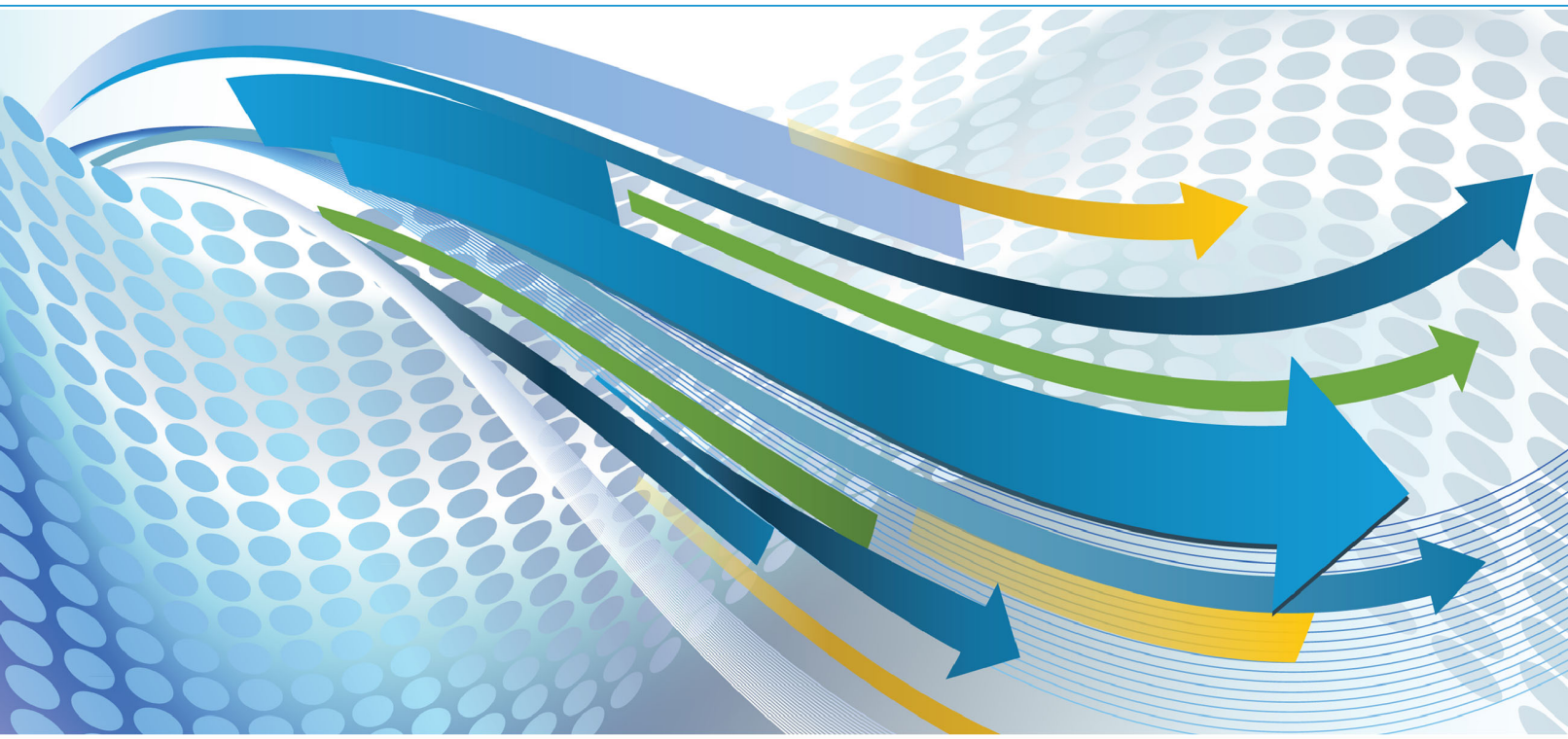


November 2021

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.

Released: November 23, 2021

Monthly Energy Review

November 2021

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

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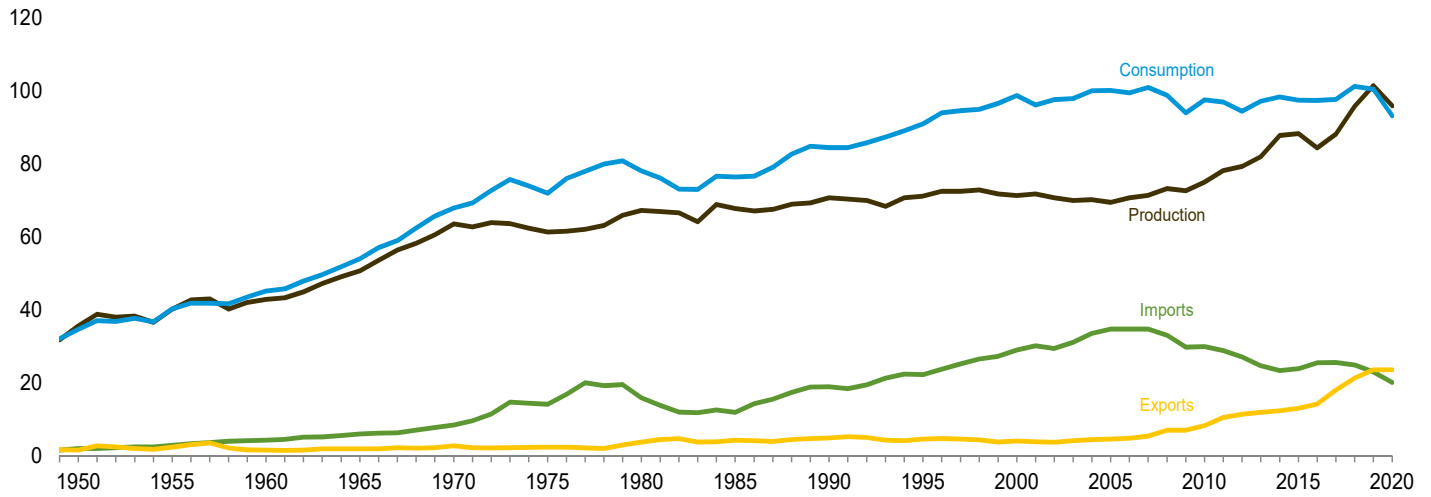
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1. Energy Overview

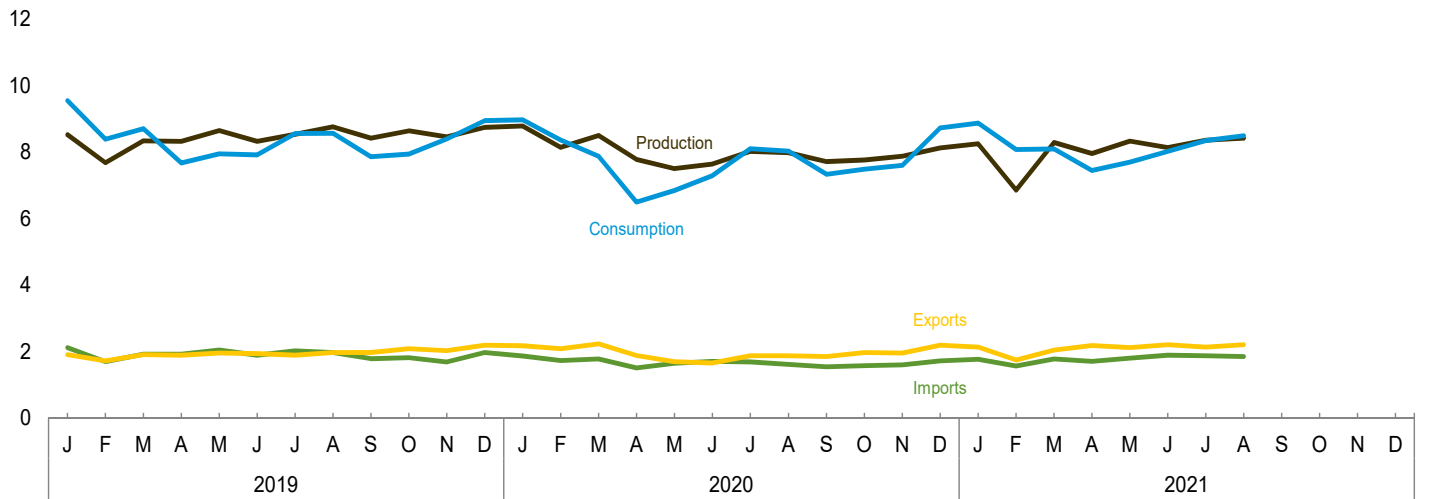
Figure 1.1 Primary Energy Overview

(Quadrillion Btu)

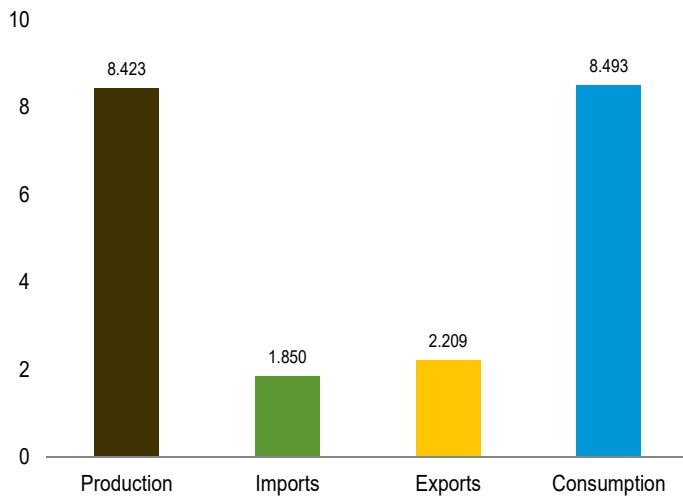
Overview, 1949–2020



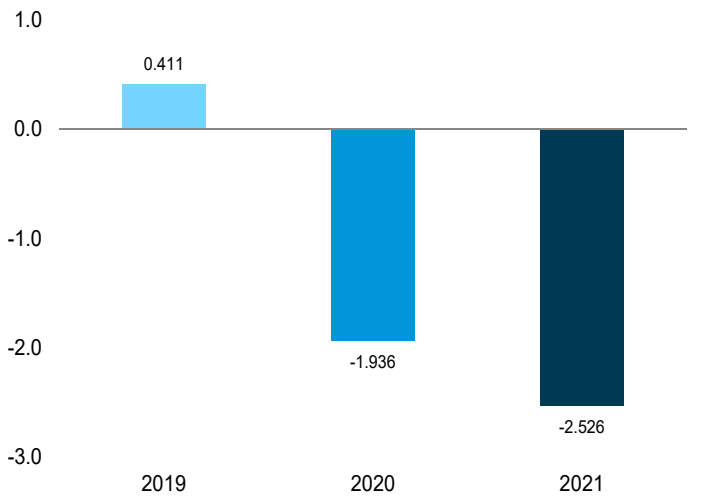
Overview, Monthly



Overview, August 2021



Net Imports, January–August



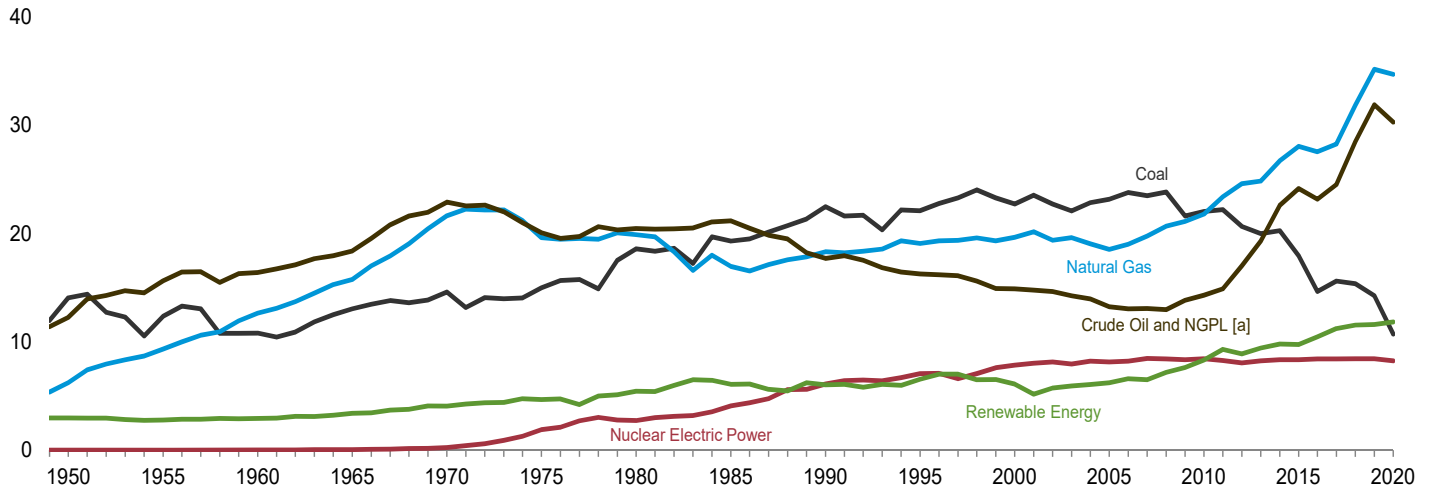
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Source: Table 1.1.

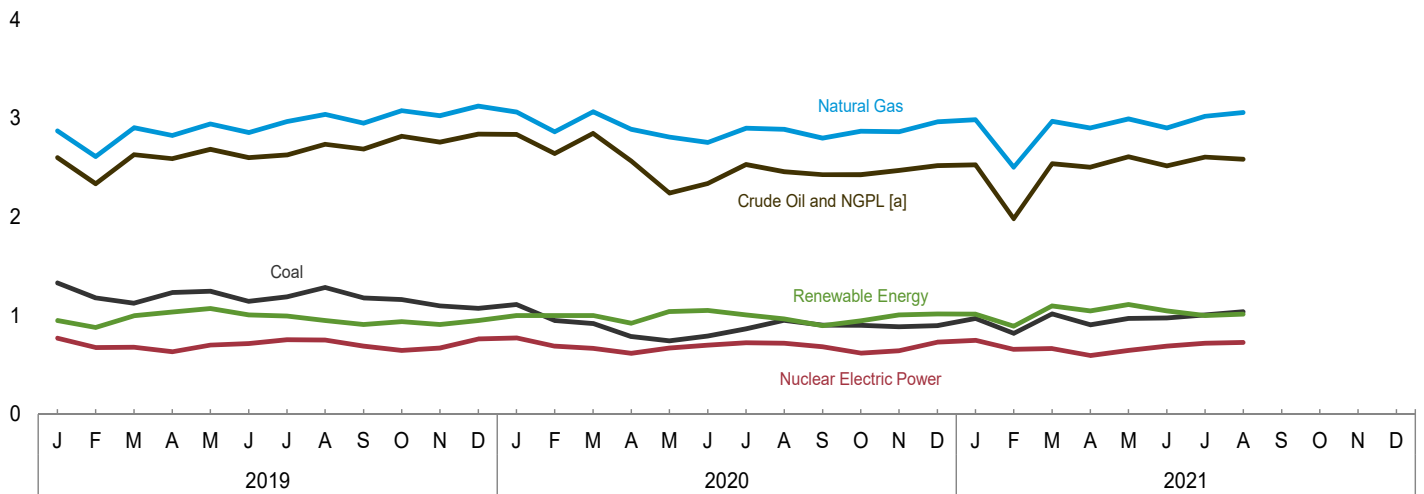
Figure 1.2 Primary Energy Production

(Quadrillion Btu)

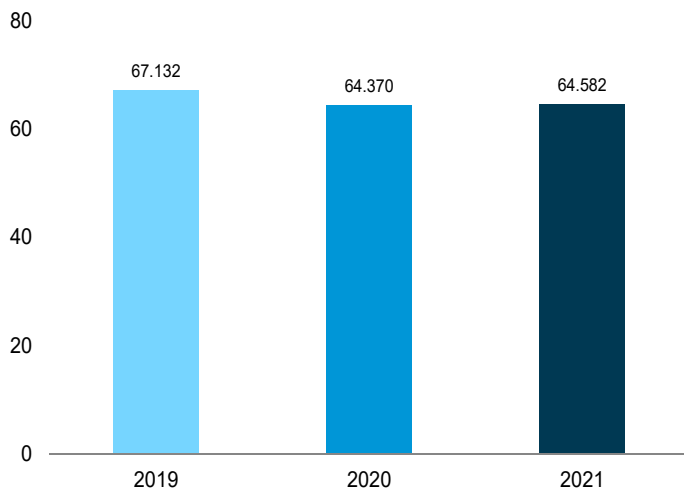
By Source, 1949–2020



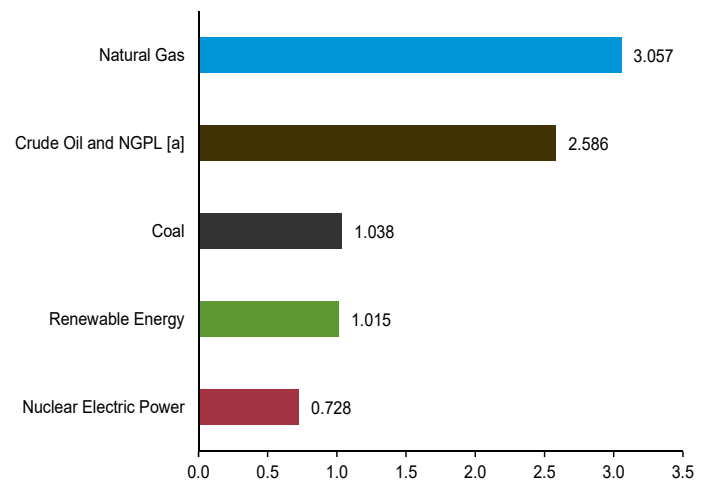
By Source, Monthly



Total, January–August



By Source, August 2021



[a] National gas plant liquids.

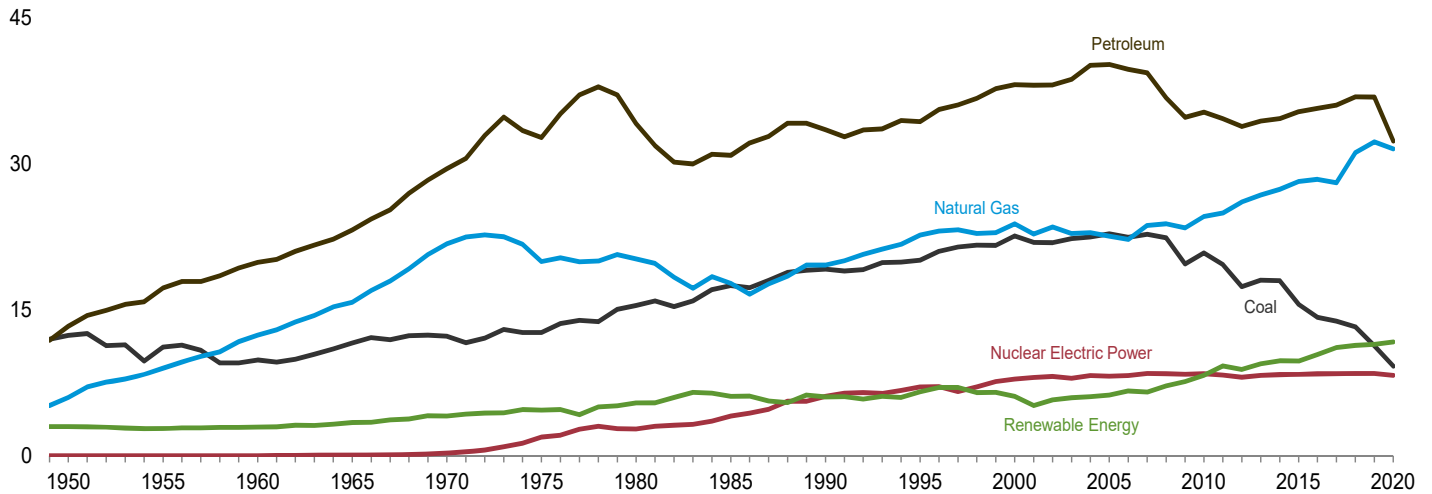
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Source: Table 1.2.

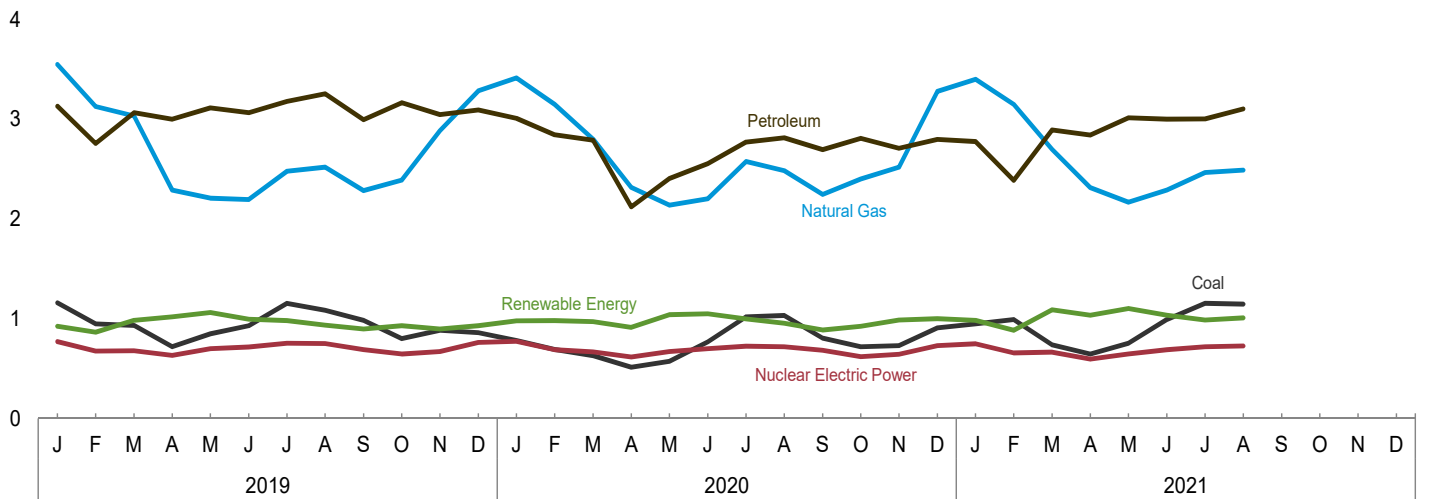
Figure 1.3 Primary Energy Consumption

(Quadrillion Btu)

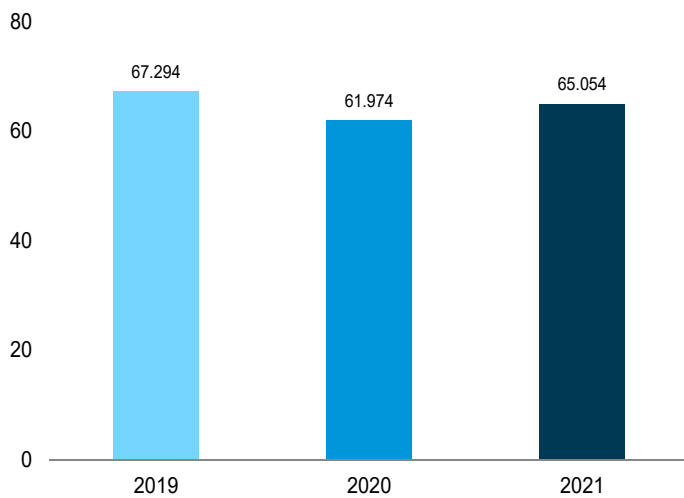
By Source, [a] 1949–2020



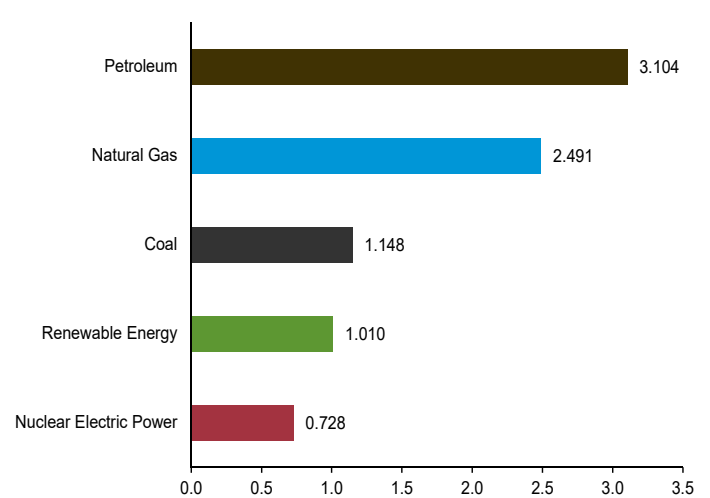
By Source, [a] Monthly



Total, January–August



By Source, [a] August 2021

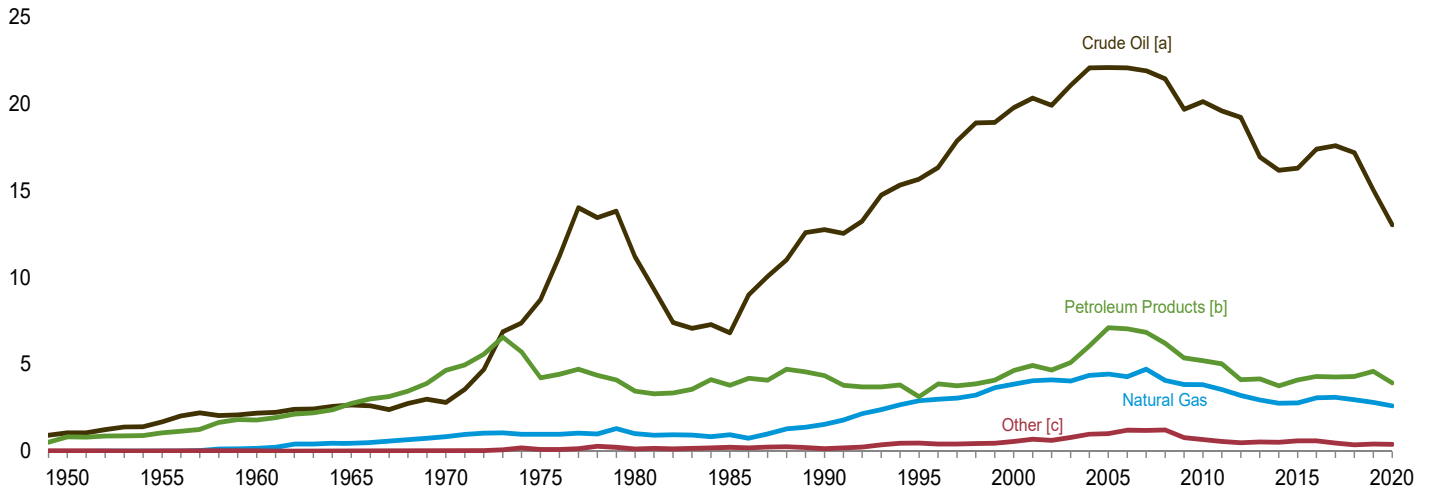


[a] Small quantities of net imports of coal coke and electricity are not shown.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#summary>.
 Source: Table 1.3.

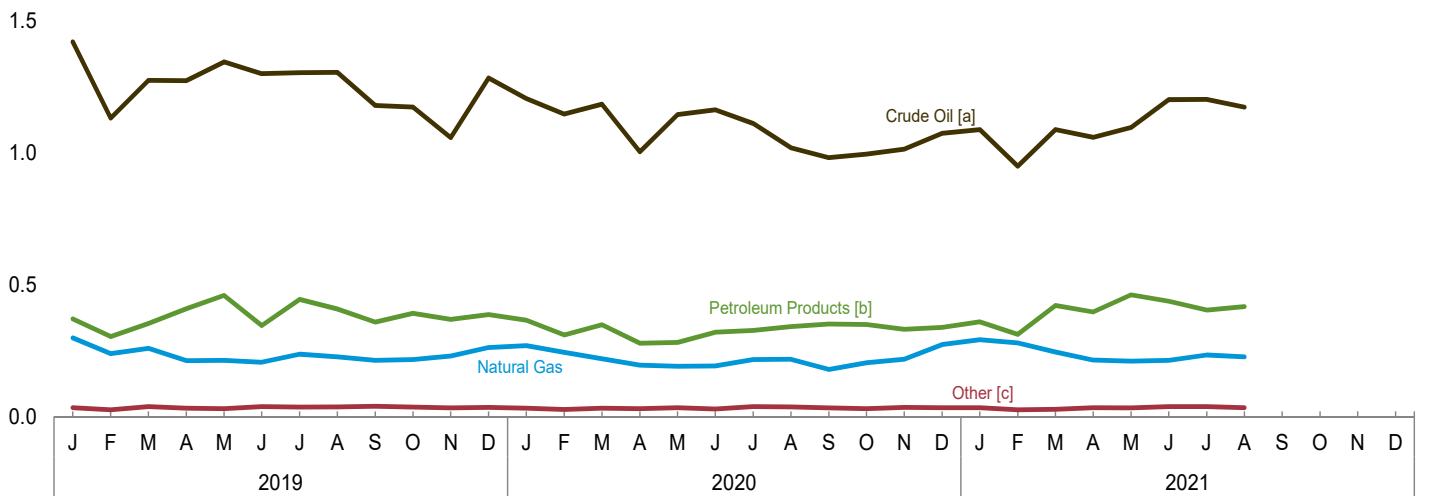
Figure 1.4a Primary Energy Imports

(Quadrillion Btu)

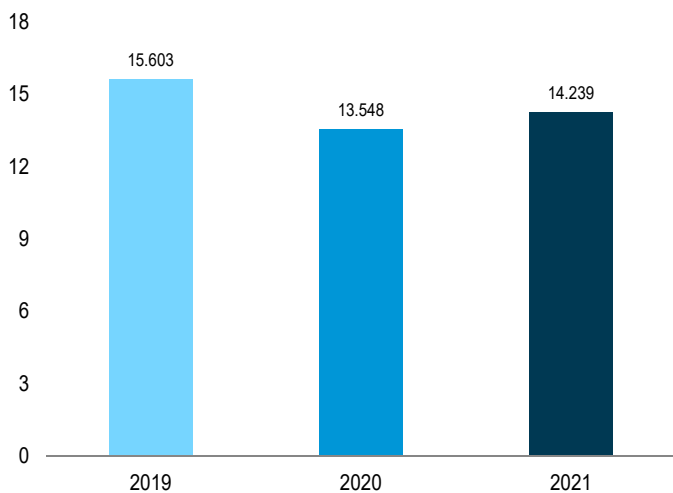
By Source, 1949–2020



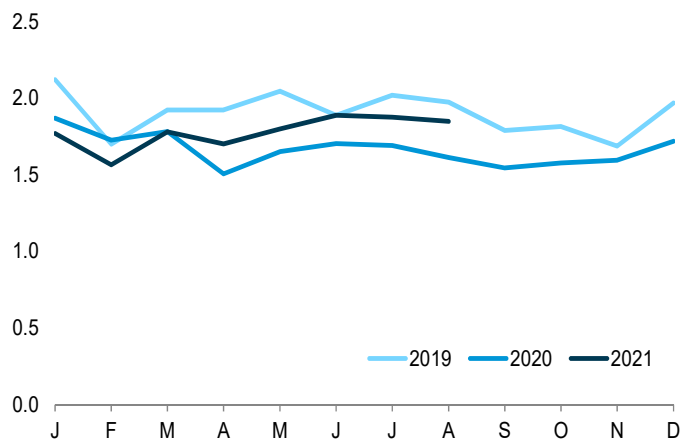
By Source, Monthly



Total, January–August



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
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 Total .....	.168	.001	3.109	17.597	4.277	21.874	.081	.224	25.458
2018 Total .....	.122	.003	2.961	17.192	4.309	21.501	.048	.199	24.833
2019 January .....	.013	(s)	.298	1.420	.370	1.790	.005	.016	2.122
February .....	.007	(s)	.239	1.132	.303	1.435	.003	.016	1.700
March .....	.015	(s)	.259	1.274	.353	1.628	.006	.017	1.925
April .....	.011	.001	.212	1.273	.409	1.681	.006	.015	1.925
May .....	.008	(s)	.213	1.344	.459	1.803	.005	.016	2.046
June .....	.014	(s)	.206	1.300	.345	1.645	.007	.018	1.889
July .....	.011	(s)	.236	1.304	.444	1.748	.007	.019	2.021
August .....	.011	.001	.226	1.305	.408	1.713	.006	.020	1.975
September .....	.013	(s)	.213	1.179	.358	1.537	.007	.018	1.789
October .....	.015	(s)	.216	1.173	.392	1.565	.007	.012	1.816
November .....	.010	.001	.229	1.058	.368	1.426	.006	.017	1.688
December .....	.011	(s)	.262	1.284	.387	1.671	.007	.018	1.969
Total .....	.138	.003	2.810	15.045	4.596	19.641	.072	.201	22.865
2020 January .....	.011	(s)	.269	1.206	.365	1.570	.006	.016	1.871
February .....	.007	(s)	.244	1.147	.309	1.456	.005	.015	1.727
March .....	.009	(s)	.219	1.184	.348	1.532	.005	.017	1.782
April .....	.007	(s)	.195	1.004	.278	1.282	.007	.016	1.507
May .....	.011	.001	.191	1.145	.281	1.426	.005	.018	1.651
June .....	.005	(s)	.192	1.163	.320	1.483	.007	.018	1.705
July .....	.011	(s)	.216	1.111	.327	1.438	.005	.023	1.692
August .....	.006	(s)	.217	1.019	.341	1.359	.007	.023	1.613
September .....	.010	.001	.179	.982	.351	1.333	.006	.016	1.545
October .....	.005	.002	.204	.995	.349	1.344	.007	.016	1.578
November .....	.013	(s)	.217	1.014	.331	1.344	.007	.014	1.596
December .....	.009	(s)	.273	1.074	.338	1.413	.008	.018	1.720
Total .....	.105	.004	2.615	13.044	3.937	16.980	.074	.210	19.988
2021 January .....	.011	(s)	.291	1.088	.359	1.446	.005	.017	1.771
February .....	.006	(s)	.279	.949	.312	1.262	.005	.014	1.566
March .....	.005	(s)	.245	1.088	.421	1.509	.007	.016	1.781
April .....	.010	(s)	.214	1.059	.397	1.456	.008	.015	1.703
May .....	.010	(s)	.210	1.096	.462	1.558	.006	.016	1.801
June .....	.010	(s)	.213	1.201	.437	1.638	.009	.018	1.889
July .....	.011	(s)	.233	1.203	.404	1.607	.006	.020	1.878
August .....	.007	(s)	.226	1.173	.417	1.590	.006	.020	1.850
8-Month Total .....	.072	.001	1.911	8.857	3.208	12.065	.054	.136	14.239
2020 8-Month Total .....	.067	.002	1.742	8.978	2.568	11.546	.046	.146	13.548
2019 8-Month Total .....	.089	.002	1.889	10.352	3.091	13.443	.044	.137	15.603

^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 Beginning in 1993, includes fuel ethanol (minus denaturant). Beginning in 2001, also includes biodiesel. Beginning in 2011, also includes renewable diesel fuel. Beginning in 2021, also includes other biofuels.

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.

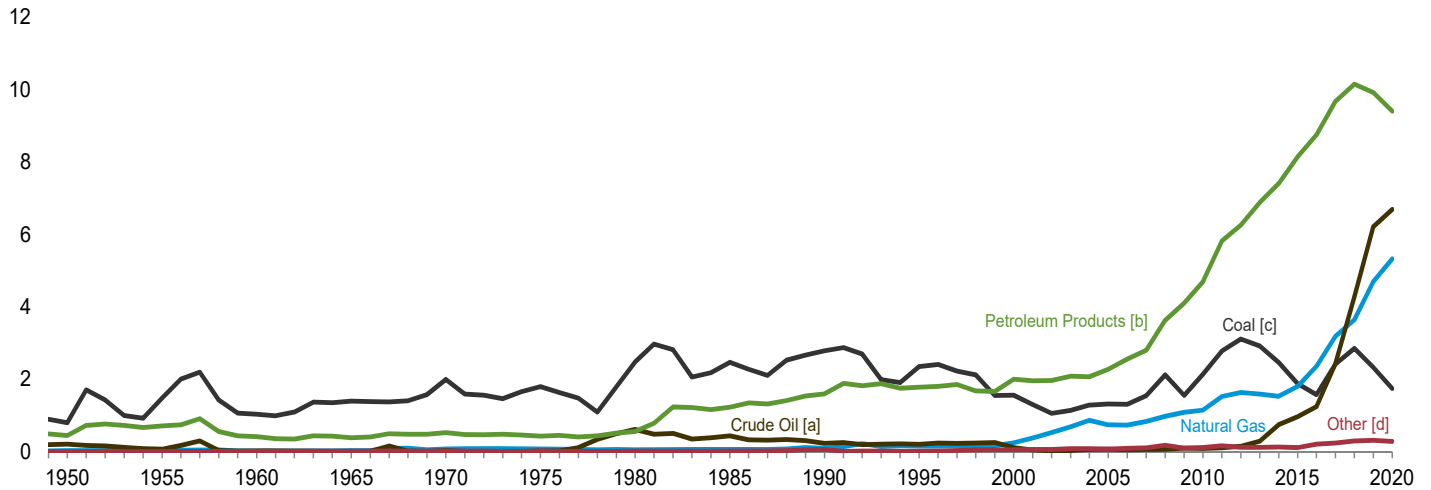
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

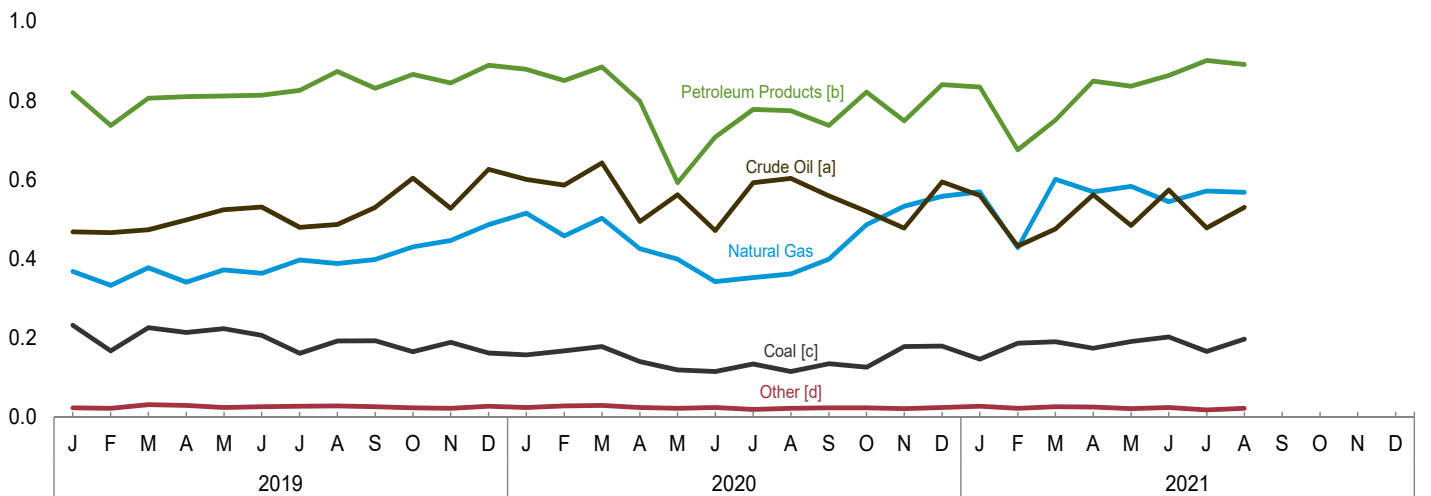
Figure 1.4b Primary Energy Exports

(Quadrillion Btu)

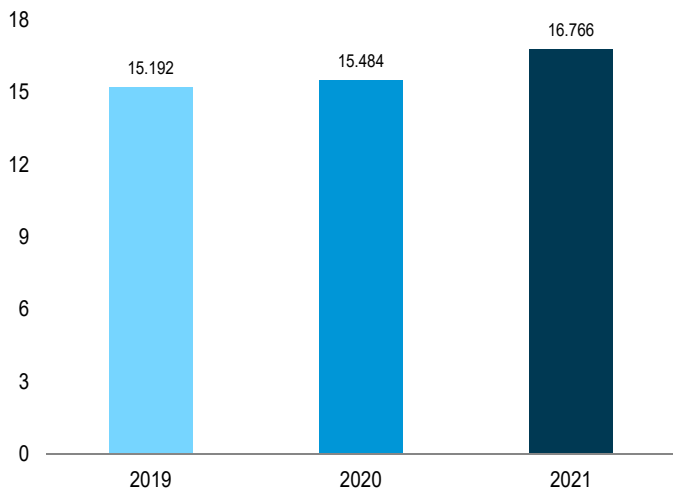
By Source, 1949-2020



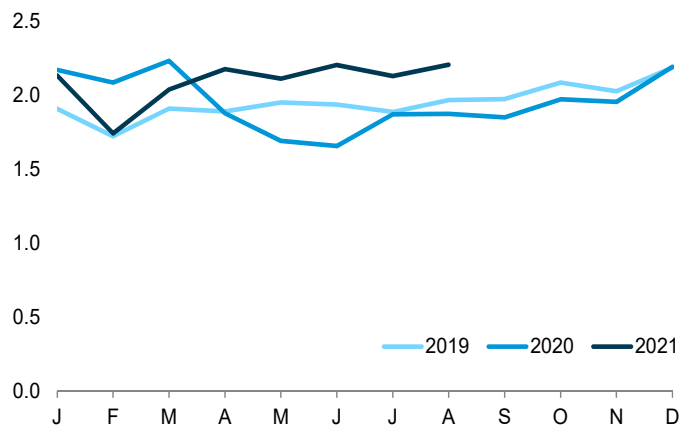
By Source, Monthly



Total, January–August



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 ^b	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
2005 Total	1.273	.043	.735	.067	2.276	2.344	(s)	.065	4.462
2006 Total	1.264	.040	.730	.052	2.554	2.606	(s)	.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 Total	2.388	.030	3.182	2.424	9.684	12.108	.206	.032	17.946
2018 Total	2.824	.029	3.640	4.277	10.158	14.434	.249	.047	21.224
2019									
January .....	.229	.003	.368	.468	.820	1.287	.018	.005	1.910
February .....	.166	.001	.333	.466	.737	1.203	.017	.005	1.725
March .....	.225	.001	.377	.473	.806	1.279	.022	.009	1.912
April .....	.212	.002	.341	.498	.810	1.309	.022	.007	1.893
May .....	.221	.002	.372	.524	.811	1.335	.019	.006	1.954
June .....	.204	.002	.363	.531	.813	1.344	.021	.005	1.940
July .....	.159	.002	.397	.479	.825	1.304	.020	.007	1.889
August .....	.190	.002	.388	.487	.873	1.360	.022	.006	1.969
September .....	.190	.003	.398	.530	.831	1.360	.019	.006	1.977
October .....	.162	.003	.430	.604	.866	1.470	.018	.005	2.088
November .....	.186	.002	.446	.527	.844	1.372	.018	.004	2.029
December .....	.160	.003	.486	.626	.889	1.515	.023	.004	2.190
Total	2.305	.024	4.700	6.212	9.926	16.139	.240	.068	23.476
2020									
January .....	.156	.002	.515	.600	.879	1.479	.019	.005	2.175
February .....	.165	.002	.458	.586	.850	1.436	.022	.006	2.089
March .....	.177	.001	.502	.642	.885	1.527	.025	.004	2.236
April .....	.139	.001	.425	.494	.798	1.291	.019	.005	1.880
May .....	.118	.001	.399	.562	.592	1.154	.017	.005	1.694
June .....	.115	(s)	.342	.471	.708	1.179	.019	.004	1.659
July .....	.134	.001	.352	.592	.777	1.368	.015	.004	1.874
August .....	.114	.001	.362	.603	.774	1.377	.019	.003	1.877
September .....	.134	.001	.399	.559	.737	1.296	.019	.003	1.853
October .....	.123	.003	.486	.520	.821	1.341	.020	.003	1.975
November .....	.176	.002	.533	.477	.748	1.225	.018	.003	1.957
December .....	.177	.001	.558	.594	.840	1.434	.021	.003	2.195
Total	1.726	.017	5.331	6.699	9.410	16.108	.234	.048	23.464
2021									
January .....	.143	.003	.569	.560	.834	1.394	.023	.003	2.136
February .....	.185	.003	.428	.432	.675	1.107	.018	.004	1.744
March .....	.189	(s)	.601	.475	.750	1.225	.024	.003	2.042
April .....	.170	.004	.569	.562	.849	1.411	.021	.004	2.180
May .....	.187	.004	.583	.484	.836	1.320	.017	.003	2.115
June .....	.196	.006	.544	.574	.863	1.437	.021	.003	2.207
July .....	.163	.003	.571	.478	.901	1.379	R .015	.003	R 2.133
August .....	.192	.005	.568	.530	.891	1.421	.019	.003	2.209
8-Month Total	1.425	.029	4.433	4.096	6.598	10.694	.159	.026	16.766
2020 8-Month Total	1.116	.009	3.355	4.548	6.264	10.812	.155	.037	15.484
2019 8-Month Total	1.607	.014	2.940	3.926	6.496	10.421	.161	.049	15.192

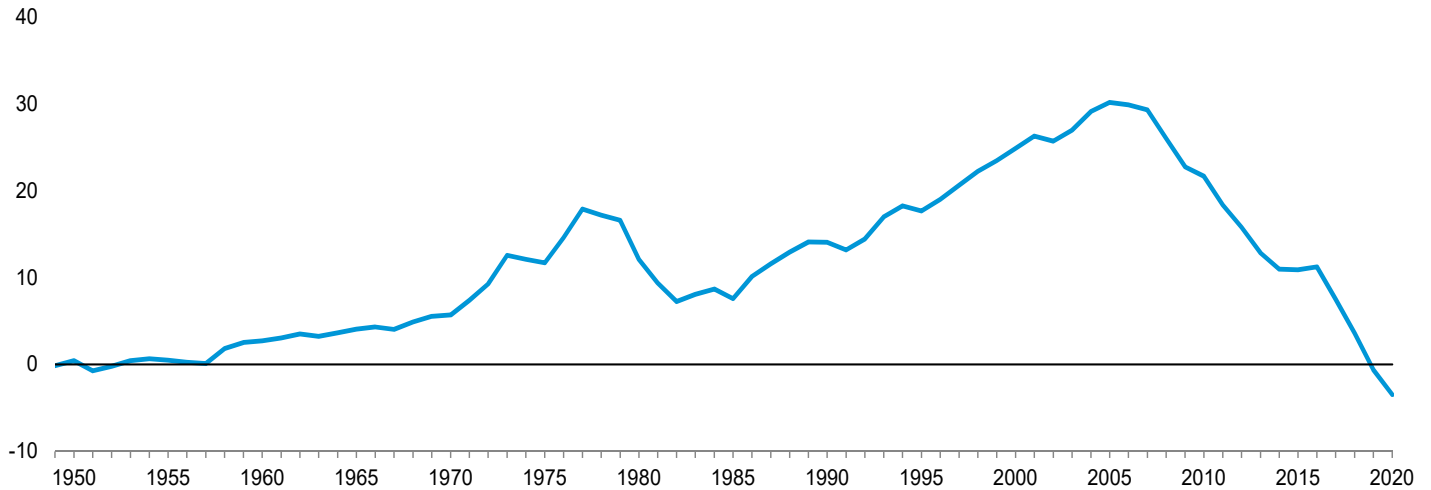
^a Crude oil and lease condensate.
^b Petroleum products, unfinished oils, natural gasoline, and gasoline blending components. Does not include biofuels.
^c Beginning in 2001, includes biodiesel. Beginning in 2010, also includes fuel ethanol (minus denaturant). Beginning in 2016, also includes wood and 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.

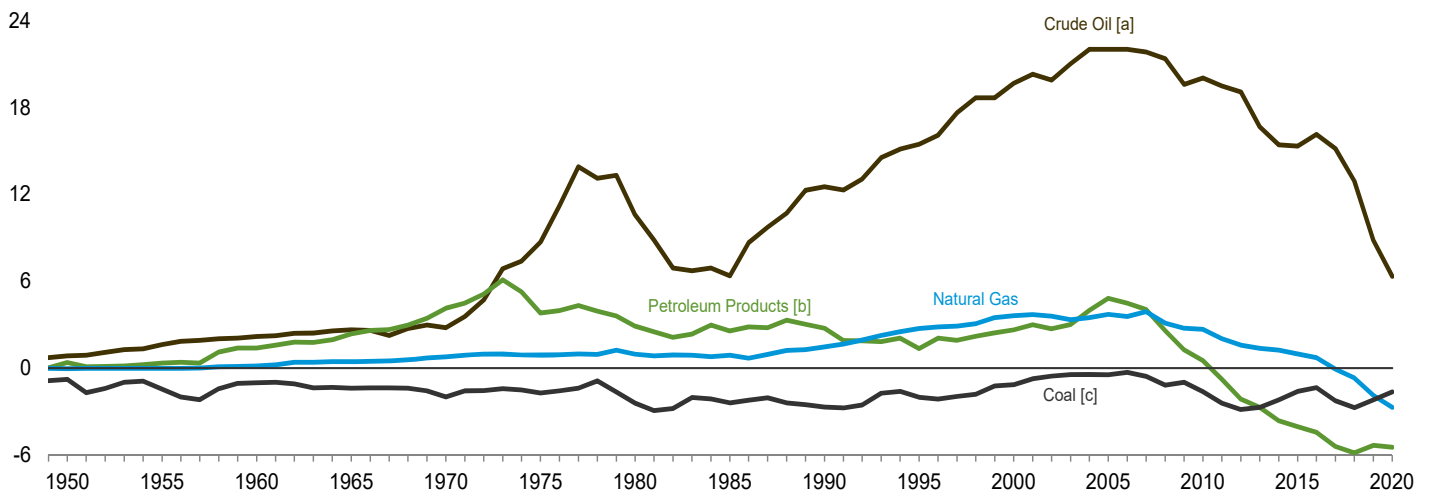
Figure 1.4c Primary Energy Net Imports

(Quadrillion Btu)

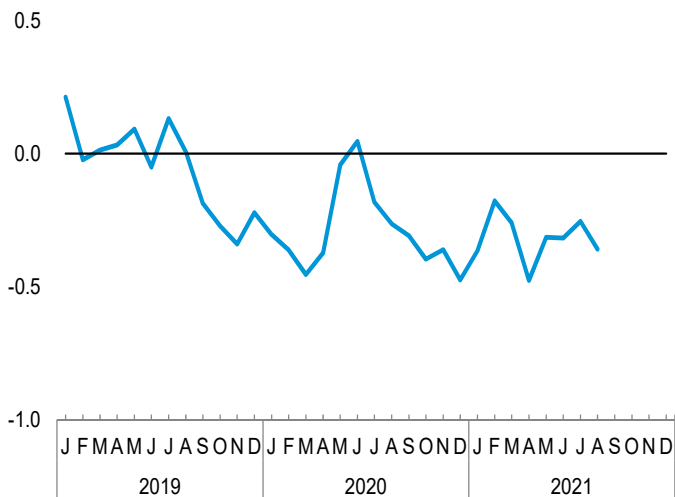
Total, 1949–2020



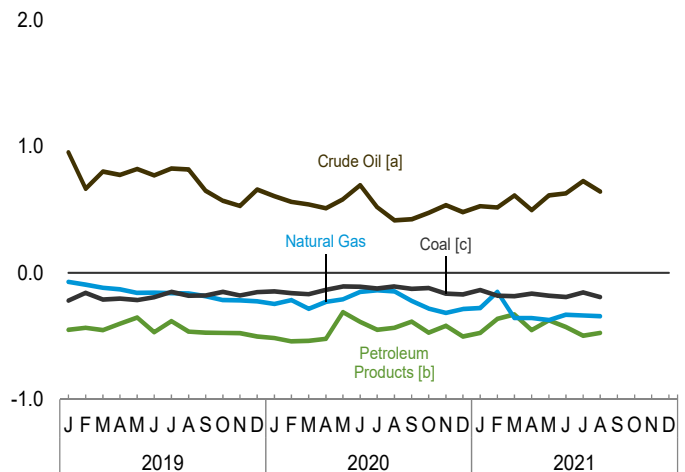
By Major Source, 1949–2020



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	NA	.134	17.684
2000 Total	-1.215	.065	3.623	19.676	2.638	22.314	NA	.115	24.904
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	-2.220	-.029	-.073	15.173	-5.407	9.766	-.124	.192	7.512
2018 Total	-2.702	-.026	-.679	12.915	-5.849	7.066	-.201	.152	3.610
2019 January	-.217	-.003	-.070	.952	-.450	.503	-.013	.011	.212
February	-.159	-.001	-.094	.666	-.434	.232	-.014	.011	-.024
March	-.210	-.001	-.118	.801	-.453	.349	-.016	.008	.013
April	-.201	-.001	-.130	.774	-.402	.373	-.017	.008	.032
May	-.212	-.002	-.159	.821	-.352	.468	-.013	.010	.092
June	-.191	-.002	-.157	.770	-.469	.301	-.014	.012	-.051
July	-.149	-.002	-.161	.825	-.381	.444	-.014	.013	.132
August	-.180	-.001	-.163	.817	-.465	.353	-.017	.014	.006
September	-.177	-.002	-.185	.649	-.473	.176	-.012	.012	-.188
October	-.147	-.002	-.214	.569	-.474	.095	-.011	.007	-.272
November	-.177	-.002	-.217	.530	-.476	.055	-.012	.012	-.340
December	-.149	-.003	-.224	.658	-.502	.156	-.016	.014	-.222
Total	-2.167	-.021	-1.889	8.833	-5.331	3.502	-.168	.133	-6.610
2020 January	-.145	-.001	-.246	.606	-.514	.092	-.014	.011	-.304
February	-.158	-.002	-.214	.561	-.541	.020	-.017	.010	-.362
March	-.167	-.001	-.283	.542	-.538	.005	-.020	.013	-.454
April	-.131	-.001	-.230	.511	-.520	-.009	-.012	.011	-.373
May	-.107	(s)	-.208	.582	-.311	.271	-.011	.012	-.043
June	-.110	(s)	-.149	.693	-.388	.304	-.013	.013	.045
July	-.123	(s)	-.137	.519	-.450	.069	-.011	.019	-.183
August	-.107	-.001	-.146	.415	-.433	-.018	-.013	.020	-.264
September	-.124	-.001	-.220	.423	-.386	.037	-.013	.013	-.308
October	-.118	-.001	-.282	.475	-.472	.003	-.013	.013	-.397
November	-.163	-.002	-.316	.536	-.417	.119	-.011	.012	-.361
December	-.169	-.001	-.285	.480	-.502	-.021	-.013	.015	-.475
Total	-1.621	-.013	-2.716	6.345	-5.473	.872	-.159	.161	-3.476
2021 January	-.132	-.003	-.277	.527	-.475	.052	-.018	.014	-.365
February	-.179	-.003	-.149	.517	-.362	.155	-.013	.010	-.178
March	-.185	(s)	-.356	.613	-.329	.284	-.017	.013	-.261
April	-.160	-.004	-.356	.497	-.452	.045	-.013	.011	-.477
May	-.177	-.004	-.373	.612	-.374	.238	-.011	.013	-.314
June	-.185	-.006	-.331	.628	-.427	.201	-.012	.015	-.318
July	-.151	-.003	-.337	.725	-.497	.228	R-.009	.017	R-.255
August	-.185	-.005	-.342	.643	-.474	.169	-.013	.017	-.359
8-Month Total	-1.353	-.028	-2.522	4.761	-3.390	1.371	-.105	.110	-2.526
2020 8-Month Total	-1.048	-.007	-1.613	4.430	-3.696	.734	-.110	.109	-1.936
2019 8-Month Total	-1.518	-.012	-1.051	6.426	-3.405	3.021	-.118	.088	.411

^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 1993, includes fuel ethanol (minus denaturant) imports. Beginning in 2001, also includes biodiesel imports and exports. Beginning in 2010, also includes fuel ethanol (minus denaturant) exports. Beginning in 2011, also includes renewable diesel fuel imports. Beginning in 2021, also includes other

biofuels imports.

