,403	2,449	1,072	182	30	1,284	
2014 Total	12	4	11	1	1,495	190	14	757	2,456	2,484	1,093	181	28	1,302	
2015 Total	13	4	14	(s)	1,476	190	18	776	2,460	2,491	1,110	191	33	1,334	
2016 Total	12	4	19	1	1,474	174	18	801	2,467	2,503	1,143	266	34	1,443	
2017 January	1	(s)	1	(s)	132	15	1	71	220	222	91	13	3	107	
February	1	(s)	1	(s)	118	14	1	63	196	199	84	14	3	101	
March	1	(s)	2	(s)	129	15	2	70	216	220	96	19	3	118	
April	1	(s)	2	(s)	123	14	1	64	203	207	94	21	3	117	
May	1	(s)	2	(s)	127	14	2	69	211	215	100	25	3	129	
June	1	(s)	2	(s)	128	12	2	67	208	212	100	25	4	129	
July	1	(s)	2	(s)	133	13	2	68	216	219	99	24	2	125	
August	1	(s)	2	(s)	134	13	2	71	220	223	103	26	2	131	
September	1	(s)	2	(s)	123	13	2	67	204	207	96	22	2	120	
October	1	(s)	2	(s)	128	14	2	70	214	217	99	22	2	123	
November	1	(s)	1	(s)	129	15	2	71	216	219	97	21	1	120	
December	1	(s)	1	(s)	135	15	2	71	223	226	97	21	2	120	
Total	13	4	22	1	1,539	168	18	821	2,547	2,587	1,156	253	30	1,439	
2018 January	1	(s)	1	(s)	133	15	2	70	219	222	R 96	15	1	113	
February	1	(s)	1	(s)	119	14	1	64	197	200	82	15	2	99	
March	1	(s)	2	(s)	130	15	2	70	216	219	96	20	3	119	
April	1	(s)	2	(s)	124	14	1	66	205	209	90	20	2	112	
May	1	(s)	2	(s)	129	14	2	70	214	218	104	21	2	127	
June	1	(s)	2	(s)	127	12	2	69	209	213	98	23	1	121	
July	1	(s)	3	(s)	133	13	2	72	219	223	101	21	1	124	
August	1	(s)	2	(s)	133	13	2	73	220	224	104	24	1	129	
September	1	(s)	2	(s)	124	12	1	66	204	207	90	22	1	113	
October	1	(s)	2	(s)	127	14	2	70	213	216	99	22	1	122	
November	1	(s)	2	(s)	128	14	2	68	212	215	95	20	2	117	
December	1	(s)	1	(s)	132	15	2	68	217	220	97	21	2	119	
Total	10	4	24	1	1,537	165	R 19	824	R 2,546	R 2,586	R 1,152	243	19	1,415	
2019 January	1	(s)	2	(s)	131	15	1	67	214	217	90	16	2	108	
February	1	(s)	2	(s)	119	13	1	61	194	197	89	17	2	107	
March	1	(s)	2	(s)	R 124	14	2	66	205	209	97	20	2	119	
April	1	(s)	3	(s)	R 121	13	R 2	66	201	205	93	20	2	115	
May	1	(s)	3	(s)	122	13	2	69	206	210	102	22	2	126	
June	1	(s)	3	(s)	120	13	2	68	202	207	R 99	20	2	122	
July	1	(s)	3	(s)	124	12	2	69	207	212	99	20	2	121	
August	1	(s)	3	(s)	127	13	2	68	209	213	101	22	2	125	
September	1	(s)	3	(s)	118	12	R 2	62	194	197	R 92	19	1	113	
October	1	(s)	2	(s)	120	14	2	66	202	205	101	19	1	121	
November	1	(s)	2	(s)	122	14	2	67	204	207	98	18	1	117	
December	1	(s)	2	(s)	126	15	2	71	213	216	98	19	1	118	
Total	10	4	28	1	1,473	160	19	799	2,451	2,495	1,160	231	19	1,410	

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

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

^c Geothermal heat pump and direct use energy.

^d Solar photovoltaic (PV) electricity net generation in the industrial sector (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6), both utility-scale and distributed (small-scale). See Table 10.5.

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

^f Wood and wood-derived fuels.

^g Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

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

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

is smaller.

^j Losses and co-products from the production of fuel ethanol and biodiesel. Does not include natural gas, electricity, and other non-biomass energy used in the production of fuel ethanol and biodiesel—these are included in the industrial sector consumption statistics for the appropriate energy source.

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

^l Although there is biodiesel use in other sectors, all biodiesel consumption is assigned to the transportation sector.

^m Other renewable diesel fuel and other renewable fuels consumption. 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: • Industrial sector data are estimates, except for hydroelectric power in 1949–1978 and 1989 forward, and wind. Transportation sector data are estimates, except for biodiesel beginning in 2012. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

Table 10.2c Renewable Energy Consumption: Electric Power Sector
(Trillion Btu)

	Hydro-electric Power ^a	Geo-thermal ^b	Solar ^c	Wind ^d	Biomass			Total
					Wood ^e	Waste ^f	Total	
1950 Total	1,346	NA	NA	NA	5	NA	5	1,351
1955 Total	1,322	NA	NA	NA	3	NA	3	1,325
1960 Total	1,569	(s)	NA	NA	2	NA	2	1,571
1965 Total	2,026	2	NA	NA	3	NA	3	2,031
1970 Total	2,600	6	NA	NA	1	2	4	2,609
1975 Total	3,122	34	NA	NA	(s)	2	2	3,158
1980 Total	2,867	53	NA	NA	3	2	4	2,925
1985 Total	2,937	97	(s)	(s)	8	7	14	3,049
1990 Total ^g	3,014	161	4	29	129	188	317	3,524
1995 Total	3,149	138	5	33	125	296	422	3,747
2000 Total	2,768	144	5	57	134	318	453	3,427
2001 Total	2,209	142	6	70	126	211	337	2,763
2002 Total	2,650	147	6	105	150	230	380	3,288
2003 Total	2,749	146	5	113	167	230	397	3,411
2004 Total	2,655	148	6	142	165	223	388	3,339
2005 Total	2,670	147	6	178	185	221	406	3,406
2006 Total	2,839	145	5	264	182	231	412	3,665
2007 Total	2,430	145	6	341	186	237	423	3,345
2008 Total	2,494	146	9	546	177	258	435	3,630
2009 Total	2,650	146	9	721	180	261	441	3,967
2010 Total	2,521	148	12	923	196	264	459	4,064
2011 Total	3,085	149	17	1,167	182	255	437	4,855
2012 Total	2,606	148	40	1,339	190	262	453	4,586
2013 Total	2,529	151	83	1,600	207	262	470	4,833
2014 Total	2,454	151	165	1,726	251	279	530	5,026
2015 Total	2,308	148	228	1,776	244	281	525	4,985
2016 Total	2,459	146	328	2,094	224	281	505	5,531
2017 January	245	13	19	183	20	26	46	505
February	217	11	23	195	18	22	41	487
March	268	13	39	230	21	24	45	595
April	269	12	43	227	17	22	39	590
May	297	12	52	207	17	24	40	607
June	277	11	56	182	18	24	42	569
July	243	12	52	147	20	24	44	498
August	200	12	50	125	21	23	45	432
September	175	12	47	164	18	22	40	438
October	167	11	44	233	18	22	40	496
November	188	12	31	222	19	23	42	495
December	205	14	31	226	21	24	45	522
Total	2,752	147	486	2,341	229	280	510	6,235
2018 January	228	12	30	233	21	24	46	549
February	226	12	35	211	19	23	42	526
March	235	12	46	241	20	24	44	578
April	255	11	55	241	16	23	39	600
May	276	13	62	218	17	23	40	609
June	251	12	67	225	19	23	42	597
July	228	12	61	150	21	23	44	495
August	200	12	60	181	20	23	43	496
September	174	12	54	169	17	21	37	446
October	177	12	45	193	17	23	39	466
November	199	12	34	201	17	23	40	485
December	207	13	28	221	18	23	41	510
Total	2,655	145	577	2,484	221	275	496	6,356
2019 January	220	13	33	229	20	20	40	534
February	198	12	R 35	R 210	17	18	35	R 489
March	232	13	53	238	17	21	37	573
April	231	11	62	271	16	19	35	R 610
May	273	12	65	237	19	20	39	625
June	240	12	72	209	17	19	37	R 571
July	215	13	R 74	201	19	20	39	541
August	R 191	13	71	181	21	20	41	R 497
September	148	12	61	R 222	18	19	37	480
October	148	11	55	256	15	20	35	506
November	186	10	R 40	R 233	15	20	34	R 503
December	201	11	32	248	18	20	39	531
Total	2,484	142	652	2,733	211	236	448	6,459

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

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

^c Solar photovoltaic (PV) and solar thermal electricity net generation in the electric power sector (converted to Btu by multiplying by the total fossil fuels heat rate factors in Table A6). See Table 10.5.

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

^e Wood and wood-derived fuels.

^f Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and

tire-derived fuels).

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

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 ^a	Losses and Co-products ^b	Denaturant ^c	Production ^d			Trade ^d		Stock Change ^{d,g}	Consumption ^d			Consumption Minus Denaturant ^h
							Net Imports ^e	Stocks ^{d,f}					
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	822	800
2009 Total	1,503	602	5,688	260,424	10,938	928	4,720	16,594	2,368	262,776	11,037	937	910
2010 Total	1,823	726	6,506	316,617	13,298	1,128	-9,115	17,941	1,347	306,155	12,858	1,091	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	1,127	-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	1,213	-18,371	18,739	2,315	320,095	13,444	1,139	1,111
2015 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 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	185	71	600	32,887	1,381	117	-2,844	22,679	2,921	27,122	1,139	96	94
February	165	63	545	29,307	1,231	104	-3,605	23,195	516	25,186	1,058	90	87
March	182	70	603	32,393	1,361	115	-3,023	23,981	786	28,584	1,201	102	99
April	167	64	545	29,639	1,245	105	-1,918	23,671	-310	28,031	1,177	100	97
May	180	69	562	31,863	1,338	113	-2,831	22,855	-816	29,848	1,254	106	104
June	173	66	543	30,794	1,293	110	-2,045	21,770	-1,085	29,434	1,253	106	104
July	177	68	559	31,384	1,318	112	-2,553	21,167	-603	29,434	1,236	105	102
August	184	70	577	32,672	1,372	116	-2,029	21,186	19	30,624	1,286	109	106
September	173	66	535	30,701	1,289	109	-1,757	21,507	321	28,623	1,202	102	100
October	182	70	536	32,212	1,353	115	-2,419	21,663	156	29,637	1,245	105	103
November	184	71	523	32,631	1,371	116	-2,069	23,203	1,540	29,022	1,219	103	101
December	186	71	529	32,952	1,384	117	-4,175	23,043	-160	28,937	1,215	103	101
Total	2,138	819	6,657	379,435	15,936	1,349	-31,268	23,043	3,285	344,882	14,485	1,226	1,199
2018 January	183	70	566	32,577	1,368	116	-2,522	24,342	1,299	28,756	1,208	102	100
February	167	64	443	29,674	1,246	105	-4,838	24,722	380	24,456	1,027	87	85
March	182	69	487	32,390	1,360	115	-5,516	23,084	-1,638	28,512	1,198	101	99
April	173	66	465	30,680	1,289	109	-3,675	23,379	295	26,710	1,122	95	93
May	182	69	490	32,389	1,360	115	-2,262	22,654	-725	30,852	1,296	110	108
June	180	68	473	31,924	1,341	113	-3,585	21,877	-777	29,116	1,223	103	102
July	188	72	519	33,430	1,404	119	-2,439	22,668	791	30,200	1,268	107	105
August	190	72	527	33,773	1,418	120	-2,494	22,824	156	31,123	1,307	111	108
September	173	66	471	30,667	1,288	109	-2,313	24,412	1,588	26,766	1,124	95	93
October	182	69	450	32,358	1,359	115	-3,614	23,698	-714	29,458	1,237	105	103
November	178	68	470	31,529	1,324	112	-3,229	23,618	-80	28,380	1,192	101	99
December	178	68	518	31,736	1,333	113	-2,924	23,418	-200	29,012	1,219	103	101
Total	2,156	821	5,819	383,127	16,091	1,361	-39,410	23,418	375	343,342	14,420	1,220	1,197
2019 January	177	67	548	31,601	1,327	112	-3,048	25,026	ⁱ 1,688	26,866	1,128	^R 96	93
February	160	61	499	28,576	1,200	102	-2,715	24,448	-578	26,439	1,110	94	92
March	173	65	504	30,895	1,298	110	-3,084	23,311	-1,137	28,948	1,216	103	101
April	174	66	462	30,951	1,300	110	-3,265	23,218	-93	27,779	1,167	99	97
May	182	69	471	32,443	1,363	115	-2,375	22,818	-400	30,468	1,280	108	106
June	179	68	505	31,895	1,340	113	-2,485	22,573	-245	29,655	1,246	105	103
July	182	69	512	32,541	1,367	116	-2,319	23,235	662	29,560	1,242	105	103
August	179	68	513	31,921	1,341	113	-2,342	22,721	-514	30,093	1,264	107	105
September	164	62	474	29,232	1,228	104	-1,337	23,036	315	27,580	1,158	98	96
October	173	66	504	30,941	1,300	110	-2,167	21,784	-1,252	30,026	1,261	107	105
November	176	66	536	31,358	1,317	111	-2,169	21,641	-143	29,332	1,232	104	102
December	186	71	556	33,275	1,398	118	-3,221	22,349	708	29,346	1,233	104	102
Total	2,104	796	6,084	375,629	15,776	1,335	-30,527	22,349	ⁱ -989	346,091	14,536	1,230	1,205

^a Total corn and other biomass inputs to the production of undenatured ethanol used for fuel ethanol.

^b Losses and co-products from the production of fuel ethanol. Does not include natural gas, electricity, and other non-biomass energy used in the production of fuel ethanol—these are included in the industrial sector consumption statistics for the appropriate energy source.

^c The amount of denaturant in fuel ethanol produced.

^d Includes denaturant.

^e Through 2009, data are for fuel ethanol imports only; data for fuel ethanol exports are not available. Beginning in 2010, data are for fuel ethanol imports minus fuel ethanol (including industrial alcohol) exports.

^f Stocks are at end of period.

^g A negative value indicates a decrease in stocks and a positive value indicates an increase.

^h Consumption of fuel ethanol minus denaturant. Data for fuel ethanol minus denaturant are used to develop data for "Renewable Energy/Biomass" in Tables 10.1–10.2b, as well as in Sections 1 and 2.

ⁱ Derived from the preliminary 2018 stocks value (23,338 thousand barrels), not the final 2018 value (23,418 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 ^f	
	Feed-stock ^a	Losses and Co-products ^b	Production			Trade			Stocks ^d	Stock Change ^e	Consumption			
			Mbbl	MMgal	TBtu	Imports	Exports	Net Imports ^c			Mbbl	MMgal		TBtu
TBtu	TBtu	Mbbl	MMgal	TBtu	Mbbl	Mbbl	Mbbl	Mbbl	Mbbl	Mbbl	MMgal	TBtu	TBtu	
2001 Total	1	(s)	204	9	1	81	41	40	NA	NA	244	10	1	NA
2002 Total	1	(s)	250	10	1	197	57	140	NA	NA	390	16	2	NA
2003 Total	2	(s)	338	14	2	97	113	-17	NA	NA	322	14	2	NA
2004 Total	4	(s)	666	28	4	101	128	-27	NA	NA	639	27	3	NA
2005 Total	12	(s)	2,162	91	12	214	213	1	NA	NA	2,163	91	12	NA
2006 Total	32	(s)	5,963	250	32	1,105	856	250	NA	NA	6,213	261	33	NA
2007 Total	63	1	11,662	490	62	3,455	6,696	-3,241	NA	NA	8,422	354	45	NA
2008 Total	88	1	16,145	678	87	7,755	16,673	-8,918	NA	NA	7,228	304	39	NA
2009 Total	67	1	12,281	516	66	1,906	6,546	-4,640	711	711	^g 7,663	322	41	-
2010 Total	44	1	8,177	343	44	564	2,588	-2,024	672	-39	6,192	260	33	(s)
2011 Total	125	2	23,035	967	123	890	1,799	-908	2,005	^h 1,028	21,099	886	113	1
2012 Total	128	2	23,588	991	126	853	3,056	-2,203	1,984	-20	21,406	899	115	1
2013 Total	176	2	32,368	1,359	173	8,152	4,675	3,477	3,810	1,825	34,020	1,429	182	30
2014 Total	165	2	30,452	1,279	163	4,578	1,974	2,604	3,131	-679	33,735	1,417	181	28
2015 Total	163	2	30,080	1,263	161	8,399	2,091	6,308	3,943	813	35,575	1,494	191	33
2016 Total	203	3	37,327	1,568	200	16,879	2,098	14,781	6,398	2,454	49,653	2,085	266	34
2017 January	12	(s)	2,208	93	12	241	42	199	6,397	(s)	2,407	101	13	3
February	12	(s)	2,238	94	12	549	59	490	6,475	78	2,650	111	14	3
March	15	(s)	2,761	116	15	650	136	514	6,189	-286	3,561	150	19	3
April	16	(s)	3,020	127	16	681	283	398	5,706	-484	3,901	164	21	3
May	18	(s)	3,242	136	17	948	239	709	4,909	-797	4,748	199	25	3
June	18	(s)	3,344	140	18	1,736	226	1,510	5,052	144	4,711	198	25	4
July	19	(s)	3,560	150	19	1,670	453	1,217	5,405	353	4,424	186	24	2
August	19	(s)	3,559	149	19	1,582	387	1,195	5,356	-49	4,803	202	26	2
September	19	(s)	3,507	147	19	205	100	105	4,849	-507	4,119	173	22	2
October	19	(s)	3,515	148	19	386	217	169	4,485	-364	4,047	170	22	2
November	19	(s)	3,523	148	19	222	49	173	4,233	-252	3,948	166	21	1
December	19	(s)	3,515	148	19	504	35	469	4,268	35	3,949	166	21	2
Total	206	3	37,993	1,596	204	9,374	2,228	7,146	4,268	-2,130	47,269	1,985	253	30
2018 January	16	(s)	2,989	126	16	246	84	162	4,565	297	2,853	120	15	1
February	17	(s)	3,046	128	16	146	103	43	4,934	369	2,720	114	15	2
March	19	(s)	3,551	149	19	457	257	200	4,925	-9	3,760	158	20	3
April	18	(s)	3,393	143	18	308	217	91	4,716	-209	3,693	155	20	2
May	20	(s)	3,603	151	19	325	396	-71	4,275	-441	3,972	167	21	2
June	21	(s)	3,783	159	20	296	276	20	3,850	-425	4,228	178	23	1
July	22	(s)	3,960	166	21	157	259	-102	3,742	-107	3,966	167	21	1
August	22	(s)	4,102	172	22	281	263	18	3,425	-318	4,437	186	24	1
September	21	(s)	3,914	164	21	277	191	86	3,371	-54	4,054	170	22	1
October	22	(s)	4,070	171	22	467	204	263	3,647	276	4,058	170	22	1
November	21	(s)	3,816	160	20	473	143	330	4,039	392	3,754	158	20	2
December	22	(s)	3,995	168	21	536	77	459	4,662	623	3,831	161	21	2
Total	240	3	44,222	1,857	237	3,969	2,470	1,499	4,662	394	45,326	1,904	243	19
2019 January	19	(s)	3,427	144	18	308	72	236	5,377	ⁱ 692	2,971	125	16	2
February	17	(s)	3,108	131	17	267	92	175	5,509	133	3,150	132	17	2
March	18	(s)	3,353	141	18	509	240	269	5,371	-138	3,760	158	20	2
April	20	(s)	3,623	152	19	410	370	40	5,315	-56	3,718	156	20	2
May	20	(s)	3,675	154	20	281	419	-138	4,802	-514	4,050	170	22	2
June	18	(s)	3,370	142	18	310	300	10	4,404	-397	3,777	159	20	2
July	21	(s)	3,776	159	20	333	392	-59	4,397	-8	3,725	156	20	2
August	20	(s)	3,712	156	20	140	290	-150	3,844	-553	4,115	173	22	2
September	18	(s)	3,377	142	18	280	238	42	3,706	-138	3,557	149	19	1
October	19	(s)	3,436	144	18	314	158	156	3,760	54	3,538	149	19	1
November	16	(s)	3,034	127	16	417	56	361	3,870	110	3,285	138	18	1
December	17	(s)	3,163	133	17	433	83	350	3,919	48	3,465	146	19	1
Total	223	3	41,054	1,724	220	4,002	2,710	1,292	3,919	ⁱ -766	43,112	1,811	231	19

^a Total vegetable oil and other biomass inputs to the production of biodiesel—calculated by multiplying biodiesel production by 5.433 million Btu per barrel. See "Biodiesel Feedstock" entry in the "Thermal Conversion Factor Source Documentation" at the end of Appendix A.

^b Losses and co-products from the production of biodiesel. Does not include natural gas, electricity, and other non-biomass energy used in the production of biodiesel—these are included in the industrial sector consumption statistics for the appropriate energy source.

^c Net imports equal imports minus exports.

^d Stocks are at end of period. Includes biodiesel stocks at (or in) refineries, pipelines, and bulk terminals. Beginning in 2011, also includes stocks at biodiesel production plants.

^e A negative value indicates a decrease in stocks and a positive value indicates an increase.

^f Other renewable diesel fuel and other renewable fuels consumption. See "Renewable Diesel Fuel (Other)" and "Renewable Fuels (Other)" in Glossary.

^g In 2009, because of incomplete data coverage and differing data sources, a "Balancing Item" amount of 733 thousand barrels (653 thousand barrels in January 2009; 80 thousand barrels in February 2009) is used to balance biodiesel supply

and disposition.

^h Derived from the final 2010 stocks value for bulk terminals and biodiesel production plants (977 thousand barrels), not the final 2010 value for bulk terminals only (672 thousand barrels) that is shown under "Stocks."

ⁱ Derived from the preliminary 2018 stocks value (4,684 thousand barrels), not the final 2018 value (4,662 thousand barrels) that is shown under "Stocks."

NA=Not available. — =No data reported. (s)=Less than 0.5 trillion Btu and greater than -0.5 trillion Btu, or less than 500 barrels and greater than -500 barrels.