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.

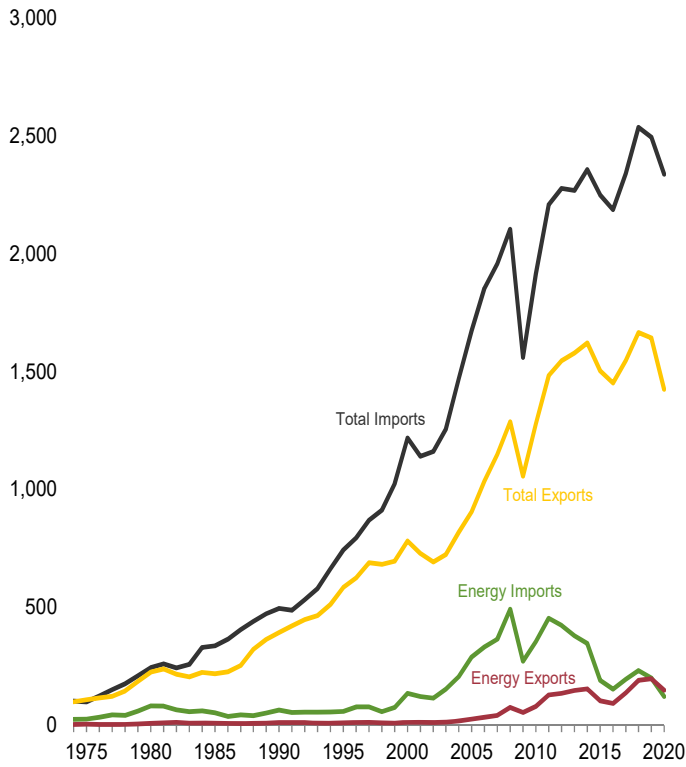
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: Tables 1.4a and 1.4b.

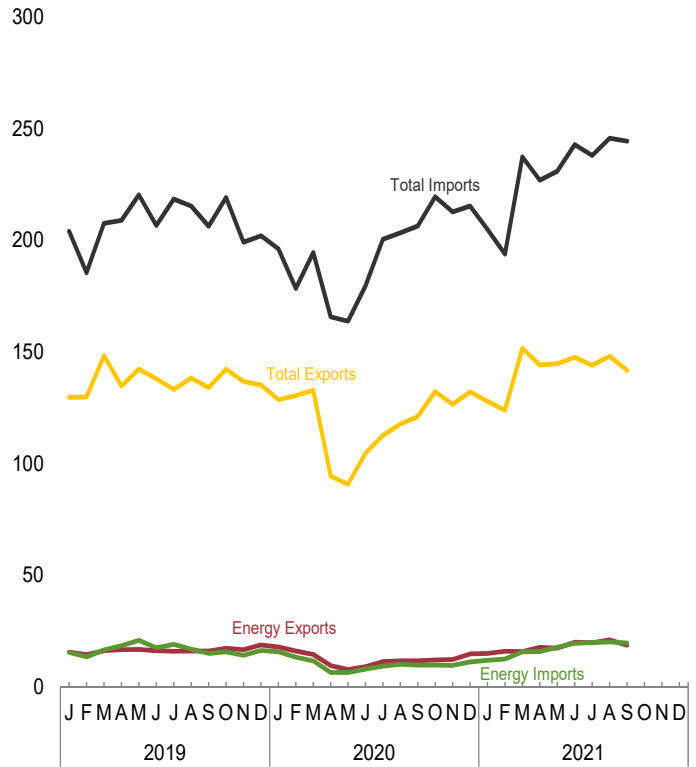
Figure 1.5 Merchandise Trade Value

(Billion Dollars[a])

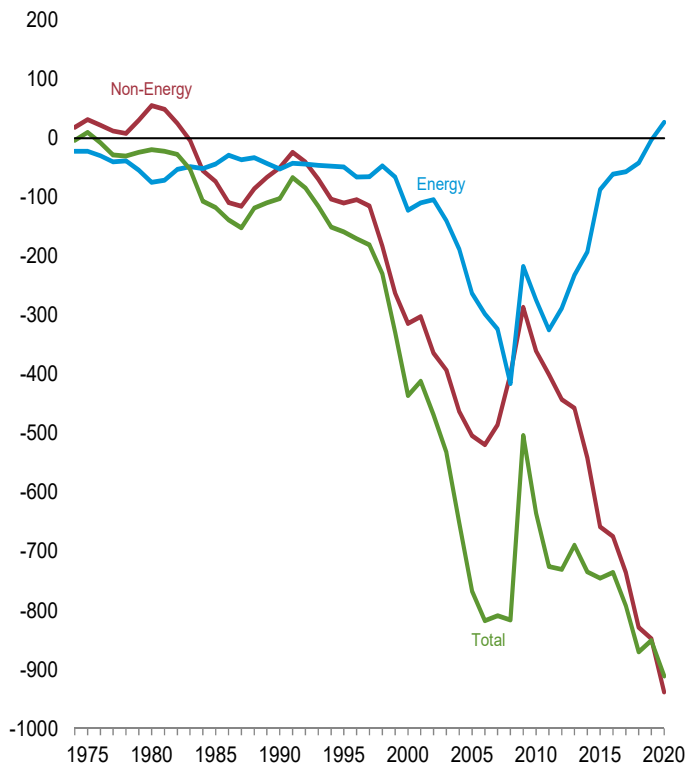
Imports and Exports, 1974–2020



Imports and Exports, Monthly



Trade Balance, 1974–2020



Trade Balance, Monthly

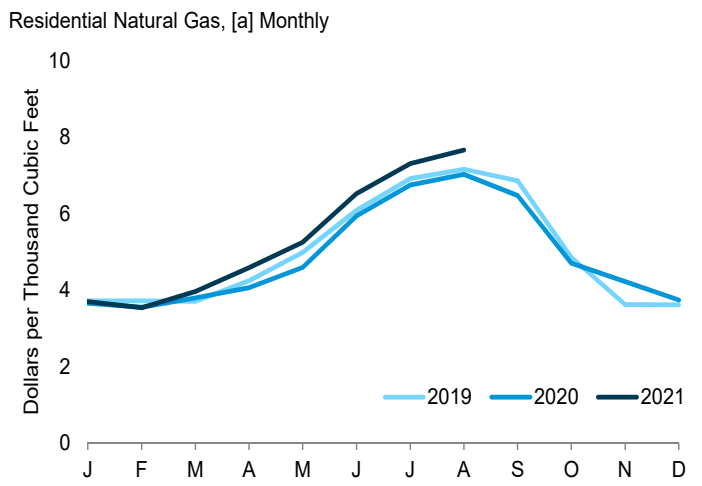
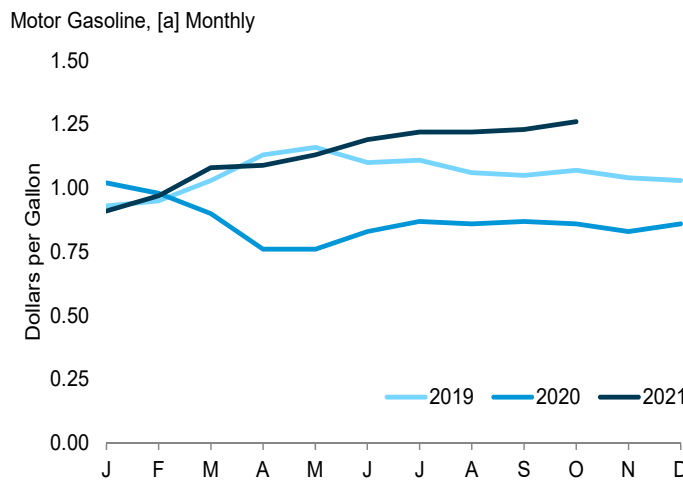
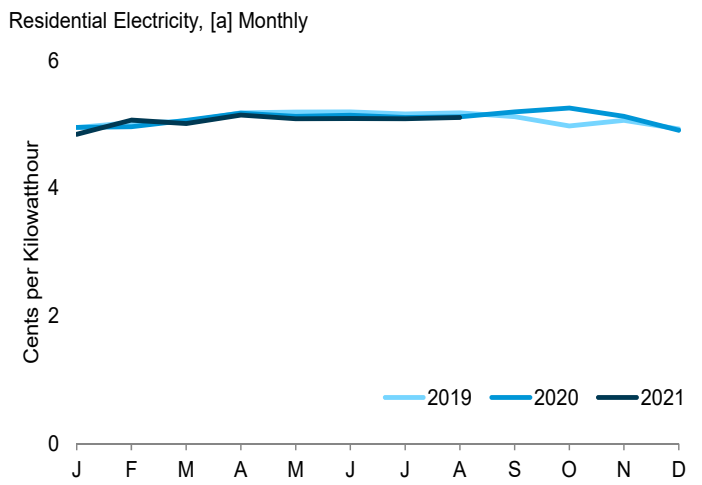
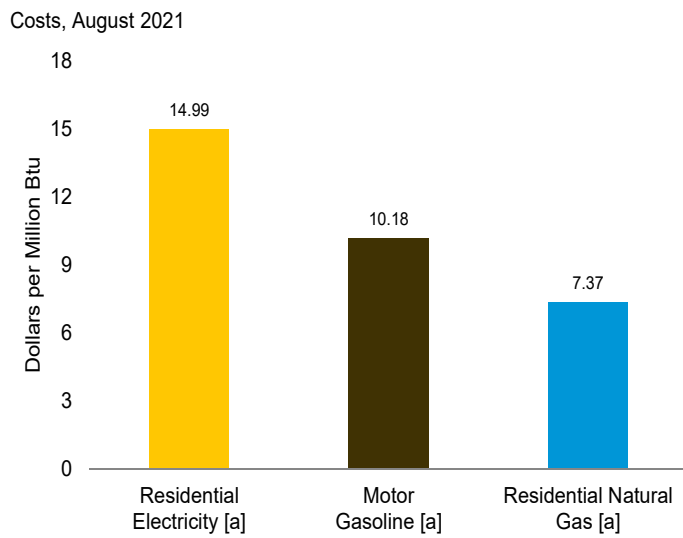
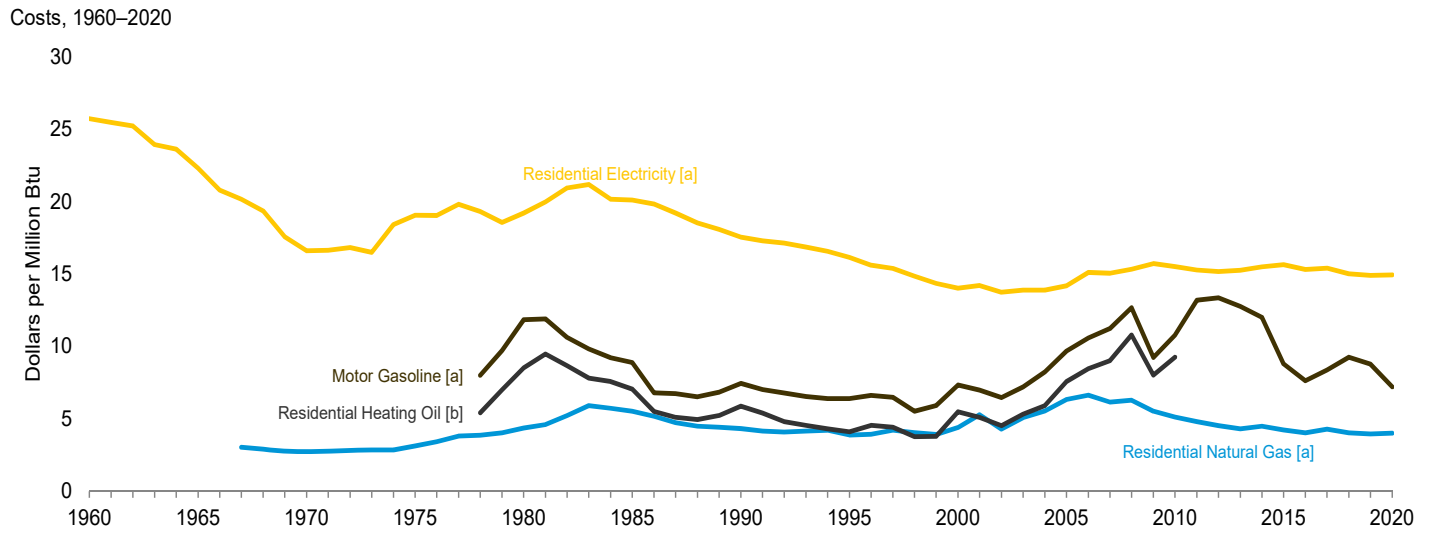


[a] Prices are not adjusted for inflation. See “Nominal Dollars” in Glossary.

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



[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 Kilowatthour	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
1981 Average	90.9	1.488	11.90	1.314	9.47	4.72	4.60	6.8	19.99
1986 Average	109.6	0.849	6.79	0.763	5.50	5.32	5.17	6.77	19.84
1991 Average	136.2	0.878	7.02	0.748	5.39	4.27	4.14	5.90	17.30
1996 Average	156.9	0.821	6.62	0.630	4.54	4.04	3.94	5.33	15.62
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	207.3	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 Average	245.120	1.007	8.37	NA	NA	4.45	4.29	5.26	15.41
2018 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	3.72	3.58	4.95	14.52
February	252.776	0.954	7.93	NA	NA	3.72	3.58	5.03	14.75
March	254.202	1.031	8.57	NA	NA	3.71	3.56	5.05	14.80
April	255.548	1.132	9.41	NA	NA	4.25	4.08	5.18	15.20
May	256.092	1.157	9.62	NA	NA	4.98	4.79	5.20	15.23
June	256.143	1.099	9.13	NA	NA	6.09	5.86	5.20	15.24
July	256.571	1.105	9.19	NA	NA	6.91	6.65	5.17	15.15
August	256.558	1.059	8.80	NA	NA	7.16	6.88	5.18	15.19
September	256.759	1.049	8.72	NA	NA	6.86	6.59	5.13	15.02
October	257.346	1.065	8.85	NA	NA	4.86	4.67	4.98	14.59
November	257.208	1.045	8.68	NA	NA	3.63	3.49	5.07	14.85
December	256.974	1.032	8.58	NA	NA	3.62	3.48	4.93	14.46
Average	255.657	1.055	8.77	NA	NA	4.11	3.95	5.09	14.91
2020 January	257.971	1.020	8.48	NA	NA	3.66	3.52	4.96	14.53
February	258.678	0.978	8.13	NA	NA	3.55	3.42	4.97	14.56
March	258.115	0.904	7.52	NA	NA	3.80	3.65	5.07	14.85
April	256.389	0.759	6.31	NA	NA	4.06	3.91	5.18	15.18
May	256.394	0.759	6.31	NA	NA	4.60	4.43	5.13	15.03
June	257.797	0.830	6.90	NA	NA	5.95	5.72	5.15	15.09
July	259.101	0.866	7.20	NA	NA	6.75	6.50	5.11	14.99
August	259.918	0.864	7.18	NA	NA	7.03	6.77	5.12	15.01
September	260.280	0.868	7.22	NA	NA	6.47	6.23	5.20	15.25
October	260.388	0.856	7.11	NA	NA	4.71	4.53	5.26	15.42
November	260.229	0.830	6.90	NA	NA	4.22	4.06	5.13	15.04
December	260.474	0.858	7.13	NA	NA	3.74	3.60	4.91	14.40
Average	258.811	0.866	7.20	NA	NA	4.17	4.01	5.10	14.95
2021 January	261.582	0.914	7.60	NA	NA	3.70	3.56	4.85	14.22
February	263.014	0.973	8.09	NA	NA	3.54	3.41	5.07	14.87
March	264.877	1.078	8.96	NA	NA	3.97	3.82	5.02	14.71
April	267.054	1.089	9.05	NA	NA	4.59	4.41	5.15	15.10
May	269.195	1.130	9.39	NA	NA	5.25	5.05	5.09	14.93
June	271.696	1.194	9.93	NA	NA	6.53	6.28	5.10	14.94
July	273.003	1.218	10.13	NA	NA	7.30	7.03	5.09	14.92
August	273.567	1.225	10.18	NA	NA	^R 7.66	^R 7.37	^R 5.11	^R 14.99
September	274.310	1.225	10.19	NA	NA	NA	NA	NA	NA
October	276.589	1.257	10.45	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.

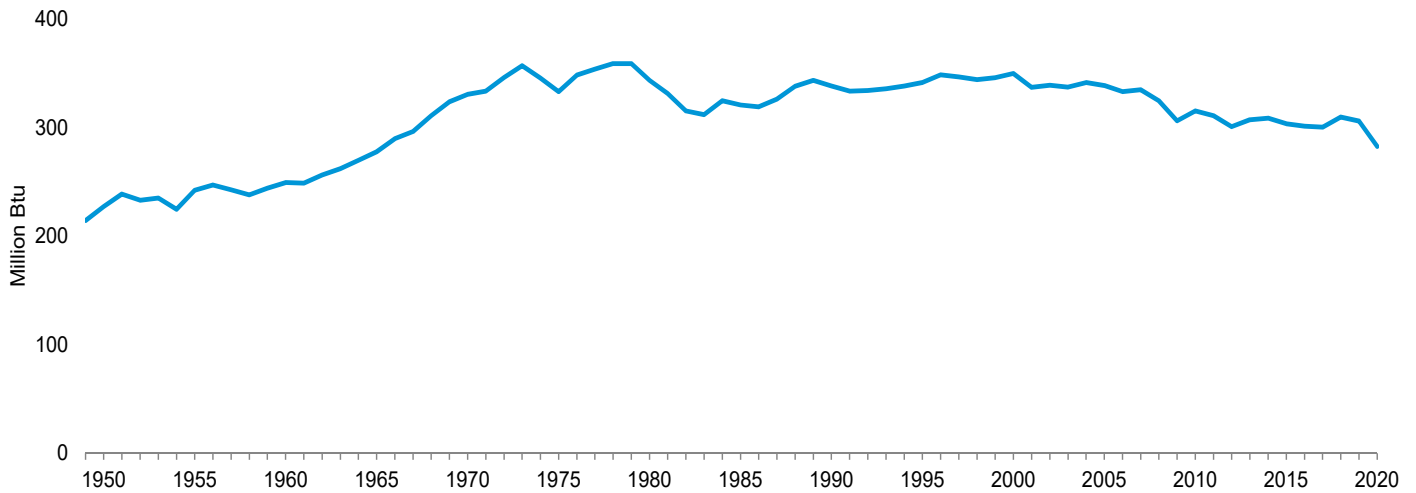
Notes: • See "Real Dollars" in Glossary. • Fuel costs are calculated by using the Urban Consumer Price Index (CPI) developed by the Bureau of Labor Statistics. • Annual averages may not equal average of months due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

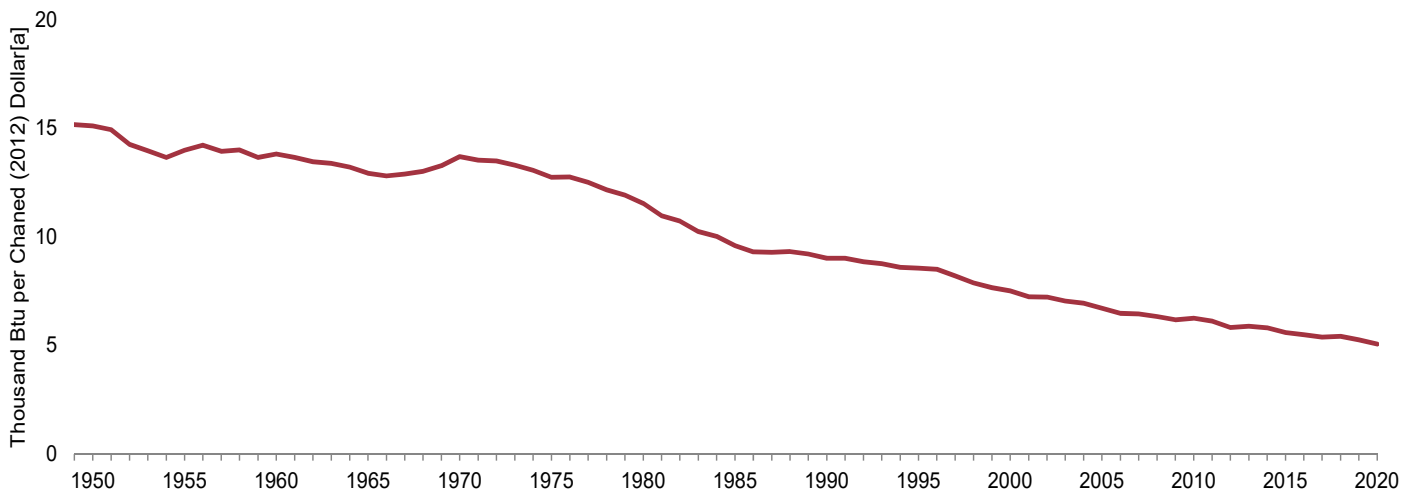
Sources: • **Fuel Prices:** Tables 9.4 (All Grades), 9.8, and 9.10, adjusted by the CPI; and *Monthly Energy Review*, September 2012, Table 9.8c. • **Consumer Price Index, All Urban Consumers:** U.S. Department of Labor, Bureau of Labor Statistics, series ID CUUR0000SA0. • **Conversion Factors:** Tables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

Figure 1.7 Primary Energy Consumption and Energy Expenditures Indicators

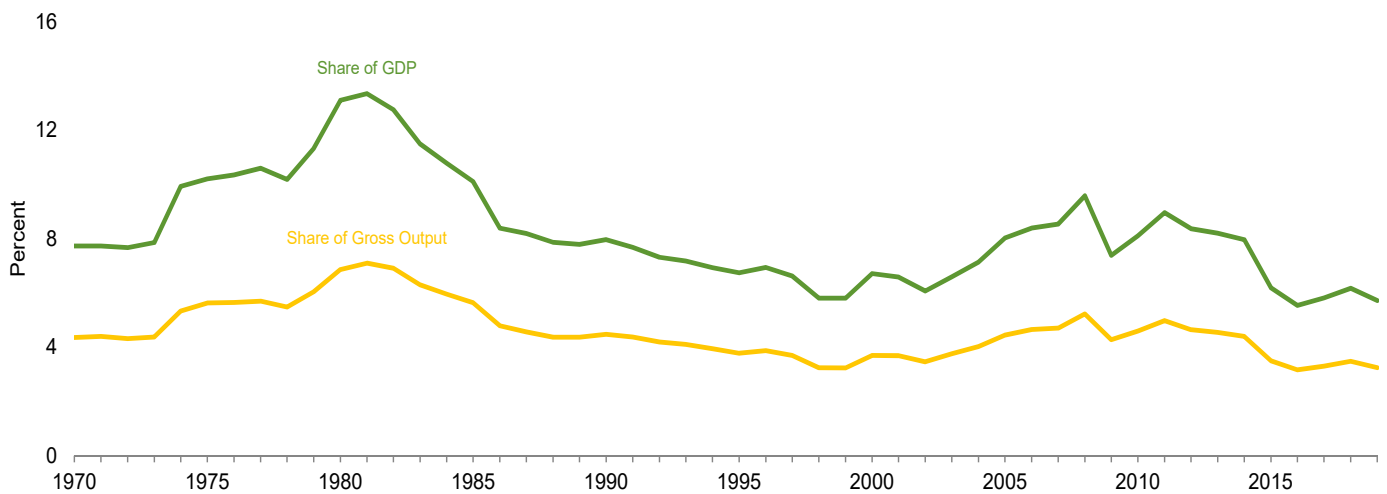
Energy Consumption per Capita, 1949–2020



Primary Energy Consumption per Real Dollar [a] of Gross Domestic Product, 1949–2020



Energy Expenditures as Share of Gross Domestic Product and Gross Output,[b] 1970–2019



[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.

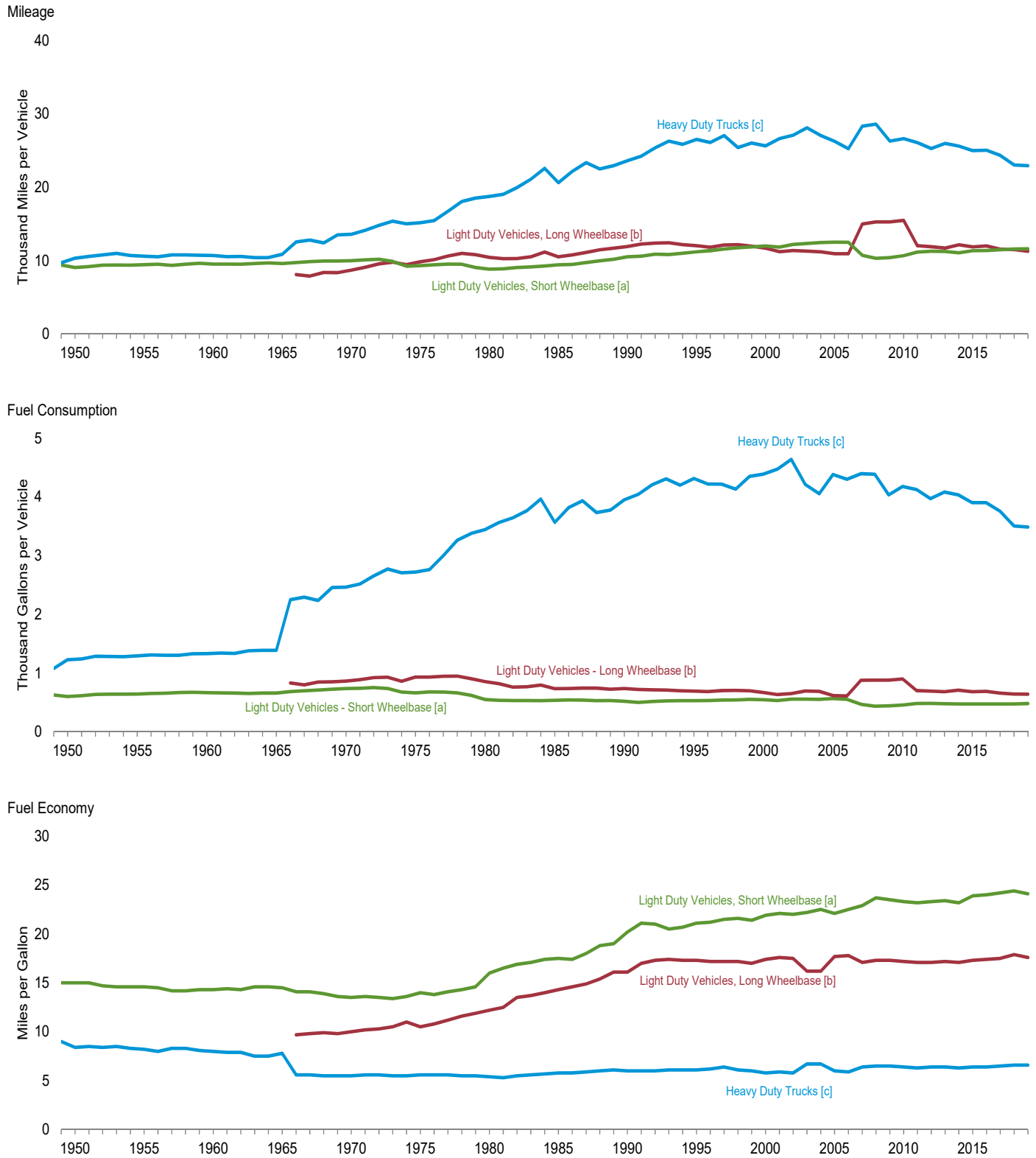
Table 1.7 Primary Energy Consumption, Energy Expenditures, and Carbon Dioxide Emissions Indicators

	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	4,428	20.5	784
1980	78.021	343	11.54	374,350	1,647	13.1	6.9	4,756	20.9	704
1981	76.057	331	10.97	427,901	1,865	13.3	7.1	4,637	20.2	669
1982	73.046	315	10.73	426,482	1,841	12.8	6.9	4,404	19.0	647
1983	72.915	312	10.24	417,622	1,786	11.5	6.3	4,384	18.8	616
1984	76.571	325	10.03	435,313	1,846	10.8	6.0	4,613	19.6	604
1985	76.334	321	9.60	438,343	1,842	10.1	5.6	4,605	19.4	579
1986	76.599	319	9.31	384,091	1,599	8.4	4.8	4,616	19.2	561
1987	79.008	326	9.28	397,627	1,641	8.2	4.6	4,776	19.7	561
1988	82.659	338	9.32	411,568	1,683	7.9	4.4	4,998	20.4	564
1989	84.740	343	9.22	439,051	1,779	7.8	4.4	5,085	20.6	553
1990	84.433	338	9.02	474,652	1,901	8.0	4.5	5,038	20.2	538
1991	84.380	334	9.02	472,440	1,867	7.7	4.4	4,993	19.7	534
1992	85.725	334	8.85	476,845	1,859	7.3	4.2	5,094	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	5,263	20.0	508
1995	90.931	341	8.55	514,624	1,933	6.7	3.8	5,324	20.0	501
1996	93.935	349	8.52	560,293	2,080	6.9	3.9	5,518	20.5	500
1997	94.507	347	8.20	567,962	2,083	6.6	3.7	5,589	20.5	485
1998	94.920	344	7.88	526,283	1,908	5.8	3.2	5,637	20.4	468
1999	96.545	346	7.66	558,627	2,002	5.8	3.2	5,700	20.4	452
2000	98.702	350	7.52	687,711	2,437	6.7	3.7	5,889	20.9	448
2001	96.064	337	7.24	696,242	2,443	6.6	3.7	5,778	20.3	436
2002	97.535	339	7.23	663,964	2,308	6.1	3.5	5,820	20.2	431
2003	97.835	337	7.05	755,070	2,603	6.6	3.7	5,886	20.3	424
2004	100.002	342	6.94	871,210	2,975	7.1	4.0	5,994	20.5	416
2005	100.102	339	6.71	1,045,730	3,539	8.0	4.4	6,007	20.3	403
2006	99.392	333	6.48	1,158,821	3,884	8.4	4.6	5,929	19.9	387
2007	100.893	335	6.46	1,233,869	4,096	8.5	4.7	6,016	20.0	385
2008	98.754	325	6.33	1,408,759	4,633	9.6	5.2	5,823	19.1	373
2009	93.942	306	6.18	1,066,293	3,476	7.4	4.3	5,404	17.6	355
2010	97.513	315	6.25	1,214,085	3,925	8.1	4.6	5,594	18.1	359
2011	96.870	311	6.12	1,392,316	4,469	9.0	5.0	5,455	17.5	344
2012	94.383	301	5.83	1,354,981	4,317	8.4	4.6	5,236	16.7	323
2013	97.125	307	5.89	1,376,234	4,354	8.2	4.5	5,359	17.0	325
2014	98.288	309	5.81	1,395,254	4,382	8.0	4.4	5,414	17.0	320
2015	97.392	304	5.59	1,128,234	3,518	6.2	3.5	5,262	16.4	302
2016	97.363	301	5.49	1,038,672	3,215	5.5	3.2	5,169	16.0	292
2017	97.634	300	5.38	1,136,211	3,495	5.8	3.3	5,131	15.8	283
2018	101.203	310	5.42	1,271,633	3,891	6.2	3.5	5,277	16.1	282
2019	100.434	306	5.26	1,223,852	3,728	5.7	3.2	5,144	15.7	269
2020	93.134	283	5.06	NA	NA	NA	NA	4,575	13.9	248

^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 2018" (June 2020), 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, 1949-2019



[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
2018	11,576	475	24.4	11,486	643	17.9	23,037	3,507	6.6	11,843	651	18.2
2019	11,599	481	24.1	11,263	640	17.6	22,930	3,488	6.6	11,797	651	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
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 Total	450	661	709	911	2,254	1,585	2,718	1,548	1,053	1,428
2018 Total	667	885	972	1,134	2,418	1,928	2,856	1,573	1,002	1,585
2019										
January	0	0	0	0	29	5	12	0	8	9
February	0	0	0	0	67	14	24	0	6	18
March	0	0	0	0	56	10	36	10	8	18
April	0	0	1	6	101	31	91	50	26	42
May	3	31	47	42	293	220	291	56	24	129
June	63	112	127	175	360	300	439	230	116	226
July	275	325	320	320	480	429	549	392	210	372
August	166	218	195	224	441	408	625	382	246	335
September	28	88	135	182	374	382	523	205	132	242
October	0	8	7	2	203	80	139	48	41	75
November	0	0	0	0	53	1	16	11	16	16
December	0	0	0	0	51	6	13	0	10	14
Total	535	783	831	951	2,508	1,886	2,758	1,383	843	1,495
2020										
January	0	0	0	0	R 47	13	R 30	0	9	15
February	0	0	0	0	46	4	R 13	2	8	12
March	0	0	2	6	R 102	56	132	8	8	42
April	0	0	0	1	108	21	105	43	19	42
May	3	11	32	37	R 165	107	279	R 158	65	105
June	R 99	R 146	186	R 256	R 341	R 297	R 458	262	111	246
July	292	363	R 335	343	R 500	R 463	R 602	R 412	R 212	R 397
August	R 215	261	R 218	R 246	R 453	R 388	R 577	R 437	292	355
September	35	R 59	54	72	R 271	211	R 325	226	R 210	R 179
October	0	4	2	3	R 183	R 67	R 132	102	R 97	R 81
November	0	0	0	0	R 92	13	70	15	16	R 31
December	0	0	0	0	21	1	8	0	10	7
Total	R 644	R 845	R 829	R 964	R 2,330	R 1,642	R 2,731	R 1,665	R 1,057	R 1,513
2021										
January	0	0	0	0	30	6	R 15	0	10	10
February	0	0	0	0	49	1	4	3	7	12
March	0	0	2	8	71	34	71	7	8	28
April	0	0	0	3	80	19	R 85	R 58	24	36
May	8	R 18	35	43	188	R 111	R 229	125	R 53	R 101
June	R 136	167	215	265	R 347	307	457	R 346	R 176	R 274
July	159	R 253	238	R 302	R 437	R 400	R 515	R 413	R 296	R 347
August	240	289	286	298	456	413	556	329	251	358
8-Month Total	542	727	776	920	1,657	1,290	1,933	1,281	824	1,165
2020 8-Month Total	610	782	772	890	1,763	1,351	2,195	1,322	724	1,214
2019 8-Month Total	507	687	690	766	1,827	1,418	2,067	1,120	644	1,149

^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 Barrels per Day							
Thousand Short Tons	Billion Cubic Feet									
1973 Total	3,523	898	522	684	162	356	45	88	88	1,945
1975 Total	3,105	761	419	654	137	320	43	75	122	1,770
1980 Total	2,612	759	396	890	159	692	41	100	143	2,422
1985 Total	1,536	642	425	982	145	395	46	83	95	2,173
1990 Total	758	675	483	1,071	164	546	57	56	85	2,462
1995 Total	921	868	486	1,357	156	590	58	37	70	2,754
1996 Total	884	896	484	1,413	151	592	60	39	70	2,809
1997 Total	842	909	505	1,447	160	686	58	38	72	2,966
1998 Total	656	938	521	1,441	168	690	84	56	83	3,043
1999 Total	654	906	547	1,578	169	651	92	76	77	3,190
2000 Total	937	836	512	1,474	151	628	100	53	85	3,003
2005 Total	929	761	546	1,369	141	729	106	33	75	2,997
2006 Total	562	573	521	1,424	137	726	111	37	86	3,041
2007 Total	556	587	494	1,444	142	664	108	41	82	2,974
2008 Total	541	597	417	1,279	131	574	103	44	85	2,634
2009 Total	375	513	360	1,401	118	507	95	24	85	2,591
2010 Total	719	654	362	1,597	131	539	42	14	89	2,773
2011 Total	730	680	355	1,639	125	520	40	12	91	2,781
2012 Total	707	706	340	1,747	114	444	43	8	88	2,785
2013 Total	732	721	323	1,870	121	448	40	52	93	2,948
2014 Total	562	725	327	1,780	126	410	20	55	97	2,817
2015 Total	520	703	343	1,918	138	378	21	52	99	2,948
2016 Total	435	727	351	1,943	130	371	20	49	100	2,965
2017 Total	463	746	351	2,023	121	394	19	52	103	3,062
2018 Total	531	1,118	327	2,309	117	393	22	48	103	3,320
2019 January	44	107	195	2,490	114	354	19	39	104	3,315
February	40	97	201	2,454	105	344	6	48	94	3,252
March	45	101	232	2,200	97	323	20	42	93	3,008
April	42	90	318	2,241	156	357	17	55	91	3,235
May	47	89	369	2,206	107	345	22	48	89	3,187
June	46	83	413	2,271	104	355	29	51	90	3,314
July	43	84	510	2,436	129	348	28	63	98	3,613
August	43	87	507	2,365	115	386	23	51	97	3,543
September	43	84	480	2,488	96	365	18	51	91	3,589
October	43	90	438	2,448	130	285	18	53	90	3,462
November	40	98	310	2,427	105	338	26	49	92	3,347
December	44	104	198	2,431	94	387	26	47	97	3,281
Total	520	1,114	348	2,371	113	349	21	50	94	3,346
2020 January	42	101	190	2,405	126	381	17	46	101	3,266
February	42	94	190	2,335	109	307	18	53	98	3,110
March	41	92	209	2,488	80	339	17	48	95	3,275
April	35	81	300	2,110	85	327	12	56	87	2,976
May	31	79	364	2,408	83	312	15	37	81	3,299
June	35	76	508	2,456	102	305	14	47	83	3,515
July	30	80	488	2,595	112	320	17	42	93	3,667
August	31	82	480	2,489	95	333	25	41	82	3,545
September	31	83	421	2,435	105	316	22	40	84	3,423
October	33	89	402	2,574	111	322	16	52	84	3,561
November	34	91	321	2,829	104	325	22	41	83	3,725
December	35	101	234	2,767	114	359	17	39	86	3,616
Total	418	1,051	343	2,492	102	329	18	45	88	3,417
2021 January	43	102	239	2,764	110	321	17	44	88	3,582
February	39	87	201	1,747	113	260	9	29	75	2,434
March	44	91	268	2,342	96	301	15	38	84	3,143
April	43	88	351	2,445	112	345	16	51	90	3,409
May	44	84	383	2,851	106	375	22	51	91	3,878
June	43	81	504	2,887	98	367	25	39	95	4,015
July	41	84	476	2,659	110	357	14	42	97	3,755
August	36	85	491	2,859	95	352	24	39	93	3,954
8-Month Total	333	703	366	2,579	105	335	18	42	89	3,533
2020 8-Month Total	285	686	342	2,412	99	328	17	46	90	3,334
2019 8-Month Total	351	739	345	2,332	116	352	21	50	95	3,310

^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	Total	Percent of Total Energy Consumption
			Asphalt and Road Oil	Hydrocarbon Gas Liquids ^a	Lubricants	Petrochemical Feedstocks ^b	Petroleum Coke	Special Naphthas	Other ^c			
1973 Total	0.113	0.916	1.264	0.872	0.359	0.726	0.093	0.169	0.185	3.668	4.696	6.2
1975 Total	.099	.777	1.014	.822	.304	.652	.090	.144	.256	3.283	4.159	5.8
1980 Total	.084	.777	.962	1.128	.354	1.426	.086	.193	.303	4.451	5.312	6.8
1985 Total	.049	.662	1.029	1.194	.322	.817	.096	.159	.201	3.818	4.529	5.9
1990 Total	.024	.695	1.170	1.345	.362	1.123	.119	.107	.179	4.406	5.125	6.1
1995 Total	.029	.892	1.178	1.716	.346	1.214	.120	.071	.145	4.790	5.711	6.3
1996 Total	.028	.921	1.176	1.779	.335	1.209	.126	.075	.146	4.846	5.795	6.2
1997 Total	.027	.933	1.224	1.821	.354	1.400	.121	.072	.150	5.142	6.102	6.5
1998 Total	.021	.969	1.263	1.819	.371	1.403	.176	.107	.174	5.312	6.302	6.6
1999 Total	.021	.932	1.324	1.989	.375	1.329	.192	.145	.161	5.516	6.469	6.7
2000 Total	.030	.856	1.240	1.831	.334	1.272	.209	.102	.178	5.167	6.054	6.2
2005 Total	.030	.782	1.323	1.701	.312	1.474	.221	.063	.157	5.250	6.062	6.1
2006 Total	.018	.589	1.261	1.754	.303	1.477	.232	.070	.180	5.278	5.885	5.9
2007 Total	.018	.603	1.197	1.768	.313	1.351	.225	.078	.173	5.106	5.726	5.7
2008 Total	.017	.613	1.012	1.564	.291	1.172	.216	.085	.180	4.520	5.150	5.2
2009 Total	.012	.526	.873	1.676	.262	1.031	.199	.046	.179	4.265	4.804	5.1
2010 Total	.023	.669	.878	1.931	.291	1.096	.087	.026	.188	4.496	5.187	5.3
2011 Total	.023	.695	.859	1.947	.276	1.057	.083	.023	.193	4.437	5.156	5.3
2012 Total	.023	.724	.827	2.109	.254	.901	.090	.015	.187	4.382	5.128	5.4
2013 Total	.023	.741	.783	2.269	.268	.901	.083	.100	.197	4.601	5.366	5.5
2014 Total	.018	.749	.793	2.125	.280	.827	.043	.106	.205	4.379	5.146	5.2
2015 Total	.017	.730	.832	2.316	.305	.760	.043	.099	.208	4.563	5.310	5.5
2016 Total	.014	.755	.853	2.330	.289	.754	.043	.094	.212	4.574	5.344	5.5
2017 Total	.015	.774	.849	2.393	.267	.797	.040	.100	.217	4.663	5.452	5.6
2018 Total	.017	1.160	.793	2.709	.259	.794	.046	.092	.218	4.911	6.088	6.0
2019 January	.001	.112	.040	.248	.021	.061	.003	.006	.019	.399	.512	5.4
February	.001	.100	.037	.219	.018	.053	.001	.007	.015	.350	.452	5.4
March	.001	.105	.048	.215	.018	.055	.004	.007	.017	.363	.469	5.4
April	.001	.094	.063	.211	.028	.059	.003	.009	.016	.389	.485	6.3
May	.002	.093	.076	.218	.020	.059	.004	.008	.016	.401	.495	6.2
June	.001	.086	.082	.222	.019	.059	.005	.008	.016	.411	.498	6.3
July	.001	.087	.105	.247	.024	.060	.005	.010	.018	.469	.558	6.5
August	.001	.091	.104	.240	.022	.066	.004	.008	.017	.462	.554	6.5
September	.001	.087	.096	.244	.018	.060	.003	.008	.016	.445	.533	6.8
October	.001	.094	.090	.249	.025	.049	.003	.009	.016	.440	.535	6.7
November	.001	.102	.062	.233	.019	.056	.004	.008	.016	.398	.501	6.0
December	.001	.108	.041	.240	.018	.066	.005	.008	.017	.394	.504	5.6
Total	.017	1.159	.844	2.786	.250	.704	.044	.096	.198	4.922	6.097	6.1
2020 January	.001	.105	.039	.233	.024	.066	.003	.008	.018	.390	.496	5.5
February	.001	.098	.037	.208	.019	.050	.003	.008	.016	.341	.440	5.3
March	.001	.096	.043	.244	.015	.058	.003	.008	.017	.389	.486	6.2
April	.001	.085	.060	.194	.015	.055	.002	.009	.015	.350	.436	6.7
May	.001	.082	.075	.235	.016	.054	.003	.006	.014	.403	.486	7.1
June	.001	.079	.101	.232	.019	.051	.002	.007	.014	.426	.506	6.9
July	.001	.083	.100	.252	.021	.055	.003	.007	.017	.455	.539	6.6
August	.001	.086	.099	.247	.018	.057	.004	.007	.015	.447	.533	6.6
September	.001	.086	.084	.238	.019	.053	.004	.006	.015	.419	.506	6.9
October	.001	.092	.083	.258	.021	.055	.003	.008	.015	.444	.537	7.2
November	.001	.095	.064	.271	.019	.054	.004	.006	.014	.433	.529	7.0
December	.001	.105	.048	.275	.021	.062	.003	.006	.015	.431	.538	6.2
Total	.013	1.092	.832	2.888	.227	.669	.037	.087	.187	4.927	6.031	6.5
2021 January	.001	.106	.049	.275	.021	.055	.003	.007	.016	.426	.533	6.0
February	.001	.091	.037	.155	.019	.041	.001	.004	.012	.271	.363	4.5
March	.001	.095	.055	.234	.018	.052	.003	.006	.015	.383	.479	5.9
April	.001	.091	.070	.231	.020	.057	.003	.008	.016	.404	.497	6.7
May	.001	.088	.079	.283	.020	.065	.004	.008	.016	.475	.564	7.3
June	.001	.084	.100	.281	.018	.061	.004	.006	.017	.487	.572	7.1
July	.001	.087	.098	.263	.021	.061	.002	.007	.017	.470	.558	6.7
August	.001	.088	.101	.288	.018	.061	.004	.006	.017	.495	.585	6.9
8-Month Total	.011	.730	.590	2.010	.155	.453	.025	.053	.125	3.411	4.152	6.4
2020 8-Month Total	.009	.713	.554	1.845	.146	.445	.023	.059	.127	3.200	3.922	6.3
2019 8-Month Total	.011	.768	.556	1.820	.171	.472	.029	.063	.133	3.244	4.023	6.0

^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.

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 first subtracting data for petroleum coke consumed at refineries (from EIA, Form EIA-820, "Annual Refinery Report") from industrial sector petroleum coke consumption (from MER Table 3.7b), and then multiplying that amount by the nonfuel share of non-refinery petroleum coke consumption (from MECS). Non-combustion ratios prior to 1994 are assumed to

be equal to the 1994 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 renewable diesel fuel and other biofuels refinery and blender net inputs, calculated using “other renewable diesel fuel” and “other renewable fuels” 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 heat content factors for renewable diesel fuel and other biofuels in Table A1).

2012–2020: 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 10.4a; minus renewable diesel fuel and other biofuels refinery and blender net inputs, calculated using “other renewable diesel fuel” and “other renewable fuels” 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 heat content factors for renewable diesel fuel and other biofuels in Table A1).

2021 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, renewable diesel fuel, and other biofuels refinery and blender net inputs and products supplied calculated using “renewable fuels except fuel ethanol” refinery and blender net inputs and products supplied from U.S. Energy Information Administration (EIA),

Petroleum Supply Monthly (data are converted to Btu by multiplying by the appropriate heat content factors in Table A1).

Coal Coke Net Imports
1949 forward: Table 1.4c.

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: Table 1.4c.

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).

2009–2011: Biomass-based diesel fuel 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 (the data are converted to Btu by multiplying by the biodiesel 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 biomass-based diesel fuel imports.

2012–2020: 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 biodiesel imports (see “Biomass—Biodiesel”) minus renewable diesel fuel imports (see “Biomass—Renewable Diesel Fuel”).

2021 forward: 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 biodiesel imports (see “Biomass—Biodiesel”) minus renewable diesel fuel imports (see “Biomass—Renewable Diesel Fuel”) minus other biofuels imports (see “Biomass—Other Biofuels”).

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 10.4a, and are converted to Btu by multiplying by the biodiesel heat content factor in Table A1.

Biomass—Renewable Diesel Fuel

2012 forward: Renewable diesel fuel imports data are from Table 10.4b, and are converted to Btu by multiplying by the renewable diesel fuel heat content factor in Table A1.

Biomass—Other Biofuels

2021 forward: Other biofuels imports data are from Table 10.4c, and are converted to Btu by multiplying by the other biofuels heat content factor in Table A1.

Total Biomass

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

2001–2011: Total biomass imports are equal to fuel ethanol (minus denaturant) imports plus biodiesel imports.

2012–2020: Total biomass imports are the sum of imports values for fuel ethanol (minus denaturant), biodiesel, and renewable diesel fuel.

2021 forward: Total biomass imports are the sum of imports values for fuel ethanol (minus denaturant), biodiesel, renewable diesel fuel, and other biofuels.

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 10.4a, 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.

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.

1993–2017: “U.S. International Trade in Goods and Services,” Annual Revisions.

2018–2020: “U.S. International Trade in Goods and Services,” 2020 Annual Revisions.

2021: “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.

1994–2017: “U.S. International Trade in Goods and Services,” Annual Revisions.

2018–2020: “U.S. International Trade in Goods and Services,” 2020 Annual Revisions.

2021: “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.

1993–2017: “U.S. International Trade in Goods and Services,” Annual Revisions.

2018–2020: “U.S. International Trade in Goods and Services,” 2020 Annual Revisions.

2021: “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.

1992–2017: “U.S. International Trade in Goods and Services,” Annual Revisions.

2018–2020: “U.S. International Trade in Goods and Services,” 2020 Annual Revisions.

2021: “U.S. International Trade in Goods and Services,” FT-900, monthly. 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.

1992–2017: “U.S. International Trade in Goods and Services,” Annual Revisions.

2018–2020: “U.S. International Trade in Goods and Services,” 2020 Annual Revisions.

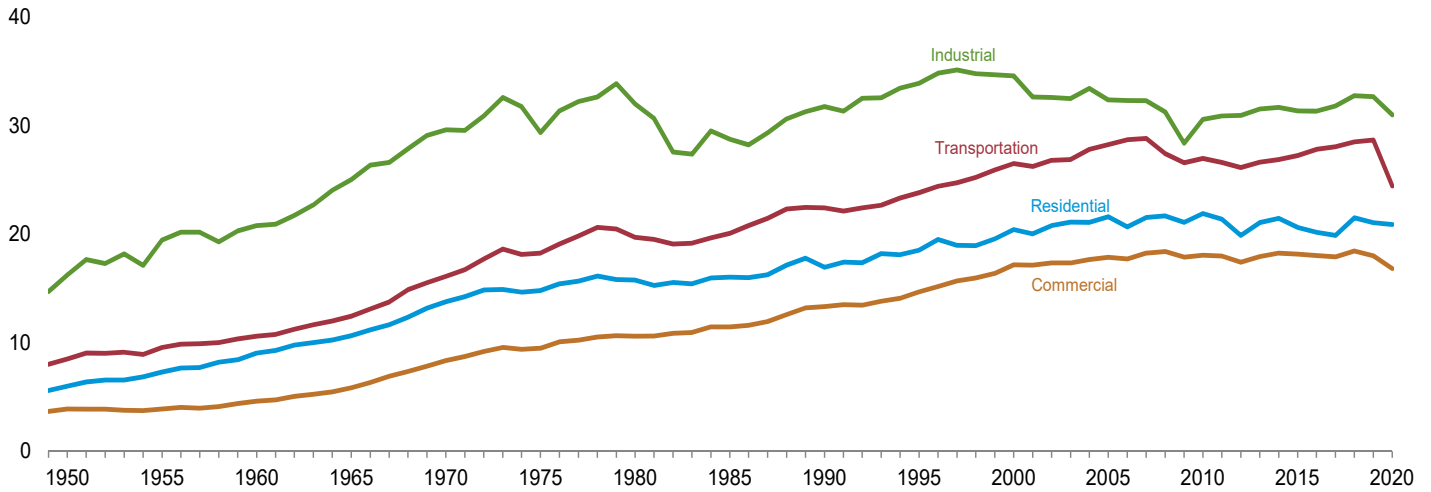
2021: “U.S. International Trade in Goods and Services,” FT-900, monthly.

2. Energy Consumption By Sector

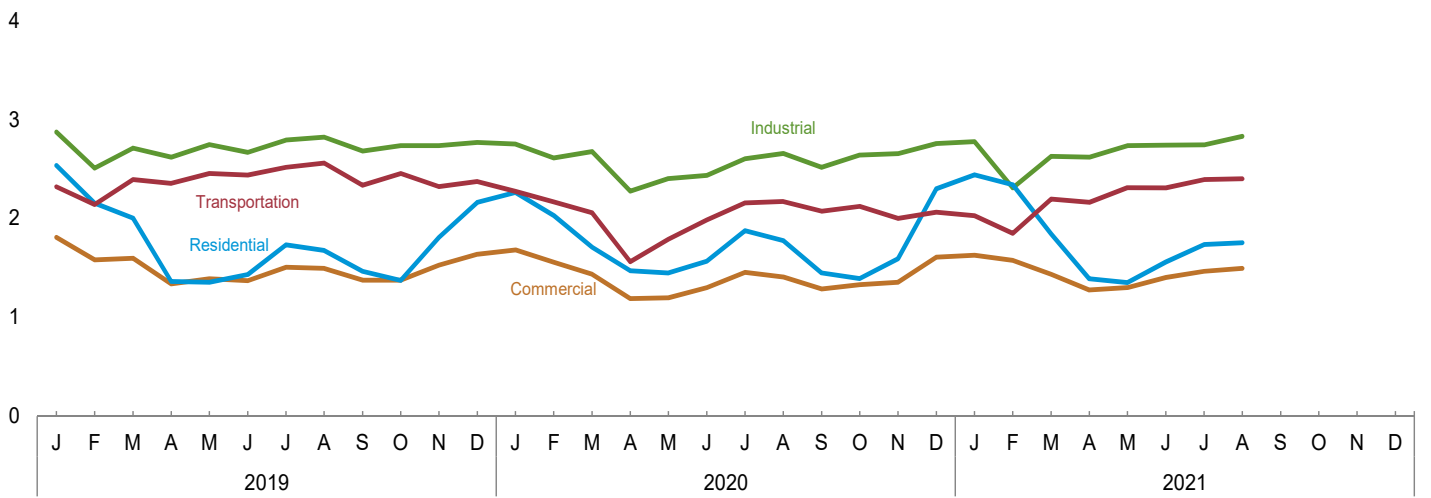
Figure 2.1 Energy Consumption by Sector

(Quadrillion Btu)

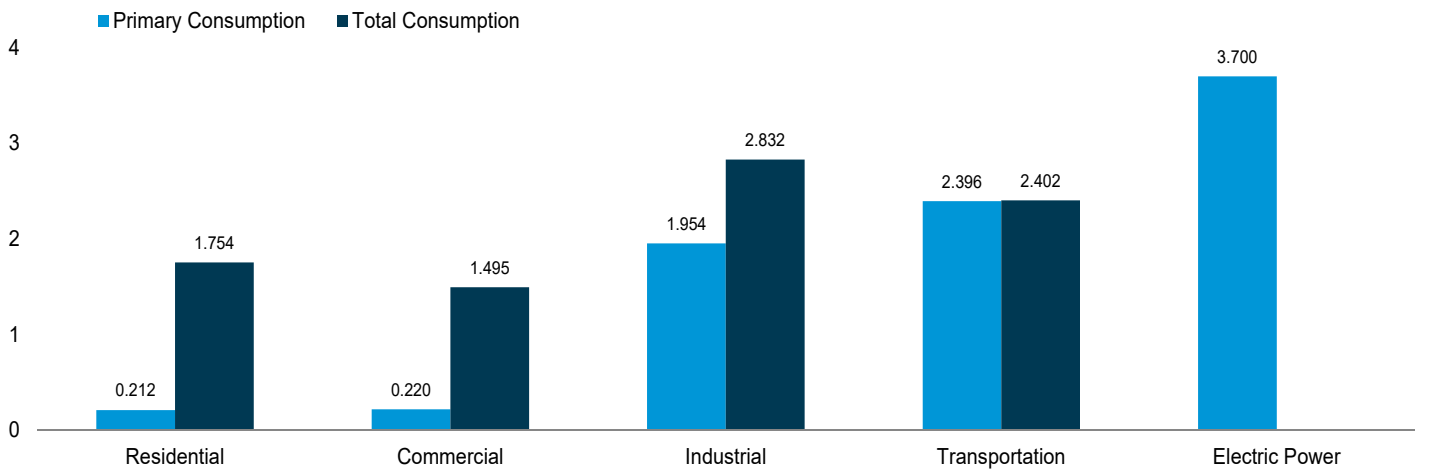
Total Consumption by End-Use Sector, 1949–2020



Total Consumption by End-Use Sector, Monthly



By Sector, August 2021



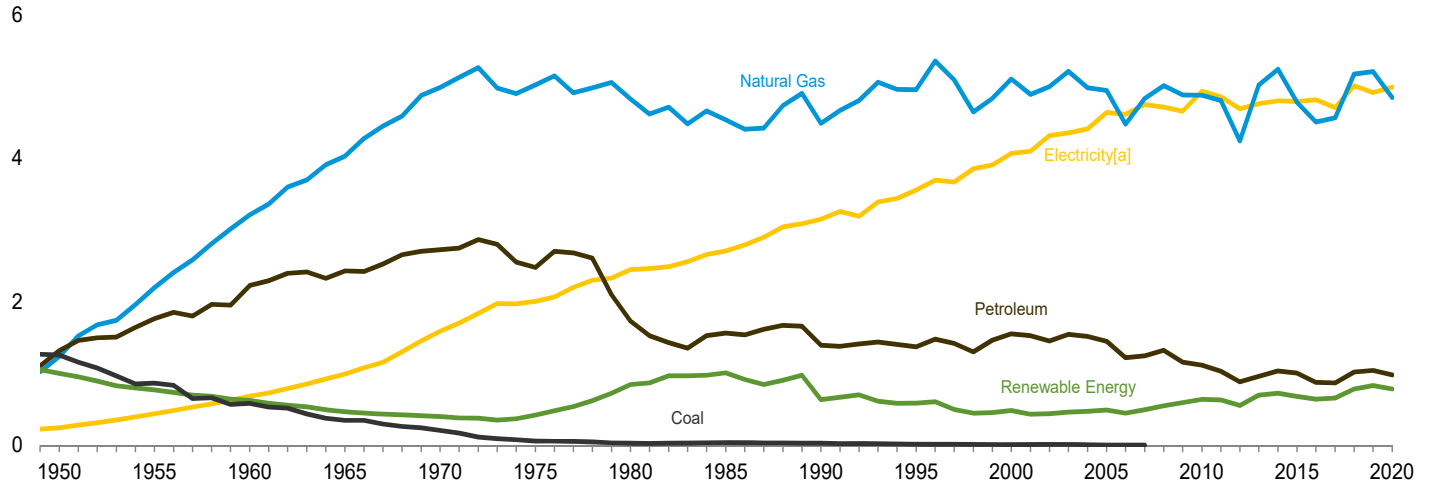
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#consumption>.

Source: Table 2.1.

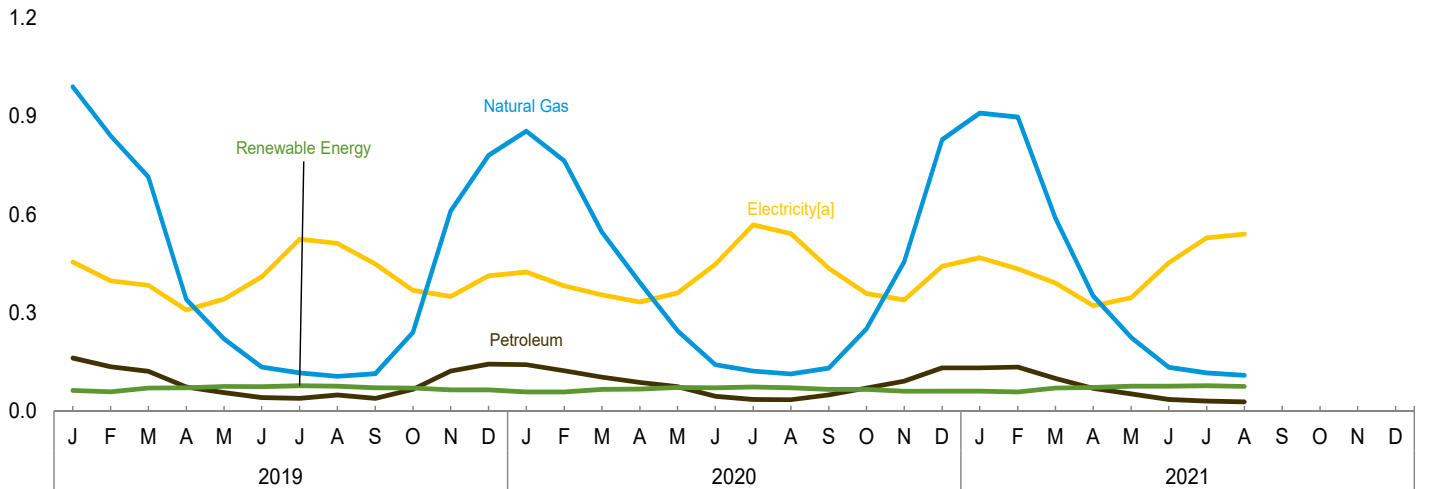
Figure 2.2 Residential Sector Energy Consumption

(Quadrillion Btu)

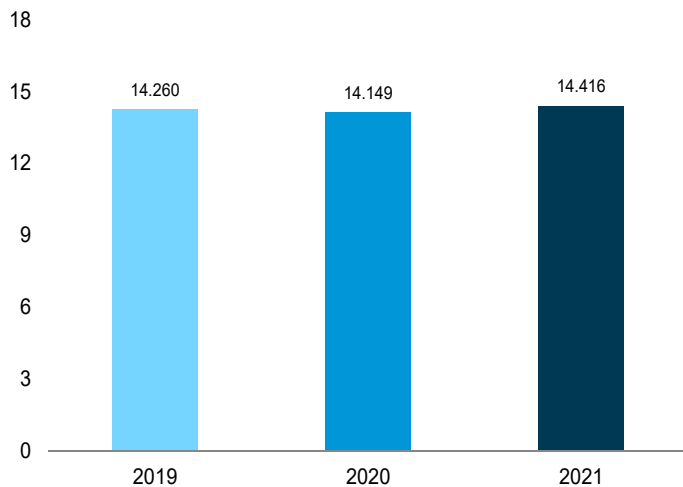
By Major Source, 1949–2020



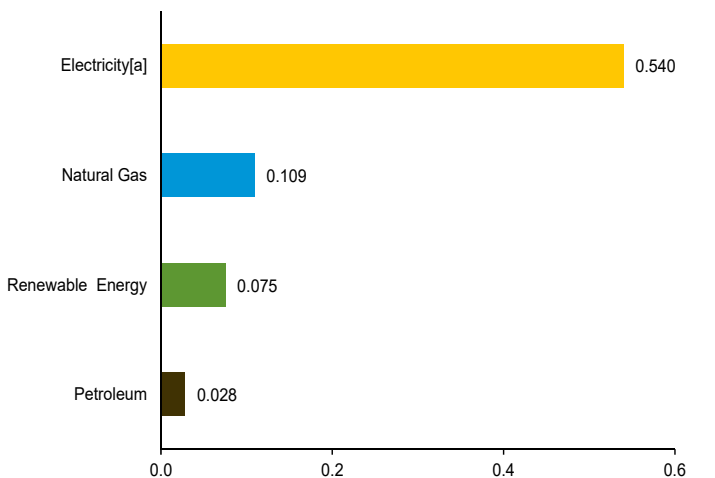
By Major Source, Monthly



Total, January–August



By Major Source, August 2021



[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								Total Primary	Electricity Retail Sales ^e	Electrical System Energy Losses ^f	Total
	Fossil Fuels				Renewable Energy ^b							
	Coal	Natural Gas ^c	Petroleum	Total	Geothermal	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
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	681	6,465	4,791	9,362	20,618
2016 Total	NA	4,506	878	5,384	40	162	445	646	6,030	4,815	9,334	20,179
2017 Total	NA	4,563	871	5,435	40	193	429	662	6,097	4,704	9,085	19,886
2018 Total	NA	5,174	1,022	6,197	40	221	524	785	6,982	5,013	9,515	21,509
2019 January	NA	990	162	1,152	3	13	46	63	1,215	455	867	2,537
February	NA	840	135	976	3	15	42	59	1,035	398	723	2,156
March	NA	715	121	836	3	21	46	70	906	384	712	2,003
April	NA	341	73	414	3	23	45	71	486	308	568	1,362
May	NA	220	56	276	3	26	46	75	351	342	663	1,356
June	NA	134	41	175	3	26	45	74	249	410	776	1,434
July	NA	116	38	154	3	27	46	77	231	525	979	1,734
August	NA	106	49	155	3	26	46	76	231	512	935	1,678
September	NA	114	38	152	3	23	45	71	223	449	794	1,466
October	NA	240	66	307	3	20	46	70	376	368	630	1,375
November	NA	611	122	733	3	16	45	64	797	350	662	1,809
December	NA	781	143	925	3	15	46	64	989	413	762	2,164
Total	NA	5,208	1,045	6,253	40	251	544	835	7,088	4,914	9,070	21,072
2020 January	NA	855	141	997	3	16	39	58	1,055	424	785	2,264
February	NA	764	123	887	3	18	36	58	945	382	704	2,031
March	NA	546	103	649	3	24	39	66	715	355	640	1,709
April	NA	392	87	478	3	26	38	67	546	333	592	1,470
May	NA	245	74	319	3	30	39	72	391	360	700	1,451
June	NA	141	45	186	3	30	38	71	257	448	863	1,568
July	NA	122	35	157	3	31	39	73	230	569	1,079	1,878
August	NA	113	34	147	3	29	39	71	218	542	1,018	1,778
September	NA	131	49	180	3	26	38	66	246	436	769	1,451
October	NA	251	70	321	3	24	39	66	387	359	648	1,394
November	NA	456	91	547	3	20	38	60	608	339	645	1,592
December	NA	829	132	961	3	18	39	60	1,021	442	839	2,302
Total	NA	4,846	984	5,829	40	291	458	788	6,617	4,988	9,275	20,880
2021 January	NA	910	132	1,041	3	19	39	60	1,102	468	871	2,441
February	NA	898	134	1,031	3	20	35	58	1,089	434	819	2,341
March	NA	589	99	687	3	28	39	70	757	391	695	1,843
April	NA	351	69	420	3	31	37	72	492	321	577	1,390
May	NA	225	52	276	3	35	39	76	353	346	653	1,352
June	NA	133	35	168	3	35	37	76	244	453	864	1,561
July	NA	116	30	145	3	36	39	77	223	529	984	1,735
August	NA	109	28	137	3	33	39	75	212	540	1,002	1,754
8-Month Total	NA	3,329	578	3,907	26	236	302	564	4,471	3,482	6,463	14,416
2020 8-Month Total	NA	3,179	642	3,821	26	204	305	535	4,356	3,413	6,381	14,149
2019 8-Month Total	NA	3,462	675	4,137	26	177	362	566	4,703	3,334	6,222	14,260

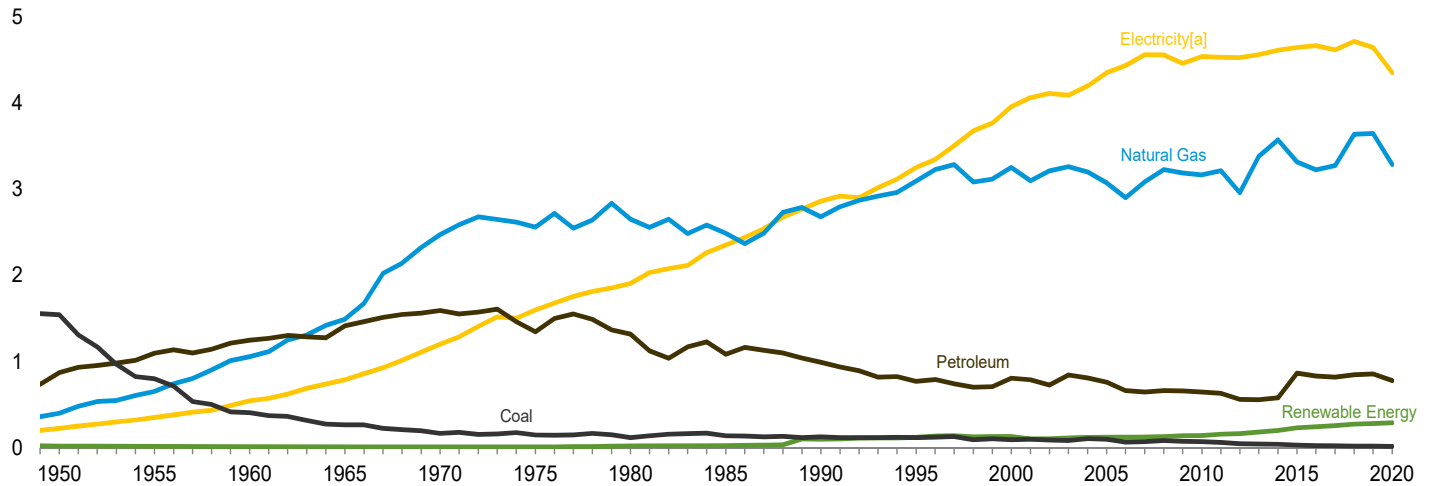
^a See "Primary Energy Consumption" in Glossary.
^b See Table 10.2a for notes on series components.
^c Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
^d Distributed (small-scale) solar photovoltaic (PV) electricity 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.

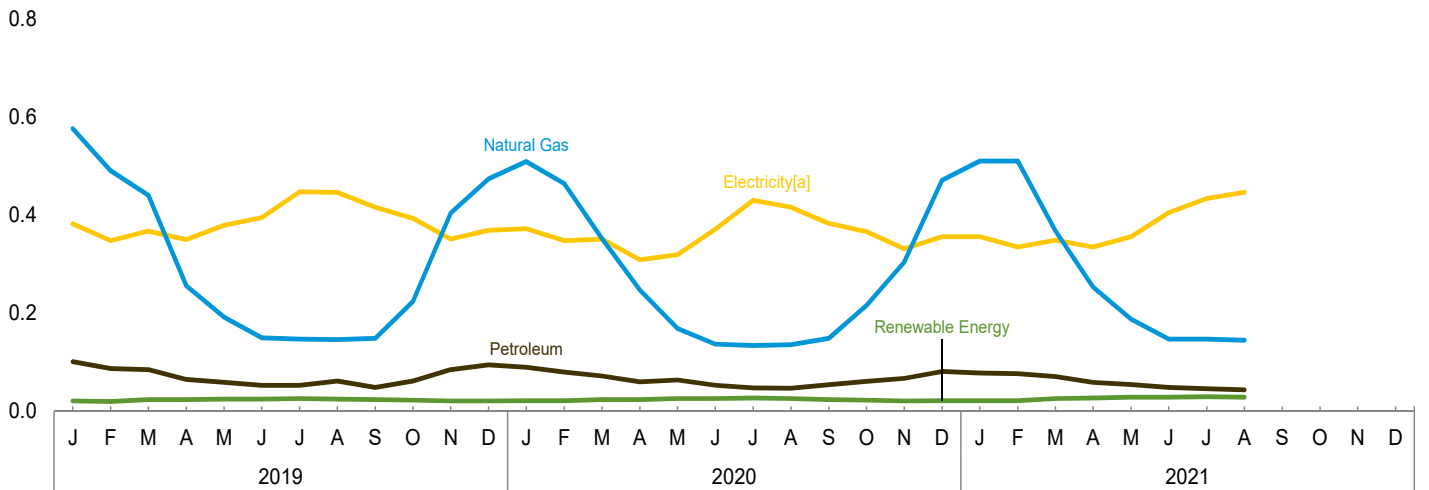
Figure 2.3 Commercial Sector Energy Consumption

(Quadrillion Btu)

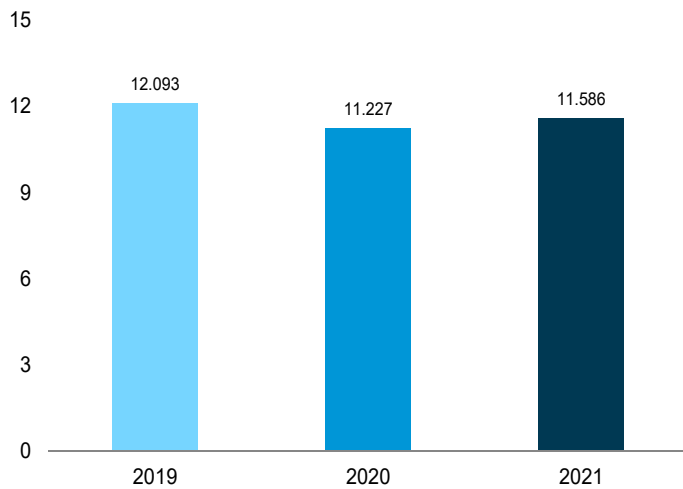
By Major Source, 1949–2020



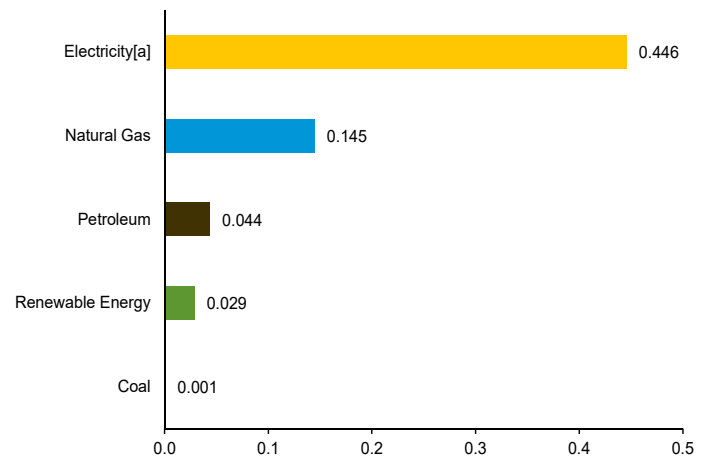
By Major Source, Monthly



Total, January–August



By Major Source, August 2021



[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	Elec- tricity Retail Sales ^g	Electrical System Energy Losses ^h	Total
	Fossil Fuels				Renewable Energy ^b									
	Coal	Natural Gas ^c	Petro- leum ^d	Total	Hydro- electric Power ^e	Geo- thermal	Solar ^f	Wind	Bio- mass	Total				
1950 Total	1,542	401	872	2,815	NA	NA	NA	NA	19	19	2,834	225	834	3,893
1955 Total	801	651	1,095	2,547	NA	NA	NA	NA	15	15	2,561	350	984	3,895
1960 Total	407	1,056	1,248	2,711	NA	NA	NA	NA	12	12	2,723	543	1,344	4,610
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
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 Total	21	3,273	820	4,113	2	20	76	1	156	255	4,368	4,616	8,916	17,900
2018 Total	19	3,638	845	4,502	2	20	94	2	156	274	4,776	4,715	8,949	18,440
2019 January	2	576	101	679	(s)	2	6	(s)	13	21	700	382	728	1,810
February	2	490	87	580	(s)	2	6	(s)	12	20	600	348	633	1,581
March	2	440	85	527	(s)	2	9	(s)	13	24	551	367	680	1,598
April	1	256	65	322	(s)	2	10	(s)	12	24	346	350	644	1,339
May	1	192	59	252	(s)	2	10	(s)	12	25	277	379	734	1,391
June	1	150	53	204	(s)	2	11	(s)	12	25	229	395	747	1,372
July	1	147	53	201	(s)	2	11	(s)	13	26	227	447	834	1,507
August	1	146	62	209	(s)	2	11	(s)	13	25	234	446	815	1,495
September	1	149	49	199	(s)	2	9	(s)	12	24	223	416	737	1,376
October	1	224	62	287	(s)	2	8	(s)	13	23	310	393	672	1,376
November	1	404	85	490	(s)	2	6	(s)	12	21	511	351	664	1,527
December	2	474	95	571	(s)	2	6	(s)	13	21	592	369	679	1,640
Total	17	3,647	857	4,521	2	24	103	2	149	279	4,800	4,643	8,570	18,013
2020 January	2	509	90	601	NM	2	7	(s)	13	22	622	372	687	1,681
February	2	464	80	546	NM	2	8	(s)	12	22	568	348	641	1,557
March	2	352	72	426	NM	2	10	(s)	12	24	450	351	633	1,435
April	1	247	60	308	NM	2	11	(s)	11	24	332	309	551	1,191
May	1	169	64	234	NM	2	12	(s)	12	26	260	319	621	1,199
June	1	137	53	190	NM	2	12	(s)	12	26	216	371	715	1,302
July	1	134	48	182	NM	2	13	(s)	12	27	209	430	814	1,454
August	1	136	47	183	NM	2	12	(s)	12	26	210	416	783	1,409
September	1	149	54	204	(s)	2	11	(s)	11	24	228	383	676	1,288
October	1	216	61	279	NM	2	10	(s)	12	23	302	366	662	1,331
November	1	304	67	372	NM	2	8	(s)	12	21	394	331	630	1,355
December	1	471	81	553	NM	2	7	(s)	12	22	575	356	676	1,608
Total	15	3,286	777	4,078	2	24	121	2	141	289	4,368	4,353	8,093	16,814
2021 January	2	510	78	590	NM	2	8	(s)	12	22	612	356	661	1,629
February	2	510	77	589	NM	2	9	(s)	11	22	611	335	632	1,578
March	1	368	71	440	NM	2	12	(s)	12	26	466	349	620	1,436
April	1	253	59	313	NM	2	13	(s)	11	27	340	335	602	1,277
May	1	188	55	244	NM	2	14	(s)	12	29	273	356	672	1,301
June	1	147	49	197	NM	2	14	(s)	12	29	226	405	774	1,405
July	1	147	46	195	NM	2	15	(s)	12	30	224	434	807	1,465
August	1	145	44	191	NM	2	14	(s)	12	29	220	446	828	1,495
8-Month Total	10	2,269	481	2,759	1	16	100	1	95	213	2,972	3,017	5,597	11,586
2020 8-Month Total	10	2,146	514	2,670	1	16	85	1	94	198	2,868	2,916	5,444	11,227
2019 8-Month Total	11	2,397	565	2,974	1	16	73	1	100	191	3,164	3,114	5,815	12,093

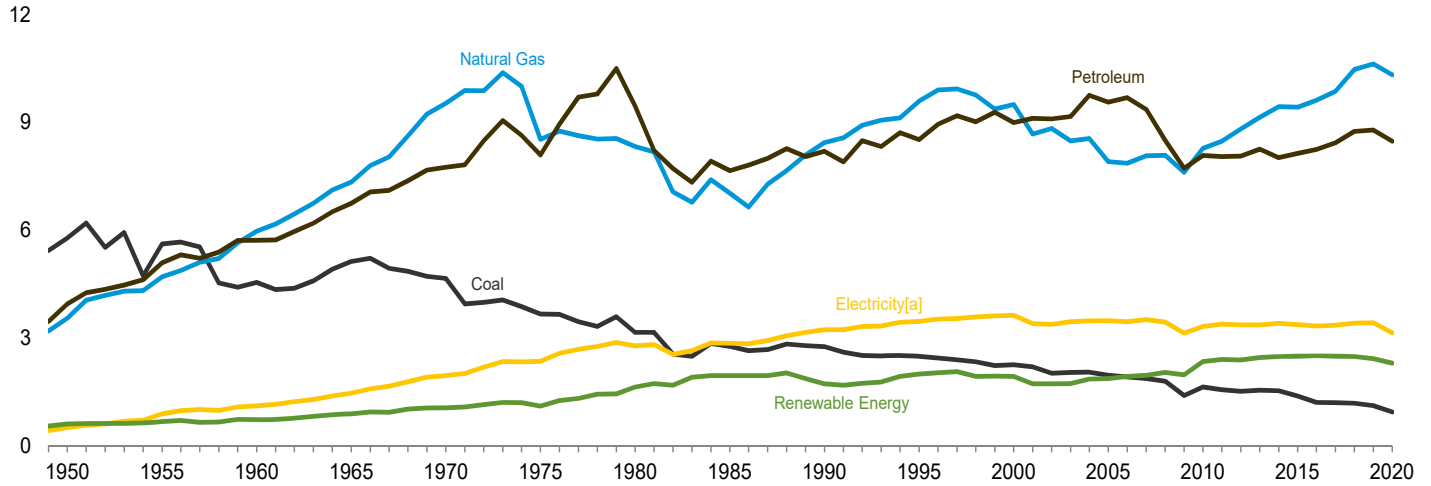
a See "Primary Energy Consumption" in Glossary.
b See Table 10.2a for notes on series components and estimation.
c Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
d Does not include biofuels that have been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

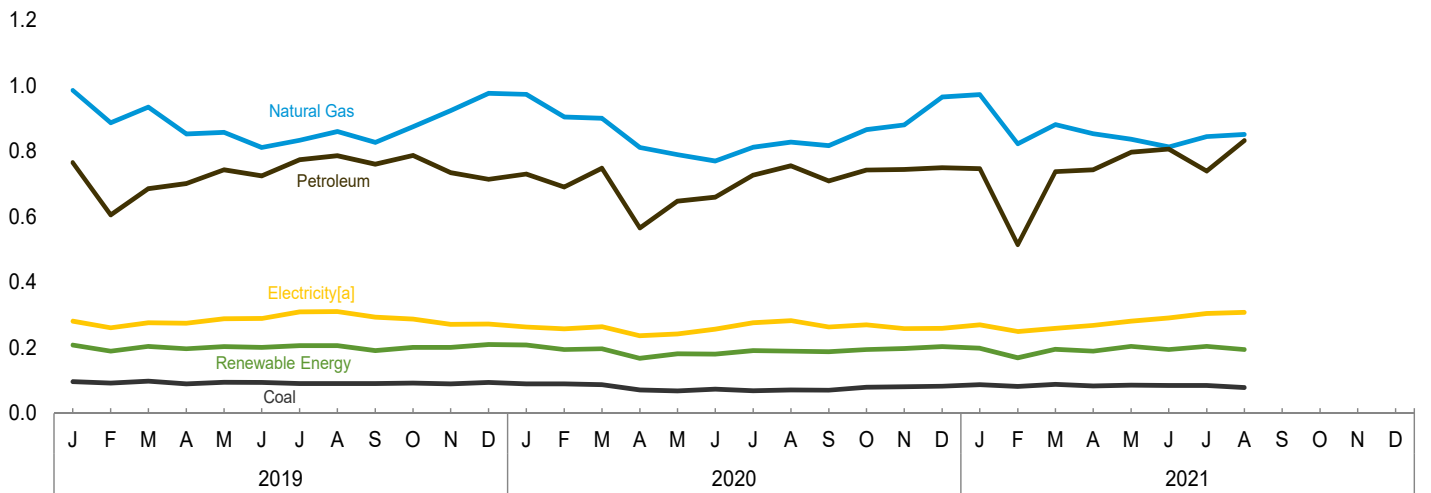
Figure 2.4 Industrial Sector Energy Consumption

(Quadrillion Btu)

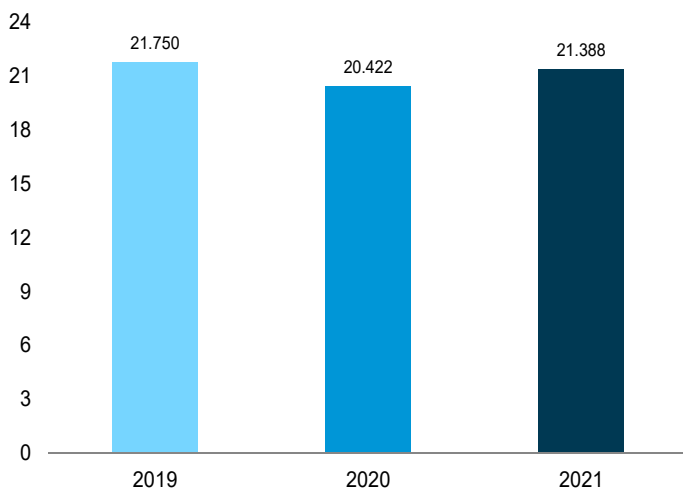
By Major Source, 1949–2020



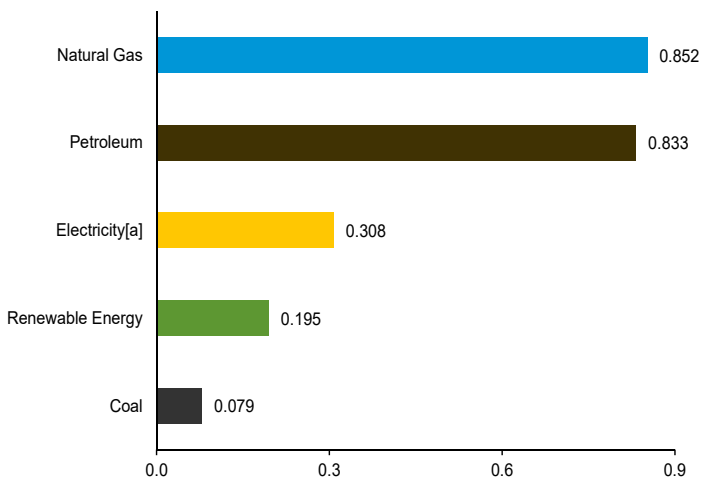
By Major Source, Monthly



Total, January–August



By Major Source, August 2021



[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											Elec- tricity Retail Sales ⁱ	Electrical System Energy Losses ^j	Total ^f	
	Fossil Fuels ^b				Renewable Energy ^c										Total Primary
	Coal	Natural Gas ^d	Petro- leum ^e	Total ^f	Hydro- electric Power ^g	Geo- thermal	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		(s)	—	1,684	1,717	21,120	3,226	7,404	31,749	
1995 Total	2,488	9,592	8,524	20,665	55	2	(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	
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	8,080	17,983	16	4	3	—	2,320	2,343	20,327	3,314	6,934	30,574	
2011 Total	1,561	8,481	8,052	18,105	17	4	4	(s)	2,375	2,401	20,505	3,382	7,005	30,893	
2012 Total	1,513	8,819	8,063	18,399	22	4	7	(s)	2,349	2,383	20,781	3,363	6,810	30,954	
2013 Total	1,546	9,140	8,259	18,929	33	4	9	(s)	2,403	2,449	21,378	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	8,138	18,925	13	4	14	(s)	2,460	2,491	21,417	3,366	6,578	31,361	
2016 Total	1,205	9,617	8,247	19,050	12	4	19	1	2,467	2,503	21,553	3,333	6,461	31,347	
2017 Total	1,195	9,864	8,433	19,463	13	4	22	1	2,450	2,490	21,953	3,358	6,487	31,798	
2018 Total	1,180	10,474	8,753	20,381	10	4	24	1	2,440	2,480	22,861	3,414	6,481	32,756	
2019															
January	97	986	766	1,847	1	(s)	2	(s)	206	209	2,056	282	537	2,875	
February	93	887	606	1,585	1	(s)	2	(s)	187	190	1,775	261	474	2,510	
March	98	935	686	1,719	1	(s)	2	(s)	201	205	1,923	277	513	2,713	
April	90	853	702	1,644	1	(s)	3	(s)	193	197	1,840	275	506	2,620	
May	95	858	744	1,696	1	(s)	3	(s)	199	204	1,900	289	559	2,748	
June	94	812	725	1,629	1	(s)	3	(s)	196	201	1,829	290	549	2,668	
July	91	834	775	1,698	1	(s)	3	(s)	204	207	1,905	310	578	2,793	
August	91	861	787	1,738	1	(s)	3	(s)	203	207	1,944	311	567	2,822	
September	91	827	761	1,676	(s)	(s)	3	(s)	189	192	1,868	294	520	2,682	
October	93	875	788	1,754	1	(s)	2	(s)	198	201	1,955	288	492	2,735	
November	90	925	735	1,748	1	(s)	2	(s)	198	201	1,949	272	514	2,735	
December	94	977	715	1,783	1	(s)	2	(s)	207	210	1,993	273	504	2,770	
Total	1,117	10,630	8,790	20,517	9	4	28	1	2,381	2,423	22,940	3,420	6,312	32,672	
2020															
January	90	974	731	1,793	1	(s)	2	(s)	206	209	2,001	264	488	2,753	
February	90	905	691	1,684	1	(s)	2	(s)	192	195	1,879	258	476	2,613	
March	88	901	749	1,736	1	(s)	3	(s)	193	197	1,934	265	478	2,676	
April	72	812	566	1,449	1	(s)	3	(s)	163	168	1,617	237	423	2,277	
May	68	790	648	1,506	1	(s)	3	(s)	177	182	1,687	243	473	2,403	
June	74	771	660	1,504	1	(s)	3	1	176	181	1,685	257	495	2,436	
July	69	813	728	1,610	1	(s)	3	1	187	192	1,802	277	525	2,604	
August	72	828	756	1,655	1	(s)	3	1	185	190	1,845	283	531	2,659	
September	71	818	710	1,598	1	(s)	3	1	183	188	1,786	264	467	2,517	
October	80	866	743	1,688	1	(s)	3	1	191	195	1,883	270	488	2,641	
November	81	881	745	1,705	1	(s)	2	1	194	198	1,903	259	492	2,654	
December	83	966	750	1,798	1	(s)	2	1	200	204	2,002	260	494	2,757	
Total	938	10,324	8,477	19,726	9	4	32	6	2,247	2,298	22,025	3,137	5,834	30,996	
2021															
January	88	973	747	1,806	1	(s)	2	1	195	199	2,004	270	502	2,777	
February	82	823	515	1,417	1	(s)	2	1	166	170	1,587	250	472	2,309	
March	89	882	738	1,708	1	(s)	3	1	191	196	1,904	260	463	2,627	
April	84	854	744	1,678	1	(s)	3	1	185	190	1,868	269	483	2,620	
May	86	837	797	1,716	1	(s)	4	1	200	205	1,922	282	532	2,736	
June	85	814	807	1,699	1	(s)	4	1	190	195	1,895	291	556	2,742	
July	85	845	740	1,668	1	(s)	4	(s)	199	205	1,872	305	568	2,745	
August	79	852	833	1,759	1	(s)	4	1	190	195	1,954	308	571	2,832	
8-Month Total	678	6,879	5,920	13,450	6	3	25	5	1,517	1,556	15,005	2,236	4,146	21,388	
2020 8-Month Total	623	6,793	5,528	12,936	6	3	22	2	1,479	1,513	14,450	2,084	3,888	20,422	
2019 8-Month Total	750	7,026	5,792	13,555	7	3	19	1	1,589	1,618	15,174	2,293	4,283	21,750	

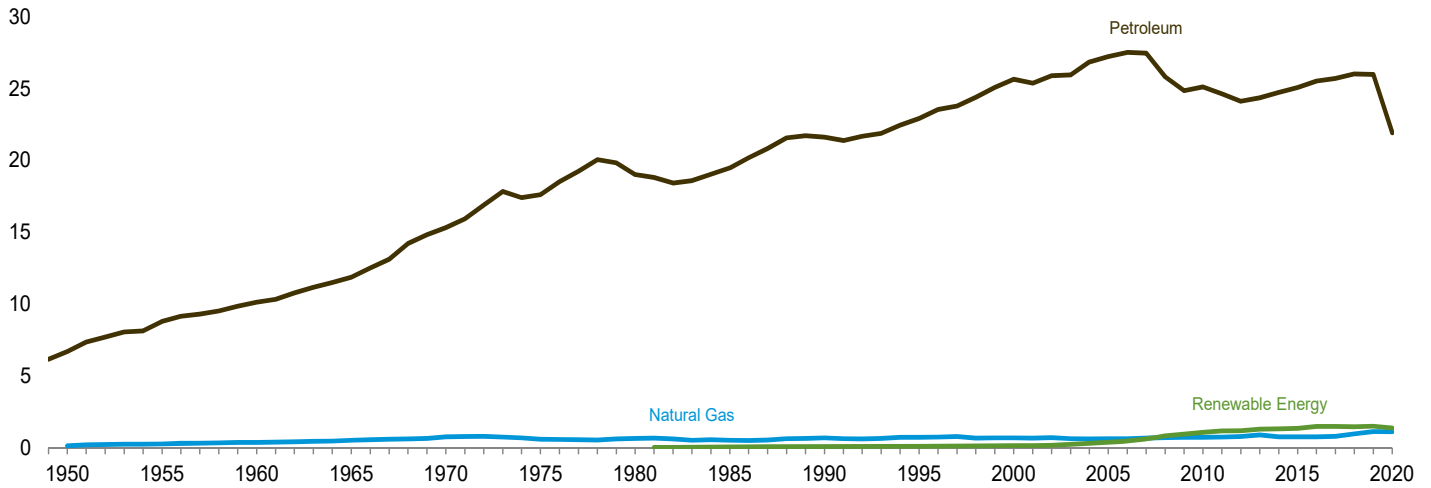
a See "Primary Energy Consumption" in Glossary.
b Includes non-combustion use of fossil fuels.
c See Table 10.2b for notes on series components and estimation.
d Natural gas only; excludes the estimated portion of supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 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.

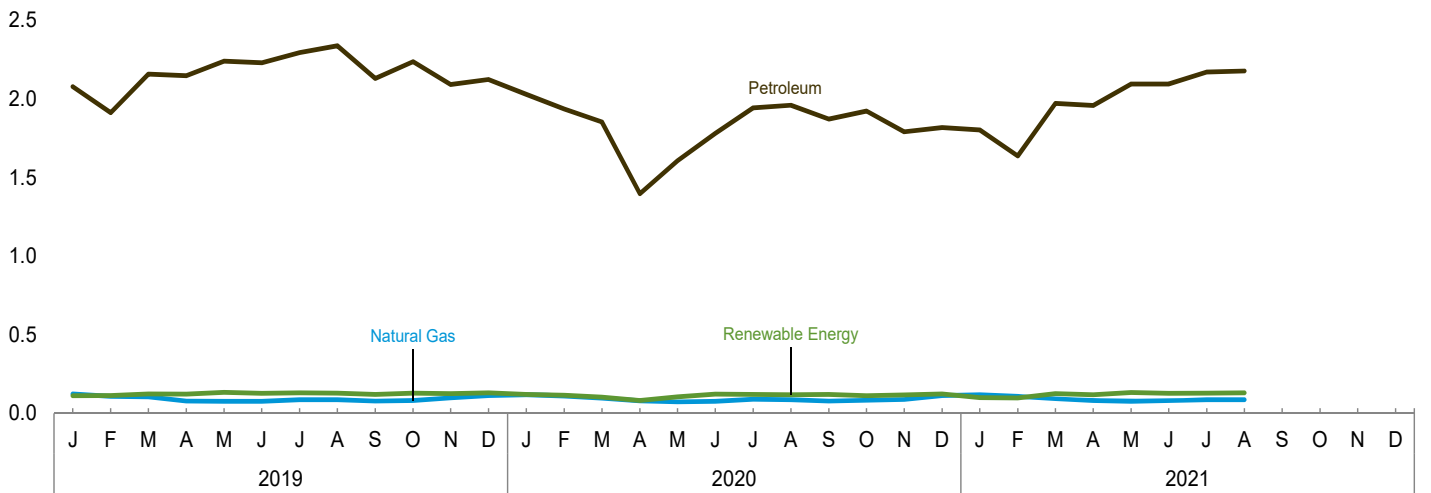
Figure 2.5 Transportation Sector Energy Consumption

(Quadrillion Btu)

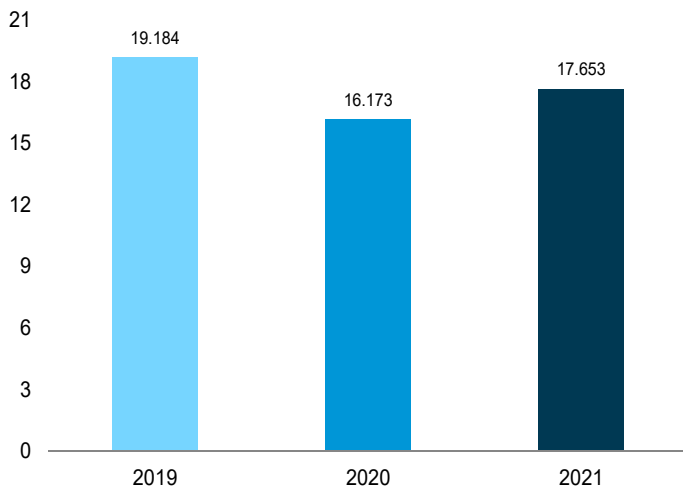
By Major Source, 1949–2020



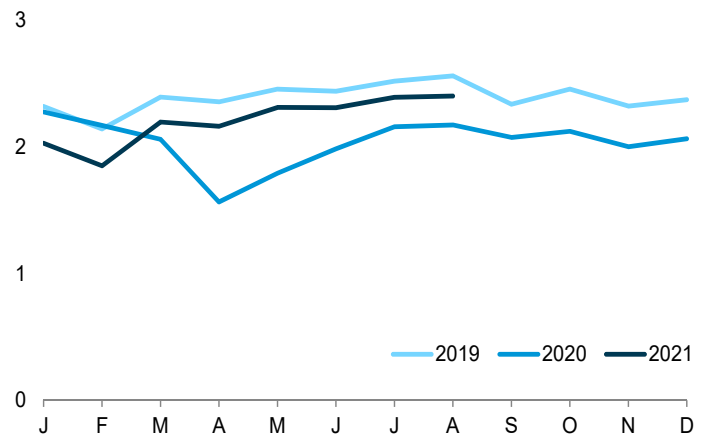
By Major Source, Monthly



Total, January–August



Total, Monthly



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

Source: Table 2.5.

Table 2.5 Transportation Sector Energy Consumption
(Trillion Btu)

	Primary Consumption ^a						Electricity Retail Sales ^e	Electrical System Energy Losses ^f	Total
	Fossil Fuels				Renewable Energy ^b	Total Primary			
	Coal	Natural Gas ^c	Petroleum ^d	Total	Biomass				
1950 Total	1,564	130	6,690	8,383	NA	8,383	23	86	8,492
1955 Total	421	254	8,799	9,474	NA	9,474	20	56	9,550
1960 Total	75	359	10,125	10,560	NA	10,560	10	26	10,596
1965 Total	16	517	11,866	12,399	NA	12,399	10	24	12,432
1970 Total	7	745	15,311	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
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	1,166	26,526	26	54	26,606
2012 Total	(g)	780	24,111	24,890	1,169	26,059	25	51	26,135
2013 Total	(g)	887	24,362	25,249	1,292	26,542	26	53	26,620
2014 Total	(g)	760	24,727	25,487	1,314	26,801	26	53	26,881
2015 Total	(g)	745	25,083	25,828	1,351	27,179	26	51	27,256
2016 Total	(g)	757	25,511	26,268	1,469	27,737	26	50	27,812
2017 Total	(g)	799	25,702	26,500	1,474	27,974	26	50	28,049
2018 Total	(g)	962	26,011	26,974	1,456	28,429	26	50	28,505
2019 January	(g)	123	2,078	2,201	112	2,313	2	4	2,320
February	(g)	108	1,913	2,022	113	2,135	2	4	2,141
March	(g)	105	2,158	2,263	123	2,386	2	4	2,393
April	(g)	79	2,148	2,228	122	2,349	2	4	2,355
May	(g)	76	2,240	2,316	134	2,450	2	4	2,456
June	(g)	76	2,230	2,306	128	2,434	2	4	2,440
July	(g)	86	2,294	2,380	131	2,511	2	4	2,518
August	(g)	87	2,339	2,426	129	2,555	2	4	2,561
September	(g)	79	2,131	2,210	120	2,330	2	4	2,337
October	(g)	82	2,238	2,320	129	2,450	2	3	2,455
November	(g)	99	2,092	2,191	125	2,316	2	4	2,322
December	(g)	113	2,124	2,237	130	2,367	2	4	2,373
Total	(g)	1,114	25,986	27,100	1,497	28,597	26	48	28,671
2020 January	(g)	119	2,029	2,148	120	2,269	2	4	2,275
February	(g)	110	1,937	2,046	115	2,162	2	4	2,168
March	(g)	97	1,853	1,950	104	2,054	2	4	2,059
April	(g)	80	1,397	1,478	82	1,559	2	3	1,564
May	(g)	74	1,607	1,681	105	1,786	2	3	1,791
June	(g)	77	1,781	1,857	122	1,979	2	3	1,984
July	(g)	90	1,943	2,032	121	2,154	2	4	2,159
August	(g)	86	1,961	2,048	119	2,167	2	3	2,172
September	(g)	78	1,872	1,950	120	2,070	2	3	2,075
October	(g)	84	1,923	2,006	112	2,118	2	3	2,123
November	(g)	88	1,792	1,879	117	1,997	2	3	2,002
December	(g)	114	1,819	1,933	124	2,057	2	4	2,063
Total	(g)	1,097	21,913	23,011	1,362	24,373	22	41	24,436
2021 January	(g)	R 118	1,803	1,921	101	2,022	2	4	2,028
February	(g)	109	1,638	1,746	98	1,845	2	4	1,850
March	(g)	94	1,972	2,066	126	2,192	2	3	2,197
April	(g)	81	1,959	2,040	118	2,158	2	3	2,163
May	(g)	77	2,096	2,173	133	2,306	2	3	2,311
June	(g)	81	2,096	2,177	128	2,305	2	3	2,310
July	(g)	R 87	2,172	2,258	129	2,387	2	3	2,392
August	(g)	87	2,179	2,266	130	2,396	2	4	2,402
8-Month Total	(g)	733	15,915	16,648	964	17,612	14	27	17,653
2020 8-Month Total	(g)	734	14,508	15,242	889	16,130	15	28	16,173
2019 8-Month Total	(g)	740	17,401	18,141	992	19,134	18	33	19,184

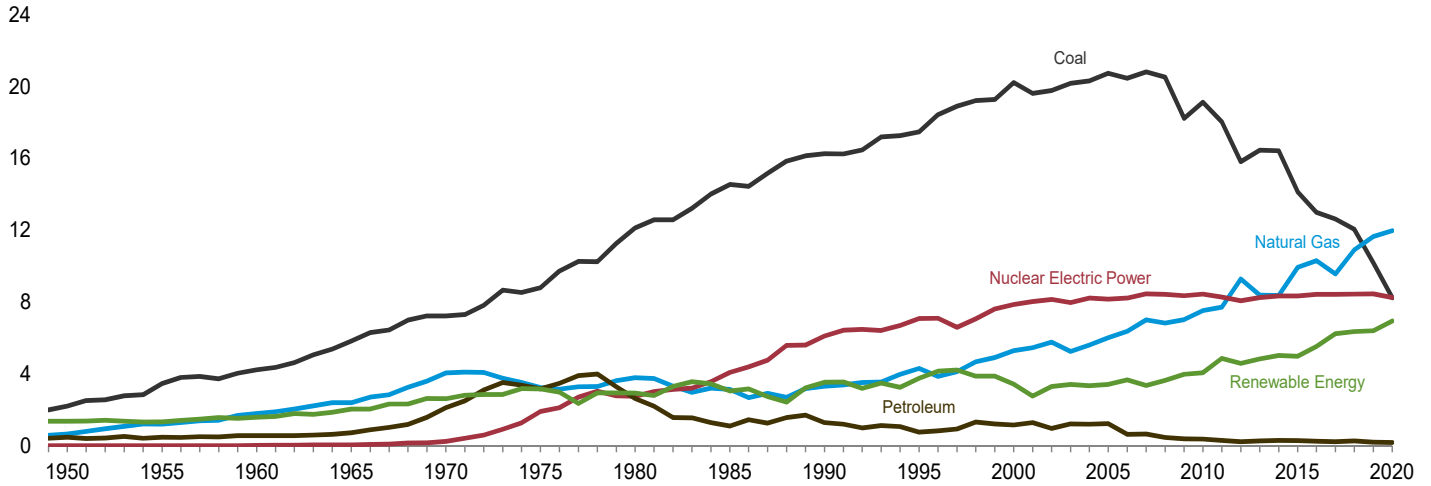
a See "Primary Energy Consumption" in Glossary.
b See Table 10.2b for notes on series components.
c Natural gas only; does not include supplemental gaseous fuels—see Note 3, "Supplemental Gaseous Fuels," at end of Section 4. Data are for natural gas consumed in the operation of pipelines (primarily in compressors) and small amounts consumed as vehicle fuel—see Table 4.3.
d Does not include biofuels. 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.

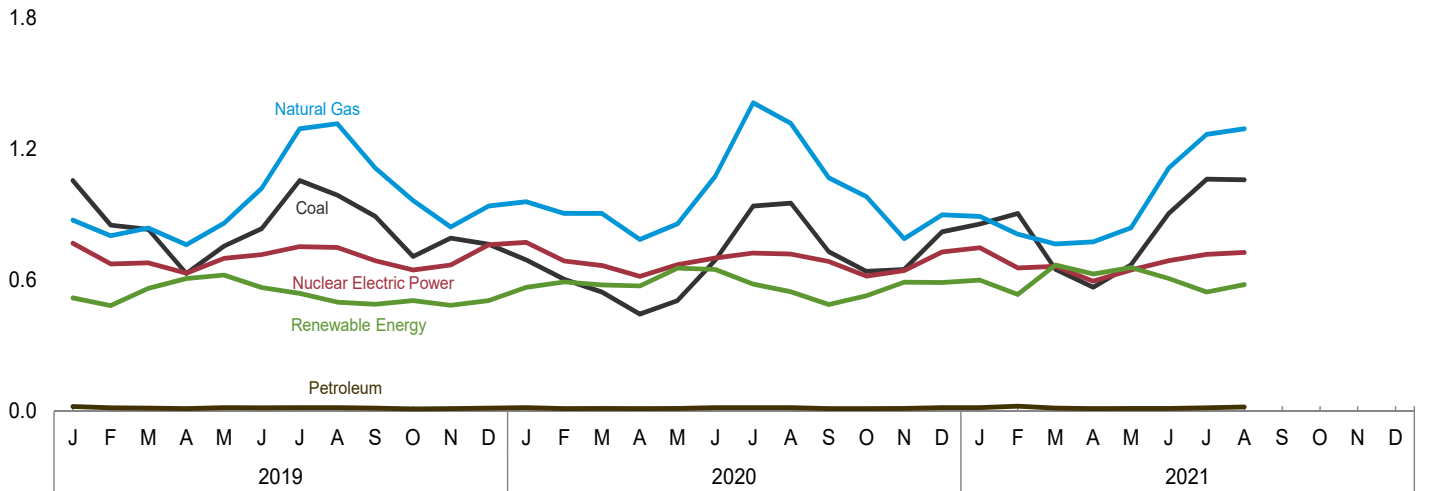
Figure 2.6 Electric Power Sector Energy Consumption

(Quadrillion Btu)

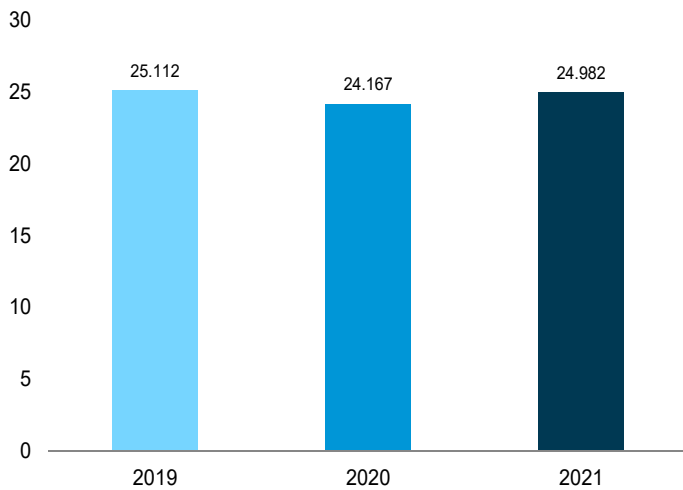
By Major Source, 1949–2020



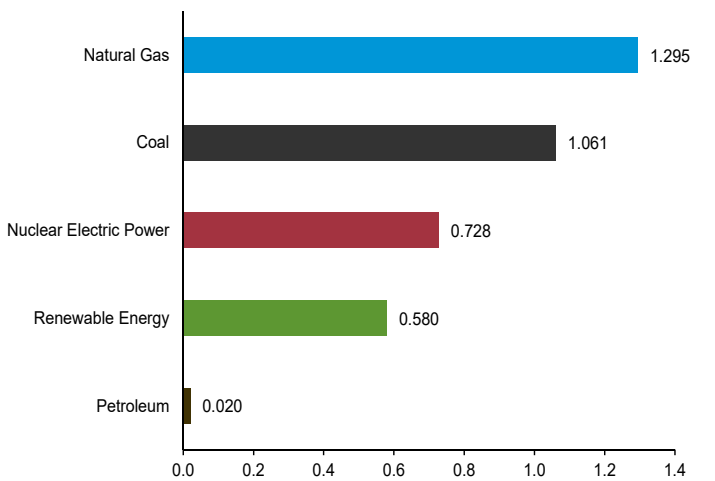
By Major Source, Monthly



Total, January–August



By Major Source, August 2021



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

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	15.6	10.0	6.1	16.2	8.4	45.5	5.8	29.7	18.8	897.0
2019	5.9	682.1	16.2	27.2	15.4	9.8	6.2	15.8	8.5	46.0	5.9	31.9	19.1	890.0
2020	5.4	648.8	17.1	26.4	14.4	9.5	5.5	14.6	8.1	46.1	5.5	30.6	17.0	849.0

^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	Elec- tricity	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	558.5	3.0	180.0	23.6	897.0
2019	5.0	131.7	.3	125.4	376.8	1.9	46.6	551.0	2.7	178.2	21.5	890.0
2020	5.2	128.3	.2	129.6	345.0	1.7	43.3	520.0	1.6	173.8	20.3	849.0

^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://ctsedwweb.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 renewable diesel fuel and other biofuels refinery and blender net inputs, calculated using "other renewable diesel fuel" and "other renewable fuels" 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 heat content factors for renewable diesel fuel and other biofuels in Table A1).

2012–2020: 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 renewable diesel fuel and other biofuels refinery and blender net inputs, calculated using "other renewable diesel fuel" and "other renewable fuels" 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 heat content factors for renewable diesel fuel and other biofuels in Table A1).

2021 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, renewable diesel fuel, and other biofuels refinery and blender net inputs and products supplied, calculated using "renewable fuels except fuel ethanol" refinery and blender net inputs and products supplied from U.S. Energy Information Administration (EIA), *Petroleum Supply Monthly* (data are converted to Btu by multiplying by the appropriate heat content factors in Table A1).

Fossil Fuels Total

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

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

Renewable Energy

1981 forward: Table 10.2b.

Total Primary Energy Consumption

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

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

Electricity Retail Sales

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

Electrical System Energy Losses

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

Total Energy Consumption

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

Table 2.6 Sources

Coal

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

Natural Gas

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

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

Petroleum

1949 forward: Table 3.8c.

Fossil Fuels Total

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

Nuclear Electric Power

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

Renewable Energy

1949 forward: Table 10.2c.

Electricity Net Imports

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

Total Primary Energy Consumption

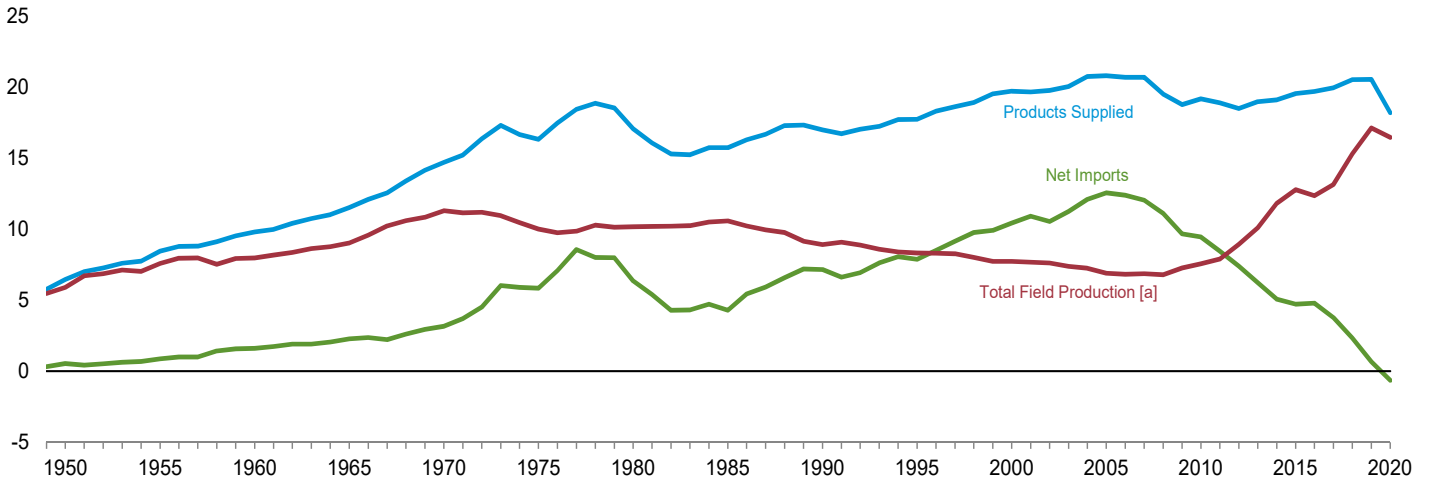
1949 forward: Electric power sector total primary energy consumption is the sum of the electric power sector consumption values for fossil fuels, nuclear electric power, and renewable energy, plus electricity net imports.