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Biodiesel data in thousand barrels are converted to million gallons by multiplying by 0.042, and are converted to Btu by multiplying by 5.359 million Btu per barrel (the approximate heat content of biodiesel—see Table A1). • Through 2000, data are not available. Beginning in 2001, data not from U.S. Energy Information Administration (EIA) surveys are estimates. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> (Excel and CSV files) for all available annual and monthly data beginning in 2001.

Sources: See end of section.

Table 10.5 Solar Energy Consumption
(Trillion Btu)

	Distributed ^a Solar Energy ^b					Utility-Scale ^c Solar Energy ^b					Total ^k
	Heat ^f	Electricity ^d				Total ^g	Electricity ^e				
		Residential Sector	Commercial Sector	Industrial Sector	Total		Commercial Sector ^h	Industrial Sector ⁱ	Electric Power Sector ^j	Total	
1985 Total	NA	NA	NA	NA	NA	NA	NA	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	3	1	5	56	—	—	5	5	61
2007 Total	53	2	4	1	7	60	—	—	6	6	66
2008 Total	54	4	6	1	11	66	(s)	—	9	9	74
2009 Total	55	5	8	2	15	69	(s)	—	9	9	78
2010 Total	56	9	12	3	24	79	(s)	(s)	12	12	91
2011 Total	58	13	20	4	37	95	1	(s)	17	18	112
2012 Total	59	20	32	7	59	118	1	(s)	40	41	159
2013 Total	61	31	38	9	78	138	3	(s)	83	86	225
2014 Total	62	47	49	11	107	169	4	(s)	165	168	337
2015 Total	63	65	53	14	132	195	4	(s)	228	232	427
2016 Total	63	98	57	19	174	237	5	(s)	328	333	570
2017											
January	3	6	4	1	11	15	(s)	(s)	19	19	34
February	4	7	4	1	13	16	(s)	(s)	23	24	40
March	5	11	6	2	18	24	(s)	(s)	39	39	63
April	6	12	6	2	20	26	(s)	(s)	43	43	69
May	7	13	7	2	22	29	(s)	(s)	52	52	81
June	7	14	7	2	23	30	1	(s)	56	57	87
July	7	14	7	2	24	30	1	(s)	52	53	83
August	7	13	7	2	23	30	1	(s)	50	50	80
September	6	12	7	2	21	27	(s)	(s)	47	47	74
October	5	11	6	2	18	24	(s)	(s)	44	44	68
November	4	8	5	1	14	19	(s)	(s)	31	31	50
December	4	8	5	1	14	18	(s)	(s)	31	31	49
Total	65	128	71	22	221	286	5	(s)	486	491	777
2018											
January	4	8	5	1	15	18	(s)	(s)	30	30	49
February	4	9	6	1	16	20	(s)	(s)	35	36	56
March	5	13	7	2	22	28	(s)	(s)	46	46	74
April	6	15	8	2	25	31	(s)	(s)	55	55	86
May	7	16	9	2	27	34	1	(s)	62	62	97
June	7	16	9	2	28	35	1	(s)	67	68	102
July	7	17	9	3	29	36	1	(s)	61	62	97
August	7	16	9	2	28	34	1	(s)	60	61	95
September	6	14	8	2	24	30	(s)	(s)	54	54	85
October	5	13	7	2	22	27	(s)	(s)	45	45	72
November	4	10	6	2	17	22	(s)	(s)	34	34	56
December	4	9	5	1	16	20	(s)	(s)	28	28	48
Total	66	156	89	24	269	335	5	(s)	577	582	917
2019											
January	4	10	6	2	17	21	(s)	(s)	33	33	54
February	4	11	6	2	19	23	(s)	(s)	R 35	35	R 58
March	5	16	9	2	27	32	(s)	(s)	53	54	86
April	6	18	R 9	3	30	36	R 1	(s)	62	62	98
May	7	19	10	3	R 30	39	1	(s)	65	R 66	R 105
June	7	20	10	3	33	40	1	(s)	72	73	R 113
July	7	21	11	3	34	41	1	(s)	R 74	74	R 116
August	7	20	10	3	33	40	1	(s)	71	72	R 112
September	6	18	9	3	29	35	R 1	(s)	61	R 62	97
October	5	15	8	2	26	31	(s)	(s)	55	56	87
November	4	12	6	2	20	25	(s)	(s)	R 40	40	64
December	4	11	6	2	19	23	(s)	(s)	32	32	54
Total	65	191	101	28	320	385	6	1	652	659	1,044

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

^b See "Photovoltaic Energy" and "Solar Thermal Energy" in Glossary.

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

^d Solar photovoltaic (PV) electricity generation at distributed (small-scale) facilities connected to the electric power grid (converted to Btu by multiplying by the fossil fuels heat rate factors in Table A6).

^e Solar photovoltaic (PV) and solar thermal electricity net generation at utility-scale facilities (converted to Btu by multiplying by the fossil fuels heat rate factors in Table A6).

^f Solar thermal direct use energy in the residential, commercial, and industrial sectors for all end uses, such as pool heating, hot water heating, and space heating.

^g Data are the sum of "Distributed Solar Energy Heat" and "Distributed Solar Energy Electricity."

^h Commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

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

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

^k Data are the sum of "Distributed Solar Energy Total" and "Utility-Scale Solar Energy Total."

R=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 ^a Solar Generation ^b				Utility-Scale ^c Solar Generation ^b				Total
	Residential Sector	Commercial Sector	Industrial Sector	Total	Commercial Sector ^d	Industrial Sector ^e	Electric Power Sector ^f	Total	
1985 Total	NA	NA	NA	NA	NA	NA	11	11	11
1990 Total	12	18	4	33	-	-	367	367	400
1995 Total	20	30	7	58	-	-	497	497	554
2000 Total	39	59	13	110	-	-	493	493	604
2001 Total	47	71	16	134	-	-	543	543	676
2002 Total	56	84	19	158	-	-	555	555	713
2003 Total	65	98	22	185	-	-	534	534	719
2004 Total	81	121	27	229	-	-	575	575	804
2005 Total	121	182	40	344	-	-	550	550	894
2006 Total	177	266	59	501	-	-	508	508	1,009
2007 Total	250	375	83	708	-	-	612	612	1,319
2008 Total	401	603	133	1,137	(s)	-	864	864	2,002
2009 Total	539	810	179	1,529	(s)	-	891	891	2,420
2010 Total	900	1,237	274	2,411	5	2	1,206	1,212	3,623
2011 Total	1,358	2,020	447	3,825	84	7	1,727	1,818	5,643
2012 Total	2,058	3,351	742	6,151	148	14	4,164	4,327	10,478
2013 Total	3,217	4,024	891	8,132	294	17	8,724	9,036	17,167
2014 Total	4,947	5,146	1,139	11,233	371	16	17,304	17,691	28,924
2015 Total	6,999	5,689	1,451	14,139	416	21	24,456	24,893	39,032
2016 Total	10,595	6,158	2,060	18,812	529	27	35,497	36,054	54,866
2017 January	703	420	123	1,246	17	1	2,011	2,030	3,276
February	789	458	137	1,384	27	2	2,526	2,555	3,939
March	1,147	629	197	1,972	42	3	4,200	4,245	6,218
April	1,283	699	213	2,195	46	4	4,646	4,696	6,891
May	1,415	770	239	2,423	53	4	5,605	5,663	8,086
June	1,469	777	241	2,487	61	5	6,109	6,175	8,662
July	1,495	808	252	2,555	58	5	5,690	5,753	8,308
August	1,446	788	246	2,480	55	5	5,374	5,434	7,914
September	1,293	709	223	2,225	52	4	5,059	5,115	7,340
October	1,157	632	201	1,990	47	4	4,771	4,821	6,811
November	904	502	156	1,561	34	3	3,372	3,409	4,970
December	841	492	138	1,472	29	3	3,358	3,389	4,861
Total	13,942	7,685	2,364	23,990	521	42	52,723	53,286	77,276
2018 January	921	552	146	1,619	29	2	3,288	3,319	4,938
February	1,007	605	155	1,766	31	3	3,863	3,896	5,663
March	1,393	820	221	2,434	43	4	5,009	5,056	7,490
April	1,592	907	241	2,740	50	4	6,002	6,057	8,796
May	1,753	992	267	3,011	57	5	6,788	6,849	9,860
June	1,788	1,003	268	3,059	62	5	7,347	7,415	10,474
July	1,834	1,036	277	3,146	59	5	6,691	6,755	9,901
August	1,756	993	268	3,017	56	5	6,634	6,695	9,712
September	1,539	893	242	2,674	46	4	5,911	5,961	8,635
October	1,385	786	220	2,392	39	4	4,926	4,970	7,361
November	1,108	623	174	1,905	29	3	3,711	3,743	5,648
December	1,029	589	157	1,775	25	2	3,083	3,110	4,885
Total	17,105	9,798	2,636	29,539	525	47	63,253	63,825	93,365
2019 January	1,106	R 632	168	R 1,906	R 32	R 4	R 3,619	R 3,655	R 5,561
February	1,204	R 680	178	R 2,062	R 32	R 4	R 3,791	R 3,827	R 5,888
March	1,726	R 938	254	R 2,918	R 51	6	R 5,852	R 5,910	R 8,828
April	1,934	R 1,042	278	R 3,253	R 57	7	R 6,771	R 6,835	R 10,089
May	2,129	R 1,121	309	R 3,558	R 61	8	R 7,123	R 7,191	R 10,750
June	2,174	R 1,130	311	R 3,615	R 67	9	R 7,930	R 8,006	R 11,620
July	R 2,267	R 1,184	321	R 3,772	R 70	9	R 8,089	R 8,169	R 11,941
August	2,183	R 1,128	311	R 3,623	R 67	8	R 7,812	R 7,888	R 11,510
September	1,929	R 1,006	281	R 3,216	R 57	7	R 6,688	R 6,752	R 9,968
October	1,696	R 890	255	R 2,840	R 48	6	R 6,077	R 6,131	R 8,971
November	1,346	688	198	R 2,232	37	5	R 4,335	R 4,377	R 6,608
December	1,209	658	179	2,046	30	4	3,460	3,494	5,541
Total	20,902	11,097	3,041	35,041	608	79	71,547	72,234	107,275

^a Data are estimates for solar photovoltaic (PV) electricity generation at small-scale facilities (combined generator nameplate capacity less than 1 megawatt) connected to the electric power grid.

^b See "Photovoltaic Energy" and "Solar Thermal Energy" in Glossary.

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

^d Commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

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

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

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

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), biodiesel, and other renewable fuels 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.

1980–2008: Annual estimates are based on EIA, Form EIA-457, "Residential Energy Consumption Survey"; and National Oceanic and Atmospheric Administration regional heating degree-day data.

2009 forward: Annual estimates based on EIA, Form EIA-457, "Residential Energy Consumption Survey"; and 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 Heat Pump and Direct Use Energy

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, Geothermal Electricity Net Generation

December 2018 forward: Commercial sector geothermal 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, Geothermal Total

1989–November 2018: Commercial sector geothermal total consumption is equal to commercial sector heat pump and direct use energy.

December 2018 forward: Commercial sector geothermal total consumption is the sum of the commercial sector values for geothermal heat pump and direct use energy, and geothermal electricity net generation.

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 2014–2016, the annual estimates are based on commercial sector biomass consumption growth rates from EIA's *Annual Energy Outlook* data system; for 2017 forward, annual estimates are assumed by EIA to be equal to that of 2016). 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 4.661 million Btu per barrel (the estimated quantity-weighted factor of natural gasoline and conventional motor gasoline used as denaturant).

2009–2018: 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 4.638 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 5.222 million Btu per barrel (the approximate heat content of motor gasoline blending components). Total denaturant is the sum of the values for natural gasoline, conventional motor gasoline, and motor gasoline blending components.

2019: 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 4.638 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 5.222 million Btu per barrel (the approximate heat content of motor gasoline blending components). Total denaturant is the sum of the values for natural gasoline, conventional motor gasoline, and motor gasoline blending components.

Production

1981–1992: Fuel ethanol production is assumed to equal fuel ethanol consumption—see sources for "Consumption."

1993–2004: Calculated as fuel ethanol consumption plus fuel ethanol stock change minus fuel ethanol net imports. These data differ slightly from the original production data from EIA, Form EIA-819, "Monthly Oxygenate Report," and predecessor form, which were not reconciled and updated to be consistent with the final balance.

2005–2008: EIA, Form EIA-819, "Monthly Oxygenate Report."

2009–2018: EIA, PSA, annual reports, Table 1, data for net production of fuel ethanol at renewable fuels and oxygenate plants.

2019: EIA, PSM, monthly reports, Table 1, data for net production of fuel ethanol at renewable fuels and oxygenate plants.

Trade, Stocks, and Stock Change

1992–2018: EIA, PSA, annual reports, Table 1.

2019: 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).

2009–2018: EIA, PSA, annual reports, Table 1. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments.

2019: 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.

2011–2018: EIA, *Petroleum Supply Annual (PSA)*, annual reports, Table 1, data for renewable fuels except fuel ethanol.

2019: 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.

2012–2018: EIA, PSA, annual reports, Tables 25 and 31, data for biomass-based diesel fuel.

2019: 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: Consumption data for "Other Renewable Diesel Fuel" are set equal to refinery and blender net inputs data from EIA, EIA-810, "Monthly Refinery Report," and EIA-815, "Monthly Bulk Terminal and Blender Report" (data are converted to Btu by multiplying by the other renewable diesel fuel heat content factor in Table A1). Consumption data for "Other Renewable Fuels" are set equal to refinery and blender net inputs data from EIA, EIA-810, "Monthly Refinery Report," and EIA-815, "Monthly Bulk Terminal and Blender Report" (data are converted to Btu by multiplying by the other renewable fuels heat content factor in Table A1). "Other Renewable Fuels" in Table 10.4 is calculated as other renewable diesel fuel consumption plus other renewable fuels consumption.

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: 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 derive monthly estimates for that year. Initial monthly estimates for the current year use the previous year's allocators.

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 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

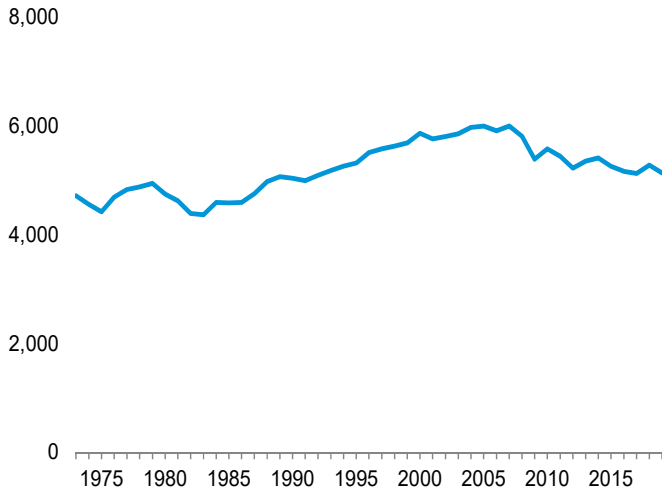
1984 forward: Total solar energy consumption is the sum of the values for total distributed solar energy consumption and total utility-scale solar energy consumption.

11. Environment

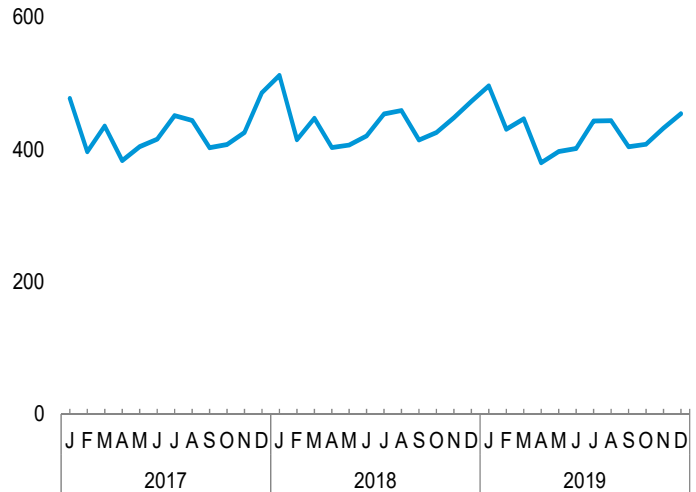
Figure 11.1 Carbon Dioxide Emissions From Energy Consumption by Source

(Million Metric Tons of Carbon Dioxide)

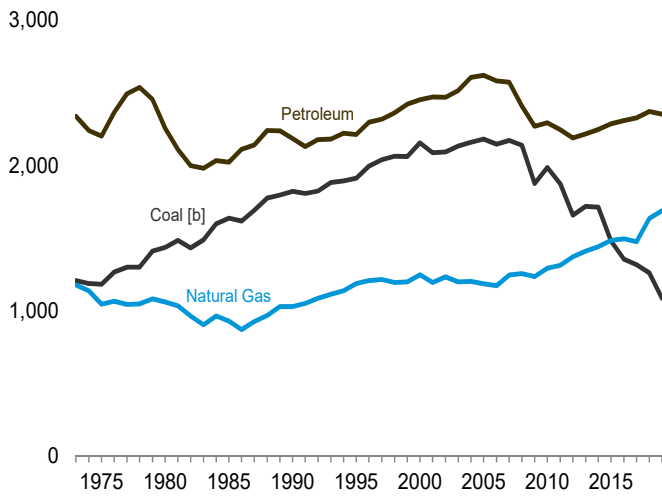
Total [a], 1973–2019



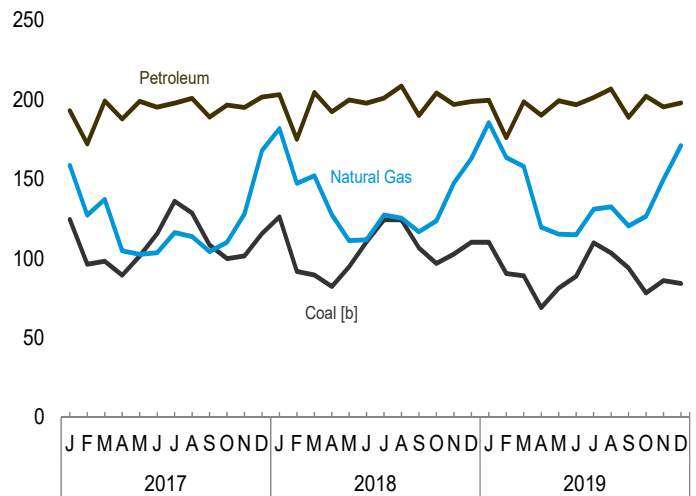
Total [a], Monthly



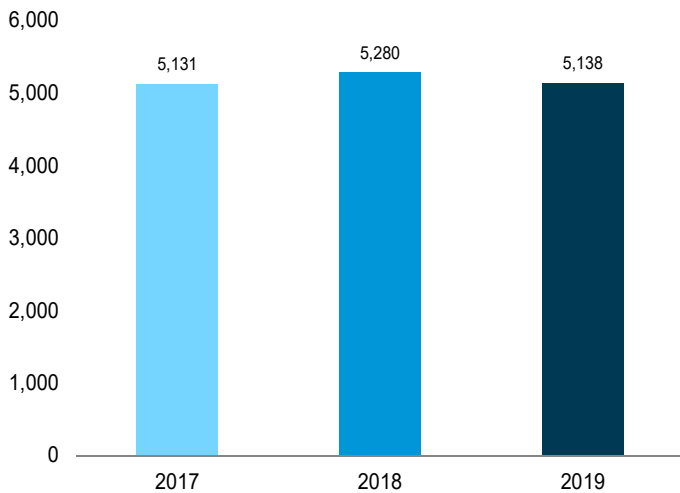
By Major Source, 1973–2019



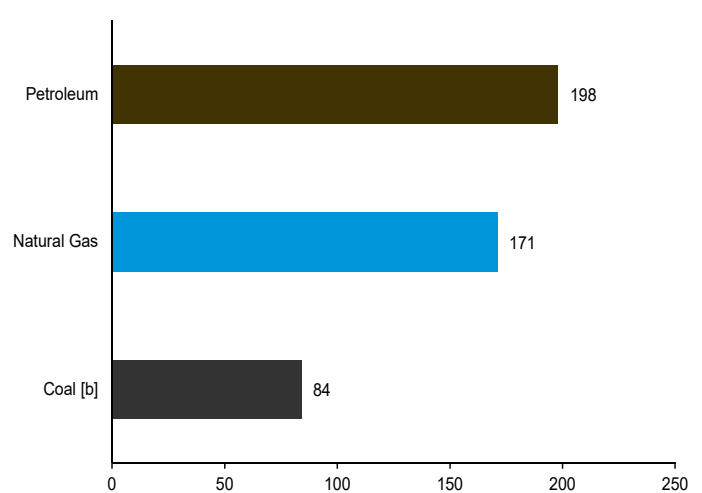
By Major Source, Monthly



Total [a], January–December



By Major Source, December 2019



[a] Excludes emissions from biomass energy consumption.

[b] Includes coal coke net imports.

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

Source: Table 11.1.