3. Petroleum

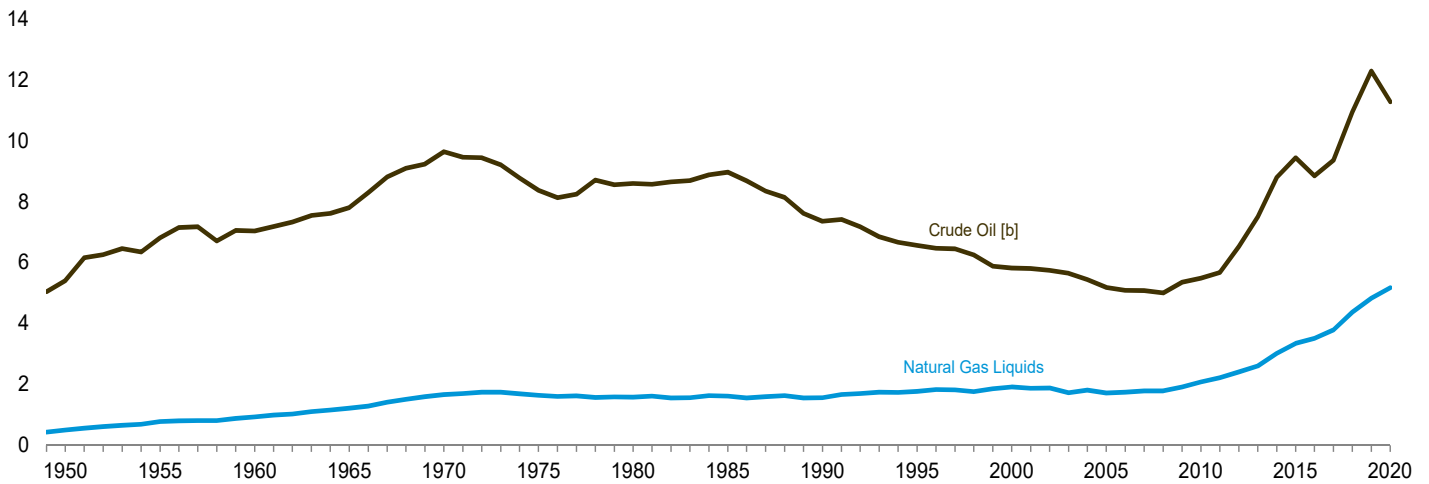
Figure 3.1 Petroleum Overview

(Million Barrels Per Day)

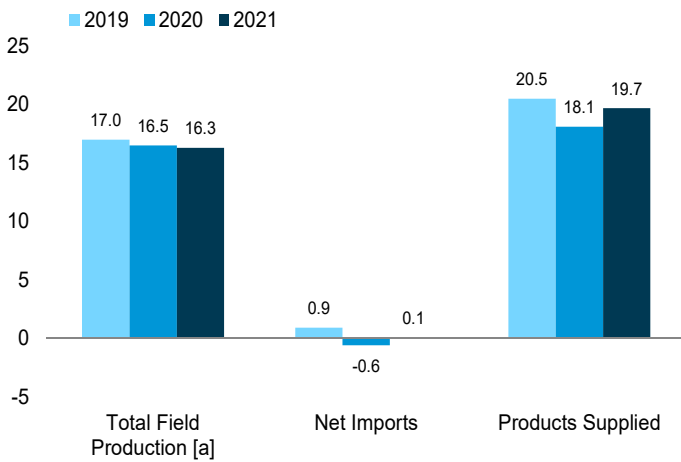
Overview, 1949–2020



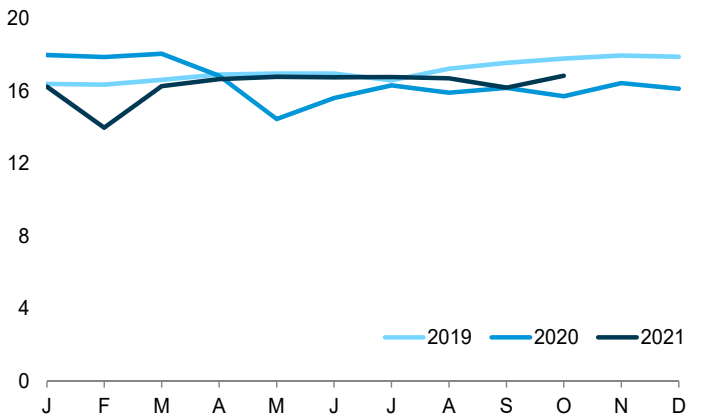
Crude Oil and Natural Gas Liquids Field Production, 1949–2020



Overview, January–October



Total Field Production [a], Monthly



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

[b] Includes lease condensate.

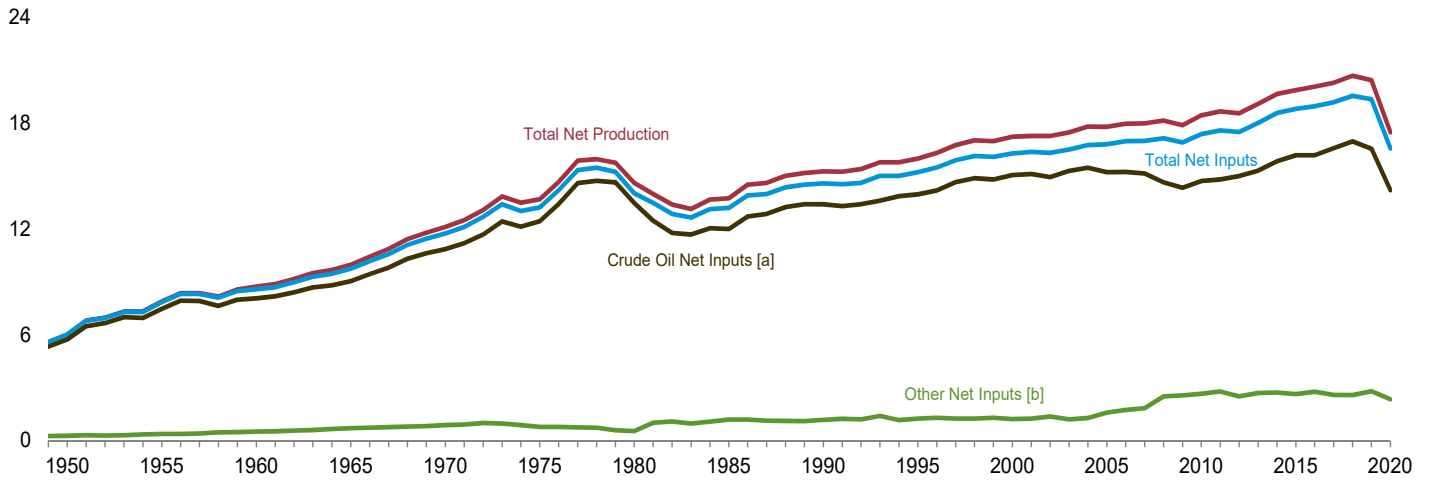
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.

Source: Table 3.1.

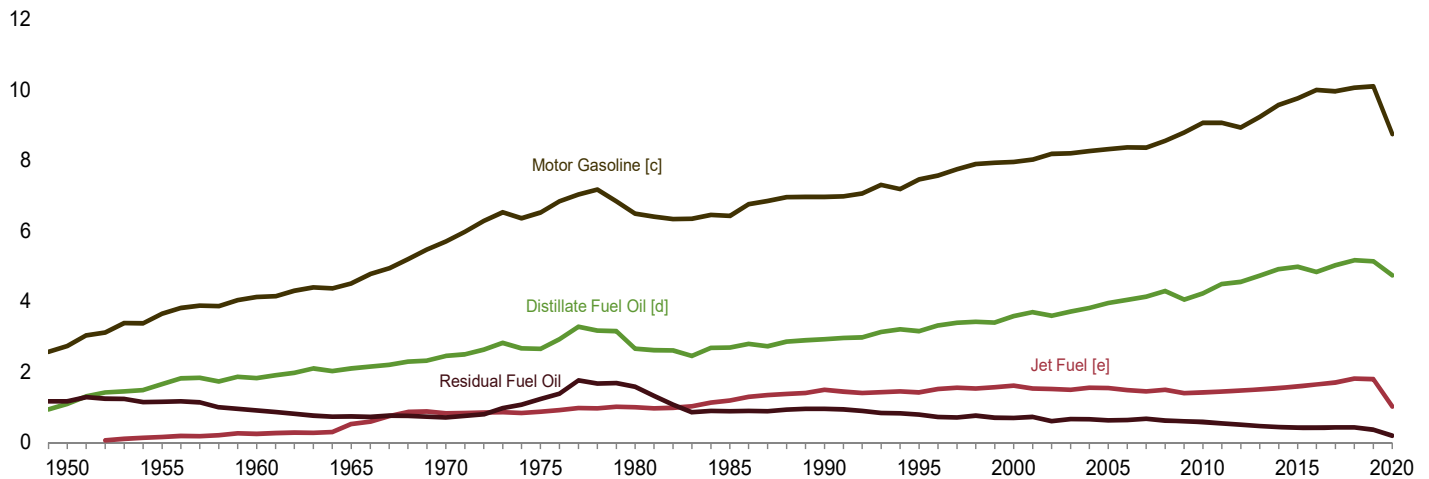
Figure 3.2 Refinery and Blender Net Inputs and Net Production

(Million Barrels per Day)

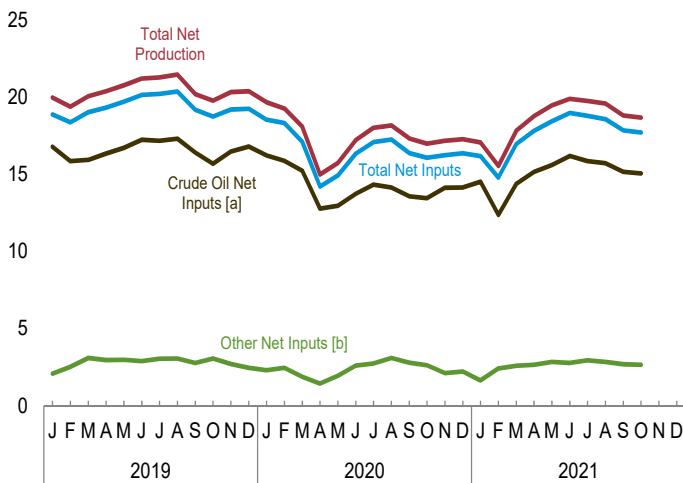
Net Inputs and Net Production, 1949–2020



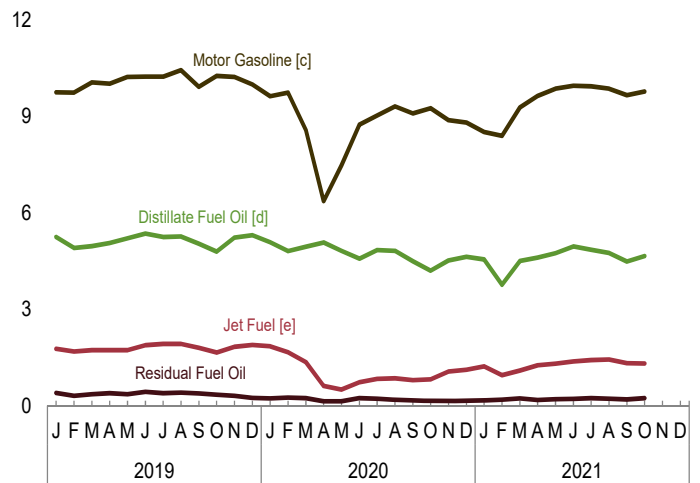
Net Production, Selected Products, 1949–2020



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.

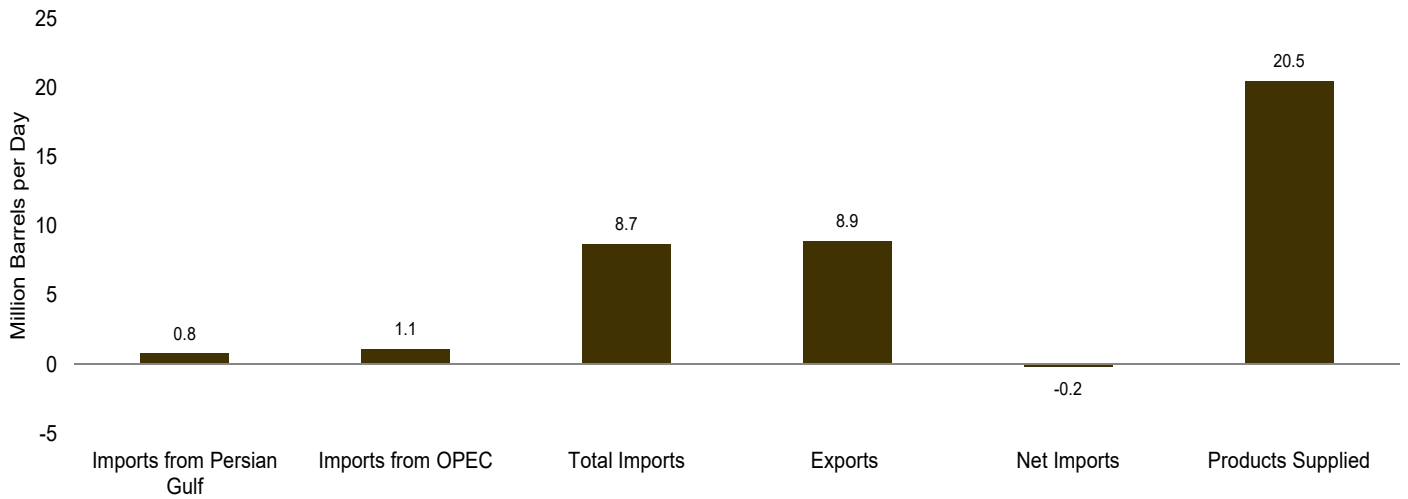
[e] Beginning in 2005, includes kerosene-type jet fuel only.

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

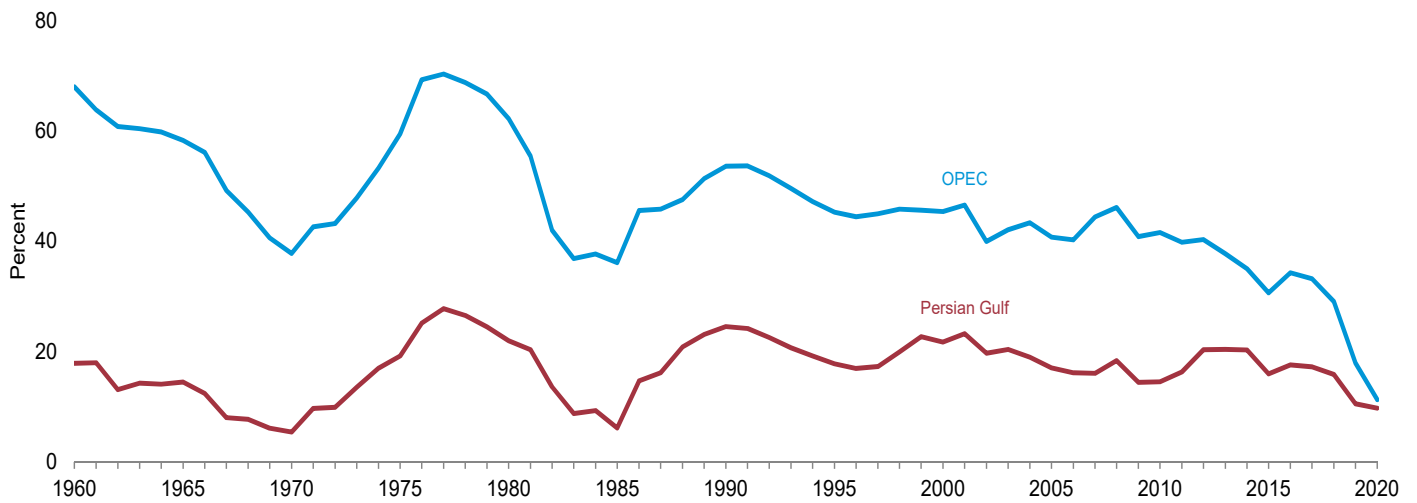
Source: Table 3.2.

Figure 3.3a Petroleum Trade: Overview

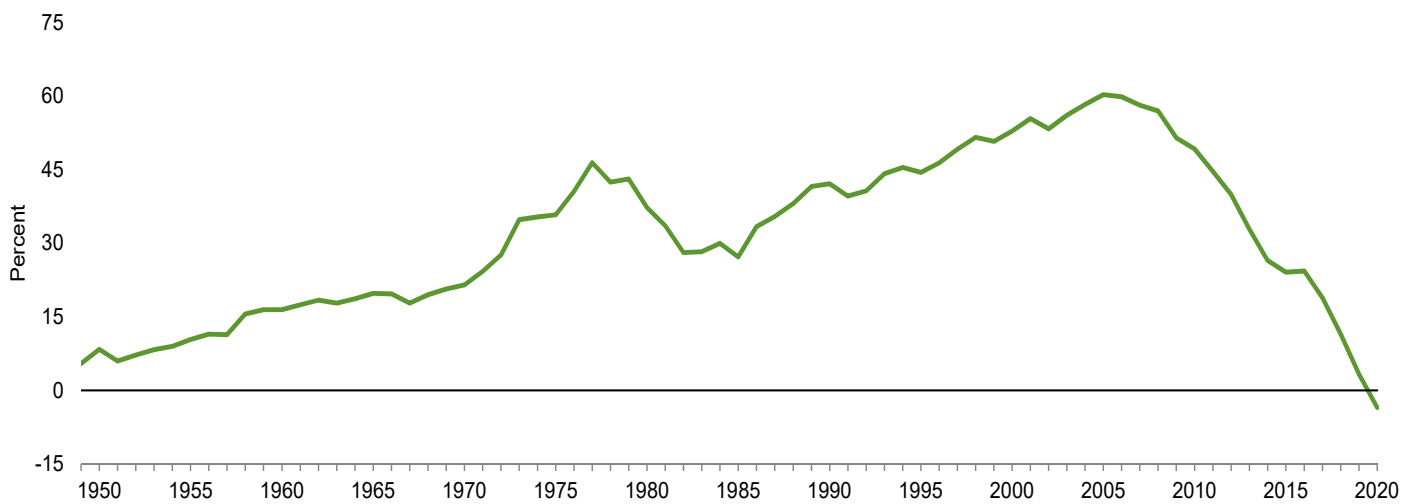
Overview, August 2021



Imports From OPEC and Persian Gulf as Share of Total Imports, 1960–2020



Net Imports as Share of Products Supplied, 1949–2020

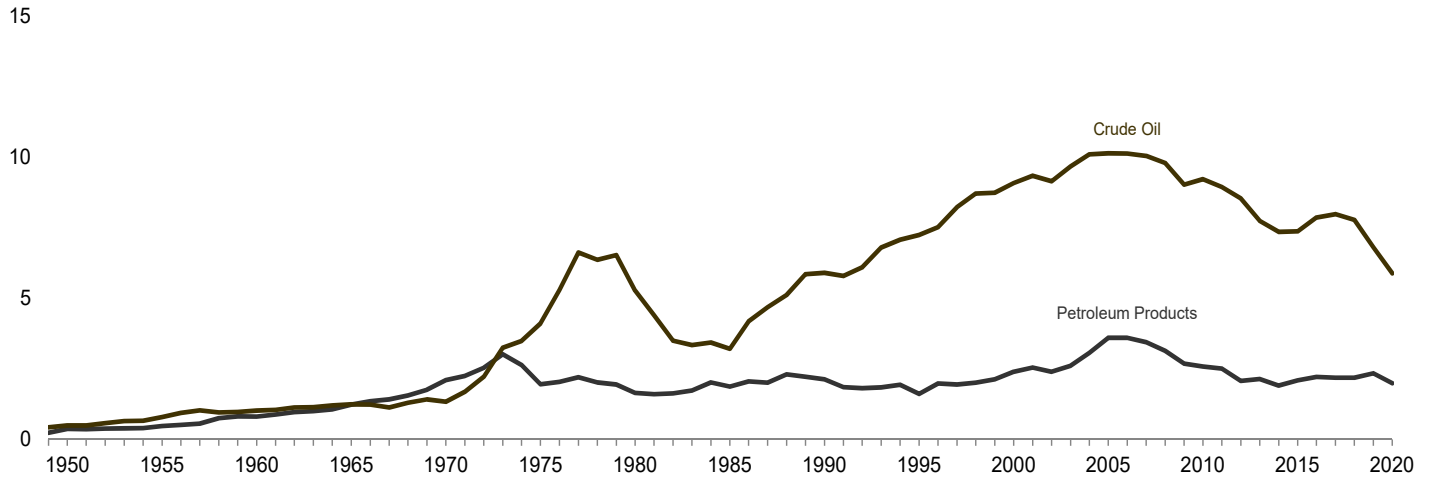


Note: OPEC=Organization of the Petroleum Exporting Countries.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.
 Source: Table 3.3a.

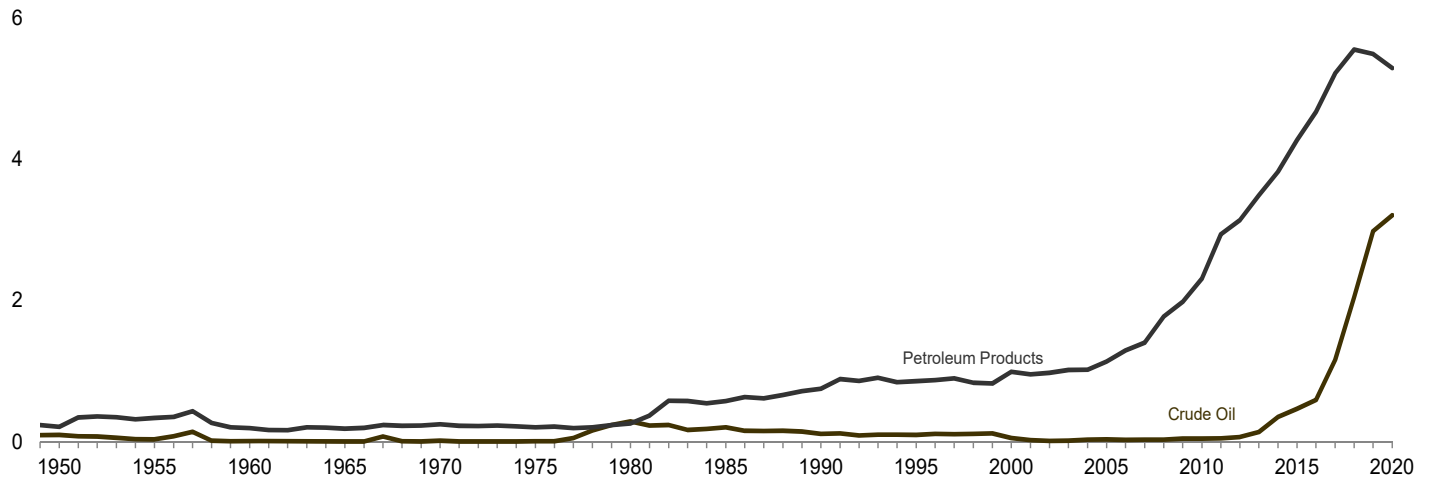
Figure 3.3b Petroleum Trade: Imports and Exports by Type

(Million Barrels per Day)

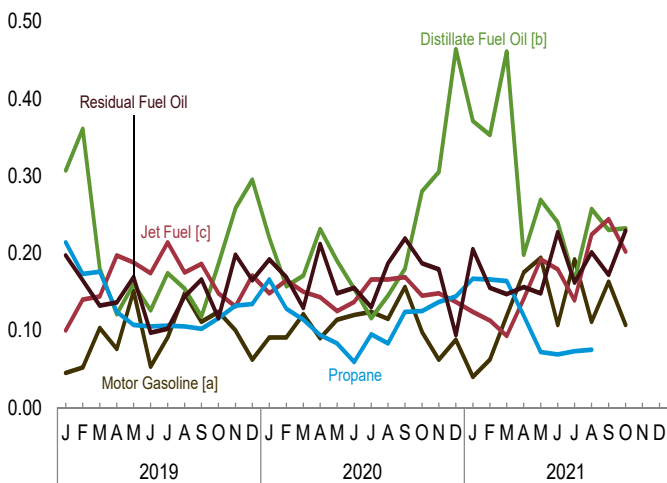
Imports Overview, 1949–2020



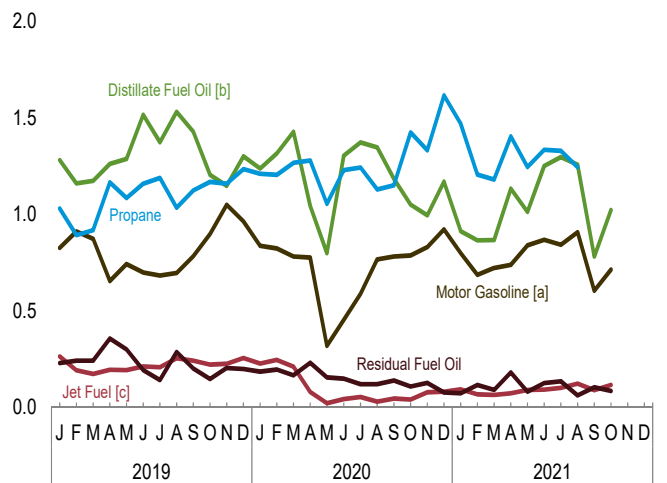
Exports Overview, 1949–2020



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

	Algeria ^a	Angola ^b	Iraq	Kuwait ^c	Libya ^d	Nigeria ^e	Saudi Arabia ^c	United Arab Emirates	Venezuela	Other ^f	Total OPEC
1960 Average	(a)	(b)	22	182	(d)	(e)	84	NA	911	34	1,233
1965 Average	{a}	{b}	16	74	42	{e}	158	14	994	142	1,439
1970 Average	8	(b)	-	48	47	(e)	30	63	989	109	1,294
1975 Average	282	(b)	2	16	232	762	715	117	702	773	3,601
1980 Average	488	(b)	28	27	554	857	1,261	172	481	432	4,300
1985 Average	187	(b)	46	21	4	293	168	45	605	461	1,830
1990 Average	280	(b)	518	86	-	800	1,339	17	1,025	231	4,296
1995 Average	234	(b)	-	218	-	627	1,344	10	1,480	88	4,002
2000 Average	225	(b)	620	272	-	896	1,572	15	1,546	57	5,203
2005 Average	478	(b)	531	243	56	1,166	1,537	18	1,529	28	5,587
2006 Average	657	(b)	553	185	87	1,114	1,463	9	1,419	29	5,517
2007 Average	670	508	484	181	117	1,134	1,485	10	1,361	29	5,980
2008 Average	548	513	627	210	103	988	1,529	4	1,189	243	5,954
2009 Average	493	460	450	182	79	809	1,004	40	1,063	195	4,776
2010 Average	510	393	415	197	70	1,023	1,096	2	988	212	4,906
2011 Average	358	346	459	191	15	818	1,195	10	951	212	4,555
2012 Average	242	233	476	305	61	441	1,365	3	960	186	4,271
2013 Average	115	216	341	328	59	281	1,329	3	806	243	3,720
2014 Average	110	154	369	311	6	92	1,166	13	789	224	3,237
2015 Average	108	136	229	204	7	81	1,059	4	827	239	2,894
2016 Average	182	168	424	210	16	235	1,106	14	796	295	3,446
2017 Average	189	135	604	145	65	334	955	34	674	231	3,366
2018 Average	176	94	521	79	56	189	901	58	586	227	2,888
2019 January	98	10	429	21	60	181	777	27	634	317	2,553
February	51	-	422	106	36	33	663	32	289	171	1,803
March	136	10	275	129	25	142	666	3	69	187	1,643
April	125	43	265	61	88	137	583	22	114	128	1,566
May	122	46	366	57	111	243	462	22	11	233	1,693
June	122	123	355	26	55	251	579	16	(s)	171	1,699
July	75	-	360	20	39	193	454	36	-	243	1,420
August	63	47	249	46	66	380	461	19	-	329	1,660
September	49	71	400	-	69	245	458	121	-	189	1,601
October	23	75	252	-	86	128	444	22	-	271	1,301
November	34	25	283	41	90	211	355	5	-	278	1,322
December	16	11	436	43	34	163	470	-	-	238	1,411
Average	78	38	341	45	63	193	530	27	92	231	1,639
2020 January	17	10	299	46	67	64	407	7	-	8	926
February	33	33	262	46	36	76	489	6	-	(s)	982
March	12	-	290	23	-	54	445	4	-	3	831
April	1	30	140	-	-	57	429	13	-	3	673
May	1	50	242	-	-	69	1,158	2	-	9	1,532
June	7	66	146	34	-	103	1,221	39	-	2	1,617
July	4	7	136	84	-	34	718	29	-	-	1,014
August	11	12	193	-	(s)	114	273	3	-	-	607
September	14	32	83	35	(s)	91	366	14	-	32	667
October	3	72	121	34	-	30	280	80	-	67	686
November	19	49	111	34	-	119	286	13	-	2	632
December	61	12	89	-	-	93	190	20	-	2	467
Average	15	31	176	28	9	75	522	19	-	11	886
2021 January	24	40	89	-	33	145	237	33	-	(s)	603
February	60	15	140	29	122	78	268	10	-	3	724
March	57	62	135	-	21	123	351	10	-	36	796
April	68	21	175	66	123	119	331	37	-	2	942
May	19	42	178	14	118	123	395	25	-	2	916
June	33	25	180	32	105	203	576	21	-	-	1,175
July	38	47	237	37	95	150	452	96	-	8	1,160
August	27	65	131	46	114	140	471	81	-	8	1,082
8-Month Average	40	40	158	28	91	136	386	40	-	8	926
2020 8-Month Average	11	26	214	29	13	71	643	13	-	3	1,022
2019 8-Month Average	102	35	339	58	60	197	580	22	139	224	1,755

^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 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.

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

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

^f Includes these countries for the dates indicated: Congo-Brazzaville (June 2018 forward), Ecuador (1973–1992 and November 2007–2019), Equatorial Guinea (May 2017 forward), Gabon (1975–1994 and July 2016 forward), Indonesia (1962–2008 and January–November 2016), Iran (1960 forward), and Qatar (1961–2018).

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 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. • **1981–2020:** EIA, *Petroleum Supply Annual*, annual reports. • **2021:** EIA, *Petroleum Supply Monthly*, monthly reports.

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

	Brazil	Canada	Colombia	Ecuador ^a	Mexico	Nether-lands	Norway	Russia ^b	United Kingdom	U.S. Virgin Islands	Other	Total Non-OPEC
1960 Average	1	120	42	NA	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	(a)	71	19	17	14	14	406	1,052	2,454
1980 Average	3	455	4	(a)	533	2	144	1	176	388	903	2,609
1985 Average	61	770	23	(a)	816	58	32	8	310	247	913	3,237
1990 Average	49	934	182	(a)	755	55	102	45	189	282	1,128	3,721
1995 Average	8	1,332	219	97	1,068	15	273	25	383	278	1,136	4,833
2000 Average	51	1,807	342	128	1,373	30	343	72	366	291	1,453	6,257
2005 Average	156	2,181	196	283	1,662	151	233	410	396	328	2,130	8,127
2006 Average	193	2,353	155	278	1,705	174	196	369	272	328	2,168	8,190
2007 Average	200	2,455	155	203	1,532	128	142	414	277	346	1,636	7,489
2008 Average	258	2,493	200	(a)	1,302	168	102	465	236	320	1,416	6,961
2009 Average	309	2,479	276	(a)	1,210	140	108	563	245	277	1,307	6,915
2010 Average	272	2,535	365	(a)	1,284	108	89	612	256	253	1,112	6,887
2011 Average	253	2,729	433	(a)	1,206	100	113	624	159	186	1,077	6,881
2012 Average	226	2,946	433	(a)	1,035	99	75	477	149	12	874	6,327
2013 Average	151	3,142	389	(a)	919	89	54	460	147	–	786	6,138
2014 Average	160	3,388	318	(a)	842	85	45	330	117	–	720	6,004
2015 Average	215	3,765	395	(a)	758	57	61	371	123	–	811	6,554
2016 Average	167	3,780	483	(a)	669	60	76	441	122	(s)	812	6,610
2017 Average	224	4,054	362	(a)	682	62	79	389	111	–	814	6,778
2018 Average	171	4,292	333	(a)	719	62	94	375	146	–	862	7,055
2019 January	141	4,655	380	(a)	569	103	88	344	122	–	813	7,215
February	90	4,320	420	(a)	720	108	69	226	47	–	867	6,868
March	172	4,429	412	(a)	712	68	80	363	118	–	907	7,262
April	153	4,412	472	(a)	680	124	112	566	182	–	1,258	7,958
May	256	4,428	468	(a)	656	218	147	564	266	–	1,198	8,200
June	213	4,398	395	(a)	574	88	190	534	156	–	1,050	7,598
July	338	4,674	379	(a)	670	121	51	496	182	–	1,270	8,181
August	197	4,379	384	(a)	744	138	94	617	146	–	1,027	7,726
September	186	4,285	283	(a)	589	121	123	486	179	–	859	7,111
October	285	4,422	266	(a)	548	95	40	675	130	–	838	7,298
November	125	3,963	284	(a)	705	96	46	649	139	–	774	6,782
December	143	4,784	340	(a)	641	76	48	696	81	–	939	7,749
Average	193	4,432	373	(a)	650	113	91	520	146	–	984	7,502
2020 January	101	4,521	337	242	854	48	1	601	109	–	839	7,654
February	132	4,607	343	236	804	64	–	614	74	–	624	7,499
March	120	4,381	322	260	801	114	18	645	62	–	805	7,530
April	104	4,093	277	176	631	93	16	408	54	–	715	6,567
May	110	3,688	250	58	889	24	44	350	101	–	715	6,230
June	167	3,752	369	112	849	98	99	551	87	–	667	6,751
July	115	3,981	331	108	755	72	12	563	84	–	808	6,831
August	113	3,877	186	242	769	91	20	552	64	–	928	6,843
September	92	3,944	351	227	728	125	15	527	91	–	791	6,891
October	113	3,967	248	165	574	56	60	660	113	–	731	6,689
November	166	4,260	175	227	611	72	36	597	66	–	775	6,983
December	173	4,440	219	176	740	132	26	416	116	7	827	7,271
Average	126	4,125	284	186	751	82	29	540	85	1	770	6,977
2021 January	121	4,468	205	164	747	75	31	649	42	42	767	7,312
February	56	4,308	272	134	613	77	56	453	74	34	847	6,924
March	83	4,512	167	142	568	192	92	740	119	67	811	7,492
April	77	4,044	223	251	708	189	56	688	68	26	996	7,325
May	96	4,057	235	196	728	154	98	844	88	59	1,099	7,654
June	157	4,586	197	153	788	161	67	848	154	25	987	8,123
July	220	4,177	157	120	851	143	94	761	121	7	984	7,635
August	177	4,234	198	198	715	132	59	795	127	4	992	7,630
8-Month Average	124	4,298	206	170	716	141	69	725	100	33	936	7,518
2020 8-Month Average	120	4,110	302	179	794	76	26	535	80	–	764	6,987
2019 8-Month Average	197	4,464	413	(a)	665	121	104	466	154	–	1,050	7,634

^a Ecuador was a member of OPEC from 1973–1992 and November 2007–2019. For those time periods, Ecuador is included in "Total OPEC" on Table 3.3c.

^b 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. • **1981–2020:** EIA, *Petroleum Supply Annual*, annual reports. • **2021:** 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
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 Average	2,048	1,289	949	1,602	223	879	321	1,240	7,601
2019 January	2,643	1,280	1,030	1,561	264	826	230	1,178	7,982
February	2,915	1,160	892	1,517	192	912	242	1,281	8,219
March	2,673	1,173	918	1,652	173	873	243	1,159	7,946
April	2,911	1,261	1,166	1,923	195	655	357	1,081	8,382
May	2,959	1,287	1,085	1,802	194	742	301	954	8,238
June	3,100	1,516	1,158	1,860	213	699	194	994	8,576
July	2,706	1,374	1,188	1,893	209	683	142	1,077	8,084
August	2,755	1,530	1,035	1,832	254	696	287	1,084	8,438
September	3,093	1,427	1,124	1,885	243	783	202	1,040	8,672
October	3,412	1,205	1,168	2,081	222	898	148	1,074	9,039
November	3,080	1,148	1,159	1,981	226	1,049	204	1,053	8,741
December	3,537	1,301	1,235	1,955	256	964	199	1,119	9,331
Average	2,982	1,306	1,098	1,830	220	815	229	1,090	8,471
2020 January	3,388	1,237	1,210	2,136	227	837	186	1,218	9,228
February	3,537	1,315	1,205	2,204	247	823	197	1,267	9,589
March	3,625	1,427	1,267	2,068	211	782	166	1,243	9,522
April	2,883	1,044	1,279	2,140	80	776	231	1,201	8,353
May	3,177	799	1,054	1,790	22	320	156	847	7,112
June	2,747	1,305	1,229	1,968	44	455	149	940	7,608
July	3,343	1,372	1,243	2,043	54	588	121	964	8,485
August	3,409	1,346	1,129	1,953	30	767	121	925	8,550
September	3,265	1,184	1,150	1,934	46	782	140	964	8,315
October	2,939	1,050	1,423	2,337	41	787	109	1,126	8,389
November	2,786	995	1,331	2,154	79	830	127	941	7,913
December	3,356	1,169	1,615	2,246	82	922	77	1,070	8,924
Average	3,206	1,187	1,262	2,081	96	722	148	1,058	8,498
2021 January	3,165	913	1,469	2,381	93	799	74	1,303	8,729
February	2,703	866	1,206	2,175	68	687	116	1,048	7,661
March	2,685	867	1,180	2,208	65	722	91	1,040	7,679
April	3,283	1,133	1,403	2,497	74	738	182	1,202	9,110
May	2,736	1,013	1,245	2,285	91	840	81	1,224	8,270
June	3,349	1,251	1,335	2,333	92	868	126	1,241	9,262
July	2,700	1,296	1,329	2,308	102	843	135	1,263	8,647
August	R 2,996	R 1,257	R 1,244	R 2,391	R 123	R 907	R 63	R 1,160	R 8,897
September	E 2,622	E 781	NA	NA	E 89	E 605	E 105	NA	E 7,247
October	E 2,844	E 1,022	NA	NA	E 117	E 714	E 85	NA	E 8,007
10-Month Average	E 2,909	E 1,042	NA	NA	E 92	E 774	E 105	NA	E 8,356
2020 10-Month Average	3,232	1,207	1,219	2,057	100	691	157	1,068	8,512
2019 10-Month Average	2,915	1,322	1,078	1,802	216	776	234	1,091	8,357

^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, 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. For 2009–2018, also includes oxygenates (excluding fuel ethanol). Beginning in 2010, also includes fuel ethanol. Beginning in 2011, also includes renewable fuels (excluding fuel ethanol).
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. • 1981–2020: EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • 2021: 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	Nether-lands	Singa-pore	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
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 Average	395	871	447	200	350	1,081	251	210	176	186	2,209	6,376
2018 Average	400	1,024	374	297	466	1,194	337	185	382	272	2,670	7,601
2019 January	457	878	93	401	646	1,177	620	37	339	375	2,957	7,982
February	328	1,163	177	455	284	1,234	442	184	607	368	2,977	8,219
March	564	944	129	673	505	1,210	372	140	506	263	2,640	7,946
April	428	1,155	80	575	516	1,197	440	119	397	293	3,181	8,382
May	428	1,030	300	469	580	1,018	294	124	501	372	3,121	8,238
June	565	861	424	438	440	993	525	82	807	286	3,155	8,576
July	466	979	286	231	589	1,165	355	79	759	269	2,905	8,084
August	443	1,052	300	417	574	1,043	373	63	616	383	3,174	8,438
September	585	1,013	317	396	633	1,056	478	149	606	322	3,116	8,672
October	446	1,190	36	586	558	1,208	553	137	618	285	3,423	9,039
November	476	1,148	133	400	595	1,355	360	168	613	371	3,122	8,741
December	493	1,026	78	480	709	1,242	595	237	590	439	3,441	9,331
Average	474	1,035	196	460	555	1,158	451	126	580	336	3,102	8,471
2020 January	506	1,302	98	490	650	1,171	505	178	772	411	3,145	9,228
February	487	1,229	82	532	454	1,067	640	192	484	552	3,869	9,589
March	516	1,013	241	526	655	1,262	565	225	393	369	3,757	9,522
April	391	860	414	405	637	935	357	480	421	310	3,142	8,353
May	269	699	1,487	434	486	521	373	204	351	230	2,058	7,112
June	307	814	878	482	460	835	411	225	374	327	2,496	7,608
July	452	904	896	329	560	966	494	60	491	373	2,959	8,485
August	486	871	788	362	390	1,114	492	185	424	455	2,983	8,550
September	443	1,046	1,053	428	326	1,053	380	114	412	234	2,825	8,315
October	533	872	993	460	463	1,045	363	51	458	332	2,819	8,389
November	355	847	663	567	416	1,223	496	60	313	340	2,632	7,913
December	500	738	947	642	724	1,308	399	34	506	267	2,858	8,924
Average	438	932	715	471	519	1,042	456	167	451	350	2,959	8,498
2021 January	511	834	713	673	758	1,021	210	161	533	260	3,054	8,729
February	426	814	527	641	383	1,085	570	282	366	149	2,418	7,661
March	270	865	753	510	446	1,094	297	109	551	233	2,551	7,679
April	453	921	559	637	476	1,151	626	334	532	377	3,044	9,110
May	364	766	725	542	492	1,279	400	167	469	332	2,734	8,270
June	552	852	476	720	529	1,214	420	362	781	342	3,014	9,262
July	516	840	500	517	501	1,225	442	312	802	313	2,679	8,647
August	572	885	508	609	453	1,123	431	301	584	397	3,033	8,897
8-Month Average	458	847	597	605	506	1,150	422	252	579	302	2,819	8,537
2020 8-Month Average	427	960	615	444	537	984	479	218	464	378	3,046	8,552
2019 8-Month Average	461	1,006	224	457	520	1,129	427	103	566	326	3,013	8,231

NA=Not available. - =No data reported.

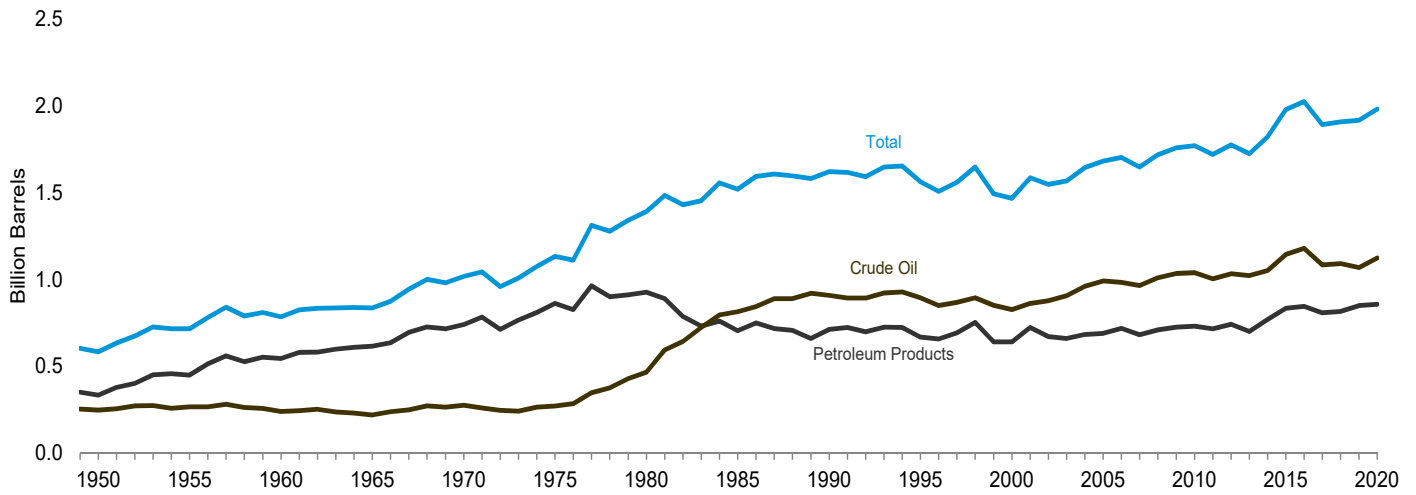
Notes: • Totals may not equal sum of components due to independent rounding. • U.S. geographic coverage is the 50 states and the District of Columbia.

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.

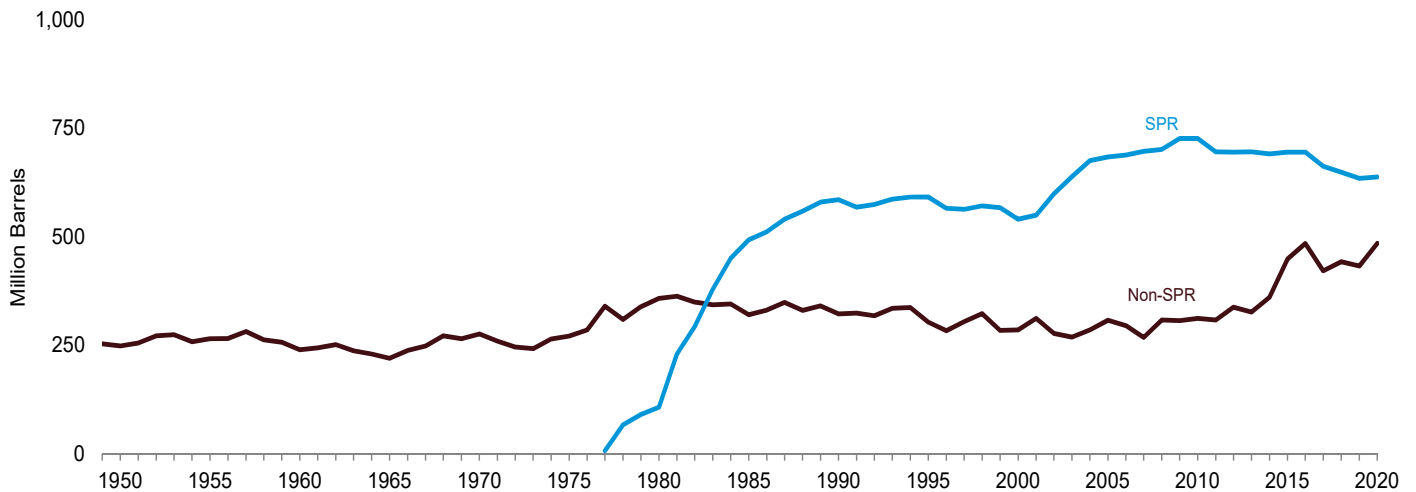
Sources: • 1960–1972: Bureau of Mines, *Minerals Yearbook*, annual reports. • 1973–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976–1980: U.S. Energy Information Administration (EIA), *Energy Data Reports, Petroleum Statement, Annual*, annual reports. • 1981–2020: EIA, *Petroleum Supply Annual*, annual reports. • 2021: EIA, *Petroleum Supply Monthly*, monthly reports.

Figure 3.4 Petroleum Stocks

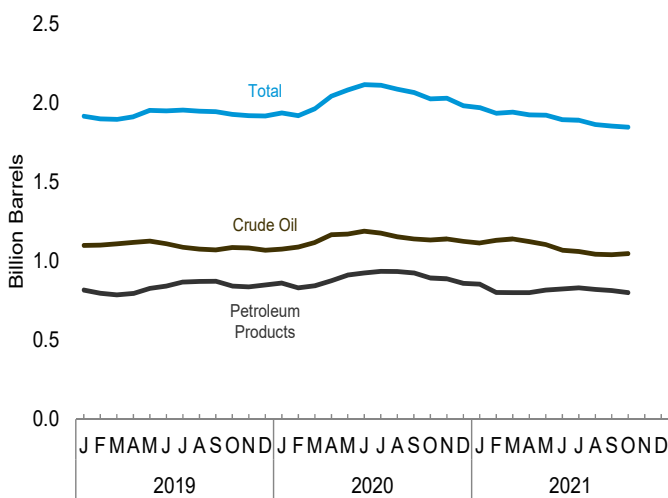
Overview, 1949–2020



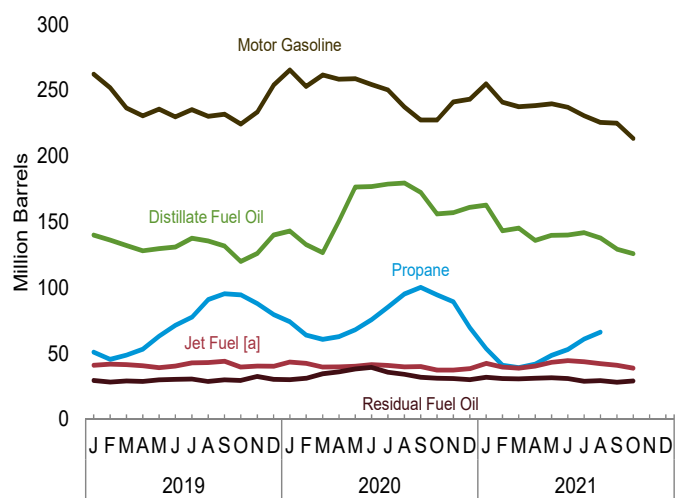
SPR and Non-SPR Crude Oil Stocks, 1949–2020



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 ^l	Motor Gasoline ⁱ	Residual Fuel Oil ^k	Other ^l	Total
	SPR ^b	Non-SPR ^{c,d}	Total ^d		Propane/Propylene			Total ^h					
					Propane	Propylene ^g	Total ^g						
1950 Year	--	248	248	72	NA	NA	NA	2	(i)	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	NA	44	28	209	54	181	1,018
1975 Year	--	271	271	209	NA	NA	NA	82	133	30	235	74	1,133
1980 Year	108	358	466	205	NA	NA	NA	71	137	42	261	92	1,392
1985 Year	493	321	814	144	NA	NA	NA	39	82	40	223	50	1,519
1990 Year	586	323	908	132	NA	NA	NA	49	104	52	220	49	1,621
1995 Year	592	303	895	130	NA	NA	NA	43	100	40	202	37	1,563
2000 Year	541	286	826	118	NA	NA	NA	41	88	45	196	36	1,468
2005 Year	685	308	992	136	NA	NA	NA	57	117	42	208	37	1,682
2006 Year	689	296	984	144	NA	NA	NA	62	125	39	212	42	1,703
2007 Year	697	268	965	134	NA	NA	NA	52	106	39	218	39	1,648
2008 Year	702	308	1,010	146	NA	NA	NA	55	127	38	214	36	1,719
2009 Year	727	307	1,034	166	NA	NA	NA	50	113	43	223	37	1,758
2010 Year	727	312	1,039	164	46	2	47	118	43	219	41	145	1,770
2011 Year	696	308	1,004	149	48	2	50	121	41	223	34	146	1,720
2012 Year	695	338	1,033	135	63	2	64	148	40	231	34	154	1,775
2013 Year	696	327	1,023	128	40	1	42	121	37	228	38	149	1,724
2014 Year	691	361	1,052	136	72	2	74	170	38	240	34	151	1,822
2015 Year	695	449	1,144	161	91	2	93	192	40	235	42	164	1,979
2016 Year	695	485	1,180	166	77	2	79	196	43	239	41	161	2,025
2017 Year	663	422	1,084	146	62	2	64	187	41	237	29	167	1,892
2018 Year	649	443	1,092	140	64	2	66	184	42	247	28	176	1,908
2019 January	649	449	1,098	140	51	1	53	161	41	262	30	182	1,914
February	649	452	1,101	136	46	1	47	151	42	252	28	187	1,897
March	649	459	1,108	132	49	2	51	160	42	237	29	186	1,894
April	649	470	1,118	128	53	2	55	175	41	231	29	190	1,912
May	645	481	1,126	130	63	2	65	202	39	236	30	189	1,952
June	645	463	1,108	131	72	2	73	224	41	230	30	184	1,949
July	645	442	1,086	138	78	2	80	238	43	235	31	182	1,954
August	645	430	1,075	136	91	2	93	256	43	230	29	177	1,946
September	645	426	1,070	132	96	3	98	263	44	232	30	172	1,943
October	641	443	1,085	120	95	2	97	253	40	224	30	176	1,927
November	635	446	1,081	126	88	2	90	232	41	234	33	172	1,918
December	635	433	1,068	140	80	2	81	212	40	254	31	172	1,917
2020 January	635	440	1,075	143	74	2	76	197	44	266	30	180	1,935
February	635	453	1,088	133	64	1	65	180	43	253	31	190	1,918
March	635	483	1,118	127	61	2	62	183	40	262	35	197	1,962
April	638	529	1,167	151	63	1	64	200	40	258	36	189	2,041
May	648	522	1,170	177	68	1	69	214	40	259	38	182	2,081
June	656	533	1,189	177	76	2	77	236	42	254	40	177	2,114
July	656	520	1,176	179	85	1	87	257	41	250	36	171	2,110
August	648	504	1,152	180	95	2	97	283	40	238	34	159	2,085
September	642	498	1,140	173	100	2	102	299	40	228	32	154	2,065
October	639	494	1,132	156	95	1	96	287	38	228	31	153	2,025
November	638	501	1,139	157	89	1	91	266	38	241	31	155	2,027
December	638	485	1,124	161	70	1	71	228	39	243	30	156	1,981
2021 January	638	476	1,114	163	54	1	55	192	43	255	32	170	1,968
February	638	493	1,131	143	41	1	42	171	40	241	31	175	1,933
March	638	502	1,140	145	39	1	40	169	39	238	31	178	1,940
April	633	490	1,123	136	42	1	43	177	41	238	31	176	1,923
May	628	477	1,104	140	49	1	50	187	43	240	32	176	1,921
June	621	448	1,069	140	53	1	54	196	45	237	31	175	1,893
July	621	439	1,060	142	61	1	62	212	44	231	29	172	1,890
August	621	R 422	R 1,043	R 138	R 66	R 1	R 67	R 220	R 43	R 226	29	R 164	R 1,863
September	E 618	E 421	E 1,039	E 129	NA	NA	E 72	RF 229	E 41	E 225	E 28	RE 160	E 1,852
October	E 611	E 435	E 1,046	E 126	NA	NA	E 76	F 229	E 39	E 214	E 29	E 162	E 1,845

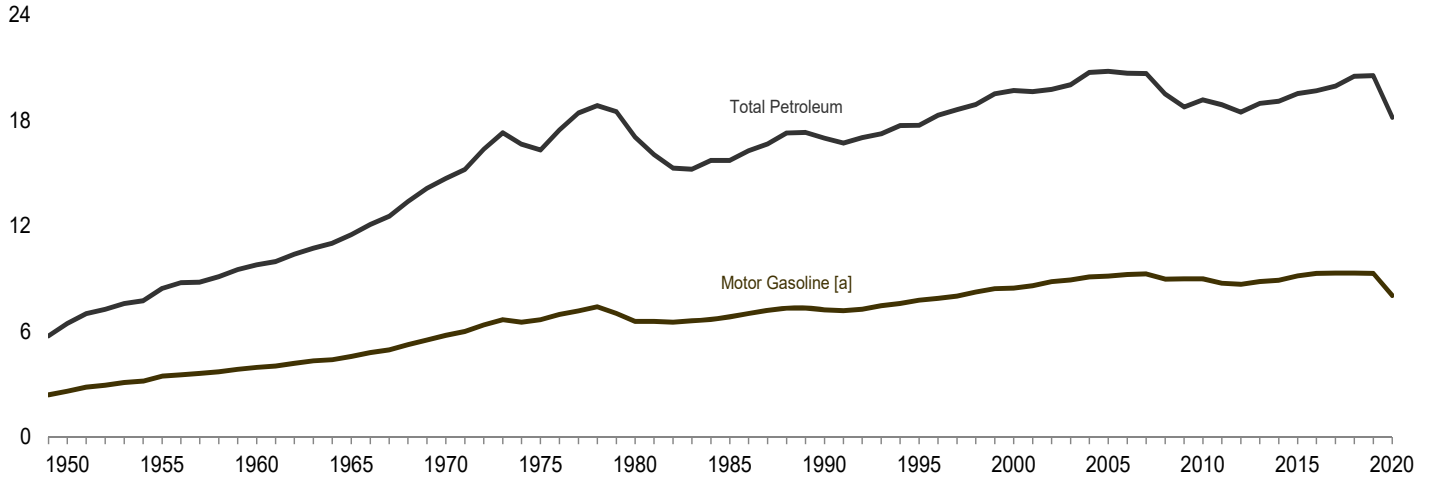
^a Includes lease condensate.
^b "SPR" is the Strategic Petroleum Reserve, which began in October 1977. Crude oil stocks in the SPR include non-U.S. stocks held under foreign or commercial storage agreements.
^c All crude oil stocks other than those in "SPR."
^d Beginning in 1981, includes stocks of Alaskan crude oil in transit.
^e Excludes stocks in the Northeast Home Heating Oil Reserve. Beginning in 2009, includes biodiesel and renewable diesel fuel blended into distillate fuel oil. Beginning in 2021, also includes renewable heating oil blended into distillate fuel oil.
^f Includes propylene stocks at refineries only.
^g Propane and propylene. Through 1983, also includes 40% of "Butane-Propane Mixtures" and 30% of "Ethane-Propane Mixtures."
^h 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.
ⁱ 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.")
^j Includes finished motor gasoline and motor gasoline blending components; excludes oxygenates. Through 1963, also includes aviation gasoline and special naphthas.
^k Through 2019, includes residual fuel oil stocks at (or in) refineries, bulk

terminals, and pipelines. Beginning in 2020, includes residual fuel oil stocks at refineries and bulk terminals only.
^l Asphalt and road oil, aviation gasoline blending components, kerosene, lubricants, petrochemical feedstocks, petroleum coke, unfinished oils, 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 1993, also includes fuel ethanol. Beginning in 2005, also includes naphtha-type jet fuel. For 2005–2018, also includes oxygenates (excluding fuel ethanol). Beginning in 2009, also includes renewable fuels (excluding fuel ethanol) and other hydrocarbons.
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. • **1981–2020:** EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • **2021:** 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.

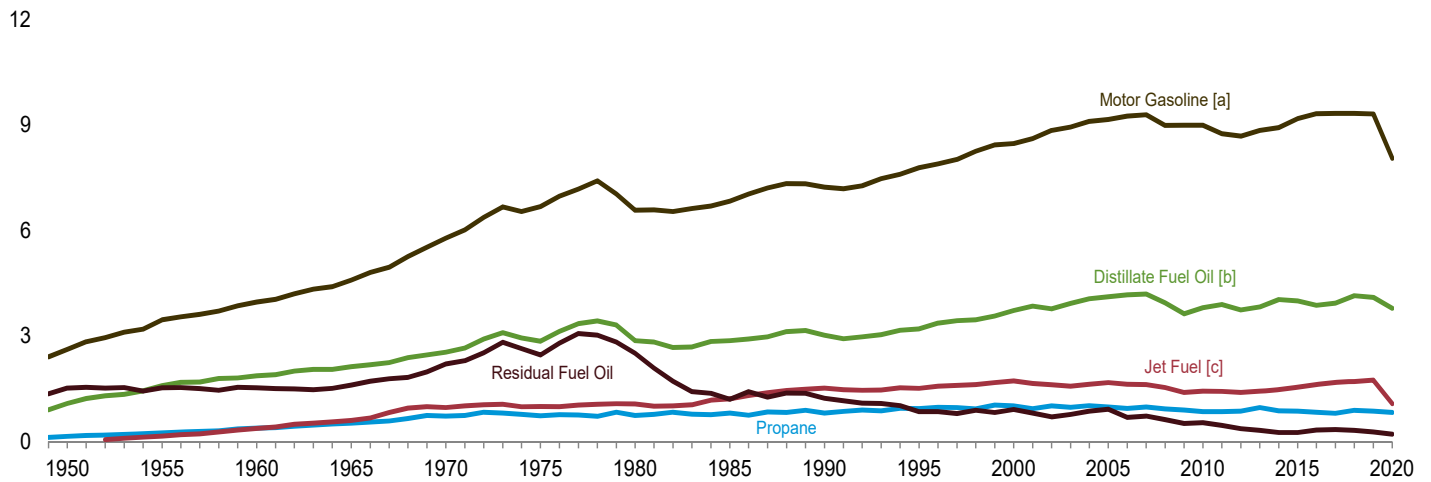
Figure 3.5 Petroleum Products Supplied by Type

(Million Barrels per Day)

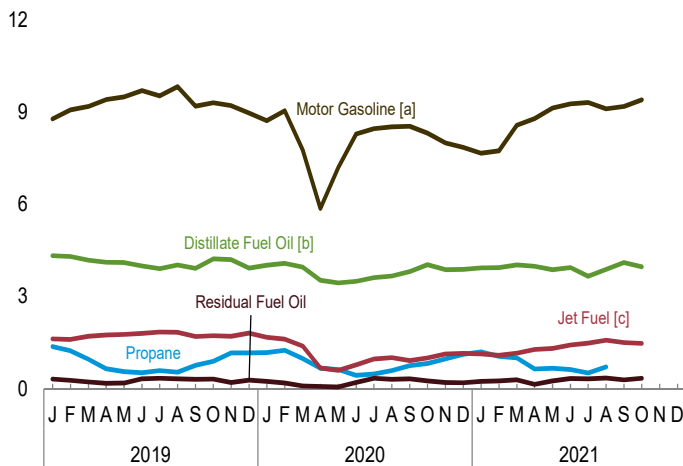
Total Petroleum and Motor Gasoline, 1949–2020



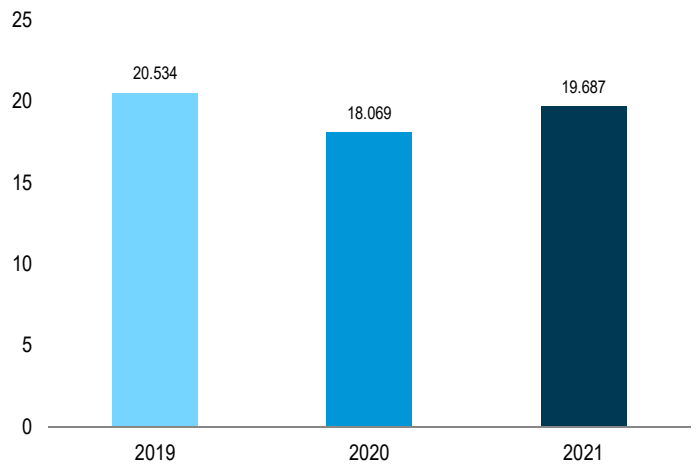
Selected Products, 1949–2020



Selected Products, Monthly



Total, January–October

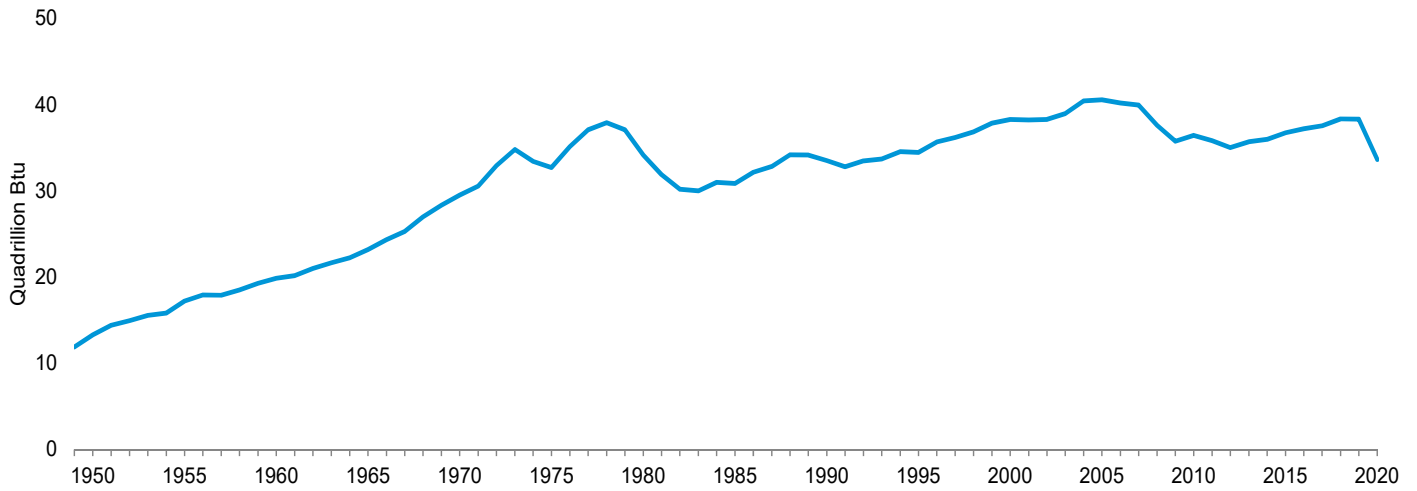


[a] Beginning in 1993, includes fuel ethanol blended into motor gasoline.
 [b] For 2009–2020, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil. Beginning in 2021, includes refinery and blender net inputs of renewable diesel fuel (including biodiesel) blended

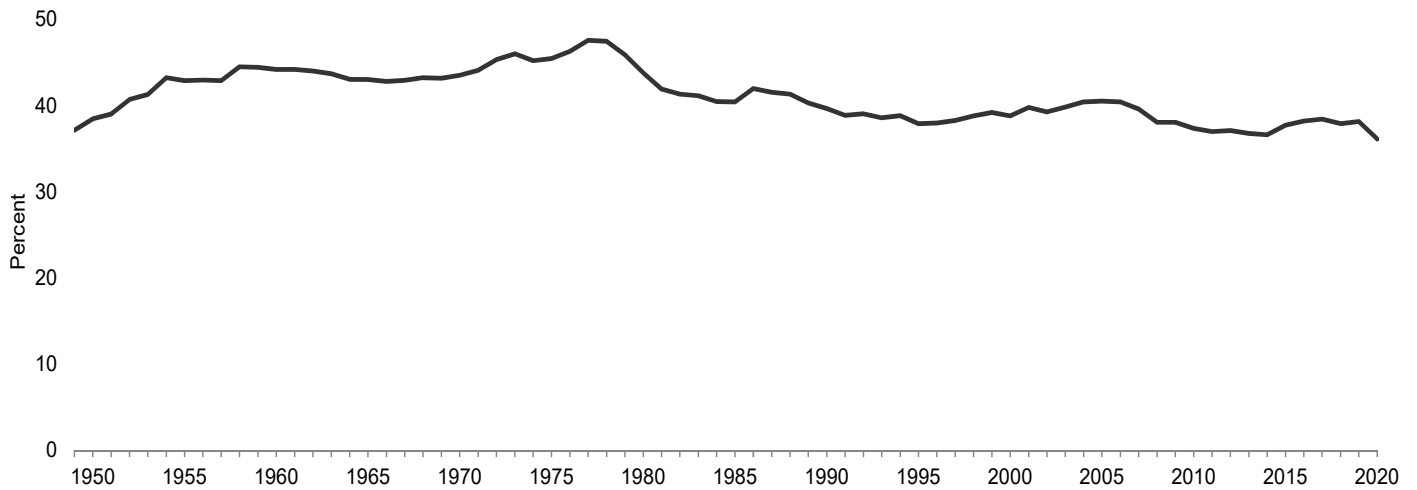
into distillate fuel oil.
 [c] Beginning in 2005, includes kerosene-type jet fuel only.
 Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.
 Source: Table 3.5.

Figure 3.6 Heat Content of Petroleum Products Supplied by Type

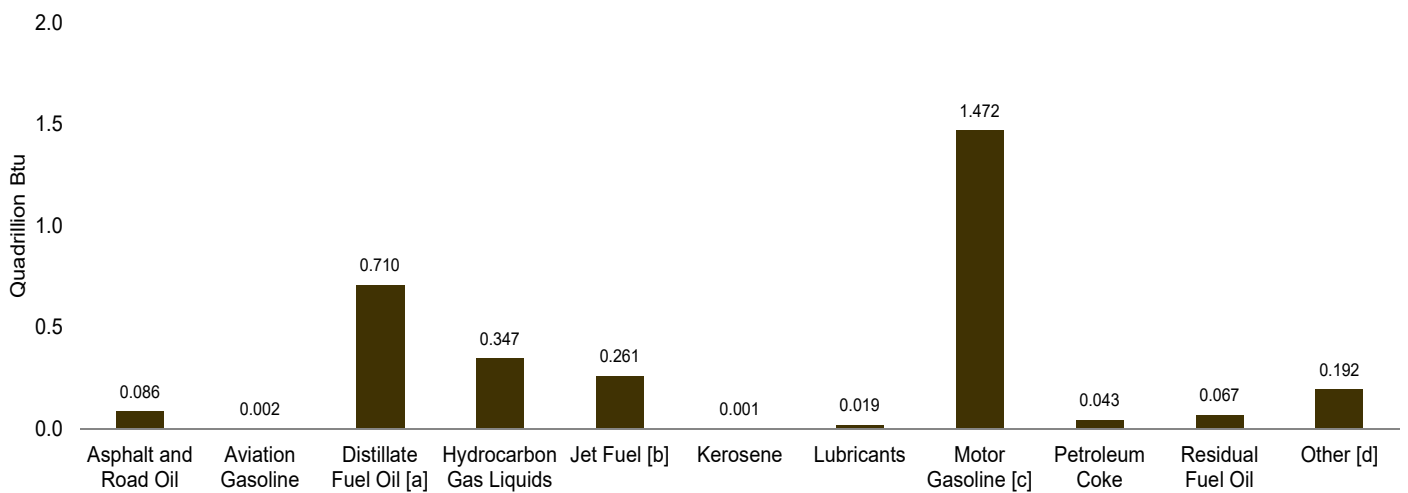
Total, 1949–2020



Petroleum Products Supplied as Share of Total Energy Consumption, 1949–2020



By Product, October 2021



[a] Includes refinery and blender net inputs of 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.

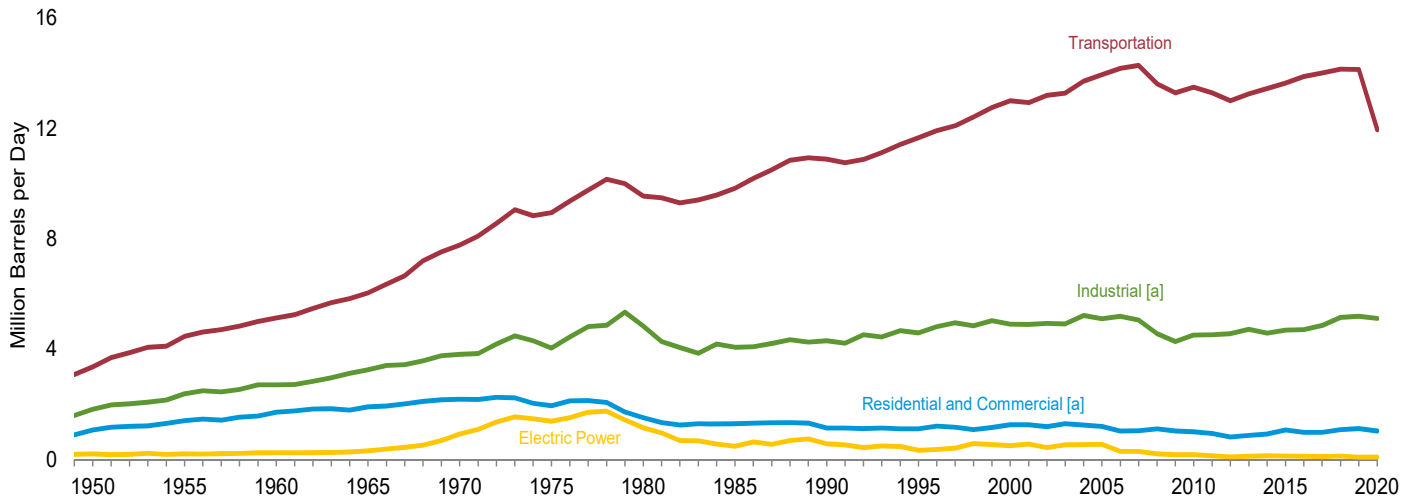
[d] All petroleum products not separately displayed.

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

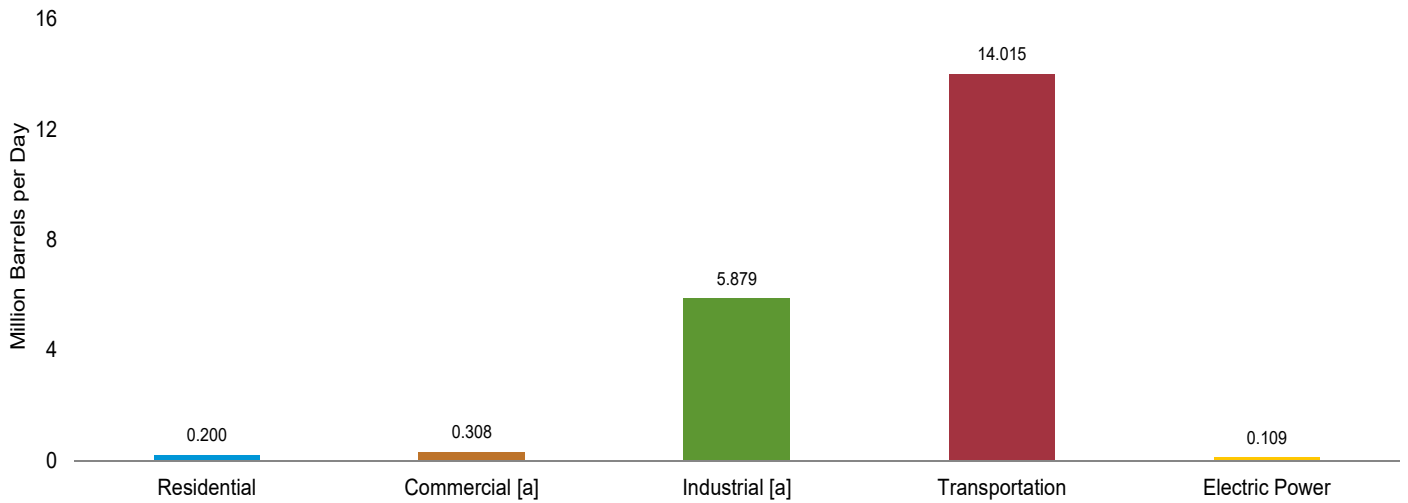
Sources: Tables 1.1 and 3.6.

Figure 3.7 Petroleum Consumption by Sector

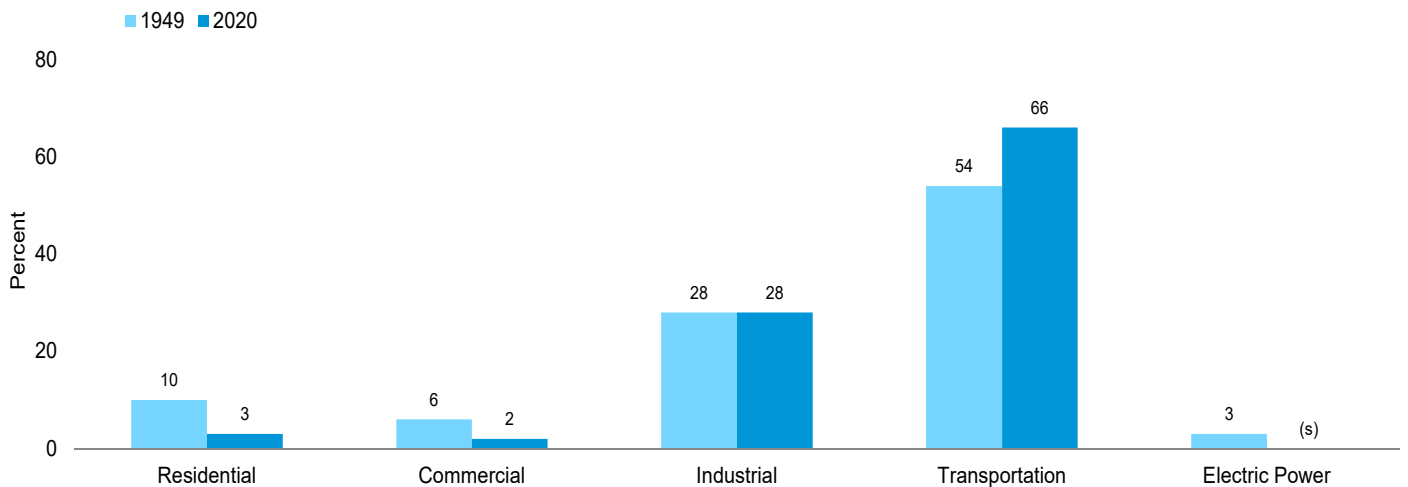
By Sector, 1949–2020



By Sector, August 2021



Sector Shares, 1949 and 2020



[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	Kero-sene	Total	Distillate Fuel Oil	HGL ^b	Kero-sene	Motor Gasoline ^{c,d}	Petroleum Coke	Residual Fuel Oil	Total
		Propane				Propane					
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
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 Average	205	307	4	517	153	111	1	196	(s)	2	462
2018 Average	241	361	4	606	153	126	1	199	(s)	1	480
2019 January	383	754	20	1,157	266	209	3	189	(s)	2	669
February	353	709	13	1,075	245	199	2	195	(s)	2	643
March	282	592	(s)	874	196	172	(s)	197	(s)	1	568
April	187	353	1	542	130	119	(s)	202	(s)	1	453
May	142	254	1	397	99	97	(s)	204	0	1	400
June	123	166	1	290	86	77	(s)	209	0	1	372
July	115	144	1	261	80	72	(s)	205	0	1	358
August	177	148	(s)	325	123	73	(s)	211	0	1	408
September	102	171	4	278	71	78	1	198	0	(s)	348
October	154	322	2	478	107	112	(s)	200	0	1	420
November	312	576	9	897	217	169	2	198	0	1	587
December	358	652	11	1,020	249	186	2	193	(s)	2	631
Average	223	402	5	630	155	130	1	200	(s)	1	487
2020 January	314	687	19	1,020	218	192	3	188	(s)	1	602
February	276	656	22	954	192	185	4	195	(s)	1	576
March	241	496	4	741	168	149	1	167	0	1	485
April	224	412	2	638	156	130	(s)	126	0	1	413
May	245	251	(s)	496	170	94	(s)	155	0	1	420
June	159	153	1	313	111	72	(s)	178	0	1	362
July	104	137	(s)	241	72	69	(s)	182	0	(s)	323
August	91	139	7	237	63	69	1	183	0	(s)	317
September	158	179	6	342	110	78	1	184	0	1	373
October	177	319	2	498	123	109	(s)	179	0	1	412
November	221	460	1	682	154	141	(s)	172	0	1	^R 468
December	268	695	6	969	186	193	1	169	0	1	^R 551
Average	206	381	6	593	143	123	1	173	(s)	1	441
2021 January	240	735	7	982	167	202	1	165	0	1	536
February	278	791	24	1,094	194	215	4	166	(s)	1	580
March	209	513	2	724	145	153	(s)	184	(s)	1	483
April	147	372	6	526	102	121	1	189	0	1	414
May	123	247	1	371	86	93	(s)	196	0	(s)	376
June	108	143	(s)	252	75	70	(s)	199	0	(s)	345
July	^R 73	137	1	^R 211	51	69	(s)	200	0	(s)	^R 320
August	62	138	(s)	200	43	69	(s)	196	0	(s)	308
8-Month Average	154	381	5	539	107	123	1	187	(s)	1	419
2020 8-Month Average	206	365	7	578	143	119	1	172	(s)	1	437
2019 8-Month Average	219	387	5	611	152	127	1	202	(s)	1	483

^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.

^RRevised. 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.

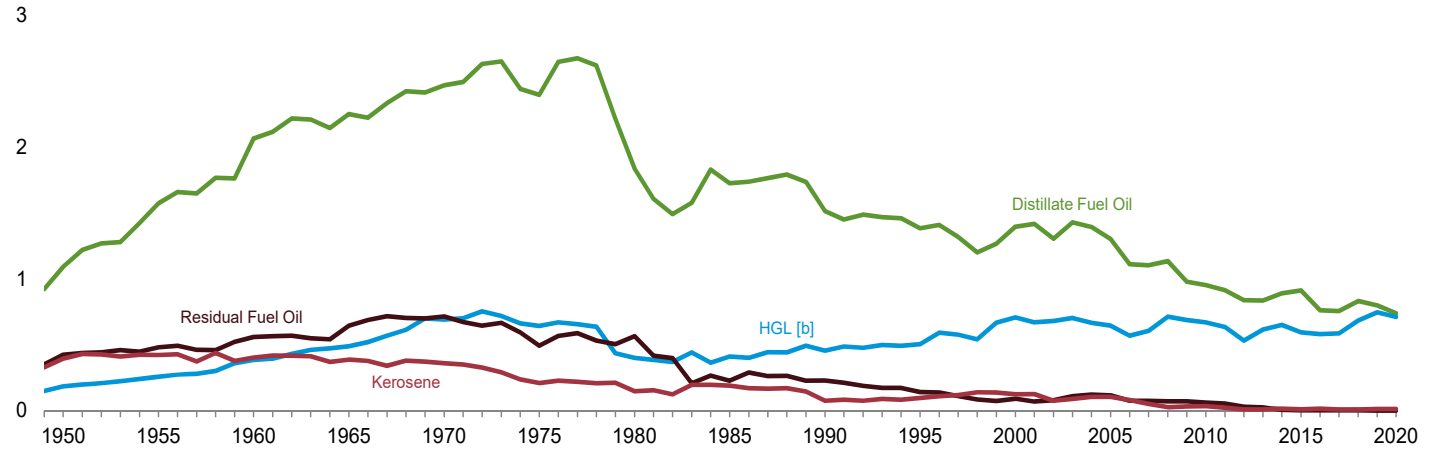
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

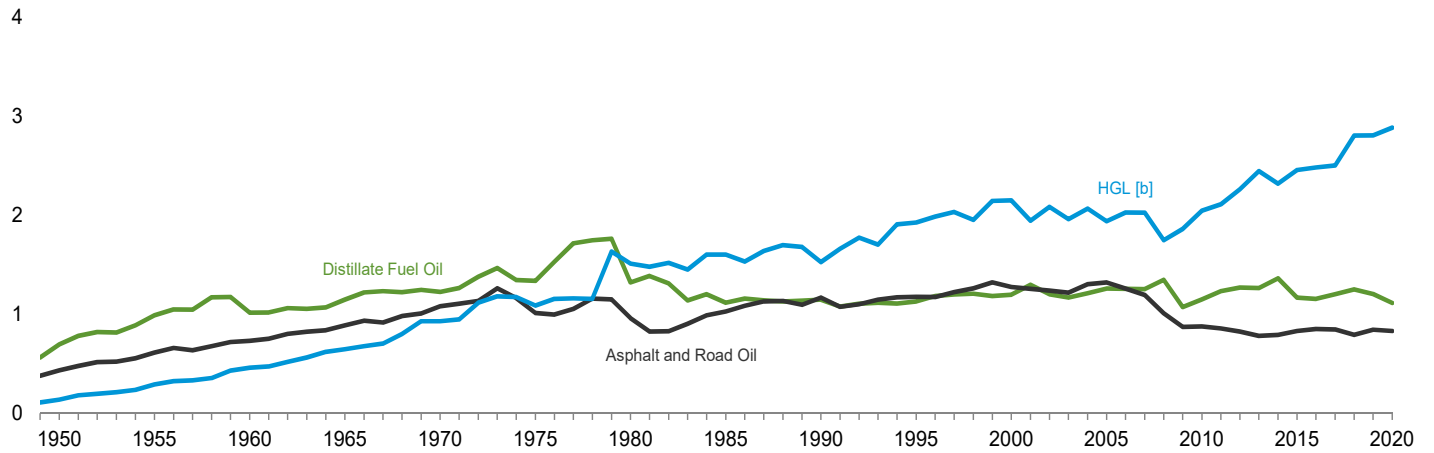
Figure 3.8a Heat Content of Petroleum Consumption by End-Use Sector, 1949-2020

(Quadrillion Btu)

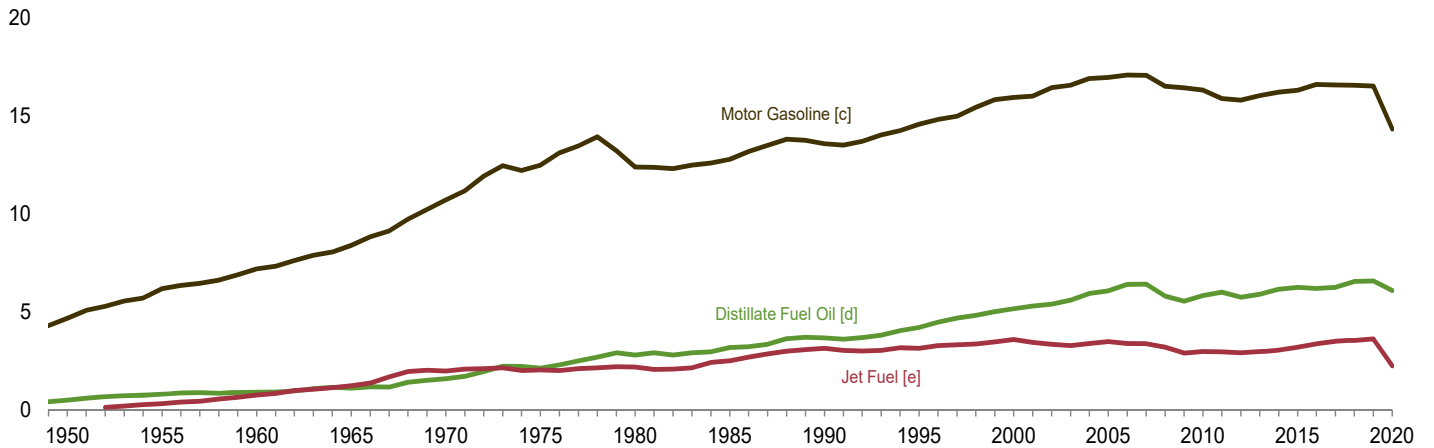
Residential and Commercial [a] Sectors, Selected Products



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] From 2009–2020, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil. Beginning in 2021, includes refinery and blender net inputs of 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.

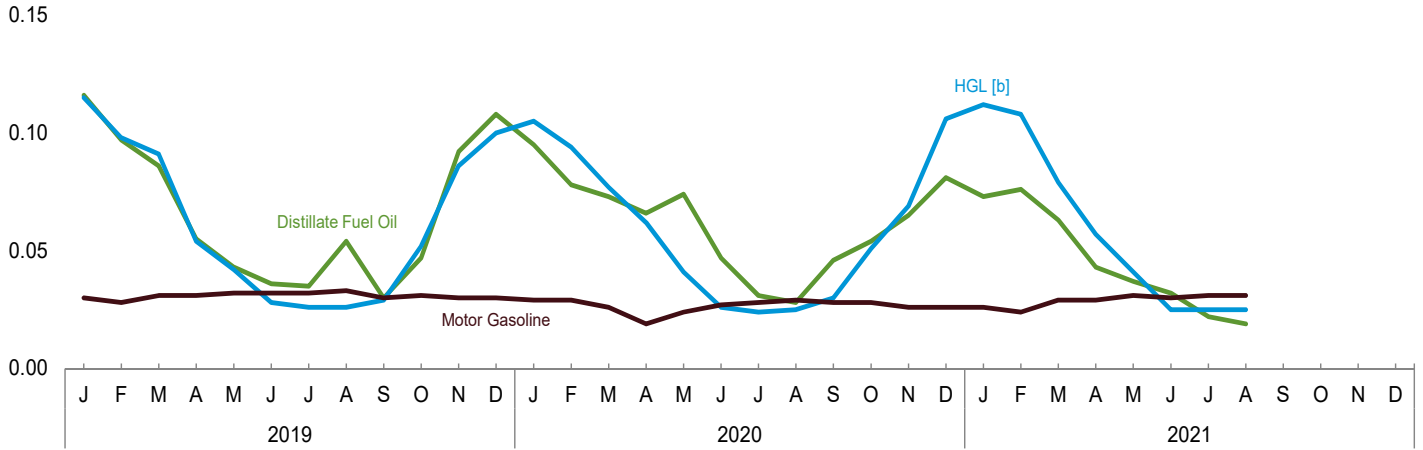
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.

Sources: Tables 3.8a–3.8c.

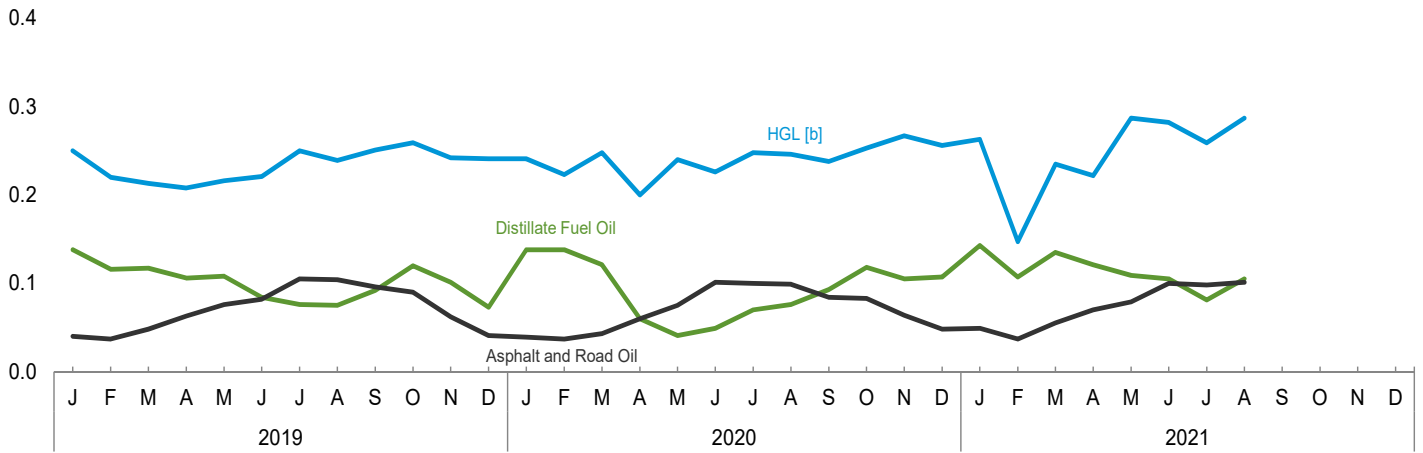
Figure 3.8b Heat Content of Petroleum Consumption by End-Use Sector, Monthly

(Quadrillion Btu)

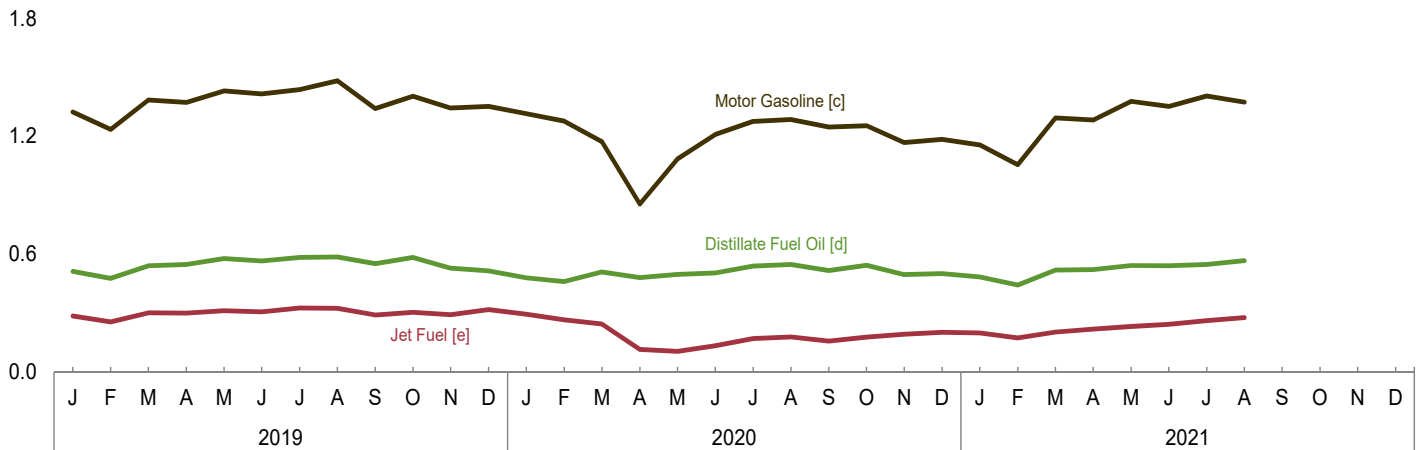
Residential and Commercial [a] Sectors, Selected Products



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] Through 2020, includes renewable diesel fuel (including biodiesel) blended into distillate fuel oil. Beginning in 2021, includes refinery and blender net inputs of 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
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 Total	432	431	8	871	323	156	1	361	(s)	4	845
2018 Total	508	507	8	1,022	323	176	1	366	(s)	3	870
2019 January	68	90	4	162	48	25	1	30	(s)	(s)	103
February	57	76	2	135	40	21	(s)	28	(s)	(s)	89
March	50	70	(s)	121	35	21	(s)	31	(s)	(s)	87
April	32	41	(s)	73	23	14	(s)	31	(s)	(s)	67
May	25	30	(s)	56	18	12	(s)	32	0	(s)	61
June	21	19	(s)	41	15	9	(s)	32	0	(s)	55
July	21	17	(s)	38	14	9	(s)	32	0	(s)	55
August	32	18	(s)	49	22	9	(s)	33	0	(s)	64
September	18	20	1	38	12	9	(s)	30	0	(s)	52
October	28	38	(s)	66	19	13	(s)	31	0	(s)	64
November	54	66	2	122	38	19	(s)	30	0	(s)	88
December	64	78	2	143	44	22	(s)	30	(s)	(s)	97
Total	471	563	11	1,045	327	182	2	369	(s)	2	883
2020 January	56	82	3	141	39	23	1	29	(s)	(s)	92
February	46	73	4	123	32	21	1	29	(s)	(s)	82
March	43	59	1	103	30	18	(s)	26	0	(s)	74
April	39	47	(s)	87	27	15	(s)	19	0	(s)	61
May	44	30	(s)	74	30	11	(s)	24	0	(s)	66
June	28	18	(s)	45	19	8	(s)	27	0	(s)	55
July	19	16	(s)	35	13	8	(s)	28	0	(s)	50
August	16	17	1	34	11	8	(s)	29	0	(s)	49
September	27	21	1	49	19	9	(s)	28	0	(s)	56
October	32	38	(s)	70	22	13	(s)	28	0	(s)	63
November	38	53	(s)	91	27	16	(s)	26	0	(s)	69
December	48	83	1	132	33	23	(s)	26	0	(s)	83
Total	435	536	12	984	303	173	2	320	(s)	2	800
2021 January	43	88	1	132	30	24	(s)	26	0	(s)	80
February	45	85	4	134	31	23	1	24	(s)	(s)	79
March	37	61	(s)	99	26	18	(s)	29	(s)	(s)	73
April	25	43	1	69	18	14	(s)	29	0	(s)	61
May	22	29	(s)	52	15	11	(s)	31	0	(s)	57
June	19	17	(s)	35	13	8	(s)	30	0	(s)	51
July	13	16	(s)	30	9	8	(s)	31	0	(s)	49
August	11	16	(s)	28	8	8	(s)	31	0	(s)	47
8-Month Total	216	355	7	578	150	115	1	230	(s)	1	497
2020 8-Month Total	290	342	9	642	202	112	2	212	(s)	1	528
2019 8-Month Total	307	361	6	675	214	118	1	248	(s)	2	582

^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.

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-p-ane	Propy-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
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	428	944	2,204	7	136	260	694	120	2,645	8,096
2011 Total	859	1,236	551	434	985	2,169	4	127	254	663	135	2,621	8,069
2012 Total	827	1,271	674	432	1,107	2,349	2	118	252	717	70	2,474	8,080
2013 Total	783	1,266	736	429	1,164	2,544	1	125	263	663	48	2,583	8,277
2014 Total	793	1,366	562	417	979	2,409	3	131	210	653	41	2,430	8,035
2015 Total	832	1,170	611	413	1,025	2,620	2	142	258	663	34	2,435	8,155
2016 Total	853	1,157	584	423	1,007	2,597	2	135	262	653	52	2,553	8,265
2017 Total	849	1,205	532	432	964	2,679	1	125	264	610	50	2,667	8,451
2018 Total	793	1,254	556	436	991	3,030	2	122	269	629	43	2,630	8,772
2019													
January	40	138	48	38	86	282	(s)	10	21	47	4	225	768
February	37	116	35	32	67	245	(s)	8	20	14	3	162	607
March	48	117	23	31	55	237	(s)	9	22	49	3	204	688
April	63	106	21	33	54	233	(s)	13	22	39	2	225	704
May	76	108	24	36	60	243	(s)	9	23	53	2	232	746
June	82	84	32	36	68	252	(s)	9	23	68	4	205	727
July	105	76	44	35	79	283	(s)	11	23	68	4	206	777
August	104	75	37	35	72	275	(s)	10	24	56	4	240	788
September	96	92	58	33	91	282	(s)	8	22	42	4	218	762
October	90	120	54	38	92	282	(s)	12	23	42	4	217	790
November	62	101	48	35	83	261	(s)	9	22	60	3	219	736
December	41	73	39	36	76	270	(s)	8	22	63	4	235	716
Total	844	1,206	465	418	882	3,144	1	118	267	602	41	2,585	8,809
2020													
January	39	138	35	34	69	252	(s)	11	21	40	3	227	732
February	37	138	46	29	75	223	(s)	9	21	40	2	223	693
March	43	121	41	30	71	274	(s)	7	19	41	1	244	750
April	60	60	14	32	46	202	(s)	7	14	28	1	195	567
May	75	41	33	33	65	258	(s)	7	18	36	1	213	649
June	101	49	24	30	54	259	(s)	9	20	33	3	189	661
July	100	70	32	33	65	281	(s)	10	21	41	4	201	729
August	99	76	45	31	76	283	(s)	8	21	61	4	205	757
September	84	93	57	33	90	279	(s)	9	20	52	4	170	712
October	83	118	46	36	82	299	(s)	10	20	38	3	173	745
November	64	105	42	35	77	309	(s)	9	19	51	2	187	747
December	48	107	27	35	63	319	(s)	10	19	41	2	205	752
Total	832	1,116	442	390	832	3,240	2	107	231	502	30	2,433	8,493
2021													
January	49	143	31	38	69	314	(s)	10	19	41	3	169	748
February	37	107	5	29	34	172	(s)	9	17	20	3	149	516
March	55	135	40	33	74	266	(s)	9	21	37	4	212	739
April	70	121	17	36	53	256	(s)	10	21	37	2	229	746
May	79	109	39	40	79	315	(s)	9	22	53	3	207	799
June	100	105	47	37	83	320	(s)	8	22	58	4	191	808
July	98	81	36	37	73	298	(s)	10	23	34	4	194	742
August	101	105	59	37	96	335	(s)	9	22	59	4	200	834
8-Month Total	590	906	274	287	561	2,278	1	73	166	340	27	1,551	5,932
2020 8-Month Total	554	692	269	251	521	2,033	1	69	153	320	19	1,698	5,539
2019 8-Month Total	556	820	264	277	541	2,050	1	81	179	395	27	1,697	5,804

^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	Other ^h	Total	Distillate Fuel Oil ⁱ	Petroleum Coke	Residual Fuel Oil ^j	Total
			Propane ^d											
1950 Total	199	480	3	(^e)	141	4,664	1,201	NA	6,690	32	NA	440	472	
1955 Total	354	791	13	301	155	6,175	1,009	NA	8,799	32	NA	439	471	
1960 Total	298	892	19	739	152	7,183	844	NA	10,125	22	NA	530	553	
1965 Total	222	1,093	32	1,215	149	8,386	770	NA	11,866	29	NA	693	722	
1970 Total	100	1,569	44	1,973	147	10,716	761	NA	15,311	141	19	1,958	2,117	
1975 Total	71	2,121	43	2,029	155	12,485	711	NA	17,615	226	2	2,937	3,166	
1980 Total	64	2,795	18	2,179	172	12,383	1,398	NA	19,009	169	5	2,459	2,634	
1985 Total	50	3,170	30	2,497	156	12,784	786	NA	19,472	85	7	998	1,090	
1990 Total	45	3,661	23	3,129	176	13,575	1,016	NA	21,626	97	30	1,163	1,289	
1995 Total	40	4,191	18	3,132	168	14,576	911	NA	23,036	108	81	566	755	
2000 Total	36	5,159	12	3,580	179	15,933	888	NA	25,787	175	99	871	1,144	
2005 Total	35	6,068	28	3,475	151	16,958	837	NA	27,553	114	231	876	1,222	
2006 Total	33	6,390	28	3,379	147	17,088	906	NA	27,972	73	203	361	637	
2007 Total	32	6,411	22	3,358	152	17,066	994	NA	28,034	89	163	397	648	
2008 Total	28	5,792	40	3,193	141	16,510	926	NA	26,630	73	146	240	459	
2009 Total	27	5,537	28	2,883	127	16,425	791	(^h)	25,817	70	132	181	382	
2010 Total	27	5,826	^d 7	2,963	155	16,320	892	(^h)	26,190	80	137	154	370	
2011 Total	27	5,997	7	2,950	148	15,877	776	(^h)	25,783	64	138	93	295	
2012 Total	25	5,736	7	2,901	135	15,795	671	(^h)	25,270	52	85	77	214	
2013 Total	22	5,894	7	2,969	143	16,030	581	(^h)	25,646	55	123	77	255	
2014 Total	22	6,154	7	3,042	149	16,209	447	(^h)	26,030	82	118	95	295	
2015 Total	21	6,251	7	3,204	163	^g 16,308	463	(^h)	26,417	70	112	94	276	
2016 Total	20	6,197	8	3,350	154	16,601	623	(^h)	26,954	55	118	71	244	
2017 Total	21	6,248	7	3,481	142	16,576	665	(^h)	27,140	55	97	66	218	
2018 Total	22	6,550	7	3,533	137	16,573	604	(^h)	27,426	81	101	78	260	
2019														
January	1	512	1	285	11	1,324	51	(^h)	2,185	7	9	6	22	
February	1	477	1	255	9	1,236	42	(^h)	2,021	4	8	4	16	
March	2	541	1	301	10	1,385	36	(^h)	2,275	4	7	4	15	
April	2	547	1	299	15	1,373	27	(^h)	2,263	4	4	4	12	
May	2	578	1	312	11	1,432	30	(^h)	2,366	5	8	5	18	
June	2	565	1	306	10	1,416	52	(^h)	2,352	5	6	5	16	
July	3	583	1	325	13	1,438	57	(^h)	2,418	4	8	6	18	
August	2	586	1	324	11	1,483	54	(^h)	2,461	4	8	6	18	
September	2	552	1	290	9	1,342	49	(^h)	2,244	4	6	5	15	
October	2	583	1	304	13	1,404	53	(^h)	2,359	4	2	5	11	
November	2	529	1	291	10	1,344	32	(^h)	2,208	4	4	5	13	
December	1	515	1	318	9	1,353	47	(^h)	2,243	5	6	5	15	
Total	23	6,567	7	3,608	131	16,531	529	(^h)	27,397	54	76	59	189	
2020														
January	2	480	1	294	12	1,316	39	(^h)	2,143	5	7	5	17	
February	1	461	1	266	10	1,277	28	(^h)	2,044	4	5	4	13	
March	2	509	1	244	8	1,173	13	(^h)	1,949	3	7	4	14	
April	1	481	1	115	8	856	10	(^h)	1,472	3	6	3	13	
May	2	497	1	105	8	1,086	7	(^h)	1,705	3	7	4	14	
June	2	504	1	133	10	1,210	32	(^h)	1,892	4	9	4	17	
July	2	539	1	170	11	1,276	58	(^h)	2,057	5	9	5	18	
August	2	547	1	179	9	1,286	51	(^h)	2,073	4	8	5	17	
September	2	516	1	157	10	1,247	52	(^h)	1,984	3	4	5	12	
October	2	544	1	177	11	1,254	41	(^h)	2,030	4	4	5	13	
November	2	496	1	192	10	1,168	32	(^h)	1,901	4	6	4	14	
December	2	501	1	202	11	1,185	31	(^h)	1,932	4	8	5	17	
Total	20	6,075	7	2,234	119	14,332	394	(^h)	23,181	46	81	53	180	
2021														
January	2	484	1	199	11	1,156	39	14	1,905	4	8	5	17	
February	1	442	1	173	10	1,055	37	17	1,736	11	8	5	24	
March	1	519	1	203	9	1,294	49	22	2,098	4	7	4	15	
April	2	522	1	218	11	1,283	21	20	2,077	4	4	4	12	
May	1	542	1	232	10	1,378	43	23	2,230	4	6	4	14	
June	3	541	1	242	9	1,353	55	20	2,224	4	5	5	14	
July	2	547	1	262	11	1,405	55	18	2,300	3	8	5	16	
August	2	566	1	277	9	1,374	57	22	2,309	5	8	7	20	
8-Month Total	14	4,163	4	1,806	81	10,298	355	157	16,879	38	54	39	130	
2020 8-Month Total	13	4,018	4	1,506	77	9,479	237	(^h)	15,335	31	59	34	124	
2019 8-Month Total	16	4,389	5	2,406	90	11,087	349	(^h)	18,341	37	58	39	134	

^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 biodiesel and renewable diesel fuel blended into distillate fuel oil. For 2011–2020, also includes biodiesel adjustments (supply of biodiesel not reported as input on surveys) reclassified as distillate fuel oil adjustments.

^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 Renewable fuels (excluding fuel ethanol) products supplied. Includes supply of non-fuel ethanol biofuels (such as B100 biodiesel and R100 renewable diesel

fuel) not reported as input on surveys. For 2009–2020, data in this category were classified as renewable fuels (excluding fuel ethanol) adjustments.

ⁱ 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.

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

NA=Not available.

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

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

Sources: See end of section.

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.)

1981–2020: 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.)

2021: 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.)

1981–2020: 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.)

2021: 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). Refinery and blender net inputs data for renewable diesel fuel are set equal to “other renewable diesel fuel” 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 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 refinery and blender net inputs data for 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 renewable diesel fuel), biodiesel, and renewable diesel fuel.

2012–2020: Consumption data for biodiesel are from Table 10.4a. Refinery and blender net inputs data for renewable diesel fuel are set equal to “other renewable diesel fuel” 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 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 refinery and blender net inputs data for 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 renewable diesel fuel), biodiesel, and renewable diesel fuel.

2021 forward: Refinery and blender net inputs data for biodiesel and 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 biodiesel and renewable diesel fuel heat content factors in Table A1). Product supplied data for distillate fuel oil from Table 3.5, minus refinery and blender net inputs data for biodiesel and 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 renewable diesel fuel), biodiesel, and 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; beginning in 2005, also includes naphtha-type jet fuel; and beginning in 2021, also includes renewable fuels excluding fuel ethanol (biodiesel, renewable diesel fuel, and other biofuels). 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.

1981–2020: EIA, *Petroleum Supply Annual (PSA)*, annual reports, and unpublished revisions.

2021: 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 renewable fuels excluding fuel ethanol is assigned to the transportation sector. Consumption of all remaining petroleum products, which include petrochemical feedstocks, special naphthas, still gas (refinery gas), waxes, and miscellaneous products, is assigned to the industrial sector. 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.

Renewable Fuels Excluding Fuel Ethanol

Beginning in 2021, renewable fuels excluding fuel ethanol consumption is assigned to the transportation sector. Renewable fuels excluding fuel ethanol consumption consists of products supplied of biodiesel, renewable diesel fuel, and other biofuels; consumption does not include renewable fuels blended with distillate fuel oil, motor gasoline, or other petroleum products.

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 minus "Renewable Fuels Excluding Fuel Ethanol" data (see sources for Table 3.8c).

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). Refinery and blender net inputs data for renewable diesel fuel are set equal to “other renewable diesel fuel” 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 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 refinery and blender net inputs data for 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 renewable diesel fuel), biodiesel, and renewable diesel fuel.

2012–2020: Consumption data for biodiesel are from Table 10.4a. Refinery and blender net inputs data for renewable diesel fuel are set equal to “other renewable diesel fuel” 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 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 refinery and blender net inputs data for 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 renewable diesel fuel), biodiesel, and renewable diesel fuel.

2021 forward: Refinery and blender net inputs data for biodiesel and 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 biodiesel and renewable diesel fuel heat content factors in Table A1). Transportation sector distillate fuel oil consumption data from Table 3.7c, minus refinery and blender net inputs data for biodiesel and 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 renewable diesel fuel), biodiesel, and 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.