Table 11.1 Carbon Dioxide Emissions From Energy Consumption by Source
(Million Metric Tons of Carbon Dioxide^a)

	Coal ^b	Natural Gas ^c	Petroleum										Total	Total ^{h,i}
			Aviation Gasoline	Distillate Fuel Oil ^d	HGL ^e	Jet Fuel	Kero-sene	Lubri-cants	Motor Gasoline ^f	Petroleum Coke	Residual Fuel Oil	Other ^g		
1973 Total	1,206	1,176	6	480	80	155	32	13	911	54	510	99	2,340	4,722
1975 Total	1,181	1,044	5	442	73	146	24	11	911	51	445	94	2,202	4,426
1980 Total	1,435	1,059	4	446	78	156	24	13	900	49	455	131	2,256	4,750
1985 Total	1,637	927	3	445	82	178	17	12	930	55	217	83	2,022	4,587
1990 Total	1,821	1,027	3	470	75	223	6	13	988	70	222	115	2,185	5,040
1995 Total	1,913	1,186	3	498	90	222	8	13	1,042	77	154	107	2,214	5,323
2000 Total	2,156	1,246	3	579	106	254	10	14	1,133	84	165	107	2,454	5,867
2001 Total	2,088	1,193	2	597	96	243	11	13	1,149	90	147	125	2,472	5,765
2002 Total	2,094	1,231	2	586	98	237	6	12	1,180	100	126	122	2,471	5,809
2003 Total	2,135	1,196	2	610	96	231	8	11	1,186	99	140	134	2,517	5,860
2004 Total	2,160	1,201	2	632	96	240	10	12	1,209	113	157	136	2,606	5,979
2005 Total	2,181	1,183	2	639	92	246	10	12	1,208	111	166	135	2,623	5,999
2006 Total	2,147	1,171	2	645	86	240	8	11	1,216	104	125	147	2,584	5,914
2007 Total	2,172	1,246	2	647	90	238	5	12	1,208	98	131	143	2,573	6,003
2008 Total	2,140	1,255	2	610	89	226	2	11	1,139	92	113	126	2,410	5,817
2009 Total	1,876	1,234	2	555	86	204	3	10	1,126	85	92	107	2,271	5,392
2010 Total	1,986	1,292	2	583	85	210	3	11	1,110	82	97	115	2,296	5,585
2011 Total	1,875	1,311	2	592	79	209	2	10	1,077	79	83	114	2,247	5,446
2012 Total	1,657	1,372	2	569	76	206	1	9	1,071	79	67	110	2,189	5,229
2013 Total	1,718	1,409	2	573	85	210	1	10	1,086	77	58	116	2,218	5,356
2014 Total	1,714	1,440	2	606	86	216	1	10	1,095	78	46	108	2,249	5,413
2015 Total	1,480	1,483	1	598	87	227	1	11	1,125	79	47	112	2,288	5,263
2016 Total	1,354	1,494	1	576	83	237	1	11	1,144	78	59	120	2,311	5,170
2017 January	125	159	(s)	48	10	20	(s)	1	88	8	8	10	193	477
February	96	127	(s)	45	7	17	(s)	1	85	4	9	9	172	397
March	98	137	(s)	52	8	21	(s)	1	97	3	5	11	199	436
April	90	105	(s)	46	7	20	(s)	1	93	5	4	12	188	383
May	102	103	(s)	49	6	21	(s)	1	99	7	5	10	199	404
June	116	104	(s)	48	5	21	(s)	1	98	5	5	11	195	416
July	136	116	(s)	46	6	22	(s)	1	100	9	4	11	198	451
August	129	114	(s)	50	5	22	(s)	1	101	6	5	10	201	444
September	108	104	(s)	48	6	20	(s)	1	94	6	4	10	189	403
October	100	110	(s)	51	7	22	(s)	1	97	3	5	11	197	408
November	102	128	(s)	51	8	20	(s)	1	91	7	6	10	195	426
December	116	168	(s)	50	10	22	(s)	1	96	7	5	11	202	486
Total	1,316	1,475	1	584	86	247	1	10	1,140	72	62	126	2,329	5,131
2018 January	126	182	(s)	57	12	20	(s)	1	91	7	5	11	203	512
February	92	147	(s)	46	9	18	(s)	1	83	3	4	11	175	415
March	90	152	(s)	53	9	21	(s)	1	99	6	4	12	205	447
April	82	128	(s)	51	8	20	(s)	1	93	6	6	9	192	403
May	95	111	(s)	53	6	21	(s)	1	99	6	5	10	200	407
June	110	112	(s)	48	6	22	(s)	1	99	7	4	11	198	421
July	124	127	(s)	50	6	22	(s)	1	100	6	5	10	201	454
August	124	125	(s)	53	7	23	(s)	1	101	8	4	10	209	459
September	107	117	(s)	49	7	21	(s)	1	92	7	5	8	190	414
October	97	124	(s)	55	8	21	(s)	1	96	8	4	11	204	426
November	103	147	(s)	51	10	21	(s)	1	93	5	5	10	197	448
December	110	163	(s)	51	11	21	(s)	1	95	5	6	10	199	473
Total	1,260	1,636	2	618	97	250	1	10	1,141	74	57	123	2,373	5,280
2019 January	110	R 186	(s)	56	12	20	(s)	1	91	5	5	9	200	496
February	90	R 164	(s)	50	10	18	(s)	1	84	2	4	7	176	431
March	89	158	(s)	53	10	21	(s)	(s)	95	6	3	10	199	447
April	69	120	(s)	49	7	21	(s)	1	94	4	3	11	190	380
May	81	115	(s)	51	7	22	(s)	1	97	6	3	12	R 199	397
June	89	115	(s)	49	6	22	(s)	1	97	7	5	10	197	401
July	110	131	(s)	49	7	23	(s)	1	99	8	5	9	R 201	443
August	103	R 133	(s)	R 50	7	23	(s)	1	102	7	5	12	207	444
September	R 94	R 121	(s)	48	7	20	(s)	1	92	5	4	11	189	R 404
October	78	127	(s)	54	8	22	(s)	1	97	5	5	11	202	408
November	86	R 150	(s)	52	10	21	(s)	1	92	7	3	11	196	R 432
December	84	171	(s)	49	11	22	(s)	1	93	7	4	11	198	454
Total	1,084	1,689	2	609	103	255	1	9	1,133	70	49	123	2,354	5,138

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

^b Includes coal coke net imports.

^c Natural gas, excluding supplemental gaseous fuels.

^d Distillate fuel oil, excluding biodiesel.

^e Hydrocarbon gas liquids.

^f Finished motor gasoline, excluding fuel ethanol.

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

^h Includes electric power sector use of geothermal energy and non-biomass waste. See Table 11.6.

ⁱ Excludes emissions from biomass energy consumption. See Table 11.7.

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 11 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 11.7 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.

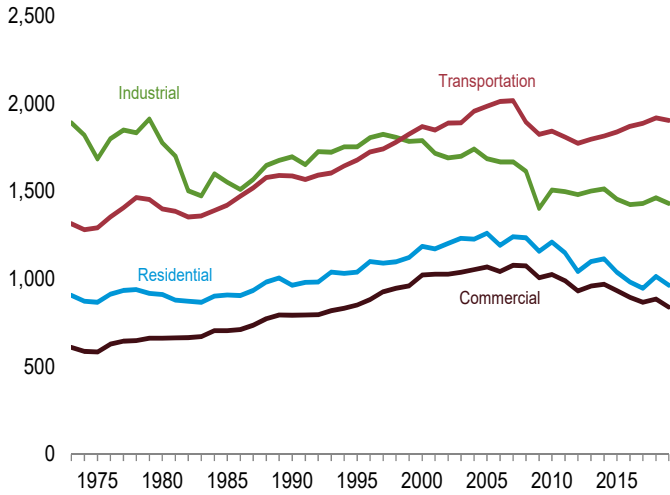
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#environment> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

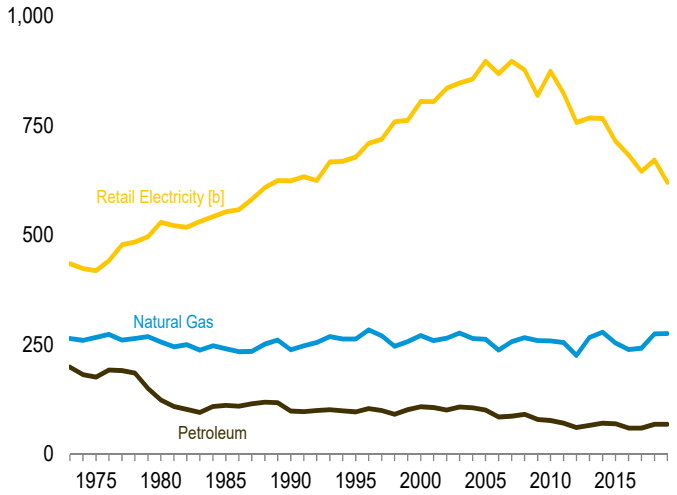
Figure 11.2 Carbon Dioxide Emissions From Energy Consumption by Sector

(Million Metric Tons of Carbon Dioxide)

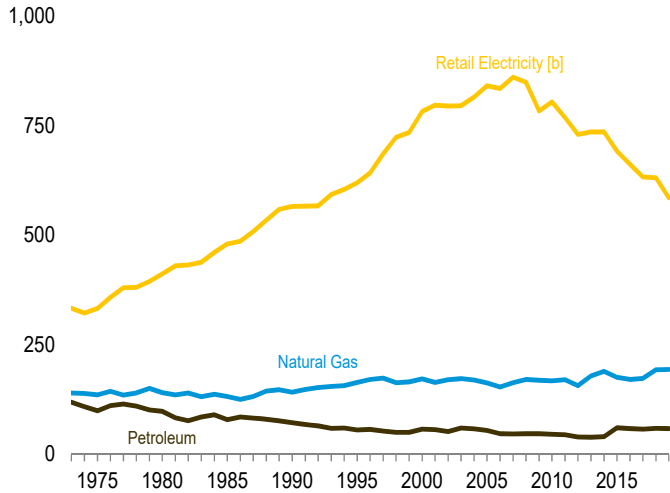
Total [a] by End-Use Sector [b], 1973–2019



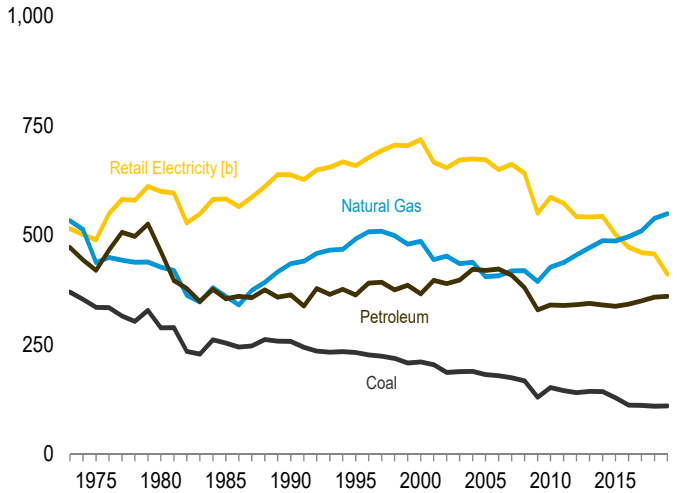
Residential Sector by Major Source, 1973–2019



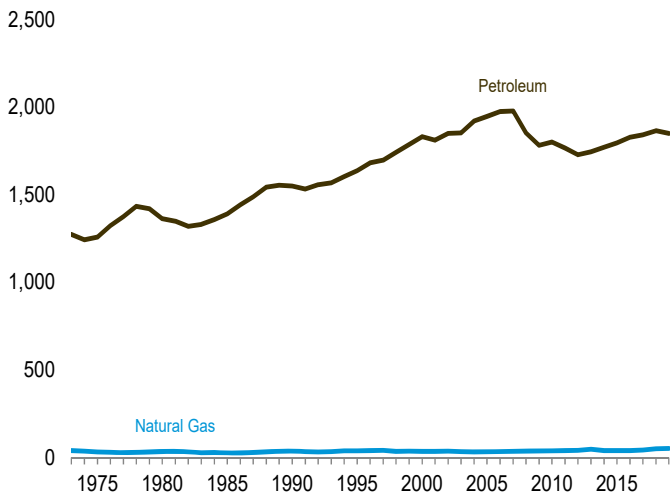
Commercial Sector by Major Source, 1973–2019



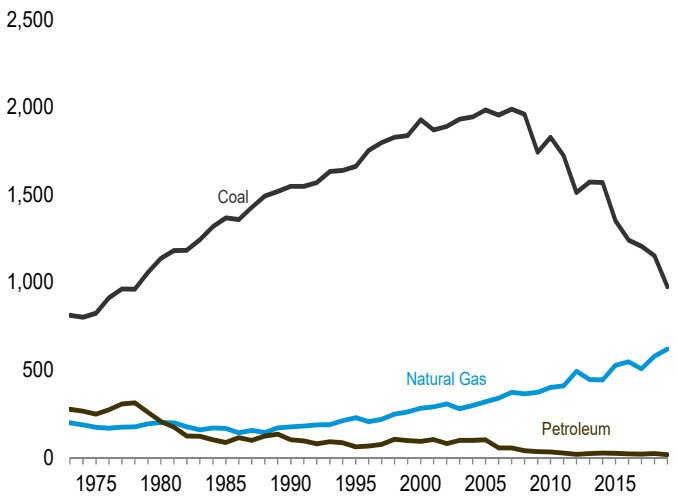
Industrial Sector by Major Source, 1973–2019



Transportation Sector by Major Source, 1973–2019



Electric Power Sector by Major Source, 1973–2019



[a] Excludes emissions from biomass energy consumption.
 [b] Emissions from energy consumption in the electric power sector are allocated to the end-use sectors in proportion to each sector's share of total

electricity retail sales.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#environment>.
 Sources: Tables 11.2–11.6.

Table 11.2 Carbon Dioxide Emissions From Energy Consumption: Residential Sector
(Million Metric Tons of Carbon Dioxide^a)

	Coal	Natural Gas ^b	Petroleum				Retail Electricity ^e	Total ^f
			Distillate Fuel Oil ^c	HGL ^d	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
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	1,235
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	71	823	1,149
2012 Total	NA	225	35	25	1	61	757	1,043
2013 Total	NA	267	36	29	1	66	768	1,100
2014 Total	NA	278	39	31	1	71	766	1,115
2015 Total	NA	253	40	28	1	69	714	1,037
2016 Total	NA	239	32	27	1	60	683	982
2017 January	NA	46	4	4	(s)	9	63	117
February	NA	32	3	3	(s)	7	44	82
March	NA	32	3	3	(s)	6	45	83
April	NA	15	2	2	(s)	4	39	58
May	NA	11	2	2	(s)	3	45	59
June	NA	7	2	1	(s)	3	58	68
July	NA	6	1	1	(s)	2	77	85
August	NA	6	2	1	(s)	3	70	78
September	NA	6	2	1	(s)	3	55	64
October	NA	11	2	2	(s)	4	46	62
November	NA	26	3	3	(s)	6	46	78
December	NA	45	5	4	(s)	9	60	114
Total	NA	242	32	27	1	59	645	947
2018 January	NA	54	R 6	5	(s)	R 12	72	137
February	NA	38	4	4	(s)	R 8	48	93
March	NA	36	3	4	(s)	7	45	88
April	NA	24	3	3	(s)	6	39	69
May	NA	9	2	1	(s)	3	46	58
June	NA	7	1	1	(s)	2	60	69
July	NA	6	1	1	(s)	2	76	84
August	NA	5	1	1	(s)	2	74	81
September	NA	6	R 2	1	(s)	R 3	60	R 69
October	NA	14	3	2	(s)	5	48	67
November	NA	33	4	4	(s)	8	49	90
December	NA	42	R 6	4	(s)	10	57	109
Total	NA	274	R 37	31	1	R 68	671	R 1,014
2019 January	NA	52	5	5	(s)	R 11	62	R 125
February	NA	44	4	4	(s)	R 9	50	103
March	NA	38	4	4	(s)	R 8	47	93
April	NA	18	R 3	2	(s)	5	34	57
May	NA	12	2	2	(s)	R 4	41	56
June	NA	7	2	1	(s)	3	52	61
July	NA	6	R 2	1	(s)	R 3	72	R 81
August	NA	6	2	1	(s)	3	69	R 78
September	NA	6	1	1	(s)	R 3	58	R 66
October	NA	13	2	2	(s)	4	43	R 61
November	NA	R 32	4	4	(s)	8	R 44	R 84
December	NA	41	5	4	(s)	9	49	100
Total	NA	275	37	31	1	68	620	964

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

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

^d Hydrocarbon gas liquids.

^e Emissions from energy consumption (for electricity and a small amount of useful thermal output) in the electric power sector are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See Tables 7.6 and 11.6.

^f Excludes emissions from biomass energy consumption. See Table 11.7.

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 11 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 11.7 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 11.3 Carbon Dioxide Emissions From Energy Consumption: Commercial Sector
(Million Metric Tons of Carbon Dioxide^a)

	Coal	Natural Gas ^b	Petroleum						Retail Electricity ^f	Total ^g	
			Distillate Fuel Oil ^c	HGL ^d	Kerosene	Motor Gasoline ^e	Petroleum Coke	Residual Fuel Oil			
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	705
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
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)	3	(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	39	736	958
2014 Total	4	190	26	10	(s)	4	(s)	1	41	736	970
2015 Total	3	176	26	9	(s)	25	(s)	(s)	61	692	932
2016 Total	2	171	24	9	(s)	25	(s)	(s)	59	662	894
2017 January	(s)	26	3	1	(s)	2	(s)	(s)	7	53	86
February	(s)	20	2	1	(s)	2	(s)	(s)	5	44	69
March	(s)	20	2	1	(s)	2	(s)	(s)	5	47	73
April	(s)	12	2	1	(s)	2	(s)	(s)	5	44	60
May	(s)	10	1	1	(s)	2	(s)	(s)	4	50	64
June	(s)	8	2	(s)	(s)	2	(s)	(s)	4	57	69
July	(s)	7	1	(s)	(s)	2	(s)	(s)	4	66	77
August	(s)	8	1	(s)	(s)	2	(s)	(s)	4	63	75
September	(s)	8	1	(s)	(s)	2	(s)	(s)	4	55	67
October	(s)	11	2	1	(s)	2	(s)	(s)	4	51	67
November	(s)	18	2	1	(s)	2	(s)	(s)	5	49	72
December	(s)	27	3	1	(s)	2	(s)	(s)	7	53	87
Total	2	174	24	10	(s)	24	(s)	(s)	58	633	867
2018 January	(s)	30	4	2	(s)	2	(s)	(s)	R 7	56	94
February	(s)	23	R 2	1	(s)	2	(s)	(s)	R 5	43	72
March	(s)	23	2	1	(s)	2	(s)	(s)	R 5	45	74
April	(s)	17	2	1	(s)	2	(s)	(s)	5	42	64
May	(s)	9	1	1	(s)	2	0	(s)	4	50	63
June	(s)	8	1	1	(s)	2	0	(s)	4	56	68
July	(s)	8	1	1	(s)	2	0	(s)	4	65	76
August	(s)	8	1	1	(s)	2	0	(s)	3	65	76
September	(s)	8	1	1	(s)	2	0	(s)	4	57	68
October	(s)	13	2	1	(s)	2	(s)	(s)	5	52	70
November	(s)	21	3	1	(s)	2	(s)	(s)	6	50	77
December	(s)	25	4	1	(s)	2	(s)	(s)	7	50	83
Total	2	193	R 24	11	(s)	24	(s)	(s)	R 59	631	886
2019 January	(s)	31	R 3	2	(s)	2	(s)	(s)	7	52	R 89
February	(s)	26	3	1	(s)	2	(s)	(s)	6	44	76
March	(s)	23	3	1	(s)	2	(s)	(s)	6	45	75
April	(s)	14	2	1	(s)	2	(s)	(s)	R 4	39	57
May	(s)	10	1	1	(s)	2	0	(s)	4	46	60
June	(s)	8	1	1	(s)	2	0	(s)	4	50	62
July	(s)	8	1	1	(s)	2	0	(s)	4	61	73
August	(s)	8	2	1	(s)	2	0	(s)	4	60	72
September	(s)	8	1	1	(s)	2	0	(s)	3	54	65
October	(s)	12	1	1	(s)	2	0	(s)	4	46	63
November	(s)	R 21	3	1	(s)	2	0	(s)	6	45	R 72
December	(s)	25	3	1	(s)	2	(s)	(s)	7	44	76
Total	2	194	23	11	(s)	24	(s)	(s)	59	585	840

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

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

^d Hydrocarbon gas liquids.

^e Finished motor gasoline, excluding fuel ethanol.

^f Emissions from energy consumption (for electricity and a small amount of useful thermal output) in the electric power sector are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See Tables 7.6 and 11.6.

^g Excludes emissions from biomass energy consumption. See Table 11.7.

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 11 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 11.7 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 11.4 Carbon Dioxide Emissions From Energy Consumption: Industrial Sector
(Million Metric Tons of Carbon Dioxide^a)

	Coal	Coal Coke Net Imports	Natural Gas ^b	Petroleum								Retail Elec- tricity ^g	Total ^h	
				Distillate Fuel Oil ^c	HGL ^d	Kero- sene	Lubri- cants	Motor Gasoline ^e	Petroleum Coke	Residual Fuel Oil	Other ^f			Total
1973 Total	371	-1	533	106	31	11	7	18	52	146	99	472	515	1,891
1975 Total	335	2	438	97	30	9	6	16	51	119	94	420	490	1,685
1980 Total	289	-4	428	96	52	13	7	11	48	106	131	464	601	1,777
1985 Total	255	-2	361	81	54	3	6	15	54	59	83	356	583	1,553
1990 Total	258	1	436	84	45	1	7	13	67	32	115	364	638	1,697
1995 Total	233	7	492	82	57	1	7	14	69	27	107	364	659	1,754
2000 Total	211	7	486	87	61	1	7	11	74	19	107	366	719	1,790
2001 Total	205	3	444	95	53	2	6	21	79	16	125	397	667	1,717
2002 Total	187	7	453	88	54	1	6	22	82	15	122	390	654	1,691
2003 Total	189	6	435	85	50	2	6	23	81	17	134	398	672	1,700
2004 Total	190	16	438	88	53	2	6	26	92	20	136	423	674	1,741
2005 Total	182	5	406	92	49	3	6	25	88	22	135	420	672	1,685
2006 Total	180	7	408	91	49	2	6	26	84	19	147	423	650	1,667
2007 Total	175	3	419	91	50	1	6	21	81	15	143	409	662	1,667
2008 Total	168	5	419	98	41	(s)	6	17	78	15	126	380	642	1,614
2009 Total	131	-3	395	78	41	(s)	5	16	72	10	107	330	550	1,403
2010 Total	152	-1	427	84	42	1	5	17	68	9	115	341	587	1,507
2011 Total	146	1	438	90	38	(s)	5	17	65	10	114	340	574	1,498
2012 Total	141	(s)	455	93	42	(s)	4	17	70	5	110	342	543	1,481
2013 Total	144	-2	472	92	46	(s)	5	17	65	4	116	345	542	1,501
2014 Total	143	-2	488	100	45	(s)	5	14	66	3	108	341	543	1,513
2015 Total	129	-2	487	85	49	(s)	5	17	67	3	112	338	502	1,455
2016 Total	113	-2	497	84	46	(s)	5	17	66	4	120	343	473	1,424
2017 January	9	(s)	46	7	4	(s)	(s)	1	7	1	10	30	38	124
February	9	(s)	41	8	3	(s)	(s)	1	3	(s)	9	25	33	108
March	9	(s)	44	10	4	(s)	(s)	1	3	(s)	11	30	35	119
April	9	(s)	41	6	4	(s)	(s)	1	5	(s)	12	29	34	112
May	9	(s)	41	8	4	(s)	(s)	2	6	(s)	10	30	38	118
June	9	(s)	40	7	4	(s)	(s)	2	4	(s)	11	28	41	117
July	9	(s)	41	5	5	(s)	(s)	2	8	(s)	11	30	45	125
August	9	(s)	41	7	4	(s)	(s)	2	5	(s)	10	28	44	123
September	9	(s)	40	7	4	(s)	(s)	1	6	(s)	10	29	39	117
October	9	(s)	43	8	5	(s)	(s)	1	3	(s)	11	28	37	117
November	9	(s)	45	9	4	(s)	(s)	1	7	(s)	10	32	37	122
December	10	(s)	48	7	4	(s)	(s)	1	7	(s)	11	30	39	127
Total	112	-3	510	88	48	(s)	5	18	62	4	126	351	461	1,430
2018 January	9	(s)	49	10	5	(s)	(s)	1	5	(s)	11	33	39	129
February	9	(s)	44	7	4	(s)	(s)	1	3	(s)	11	27	32	111
March	9	(s)	47	R 9	4	(s)	(s)	2	5	(s)	12	33	34	122
April	9	(s)	44	R 7	4	(s)	(s)	1	5	(s)	9	27	32	113
May	9	(s)	43	9	4	(s)	(s)	2	5	(s)	10	30	38	120
June	9	(s)	42	6	4	(s)	(s)	2	6	(s)	11	29	40	119
July	9	(s)	43	6	5	(s)	(s)	2	5	(s)	10	29	44	125
August	9	(s)	43	8	5	(s)	(s)	2	7	(s)	10	R 33	44	130
September	9	(s)	43	7	5	(s)	(s)	1	7	(s)	8	29	40	121
October	9	(s)	44	9	5	(s)	(s)	R 2	7	(s)	11	34	38	126
November	9	(s)	47	R 7	5	(s)	(s)	1	4	(s)	10	29	38	R 123
December	10	(s)	49	5	5	(s)	(s)	1	4	(s)	10	26	37	122
Total	110	-3	539	R 92	55	(s)	R 5	18	64	3	123	R 359	458	R 1,463
2019 January	9	(s)	51	11	6	(s)	(s)	1	5	(s)	9	32	36	128
February	9	(s)	46	9	5	(s)	(s)	1	1	(s)	7	24	31	110
March	9	(s)	48	R 9	5	(s)	(s)	1	5	(s)	10	30	33	120
April	8	(s)	44	7	4	(s)	1	1	4	(s)	11	28	29	R 110
May	9	(s)	44	8	4	(s)	(s)	R 2	5	(s)	12	R 32	33	118
June	9	(s)	42	R 7	5	(s)	(s)	R 2	7	(s)	10	30	35	115
July	9	(s)	43	6	6	(s)	(s)	2	7	(s)	9	30	40	122
August	9	(s)	45	R 6	5	(s)	(s)	2	6	(s)	12	R 31	40	123
September	8	(s)	43	7	6	(s)	(s)	1	5	(s)	11	30	36	117
October	11	(s)	45	9	5	(s)	(s)	R 2	4	(s)	11	R 33	32	R 121
November	10	(s)	48	R 8	5	(s)	(s)	1	6	(s)	11	31	33	122
December	11	(s)	50	5	5	(s)	(s)	1	7	(s)	11	30	31	123
Total	111	-2	550	90	60	(s)	4	18	62	3	123	361	411	1,430

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

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

^d Hydrocarbon gas liquids.

^e Finished motor gasoline, excluding fuel ethanol.

^f Aviation gasoline blending components, crude oil, motor gasoline blending components, petrochemical feedstocks, special naphthas, still gas, unfinished oils, waxes, and miscellaneous petroleum products.

^g Emissions from energy consumption (for electricity and a small amount of useful thermal output) in the electric power sector are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See Tables 7.6 and 11.6.

^h Excludes emissions from biomass energy consumption. See Table 11.7.

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 11 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 11.7 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 11.5 Carbon Dioxide Emissions From Energy Consumption: Transportation Sector
(Million Metric Tons of Carbon Dioxide^a)

	Coal	Natural Gas ^b	Petroleum							Retail Elec- tricity ^f	Total ^g	
			Aviation Gasoline	Distillate Fuel Oil ^c	HGL ^d	Jet Fuel	Lubri- cants	Motor Gasoline ^e	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	1,026	72	1,637	3	1,679
2000 Total	(h)	36	3	377	1	254	7	1,119	70	1,830	4	1,870
2001 Total	(h)	35	2	387	1	243	6	1,125	46	1,810	4	1,849
2002 Total	(h)	37	2	394	1	237	6	1,156	53	1,849	4	1,890
2003 Total	(h)	33	2	408	1	231	6	1,159	45	1,853	5	1,891
2004 Total	(h)	32	2	433	1	240	6	1,180	58	1,921	5	1,957
2005 Total	(h)	33	2	444	2	246	6	1,180	66	1,946	5	1,984
2006 Total	(h)	33	2	467	2	240	5	1,187	71	1,974	5	2,012
2007 Total	(h)	35	2	469	1	238	6	1,183	78	1,977	5	2,018
2008 Total	(h)	37	2	424	3	226	5	1,119	73	1,852	5	1,893
2009 Total	(h)	38	2	400	2	204	5	1,107	62	1,782	5	1,825
2010 Total	(h)	38	2	423	(s)	210	6	1,089	70	1,800	5	1,843
2011 Total	(h)	39	2	431	(s)	209	6	1,057	61	1,766	4	1,809
2012 Total	(h)	41	2	411	(s)	206	5	1,051	53	1,728	4	1,773
2013 Total	(h)	47	2	416	(s)	210	5	1,066	46	1,745	4	1,796
2014 Total	(h)	40	2	435	(s)	216	6	1,077	35	1,770	4	1,815
2015 Total	(h)	40	1	441	(s)	227	6	1,083	37	1,795	4	1,839
2016 Total	(h)	40	1	431	(s)	237	6	1,102	49	1,827	4	1,871
2017 January	(h)	5	(s)	33	(s)	20	1	85	7	145	(s)	150
February	(h)	4	(s)	32	(s)	17	(s)	82	3	134	(s)	138
March	(h)	4	(s)	37	(s)	21	1	93	4	156	(s)	160
April	(h)	3	(s)	35	(s)	20	(s)	90	4	149	(s)	153
May	(h)	3	(s)	38	(s)	21	(s)	96	5	160	(s)	163
June	(h)	3	(s)	37	(s)	21	(s)	95	4	158	(s)	162
July	(h)	3	(s)	38	(s)	22	(s)	96	4	160	(s)	164
August	(h)	3	(s)	40	(s)	22	(s)	98	5	164	(s)	168
September	(h)	3	(s)	37	(s)	20	(s)	91	4	152	(s)	155
October	(h)	3	(s)	38	(s)	22	(s)	94	4	159	(s)	162
November	(h)	4	(s)	36	(s)	20	(s)	88	5	150	(s)	154
December	(h)	5	(s)	35	(s)	22	(s)	93	4	154	(s)	159
Total	(h)	42	1	436	(s)	247	5	1,099	52	1,842	4	1,888
2018 January	(h)	6	(s)	36	(s)	20	(s)	88	3	146	(s)	152
February	(h)	5	(s)	32	(s)	18	(s)	80	4	134	(s)	139
March	(h)	5	(s)	38	(s)	21	(s)	95	3	158	(s)	163
April	(h)	4	(s)	38	(s)	20	(s)	89	5	153	(s)	157
May	(h)	3	(s)	41	(s)	21	(s)	95	4	161	(s)	165
June	(h)	3	(s)	39	(s)	22	(s)	95	3	161	(s)	165
July	(h)	4	(s)	41	(s)	22	(s)	R 96	5	165	(s)	169
August	(h)	4	(s)	43	(s)	23	(s)	98	4	168	(s)	172
September	(h)	4	(s)	39	(s)	21	(s)	89	4	153	(s)	157
October	(h)	4	(s)	41	(s)	21	(s)	93	3	R 158	(s)	163
November	(h)	5	(s)	37	(s)	21	(s)	90	4	153	(s)	158
December	(h)	5	(s)	36	(s)	21	(s)	92	5	154	(s)	159
Total	(h)	50	2	R 460	(s)	250	5	R 1,099	R 48	R 1,864	4	R 1,918
2019 January	(h)	6	(s)	36	(s)	20	(s)	88	4	R 148	(s)	154
February	(h)	5	(s)	R 33	(s)	18	(s)	81	4	136	(s)	R 141
March	(h)	5	(s)	R 37	(s)	21	(s)	92	3	R 153	(s)	159
April	(h)	4	(s)	R 37	(s)	21	1	91	2	152	(s)	156
May	(h)	4	(s)	40	(s)	22	(s)	94	2	159	(s)	163
June	(h)	4	(s)	R 39	(s)	22	(s)	94	4	R 159	(s)	R 163
July	(h)	4	(s)	41	(s)	23	(s)	95	4	164	(s)	168
August	(h)	4	(s)	R 40	(s)	23	(s)	98	4	167	(s)	R 171
September	(h)	4	(s)	R 38	(s)	20	(s)	89	3	R 151	(s)	156
October	(h)	4	(s)	41	(s)	22	(s)	93	4	R 160	(s)	R 164
November	(h)	5	(s)	37	(s)	21	(s)	89	3	R 149	(s)	154
December	(h)	5	(s)	36	(s)	22	(s)	89	3	151	(s)	156
Total	(h)	52	2	455	(s)	255	5	1,091	41	1,850	3	1,905

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

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

^d Hydrocarbon gas liquids.

^e Finished motor gasoline, excluding fuel ethanol.

^f Emissions from energy consumption (for electricity and a small amount of useful thermal output) in the electric power sector are allocated to the end-use sectors in proportion to each sector's share of total electricity retail sales. See Tables 7.6 and 11.6.

^g Excludes emissions from biomass energy consumption. See Table 11.7.

^h 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 11 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 11.7 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 11.6 Carbon Dioxide Emissions From Energy Consumption: Electric Power Sector
(Million Metric Tons of Carbon Dioxide^a)

	Coal	Natural Gas ^b	Petroleum				Geo-thermal	Non-Biomass Waste ^d	Total ^e
			Distillate Fuel Oil ^c	Petroleum Coke	Residual Fuel Oil	Total			
1973 Total	812	199	20	2	254	276	NA	NA	1,286
1975 Total	824	172	17	(s)	231	248	NA	NA	1,244
1980 Total	1,137	200	12	1	194	207	NA	NA	1,544
1985 Total	1,367	166	6	1	79	86	NA	NA	1,619
1990 Total	1,548	176	7	3	92	102	(s)	6	1,831
1995 Total	1,661	228	8	8	45	61	(s)	10	1,960
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 Total	1,350	527	5	11	7	24	(s)	11	1,913
2016 Total	1,241	547	4	12	6	22	(s)	11	1,821
2017 January	115	36	(s)	1	(s)	2	(s)	1	154
February	87	31	(s)	1	(s)	1	(s)	1	121
March	89	37	(s)	1	(s)	1	(s)	1	128
April	80	34	(s)	(s)	(s)	1	(s)	1	117
May	92	38	(s)	1	(s)	2	(s)	1	133
June	107	47	(s)	1	(s)	2	(s)	1	156
July	127	59	(s)	1	(s)	2	(s)	1	188
August	119	56	(s)	1	(s)	2	(s)	1	178
September	99	47	(s)	1	(s)	1	(s)	1	149
October	91	42	(s)	1	(s)	1	(s)	1	135
November	92	36	(s)	1	(s)	1	(s)	1	131
December	106	43	(s)	1	(s)	2	(s)	1	152
Total	1,206	507	4	10	5	19	(s)	11	1,743
2018 January	117	43	2	1	2	5	(s)	1	166
February	83	38	(s)	1	(s)	1	(s)	1	123
March	81	41	(s)	1	(s)	1	(s)	1	124
April	73	38	(s)	1	(s)	1	(s)	1	114
May	86	46	(s)	1	(s)	1	(s)	1	134
June	101	52	(s)	1	(s)	2	(s)	1	156
July	115	67	(s)	1	(s)	2	(s)	1	185
August	115	65	(s)	1	(s)	2	(s)	1	183
September	98	56	(s)	1	(s)	2	(s)	1	156
October	88	49	(s)	1	(s)	1	(s)	1	138
November	94	42	(s)	1	(s)	2	(s)	1	138
December	101	42	(s)	1	(s)	2	(s)	1	145
Total	1,151	579	6	10	6	22	(s)	11	1,764
2019 January	101	46	(s)	1	1	2	(s)	1	150
February	82	42	(s)	1	(s)	1	(s)	1	126
March	80	44	(s)	1	(s)	1	(s)	1	126
April	61	40	(s)	1	(s)	1	(s)	1	103
May	72	45	(s)	1	(s)	2	(s)	1	120
June	80	54	(s)	1	(s)	1	(s)	1	137
July	101	70	(s)	1	(s)	2	(s)	1	174
August	95	70	(s)	1	(s)	2	(s)	1	168
September	86	60	(s)	1	(s)	1	(s)	1	^R 148
October	68	^R 52	(s)	(s)	(s)	1	(s)	1	122
November	76	45	(s)	(s)	(s)	1	(s)	1	123
December	73	49	(s)	(s)	(s)	1	(s)	1	124
Total	975	618	4	8	5	16	(s)	11	1,620

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

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

^d Municipal solid waste from non-biogenic sources, and tire-derived waste. Through 1994, also includes blast furnace gas, and other manufactured and waste gases derived from fossil fuels.

^e Excludes emissions from biomass energy consumption. See Table 11.7.

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 11 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 11.7 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 11.7 Carbon Dioxide Emissions From Biomass Energy Consumption
(Million Metric Tons of Carbon Dioxide^a)

	By Source					By Sector					
	Wood ^b	Biomass Waste ^c	Fuel Ethanol ^d	Bio-diesel	Total	Residential	Com-mercial ^e	Indus-trial ^f	Trans-portion	Electric Power ^g	Total
1973 Total	143	(s)	NA	NA	143	33	1	109	NA	(s)	143
1975 Total	140	(s)	NA	NA	141	40	1	100	NA	(s)	141
1980 Total	232	(s)	NA	NA	232	80	2	150	NA	(s)	232
1985 Total	252	14	3	NA	270	95	2	168	3	1	270
1990 Total	208	24	4	NA	237	54	8	147	4	23	237
1995 Total	222	30	8	NA	260	49	9	166	8	28	260
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	182	41	62	3	288	47	10	125	64	41	288
2010 Total	208	42	73	2	325	51	10	149	74	42	325
2011 Total	208	42	73	8	331	49	11	151	80	40	331
2012 Total	202	42	73	8	325	41	10	153	80	42	325
2013 Total	219	45	75	13	353	54	11	158	87	43	353
2014 Total	225	47	76	13	361	54	12	158	88	49	361
2015 Total	217	47	79	14	357	48	13	157	90	48	357
2016 Total	^R 209	46	81	20	355	41	14	155	98	47	355
2017 January	18	4	6	1	30	3	1	14	7	4	30
February	16	4	6	1	27	3	1	12	7	4	27
March	18	4	7	1	30	3	1	14	8	4	30
April	17	4	7	2	29	3	1	13	8	4	29
May	18	4	7	2	30	3	1	13	9	4	30
June	18	4	7	2	30	3	1	13	9	4	30
July	18	4	7	2	31	3	1	14	8	4	31
August	19	4	7	2	31	3	1	14	9	4	31
September	17	3	7	2	29	3	1	13	8	4	29
October	18	4	7	2	30	3	1	13	8	4	30
November	18	4	7	2	30	3	1	14	8	4	30
December	19	4	7	2	31	3	1	14	8	4	31
Total	^R 214	45	82	19	359	40	14	161	98	47	359
2018 January	19	4	7	1	31	4	1	14	8	4	31
February	17	4	6	1	28	4	1	12	7	4	28
March	19	4	7	1	31	4	1	14	8	4	31
April	18	4	6	1	29	4	1	13	8	4	29
May	^R 19	4	7	2	31	4	1	13	9	4	31
June	18	4	7	2	30	4	1	13	8	4	30
July	19	4	7	2	32	4	1	14	9	4	32
August	19	4	7	2	32	4	1	14	9	4	32
September	18	3	6	2	29	4	1	13	8	3	29
October	18	4	7	2	31	4	1	13	8	4	31
November	18	4	7	1	30	4	1	13	8	4	30
December	19	4	7	2	31	4	1	14	8	4	31
Total	221	44	82	18	365	49	14	160	97	46	365
2019 January	19	3	6	1	30	4	1	14	7	4	30
February	17	3	6	1	28	4	1	12	7	3	28
March	18	3	7	1	30	4	1	13	8	3	30
April	^R 18	3	7	1	29	4	1	13	8	3	29
May	18	3	7	2	30	4	1	13	9	4	30
June	18	3	7	1	29	4	1	13	8	3	29
July	18	3	7	1	30	4	1	13	8	4	30
August	19	3	7	2	31	4	1	13	9	4	31
September	17	3	7	1	29	4	1	12	8	3	29
October	18	3	7	1	29	4	1	13	8	3	29
November	18	3	7	1	29	4	1	13	8	3	29
December	18	3	7	1	30	4	1	13	8	4	30
Total	215	39	82	17	354	50	13	154	96	41	354

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

^b Wood and wood-derived fuels.

^c Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass.

^d Fuel ethanol minus denaturant.

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

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

^g The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

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 11.1–11.6. See Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Data are estimates. See "Section 11 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.

Note 1. Emissions of Carbon Dioxide and Other Greenhouse Gases. Greenhouse gases are those gases—such as water vapor, carbon dioxide (CO₂), methane, nitrous oxide, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride—that are transparent to solar (short-wave) radiation but opaque to long-wave (infrared) radiation, thus preventing long-wave radiant energy from leaving Earth's atmosphere. The net effect is a trapping of absorbed radiation and a tendency to warm the planet's surface.

Energy-related carbon dioxide emissions account for about 98% of U.S. CO₂ emissions. The vast majority of CO₂ emissions come from fossil fuel combustion, with smaller amounts from the non-combustion use of fossil fuels, as well as from electricity generation using geothermal energy and non-biomass waste. Other sources of CO₂ emissions include industrial processes, such as cement and limestone production. Data in the U.S. Energy Information Administration's (EIA) *Monthly Energy Review* (MER) Tables 11.1–11.6 are estimates for U.S. CO₂ emissions from energy consumption, plus the non-combustion use of fossil fuels (excluded are estimates for CO₂ emissions from biomass energy consumption, which appear in MER Table 11.7).

For annual U.S. estimates for emissions of CO₂ from all sources, as well as for emissions of other greenhouse gases, see EIA's *Emissions of Greenhouse Gases Report* at http://www.eia.gov/environment/emissions/ghg_report/.

Note 2. Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion. Carbon dioxide (CO₂) emissions from the combustion of biomass to produce energy are excluded from the energy-related CO₂ emissions reported in MER Tables 11.1–11.6, but appear in MER Table 11.7. According to current international convention (see the Intergovernmental Panel on Climate Change's "2006 IPCC Guidelines for National Greenhouse Gas Inventories"), carbon released through biomass combustion is excluded from reported energy-related emissions. The release of carbon from biomass combustion is assumed to be balanced by the uptake of carbon when the feedstock is grown, resulting in zero net emissions over some period of time. (This is not to say that biomass energy is carbon-neutral. Energy inputs are required in order to grow, fertilize, and harvest the feedstock and to produce and process the biomass into fuels.)

However, analysts have debated whether increased use of biomass energy may result in a decline in terrestrial carbon stocks, leading to a net positive release of carbon rather than the zero net release assumed by its exclusion from reported energy-related emissions. For example, the clearing of forests for biofuel crops could result in an initial release of carbon that is not fully recaptured in subsequent use of the land for agriculture.

To reflect the potential net emissions, the international convention for greenhouse gas inventories is to report biomass emissions in the category "agriculture, forestry, and other land use," usually based on estimates of net changes in carbon stocks over time.

This indirect accounting of CO₂ emissions from biomass can potentially lead to confusion in accounting for and understanding the flow of CO₂ emissions within energy and non-energy systems. In recognition of this issue, reporting of CO₂ emissions from biomass combustion alongside other energy-related CO₂ emissions offers an alternative accounting treatment. It is important, however, to avoid misinterpreting emissions from fossil energy and biomass energy sources as necessarily additive. Instead, the combined total of direct CO₂ emissions from biomass and energy-related CO₂ emissions implicitly assumes that none of the carbon emitted was previously or subsequently reabsorbed in terrestrial sinks or that other emissions sources offset any such sequestration.

Section 11 Methodology and Sources

To estimate carbon dioxide emissions from energy consumption for the *Monthly Energy Review* (MER), Tables 11.1–11.7, 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 and other renewable diesel fuel, which are non-fossil renewable fuels.

2009–2011: To remove the biodiesel portion from distillate fuel oil, data for biodiesel consumption (calculated using data from EIA, 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") 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. To remove the other renewable diesel fuel portion from distillate fuel oil, data for refinery and blender net inputs (from EIA-810, "Monthly Refinery Report," and EIA-815, "Monthly Bulk Terminal and Blender Report") are converted to trillion Btu by multiplying by the other renewable diesel fuel heat content factor in MER Table A1, and then subtracted from the distillate fuel oil consumption values.

2012 forward: To remove the biodiesel portion from distillate fuel oil, data for biodiesel consumption (from MER Table 10.4) is subtracted from the distillate fuel oil consumption values. To remove the other renewable diesel fuel portion from distillate fuel oil, data for refinery and blender net inputs (from EIA-810, "Monthly Refinery Report," and EIA-815, "Monthly Bulk Terminal and Blender Report") are converted to trillion Btu by multiplying by the other renewable diesel fuel 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 11, 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 11, 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 https://www.eia.gov/environment/archive/1605/ggrpt/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 (CO₂) emissions data in million metric tons are calculated by multiplying consumption values in trillion Btu from Steps 1 and 2 (minus the carbon sequestered in non-combustion use in Step 3) by the CO₂ emissions factors at http://www.eia.gov/environment/archive/1605/ggrpt/excel/CO2_coeffs_09_v2.xls.