Renewable Fuels Excluding Fuel Ethanol

Beginning in 2021, transportation sector data in thousand barrels per day for "Renewable Fuels Excluding Fuel Ethanol" are converted to trillion Btu by multiplying the fuel types (biodiesel, renewable diesel fuel, and other biofuels) by the appropriate heat content factors 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

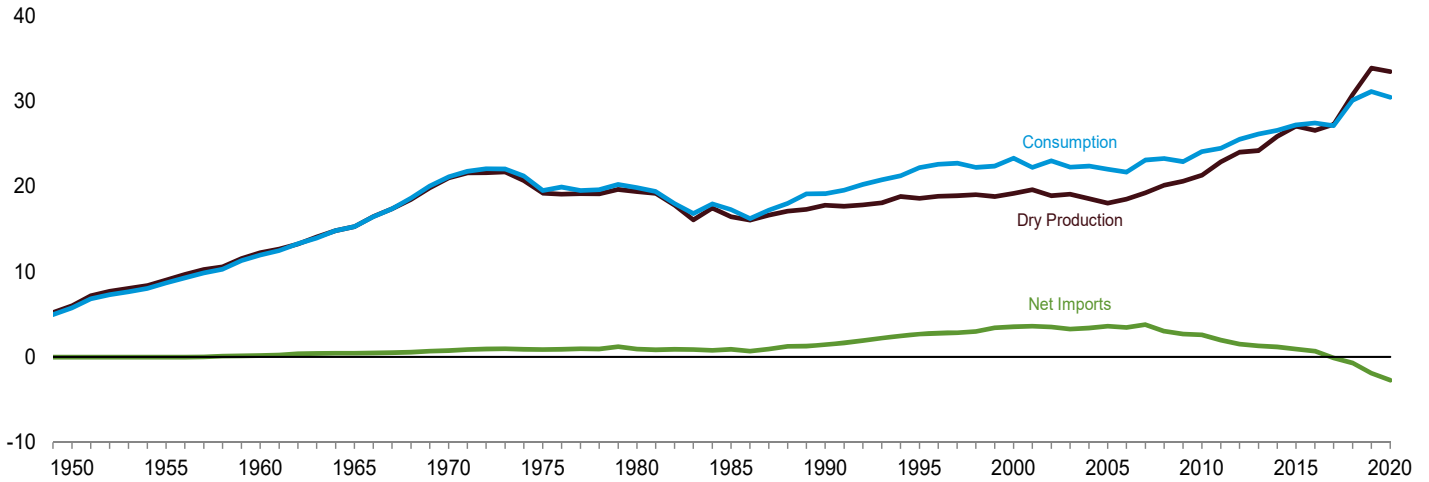
Transportation sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under "Transportation Sector" in Table 3.8c. Electric power sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under "Electric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

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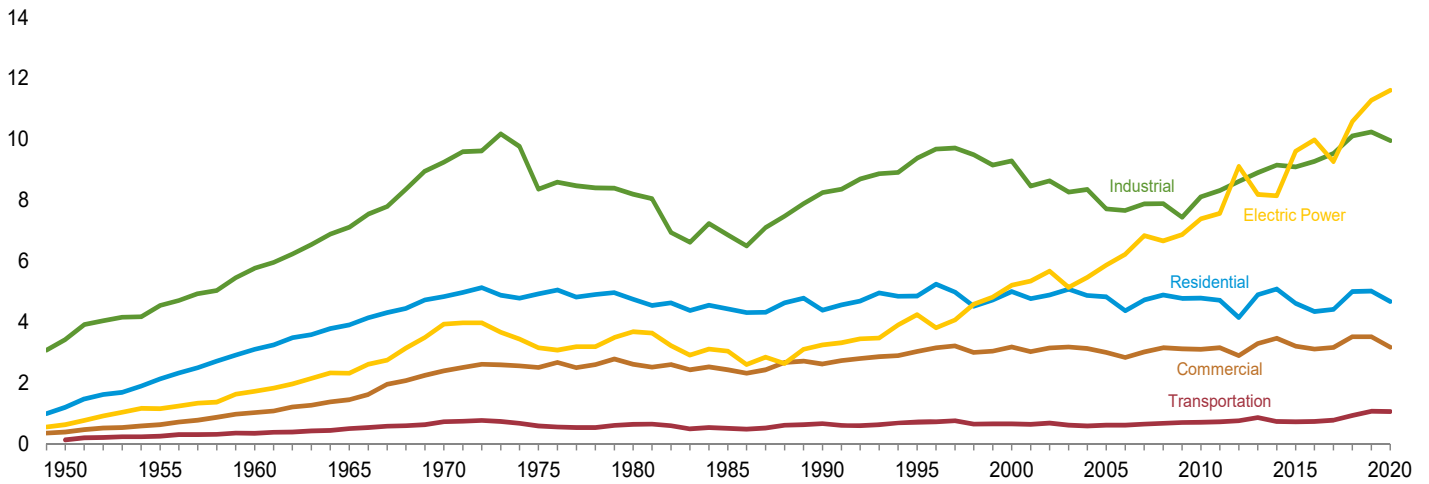
4. Natural Gas

Figure 4.1 Natural Gas
(Trillion Cubic Feet)

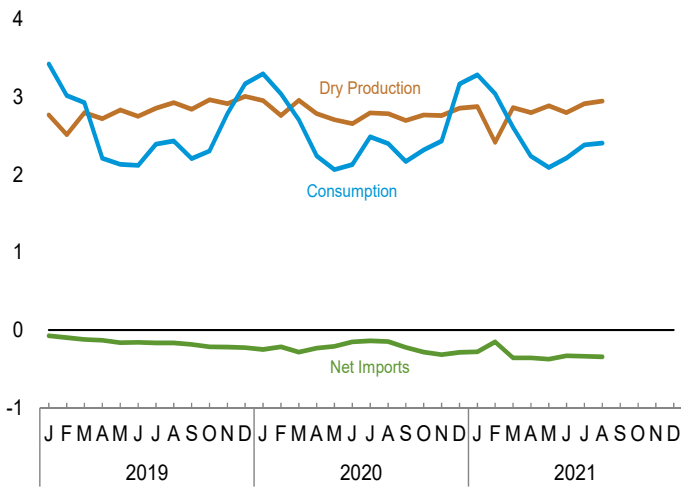
Overview, 1949–2020



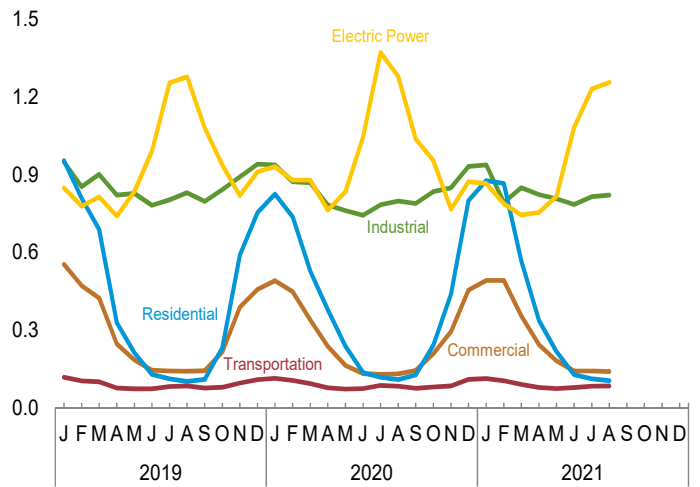
Consumption by Sector, 1949–2020



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 With-drawals ^a	Marketed Production (Wet) ^b	NGPL Production ^c	Dry Gas Production ^d	Supplemental Gaseous Fuels ^e	Trade			Net Storage With-drawals ^f	Balancing Item ^g	Consumption ^h
						Imports	Exports	Net Imports			
1950 Total	8,480	16,282	260	16,022	NA	0	26	-26	-54	-175	5,767
1955 Total	11,720	19,405	377	19,029	NA	11	31	-20	-68	-247	8,694
1960 Total	15,088	21,771	543	21,228	NA	156	11	144	-132	-274	11,967
1965 Total	17,963	21,040	753	20,287	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
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	69	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 Total	33,292	29,204	1,897	27,306	66	3,033	3,154	-121	254	-360	27,146
2018 Total	37,326	33,009	2,235	30,774	69	2,889	3,608	-719	314	-299	30,140
2019 January	3,377	2,975	208	2,767	5	291	365	-74	722	4	3,424
February	3,057	2,705	189	2,516	5	233	330	-97	580	16	3,019
March	3,383	3,009	210	2,798	5	253	374	-121	253	-8	2,928
April	3,315	2,926	205	2,721	5	207	338	-132	-389	7	2,212
May	3,424	3,046	213	2,833	5	208	369	-161	-480	-63	2,134
June	3,300	2,956	207	2,750	5	201	360	-159	-439	-37	2,119
July	3,396	3,072	215	2,857	5	230	393	-163	-260	-45	2,394
August	3,448	3,146	220	2,926	5	220	385	-165	-292	-40	2,434
September	3,397	3,057	214	2,843	5	208	395	-186	-427	-28	2,206
October	3,552	3,186	223	2,963	5	211	426	-215	-353	-94	2,307
November	3,509	3,134	219	2,915	5	224	442	-218	156	-74	2,784
December	3,623	3,235	226	3,009	5	256	482	-226	428	-45	3,171
Total	40,780	36,447	2,548	33,899	61	2,742	4,658	-1,916	-503	-408	31,132
2020 January	3,597	3,194	240	2,954	6	262	510	-248	581	8	3,300
February	3,363	2,985	224	2,761	5	238	454	-216	545	-53	3,041
March	3,582	3,196	240	2,956	6	213	497	-284	53	-24	2,707
April	3,374	3,012	226	2,786	5	190	421	-231	-311	-8	2,241
May	3,285	2,927	220	2,707	5	187	395	-209	-454	18	2,067
June	3,217	2,873	216	2,657	5	187	338	-151	-363	-18	2,131
July	3,374	3,021	227	2,795	5	210	349	-139	-165	-7	2,489
August	3,350	3,012	226	2,786	5	211	359	-148	-232	-9	2,401
September	3,265	2,918	219	2,699	5	174	395	-221	-329	18	2,172
October	3,364	2,992	225	2,767	5	199	482	-282	-96	-74	2,320
November	3,352	2,985	224	2,761	5	212	528	-316	-6	-8	2,435
December	3,490	3,089	232	2,857	5	267	553	-287	597	-5	3,168
Total	40,614	36,202	2,717	33,485	63	2,551	5,284	-2,732	-180	-164	30,472
2021 January	^E 3,506	^{RE} 3,110	232	^{RE} 2,878	5	284	564	-279	707	^R -25	3,286
February	^E 2,924	^{RE} 2,586	^R 171	^{RE} 2,416	6	272	424	-152	781	^R -8	^R 3,043
March	^E 3,482	^{RE} 3,092	^R 230	^{RE} 2,862	5	239	595	-357	59	^R 38	^R 2,608
April	^E 3,409	^{RE} 3,036	^R 238	^{RE} 2,798	5	208	564	-356	-174	^R -35	^R 2,238
May	^E 3,510	^{RE} 3,130	245	^{RE} 2,885	3	205	578	-373	-416	^R -4	^R 2,094
June	^{RE} 3,391	^{RE} 3,036	238	^{RE} 2,798	5	208	539	-331	-248	^R -9	2,214
July	^{RE} 3,498	^{RE} 3,158	245	^{RE} 2,913	5	228	566	-338	-170	^R -28	^R 2,383
August	^E 3,557	^E 3,199	251	^E 2,948	4	221	563	-342	-162	^R -42	2,407
8-Month Total	^E 27,277	^E 24,347	1,849	^E 22,498	39	1,864	4,393	-2,529	378	-113	20,273
2020 8-Month Total	27,143	24,220	1,818	22,402	42	1,699	3,325	-1,626	-346	-94	20,378
2019 8-Month Total	26,700	23,836	1,666	22,169	40	1,843	2,914	-1,071	-307	-166	20,665

^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," at end of section.

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

^j For 1989–1992, a small amount of consumption at independent power

producers may be counted in both "Other Industrial" and "Electric Power Sector" in Table 4.3. See Note 7, "Natural Gas Consumption, 1989–1992," at end of section.

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

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

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

Sources: • **Imports and Exports:** Tables 4.2a and 4.2b. • **Consumption:** Table 4.3. • **Balancing Item:** Calculated as consumption minus dry gas production, supplemental gaseous fuels, net imports, and net storage withdrawals. • **All Other Data: 1949–2020**—U.S. Energy Information Administration (EIA), *Natural Gas Annual*, annual reports. **2021 forward**—EIA, *Natural Gas Monthly*, October 2021, Table 1.

Table 4.2a Natural Gas Imports by Country
(Billion Cubic Feet)

	Algeria ^a	Australia ^a	Canada ^b	Egypt ^a	Mexico ^b	Nigeria ^a	Norway ^a	Oman ^a	Qatar ^a	Trinidad and Tobago ^a	United Arab Emirates ^a	Yemen ^a	Other ^a	Total
1950 Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1955 Total	0	0	11	0	(s)	0	0	0	0	0	0	0	0	11
1960 Total	0	0	109	0	47	0	0	0	0	0	0	0	0	156
1965 Total	0	0	405	0	52	0	0	0	0	0	0	0	0	456
1970 Total	1	0	779	0	(s)	0	0	0	0	0	0	0	0	821
1975 Total	5	0	948	0	0	0	0	0	0	0	0	0	0	953
1980 Total	86	0	797	0	102	0	0	0	0	0	0	0	0	985
1985 Total	24	0	926	0	0	0	0	0	0	0	0	0	0	950
1990 Total	84	0	1,448	0	0	0	0	0	0	0	0	0	0	1,532
1995 Total	18	0	2,816	0	7	0	0	0	0	0	0	0	0	2,841
2000 Total	47	6	3,544	0	12	13	0	10	46	99	3	0	21	3,782
2005 Total	97	0	3,700	73	9	8	0	2	3	439	0	0	11	4,341
2006 Total	17	0	3,590	120	13	57	0	0	0	389	0	0	0	4,186
2007 Total	77	0	3,783	115	54	95	0	0	18	448	0	0	18	4,608
2008 Total	0	0	3,589	55	43	12	15	0	3	267	0	0	15	3,984
2009 Total	0	0	3,271	160	28	13	29	0	13	236	0	0	29	3,751
2010 Total	0	0	3,280	73	30	42	26	0	46	190	0	39	81	3,741
2011 Total	0	0	3,117	35	3	2	15	0	91	129	0	60	92	3,469
2012 Total	0	0	2,963	3	(s)	0	6	0	34	112	0	20	26	3,138
2013 Total	0	0	2,786	0	1	3	6	0	7	70	0	11	0	2,883
2014 Total	0	0	2,635	0	1	0	6	0	0	43	0	8	3	2,695
2015 Total	0	0	2,626	0	1	0	12	0	0	71	0	7	0	2,718
2016 Total	0	0	2,918	0	1	0	3	0	0	84	0	0	0	3,006
2017 Total	0	0	2,955	0	1	6	0	0	0	70	0	0	0	3,033
2018 Total	0	0	2,811	0	3	3	0	0	0	66	0	0	6	2,889
2019 January	0	0	276	0	(s)	0	0	0	0	12	0	0	3	291
February	0	0	226	0	(s)	0	0	0	0	7	0	0	0	233
March	0	0	249	0	(s)	0	0	0	0	3	0	0	0	253
April	0	0	204	0	(s)	0	0	0	0	3	0	0	0	207
May	0	0	208	0	(s)	0	0	0	0	0	0	0	0	208
June	0	0	201	0	(s)	0	0	0	0	0	0	0	0	201
July	0	0	228	0	(s)	0	0	0	0	3	0	0	0	230
August	0	0	217	0	(s)	0	0	0	0	3	0	0	0	220
September	0	0	208	0	(s)	0	0	0	0	0	0	0	0	208
October	0	0	205	0	(s)	0	0	0	0	6	0	0	0	211
November	0	0	221	0	(s)	0	0	0	0	3	0	0	0	224
December	0	0	245	0	1	3	0	0	0	7	0	0	0	256
Total	0	0	2,687	0	2	3	0	0	0	47	0	0	3	2,742
2020 January	0	0	249	0	(s)	2	3	0	0	9	0	0	0	262
February	0	0	232	0	(s)	0	0	0	0	6	0	0	0	238
March	0	0	210	0	(s)	0	0	0	0	3	0	0	(s)	213
April	0	0	187	0	(s)	0	0	0	0	3	0	0	0	190
May	0	0	184	0	(s)	0	0	0	0	3	0	0	0	187
June	0	0	183	0	(s)	3	0	0	0	2	0	0	0	187
July	0	0	206	0	(s)	0	0	0	0	4	0	0	0	210
August	0	0	208	0	(s)	0	0	0	0	3	0	0	0	211
September	0	0	173	0	(s)	0	0	0	0	1	0	0	0	174
October	0	0	199	0	(s)	0	0	0	0	0	0	0	0	199
November	0	0	209	0	(s)	0	0	0	0	3	0	0	(s)	212
December	0	0	261	0	(s)	3	0	0	0	3	0	0	(s)	267
Total	0	0	2,500	0	2	7	3	0	0	39	0	0	0	2,551
2021 January	0	0	278	0	(s)	0	0	0	0	6	0	0	0	284
February	0	0	265	0	1	0	0	0	0	6	0	0	0	272
March	0	0	237	0	(s)	0	0	0	0	1	0	0	0	239
April	0	0	208	0	(s)	0	0	0	0	0	0	0	0	208
May	0	0	203	0	(s)	0	0	0	0	2	0	0	0	205
June	0	0	208	0	(s)	0	0	0	0	0	0	0	0	208
July	0	0	226	0	(s)	0	0	0	0	2	0	0	0	228
August	0	0	221	0	(s)	0	0	0	0	0	0	0	0	221
8-Month Total	0	0	1,846	0	1	0	0	0	0	17	0	0	0	1,864
2020 8-Month Total	0	0	1,658	0	1	4	3	0	0	32	0	0	0	1,699
2019 8-Month Total	0	0	1,809	0	1	0	0	0	0	31	0	0	3	1,843

^a As liquefied natural gas.
^b By pipeline, except for small amounts of: liquefied natural gas (LNG) imported from Canada in 1973, 1977, 1981, and 2013 forward; and compressed natural gas (CNG) imported from Canada in 2014 forward; See Note 9, "Natural Gas Imports and Exports," at end of section.
(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."
• **1988–2020:** EIA, *Natural Gas Annual*, annual reports. • **2021 forward:** EIA, *Natural Gas Monthly*, October 2021, Table 4; and U.S. Department of Energy, Office of Fossil Energy, "Natural Gas Imports and Exports."

Table 4.2b Natural Gas Exports by Country
(Billion Cubic Feet)

	Brazil ^a	Canada ^b	Chile ^a	China ^a	France ^a	India ^a	Japan ^a	Mexico ^b	South Korea ^a	Spain ^a	Turkey ^a	United Kingdom ^a	Other ^a	Total
1950 Total	0	3	0	0	0	0	0	23	0	0	0	0	0	26
1955 Total	0	11	0	0	0	0	0	20	0	0	0	0	0	31
1960 Total	0	6	0	0	0	0	0	6	0	0	0	0	0	11
1965 Total	0	18	0	0	0	0	0	8	0	0	0	0	0	26
1970 Total	0	11	0	0	0	0	44	15	0	0	0	0	0	70
1975 Total	0	10	0	0	0	0	53	9	0	0	0	0	0	73
1980 Total	0	(s)	0	0	0	0	45	4	0	0	0	0	0	49
1985 Total	0	(s)	0	0	0	0	53	2	0	0	0	0	0	55
1990 Total	0	17	0	0	0	0	53	16	0	0	0	0	0	86
1995 Total	0	28	0	0	0	0	65	61	0	0	0	0	0	154
2000 Total	0	73	0	0	0	0	66	106	0	0	0	0	0	244
2005 Total	0	358	0	0	0	0	65	305	0	0	0	0	0	729
2006 Total	0	341	0	0	0	0	61	322	0	0	0	0	0	724
2007 Total	0	482	0	0	0	0	47	292	0	0	0	0	2	822
2008 Total	0	559	0	0	0	0	39	365	0	0	0	0	0	963
2009 Total	0	701	0	0	0	0	31	338	3	0	0	0	3	1,072
2010 Total	3	739	0	0	0	3	33	333	12	4	0	10	32	1,137
2011 Total	11	937	3	7	0	13	18	499	9	6	0	3	52	1,506
2012 Total	8	971	0	0	0	3	14	620	0	0	0	0	14	1,619
2013 Total	0	911	0	0	0	0	0	661	0	0	0	0	0	1,572
2014 Total	3	770	0	0	0	0	13	729	0	0	0	0	0	1,514
2015 Total	6	701	0	0	0	0	8	1,054	0	0	3	0	11	1,784
2016 Total	11	771	29	17	0	17	11	1,405	10	3	9	0	51	2,335
2017 Total	18	917	26	103	0	21	53	1,671	130	29	25	3	157	3,154
2018 Total	36	836	41	90	18	58	126	1,871	252	10	23	51	194	3,608
2019 January	0	87	0	3	7	7	17	165	17	7	10	10	34	365
February	3	92	3	3	0	7	10	142	18	7	6	4	35	330
March	3	93	10	0	21	7	7	157	18	11	0	4	43	374
April	1	71	9	0	17	7	14	150	13	10	3	0	42	338
May	5	70	6	0	7	14	7	174	18	14	0	0	53	369
June	9	62	19	0	0	3	15	173	20	14	0	0	45	360
July	7	69	9	0	0	3	21	192	33	3	0	0	56	393
August	13	78	6	0	3	7	18	182	17	16	0	1	43	385
September	6	72	10	0	7	14	28	173	11	38	0	3	33	395
October	3	76	7	0	14	7	25	178	42	14	4	26	30	426
November	3	93	3	0	27	7	18	162	25	20	7	40	37	442
December	0	110	7	0	15	7	21	161	38	14	1	30	78	482
Total	54	973	90	7	118	91	201	2,010	270	167	31	119	527	4,658
2020 January	8	99	6	0	7	3	32	168	45	24	33	30	55	510
February	10	77	11	0	21	0	21	154	11	20	24	29	75	454
March	7	87	3	18	23	17	22	174	28	24	6	20	68	497
April	0	72	14	21	16	17	18	139	24	23	14	0	63	421
May	0	68	11	15	10	11	14	145	21	29	7	0	66	395
June	0	67	3	0	0	10	22	163	28	10	0	0	36	338
July	0	72	2	10	0	7	11	181	10	14	3	3	36	349
August	4	61	7	14	0	10	23	190	14	3	0	0	34	359
September	0	62	3	11	0	11	7	185	32	15	4	4	61	395
October	23	73	7	35	7	18	32	193	14	14	0	17	49	482
November	30	81	3	45	3	10	33	169	49	10	13	27	54	528
December	30	84	10	46	4	10	54	165	40	14	20	30	47	553
Total	112	903	81	214	90	124	288	2,026	317	200	124	160	644	5,284
2021 January	21	85	10	39	4	20	64	173	56	7	27	21	36	564
February	13	78	7	3	15	14	18	151	18	4	21	34	48	424
March	22	91	21	28	34	17	28	183	32	14	4	17	103	595
April	12	75	10	47	36	14	29	183	22	23	0	14	101	564
May	20	71	18	38	12	28	25	193	46	5	3	11	110	578
June	32	70	0	42	4	17	40	198	56	8	0	0	73	539
July	40	68	20	42	0	13	25	198	39	9	6	0	106	566
August	34	72	16	52	7	21	20	193	50	23	0	0	75	563
8-Month Total	194	609	102	292	111	144	249	1,473	319	93	60	98	652	4,393
2020 8-Month Total	29	602	57	77	76	76	163	1,313	181	147	87	82	433	3,325
2019 8-Month Total	42	622	63	7	55	56	110	1,335	154	81	19	19	350	2,914

^a As liquefied natural gas.

^b By pipeline, except for small amounts of: liquefied natural gas (LNG) exported to Canada in 2007 and 2012 forward; compressed natural gas (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.

(s)=Less than 500 million cubic feet.

Notes: • Exports include re-exports. • 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." • **1988–2020:** EIA, *Natural Gas Annual*, annual reports. • **2021 forward:** EIA, *Natural Gas Monthly*, October 2021, Table 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 ^{d,g}	Total
	Residential	Commercial ^a	Lease and Plant Fuel	Industrial			Transportation					
				Other Industrial		Total	Pipelines ^d and Distribution ^e	Vehicle Fuel	Total			
				CHP ^b	Non-CHP ^c					Total		
1950 Total	1,198	388	928	(h)	2,498	2,498	3,426	126	NA	126	629	5,767
1955 Total	2,124	629	1,131	(h)	3,411	3,411	4,542	245	NA	245	1,153	8,694
1960 Total	3,103	1,020	1,237	(h)	4,535	4,535	5,771	347	NA	347	1,725	11,967
1965 Total	3,903	1,444	1,156	(h)	5,955	5,955	7,112	501	NA	501	2,321	15,280
1970 Total	4,837	2,399	1,399	(h)	7,851	7,851	9,249	722	NA	722	3,932	21,139
1975 Total	4,924	2,508	1,396	(h)	6,968	6,968	8,365	583	NA	583	3,158	19,538
1980 Total	4,752	2,611	1,026	(h)	7,172	7,172	8,198	635	NA	635	3,682	19,877
1985 Total	4,433	2,432	966	(h)	5,901	5,901	6,867	504	NA	504	3,044	17,281
1990 Total	4,391	2,623	1,236	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
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 Total	4,412	3,164	1,584	1,257	6,693	7,949	9,533	722	48	770	9,266	27,146
2018 Total	4,998	3,514	1,694	1,314	7,103	8,417	10,112	877	50	927	10,590	30,140
2019 January	954	554	149	121	679	801	949	114	5	118	849	3,424
February	809	472	135	108	611	719	854	100	4	104	779	3,019
March	689	424	150	113	637	750	901	96	5	101	814	2,928
April	329	247	146	105	571	675	821	72	4	76	740	2,212
May	212	185	152	111	564	675	827	69	5	73	836	2,134
June	129	145	148	111	523	634	782	68	4	73	991	2,119
July	112	142	154	118	531	650	803	78	5	82	1,255	2,394
August	102	141	157	120	553	672	830	79	5	84	1,278	2,434
September	110	143	153	114	530	644	797	71	4	76	1,081	2,206
October	232	216	159	114	569	684	843	75	5	79	937	2,307
November	589	389	157	117	618	735	891	91	4	96	819	2,784
December	753	457	162	122	657	779	941	105	5	109	912	3,171
Total	5,019	3,515	1,823	1,374	7,042	8,417	10,240	1,018	53	1,071	11,288	31,132
2020 January	825	491	159	125	654	779	938	110	4	114	931	3,300
February	737	448	149	114	610	724	873	102	4	106	879	3,041
March	527	339	159	115	594	710	869	90	4	94	879	2,707
April	378	238	150	107	526	633	783	73	4	77	764	2,241
May	237	163	146	108	508	616	762	67	4	72	834	2,067
June	136	132	143	110	490	600	743	70	4	74	1,046	2,131
July	118	129	151	116	517	633	784	82	4	86	1,372	2,489
August	109	131	150	116	532	648	798	79	4	83	1,280	2,401
September	127	144	145	107	536	643	789	71	4	75	1,038	2,172
October	242	209	149	112	573	686	835	76	4	80	954	2,320
November	440	294	149	111	590	701	850	80	4	84	767	2,435
December	800	454	154	125	653	778	932	106	4	110	873	3,168
Total	4,674	3,170	1,805	1,367	6,784	8,151	9,955	1,007	49	1,056	11,616	30,472
2021 January	877	492	E 155	123	660	783	R 938	E 109	RE 5	E 113	866	3,286
February	866	492	RE 129	99	565	664	E 101	E 106	E 4	E 105	788	R 3,043
March	568	355	E 154	108	588	696	850	E 86	RE 5	E 91	744	R 2,608
April	338	244	E 151	104	568	672	823	E 74	E 4	E 78	754	R 2,238
May	217	182	RE 156	106	544	651	R 807	E 69	RE 5	E 74	816	2,094
June	128	142	E 151	110	524	633	R 785	E 73	E 4	E 78	1,082	2,214
July	112	142	E 157	117	541	657	R 815	E 79	E 5	E 83	1,231	R 2,383
August	105	140	E 159	115	547	662	821	E 80	E 5	E 84	1,256	2,407
8-Month Total	3,211	2,188	E 1,214	882	4,537	5,418	6,632	E 670	E 35	E 705	7,537	20,273
2020 8-Month Total	3,066	2,070	1,207	911	4,432	5,343	6,551	673	33	706	7,984	20,378
2019 8-Month Total	3,335	2,310	1,192	907	4,669	5,576	6,768	676	35	712	7,540	20,665

^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: 1949–2020—U.S. Energy Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports and unpublished revisions. 2021 forward—EIA, *Natural Gas Monthly (NGM)*, October 2021, 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). 1999–2020—EIA, *NGA*, annual reports. 2021 forward—EIA, *NGM*, October 2021, 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
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 Total	4,360	3,033	7,392	-264	-8.0	3,590	3,337	254
2018 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	7,089	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	3,188	7,568	480	17.7	556	138	418
Total	4,380	3,188	7,568	480	17.7	3,653	4,153	-500
2020 January	4,380	2,616	6,997	622	31.2	665	94	571
February	4,379	2,081	6,460	655	45.9	634	99	536
March	4,379	2,029	6,409	844	71.3	285	236	49
April	4,384	2,332	6,716	773	49.6	131	437	-306
May	4,387	2,778	7,164	747	36.8	74	522	-448
June	4,389	3,133	7,523	672	27.3	85	443	-358
July	4,390	3,294	7,684	579	21.3	151	312	-161
August	4,390	3,522	7,912	524	17.5	174	401	-227
September	4,389	3,840	8,229	425	12.4	126	450	-323
October	4,393	3,929	8,321	166	4.4	191	283	-92
November	4,394	3,932	8,325	322	8.9	214	218	-4
December	4,394	3,341	7,735	153	4.8	681	94	587
Total	4,394	3,341	7,735	153	4.8	3,412	3,590	-178
2021 January	4,394	2,635	7,029	19	.7	783	76	707
February	4,390	1,858	6,248	-223	-10.7	904	122	781
March	4,388	1,801	6,189	-229	-11.3	321	262	59
April	4,380	1,974	6,354	-358	-15.4	173	347	-174
May	4,383	2,388	6,771	-390	-14.0	75	491	-416
June	4,436	2,583	7,019	-550	-17.6	140	388	-248
July	4,436	2,752	7,188	-541	-16.4	171	341	-170
August	4,436	2,918	7,354	-604	-17.2	183	345	-162
8-Month Total	--	--	--	--	--	2,750	2,373	378
2020 8-Month Total	--	--	--	--	--	2,199	2,545	-345
2019 8-Month Total	--	--	--	--	--	2,521	2,824	-303

^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.

--=Not applicable. NA=Not available.

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

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

beginning in 1973.

Sources: • **Storage Activity: 1949–1975**—U.S. Energy Information Administration (EIA), *Natural Gas Annual 1994, Volume 2*, Table 9. **1976–1979**—EIA, *Natural Gas Production and Consumption 1979*, Table 1. **1980–1995**—EIA, *Historical Natural Gas Annual 1930 Through 2000*, Table 11. **1996–2014**—EIA, *Natural Gas Monthly (NGM)*, monthly issues. **2015 forward**—EIA, NGM, January 2021, 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." **1996–2020**—EIA, NGA, annual reports. **2021 forward**—EIA, NGM, October 2021, 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	9,231
2020s	9,259									

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 vessel from other countries. In addition, small amounts of LNG arrived from Canada via truck in 1973, 1977, 1981, and 2013 forward. 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 vessel to other countries. Also, small amounts of LNG have gone to Mexico via truck since 1998 and via vessel since 2016, and to Canada via truck in 2007 and 2012 forward. Small amounts of CNG have been exported to Canada since 2013. Natural gas exports include re-exports.

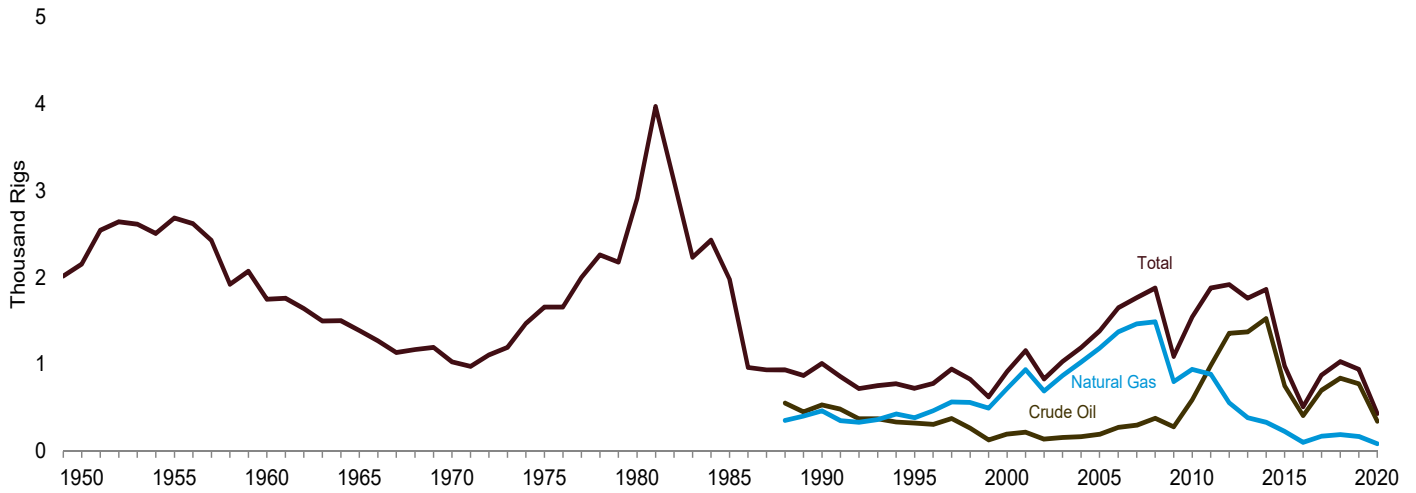
Annual and final monthly data are from the annual EIA Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition," and FE-746R, "Import and Export of Natural Gas."

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 *Natural Gas Annual*.

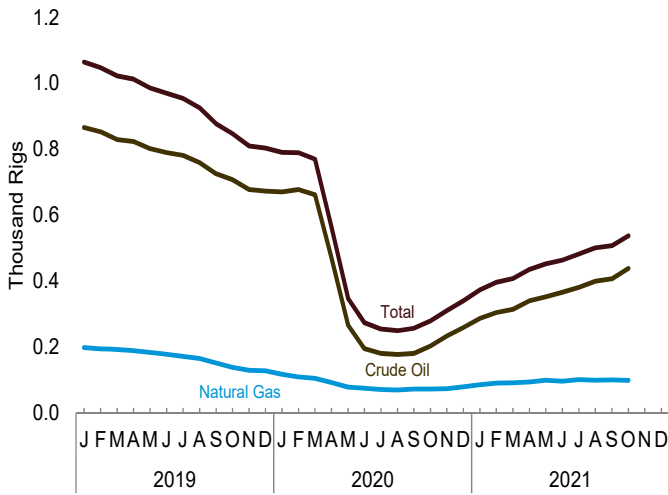
5. Crude Oil and Natural Gas Resource Development

Figure 5.1 Crude Oil and Natural Gas Resource Development Indicators

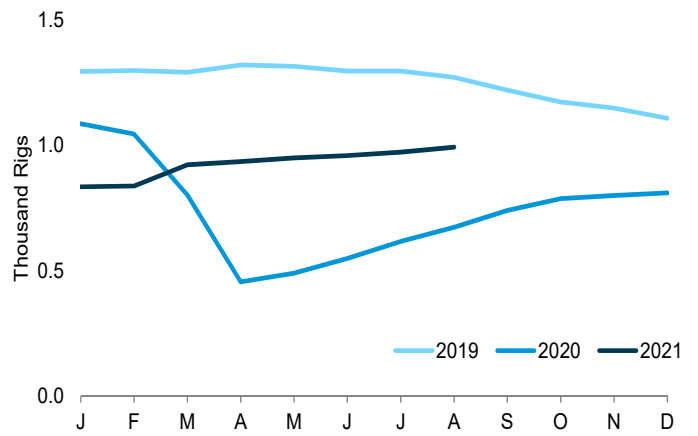
Rotary Rigs in Operation by Type, 1949–2020



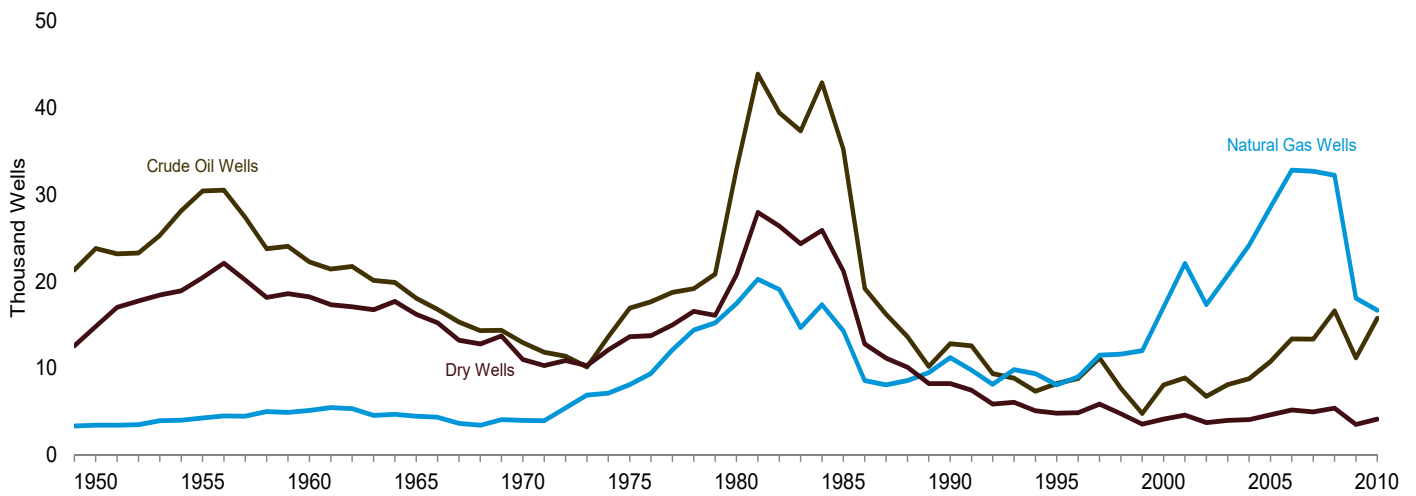
Rotary Rigs in Operation by Type, Monthly



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
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 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	1,086
February	768	23	678	110	790	1,046
March	752	20	663	106	771	802
April	548	18	471	93	565	456
May	335	13	267	79	348	490
June	262	12	196	76	274	549
July	243	12	181	72	255	617
August	237	13	178	70	250	674
September	242	15	181	73	257	741
October	266	14	204	73	280	788
November	298	12	234	74	311	800
December	326	15	260	80	341	811
Average	417	15	345	85	433	738
2021 January	358	16	287	86	374	835
February	381	17	305	91	397	838
March	395	13	315	92	408	923
April	424	12	341	94	436	936
May	439	14	353	100	453	950
June	451	13	367	97	464	960
July	468	16	381	102	483	973
August	486	15	400	100	501	993
September	502	6	407	101	508	NA
October	526	12	439	99	538	NA
10-Month Average	445	13	361	96	458	NA
2020 10-Month Average	439	16	365	87	455	725
2019 10-Month Average	949	23	794	177	972	1,278

^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.

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>. • **Active Well Service Rig Count:** Energy Workforce & Technology Council, Houston, TX. See <https://energyworkforce.org/news/energy-workforce-technology-council-rig-count/>.

September 2021 data from the Energy Workforce & Technology Council were not available in time for this publication.

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
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.

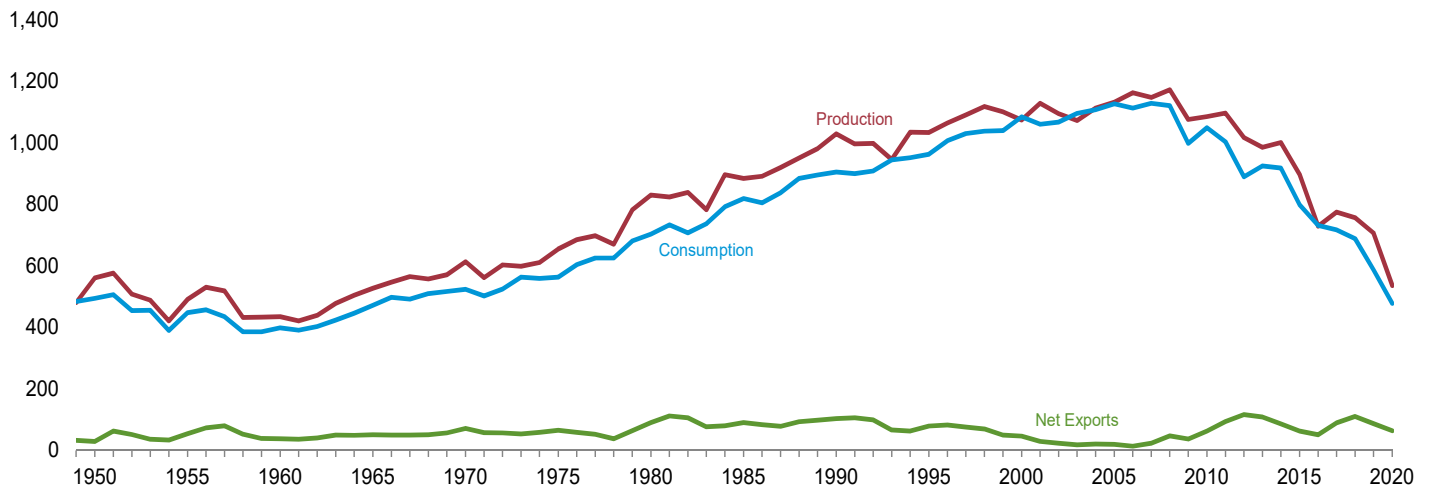
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6. Coal

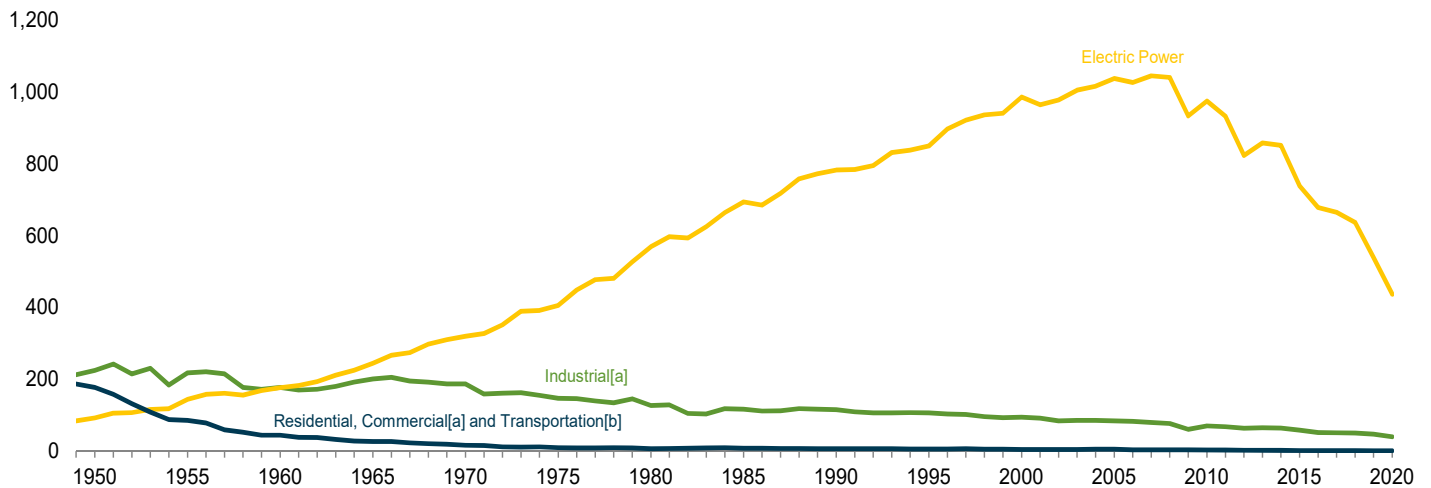
Figure 6.1 Coal

(Million Short Tons)

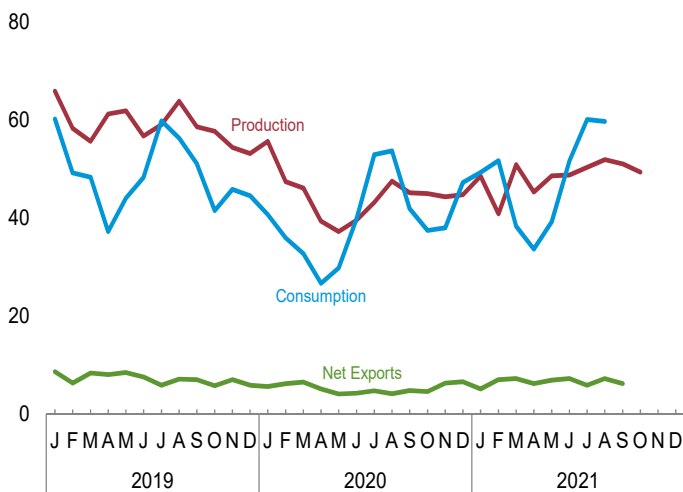
Overview, 1949–2020



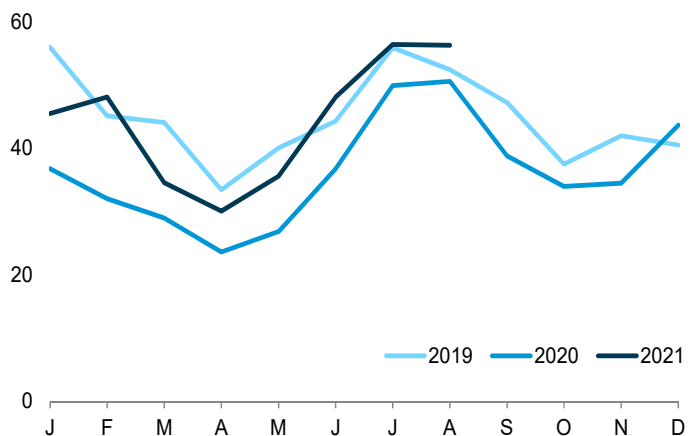
Consumption by Sector, 1949–2020



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
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	9,846	60,271	-50,425	-45,441	2,449	731,071
2017 Total	774,609	9,951	7,803	96,945	-89,142	-26,033	4,596	716,856
2018 Total	756,167	10,431	5,954	116,244	-110,290	-37,160	5,363	688,105
2019 January	65,836	976	625	9,329	-8,704	-4,034	1,942	60,199
February	58,315	824	358	6,752	-6,393	1,568	1,978	49,200
March	55,667	850	706	9,132	-8,427	-1,181	923	48,348
April	61,213	598	537	8,642	-8,105	9,889	6,535	37,282
May	61,862	648	408	8,979	-8,572	9,276	602	44,060
June	56,706	700	660	8,308	-7,648	1,558	-68	48,267
July	59,069	574	511	6,469	-5,958	-5,362	-756	59,802
August	63,795	593	519	7,749	-7,230	935	-88	56,311
September	58,597	410	651	7,742	-7,091	1,747	-943	51,113
October	57,674	498	742	6,590	-5,848	9,912	895	41,518
November	54,393	611	466	7,582	-7,116	4,816	-2,798	45,869
December	53,184	723	515	6,491	-5,976	6,413	-3,058	44,575
Total	706,309	8,003	6,697	93,765	-87,068	35,538	5,164	586,543
2020 January	55,667	681	535	6,230	-5,694	6,085	3,847	40,722
February	47,425	665	343	6,611	-6,268	5,196	643	35,983
March	46,106	527	461	7,070	-6,610	4,812	2,411	32,801
April	39,347	515	365	5,551	-5,186	6,802	1,156	26,717
May	37,263	499	535	4,714	-4,179	2,626	1,122	29,834
June	39,608	580	227	4,583	-4,356	-5,686	1,596	39,923
July	43,217	706	530	5,344	-4,814	-14,290	436	52,963
August	47,523	764	314	4,545	-4,231	-8,934	-736	53,726
September	45,141	701	501	5,371	-4,870	-2,212	1,284	41,902
October	44,988	679	264	4,921	-4,657	3,708	-205	37,507
November	44,345	645	639	7,034	-6,395	1,752	-1,184	38,028
December	44,804	800	423	7,093	-6,670	-4,079	-4,277	47,290
Total	535,434	7,763	5,137	69,067	-63,929	-4,220	6,093	477,395
2021 January	48,556	742	526	5,730	-5,204	-3,306	-1,912	49,312
February	40,868	756	309	7,395	-7,087	-15,309	-1,836	51,682
March	50,881	690	241	7,581	-7,340	1,790	4,077	38,364
April	45,318	468	509	6,811	-6,302	6,535	-729	33,678
May	48,632	566	512	7,487	-6,975	2,952	16	39,256
June	48,798	654	509	7,836	-7,327	-11,809	2,288	51,646
July	50,334	F 667	564	6,511	-5,947	-14,836	-201	60,091
August	51,924	RF 667	368	7,692	-7,324	R -12,832	R -1,596	R 59,696
September	51,077	NA	R 202	R 6,515	R -6,313	NA	NA	NA
October	49,348	NA	NA	NA	NA	NA	NA	NA
10-Month Total ...	485,736	NA	NA	NA	NA	NA	NA	NA
2020 10-Month Total ...	446,286	6,318	4,075	54,940	-50,864	-1,893	11,554	392,078
2019 10-Month Total ...	598,733	6,669	5,716	79,692	-73,975	24,308	11,020	496,099

^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											
	Residential	Commercial			Coke Plants	Industrial			Total	Transportation	Electric Power Sector ^{g,i}	Total
		CHP ^a	Other ^b	Total		Other Industrial	CHP ^c	Non-CHP ^d					Total
1950 Total	51,562	(g)	63,021	63,021	104,014	(h)	120,623	120,623	224,637	63,011	91,871	494,102
1955 Total	35,590	(g)	32,852	32,852	107,743	(h)	110,096	110,096	217,839	16,972	143,759	447,012
1960 Total	24,159	(g)	16,789	16,789	81,385	(h)	96,017	96,017	177,402	3,046	176,685	398,081
1965 Total	14,635	(g)	11,041	11,041	95,286	(h)	105,560	105,560	200,846	655	244,788	471,965
1970 Total	9,024	(g)	7,090	7,090	96,481	(h)	90,156	90,156	186,637	298	320,182	523,231
1975 Total	2,823	(g)	6,587	6,587	83,598	(h)	63,646	63,646	147,244	24	405,962	562,640
1980 Total	1,355	(g)	5,097	5,097	66,657	(h)	60,347	60,347	127,004	(h)	569,274	702,730
1985 Total	1,711	(g)	6,068	6,068	41,056	(h)	75,372	75,372	116,429	(h)	693,841	818,049
1990 Total	1,345	1,191	4,189	5,379	38,877	27,781	48,549	76,330	115,207	(h)	f 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
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 Total	(i)	577	395	972	18,337	12,233	19,347	31,580	49,917	(h)	637,217	688,105
2019 January	(i)	59	51	111	1,515	1,119	1,487	2,606	4,121	(h)	55,967	60,199
February	(i)	54	47	102	1,393	1,005	1,577	2,582	3,974	(h)	45,124	49,200
March	(i)	58	50	108	1,556	932	1,654	2,587	4,142	(h)	44,098	48,348
April	(i)	40	27	67	1,450	893	1,444	2,337	3,786	(h)	33,429	37,282
May	(i)	38	26	64	1,624	873	1,455	2,328	3,952	(h)	40,045	44,060
June	(i)	27	18	45	1,586	844	1,494	2,338	3,925	(h)	44,297	48,267
July	(i)	35	13	48	1,498	846	1,478	2,324	3,822	(h)	55,932	59,802
August	(i)	37	14	51	1,487	854	1,487	2,341	3,829	(h)	52,431	56,311
September	(i)	40	15	55	1,469	814	1,526	2,340	3,810	(h)	47,249	51,113
October	(i)	37	27	65	1,494	856	1,579	2,436	3,930	(h)	37,523	41,518
November	(i)	44	32	76	1,387	904	1,524	2,429	3,816	(h)	41,977	45,869
December	(i)	49	36	86	1,508	950	1,498	2,448	3,956	(h)	40,534	44,575
Total	(i)	519	357	876	17,967	10,892	18,203	29,095	47,062	(h)	538,606	586,543
2020 January	(i)	41	55	96	1,435	984	1,400	2,385	3,819	(h)	36,808	40,722
February	(i)	49	66	115	1,434	940	1,427	2,367	3,801	(h)	32,067	35,983
March	(i)	41	55	96	1,408	887	1,431	2,318	3,726	(h)	28,979	32,801
April	(i)	29	14	44	1,192	774	1,085	1,858	3,050	(h)	23,624	26,717
May	(i)	32	15	47	1,055	750	1,112	1,863	2,917	(h)	26,870	29,834
June	(i)	35	17	52	1,208	699	1,218	1,917	3,125	(h)	36,746	39,923
July	(i)	35	11	46	1,019	761	1,208	1,969	2,988	(h)	49,930	52,963
August	(i)	37	11	49	1,086	735	1,267	2,001	3,087	(h)	50,590	53,726
September	(i)	41	13	54	1,058	775	1,226	2,001	3,059	(h)	38,788	41,902
October	(i)	34	22	56	1,153	850	1,451	2,301	3,454	(h)	33,997	37,507
November	(i)	36	23	58	1,167	826	1,503	2,329	3,496	(h)	34,473	38,028
December	(i)	50	32	82	1,200	909	1,446	2,355	3,555	(h)	43,653	47,290
Total	(i)	459	334	793	14,414	9,890	15,774	25,665	40,078	(h)	436,524	477,395
2021 January	(i)	49	38	87	1,491	886	1,350	2,236	3,728	(h)	45,498	49,312
February	(i)	60	46	106	1,351	803	1,321	2,124	3,475	(h)	48,101	51,682
March	(i)	45	35	80	1,519	833	1,382	2,215	3,734	(h)	34,551	38,364
April	(i)	37	15	52	1,477	843	1,202	2,045	3,522	(h)	30,104	33,678
May	(i)	33	14	47	1,527	861	1,200	2,061	3,587	(h)	35,622	39,256
June	(i)	38	16	53	1,485	828	1,226	2,054	3,539	(h)	48,053	51,646
July	(i)	41	F 20	F 61	F 1,417	898	F 1,286	F 2,184	F 3,600	(h)	56,430	60,091
August	(i)	43	F 18	F 61	F 1,232	818	F 1,315	F 2,133	F 3,365	(h)	56,269	59,696
8-Month Total	(i)	346	E 201	E 547	E 11,500	6,771	E 10,281	E 17,051	E 28,551	(h)	354,628	383,725
2020 8-Month Total	(i)	298	245	543	9,836	6,530	10,148	16,679	26,514	(h)	285,613	312,670
2019 8-Month Total	(i)	348	246	595	12,108	7,367	12,075	19,443	31,551	(h)	371,323	403,469

^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).

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
2005 Year	34,971	NA	2,615	5,582	8,196	8,196	101,137	144,304
2006 Year	36,548	NA	2,928	6,506	9,434	9,434	140,964	186,946
2007 Year	33,977	NA	1,936	5,624	7,560	7,560	151,221	192,758
2008 Year	34,688	498	2,331	6,007	8,338	8,836	161,589	205,112
2009 Year	47,718	529	1,957	5,109	7,066	7,595	189,467	244,780
2010 Year	49,820	552	1,925	4,525	6,451	7,003	174,917	231,740
2011 Year	51,897	603	2,610	4,455	7,065	7,668	172,387	231,951
2012 Year	46,157	583	2,522	4,475	6,997	7,581	185,116	238,853
2013 Year	45,652	495	2,200	4,097	6,297	6,792	147,884	200,328
2014 Year	38,894	449	2,640	4,196	6,836	7,285	151,548	197,727
2015 Year	35,871	394	2,236	4,382	6,618	7,012	195,548	238,431
2016 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 Year	21,692	247	1,807	3,258	5,065	5,312	102,793	129,796
2019 January	21,391	238	1,873	3,116	4,989	5,227	99,145	125,763
February	23,551	229	1,939	2,974	4,913	5,142	98,637	127,331
March	24,160	221	2,005	2,832	4,837	5,058	96,932	126,150
April	22,767	214	2,102	2,883	4,985	5,199	108,072	136,039
May	24,273	208	2,199	2,934	5,133	5,341	115,700	145,314
June	24,529	201	2,296	2,985	5,281	5,483	116,861	146,872
July	25,240	212	2,352	3,046	5,398	5,609	110,661	141,511
August	26,441	222	2,407	3,107	5,514	5,736	110,268	142,445
September	27,714	232	2,463	3,168	5,631	5,863	110,615	144,192
October	29,683	237	2,420	3,198	5,618	5,855	118,566	154,104
November	30,717	242	2,376	3,228	5,605	5,846	122,357	158,921
December	31,320	246	2,333	3,258	5,591	5,838	128,176	165,334
2020 January	31,382	235	2,271	3,179	5,450	5,685	134,352	171,419
February	31,803	223	2,210	3,100	5,309	5,533	139,280	176,615
March	30,829	212	2,148	3,020	5,168	5,380	145,218	181,427
April	31,168	212	2,106	3,020	5,126	5,338	151,723	188,229
May	31,522	212	2,064	3,019	5,083	5,296	154,037	190,855
June	29,510	213	2,022	3,019	5,041	5,253	150,406	185,169
July	27,716	220	2,007	2,981	4,988	5,208	137,956	170,879
August	27,138	227	1,991	2,944	4,935	5,162	129,645	161,945
September	25,537	234	1,975	2,907	4,882	5,116	129,079	159,732
October	25,025	239	1,868	2,887	4,755	4,994	133,421	163,441
November	24,152	245	1,761	2,867	4,628	4,873	136,168	165,193
December	23,640	250	1,654	2,848	4,501	4,751	132,723	161,114
2021 January	F 27,799	243	1,618	2,750	4,368	4,611	125,399	157,808
February	F 28,313	236	1,581	2,652	4,234	4,470	109,717	142,500
March	F 28,146	229	1,545	2,555	4,100	4,329	111,815	144,290
April	F 28,539	223	1,648	2,580	4,228	4,451	117,835	150,825
May	F 28,861	217	1,750	2,606	4,356	4,573	120,343	153,777
June	F 26,064	210	1,853	2,632	4,485	4,695	111,209	141,968
July	F 24,206	F 184	F 1,994	F 3,581	F 5,576	F 5,760	97,166	127,132
August	F 24,205	F 185	F 2,035	F 3,568	F 5,603	F 5,788	84,306	114,300

^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.