Coal—CO₂ emissions for coal are calculated for each sector (residential, commercial, coke plants, other industrial, transportation, electric power). Total coal emissions are the sum of the sectoral coal emissions.

Coal Coke Net Imports—CO₂ emissions for coal coke net imports are calculated.

Natural Gas—CO₂ emissions for natural gas are calculated for each sector (residential, commercial, industrial, transportation, electric power). Total natural gas emissions are the sum of the sectoral natural gas emissions.

Petroleum—CO₂ emissions are calculated for each petroleum product. Total petroleum emissions are the sum of the product emissions. Total 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 CO₂ emissions data for geothermal and non-biomass waste are EIA estimates based on Form EIA-923, "Power Plant Operations Report" (and predecessor forms). Monthly estimates are created by dividing the annual data by the number of days in the year and then multiplying by the number of days in the month. (Annual estimates for the current year are set equal to those of the previous year.)

Biomass—CO₂ emissions for wood, biomass waste, fuel ethanol (minus denaturant), and biodiesel are calculated for each sector. Total emissions for each biomass fuel are the sum of the sectoral emissions. The following factors, in million metric tons CO₂ per quadrillion Btu, are used: wood—93.80; biomass waste—90.70; fuel ethanol—68.44; and biodiesel—73.84. For 1973–1988, the biomass portion of waste in MER Tables 10.2a–10.2c is estimated as 67%; for 1989–2000, the biomass portion of waste is estimated as 67% in 1989 to 58% in 2000, based on the biogenic shares of total municipal solid waste shown in EIA's "Methodology for Allocating Municipal Solid Waste to Biogenic and Non-Biogenic Energy," Table 1 at <http://www.eia.gov/totalenergy/data/monthly/pdf/historical/msw.pdf>.

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Appendix A

British Thermal Unit Conversion Factors

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	Kerosene	5.670
Aviation Gasoline (Finished)	5.048	Lubricants	6.065
Aviation Gasoline Blending Components	5.048	Motor Gasoline (Finished)—see Tables A2 and A3	
Biodiesel (Biomass-Based Diesel Fuel)	5.359	Motor Gasoline Blending Components (MGBC)	
Crude Oil—see Table A2		Through 2006	5.253
Distillate Fuel Oil—see Table A3 for averages		Beginning in 2007	5.222
15 ppm sulfur and under	5.770	Other Renewable Diesel Fuel	5.494
Greater than 15 ppm to 500 ppm sulfur	5.817	Other Renewable Fuels	5.359
Greater than 500 ppm sulfur	5.825	Oxygenates (excluding Fuel Ethanol)	4.247
Fuel Ethanol—see Table A3		Petrochemical Feedstocks	
Hydrocarbon Gas Liquids		Naphtha Less Than 401°F	5.248
Natural Gas Liquids		Other Oils Equal to or Greater Than 401°F	5.825
Ethane	2.783	Petroleum Coke—see Table A3 for averages	
Propane	3.841	Total, through 2003	6.024
Normal Butane	4.353	Catalyst, beginning in 2004	^a 6.287
Isobutane	4.183	Marketable, beginning in 2004	5.719
Natural Gasoline (Pentanes Plus)	4.638	Residual Fuel Oil	6.287
Refinery Olefins		Special Naphthas	5.248
Ethylene	2.436	Still Gas	
Propylene	3.835	Through 2015	^b 6.000
Butylene	4.377	Beginning in 2016	^a 6.287
Isobutylene	4.355	Unfinished Oils	5.825
Hydrogen	^a 6.287	Waxes	5.537
Jet Fuel, Kerosene Type	5.670	Miscellaneous Products	5.796
Jet Fuel, Naphtha Type	5.355	Other Hydrocarbons	5.825

^a Per residual fuel oil equivalent barrel (6.287 million Btu per barrel).

^b Per fuel oil equivalent barrel (6.000 million Btu per barrel).

Note: The values in this table are for gross heat contents. See "Heat Content" in Glossary.

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

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A2. Approximate Heat Content of Petroleum Production, Imports, and Exports
(Million Btu per Barrel)

	Production		Imports				Exports			
			Crude Oil ^a	Petroleum Products		Total ^c	Crude Oil ^a	Petroleum Products		Total ^c
	Natural Gas Plant Liquids	Motor Gasoline ^b		Total Products ^c	Motor Gasoline ^d			Total Products ^c		
1950	5.800	4.534	5.943	5.253	6.263	6.080	5.800	5.253	5.751	5.766
1955	5.800	4.414	5.924	5.253	6.234	6.040	5.800	5.253	5.765	5.768
1960	5.800	4.301	5.911	5.253	6.161	6.021	5.800	5.253	5.835	5.834
1965	5.800	4.265	5.872	5.253	6.123	5.997	5.800	5.253	5.742	5.743
1970	5.800	4.132	5.822	5.253	6.088	5.985	5.800	5.253	5.811	5.810
1975	5.800	3.944	5.821	5.253	5.935	5.858	5.800	5.253	5.747	5.748
1980	5.800	3.862	5.812	5.253	5.748	5.796	5.800	5.253	5.841	5.820
1981	5.800	3.860	5.818	5.253	5.659	5.775	5.800	5.253	5.837	5.821
1982	5.800	3.798	5.826	5.253	5.664	5.775	5.800	5.253	5.829	5.820
1983	5.800	3.755	5.825	5.253	5.677	5.774	5.800	5.253	5.800	5.800
1984	5.800	3.745	5.823	5.253	5.613	5.745	5.800	5.253	5.867	5.850
1985	5.800	3.752	5.832	5.253	5.572	5.736	5.800	5.253	5.819	5.814
1986	5.800	3.733	5.903	5.253	5.624	5.808	5.800	5.253	5.839	5.832
1987	5.800	3.742	5.901	5.253	5.599	5.820	5.800	5.253	5.860	5.858
1988	5.800	3.751	5.900	5.253	5.618	5.820	5.800	5.253	5.842	5.840
1989	5.800	3.764	5.906	5.253	5.641	5.833	5.800	5.253	5.869	5.857
1990	5.800	3.758	5.934	5.253	5.614	5.849	5.800	5.253	5.838	5.833
1991	5.800	3.740	5.948	5.253	5.636	5.873	5.800	5.253	5.827	5.823
1992	5.800	3.739	5.953	5.253	5.623	5.877	5.800	5.253	5.774	5.777
1993	5.800	3.735	5.954	5.253	5.539	5.866	5.800	5.253	5.681	5.693
1994	5.800	3.728	5.950	5.253	5.416	5.835	5.800	5.253	5.693	5.704
1995	5.800	3.728	5.938	5.253	5.345	5.830	5.800	5.253	5.692	5.703
1996	5.800	3.703	5.947	5.253	5.373	5.828	5.800	5.253	5.663	5.678
1997	5.800	3.686	5.954	5.253	5.333	5.836	5.800	5.253	5.663	5.678
1998	5.800	3.694	5.953	5.253	5.314	5.833	5.800	5.253	5.505	5.539
1999	5.800	3.663	5.942	5.253	5.291	5.815	5.800	5.253	5.530	5.564
2000	5.800	3.648	5.959	5.253	5.309	5.823	5.800	5.253	5.529	5.542
2001	5.800	3.652	5.976	5.253	5.330	5.838	5.800	5.253	5.637	5.641
2002	5.800	3.646	5.971	5.253	5.362	5.845	5.800	5.253	5.517	5.519
2003	5.800	3.659	5.970	5.253	5.381	5.845	5.800	5.253	5.628	5.630
2004	5.800	3.636	5.981	5.253	5.429	5.853	5.800	5.253	5.532	5.539
2005	5.800	3.638	5.977	5.253	5.436	5.835	5.800	5.253	5.504	5.513
2006	5.800	3.622	5.980	5.253	5.431	5.836	5.800	5.219	5.415	5.423
2007	5.800	3.609	5.985	5.222	5.483	5.857	5.800	5.188	5.465	5.471
2008	5.800	3.614	5.990	5.222	5.459	5.861	5.800	5.215	5.587	5.591
2009	5.800	3.598	5.988	5.222	5.509	5.878	5.800	5.221	5.674	5.677
2010	5.800	3.573	5.989	5.222	5.545	5.892	5.800	5.214	5.601	5.604
2011	5.800	3.573	6.008	5.222	5.538	5.905	5.800	5.216	5.526	5.530
2012	5.800	3.588	6.165	5.222	5.501	6.035	5.800	5.217	5.520	5.526
2013	5.800	3.629	6.010	5.222	5.497	5.899	5.800	5.216	5.470	5.482
2014	5.800	3.640	6.035	5.222	5.518	5.929	5.800	5.218	5.369	5.406
2015	5.717	3.669	6.065	5.222	5.504	5.941	5.682	5.218	5.279	5.319
2016	5.722	3.632	6.053	5.222	5.491	5.929	5.724	5.218	5.184	5.245
2017	5.723	3.612	6.050	5.222	5.489	5.930	5.738	5.222	5.151	5.258
2018	5.706	3.591	6.063	5.222	^c 5.491	^c 5.938	5.721	5.222	^c 5.088	^c 5.259
2019	^{RP} 5.698	^{RP} 3.607	^{RP} 6.075	^P 5.222	^{RP} 5.466	^{RP} 5.921	^{RP} 5.708	^P 5.222	^{RP} 5.018	^{RP} 5.258
2020	^E 5.698	^E 3.607	^E 6.075	^E 5.222	^E 5.466	^E 5.921	^E 5.708	^E 5.222	^E 5.018	^E 5.258

^a Includes lease condensate.

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

^c Through 2017, the imports and exports factors are developed using old hydrocarbon gas liquids heat content values shown in Table A1 of the September 2019 *Monthly Energy Review* (MER). Beginning in 2018, the factors are developed using heat content values shown in Table A1 of the current MER.

^d 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 ^a Consumption by Sector						Distillate Fuel Oil Consumption ^f	Hydrocarbon Gas Liquids Consumption ^g	Motor Gasoline (Finished) Consumption ^h	Petroleum Coke Consumption ⁱ	Fuel Ethanol ^j	Fuel Ethanol Feedstock Factor ^k
	Residential	Commercial ^b	Industrial ^b	Transportation ^{b,c}	Electric Power ^{d,e}	Total ^{b,c}						
1950	5.473	5.817	5.927	5.461	6.254	5.642	5.825	3.810	5.253	6.024	NA	NA
1955	5.470	5.781	5.847	5.407	6.254	5.581	5.825	3.810	5.253	6.024	NA	NA
1960	5.418	5.781	5.772	5.387	6.267	5.542	5.825	3.810	5.253	6.024	NA	NA
1965	5.365	5.761	5.695	5.386	6.267	5.517	5.825	3.810	5.253	6.024	NA	NA
1970	5.262	5.709	5.579	5.393	6.252	5.499	5.825	3.731	5.253	6.024	NA	NA
1975	5.255	5.649	5.490	5.392	6.250	5.489	5.825	3.671	5.253	6.024	NA	NA
1980	5.322	5.752	5.340	5.441	6.254	5.472	5.825	3.669	5.253	6.024	3.564	6.586
1981	5.284	5.693	5.268	5.433	6.258	5.440	5.825	3.632	5.253	6.024	3.564	6.562
1982	5.267	5.699	5.211	5.423	6.258	5.406	5.825	3.588	5.253	6.024	3.564	6.539
1983	5.141	5.592	5.214	5.416	6.255	5.396	5.825	3.535	5.253	6.024	3.564	6.515
1984	5.308	5.658	5.167	5.418	6.251	5.385	5.825	3.580	5.253	6.024	3.564	6.492
1985	5.264	5.598	5.159	5.423	6.247	5.377	5.825	3.584	5.253	6.024	3.564	6.469
1986	5.269	5.632	5.237	5.426	6.257	5.410	5.825	3.631	5.253	6.024	3.564	6.446
1987	5.241	5.594	5.203	5.429	6.249	5.395	5.825	3.663	5.253	6.024	3.564	6.423
1988	5.259	5.598	5.196	5.433	6.250	5.402	5.825	3.643	5.253	6.024	3.564	6.400
1989	5.195	5.549	5.190	5.438	6.240	5.403	5.825	3.679	5.253	6.024	3.564	6.377
1990	5.146	5.554	5.219	5.442	6.244	5.403	5.825	3.630	5.253	6.024	3.564	6.355
1991	5.096	5.529	5.130	5.441	6.246	5.375	5.825	3.626	5.253	6.024	3.564	6.332
1992	5.126	5.514	5.133	5.443	6.238	5.369	5.825	3.643	5.253	6.024	3.564	6.309
1993	5.103	5.505	5.140	5.413	6.230	5.354	5.825	3.628	5.217	6.024	3.564	6.287
1994	5.097	5.513	5.115	5.413	6.213	5.344	5.820	3.657	5.214	6.024	3.564	6.264
1995	5.062	5.476	5.084	5.409	6.187	5.326	5.820	3.641	5.204	6.024	3.564	6.242
1996	4.997	5.431	5.076	5.416	6.194	5.323	5.820	3.629	5.211	6.024	3.564	6.220
1997	4.988	5.389	5.083	5.410	6.198	5.322	5.820	3.627	5.205	6.024	3.564	6.198
1998	4.974	5.363	5.101	5.406	6.210	5.335	5.819	3.619	5.203	6.024	3.564	6.176
1999	4.902	5.289	5.052	5.406	6.204	5.313	5.819	3.628	5.202	6.024	3.564	6.167
2000	4.908	5.313	5.015	5.415	6.188	5.311	5.819	3.610	5.201	6.024	3.564	6.159
2001	4.936	5.323	5.104	5.405	6.199	5.331	5.819	3.604	5.201	6.024	3.564	6.151
2002	4.885	5.291	5.053	5.404	6.172	5.309	5.819	3.588	5.199	6.024	3.564	6.143
2003	4.920	5.313	5.108	5.400	6.182	5.326	5.819	3.610	5.197	6.024	3.564	6.106
2004	4.952	5.324	5.106	5.407	6.134	5.330	5.818	3.591	5.196	5.982	3.564	6.069
2005	4.915	5.360	5.143	5.408	6.126	5.342	5.818	3.589	5.192	5.982	3.564	6.032
2006	4.886	5.296	5.120	5.405	6.038	5.323	5.803	3.551	5.185	5.987	3.564	5.995
2007	4.833	5.270	5.079	5.376	6.064	5.293	5.784	3.544	5.142	5.996	3.564	5.959
2008	4.772	5.156	5.103	5.342	6.013	5.268	5.780	3.549	5.106	5.992	3.564	5.922
2009	4.664	5.217	4.959	5.320	5.987	5.218	5.781	3.487	5.090	6.017	3.564	5.901
2010	4.664	5.195	4.920	5.316	5.956	5.204	5.778	3.489	5.067	6.059	3.562	5.880
2011	4.657	5.176	4.889	5.315	5.900	5.194	5.776	3.421	5.063	6.077	3.561	5.859
2012	4.714	5.126	4.843	5.306	5.925	5.176	5.774	3.440	5.062	6.084	3.560	5.838
2013	4.648	5.053	4.801	5.302	5.892	5.157	5.774	3.468	5.060	6.089	3.560	5.817
2014	4.664	5.016	4.804	5.300	5.906	5.161	5.773	3.439	5.059	6.100	3.559	5.797
2015	4.721	5.050	4.767	5.302	5.915	5.154	5.773	3.462	5.057	6.085	3.558	5.776
2016	4.631	5.022	4.799	5.303	5.885	5.162	5.773	3.423	5.055	6.104	3.558	5.755
2017	4.623	5.006	4.767	5.305	5.893	5.152	5.772	3.401	5.053	6.132	3.556	5.735
2018	RE 4.639	RE 4.970	RE 4.663	E 5.310	5.896	5.123	5.772	3.380	5.054	6.122	RP 3.553	5.715
2019	RE 4.633	RE 4.965	RE 4.641	RE 5.306	RP 5.901	RP 5.111	RP 5.771	RP 3.402	RP 5.052	RP 6.124	RP 3.555	5.694
2020	E 4.633	E 4.965	E 4.641	E 5.306	E 5.901	E 5.111	E 5.771	E 3.402	E 5.052	E 6.124	E 3.555	5.674

^a Petroleum products supplied, including natural gas plant liquids and crude oil burned directly as fuel. Quantity-weighted averages of the petroleum products included in each category are calculated by using heat content values for individual products shown in Tables A1 and A3.

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

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

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

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

^f There is a discontinuity in this time series between 1993 and 1994; beginning in 1994, the single constant factor is replaced by a quantity-weighted factor. Quantity-weighted averages of the sulfur-content categories of distillate fuel oil are calculated by using heat content values shown in Table A1. Excludes renewable diesel fuel (including biodiesel) blended into distillate fuel oil.

^g Quantity-weighted averages of the major components of hydrocarbon gas liquids are calculated by using heat content values shown in Table A1. The factor for 1967 is used as the estimated factor for 1949–1966.

^h Through 1992, excludes oxygenates. Beginning in 1993, includes fuel ethanol blended into motor gasoline; and for 1993–2006, also includes methyl tertiary butyl ether (MTBE) and other oxygenates blended into motor gasoline.

ⁱ There is a discontinuity in this time series between 2003 and 2004; beginning in 2004, the single constant factor is replaced by a quantity-weighted factor. Quantity-weighted averages of the two categories of petroleum coke are calculated by using heat content values shown in Table A1.

^j Includes denaturant (petroleum added to ethanol to make it undrinkable). Fuel ethanol factors are weighted average heat contents for undenatured ethanol (3.539 million Btu per barrel) and products used as denaturant (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.

^k Corn input to the production of undenatured ethanol (million Btu corn per barrel undenatured ethanol), used as the factor to estimate total biomass inputs to the production of undenatured ethanol. Observed ethanol yields (gallons undenatured ethanol per bushel of corn) are 2.5 in 1980, 2.666 in 1998, 2.68 in 2002, 2.78 in 2008, and 2.82 in 2012; yields in other years are estimated. Corn is assumed to have a gross heat content of 0.392 million Btu per bushel. Undenatured ethanol is assumed to have a gross heat content of 3.539 million Btu per barrel.

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 ^a			Imports	Exports
	Marketed	Dry	End-Use Sectors ^b	Electric Power Sector ^c	Total		
1950	1,119	1,035	1,035	1,035	1,035	--	1,035
1955	1,120	1,035	1,035	1,035	1,035	1,035	1,035
1960	1,107	1,035	1,035	1,035	1,035	1,035	1,035
1965	1,101	1,032	1,032	1,032	1,032	1,032	1,032
1970	1,102	1,031	1,031	1,031	1,031	1,031	1,031
1975	1,095	1,021	1,020	1,026	1,021	1,026	1,014
1980	1,098	1,026	1,024	1,035	1,026	1,022	1,013
1981	1,103	1,027	1,025	1,035	1,027	1,014	1,011
1982	1,107	1,028	1,026	1,036	1,028	1,018	1,011
1983	1,115	1,031	1,031	1,030	1,031	1,024	1,010
1984	1,109	1,031	1,030	1,035	1,031	1,005	1,010
1985	1,112	1,032	1,031	1,038	1,032	1,002	1,011
1986	1,110	1,030	1,029	1,034	1,030	997	1,008
1987	1,112	1,031	1,031	1,032	1,031	999	1,011
1988	1,109	1,029	1,029	1,028	1,029	1,002	1,018
1989	1,107	1,031	1,032	^c 1,028	1,031	1,004	1,019
1990	1,105	1,029	1,029	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	1,027	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	1,128	1,037	1,039	1,034	1,037	1,025	1,009
2017	1,129	1,036	1,037	1,034	1,036	1,025	1,009
2018	1,134	1,036	1,038	1,033	1,036	1,025	1,009
2019	^E 1,134	^{RP} 1,037	^{RP} 1,039	^P 1,033	^{RP} 1,037	^E 1,025	^E 1,009
2020	^E 1,134	^E 1,037	^E 1,039	^E 1,033	^E 1,037	^E 1,025	^E 1,009

^a Consumption factors are for natural gas, plus a small amount of supplemental gaseous fuels.

^b Residential, commercial, industrial, and transportation sectors.

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

R=Revised. P=Preliminary. E=Estimate. --=Not applicable.

Note: The values in this table are for gross heat contents. See "Heat Content" in Glossary.

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

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A5. Approximate Heat Content of Coal and Coal Coke
(Million Btu per Short Ton)

	Coal									Coal Coke	
	Production ^a	Waste Coal Supplied ^b	Consumption					Imports	Exports		Imports and Exports
			Residential and Commercial Sectors ^c	Industrial Sector		Electric Power Sector ^{e,f}	Total				
				Coke Plants	Other ^d						
1950	25.090	NA	24.461	26.798	24.820	23.937	24.989	25.020	26.788	24.800	
1955	25.201	NA	24.373	26.794	24.821	24.056	24.982	25.000	26.907	24.800	
1960	24.906	NA	24.226	26.791	24.609	23.927	24.713	25.003	26.939	24.800	
1965	24.775	NA	24.028	26.787	24.385	23.780	24.537	25.000	26.973	24.800	
1970	23.842	NA	23.203	26.784	22.983	22.573	23.440	25.000	26.982	24.800	
1975	22.897	NA	22.261	26.782	22.436	21.642	22.506	25.000	26.562	24.800	
1980	22.415	NA	22.543	26.790	22.690	21.295	21.947	25.000	26.384	24.800	
1981	22.308	NA	22.474	26.794	22.585	21.085	21.713	25.000	26.160	24.800	
1982	22.239	NA	22.695	26.797	22.712	21.194	21.674	25.000	26.223	24.800	
1983	22.052	NA	22.775	26.798	22.691	21.133	21.576	25.000	26.291	24.800	
1984	22.010	NA	22.844	26.799	22.543	21.101	21.573	25.000	26.402	24.800	
1985	21.870	NA	22.646	26.798	22.020	20.959	21.366	25.000	26.307	24.800	
1986	21.913	NA	22.947	26.798	22.198	21.084	21.462	25.000	26.292	24.800	
1987	21.922	NA	23.404	26.799	22.381	21.136	21.517	25.000	26.291	24.800	
1988	21.823	NA	23.571	26.799	22.360	20.900	21.328	25.000	26.299	24.800	
1989	21.765	^b 10.391	23.650	26.800	22.347	^e 20.898	21.307	25.000	26.160	24.800	
1990	21.822	9.303	23.137	26.799	22.457	20.779	21.197	25.000	26.202	24.800	
1991	21.681	10.758	23.114	26.799	22.460	20.730	21.120	25.000	26.188	24.800	
1992	21.682	10.396	23.105	26.799	22.250	20.709	21.068	25.000	26.161	24.800	
1993	21.418	10.638	22.994	26.800	22.123	20.677	21.010	25.000	26.335	24.800	
1994	21.394	11.097	23.112	26.800	22.068	20.589	20.929	25.000	26.329	24.800	
1995	21.326	11.722	23.118	26.800	21.950	20.543	20.880	25.000	26.180	24.800	
1996	21.322	12.147	23.011	26.800	22.105	20.547	20.870	25.000	26.174	24.800	
1997	21.296	12.158	22.494	26.800	22.172	20.518	20.830	25.000	26.251	24.800	
1998	21.418	12.639	21.620	27.426	23.164	20.516	20.881	25.000	26.800	24.800	
1999	21.070	12.552	23.880	27.426	22.489	20.490	20.818	25.000	26.081	24.800	
2000	21.072	12.360	25.020	27.426	22.433	20.511	20.828	25.000	26.117	24.800	
2001	^a 20.772	12.169	24.909	27.426	22.622	20.337	20.671	25.000	25.998	24.800	
2002	20.673	12.165	22.962	27.426	22.562	20.238	20.541	25.000	26.062	24.800	
2003	20.499	12.360	22.242	27.425	22.468	20.082	20.387	25.000	25.972	24.800	
2004	20.424	12.266	22.324	27.426	22.473	19.980	20.290	25.000	26.108	24.800	
2005	20.348	12.093	22.342	26.279	22.178	19.988	20.246	25.000	25.494	24.800	
2006	20.310	12.080	22.066	26.271	22.050	19.931	20.181	25.000	25.453	24.800	
2007	20.340	12.090	22.069	26.329	22.371	19.909	20.168	25.000	25.466	24.800	
2008	20.208	12.121	^c 23.035	26.281	22.304	19.713	19.979	25.000	25.399	24.800	
2009	19.963	12.076	22.852	26.334	21.823	19.521	19.741	25.000	25.633	24.800	
2010	20.173	11.960	22.611	26.295	21.846	19.623	19.870	25.000	25.713	24.800	
2011	20.142	11.604	22.099	26.299	21.568	19.341	19.600	25.000	25.645	24.800	
2012	20.215	11.539	21.300	28.636	21.449	19.211	19.544	23.128	24.551	24.800	
2013	20.182	11.103	21.233	28.705	21.600	19.174	19.513	22.379	24.605	24.800	
2014	20.146	11.474	21.307	28.458	21.525	19.290	19.611	22.187	25.032	24.800	
2015	19.880	11.527	20.699	28.526	21.258	19.146	19.482	22.633	25.048	24.800	
2016	19.977	11.496	20.078	28.608	21.055	19.153	19.459	22.327	25.655	24.800	
2017	20.025	11.438	19.467	28.673	20.802	18.981	19.303	21.489	24.628	24.800	
2018	20.160	11.419	19.269	28.608	20.739	18.915	19.258	20.415	24.294	24.800	
2019	^E 20.160	^E 11.419	^E 19.269	^E 28.608	^E 20.739	^E 18.915	^E 19.258	^E 20.415	^E 24.294	^E 24.800	
2020	^E 20.160	^E 11.419	^E 19.269	^E 28.608	^E 20.739	^E 18.915	^E 19.258	^E 20.415	^E 24.294	^E 24.800	

^a Beginning in 2001, includes a small amount of refuse recovery (coal recaptured from a refuse mine, and cleaned to reduce the concentration of noncombustible materials).
^b Waste coal (including fine coal, coal obtained from a refuse bank or slurry dam, anthracite culm, bituminous gob, and lignite waste) consumed by the electric power and industrial sectors. Beginning in 1989, waste coal supplied is counted as a supply-side item to balance the same amount of waste coal included in "Consumption."
^c Through 2007, used as the thermal conversion factor for coal consumption by the residential and commercial sectors. Beginning in 2008, used as the thermal conversion factor for coal consumption by the commercial sector only.
^d Includes transportation. Excludes coal synfuel plants.
^e Electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only; beginning in 1989, data are for electric utilities and independent power producers.
^f Electric power sector factors are for anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and, beginning in 1998, coal synfuel.
E=Estimate. NA=Not available.
Note: The values in this table are for gross heat contents. See "Heat Content" in Glossary.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949.
Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A6. Approximate Heat Rates for Electricity, and Heat Content of Electricity
(Btu per Kilowatthour)

	Approximate Heat Rates ^a for Electricity Net Generation						Heat Content ^l of Electricity ^k
	Fossil Fuels ^b				Nuclear ^h	Noncombustible Renewable Energy ^{g,i}	
	Coal ^c	Petroleum ^d	Natural Gas ^e	Total Fossil Fuels ^{f,g}			
1950	NA	NA	NA	14,030	--	14,030	3,412
1955	NA	NA	NA	11,699	--	11,699	3,412
1960	NA	NA	NA	10,760	11,629	10,760	3,412
1965	NA	NA	NA	10,453	11,804	10,453	3,412
1970	NA	NA	NA	10,494	10,977	10,494	3,412
1975	NA	NA	NA	10,406	11,013	10,406	3,412
1980	NA	NA	NA	10,388	10,908	10,388	3,412
1981	NA	NA	NA	10,453	11,030	10,453	3,412
1982	NA	NA	NA	10,454	11,073	10,454	3,412
1983	NA	NA	NA	10,520	10,905	10,520	3,412
1984	NA	NA	NA	10,440	10,843	10,440	3,412
1985	NA	NA	NA	10,447	10,622	10,447	3,412
1986	NA	NA	NA	10,446	10,579	10,446	3,412
1987	NA	NA	NA	10,419	10,442	10,419	3,412
1988	NA	NA	NA	10,324	10,602	10,324	3,412
1989	NA	NA	NA	10,432	10,583	10,432	3,412
1990	NA	NA	NA	10,402	10,582	10,402	3,412
1991	NA	NA	NA	10,436	10,484	10,436	3,412
1992	NA	NA	NA	10,342	10,471	10,342	3,412
1993	NA	NA	NA	10,309	10,504	10,309	3,412
1994	NA	NA	NA	10,316	10,452	10,316	3,412
1995	NA	NA	NA	10,312	10,507	10,312	3,412
1996	NA	NA	NA	10,340	10,503	10,340	3,412
1997	NA	NA	NA	10,213	10,494	10,213	3,412
1998	NA	NA	NA	10,197	10,491	10,197	3,412
1999	NA	NA	NA	10,226	10,450	10,226	3,412
2000	NA	NA	NA	10,201	10,429	10,201	3,412
2001	10,378	10,742	10,051	^b 10,333	10,443	10,333	3,412
2002	10,314	10,641	9,533	10,173	10,442	10,173	3,412
2003	10,297	10,610	9,207	10,125	10,422	10,125	3,412
2004	10,331	10,571	8,647	10,016	10,428	10,016	3,412
2005	10,373	10,631	8,551	9,999	10,436	9,999	3,412
2006	10,351	10,809	8,471	9,919	10,435	9,919	3,412
2007	10,375	10,794	8,403	9,884	10,489	9,884	3,412
2008	10,378	11,015	8,305	9,854	10,452	9,854	3,412
2009	10,414	10,923	8,160	9,760	10,459	9,760	3,412
2010	10,415	10,984	8,185	9,756	10,452	9,756	3,412
2011	10,444	10,829	8,152	9,716	10,464	9,716	3,412
2012	10,498	10,991	8,039	9,516	10,479	9,516	3,412
2013	10,459	10,713	7,948	9,541	10,449	9,541	3,412
2014	10,428	10,814	7,907	9,510	10,459	9,510	3,412
2015	10,495	10,687	7,878	9,319	10,458	9,319	3,412
2016	10,493	10,811	7,870	9,232	10,459	9,232	3,412
2017	10,465	10,834	7,812	9,213	10,459	9,213	3,412
2018	10,514	11,095	7,822	9,118	10,455	9,118	3,412
2019	^E 10,514	^E 11,095	^E 7,822	^E 9,118	^E 10,455	^E 9,118	3,412
2020	^E 10,514	^E 11,095	^E 7,822	^E 9,118	^E 10,455	^E 9,118	3,412

^a The values in columns 1–6 of this table are for net heat rates. See "Heat Rate" in Glossary.
^b Through 2000, heat rates are for fossil-fueled steam-electric plants at electric utilities. Beginning in 2001, heat rates are for all fossil-fueled plants at electric utilities and electricity-only independent power producers.
^c Includes anthracite, bituminous coal, subbituminous coal, lignite, and, beginning in 2002, waste coal and coal synfuel.
^d Includes distillate fuel oil, residual fuel oil, jet fuel, kerosene, petroleum coke, and waste oil.
^e Includes natural gas and supplemental gaseous fuels.
^f Includes coal, petroleum, natural gas, and, beginning in 2001, other gases (blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels).
^g The fossil-fuels heat rate is used as the thermal conversion factor for electricity net generation from noncombustible renewable energy (hydro, geothermal, solar thermal, photovoltaic, and wind) to approximate the quantity of fossil fuels replaced by these sources. Through 2000, also used as the thermal conversion factor for wood and waste electricity net generation at electric utilities; beginning in 2001, Btu data for wood and waste at electric utilities are available from surveys.
^h Used as the thermal conversion factor for nuclear electricity net generation.
ⁱ Technology-based geothermal heat rates are no longer used in Btu calculations in this report. For technology-based geothermal heat rates for 1960–2010, see the *Annual Energy Review 2010*, Table A6.
^j See "Heat Content" in Glossary.
^k The value of 3,412 Btu per kilowatthour is a constant. It is used as the thermal conversion factor for electricity retail sales, and electricity imports and exports.
E=Estimate. NA=Not available. -- =Not applicable.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949.
Sources: See "Thermal Conversion Factor Source Documentation," which follows this table.

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.

Butylene. EIA estimated the thermal conversion factor to be 4.377 million Btu per barrel, based on data for enthalpy of combustion from the National Institute of Standards and Technology, *NIST Chemistry WebBook, NIST Standard Reference Database Number 69*, 2018; and data for density of liquids at 60 degrees Fahrenheit and equilibrium pressure from the American Petroleum Institute.

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. EIA estimated the thermal conversion factor to be 2.783 million Btu per barrel, based on data for enthalpy of combustion from the National Institute of Standards and Technology, *NIST Chemistry WebBook, NIST Standard*

Reference Database Number 69, 2018; and data for density of liquids at 60 degrees Fahrenheit and equilibrium pressure from the American Petroleum Institute.

Ethylene. EIA adopted the thermal conversion factor of 2.436 million Btu per barrel (0.058 million Btu per gallon) as published in the Federal Register EPA; 40 CFR part 98; e-CRF; Table C1; April 5, 2019. The ethylene higher heating value is determined at 41 degrees Fahrenheit at saturation pressure.

Hydrocarbon Gas Liquids. • 1949–1966: EIA used the 1967 factor. • 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, propane, normal butane, isobutane, natural gasoline (pentanes plus), and refinery olefins (ethylene, propylene, butylene, and isobutylene). For 1967–1980, quantities consumed are from EIA, Energy Data Reports, “Petroleum Statement, Annual.” For 1981 forward, quantities consumed are from EIA, *Petroleum Supply Annual*.

Hydrogen. Assumed by EIA to be 6.287 million Btu per barrel or equal to the thermal conversion factor for **Residual Fuel Oil**.

Isobutane. EIA estimated the thermal conversion factor to be 4.183 million Btu per barrel, based on data for enthalpy of combustion from the National Institute of Standards and Technology, *NIST Chemistry WebBook, NIST Standard Reference Database Number 69*, 2018; and data for density of liquids at 60 degrees Fahrenheit and equilibrium pressure from the American Petroleum Institute.

Isobutylene. EIA estimated the thermal conversion factor to be 4.355 million Btu per barrel, based on data for enthalpy of combustion from the National Institute of Standards and Technology, *NIST Chemistry WebBook, NIST Standard Reference Database Number 69*, 2018; and data for density of liquids at 60 degrees Fahrenheit and equilibrium pressure from the American Petroleum Institute.

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 estimated the thermal conversion factor to be 4.638 million Btu per barrel, based on data for enthalpy of combustion from the National Institute of Standards and Technology, *NIST Chemistry WebBook, NIST Standard Reference Database Number 69*, 2018; and data for density of liquids at 60 degrees Fahrenheit and equilibrium pressure from the American Petroleum Institute. EIA assumes a natural gasoline ratio of 29% isopentane, 29% neopentane, 20% normal pentane, 13% normal hexane, 4% cyclohexane, 3% benzene, and 2% toluene in these calculations.

Normal Butane. EIA estimated the thermal conversion factor to be 4.353 million Btu per barrel, based on data for enthalpy of combustion from the National Institute of Standards and Technology, *NIST Chemistry WebBook, NIST Standard Reference Database Number 69*, 2018; and data for density of liquids at 60 degrees Fahrenheit and equilibrium pressure from the American Petroleum Institute.

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 equal to the thermal conversion factor for **Still Gas**.

Petroleum Coke, Catalyst. Assumed by EIA to be 6.287 million Btu per barrel or equal to the thermal conversion factor for **Residual Fuel Oil**.

Petroleum Coke, Marketable. EIA adopted the thermal conversion factor of 5.719 million Btu per barrel, calculated by dividing 28,595,925 Btu per short ton for petroleum coke (from U.S. Department of Energy, Argonne National Laboratory, “The Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model” (GREET), version GREET1_October 2013) by 5.0 barrels per short ton (as given in the Bureau of Mines Form 6-1300-M and successor EIA forms).

Petroleum Coke, Total. • 1949–2003: EIA adopted the thermal conversion factor of 6.024 million Btu per barrel as reported in Btu per short ton in the Bureau of Mines internal memorandum, “Bureau of Mines Standard Average Heating Values of Various Fuels, Adopted January 3, 1950.” The Bureau of Mines calculated this factor by dividing 30.120 million Btu per short ton, as given in the referenced Bureau of Mines internal memorandum, by 5.0 barrels per short ton, as given in the Bureau of Mines Form 6-1300-M and successor EIA forms. • 2004 forward: Calculated by EIA as the annual quantity-weighted average of the conversion factors for **Petroleum Coke, Catalyst** (6.287 million Btu per barrel) and **Petroleum Coke, Marketable** (5.719 million Btu per barrel).

Petroleum Consumption, Commercial Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the commercial sector weighted by the estimated quantities consumed by the commercial sector. The quantities of petroleum products consumed by the commercial sector are estimated in the State Energy Data System—see documentation at http://www.eia.gov/state/seds/sep_use/notes/use_petrol.pdf.

Petroleum Consumption, Electric Power Sector. Calculated annually by EIA as the average of the thermal conversion factors for distillate fuel oil, petroleum coke, and residual fuel oil consumed by the electric power sector weighted by the quantities consumed by the electric power sector. Data are from Form EIA-923, “Power Plant Operations Report,” and predecessor forms.

Petroleum Consumption, Industrial Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the industrial sector weighted by the estimated quantities consumed by the industrial sector. The quantities of petroleum products consumed by the industrial sector are estimated in the State Energy Data System—see documentation at http://www.eia.gov/state/seds/sep_use/notes/use_petrol.pdf.

Petroleum Consumption, Residential Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the residential sector weighted by the estimated quantities consumed by the residential sector. The quantities of petroleum products consumed by the residential sector are estimated in the State Energy Data System—see documentation at http://www.eia.gov/state/seds/sep_use/notes/use_petrol.pdf.

Petroleum Consumption, Total. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed weighted by the quantities consumed.

Petroleum Consumption, Transportation Sector. Calculated annually by EIA as the average of the thermal conversion factors for all petroleum products consumed by the transportation sector weighted by the estimated quantities consumed by the transportation sector. The quantities of petroleum products consumed by the transportation sector are estimated in the State Energy Data System—see documentation at http://www.eia.gov/state/seds/sep_use/notes/use_petrol.pdf.

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

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

Plant Condensate. • 1973–1983: Estimated to be 5.418 million Btu per barrel by EIA from data provided by McClanahan Consultants, Inc., Houston, Texas.

Propane. EIA estimated the thermal conversion factor to be 3.841 million Btu per barrel, based on data for enthalpy of combustion from the National Institute of Standards and Technology, *NIST Chemistry WebBook*, *NIST Standard Reference Database Number 69*, 2018; and data for density of liquids at 60 degrees Fahrenheit and equilibrium pressure from the American Petroleum Institute.

Propylene. EIA estimated the thermal conversion factor to be 3.835 million Btu per barrel, based on data for enthalpy of combustion from the National Institute of Standards and Technology, *NIST Chemistry WebBook*, *NIST Standard Reference Database Number 69*, 2018; and data for density of liquids at 60 degrees Fahrenheit and equilibrium pressure from the American Petroleum Institute.

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, the average of all natural gas or equal to that for **Distillate Fuel Oil** and first published it in EIA’s *Annual Report to Congress, Volume 3, 1977*.

Unfractionated Stream. • 1979–1982: EIA assumed the thermal conversion factor to be 3.800 million Btu per barrel, the average of all natural gas plant liquids calculated on their contribution to total barrels produced.

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 (4.638 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. The heat content of natural gas consumed by the end-use sectors is calculated as the total heat content of natural gas consumed minus the heat content of natural gas consumed by the electric power sector. The quantity of natural gas consumed by the end-use sectors is calculated as the total quantity of natural gas consumed minus the quantity of natural gas consumed by the electric power sector. Data are from Form EIA-176, “Annual Report of Natural and Supplemental Gas Supply and Disposition”; and Form EIA-923, “Power Plant Operations Report,” and predecessor forms.

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).

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Appendix B

Metric Conversion Factors, Metric Prefixes, and Other Physical Conversion Factors

Metric Conversion Factors, Metric Prefixes, and Other Physical Conversion Factors

Data presented in the *Monthly Energy Review* and in other U.S. Energy Information Administration publications are expressed predominately in units that historically have been used in the United States, such as British thermal units, barrels, cubic feet, and short tons. The metric conversion factors presented in Table B1 can be used to calculate the metric-unit equivalents of values expressed in U.S. Customary units. For example, 500 short tons are the equivalent of 453.6 metric tons (500 short tons x 0.9071847 metric tons/short ton = 453.6 metric tons).

In the metric system of weights and measures, the names of multiples and subdivisions of any unit may be derived by combining the name of the unit with prefixes, such as deka, hecto, and kilo, meaning, respectively, 10, 100, 1,000, and deci, centi, and milli, meaning, respectively, one-tenth, one-hundredth, and one-thousandth. Common metric prefixes can be found in Table B2.

The conversion factors presented in Table B3 can be used to calculate equivalents in various physical units commonly used in energy analyses. For example, 10 barrels are the equivalent of 420 U.S. gallons (10 barrels x 42 gallons/barrel = 420 gallons).

Table B1. Metric Conversion Factors

Type of Unit	U.S. Unit	=	Equivalent in	Metric Units
Mass	1 short ton (2,000 lb)	=	0.907 184 7	metric tons (t)
	1 long ton	=	1.016 047	metric tons (t)
	1 pound (lb)	=	0.453 592 37 ^a	kilograms (kg)
	1 pound uranium oxide (lb U ₃ O ₈)	=	0.384 647 ^b	kilograms uranium (kgU)
	1 ounce, avoirdupois (avdp oz)	=	28.349 52	grams (g)
Volume	1 barrel of oil (bbl)	=	0.158 987 3	cubic meters (m ³)
	1 cubic yard (yd ³)	=	0.764 555	cubic meters (m ³)
	1 cubic foot (ft ³)	=	0.028 316 85	cubic meters (m ³)
	1 U.S. gallon (gal)	=	3.785 412	liters (L)
	1 ounce, fluid (fl oz)	=	29.573 53	milliliters (mL)
	1 cubic inch (in ³)	=	16.387 06	milliliters (mL)
Length	1 mile (mi)	=	1.609 344 ^a	kilometers (km)
	1 yard (yd)	=	0.914 4 ^a	meters (m)
	1 foot (ft)	=	0.304 8 ^a	meters (m)
	1 inch (in)	=	2.54 ^a	centimeters (cm)
Area	1 acre	=	0.404 69	hectares (ha)
	1 square mile (mi ²)	=	2.589 988	square kilometers (km ²)
	1 square yard (yd ²)	=	0.836 127 4	square meters (m ²)
	1 square foot (ft ²)	=	0.092 903 04 ^a	square meters (m ²)
	1 square inch (in ²)	=	6.451 6 ^a	square centimeters (cm ²)
Energy	1 British thermal unit (Btu) ^c	=	1,055.055 852 62 ^a	joules (J)
	1 calorie (cal)	=	4.186 8 ^a	joules (J)
	1 kilowatthour (kWh)	=	3.6 ^a	megajoules (MJ)
Temperature^d	32 degrees Fahrenheit (°F)	=	0 ^a	degrees Celsius (°C)
	212 degrees Fahrenheit (°F)	=	100 ^a	degrees Celsius (°C)

[a] Exact conversion.

[b] Calculated by the U.S. Energy Information Administration.

[c] The Btu used in this table is the International Table Btu adopted by the Fifth International Conference on Properties of Steam, London, 1956.

[d] To convert degrees 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 Std268-1992, pp. 28 and 29.