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

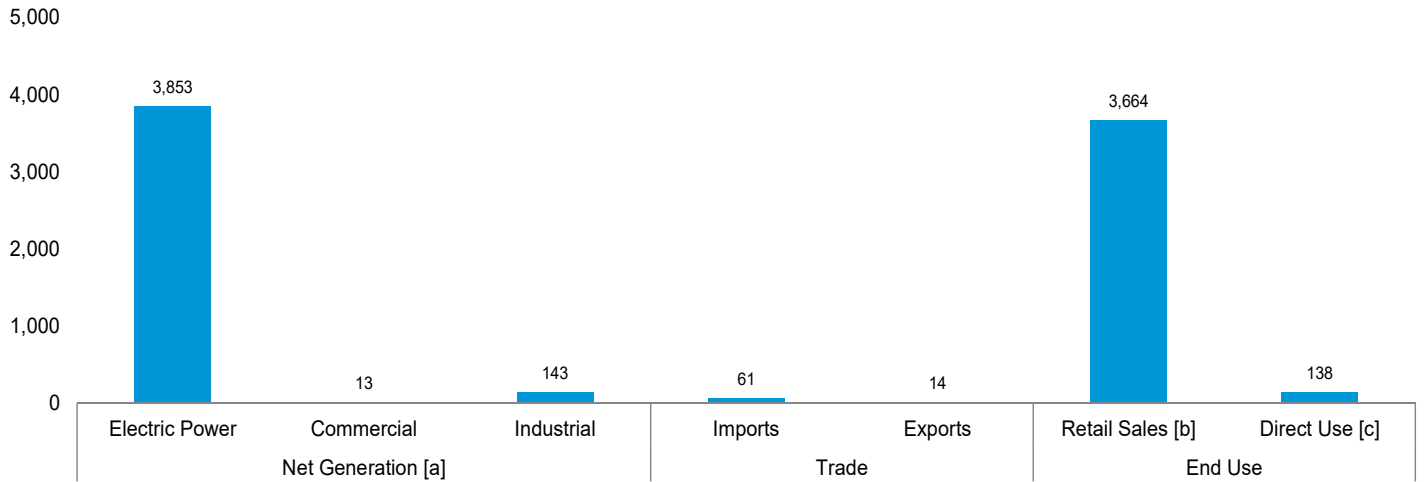
1949 forward: Table 7.5.

7. Electricity

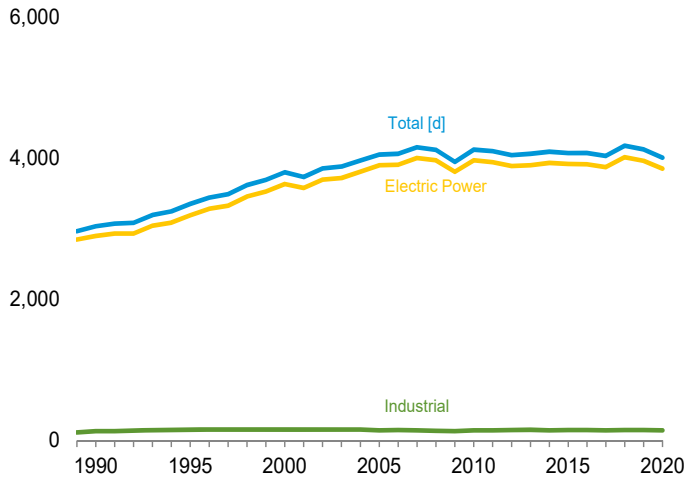
Figure 7.1 Electricity Overview

(Billion Kilowatthours)

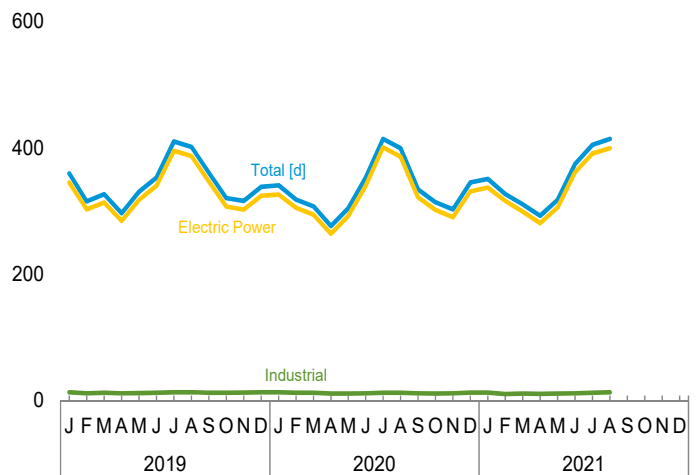
Overview, 2020



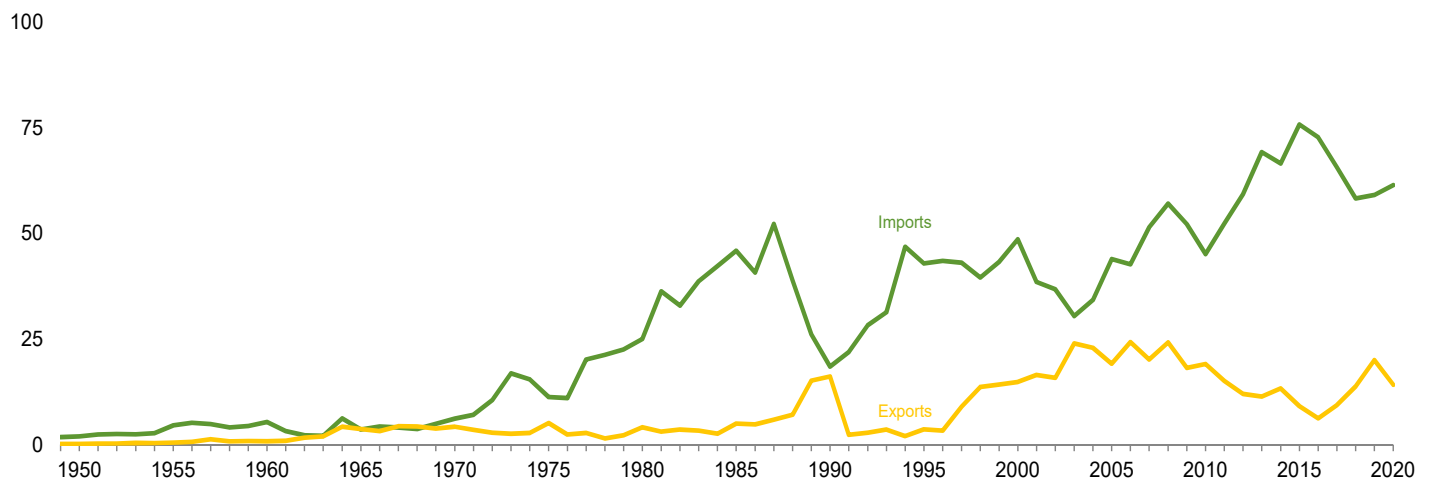
Net Generation [a] by Sector, 1989–2020



Net Generation [a] by Sector, Monthly



Trade, 1949–2020



[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
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 Total	3,877	13	144	4,034	66	9	56	226	3,723	141	3,864
2018 Total	4,018	13	147	4,178	58	14	44	219	3,859	144	4,003
2019 January	345	1	13	360	5	1	3	22	329	^E 13	341
February	303	1	11	315	5	1	3	11	296	^E 11	307
March	313	1	12	327	5	3	2	15	302	^E 12	314
April	284	1	11	297	4	2	2	14	274	^E 11	285
May	317	1	12	330	5	2	3	25	297	^E 11	308
June	340	1	12	353	5	2	4	23	321	^E 12	333
July	396	1	13	410	6	2	4	25	376	^E 13	389
August	387	1	13	401	6	2	4	20	373	^E 13	385
September	347	1	12	361	5	2	4	12	340	^E 12	353
October	307	1	12	320	4	1	2	2	308	^E 12	320
November	302	1	13	316	5	1	4	22	286	^E 12	298
December	324	1	13	338	5	1	4	20	310	^E 13	322
Total	3,966	14	149	4,128	59	20	39	212	3,811	143	3,955
2020 January	326	1	13	341	5	1	3	20	311	^E 13	324
February	305	1	12	318	4	2	3	19	290	^E 12	302
March	294	1	12	307	5	1	4	14	285	^E 12	297
April	264	1	11	276	5	1	3	11	258	^E 11	269
May	292	1	11	304	5	2	4	27	270	^E 11	281
June	340	1	12	353	5	1	4	30	316	^E 11	327
July	401	1	12	414	7	1	5	33	375	^E 12	387
August	386	1	12	400	7	1	6	29	364	^E 12	376
September	322	1	11	334	5	1	4	9	318	^E 11	329
October	302	1	11	314	5	1	4	15	292	^E 11	303
November	290	1	12	303	4	1	3	22	273	^E 11	284
December	331	1	13	345	5	1	4	26	311	^E 12	323
Total	3,853	13	143	4,009	61	14	47	254	3,664	^E 138	3,802
2021 January	337	1	13	351	5	1	4	22	321	^E 12	333
February	316	1	10	327	4	1	3	21	299	^E 10	309
March	299	1	11	311	5	1	4	10	294	^E 11	304
April	281	1	11	292	4	1	3	14	272	^E 10	282
May	305	1	11	317	5	1	4	21	289	^E 11	300
June	362	1	12	374	^F 5	^F 1	^F 4	30	337	^E 11	349
July	391	1	12	405	^F 6	^F 1	^F 5	26	372	^E 12	384
August	400	NM	13	414	^F 6	^F 1	^F 5	27	380	^E 13	393
8-Month Total	2,690	9	92	2,791	^E 40	^E 7	^E 32	170	2,564	^E 89	2,654
2020 8-Month Total	2,608	9	96	2,713	43	11	32	182	2,470	^E 93	2,563
2019 8-Month Total	2,685	9	98	2,793	40	14	26	156	2,567	^E 95	2,662

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

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

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

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

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

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

^g Data collection frame differences and nonsampling error.

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

in 1996, other energy service providers.

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

^E=Estimate. ^{NA}=Not available. ^{NM}=Not meaningful. ^F=Forecast. ^(s)=Less than 0.5 billion kilowatthours.

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

• Data values preceded by "F" are derived from the U.S. Energy Information Administration's Short-Term Integrated Forecasting System. See Note 3, "Electricity Forecast Values," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

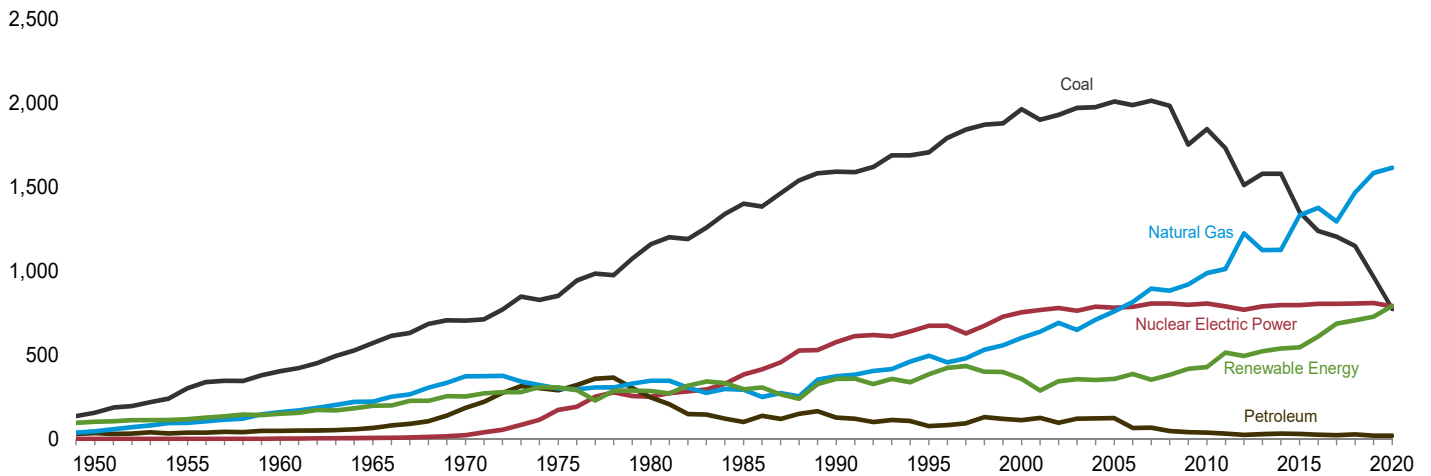
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

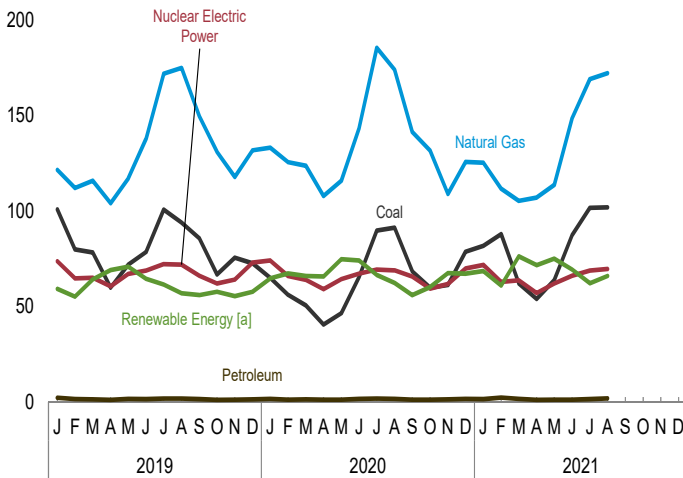
Figure 7.2 Electricity Net Generation

(Billion Kilowatthours)

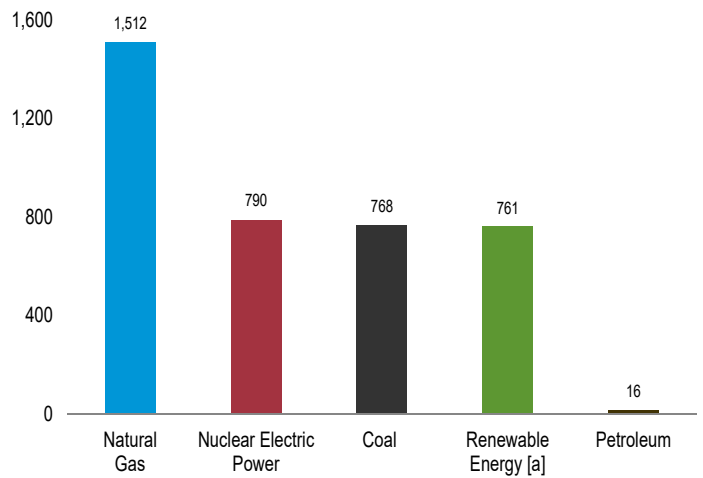
Total (All Sectors), Major Sources, 1949–2020



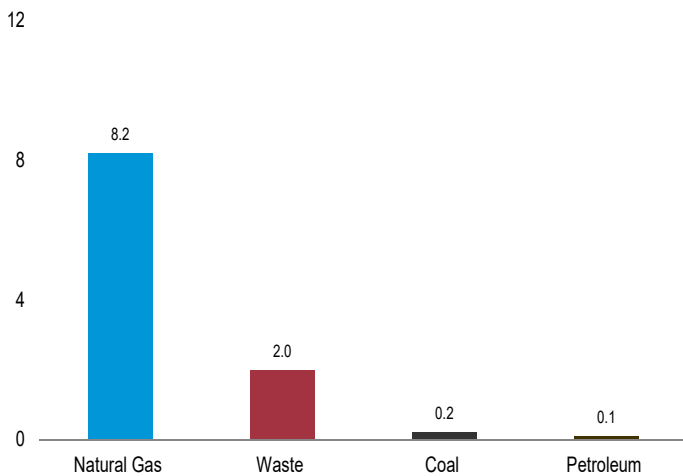
Total (All Sectors), Major Sources, Monthly



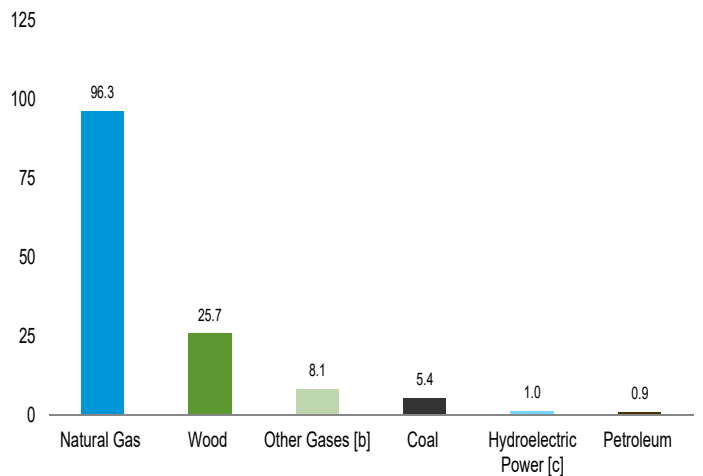
Electric Power Sector, Major Sources, 2020



Commercial Sector, Major Sources, 2020



Industrial Sector, Major Sources, 2020



[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	Hydroelectric Pumped Storage ^e	Renewable Energy					Total ^j	
	Coal ^a	Petroleum ^b	Natural Gas ^c	Other Gases ^d			Conventional Hydroelectric Power ^f	Biomass		Geothermal	Solar ⁱ		Wind
								Wood ^g	Waste ^h				
1950 Total	154,520	33,734	44,559	NA	0	(f)	100,885	390	NA	NA	NA	NA	334,088
1955 Total	301,363	37,138	95,285	NA	0	(f)	116,236	276	NA	NA	NA	NA	550,299
1960 Total	403,067	47,987	157,970	NA	518	(f)	149,440	140	NA	33	NA	NA	759,156
1965 Total	570,926	64,801	221,559	NA	3,657	(f)	196,984	269	NA	189	NA	NA	1,058,386
1970 Total	704,394	184,183	372,890	NA	21,804	(f)	250,957	136	220	525	NA	NA	1,535,111
1975 Total	852,786	289,095	299,778	NA	172,505	(f)	303,153	18	174	3,246	NA	NA	1,920,755
1980 Total	1,161,562	245,994	346,240	NA	251,116	(f)	279,182	275	158	5,073	NA	NA	2,289,600
1985 Total	1,402,128	100,202	291,946	NA	383,691	(f)	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
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	-4,288	254,831	37,300	17,734	14,840	864	55,363	4,119,388
2009 Total	1,755,904	38,937	920,979	10,632	798,855	-4,627	273,445	36,050	18,443	15,009	891	73,886	3,950,331
2010 Total	1,847,290	37,061	987,697	11,313	806,968	-5,501	260,203	37,172	18,917	15,219	1,212	94,652	4,125,060
2011 Total	1,733,430	30,182	1,013,689	11,566	790,204	-6,421	319,355	37,449	19,222	15,316	1,818	120,177	4,100,141
2012 Total	1,514,043	23,190	1,225,894	11,898	769,331	-4,950	276,240	37,799	19,823	15,562	4,327	140,822	4,047,765
2013 Total	1,581,115	27,164	1,124,836	12,853	789,016	-4,681	268,565	40,028	20,830	15,775	9,036	167,840	4,065,964
2014 Total	1,581,710	30,232	1,126,609	12,022	797,166	-6,174	259,367	42,340	21,650	15,877	17,691	181,655	4,093,606
2015 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 Total	1,205,835	21,390	1,296,442	12,469	804,950	-6,495	300,333	41,124	21,610	15,927	53,287	254,303	4,034,271
2018 Total	1,149,487	25,226	1,469,133	13,463	807,084	-5,905	292,524	40,936	20,896	15,967	63,825	272,667	4,178,277
2019													
January	100,905	2,213	121,589	1,025	73,701	-323	24,798	3,465	1,672	1,390	3,580	24,301	359,509
February	79,929	1,507	112,142	948	64,715	-389	22,881	3,042	1,498	1,293	3,836	22,623	315,026
March	78,352	1,390	115,813	1,086	65,080	-409	26,334	3,217	1,625	1,422	5,899	25,773	326,657
April	59,922	1,183	104,059	948	60,581	-103	27,820	2,807	1,510	1,254	6,752	28,915	296,663
May	71,885	1,674	117,059	1,054	67,124	-368	31,982	3,051	1,564	1,342	7,162	25,779	330,423
June	78,540	1,519	137,836	1,009	68,805	-385	28,078	3,159	1,581	1,328	7,971	22,446	352,988
July	100,771	1,795	171,955	1,185	72,199	-622	24,875	3,498	1,617	1,375	8,133	22,101	410,038
August	94,040	1,731	174,968	1,147	71,911	-579	22,579	3,539	1,636	1,393	7,877	19,978	401,430
September	85,707	1,504	149,697	1,112	66,064	-671	18,526	3,211	1,530	1,368	6,817	24,513	360,518
October	66,777	1,142	130,948	924	62,033	-373	18,306	3,063	1,573	1,141	6,093	27,625	320,352
November	75,549	1,232	117,910	1,047	64,125	-509	20,218	3,137	1,525	984	4,364	25,184	315,849
December	72,581	1,451	131,839	1,107	73,074	-529	21,478	3,355	1,633	1,183	3,453	26,644	338,402
Total	964,957	18,341	1,585,814	12,591	809,409	-5,261	287,874	38,543	18,964	15,473	71,937	295,882	4,127,855
2020													
January	65,100	1,612	133,158	1,105	74,170	-377	25,332	3,345	1,671	1,265	4,657	28,547	340,669
February	56,114	1,257	125,594	1,131	65,950	-247	26,370	3,145	1,515	1,274	5,706	29,397	318,168
March	50,644	1,390	123,697	1,014	63,997	-353	23,594	3,192	1,682	1,517	6,496	29,525	307,479
April	40,624	1,219	107,960	747	59,170	-325	22,112	2,968	1,594	1,450	8,126	29,416	276,127
May	46,530	1,286	115,871	810	64,338	-367	30,485	3,094	1,617	1,450	9,767	28,309	304,277
June	65,335	1,667	143,245	757	67,205	-499	29,059	2,988	1,456	1,371	9,641	29,524	352,766
July	89,831	1,794	185,445	856	69,385	-686	27,676	3,106	1,564	1,435	10,478	22,270	414,243
August	91,252	1,701	173,927	1,006	68,982	-784	24,082	3,303	1,589	1,430	9,508	22,413	399,504
September	68,448	1,249	141,453	948	65,727	-525	19,162	2,941	1,512	1,392	7,891	23,064	334,270
October	59,895	1,224	131,658	895	59,362	-423	18,321	2,802	1,516	1,380	7,346	28,880	313,910
November	61,332	1,444	109,037	940	61,760	-369	21,832	3,105	1,476	1,489	5,895	33,704	302,702
December	78,700	1,652	125,704	972	69,871	-368	23,086	3,260	1,612	1,478	5,381	32,462	344,970
Total	773,805	17,495	1,616,748	11,182	789,919	-5,321	291,111	37,249	18,805	16,930	90,891	337,510	4,009,085
2021													
January	81,806	1,589	125,323	985	71,832	-424	26,159	3,253	1,620	1,404	5,732	30,427	350,815
February	87,848	2,284	111,672	767	62,954	-425	22,137	2,936	1,419	1,327	6,502	26,673	327,019
March	62,022	1,654	105,377	791	63,708	-236	21,349	3,199	1,604	1,265	9,342	39,558	310,701
April	53,933	1,132	107,041	794	57,092	-197	19,257	2,726	1,508	1,304	10,923	35,908	292,392
May	63,890	1,303	113,684	853	62,053	-416	23,408	3,051	1,550	1,388	12,467	33,192	317,425
June	87,353	1,320	148,583	902	66,070	-376	24,879	3,145	1,489	1,392	12,063	26,383	374,206
July	101,635	1,498	169,107	949	68,832	-685	22,609	3,287	1,517	1,414	11,978	21,422	404,615
August	101,932	1,895	172,275	985	69,673	-670	21,486	3,370	1,500	1,374	11,921	26,298	414,224
8-Month Total	640,417	12,674	1,053,061	7,027	522,215	-3,428	181,285	24,968	12,206	10,868	80,928	239,861	2,791,396
2020 8-Month Total	505,430	11,927	1,108,896	7,426	533,198	-3,636	208,710	25,141	12,689	11,191	64,378	219,400	2,713,233
2019 8-Month Total	664,343	13,012	1,055,420	8,401	544,114	-3,179	209,346	25,778	12,702	10,798	51,209	191,916	2,792,734

^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.

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 ⁱ	
	Coal ^a	Petro- leum ^b	Natural Gas ^c	Other Gases ^d			Conven- tional Hydro- electric Power ^f	Biomass		Geo- thermal	Solar ⁱ	Wind		
								Wood ^g	Waste ^h					
1950 Total	154,520	33,734	44,559	NA	0	(f)	95,938	390	NA	NA	NA	NA	NA	329,141
1955 Total	301,363	37,138	95,285	NA	0	(f)	112,975	276	NA	NA	NA	NA	NA	547,038
1960 Total	403,067	47,987	157,970	NA	518	(f)	145,833	140	NA	33	NA	NA	NA	755,549
1965 Total	570,926	64,801	221,559	NA	3,657	(f)	193,851	269	NA	189	NA	NA	NA	1,055,252
1970 Total	704,394	184,183	372,890	NA	21,804	(f)	247,714	136	220	525	NA	NA	NA	1,531,868
1975 Total	852,786	289,095	299,778	NA	172,505	(f)	300,047	18	174	3,246	NA	NA	NA	1,917,649
1980 Total	1,161,562	245,994	346,240	NA	251,116	(f)	276,021	275	158	5,073	NA	NA	NA	2,286,439
1985 Total	1,402,128	100,202	291,946	NA	383,691	(f)	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	2,789	2,901,322
1995 Total	1,686,056	68,146	419,179	1,927	673,402	-2,725	305,410	7,597	17,986	13,378	497	3,164	3,164	3,194,230
2000 Total	1,943,111	105,192	517,978	2,028	753,893	-5,539	271,338	8,916	20,307	14,093	493	5,593	5,593	3,637,529
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	17,811	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	26,589	3,908,077
2007 Total	1,998,390	61,306	814,752	4,042	806,425	-6,896	245,843	10,711	14,294	14,637	612	34,450	34,450	4,005,343
2008 Total	1,968,838	42,881	802,372	3,200	806,208	-6,288	253,096	10,638	15,379	14,840	864	55,363	55,363	3,974,349
2009 Total	1,741,123	35,811	841,006	3,058	798,855	-4,627	271,506	10,738	15,954	15,009	891	73,886	73,886	3,809,837
2010 Total	1,827,738	34,679	901,389	2,967	806,968	-5,501	258,455	11,446	16,376	15,219	1,206	94,636	94,636	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	1,727	120,121	120,121	3,948,186
2012 Total	1,500,557	20,072	1,132,791	2,984	769,331	-4,950	273,859	11,050	16,555	15,562	4,164	140,749	140,749	3,890,358
2013 Total	1,567,722	24,510	1,028,949	4,322	789,016	-4,681	265,058	12,302	16,918	15,775	8,724	167,742	167,742	3,903,715
2014 Total	1,568,774	28,043	1,033,172	3,358	797,166	-6,174	258,046	15,027	17,602	15,877	17,304	181,496	181,496	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	190,547	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	226,790	3,918,078
2017 Total	1,197,838	20,039	1,196,753	4,126	804,950	-6,495	298,711	13,641	18,084	15,927	52,724	254,074	254,074	3,877,453
2018 Total	1,142,173	23,928	1,365,822	4,086	807,084	-5,905	291,148	13,385	17,623	15,934	63,253	272,396	272,396	4,018,167
2019 January	100,294	2,104	112,144	360	73,701	-323	24,658	1,141	1,412	1,348	3,546	24,273	24,273	345,324
February	79,382	1,420	103,949	351	64,715	-389	22,772	947	1,266	1,252	3,798	22,598	22,598	302,635
March	77,819	1,307	107,124	383	65,080	-409	26,208	939	1,364	1,378	5,841	25,746	25,746	313,385
April	59,426	1,089	95,861	329	60,581	-103	27,695	769	1,276	1,227	6,690	28,888	28,888	284,309
May	71,388	1,597	108,445	324	67,124	-368	31,857	965	1,347	1,304	7,095	25,757	25,757	317,498
June	78,043	1,435	128,930	329	68,805	-385	27,965	975	1,346	1,294	7,898	22,426	22,426	339,709
July	100,225	1,652	162,249	372	72,199	-622	24,788	1,151	1,383	1,342	8,053	22,084	22,084	395,547
August	93,517	1,636	165,140	377	71,911	-579	22,504	1,172	1,393	1,362	7,803	19,964	19,964	386,904
September	85,216	1,417	140,483	342	66,064	-671	18,461	1,045	1,303	1,338	6,754	24,494	24,494	346,894
October	66,311	1,056	121,934	189	62,033	-373	18,232	899	1,334	1,103	6,040	27,599	27,599	306,999
November	75,046	1,146	108,683	326	64,125	-509	20,139	957	1,288	941	4,323	25,160	25,160	302,253
December	72,065	1,361	122,198	354	73,074	-529	21,374	1,060	1,380	1,140	3,423	26,616	26,616	324,174
Total	958,732	17,220	1,477,139	4,037	809,409	-5,261	286,652	12,020	16,091	15,031	71,265	295,604	295,604	3,965,629
2020 January	64,548	1,514	123,298	354	74,170	-377	25,222	1,053	1,422	1,229	4,615	28,520	28,520	326,217
February	55,590	1,177	116,654	370	65,950	-247	26,260	1,004	1,284	1,233	5,657	29,368	29,368	304,885
March	50,145	1,306	114,766	288	63,997	-353	23,483	949	1,437	1,473	6,436	29,496	29,496	294,084
April	40,189	1,157	100,048	150	59,170	-325	22,002	823	1,364	1,410	8,052	29,386	29,386	264,054
May	46,094	1,210	107,853	161	64,338	-367	30,367	944	1,382	1,411	9,679	28,282	28,282	291,979
June	64,920	1,576	134,669	133	67,205	-499	28,950	907	1,247	1,338	9,555	29,446	29,446	340,019
July	89,368	1,691	176,293	162	69,385	-686	27,571	992	1,339	1,404	10,386	22,186	22,186	400,737
August	90,814	1,609	164,758	303	68,982	-784	23,985	1,159	1,365	1,400	9,428	22,341	22,341	386,013
September	67,978	1,170	133,123	297	65,727	-525	19,076	847	1,307	1,359	7,824	22,977	22,977	321,755
October	59,440	1,139	123,640	238	59,362	-423	18,237	808	1,292	1,341	7,284	28,770	28,770	301,722
November	60,896	1,350	100,783	306	61,760	-369	21,736	922	1,253	1,448	5,845	33,582	33,582	290,110
December	78,215	1,557	116,315	337	69,871	-368	22,981	1,015	1,370	1,434	5,338	32,329	32,329	331,059
Total	768,196	16,456	1,512,199	3,097	789,919	-5,321	289,870	11,423	16,062	16,481	90,097	336,681	336,681	3,852,634
2021 January	81,340	1,505	116,050	326	71,832	-424	26,047	1,031	1,371	1,360	5,689	30,319	30,319	337,092
February	87,393	2,172	104,470	191	62,954	-425	22,043	1,021	1,216	1,288	6,452	26,561	26,561	315,905
March	61,561	1,568	97,691	196	63,708	-236	21,247	1,040	1,364	1,248	9,267	39,466	39,466	298,757
April	53,494	1,065	99,521	246	57,092	-197	19,158	721	1,281	1,267	10,837	35,809	35,809	280,877
May	63,412	1,223	105,770	260	62,053	-416	23,307	969	1,330	1,337	12,370	33,113	33,113	305,324
June	86,848	1,251	140,120	304	66,070	-376	24,783	1,033	1,294	1,352	11,974	26,305	26,305	361,556
July	101,129	1,419	159,992	298	68,832	-685	22,512	1,103	1,295	1,374	11,890	21,363	21,363	391,130
August	101,424	1,810	163,240	321	69,673	-670	21,389	1,218	1,278	1,333	11,830	26,215	26,215	399,667
8-Month Total	636,601	12,012	986,854	2,142	522,215	-3,428	180,485	8,137	10,431	10,558	80,311	239,152	239,152	2,690,308
2020 8-Month Total	501,667	11,240	1,038,338	1,920	533,198	-3,636	207,840	7,831	10,840	10,899	63,807	219,023	219,023	2,607,988
2019 8-Month Total	660,093	12,241	983,842	2,825	544,114	-3,179	208,446	8,058	10,786	10,508	50,724	191,736	191,736	2,685,310

^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, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.
NA=Not available.
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the

Table 7.2c Electricity Net Generation: Commercial and Industrial Sectors

(Subset of Table 7.2a; Million Kilowatthours)

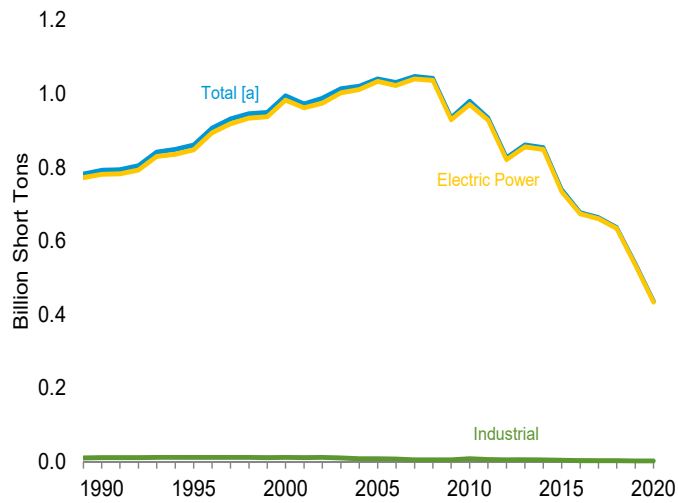
	Commercial Sector ^a					Industrial Sector ^b							
	Coal ^c	Petroleum ^d	Natural Gas ^e	Biomass	Total ^g	Coal ^c	Petroleum ^d	Natural Gas ^e	Other Gases ^h	Hydroelectric Power ⁱ	Biomass		Total ^k
				Waste ^f							Wood ^j	Waste ^l	
1950 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,946	NA	NA	4,946
1955 Total	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
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 Total	329	112	8,042	2,515	13,060	7,669	1,239	91,647	8,343	1,382	27,412	1,012	143,758
2018 Total	303	140	8,419	2,404	13,312	7,011	1,157	94,892	9,377	1,149	27,475	868	146,798
2019													
January	29	21	706	195	1,160	581	88	8,739	664	124	2,317	65	13,025
February	27	10	654	171	1,057	521	77	7,538	597	94	2,086	61	11,335
March	33	9	711	189	1,173	500	74	7,978	702	108	2,267	71	12,099
April	22	8	646	168	1,053	475	85	7,552	619	106	2,034	65	11,301
May	18	7	663	159	1,072	479	70	7,951	730	104	2,084	58	11,854
June	13	6	711	178	1,133	484	79	8,196	680	95	2,179	57	12,147
July	18	9	869	180	1,313	528	133	8,837	813	71	2,331	55	13,178
August	17	12	852	185	1,290	506	83	8,976	770	59	2,357	57	13,236
September	21	10	731	179	1,150	470	77	8,483	770	52	2,157	48	12,474
October	21	9	666	173	1,072	445	76	8,348	735	63	2,157	67	12,281
November	23	9	667	171	1,066	480	77	8,561	721	67	2,174	67	12,531
December	27	11	735	181	1,151	489	80	8,906	753	91	2,289	72	13,077
Total	268	121	8,610	2,129	13,689	5,957	1,000	100,065	8,554	1,033	26,433	743	148,537
2020													
January	22	11	751	177	1,167	530	87	9,108	752	93	2,284	72	13,284
February	29	6	688	166	1,096	495	73	8,253	761	92	2,135	65	12,186
March	22	6	663	181	1,095	477	78	8,268	726	96	2,239	65	12,300
April	13	5	562	165	966	422	58	7,351	597	95	2,144	64	11,107
May	14	7	597	174	1,038	422	69	7,421	649	95	2,146	62	11,260
June	17	7	680	161	1,104	398	83	7,896	624	86	2,074	49	11,643
July	17	10	817	173	1,264	447	92	8,335	695	84	2,101	52	12,242
August	15	10	798	172	1,228	423	82	8,370	702	80	2,130	51	12,263
September	24	8	717	162	1,119	446	71	7,612	652	73	2,087	44	11,397
October	17	8	623	163	1,023	437	77	7,395	656	71	1,985	61	11,165
November	19	8	624	166	1,025	417	87	7,631	635	81	2,175	57	11,567
December	26	9	687	174	1,105	460	86	8,702	636	90	2,235	68	12,806
Total	235	97	8,207	2,035	13,230	5,374	943	96,342	8,085	1,035	25,735	708	143,221
2021													
January	25	10	685	183	1,121	440	75	8,588	659	92	2,212	66	12,602
February	36	NM	616	148	1,013	419	96	6,587	577	76	1,900	55	10,101
March	24	NM	629	172	1,044	437	78	7,057	595	87	2,151	68	10,900
April	18	8	578	162	1,001	421	58	6,942	548	84	1,997	65	10,514
May	12	9	609	159	1,039	466	71	7,305	593	83	2,075	62	11,063
June	19	7	692	151	1,108	486	62	7,771	598	78	2,098	43	11,542
July	22	9	781	171	1,231	483	70	8,334	651	80	2,166	50	12,254
August	25	9	808	170	NM	482	76	8,226	664	81	2,135	51	12,913
8-Month Total	183	76	5,399	1,316	9,200	3,634	586	60,809	4,885	661	16,733	460	91,889
2020 8-Month Total	149	64	5,556	1,369	8,959	3,614	622	65,002	5,506	721	17,253	480	96,286
2019 8-Month Total	176	82	5,811	1,426	9,249	4,073	689	65,767	5,576	760	17,656	489	98,175

^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

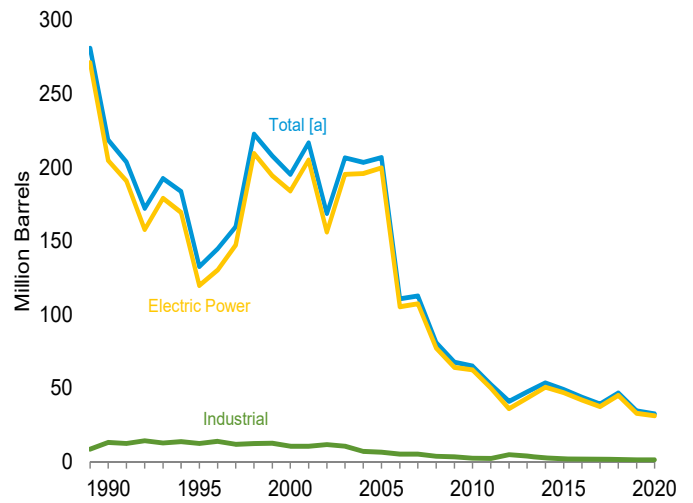
fossil fuels. Through 2010, also includes propane gas.
ⁱ Conventional hydroelectric power.
^j Wood and wood-derived fuels.
^k Includes photovoltaic (PV) energy, wind, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (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.
 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

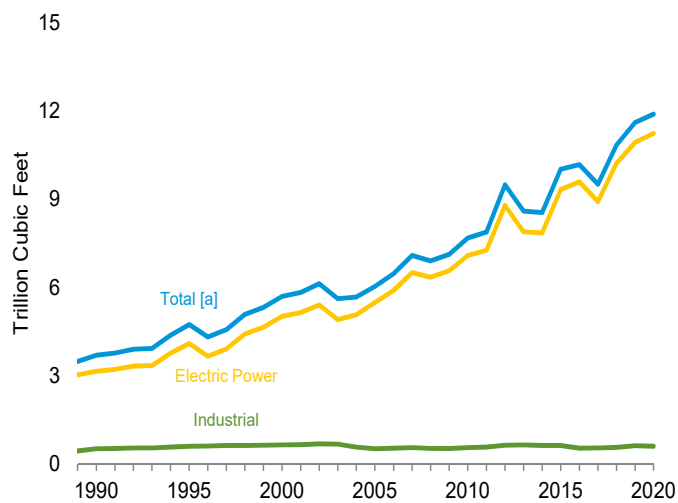
Coal by Sector, 1989–2020



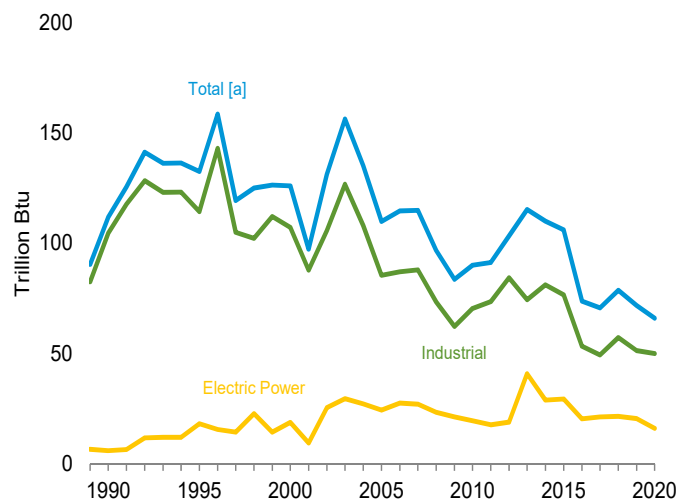
Petroleum by Sector, 1989–2020



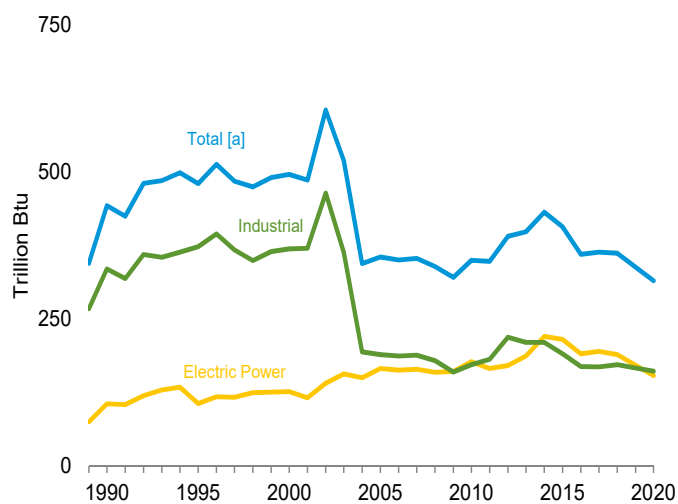
Natural Gas by Sector, 1989–2020



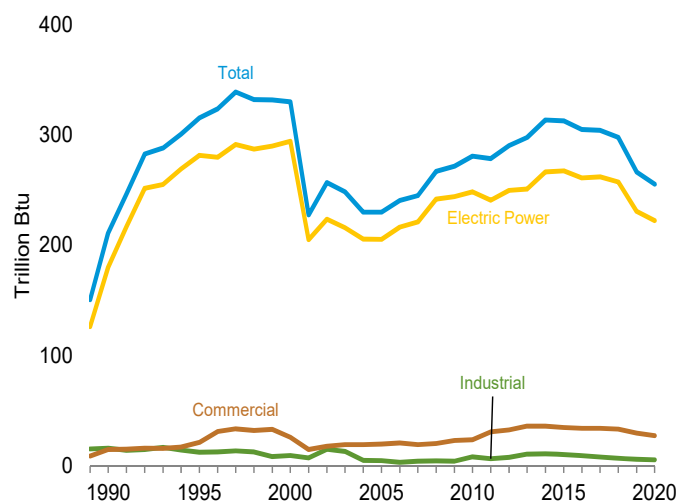
Other Gases [b] by Sector, 1989–2020



Wood by Sector, 1989–2020



Waste by Sector, 1989–2020



[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 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	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
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 Total	663,911	9,707	10,442	1,547	3,490	39,144	9,508	71	364	304	190
2018 Total	636,213	14,223	12,407	1,985	3,623	46,727	10,833	79	362	298	190
2019 January	55,834	1,206	996	303	326	4,135	873	6	31	23	17
February	45,025	739	580	163	272	2,844	801	5	27	21	15
March	43,976	734	611	131	235	2,651	836	6	28	23	16
April	33,353	648	621	149	155	2,194	763	5	24	21	16
May	40,015	830	735	136	294	3,169	863	6	27	22	17
June	44,218	812	790	145	216	2,828	1,017	6	28	22	17
July	55,863	775	895	148	309	3,363	1,284	7	31	23	17
August	52,349	758	961	150	276	3,251	1,306	6	32	23	18
September	47,188	725	786	157	231	2,824	1,109	6	28	22	17
October	37,431	742	794	172	83	2,123	965	5	26	22	16
November	41,907	779	718	130	129	2,272	847	6	27	22	16
December	40,461	873	763	179	197	2,800	939	6	29	23	17
Total	537,620	9,620	9,251	1,965	2,724	34,454	11,602	72	338	267	199
2020 January	36,773	859	761	158	261	3,082	958	6	28	23	16
February	32,039	696	616	131	190	2,393	902	6	27	21	14
March	28,989	593	583	192	262	2,678	902	6	27	23	16
April	23,623	504	544	137	221	2,288	783	4	24	21	15
May	26,849	596	588	104	231	2,442	854	5	26	22	16
June	36,708	749	700	123	308	3,115	1,068	5	25	20	15
July	49,856	813	801	135	318	3,337	1,396	5	27	21	16
August	50,516	747	800	128	295	3,152	1,304	6	29	22	16
September	38,757	563	732	115	159	2,206	1,058	6	24	21	15
October	33,943	714	787	143	131	2,300	975	5	24	21	15
November	34,437	657	677	121	211	2,509	790	6	26	20	15
December	43,588	776	720	127	279	3,020	899	6	28	22	17
Total	436,076	8,268	8,310	1,613	2,866	32,520	11,888	66	315	256	186
2021 January	45,412	663	842	127	268	2,971	892	6	27	22	16
February	47,989	1,869	822	352	269	4,387	804	4	26	19	14
March	34,487	656	645	107	255	2,684	764	5	28	21	16
April	30,059	662	598	114	150	2,126	772	5	23	20	15
May	35,606	686	653	84	199	2,418	837	5	26	20	14
June	47,981	673	716	137	192	2,486	1,105	5	27	20	15
July	56,332	630	726	116	269	2,816	1,256	6	29	21	16
August	56,164	859	1,067	151	288	3,517	1,279	6	30	21	23
8-Month Total	354,029	6,697	6,070	1,189	1,890	23,405	7,709	41	217	165	127
2020 8-Month Total	285,352	5,558	5,393	1,107	2,085	22,485	8,166	44	214	172	124
2019 8-Month Total	370,633	6,501	6,190	1,326	2,084	24,435	7,742	48	228	178	132

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

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

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

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

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

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

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

^h Wood and wood-derived fuels.

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

tire-derived fuels).

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

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

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

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • Data are for fuels consumed to produce electricity. Data also include fuels consumed to produce useful thermal output at a small number of electric utility combined-heat-and-power (CHP) plants. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See "Table 7.3b Sources" at end of section and sources for Table 7.3c.

Table 7.3b Consumption of Combustible Fuels for Electricity Generation: Electric Power Sector (Subset of Table 7.3a)

	Coal ^a	Petroleum					Natural Gas ^f	Other Gases ^g	Biomass		Other ⁱ
		Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e	Total ^e			Wood ^h	Waste ⁱ	
		Thousand Short Tons	Thousand Barrels			Thousand Short Tons			Thousand Barrels	Billion Cubic Feet		Trillion Btu
1950 Total	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1955 Total	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1960 Total	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1965 Total	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1970 Total	320,182	24,123	311,381	NA	636	338,686	3,932	NA	1	2	NA
1975 Total	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1980 Total	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1985 Total	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1990 Total ^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
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 Total	661,033	9,398	10,299	1,332	3,273	37,394	8,917	21	195	262	121
2018 Total	633,593	13,795	12,259	1,757	3,444	45,030	10,215	21	189	257	125
2019 January	55,611	1,160	982	286	313	3,991	815	2	17	20	11
February	44,821	715	570	261	261	2,731	751	2	14	18	10
March	43,799	708	602	113	222	2,531	782	2	14	19	11
April	33,185	623	614	121	139	2,055	712	2	11	18	10
May	39,832	805	731	116	280	3,050	809	2	14	19	11
June	44,040	786	785	126	202	2,708	962	2	14	19	11
July	55,665	742	891	131	285	3,189	1,223	2	16	20	12
August	52,153	725	957	132	261	3,120	1,245	2	17	20	12
September	47,008	688	781	138	216	2,689	1,051	2	15	19	11
October	37,268	709	787	155	68	1,990	908	1	13	19	11
November	41,727	749	710	107	116	2,144	789	2	13	19	11
December	40,274	844	754	159	183	2,670	880	2	15	20	12
Total	535,382	9,254	9,163	1,724	2,545	32,868	10,928	21	171	231	133
2020 January	36,580	831	754	135	245	2,948	898	2	14	20	11
February	31,854	675	608	114	178	2,285	847	2	14	18	10
March	28,815	569	578	173	249	2,564	847	2	13	20	11
April	23,475	485	540	121	212	2,204	734	1	11	19	11
May	26,702	570	582	84	218	2,326	803	1	13	19	11
June	36,573	721	695	107	294	2,994	1,014	1	12	17	10
July	49,708	778	796	119	302	3,202	1,338	1	13	19	11
August	50,371	715	794	118	280	3,026	1,246	2	16	19	11
September	38,601	530	728	103	146	2,094	1,006	1	11	18	11
October	33,788	685	783	126	119	2,187	924	1	12	18	10
November	34,288	626	671	105	196	2,383	738	2	12	17	10
December	43,425	749	712	109	265	2,896	840	2	14	19	11
Total	434,178	7,935	8,242	1,415	2,703	31,109	11,235	16	154	222	130
2021 January	45,255	634	835	114	255	2,860	834	2	13	19	11
February	47,837	1,833	813	306	259	4,247	759	1	14	17	10
March	34,336	622	639	90	242	2,562	715	1	14	19	11
April	29,915	631	593	98	141	2,025	724	1	10	18	10
May	35,444	658	647	63	187	2,304	787	1	13	18	10
June	47,811	647	712	120	181	2,384	1,052	1	14	18	10
July	56,160	596	721	100	257	2,701	1,200	2	15	19	11
August	55,988	825	1,059	133	276	3,399	1,223	2	17	18	11
8-Month Total	352,745	6,446	6,019	1,026	1,798	22,481	7,294	11	111	144	84
2020 8-Month Total	284,077	5,344	5,348	971	1,977	21,549	7,727	10	105	150	87
2019 8-Month Total	369,105	6,264	6,131	1,165	1,963	23,375	7,299	14	116	154	88

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

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

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

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

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

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

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

^h Wood and wood-derived fuels.

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

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

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

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

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • Data are for fuels consumed to produce electricity. Data also include fuels consumed to produce useful thermal output at a small number of electric utility combined-heat-and-power (CHP) plants. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

Table 7.3c Consumption of Selected Combustible Fuels for Electricity Generation: Commercial and Industrial Sectors (Subset of Table 7.3a)

	Commercial Sector ^a				Industrial Sector ^b						
	Coal ^c	Petroleum ^d	Natural Gas ^e	Biomass	Coal ^c	Petroleum ^d	Natural Gas ^e	Other Gases ^g	Biomass		Other ⁱ
				Waste ^f					Wood ^h	Waste ^f	
	Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu			
1990 Total	417	953	28	15	10,740	13,103	517	104	335	16	36
1995 Total	569	649	43	21	12,171	12,265	601	114	373	13	40
2000 Total	514	823	37	26	11,706	10,459	640	107	369	10	45
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 Total	95	204	50	34	2,783	1,545	541	49	169	8	49
2018 Total	87	279	53	33	2,534	1,418	565	57	172	7	46
2019 January	8	34	5	3	214	109	54	4	15	1	4
February	8	16	4	2	197	97	46	4	13	1	3
March	9	17	5	3	168	103	49	4	14	1	4
April	6	16	4	2	161	123	46	4	13	1	3
May	6	17	4	2	178	102	50	4	13	(s)	4
June	4	17	5	3	174	104	50	4	14	(s)	4
July	5	24	6	3	193	150	55	5	15	(s)	4
August	5	21	5	3	190	110	56	5	15	(s)	4
September	6	27	5	2	175	108	53	5	13	(s)	4
October	6	23	4	2	157	109	52	4	14	1	4
November	6	23	4	2	173	105	53	4	14	1	4
December	7	23	5	3	180	107	55	5	14	1	4
Total	76	257	56	30	2,161	1,329	618	51	167	6	45
2020 January	6	24	5	2	187	109	56	4	14	1	3
February	9	13	4	2	177	94	51	5	13	1	3
March	6	17	4	2	168	97	51	4	14	1	3
April	4	12	4	2	144	72	45	4	13	(s)	3
May	4	20	4	2	142	96	46	4	13	(s)	3
June	5	20	4	2	130	101	50	4	13	(s)	3
July	5	25	5	2	143	109	53	4	13	(s)	3
August	4	24	5	2	140	102	53	4	13	(s)	3
September	7	23	5	2	149	89	48	4	13	(s)	3
October	5	17	4	2	149	96	47	4	12	(s)	3
November	6	20	4	2	144	106	48	4	14	(s)	3
December	7	19	4	2	155	104	54	4	14	1	3
Total	69	236	52	28	1,829	1,175	601	50	161	6	37
2021 January	7	23	4	2	150	88	54	4	14	1	3
February	11	27	4	2	141	113	41	3	12	(s)	2
March	7	23	4	2	144	99	45	4	13	1	3
April	6	23	4	2	138	78	44	3	12	1	3
May	3	21	4	2	158	93	46	4	13	(s)	3
June	6	17	4	2	164	86	49	4	13	(s)	3
July	7	24	5	2	165	91	52	4	14	(s)	3
August	8	23	5	2	168	95	51	4	13	(s)	10
8-Month Total	56	181	33	18	1,228	744	381	30	105	4	30
2020 8-Month Total	44	157	35	18	1,231	780	404	34	108	4	24
2019 8-Month Total	51	161	37	20	1,476	899	405	33	111	4	30

^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).

(s)=Less than 0.5 trillion Btu.