Table B2. Metric Prefixes

Unit Multiple	Prefix	Symbol	Unit Subdivision	Prefix	Symbol
10 ¹	deka	da	10 ⁻¹	deci	d
10 ²	hecto	h	10 ⁻²	centi	c
10 ³	kilo	k	10 ⁻³	milli	m
10 ⁶	mega	M	10 ⁻⁶	micro	μ
10 ⁹	giga	G	10 ⁻⁹	nano	n
10 ¹²	tera	T	10 ⁻¹²	pico	p
10 ¹⁵	peta	P	10 ⁻¹⁵	femto	f
10 ¹⁸	exa	E	10 ⁻¹⁸	atto	a
10 ²¹	zetta	Z	10 ⁻²¹	zepto	z
10 ²⁴	yotta	Y	10 ⁻²⁴	yocto	y

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

Sources: U.S. Department of Commerce, National Institute of Standards and Technology, *The International System of Units (SI)*, NIST Special Publication 330, 1991 Edition (Washington, DC, August 1991), p.10.

Table B3. Other Physical Conversion Factors

Energy Source	Original Unit		Equivalent in Final Units
Petroleum	1 barrel (bbl)	=	42 ^a U.S. gallons (gal)
Coal	1 short ton	=	2,000 ^a pounds (lb)
	1 long ton	=	2,240 ^a pounds (lb)
	1 metric ton (t)	=	1,000 ^a kilograms (kg)
Wood	1 cord (cd)	=	1.25 ^b shorts tons
	1 cord (cd)	=	128 ^a cubic feet (ft ³)

[a] Exact conversion.

[b] Calculated by the U.S. Energy Information Administration.

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

Sources: U.S. Department of Commerce, National Institute of Standards and Technology, *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, NIST Handbook 44, 1994 Edition (Washington, DC, October 1993), pp. B-10, C-17, and C-21.

Appendix C

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

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

Table C1. Population, U.S. Gross Domestic Product, and U.S. Gross Output

	Population			U.S. Gross Domestic Product			U.S. Gross Output ^a
	United States ^b	World	United States as Share of World	Billion Nominal Dollars ^d	Billion Chained (2012) Dollars ^e	Implicit Price Deflator ^c (2012 = 1.00000)	Billion Nominal Dollars ^d
	Million People		Percent				
1950	152.3	2,557.6	6.0	299.8	2,289.5	0.13095	577.8
1955	165.9	2,782.1	6.0	425.5	2,871.2	.14819	802.6
1960	180.7	3,043.0	5.9	542.4	3,260.0	.16638	1,006.0
1965	194.3	3,350.8	5.8	742.3	4,170.8	.17798	1,356.0
1970	205.1	3,713.4	5.5	1,073.3	4,951.3	.21677	1,903.0
1975	216.0	4,089.0	5.3	1,684.9	5,644.8	.29849	3,055.3
1980	227.2	4,445.4	5.1	2,857.3	6,759.2	.42273	5,462.0
1981	229.5	4,526.7	5.1	3,207.0	6,930.7	.46273	6,033.5
1982	231.7	4,607.1	5.0	3,343.8	6,805.8	.49132	6,175.0
1983	233.8	4,688.4	5.0	3,634.0	7,117.7	.51056	6,631.0
1984	235.8	4,767.4	4.9	4,037.6	7,632.8	.52898	7,313.8
1985	237.9	4,849.6	4.9	4,339.0	7,951.1	.54571	7,775.7
1986	240.1	4,933.9	4.9	4,579.6	8,226.4	.55670	8,031.0
1987	242.3	5,020.6	4.8	4,855.2	8,511.0	.57046	8,707.5
1988	244.5	5,108.1	4.8	5,236.4	8,866.5	.59059	9,434.2
1989	246.8	5,198.4	4.7	5,641.6	9,192.1	.61374	10,069.8
1990	249.6	5,286.8	4.7	5,963.1	9,365.5	.63671	10,624.6
1991	253.0	5,370.1	4.7	6,158.1	9,355.4	.65825	10,808.0
1992	256.5	5,454.6	4.7	6,520.3	9,684.9	.67325	11,381.0
1993	259.9	5,536.5	4.7	6,858.6	9,951.5	.68920	12,024.4
1994	263.1	5,616.7	4.7	7,287.2	10,352.4	.70392	12,826.8
1995	266.3	5,695.3	4.7	7,639.7	10,630.3	.71868	13,653.2
1996	269.4	5,776.1	4.7	8,073.1	11,031.4	.73183	14,463.4
1997	272.6	5,854.9	4.7	8,577.6	11,521.9	.74445	15,393.3
1998	275.9	5,932.5	4.6	9,062.8	12,038.3	.75283	16,216.8
1999	279.0	6,009.6	4.6	9,630.7	12,610.5	.76370	17,272.3
2000	282.2	6,086.1	4.6	10,252.3	13,131.0	.78078	18,623.9
2001	285.0	6,162.8	4.6	10,581.8	13,262.1	.79790	18,888.3
2002	287.6	6,239.6	4.6	10,936.4	13,493.1	.81052	19,178.3
2003	290.1	6,316.8	4.6	11,458.2	13,879.1	.82557	20,141.2
2004	292.8	6,394.0	4.6	12,213.7	14,406.4	.84780	21,690.2
2005	295.5	6,471.4	4.6	13,036.6	14,912.5	.87421	23,512.9
2006	298.4	6,550.5	4.6	13,814.6	15,338.3	.90066	24,931.4
2007	301.2	6,631.0	4.5	14,451.9	15,626.0	.92486	26,238.5
2008	304.1	6,712.5	4.5	14,712.8	15,604.7	.94285	26,989.2
2009	306.8	6,793.5	4.5	14,448.9	15,208.8	.95004	24,919.5
2010	309.3	6,872.7	4.5	14,992.1	15,598.8	.96111	26,422.4
2011	311.6	6,951.2	4.5	15,542.6	15,840.7	.98118	27,999.5
2012	313.9	7,030.1	4.5	16,197.0	16,197.0	1.00000	29,186.8
2013	316.1	7,109.6	4.4	16,784.9	16,495.4	1.01755	30,291.3
2014	318.4	7,188.4	4.4	17,521.7	16,899.8	1.03680	31,740.0
2015	320.7	7,267.0	4.4	18,219.3	17,386.7	1.04789	32,176.7
2016	323.1	7,345.8	4.4	18,707.2	17,659.2	1.05935	32,838.5
2017	325.1	7,424.2	4.4	19,485.4	18,050.7	1.07948	34,495.4
2018	327.2	7,503.8	4.4	20,494.1	18,566.4	1.10382	36,593.3

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

^b Resident population of the 50 states and the District of Columbia estimated for July 1 of each year.

^c The gross domestic product implicit price deflator is used to convert nominal dollars to chained (2012) dollars.

^d See "Nominal Dollars" in Glossary.

^e See "Chained Dollars" in Glossary.

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 2018). • **World Population: 1950 forward**—DOC, U.S. Census Bureau, International Database (September 2018). • **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 (December 2018), Tables 1.1.5, 1.1.6, and 1.1.9. • **U.S. Gross Output: 1949–1996**—DOC, BEA, GDP by industry (Historical) data (October 2019). **1997 forward**—DOC, BEA, GDP by Industry data (January 2020).

Appendix D

Estimated Primary Energy Consumption in the
United States, Selected Years, 1635-1945

Estimated Primary Energy Consumption in the United States, Selected Years, 1635-1945

Table D1. Estimated Primary Energy Consumption in the United States, Selected Years, 1635–1945 (Quadrillion Btu)

	Fossil Fuels				Renewable Energy			Electricity Net Imports ^b	Total
	Coal	Natural Gas	Petroleum	Total	Conventional Hydroelectric Power	Biomass	Total		
						Wood ^a			
1635	NA	--	--	NA	--	(s)	(s)	--	(s)
1645	NA	--	--	NA	--	0.001	0.001	--	0.001
1655	NA	--	--	NA	--	.002	.002	--	.002
1665	NA	--	--	NA	--	.005	.005	--	.005
1675	NA	--	--	NA	--	.007	.007	--	.007
1685	NA	--	--	NA	--	.009	.009	--	.009
1695	NA	--	--	NA	--	.014	.014	--	.014
1705	NA	--	--	NA	--	.022	.022	--	.022
1715	NA	--	--	NA	--	.037	.037	--	.037
1725	NA	--	--	NA	--	.056	.056	--	.056
1735	NA	--	--	NA	--	.080	.080	--	.080
1745	NA	--	--	NA	--	.112	.112	--	.112
1755	NA	--	--	NA	--	.155	.155	--	.155
1765	NA	--	--	NA	--	.200	.200	--	.200
1775	NA	--	--	NA	--	.249	.249	--	.249
1785	NA	--	--	NA	--	.310	.310	--	.310
1795	NA	--	--	NA	--	.402	.402	--	.402
1805	NA	--	--	NA	--	.537	.537	--	.537
1815	NA	--	--	NA	--	.714	.714	--	.714
1825	NA	--	--	NA	--	.960	.960	--	.960
1835	NA	--	--	NA	--	1.305	1.305	--	1.305
1845	NA	--	--	NA	--	1.757	1.757	--	1.757
1850	0.219	--	--	0.219	--	2.138	2.138	--	2.357
1855 .....	.421	--	--	.421	--	2.389	2.389	--	2.810
1860 .....	.518	--	0.003	.521	--	2.641	2.641	--	3.162
1865 .....	.632	--	.010	.642	--	2.767	2.767	--	3.409
1870	1.048	--	.011	1.059	--	2.893	2.893	--	3.952
1875	1.440	--	.011	1.451	--	2.872	2.872	--	4.323
1880	2.054	--	.096	2.150	--	2.851	2.851	--	5.001
1885	2.840	0.082	.040	2.962	--	2.683	2.683	--	5.645
1890	4.062	.257	.156	4.475	0.022	2.515	2.537	--	7.012
1895	4.950	.147	.168	5.265	.090	2.306	2.396	--	7.661
1900	6.841	.252	.229	7.322	.250	2.015	2.265	--	9.587
1905	10.001	.372	.610	10.983	.386	1.843	2.229	--	13.212
1910	12.714	.540	1.007	14.261	.539	1.765	2.304	--	16.565
1915	13.294	.673	1.418	15.385	.659	1.688	2.347	0.002	17.734
1920	15.504	.813	2.676	18.993	.738	1.610	2.348	.003	21.344
1925	14.706	1.191	4.280	20.177	.668	1.533	2.201	.004	22.382
1930	13.639	1.932	5.897	21.468	.752	1.455	2.207	.005	23.680
1935	10.634	1.919	5.675	18.228	.806	1.397	2.203	.005	20.436
1940	12.535	2.665	7.760	22.960	.880	1.358	2.238	.007	25.205
1945	15.972	3.871	10.110	29.953	1.442	^a 1.261	2.703	.009	32.665

^a There is a discontinuity in the "Wood" time series between 1945 (in this table) and 1949 (in Table 10.1). Through 1945, data are for fuelwood only; beginning in 1949, data are for wood and wood-derived fuels.

^b Electricity transmitted across U.S. borders. Net imports equal imports minus exports.

NA=Not available. -- =Not applicable. (s)=Less than 0.5 trillion Btu.

Notes: • For years not shown, data are not available. • See Tables 1.3 and 10.1 for continuation of these data series beginning in 1949. • See Note, "Geographic Coverage of Statistics for 1635–1945," at end of section.

Sources: • **Fossil Fuels:** *Energy in the American Economy, 1850–1975*, Table VII. • **Conventional Hydroelectric Power:** *Energy in the American Economy, 1850–1975*, Table II. • **Wood:** 1635–1845—U.S. Department of Agriculture,

Circular No. 641, *Fuel Wood Used in the United States 1630–1930*, February 1942. This source estimates fuelwood consumption in cords per decade, which were converted to Btu using the conversion factor of 20 million Btu per cord. The annual average value for each decade was assigned to the fifth year of the decade on the assumption that annual use was likely to increase during any given decade and the average annual value was more likely to reflect mid-decade yearly consumption than use at either the beginning or end of the decade. Values thus begin in 1635 and are plotted at 10-year intervals. 1850–1945—*Energy in the American Economy, 1850–1975*, Table VII. • **Electricity Net Imports:** *Energy in the American Economy, 1850–1975*, Tables I and VI. Electricity net imports are assumed to equal hydroelectric consumption minus hydroelectric production (data are converted to Btu by multiplying by 3,412 Btu per kilowatthour).

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.

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Appendix E

Alternative Approaches for Deriving Energy Contents of Noncombustible Renewables

Alternative Approaches for Deriving Energy Contents of Noncombustible Renewables

EIA compiles data on most energy sources in physical units, such as barrels and cubic feet, in order to calculate total primary energy consumption. To sum data for different energy sources, EIA converts the data to the common unit of British thermal units (Btu), a measure that is based on the thermal conversion of energy resources to heat and power.

Noncombustible renewables are resources from which energy is extracted without burning or combusting fuel. They include hydroelectric, geothermal, solar, and wind energy. When noncombustible renewables are used to generate electricity, there is no fuel combustion and, therefore, no set Btu conversion factors for the energy sources.¹ However, there are several possible approaches for converting that electricity to Btu. Three of these approaches are described below.

Fossil Fuel Equivalency Approach

In Sections 1, 2, and 10 of the *Monthly Energy Review*, EIA calculates total primary energy consumption for noncombustible renewable electricity in Btu by applying a fossil fuel equivalency factor. Under that approach, the primary energy consumption of noncombustible renewable electricity can be viewed as the sum of captured energy “transformed into electricity” and an “adjustment for fossil fuel equivalency.”

The adjustment for fossil fuel equivalency is equal to the difference between total primary consumption of noncombustible renewables for electricity generation in Btu (calculated using the fossil fuels heat rate in Table A6) and the captured energy of that electricity (calculated using the constant conversion factor of 3,412 Btu per kWh). The fossil fuels heat rate is equal to the thermal efficiency across fossil fuel-fired generating stations based on net generation. The fossil fuel equivalency adjustment represents the energy that would have been consumed if electricity had been generated by fossil fuels. By using that factor, it is possible, for example, to evaluate fossil fuel requirements for replacing electricity generation during periods of interruptions, such as droughts.

Captured Energy Approach

Captured energy (Tables E1a and E1b) reflects the primary energy captured for economic use and does not include losses. Thus, it is the net energy available for direct consumption after transformation of a noncombustible renewable into electricity. In other words, captured energy is the energy measured as the “output” of a generating unit, such as electricity from a wind turbine or solar plant. The captured energy approach is often used to show the economically significant energy transformations in the United States. There is no market for the resource-specific energy apart from its immediate, site-specific energy conversion, and there is no substantive opportunity cost to its continued exploitation.²

Incident Energy Approach

Incident energy is the mechanical, radiation, or thermal energy that is measurable as the “input” of the device. EIA defines “incident energy” for noncombustible renewables as the gross energy that first strikes an energy conversion device:

- For hydroelectric, the energy contained in the water passing through the penstock (a closed conduit for carrying water to the turbines)
- For geothermal, the energy contained in the hot fluid at the surface of the wellbore
- For wind, the energy contained in the wind that passes through the rotor disc
- For solar, the energy contained in the sunlight that strikes the panel or collector mirror

The incident energy approach to converting noncombustible renewable electricity to Btu could, in theory, be used to account for “losses” that are due to the inability to convert 100% of incident energy to a useful form of energy. EIA does not publish total primary energy consumption estimates based on the incident energy approach because it would be difficult to obtain accurate estimates of input energy without creating undue burden on survey respondents. Few renewable electricity power plants track cumulative input energy due to its lack of economic significance or other purpose. In addition, estimated energy efficiencies of renewable conversion technologies vary significantly across technologies, site-specific configurations, and environmental factors.³

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

²There is an initial opportunity cost when a facility is first built: water behind a dam might flood land that could have been used for other purposes, or a solar panel might shade an area that could have used the sunlight. But that is a “fixed” opportunity cost that does not change during the operation of the plant.

³Based on EIA research conducted in 2016, engineering estimates of conversion efficiencies for noncombustible renewables range from less than 20% for solar photovoltaics and geothermal to 90% for large-scale hydroelectricity plants. Those estimates are notional indications of the energy output as a percent of energy input at each technology based on typical equipment operating within the normal operating range for that technology.

Table E1a. Noncombustible Renewable Primary Energy Consumption: Conventional Hydroelectric Power, Geothermal, and Wind (Trillion Btu)

	Conventional Hydroelectric Power ^a			Geothermal ^b				Wind ^c		
	Transformed Into Electricity ^{d,e}	Adjustment for Fossil Fuel Equivalence ^f	Total Primary Energy ^g	Direct Consumption ^h	Transformed Into Electricity ^{d,i}	Adjustment for Fossil Fuel Equivalence ^f	Total Primary Energy ^j	Transformed Into Electricity ^{d,i}	Adjustment for Fossil Fuel Equivalence ^f	Total Primary Energy ^g
1950	344	1,071	1,415	NA	NA	NA	NA	NA	NA	NA
1955	397	963	1,360	NA	NA	NA	NA	NA	NA	NA
1960	510	1,098	1,608	NA	(s)	(s)	(s)	NA	NA	NA
1965	672	1,387	2,059	NA	1	1	2	NA	NA	NA
1970	856	1,777	2,634	NA	2	4	6	NA	NA	NA
1975	1,034	2,120	3,155	NA	11	23	34	NA	NA	NA
1980	953	1,948	2,900	NA	17	35	53	NA	NA	NA
1981	900	1,858	2,758	NA	19	40	59	NA	NA	NA
1982	1,066	2,200	3,266	NA	17	34	51	NA	NA	NA
1983	1,144	2,383	3,527	NA	21	43	64	(s)	(s)	(s)
1984	1,107	2,279	3,386	NA	26	54	81	(s)	(s)	(s)
1985	970	2,000	2,970	NA	32	66	97	(s)	(s)	(s)
1986	1,003	2,068	3,071	NA	35	73	108	(s)	(s)	(s)
1987	863	1,772	2,635	NA	37	76	112	(s)	(s)	(s)
1988	771	1,563	2,334	NA	35	71	106	(s)	(s)	(s)
1989	^e 928	1,909	2,837	9	ⁱ 50	102	162	^j 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	1,025	1,742	2,767	64	54	92	210	868	1,475	2,343
2018	998	1,669	2,667	64	54	91	209	930	1,556	2,486
2019	934	1,562	2,496	64	55	91	209	1,024	1,712	2,736

^a Conventional hydroelectricity net generation. Through 1989, also includes hydroelectric pumped storage.

^b Geothermal heat pump and direct use energy; and geothermal electricity net generation.

^c Wind electricity net generation.

^d Electricity net generation in kilowatt-hours (kWh) multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

^e Through 1988, data are for electric utilities and industrial plants. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.

^f Equals the difference between the fossil-fuel equivalent value of electricity and the captured energy consumed as electricity. The fossil-fuel equivalent value of electricity equals electricity net generation in kilowatt-hours multiplied by the total fossil fuels heat rate factors (see Table A6). The captured energy consumed as electricity equals electricity net generation in kilowatt-hours multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

^g Electricity net generation in kilowatt-hours multiplied by the total fossil fuels

heat rate factors (see Table A6).

^h Geothermal heat pump and direct use energy.

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

^j Direct consumption of energy; and energy used to generate electricity, calculated as electricity net generation in kilowatt-hours multiplied by the total fossil fuels heat rate factors (see Table A6).

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

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

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

Sources: • **Conventional Hydroelectric Power** and **Wind**: Tables 7.2a, 10.1, and A6. • **Geothermal**: Tables 7.2a, 10.1, 10.2a, 10.2b, and A6.

Table E1b. Noncombustible Renewable Primary Energy Consumption: Solar and Total
(Trillion Btu)

	Solar ^a					Total ^b			
	Distributed ^c			Utility-Scale ^d		Total Primary Energy ⁱ	Captured Energy ^j	Adjustment for Fossil Fuel Equivalence ^g	Total Primary Energy ⁱ
	Direct Consumption ^e	Transformed Into Electricity ^f	Adjustment for Fossil Fuel Equivalence ^g	Transformed Into Electricity ^{f,h}	Adjustment for Fossil Fuel Equivalence ^g				
1950	NA	NA	NA	NA	NA	NA	344	1,071	1,415
1955	NA	NA	NA	NA	NA	NA	397	963	1,360
1960	NA	NA	NA	NA	NA	NA	510	1,098	1,608
1965	NA	NA	NA	NA	NA	NA	673	1,388	2,061
1970	NA	NA	NA	NA	NA	NA	858	1,781	2,639
1975	NA	NA	NA	NA	NA	NA	1,045	2,143	3,188
1980	NA	NA	NA	NA	NA	NA	970	1,983	2,953
1981	NA	NA	NA	NA	NA	NA	920	1,898	2,817
1982	NA	NA	NA	NA	NA	NA	1,082	2,234	3,316
1983	NA	NA	NA	NA	NA	NA	1,165	2,426	3,591
1984	NA	NA	NA	(s)	(s)	(s)	1,133	2,334	3,467
1985	NA	NA	NA	(s)	(s)	(s)	1,002	2,066	3,068
1986	NA	NA	NA	(s)	(s)	(s)	1,038	2,141	3,179
1987	NA	NA	NA	(s)	(s)	(s)	900	1,847	2,747
1988	NA	NA	NA	(s)	(s)	(s)	807	1,634	2,441
1989	52	(s)	(s)	^h 1	2	54	1,047	2,029	3,075
1990	55	(s)	(s)	1	3	59	1,128	2,177	3,305
1991	56	(s)	(s)	2	3	62	1,120	2,166	3,286
1992	58	(s)	(s)	1	3	63	1,000	1,889	2,889
1993	60	(s)	(s)	2	3	65	1,099	2,075	3,173
1994	62	(s)	(s)	2	3	67	1,029	1,931	2,960
1995	63	(s)	(s)	2	3	68	1,196	2,263	3,458
1996	63	(s)	(s)	2	4	69	1,325	2,531	3,856
1997	62	(s)	1	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	2	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	2,157	3,375
2007	53	2	5	2	4	66	1,110	1,928	3,038
2008	54	4	7	3	6	74	1,217	2,107	3,323
2009	55	5	10	3	6	78	1,353	2,315	3,668
2010	56	8	15	4	8	91	1,390	2,371	3,761
2011	58	13	24	6	11	112	1,692	2,903	4,595
2012	59	21	38	15	26	159	1,635	2,705	4,339
2013	61	28	50	31	55	225	1,726	2,877	4,602
2014	62	38	68	60	108	337	1,783	2,963	4,746
2015	63	48	84	85	147	427	1,814	2,922	4,737
2016	63	64	109	123	210	570	2,056	3,291	5,348
2017	65	82	139	182	309	777	2,339	3,758	6,097
2018	66	101	169	218	364	917	2,430	3,849	6,279
2019	65	120	200	246	412	1,044	2,507	3,977	6,485

^a Solar thermal direct use energy; and solar photovoltaic (PV) and solar thermal electricity net generation.

^b Conventional hydroelectricity net generation; geothermal heat pump and direct use energy; geothermal electricity net generation; wind electricity net generation; solar thermal direct use energy; and solar photovoltaic (PV) and solar thermal electricity net generation.

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

^d Utility-scale facilities (combined generator nameplate capacity of 1 megawatt or more).

^e Solar thermal direct use energy.

^f Electricity net generation in kilowatt-hours (kWh) multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

^g Equals the difference between the fossil-fuel equivalent value of electricity and the captured energy consumed as electricity. The fossil-fuel equivalent value of electricity equals electricity net generation in kilowatt-hours multiplied by the total fossil fuels heat rate factors (see Table A6). The captured energy consumed as electricity equals electricity net generation in kilowatt-hours multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

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

ⁱ Direct consumption of energy; and energy used to generate electricity, calculated as electricity net generation in kilowatt-hours multiplied by the total fossil fuels heat rate factors (see Table A6).

^j Direct consumption of energy plus captured energy consumed as electricity, which is calculated as electricity net generation in kilowatt-hours (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.

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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; $\text{CH}_3\text{-(CH}_2\text{)}_n\text{-OH}$ (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 (C₄H₁₀): A straight-chain or branch-chain **hydrocarbon** extracted from **natural gas** or **refinery gas** streams, which is gaseous at standard temperature and pressure. It includes **isobutane** and **normal butane** and is designated in ASTM Specification D1835 and Gas Processors Association specifications for commercial butane.

Isobutane (C₄H₁₀): A branch-chain saturated (paraffinic) **hydrocarbon** extracted from both **natural gas** and **refinery gas** streams, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of 11 degrees Fahrenheit. See **Paraffinic hydrocarbons**.

Normal Butane (C₄H₁₀): A straight-chain saturated (paraffinic) **hydrocarbon** extracted from both **natural gas** and **refinery gas** streams, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of 31 degrees Fahrenheit. See **Paraffinic hydrocarbons**.

Butylene (C₄H₈): An olefinic **hydrocarbon** recovered from refinery or petrochemical processes, which is gaseous at standard temperature and pressure. Butylene is used in the production of gasoline and various petrochemical products. See **Olefinic hydrocarbons (olefins)**.

Capacity factor: The ratio of the electrical energy produced by a generating unit for a given period of time to the electrical energy that could have been produced at continuous full-power operation during the same period.

Carbon dioxide (CO₂): A colorless, odorless, non-poisonous gas that is a normal part of Earth's atmosphere. Carbon dioxide is a product of **fossil-fuel** combustion as well as other processes. It is considered a **greenhouse gas** as it traps heat (infrared energy) radiated by the Earth into the atmosphere and thereby contributes to the potential for **global warming**. The **global warming potential** (GWP) of other greenhouse gases is measured in relation to that of carbon dioxide, which by international scientific convention is assigned a value of one (1).

Chained dollars: A measure used to express **real prices**. Real prices are those that have been adjusted to remove the effect of changes in the purchasing power of the dollar; they usually reflect buying power relative to a reference year. Prior to 1996, real prices were expressed in constant dollars, a measure based on the weights of goods and services in a single year, usually a recent year. In 1996, the U.S. Department of Commerce introduced the chained-dollar measure. The new measure is based on the average weights of goods and services in successive pairs of years. It is "chained" because the second year in each pair, with its weights, becomes the first year of the next pair. The advantage of using the chained-dollar measure is that it is more closely related to any given period and is therefore subject to less distortion over time.

CIF: See **Cost, insurance, freight**.

Citygate: A point or measuring station at which a distribution gas utility receives gas from a **natural gas** pipeline company or transmission system.

Climate change: A term used to refer to all forms of climatic inconsistency, but especially to significant change from one prevailing climatic condition to another. In some cases, "climate change" has been used synonymously with the term "**global warming**"; scientists, however, tend to use the term in a wider sense inclusive of natural changes in climate, including climatic cooling.

Coal: A readily combustible black or brownish-black rock whose composition, including inherent moisture, consists of more than 50 percent by weight and more than 70 percent by volume of carbonaceous material. It is formed from plant remains that have been compacted, hardened, chemically altered, and metamorphosed by heat and pressure over geologic time. See **Anthracite, Bituminous coal, Lignite, Subbituminous coal, Waste coal, and Coal syngas**.

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 syngas: Coal-based solid fuel that has been processed by a **coal syngas plant**; and coal-based fuels such as briquettes, pellets, or extrusions, which are formed from fresh or recycled coal and binding materials.

Coal syngas plant: A plant engaged in the chemical transformation of **coal** into **coal syngas**.

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>. 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 (C₂H₆): A straight-chain saturated (paraffinic) **hydrocarbon** extracted predominantly from the natural gas stream, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of -127 degrees Fahrenheit. See **Paraffinic hydrocarbons.**

Ethanol (C₂H₅OH): A clear, colorless, flammable **alcohol.** Ethanol is typically produced biologically from **biomass** feedstocks such as agricultural crops and cellulosic residues from agricultural crops or wood. Ethanol can also be produced chemically from **ethylene.** See **Biomass, Fuel ethanol, and Fuel ethanol minus denaturant.**

Ether: A generic term applied to a group of organic chemical compounds composed of carbon, **hydrogen,** and oxygen, characterized by an oxygen atom attached to two carbon atoms (e.g., **methyl tertiary butyl ether**).

Ethylene (C₂H₄): An olefinic **hydrocarbon** recovered from refinery or petrochemical processes, which is gaseous at standard temperature and pressure. Ethylene is used as a petrochemical feedstock for many chemical applications and the production of consumer goods. See **Olefinic hydrocarbons (olefins).**

Exploratory well: A well drilled to find and produce oil or gas in an area previously considered an unproductive area, to find a new reservoir in a known field (i.e., one previously found to be producing oil or gas in another reservoir), or to extend the limit of a known oil or gas reservoir.

Exports: Shipments of goods from within the 50 states and the District of Columbia to U.S. possessions and territories or to foreign countries.

Federal Energy Administration (FEA): A predecessor of the U.S. Energy Information Administration.

Federal Energy Regulatory Commission (FERC): The Federal agency with jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing, oil pipeline rates, and gas pipeline certification. FERC is an independent regulatory agency within the U.S. Department of Energy and is the successor to the Federal Power Commission.

Federal Power Commission (FPC): The predecessor agency of the Federal Energy Regulatory Commission. The Federal Power Commission was created by an Act of Congress under the Federal Water Power Act on June 10, 1920. It was charged originally with regulating the electric power and natural gas industries. It was abolished on September 30, 1977, when the U.S. Department of Energy was created. Its functions were divided between the U.S. Department of Energy and the Federal Energy Regulatory Commission, an independent regulatory agency.

First purchase price: The price for domestic crude oil reported by the company that owns the crude oil the first time it is removed from the lease boundary.

Flared natural gas: Natural gas burned in flares on the base site or at gas processing plants.

F.O.B. (free on board): A sales transaction in which the seller makes the product available for pick up at a specified port or terminal at a specified price and the buyer pays for the subsequent transportation and insurance.

Footage drilled: Total footage for wells in various categories, as reported for any specified period, includes (1) the deepest total depth (length of well bores) of all wells drilled from the surface, (2) the total of all bypassed footage drilled in connection with reported wells, and (3) all new footage drilled for directional sidetrack wells. Footage reported for directional sidetrack wells does not include footage in the common bore, which is reported as footage for

the original well. In the case of old wells drilled deeper, the reported footage is that which was drilled below the total depth of the old well.

Former U.S.S.R.: See **Union of Soviet Socialist Republics (U.S.S.R.)**.

Fossil fuel: An energy source formed in the Earth's crust from decayed organic material, such as **petroleum, coal,** and **natural gas**.

Fossil fueled steam electric power plant: An electricity generation plant in which the prime mover is a turbine rotated by high-pressure steam produced in a boiler by heat from burning fossil fuels.

Fuel ethanol: Ethanol intended for fuel use. Fuel ethanol in the United States must be anhydrous (less than 1 percent water). Fuel ethanol is denatured (made unfit for human consumption), usually prior to transport from the ethanol production facility, by adding 2 to 5 volume percent petroleum, typically **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 (C₄H₁₀): A branch-chain saturated (paraffinic) **hydrocarbon** extracted from both **natural gas** and **refinery gas** streams, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of 11 degrees Fahrenheit. See **Paraffinic hydrocarbons**.

Isobutylene (C₄H₈): A branch-chain olefinic **hydrocarbon** recovered from refinery or petrochemical processes, which is gaseous at standard temperature and pressure. Isobutylene is used in the production of gasoline and various petrochemical products. See **Olefinic hydrocarbons (olefins)**.

Isopentane (C₅H₁₂): A saturated branched-chain **hydrocarbon** obtained by fractionation of **natural gasoline** or isomerization of normal pentane.

Jet fuel: A refined **petroleum** product used in jet aircraft engines. See **Jet fuel, Kerosene-type**, and **Jet fuel, Naphtha-type**.

Jet fuel, kerosene-type: A **kerosene**-based product having a maximum distillation temperature of 400 degrees Fahrenheit at the 10-percent recovery point and a final maximum boiling point of 572 degrees Fahrenheit and meeting ASTM Specification D 1655 and Military Specifications MIL-T-5624P and MIL-T-83133D (Grades JP-5 and JP-8). It is used for commercial and military turbo jet and turbo prop aircraft engines.

Jet fuel, naphtha-type: A fuel in the heavy **naphtha** boiling range having an average gravity of 52.8 degrees API, 20% to 90% distillation temperatures of 290 degrees to 470 degrees Fahrenheit, and meeting Military Specification MIL-T-5624L (Grade JP-4). It is used primarily for military turbojet and turboprop aircraft engines because it has a lower freeze point than other aviation fuels and meets engine requirements at high altitudes and speeds.

Kerosene: A light **petroleum** distillate that is used in space heaters, cook stoves, and water heaters and is suitable for use as a light source when burned in wick-fed lamps. Kerosene has a maximum distillation temperature of 400 degrees Fahrenheit at the 10-percent recovery point, a final boiling point of 572 degrees Fahrenheit, and a minimum flash point of 100 degrees Fahrenheit. Included are No. 1-K and No. 2-K, the two grades recognized by ASTM Specification D 3699 as well as all other grades of kerosene called range or stove oil, which have properties similar to those of No. 1 fuel oil. See **Jet fuel, kerosene-type**.

Kilowatt: A unit of electrical power equal to 1,000 **watts**.

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 (CH₄): A colorless, flammable, odorless **hydrocarbon** gas which is the major component of **natural gas**. It is also an important source of hydrogen in various industrial processes. Methane is a greenhouse gas. See **Greenhouse gases**.

Methanol (CH₃OH): A light, volatile alcohol eligible for gasoline blending. See **Motor gasoline blending** and **Oxygenates**.

Methyl tertiary butyl ether (MTBE) ((CH₃)₃COCH₃): An **ether** intended for gasoline blending. See **Motor gasoline blending** and **Oxygenates**.

Miscellaneous petroleum products: All finished petroleum products not classified elsewhere—for example, petrolatum, lube refining byproducts (aromatic extracts and tars), absorption oils, ram-jet fuel, petroleum rocket fuels, synthetic natural gas feedstocks, and specialty oils.

Motor gasoline blending components: Naphtha (e.g., straight-run gasoline, alkylate, reformate, benzene, toluene, xylene) used for blending or compounding into finished motor gasoline. These components include reformulated gasoline blendstock (RBOB) but exclude oxygenates (alcohols, ethers), butane, and 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 (C₄H₁₀): A straight-chain saturated (paraffinic) **hydrocarbon** extracted from both **natural gas** and **refinery gas** streams, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of 31 degrees Fahrenheit. See **Paraffinic hydrocarbons**.

Nuclear electric power (nuclear power): Electricity generated by the use of the thermal energy released from the fission of nuclear fuel in a reactor.

Nuclear electric power plant: A single-unit or multiunit facility in which heat produced in one or more reactors by the fissioning of nuclear fuel is used to drive one or more steam turbines.

Nuclear reactor: An apparatus in which a nuclear fission chain reaction can be initiated, controlled, and sustained at a specific rate. A reactor includes fuel (fissionable material), moderating material to control the rate of fission, a heavy-walled pressure vessel to house reactor components, shielding to protect personnel, a system to conduct heat away from the reactor, and instrumentation for monitoring and controlling the reactor's systems.

OECD: See **Organization for Economic Cooperation and Development**.

Offshore: That geographic area that lies seaward of the coastline. In general, the coastline is the line of ordinary low water along with that portion of the coast that is in direct contact with the open sea or the line marking the seaward limit of inland water.

Oil: See **Crude oil**.

Olefinic hydrocarbons (olefins): Unsaturated **hydrocarbon** compounds with the general formula C_nH_{2n} containing at least one carbon-to-carbon double-bond. Olefins are produced at crude oil refineries and petrochemical plants and are not naturally occurring constituents of oil and natural gas. Sometimes referred to as alkenes or unsaturated hydrocarbons. Excludes aromatics.

Olefins: See **Olefinic hydrocarbons (olefins)**.

OPEC: See **Organization of the Petroleum Exporting Countries**.

Operable unit (nuclear): In the United States, a nuclear generating unit that has completed low-power testing and been issued a full-power operating license by the Nuclear Regulatory Commission, or equivalent permission to operate.

Organization for Economic Cooperation and Development (OECD): An international organization helping governments tackle the economic, social and governance challenges of a globalized economy. Its membership comprises about 30 member countries. With active relationships with some 70 other countries, non-governmental organizations (NGOs) and civil society, it has a global reach. For details about the organization, see <http://www.oecd.org>.

Organization of the Petroleum Exporting Countries (OPEC): An intergovernmental organization whose stated objective is to "coordinate and unify the petroleum policies of member countries." It was created at the Baghdad Conference on September 10–14, 1960. Current and former members (with years of membership) include Algeria (1969 forward), Angola (2007 forward), Congo-Brazzaville (2018 forward), Ecuador (1973–1992 and 2007 forward), Equatorial Guinea (2017 forward), Gabon (1974–1995 and 2016 forward), Indonesia (1962–2008 and 2016), Iran (1960 forward), Iraq (1960 forward), Kuwait (1960 forward), Libya (1962 forward), Nigeria (1971 forward), Qatar (1961–2018), Saudi Arabia (1960 forward), United Arab Emirates (1967 forward), and Venezuela (1960 forward).

Other energy losses: Energy losses throughout the energy system as they are consumed, usually in the form of heat, that are not separately identified by U.S. Energy Information Administration. Examples include heat lost in the process of burning motor gasoline to move vehicles or in electricity used to power a lightbulb.

Other hydrocarbons: Materials received by a refinery and consumed as a raw material. Includes hydrogen, coal tar derivatives, gilsonite. Excludes **natural gas** used for fuel or **hydrogen** feedstock.

Oxygenates: Substances which, when added to gasoline, increase the amount of oxygen in that gasoline blend. **Ethanol**, **Methyl Tertiary Butyl Ether (MTBE)**, Ethyl Tertiary Butyl Ether (ETBE), and methanol are common oxygenates.

PAD Districts: Petroleum Administration for Defense Districts. Geographic aggregations of the 50 states and the District of Columbia into five districts for the Petroleum Administration for Defense in 1950. The districts were originally instituted for economic and geographic reasons as Petroleum Administration for War (PAW) Districts, which were established in 1942.

Paraffinic hydrocarbons: Saturated **hydrocarbon** compounds with the general formula C_nH_{2n+2} containing only single bonds. Sometimes referred to as alkanes or **natural gas liquids**.

Pentanes plus: A mixture of liquid **hydrocarbons**, mostly pentanes and heavier, extracted from **natural gas** in a gas processing plant. Pentanes plus is equivalent to **natural gasoline**.

Petrochemical feedstocks: Chemical feedstocks derived from refined or partially refined **petroleum** fractions, principally for use in the manufacturing of chemicals, synthetic rubber, and a variety of plastics.

Petroleum: A broadly defined class of liquid hydrocarbon mixtures. Included are crude oil, lease condensate, unfinished oils, refined products obtained from the processing of crude oil, and natural gas plant liquids. **Note:** Volumes of finished petroleum products include nonhydrocarbon compounds, such as additives and detergents, after they have been blended into the products.

Petroleum coke: A residue high in carbon content and low in **hydrogen** that is the final product of thermal decomposition in the condensation process in cracking. This product is reported as marketable coke or catalyst coke. The conversion is 5 barrels (of 42 U.S. gallons each) per short ton. See **Petroleum coke**, **Catalyst** and **Petroleum coke, marketable**.

Petroleum coke, catalyst: The carbonaceous residue that is deposited on the catalyst used in many catalytic operations (e.g., catalytic cracking). Carbon is deposited on the catalyst, thus deactivating the catalyst. The catalyst is reactivated by burning off the carbon producing heat and **carbon dioxide (CO₂)**. The carbonaceous residue is not recoverable as a product. See **Petroleum coke**.

Petroleum coke, marketable: Those grades of coke produced in delayed or fluid cokers that may be recovered as relatively pure carbon. Marketable petroleum coke may be sold as is or further purified by calcining. See **Petroleum coke**.

Petroleum consumption: See **Products supplied (petroleum)**.

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

Petroleum products: Products obtained from the processing of crude oil (including lease condensate), natural gas, and other hydrocarbon compounds. Petroleum products include unfinished oils, 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**. 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)**; **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 average heat rate of fossil-fuel fired plants); **geothermal** electricity net generation (converted to Btu using the average annual heat rate of fossil-fueled fired plants), geothermal heat pump energy and geothermal direct-use energy; **solar thermal** and **photovoltaic** electricity net generation (converted to Btu using the average annual heat rate of fossil-fueled fired plants), and solar thermal direct-use energy; wind electricity net generation (converted to Btu using the average annual heat rate of fossil-fueled fired plants); **wood and wood-derived fuels** consumption; **biomass waste** consumption; **fuel ethanol** and **biodiesel** consumption; losses and co-products from the production of fuel ethanol and biodiesel; and electricity net imports (converted to Btu using the electricity heat content of 3,412 Btu per kilowatthour). Primary energy consumption includes all non-combustion use of fossil fuels. Primary energy consumption also includes **other energy losses** throughout the energy system. See **Total energy consumption**. Energy sources 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. As a result, U.S. primary energy consumption does include net imports of coal coke, but it does not include the coal coke produced from domestic coal.

Primary energy production: Production of **primary energy**. The U.S. Energy Information Administration includes the following in U.S. primary energy production: **coal** production, **waste coal** supplied, and coal refuse recovery; **crude oil** and **lease condensate** production; **natural gas plant liquids** production; **dry natural gas**—excluding **supplemental gaseous fuels**— production; **nuclear electricity net generation** (converted to Btu using the nuclear plants **heat rate**); **conventional hydroelectricity** net generation (converted to Btu using the fossil-fueled plants heat rate); **geothermal** electricity net generation (converted to Btu using the fossil-fueled plants heat rate), and geothermal heat pump energy and geothermal direct use energy; **solar thermal** and **photovoltaic** electricity net generation (converted to Btu using the fossil-fueled plants heat rate), and solar thermal direct use energy; **wind** electricity net generation (converted to Btu using the fossil-fueled plants heat rate); **wood and wood-derived fuels** production; **biomass waste** consumption; and **biofuels** feedstock.

Prime mover: The engine, turbine, water wheel, or similar machine that drives an electric generator; or, for reporting purposes, a device that converts energy to electricity directly.

Product supplied (petroleum): Approximately represents consumption of petroleum products because it measures the disappearance of these products from primary sources, i.e., refineries, natural gas-processing plants, blending plants, pipelines, and bulk terminals. In general, product supplied of each product in any given period is computed as follows: field production, plus refinery production, plus imports, plus unaccounted-for crude oil (plus net receipts when calculated on a PAD District basis) minus stock change, minus crude oil losses, minus refinery inputs, and minus exports.

Propane (C₃H₈): A straight-chain saturated (paraffinic) **hydrocarbon** extracted from **natural gas** or **refinery gas** streams, which is gaseous at standard temperature and pressure. It is a colorless gas that boils at a temperature of -44 degrees Fahrenheit. It includes all products designated in ASTM Specification D1835 and Gas Processors Association specifications for commercial (HD-5) propane. See **Paraffinic hydrocarbons**.

Propylene (C₃H₆): An olefinic **hydrocarbon** recovered from refinery or petrochemical processes, which is gaseous at standard temperature and pressure. Propylene is an important petrochemical feedstock. See **Olefinic hydrocarbons (olefins)**.

Real dollars: These are dollars that have been adjusted for inflation.

Real price: A price that has been adjusted to remove the effect of changes in the purchasing power of the dollar. Real prices, which are expressed in constant dollars, usually reflect buying power relative to a base year.

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

Refinery and blender net inputs: Raw materials, **unfinished oils**, and blending components processed at refineries, or blended at refineries or petroleum storage terminals to produce finished **petroleum products**. Included are gross inputs of **crude oil**, **natural gas 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, and 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**. Also includes **other energy losses** throughout the energy system.

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."

Uranium: A heavy, naturally radioactive, metallic element (atomic number 92). Its two principally occurring isotopes are uranium-235 and uranium-238. Uranium-235 is indispensable to the nuclear industry because it is the only isotope existing in nature, to any appreciable extent, that is fissionable by thermal neutrons. Uranium-238 is also important because it absorbs neutrons to produce a radioactive isotope that subsequently decays to the isotope plutonium-239, which also is fissionable by thermal neutrons.

Uranium concentrate: A yellow or brown powder obtained by the milling of uranium ore, processing of in situ leach mining solutions, or as a byproduct of phosphoric acid production. See **Uranium oxide**.

Uranium ore: Rock containing uranium mineralization in concentrations that can be mined economically, typically one to four pounds of uranium oxide (U₃O₈) per ton or 0.05 percent to 0.2 percent U₃O₈.

Uranium oxide (U₃O₈): **Uranium concentrate** or **yellowcake**.

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.

Watt-hour (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.

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