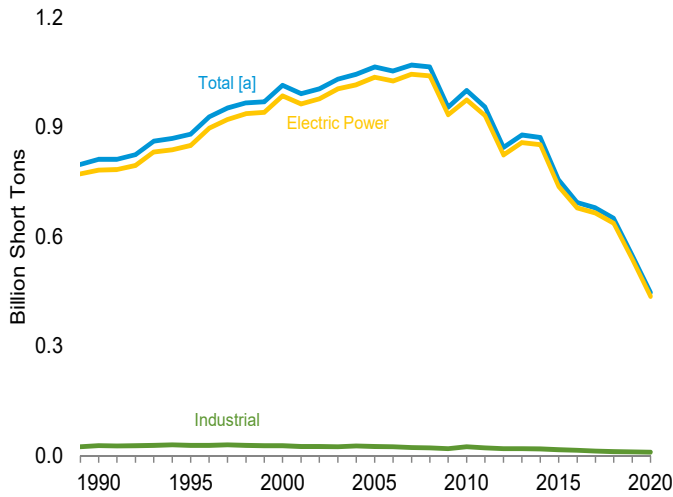
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Data are for fuels consumed to produce electricity. Through 1988, data are not available. •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

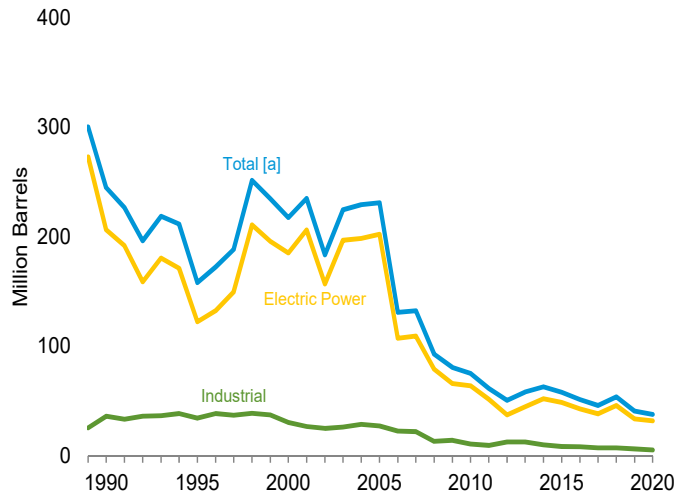
Sources: • **1989–1997:** U.S. Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • **1998–2000:** EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • **2001–2003:** EIA, Form EIA-906, "Power Plant Report." • **2004–2007:** EIA, Form EIA-906,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

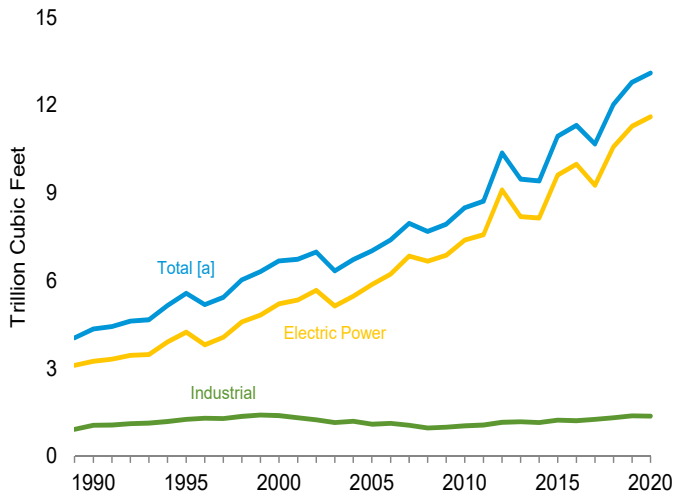
Coal by Sector, 1989–2020



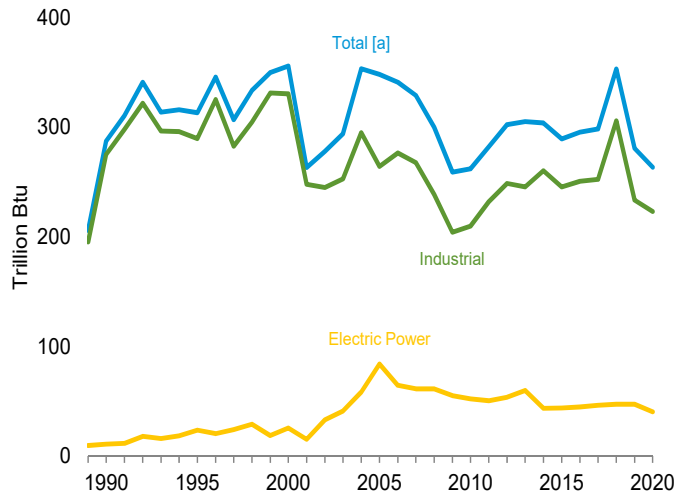
Petroleum by Sector, 1989–2020



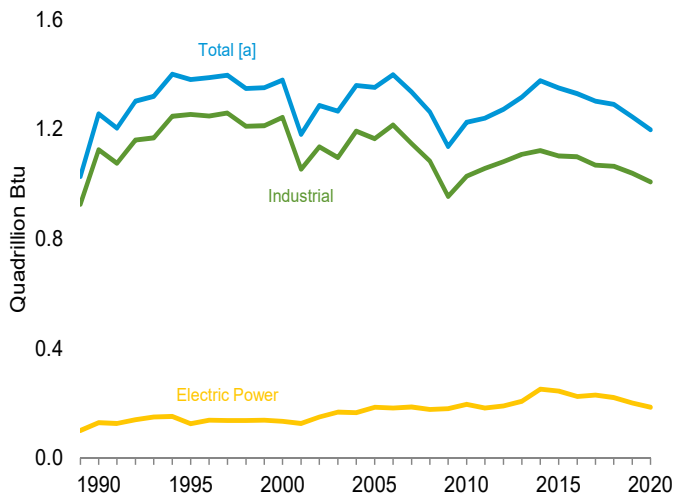
Natural Gas by Sector, 1989–2020



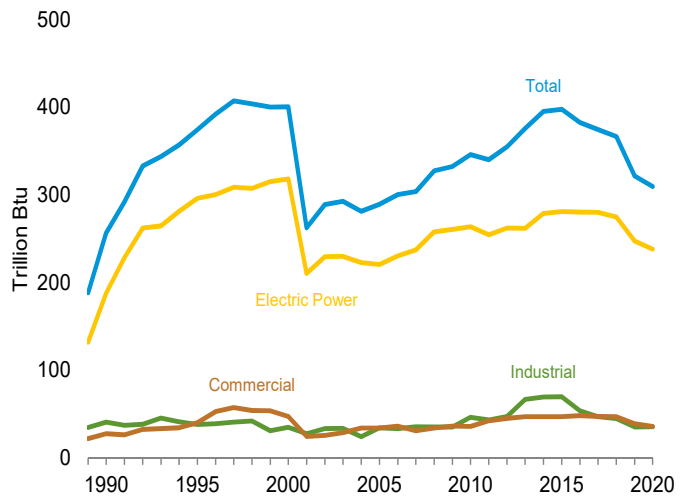
Other Gases [b] by Sector, 1989–2020



Wood by Sector, 1989–2020



Waste by Sector, 1989–2020



[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 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 Short Tons	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	636	338,686	3,932	NA	1	2	NA
1975 Total	405,962	38,907	467,221	NA	70	506,479	3,158	NA	(s)	2	NA
1980 Total	569,274	29,051	391,163	NA	179	421,110	3,682	NA	3	2	NA
1985 Total	693,841	14,635	158,779	NA	231	174,571	3,044	NA	8	7	NA
1990 Total ^k	811,538	20,194	209,081	1,332	2,832	244,765	4,346	288	1,256	257	86
1995 Total	881,012	21,697	112,168	1,322	4,590	158,140	5,572	313	1,382	374	97
2000 Total	1,015,398	34,572	156,673	2,904	4,669	217,494	6,677	356	1,380	401	109
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	16,877	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 Total	678,578	10,168	11,508	2,033	4,467	46,043	10,677	299	1,303	375	226
2018 Total	650,027	15,066	13,584	2,578	4,552	53,988	12,039	353	1,291	367	226
2019 January	57,146	1,427	1,121	362	399	4,905	982	24	112	29	21
February	46,183	802	659	217	338	3,368	898	22	100	26	18
March	45,088	779	685	172	308	3,175	937	24	105	28	19
April	34,362	680	679	201	227	2,693	854	23	96	26	18
May	40,956	967	785	177	364	3,747	957	23	101	26	19
June	45,168	839	840	183	287	3,295	1,112	22	101	26	19
July	56,813	806	942	180	385	3,851	1,386	25	108	26	20
August	53,323	800	1,003	188	346	3,720	1,410	24	109	27	21
September	48,103	768	841	198	310	3,356	1,206	23	101	25	19
October	38,417	776	860	213	146	2,581	1,062	23	101	27	19
November	42,926	821	787	267	186	2,803	947	23	103	27	19
December	41,533	903	847	222	269	3,317	1,046	24	108	29	20
Total	550,017	10,369	10,049	2,580	3,563	40,811	12,798	281	1,246	322	234
2020 January	37,833	892	817	201	336	3,589	1,068	25	106	29	18
February	33,056	723	676	166	239	2,757	1,004	25	100	26	17
March	29,907	620	630	231	301	2,988	1,005	25	101	28	18
April	24,427	530	589	168	252	2,546	880	20	97	26	18
May	27,652	628	637	143	290	2,858	952	20	102	26	18
June	37,480	783	753	157	379	3,589	1,166	19	93	23	17
July	50,726	849	853	177	385	3,802	1,500	21	98	25	19
August	51,362	785	864	164	371	3,669	1,408	22	99	25	19
September	39,605	607	784	142	228	2,675	1,156	21	95	24	17
October	34,881	758	839	181	205	2,803	1,077	22	97	25	18
November	35,334	711	736	153	280	3,001	889	22	101	25	18
December	44,612	817	804	164	353	3,550	1,009	22	108	28	19
Total	446,874	8,705	8,982	2,048	3,618	37,827	13,113	264	1,198	310	216
2021 January	46,433	711	920	161	340	3,490	1,001	23	104	27	18
February	48,964	1,989	910	427	333	4,988	898	18	93	24	16
March	35,429	740	712	138	325	3,214	863	21	100	27	18
April	30,983	713	659	143	214	2,586	867	20	95	25	16
May	36,516	734	714	123	270	2,919	932	19	104	25	16
June	48,919	715	765	175	255	2,930	1,202	20	100	23	17
July	57,369	677	782	145	338	3,295	1,359	21	108	25	18
August	57,130	907	1,144	190	356	4,022	1,383	22	104	25	25
8-Month Total	361,744	7,185	6,606	1,502	2,430	27,444	8,503	163	808	202	145
2020 8-Month Total	292,441	5,811	5,819	1,407	2,552	25,798	8,983	177	797	208	144
2019 8-Month Total	379,039	7,101	6,714	1,681	2,652	28,755	8,538	187	834	215	156

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

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

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

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

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

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

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

^h Wood and wood-derived fuels.

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

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

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

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

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

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

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

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

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

	Coal ^a	Petroleum					Natural Gas ^f	Other Gases ^g	Biomass		
		Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e	Total ^e			Wood ^h	Waste ⁱ	Other ⁱ
		Thousand Short Tons	Thousand Barrels			Thousand Short Tons			Thousand Barrels	Billion Cubic Feet	Trillion Btu
1950 Total	91,871	5,423	69,998	NA	NA	75,421	629	NA	5	NA	NA
1955 Total	143,759	5,412	69,862	NA	NA	75,274	1,153	NA	3	NA	NA
1960 Total	176,685	3,824	84,371	NA	NA	88,195	1,725	NA	2	NA	NA
1965 Total	244,788	4,928	110,274	NA	NA	115,203	2,321	NA	3	NA	NA
1970 Total	320,182	24,123	311,381	NA	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	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
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	65	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 Total	664,993	9,481	10,464	1,375	3,399	38,318	9,266	46	229	280	132
2018 Total	637,217	13,967	12,446	1,855	3,549	46,013	10,590	47	221	275	136
2019											
January	55,967	1,181	1,009	297	322	4,096	849	4	19	22	12
February	45,124	729	586	142	271	2,809	779	4	16	19	11
March	44,098	714	618	114	231	2,602	814	5	16	21	12
April	33,429	627	629	122	151	2,132	740	4	14	20	11
May	40,045	812	745	117	289	3,117	836	4	16	21	12
June	44,297	790	799	127	210	2,768	991	4	16	20	12
July	55,932	745	902	132	295	3,255	1,255	4	19	21	13
August	52,431	730	967	133	270	3,179	1,278	4	19	21	13
September	47,249	693	799	139	226	2,760	1,081	4	17	20	12
October	37,523	714	804	157	70	2,027	937	3	15	21	12
November	41,977	754	725	109	126	2,218	819	4	16	20	12
December	40,534	849	769	160	194	2,749	912	4	18	22	13
Total	538,606	9,336	9,352	1,750	2,655	33,712	11,288	47	201	248	145
2020											
January	36,808	835	763	137	256	3,016	931	4	17	21	12
February	32,067	679	616	115	188	2,350	879	4	16	20	11
March	28,979	574	587	175	258	2,628	879	4	15	21	12
April	23,624	492	551	122	222	2,277	764	3	13	20	12
May	26,870	575	593	85	229	2,399	834	3	15	20	12
June	36,746	726	705	108	301	3,045	1,046	2	15	18	11
July	49,930	782	809	120	309	3,256	1,372	2	16	20	12
August	50,590	720	806	120	289	3,088	1,280	4	19	20	12
September	38,788	535	741	104	156	2,162	1,038	3	13	19	11
October	33,997	692	799	128	128	2,260	954	3	14	19	11
November	34,473	632	689	106	207	2,461	767	4	15	19	11
December	43,653	755	737	111	275	2,978	873	4	17	21	12
Total	436,524	7,999	8,396	1,430	2,819	31,921	11,616	40	185	238	142
2021											
January	45,498	638	856	117	268	2,950	866	4	16	20	12
February	48,101	1,881	834	320	269	4,379	788	2	16	18	11
March	34,551	627	657	91	252	2,633	744	3	17	20	12
April	30,104	636	611	99	149	2,089	754	3	13	19	11
May	35,622	666	659	64	195	2,363	816	3	15	19	11
June	48,053	653	722	121	190	2,447	1,082	3	17	19	11
July	56,430	601	738	101	268	2,782	1,231	4	18	20	12
August	56,269	831	1,076	135	294	3,513	1,256	4	19	19	12
8-Month Total	354,628	6,533	6,155	1,048	1,884	23,157	7,537	25	132	155	90
2020 8-Month Total	285,613	5,385	5,430	981	2,053	22,061	7,984	26	126	160	95
2019 8-Month Total	371,323	6,327	6,254	1,185	2,038	23,958	7,540	32	136	166	97

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

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

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

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

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

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

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

^h Wood and wood-derived fuels.

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

tire-derived fuels).

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

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

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

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

Table 7.4c Consumption of Selected Combustible Fuels for Electricity Generation and Useful Thermal Output: Commercial and Industrial Sectors (Subset of Table 7.4a)

	Commercial Sector ^a				Industrial Sector ^b						
	Coal ^c	Petroleum ^d	Natural Gas ^e	Biomass	Coal ^c	Petroleum ^d	Natural Gas ^e	Other Gases ^g	Biomass		Other ⁱ
				Waste ^f					Wood ^h	Waste ^f	
Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu	Thousand Short Tons	Thousand Barrels	Billion Cubic Feet	Trillion Btu				
1990 Total	1,191	2,056	46	28	27,781	36,159	1,055	275	1,125	41	86
1995 Total	1,419	1,245	78	40	29,363	34,448	1,258	290	1,255	38	95
2000 Total	1,547	1,615	85	47	28,031	30,520	1,386	331	1,244	35	108
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 Total	610	516	154	48	12,975	7,209	1,257	253	1,069	47	65
2018 Total	577	681	135	47	12,233	7,294	1,314	306	1,065	45	62
2019											
January	59	100	12	4	1,119	708	121	20	92	4	6
February	54	51	11	3	1,005	508	108	18	83	4	5
March	58	53	11	3	932	521	113	20	89	4	5
April	40	39	10	3	893	522	105	19	82	3	5
May	38	137	10	3	873	493	111	19	85	2	5
June	27	29	11	3	844	498	111	19	84	3	5
July	35	48	13	3	846	548	118	21	89	2	5
August	37	44	12	3	854	498	120	20	90	2	5
September	40	54	11	3	814	541	114	20	83	2	5
October	37	44	11	3	856	510	114	19	86	3	5
November	44	55	11	3	904	530	117	19	86	4	5
December	49	52	12	3	950	516	122	20	90	4	5
Total	519	707	135	39	10,892	6,393	1,374	234	1,040	35	61
2020											
January	41	60	12	3	984	514	125	21	88	4	4
February	49	37	11	3	940	370	114	21	84	4	4
March	41	37	11	3	887	323	115	20	85	3	4
April	29	24	10	3	774	245	107	17	83	3	4
May	32	42	10	3	750	417	108	18	87	3	4
June	35	38	10	3	699	505	110	17	78	2	4
July	35	53	12	3	761	493	116	18	82	2	4
August	37	57	12	3	735	523	116	18	80	2	4
September	41	45	11	3	775	467	107	18	82	2	4
October	34	35	10	3	850	508	112	19	83	3	4
November	36	45	10	3	826	495	111	18	86	3	4
December	50	45	11	3	909	527	125	18	90	4	5
Total	459	518	130	36	9,890	5,387	1,367	223	1,008	36	50
2021											
January	49	58	12	3	886	481	123	19	88	4	4
February	60	92	11	3	803	518	99	16	76	3	4
March	45	58	11	3	833	523	108	18	83	4	4
April	37	52	9	3	843	445	104	17	82	3	4
May	33	50	9	3	861	506	106	17	88	3	4
June	38	42	10	3	828	440	110	16	83	2	4
July	41	50	11	3	898	463	117	17	89	2	4
August	43	47	12	3	818	462	115	18	84	2	11
8-Month Total	346	448	85	24	6,771	3,838	882	138	673	24	39
2020 8-Month Total	298	348	87	24	6,530	3,390	911	151	668	24	32
2019 8-Month Total	348	501	90	26	7,367	4,296	907	155	695	23	41

^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).

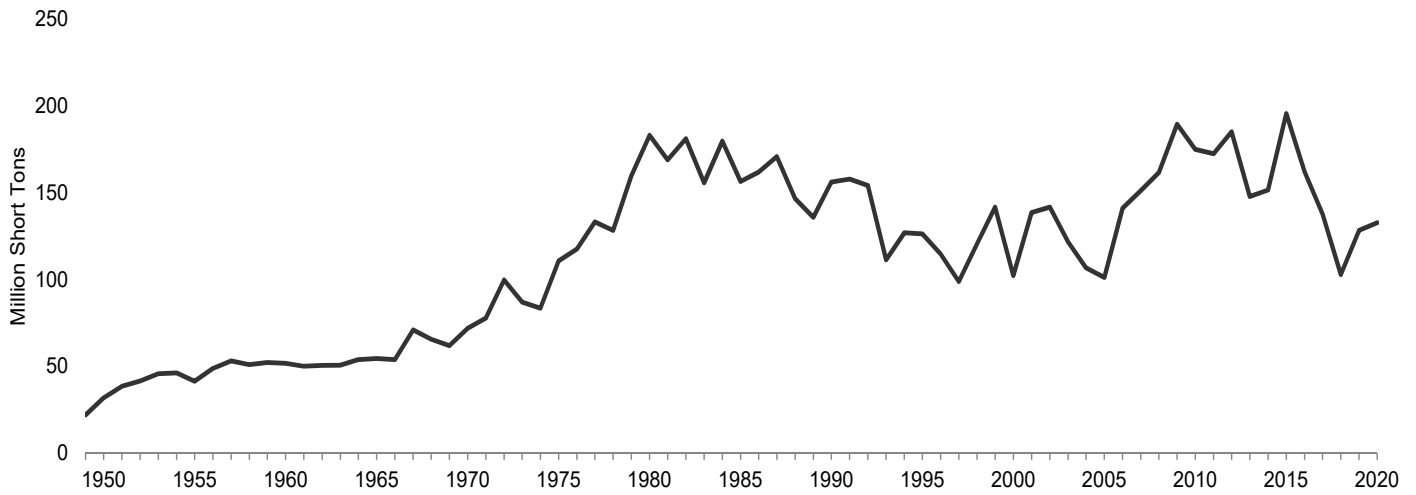
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is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

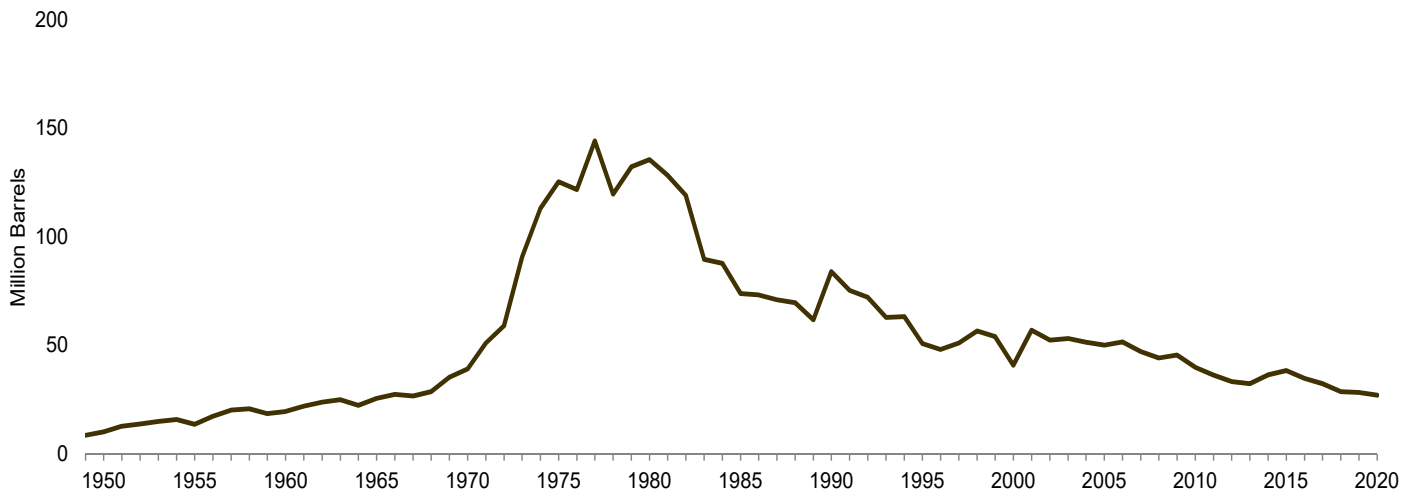
Sources: • **1989–1997**: U.S. Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • **1998–2000**: EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • **2001–2003**: EIA, Form EIA-906, "Power Plant Report." • **2004–2007**: EIA, Form EIA-906,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

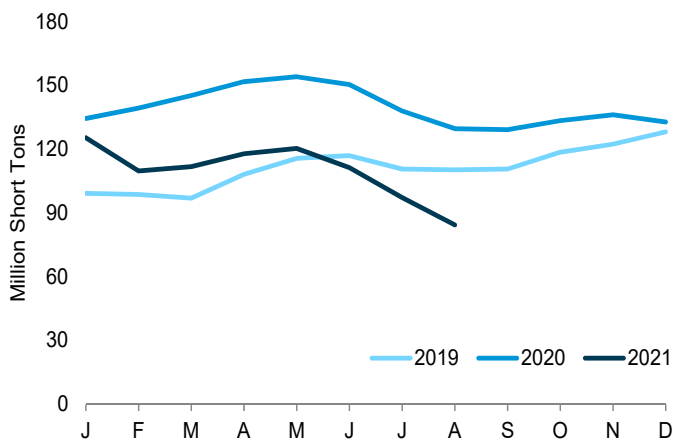
Coal, 1949–2020



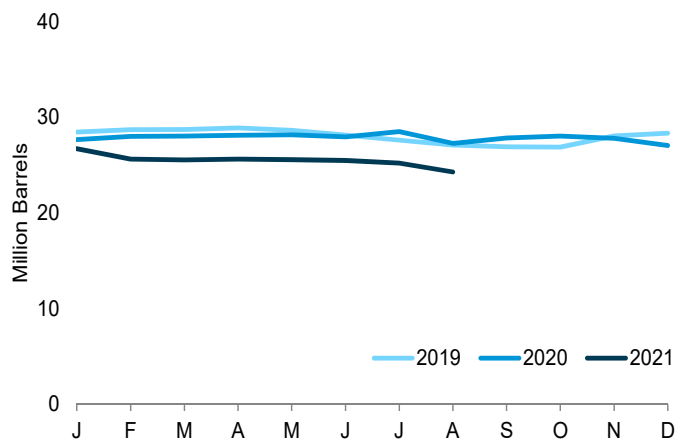
Total Petroleum, 1949–2020



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	Petroleum				Total ^{e,f}
		Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e	
	Thousand Short Tons	Thousand Barrels			Thousand Short Tons	Thousand Barrels
1950 Year	31,842	NA	NA	NA	NA	10,201
1955 Year	41,391	NA	NA	NA	NA	13,671
1960 Year	51,735	NA	NA	NA	NA	19,572
1965 Year	54,525	NA	NA	NA	NA	25,647
1970 Year	71,908	NA	NA	NA	239	39,151
1975 Year	110,724	16,432	108,825	NA	31	125,413
1980 Year	183,010	30,023	105,351	NA	52	135,635
1985 Year	156,376	16,386	57,304	NA	49	73,933
1990 Year	156,166	16,471	67,030	NA	94	83,970
1995 Year	126,304	15,392	35,102	NA	65	50,821
2000 Year ^g	102,296	15,127	24,748	NA	211	40,932
2005 Year	101,137	18,778	27,624	NA	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	1,634	739	44,178
2009 Year	189,467	17,886	19,068	1,651	1,394	45,575
2010 Year	174,917	16,758	16,629	1,454	1,019	39,936
2011 Year	172,387	16,649	15,491	1,603	508	36,282
2012 Year	185,116	16,433	12,999	1,430	495	33,336
2013 Year	147,884	16,068	12,926	1,393	390	32,336
2014 Year	151,548	18,309	12,764	1,249	827	36,459
2015 Year	195,548	17,955	12,566	1,173	1,340	38,396
2016 Year	162,009	17,855	11,789	949	845	34,818
2017 Year	137,687	16,342	10,930	816	864	32,407
2018 Year	102,793	16,436	8,785	756	539	28,674
2019						
January	99,145	16,430	8,672	689	528	28,429
February	98,637	16,462	9,011	680	505	28,680
March	96,932	16,489	9,034	679	503	28,715
April	108,072	16,635	9,007	688	513	28,895
May	115,700	16,716	8,994	697	444	28,625
June	116,861	16,632	8,854	700	388	28,125
July	110,661	16,554	8,570	703	354	27,599
August	110,268	16,413	8,090	706	380	27,109
September	110,615	16,460	8,281	708	292	26,910
October	118,566	16,557	8,156	701	292	26,876
November	122,357	16,434	8,563	722	464	28,038
December	128,176	16,733	8,549	678	471	28,317
2020						
January	134,352	16,414	8,076	630	508	27,660
February	139,280	16,246	8,129	620	600	27,994
March	145,218	16,496	8,286	549	541	28,036
April	151,723	16,369	8,480	546	541	28,102
May	154,037	16,567	8,422	535	529	28,169
June	150,406	16,515	8,505	525	480	27,944
July	137,956	17,174	8,560	499	456	28,511
August	129,645	16,925	7,773	518	408	27,257
September	129,079	17,011	8,212	514	417	27,820
October	133,421	16,954	8,270	506	457	28,014
November	136,168	16,768	8,156	500	472	27,786
December	132,723	16,796	8,251	500	298	27,038
2021						
January	125,399	16,742	8,211	497	253	26,715
February	109,717	16,052	8,063	469	207	25,621
March	111,815	15,936	8,004	463	227	25,537
April	117,835	15,578	7,820	461	353	25,626
May	120,343	15,471	7,651	456	398	25,567
June	111,209	15,334	7,465	447	445	25,471
July	97,166	15,298	7,215	465	445	25,205
August	84,306	15,197	6,810	459	360	24,269

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

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

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

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

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

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

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

NA=Not available.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose

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

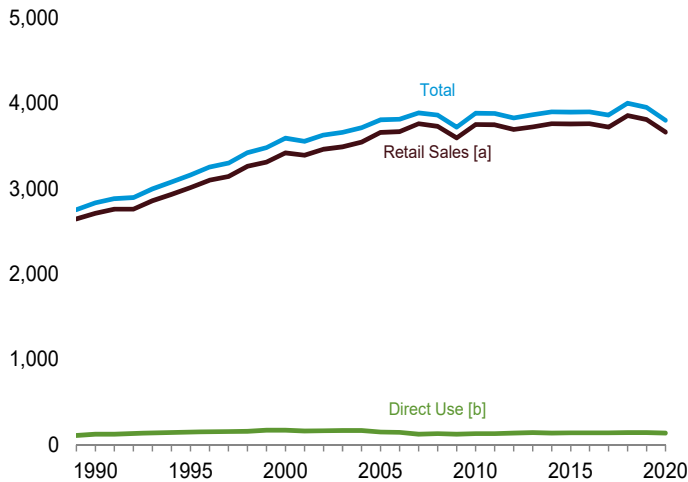
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: • **1949–September 1977:** Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • **October 1977–1981:** Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • **1982–1988:** U.S. Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report." • **1989–1997:** EIA, Form EIA-759, "Monthly Power Plant Report," and Form EIA-867, "Annual Nonutility Power Producer Report." • **1998–2000:** EIA, Form EIA-759, "Monthly Power Plant Report," and Form EIA-860B, "Annual Electric Generator Report—Nonutility." • **2001–2003:** EIA, Form EIA-906, "Power Plant Report." • **2004–2007:** EIA, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report." • **2008 forward:** EIA, Form EIA-923, "Power Plant Operations Report."

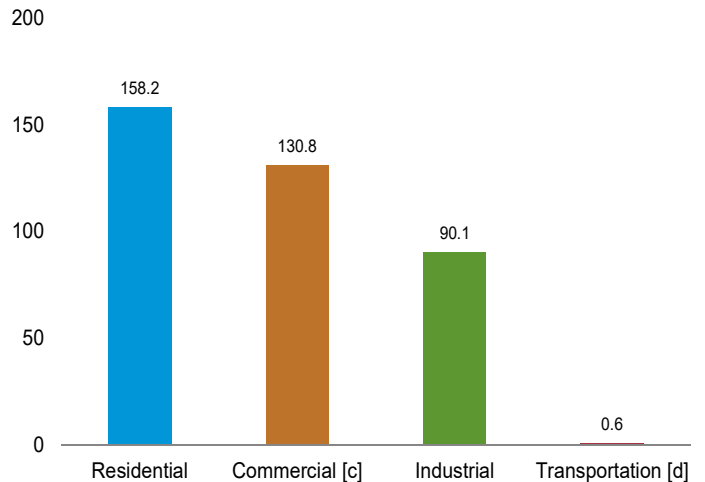
Figure 7.6 Electricity End Use

(Billion Kilowatthours)

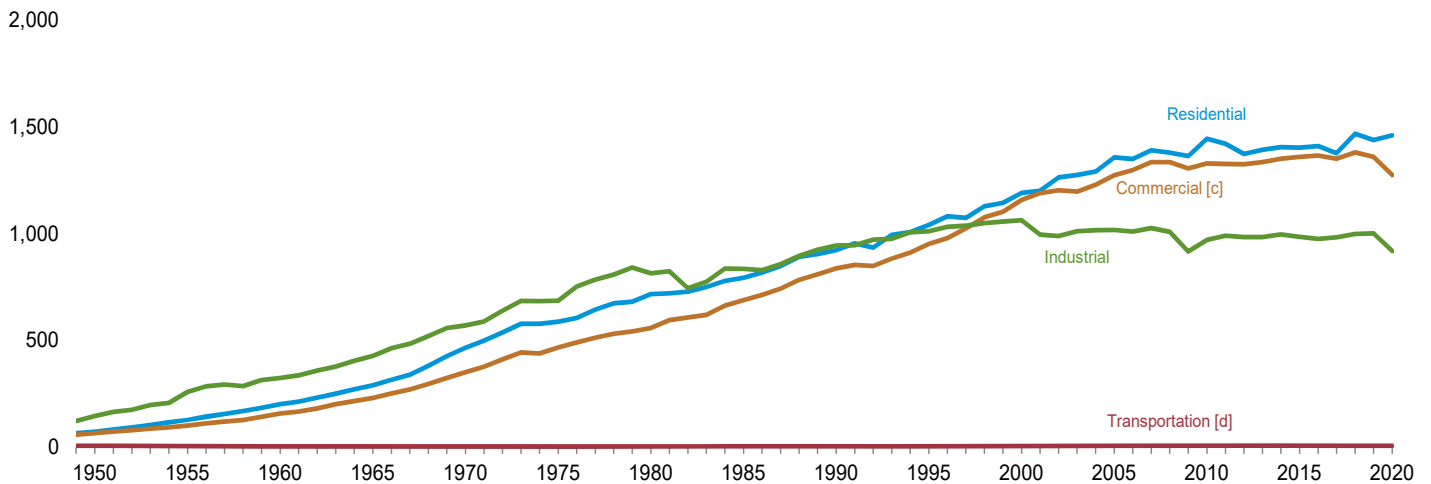
Electricity End Use Overview, 1989–2020



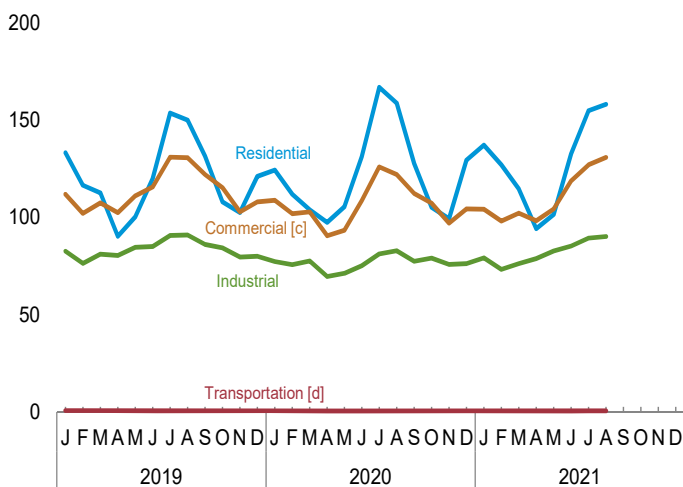
Retail Sales [a] by Sector, August 2021



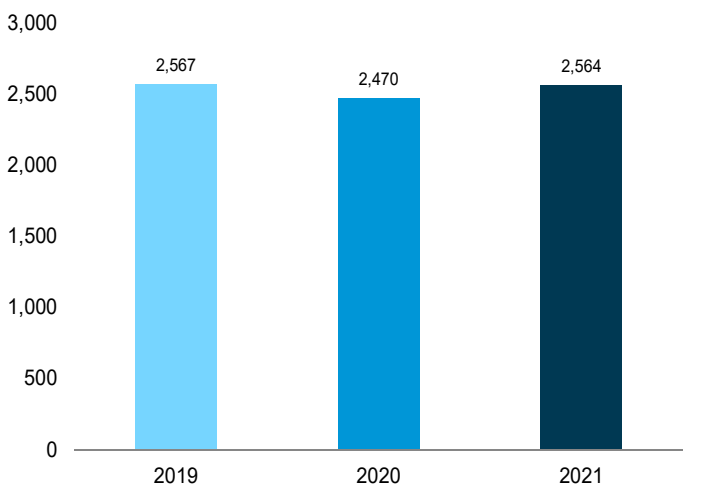
Retail Sales [a] by Sector, 1949–2020



Retail Sales [a] by Sector, Monthly



Retail Sales [a] Total, January–August



[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
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 Total	1,378,648	1,352,888	984,298	7,523	3,723,356	141,114	3,864,470
2018 Total	1,469,093	1,381,755	1,000,673	7,665	3,859,185	144,114	4,003,299
2019							
January	133,318	112,012	82,610	670	328,609	E 12,544	341,154
February	116,608	102,071	76,447	672	295,798	E 10,958	306,756
March	112,605	107,468	81,093	686	301,853	E 11,737	313,589
April	90,384	102,446	80,460	610	273,900	E 10,925	284,825
May	100,331	111,201	84,661	608	296,802	E 11,430	308,232
June	120,116	115,745	84,992	608	321,462	E 11,743	333,205
July	153,749	130,951	90,752	642	376,095	E 12,814	388,909
August	150,083	130,776	91,062	653	372,574	E 12,845	385,419
September	131,567	122,059	86,160	677	340,463	E 12,048	352,511
October	107,997	115,305	84,396	543	308,241	E 11,808	320,050
November	102,453	102,840	79,625	614	285,532	E 12,023	297,556
December	121,078	108,001	80,095	648	309,823	E 12,582	322,405
Total	1,440,289	1,360,877	1,002,353	7,632	3,811,150	143,458	3,954,609
2020							
January	124,413	108,903	77,339	664	311,318	E 12,780	324,098
February	111,929	101,904	75,664	622	290,120	E 11,746	301,866
March	104,006	102,937	77,658	577	285,177	E 11,846	297,023
April	97,465	90,631	69,591	458	258,145	E 10,676	268,821
May	105,412	93,406	71,220	448	270,486	E 10,875	281,361
June	131,242	108,699	75,230	480	315,651	E 11,273	326,924
July	166,891	126,010	81,278	555	374,734	E 11,943	386,677
August	158,801	122,035	82,852	525	364,212	E 11,930	376,142
September	127,706	112,297	77,468	532	318,002	E 11,067	329,069
October	105,145	107,404	79,079	514	292,142	E 10,778	302,920
November	99,444	97,091	75,866	525	272,926	E 11,135	284,061
December	129,504	104,403	76,289	632	310,828	E 12,302	323,130
Total	1,461,958	1,275,718	919,533	6,532	3,663,741	E 138,351	3,802,093
2021							
January	137,243	104,192	79,222	563	321,219	E 12,135	333,354
February	127,076	98,175	73,246	554	299,051	E 9,828	308,878
March	114,598	102,270	76,331	543	293,741	E 10,562	304,303
April	94,211	98,289	78,806	501	271,806	E 10,182	281,989
May	101,496	104,428	82,747	472	289,143	E 10,701	299,844
June	132,711	118,843	85,383	504	337,442	E 11,187	348,628
July	154,912	127,133	89,387	544	371,976	E 11,925	383,901
August	158,213	130,842	90,136	561	379,752	E 12,873	392,625
8-Month Total	1,020,459	884,171	655,257	4,242	2,564,129	E 89,393	2,653,522
2020 8-Month Total	1,000,159	854,524	610,832	4,329	2,469,843	E 93,069	2,562,912
2019 8-Month Total	977,194	912,671	672,077	5,150	2,567,092	E 94,997	2,662,088

^a Electricity retail sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.
^b Commercial sector, including public street and highway lighting, interdepartmental sales, and other sales to public authorities.
^c Industrial sector. Through 2002, excludes agriculture and irrigation; beginning in 2003, includes agriculture and irrigation.
^d Transportation sector, including sales to railroads and railways.
^e The sum of "Residential," "Commercial," "Industrial," and "Transportation."
^f Use of electricity that is 1) self-generated, 2) produced by either the same entity that consumes the power or an affiliate, and 3) used in direct support of a service or industrial process located within the same facility or group of facilities

that house the generating equipment. Direct use is exclusive of station use.
^g The sum of "Total Retail Sales" and "Direct Use."
 E=Estimate. NA=Not available.
 Notes: • See Note 1, "Coverage of Electricity Statistics," at end of section.
 • Totals may not equal sum of components due to independent rounding.
 • Geographic coverage is the 50 states and the District of Columbia.
 Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
 Sources: See end of section.

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)* October 2021, 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, October 2021, 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 October 2021, 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."

2001–2019: EIA, *Electric Power Annual 2019*, February 2021, Table 2.2.

2020: Sum of monthly estimates.

Direct Use, Monthly

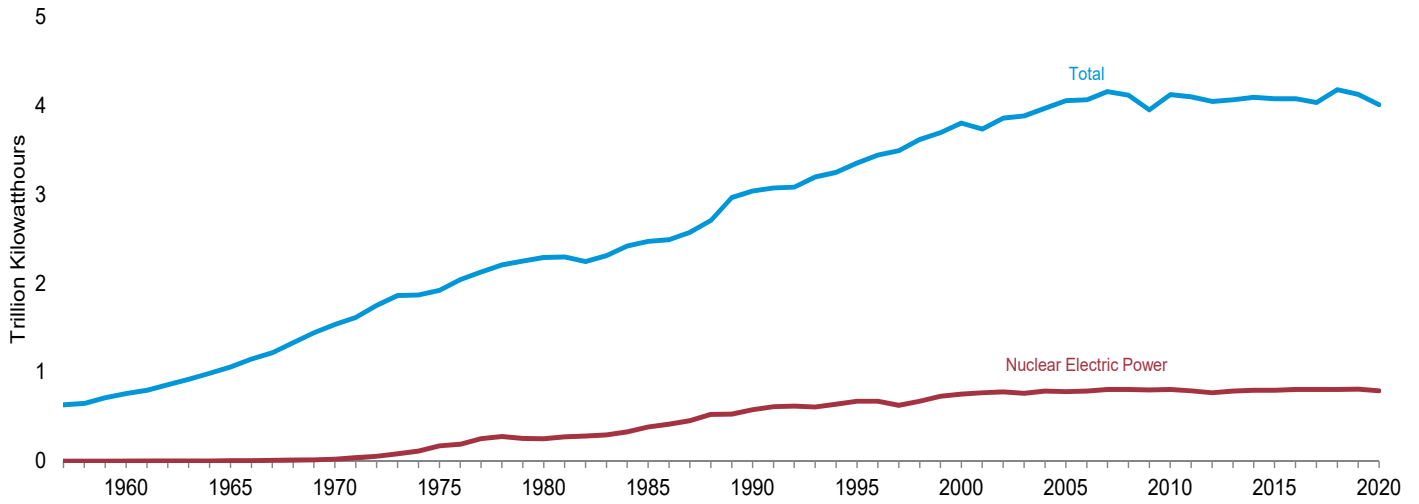
1989 forward: Annual shares are calculated as annual direct use divided by annual commercial and industrial net generation (on Table 7.1). Then monthly direct use estimates are calculated as the annual share multiplied by the monthly commercial and industrial net generation values. For 2020, the 2019 annual share is used.

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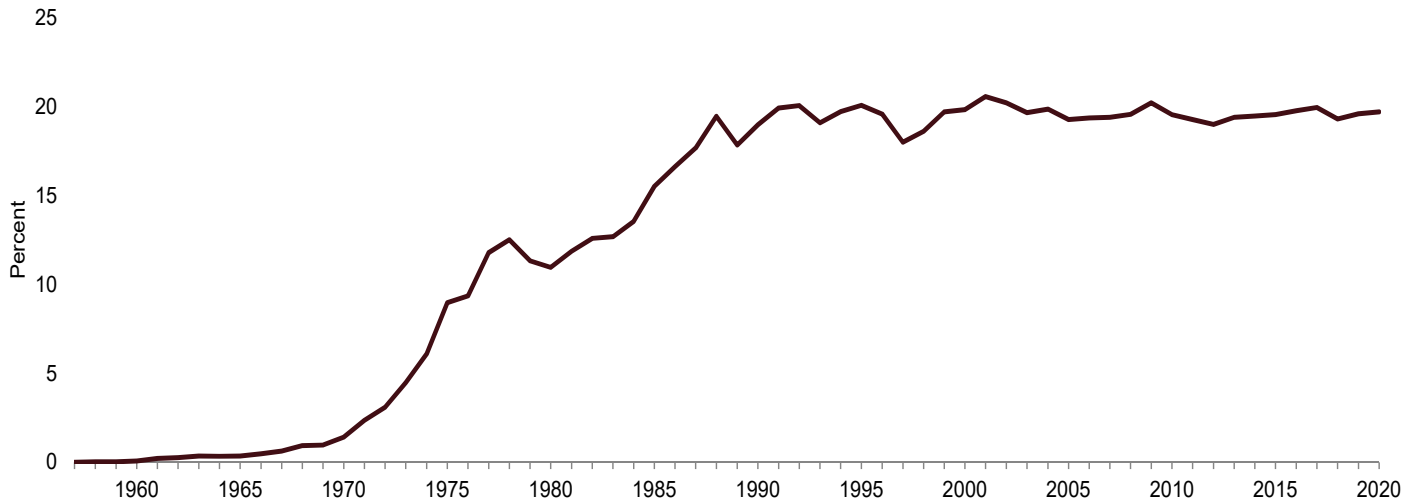
8. Nuclear Energy

Figure 8.1 Nuclear Energy Overview

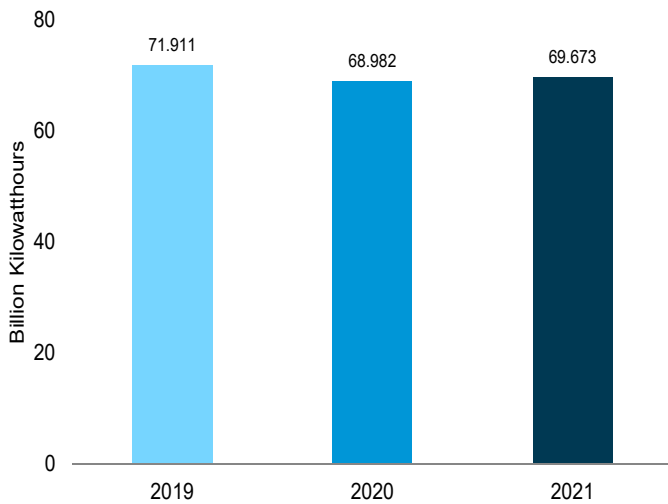
Electricity Net Generation, 1957–2020



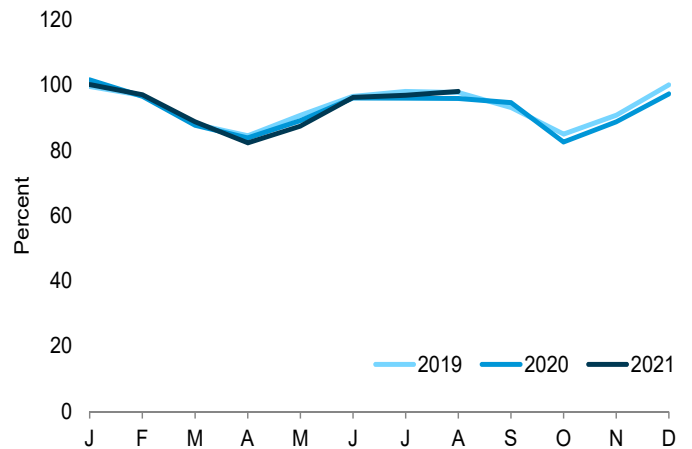
Nuclear Share of Electricity Net Generation, 1957–2020



Nuclear Electricity Net Generation—August



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
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 Total	99	99.629	804,950	20.0	92.3
2018 Total	98	99.433	807,084	19.3	92.5
2019 January	98	99.440	73,701	20.5	99.6
February	98	99.440	64,715	20.5	96.8
March	98	99.440	65,080	19.9	88.0
April	98	99.595	60,581	20.4	84.5
May	97	98.922	67,124	20.3	90.8
June	97	98.922	68,805	19.5	96.6
July	97	98.922	72,199	17.6	98.1
August	97	98.922	71,911	17.9	97.7
September	96	98.119	66,064	18.3	93.1
October	96	98.119	62,033	19.4	85.0
November	96	98.119	64,125	20.3	90.8
December	96	98.119	73,074	21.6	100.1
Total	96	98.119	809,409	19.6	93.4
2020 January	96	^E 98.128	74,170	21.8	^E 101.6
February	96	^E 98.128	65,950	20.7	^E 96.6
March	96	^E 98.128	63,997	20.8	^E 87.7
April	95	^E 97.116	59,170	21.4	^E 83.8
May	95	^E 97.116	64,338	21.1	^E 89.1
June	95	^E 97.116	67,205	19.1	^E 96.1
July	95	^E 97.116	69,385	16.7	^E 96.0
August	95	^E 96.515	68,982	17.3	^E 95.9
September	94	^E 96.515	65,727	19.7	^E 94.6
October	94	^E 96.555	59,362	18.9	^E 82.6
November	94	^E 96.555	61,760	20.4	^E 88.8
December	94	^E 96.555	69,871	20.3	^E 97.3
Total	94	^E 96.555	789,919	19.7	^E 92.5
2021 January	94	^E 96.438	71,832	20.5	^E 100.2
February	94	^E 96.435	62,954	19.3	^E 97.1
March	94	^E 96.435	63,708	20.5	^E 88.8
April	93	^E 95.388	57,092	19.5	^E 82.3
May	93	^E 95.388	62,053	19.5	^E 87.4
June	93	^E 95.388	66,070	17.7	^E 96.2
July	93	^E 95.464	68,832	17.0	^E 96.9
August	93	^E 95.464	69,673	16.8	^E 98.1
8-Month Total	93	^E 95.464	522,215	18.7	^E 93.4
2020 8-Month Total	95	^E 96.515	533,198	19.7	^E 93.4
2019 8-Month Total	97	98.922	544,114	19.5	94.0

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

^b At end of period.

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

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

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

E=Estimate. NA=Not available. (s)=Less than 0.05%.

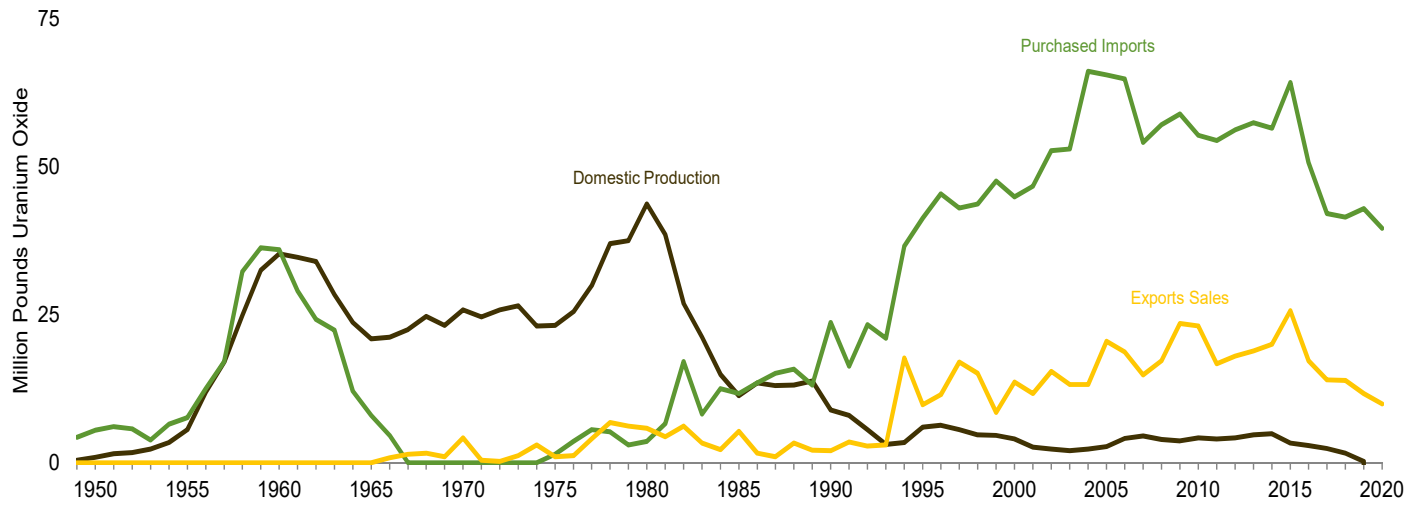
Notes: • For a discussion of nuclear reactor unit coverage, see Note 1, "Operable Nuclear Reactors," at end of section. • Nuclear electricity net generation totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#nuclear> (Excel and CSV files) for all available annual data beginning in 1957 and monthly data beginning in 1973.

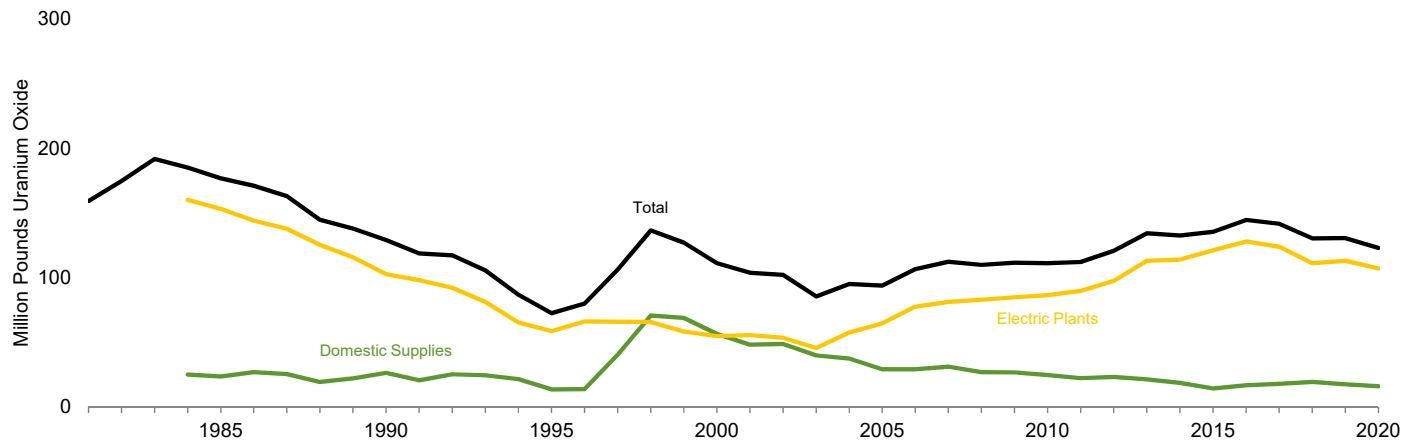
Sources: See end of section.

Figure 8.2 Uranium Overview

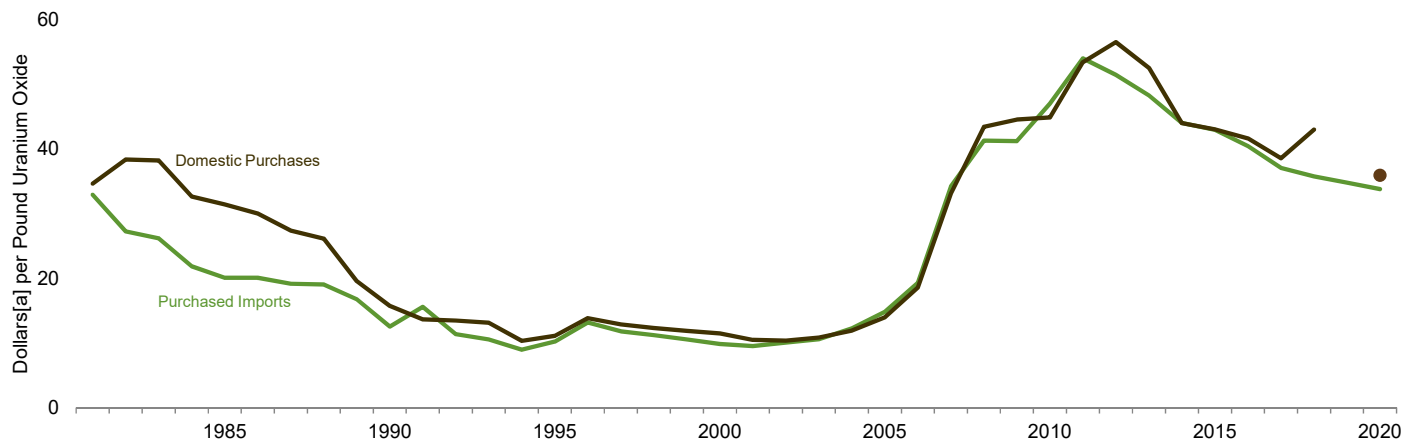
Production and Trade, 1949–2020



Inventories, End of Year 1981–2020



Average Prices, 1981–2020



[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	1.65	41.5	13.9	11.1	50.4	19.3	111.2	130.5	35.73	42.98
2019 .....	.17	42.9	11.7	W	43.2	17.5	113.1	130.7	34.77	W
2020	W	39.6	9.9	10.5	^P 48.6	^P 16.0	^P 107.2	^P 123.1	33.79	35.92

^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.

P=Preliminary. E=Estimate. NA=Not available. W=Value withheld to avoid disclosure of individual company data. -- =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. • **2003–2017:** EIA, "Domestic Uranium Production Report," annual reports; and EIA, "Uranium Marketing Annual Report," annual reports. • **2018 forward:** EIA, "2020 Domestic Uranium Production Report" (May 2021), Table 3; and EIA, "2020 Uranium Marketing Annual Report" (May 2021), Tables 5, 18, 19, 21, and 22.

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

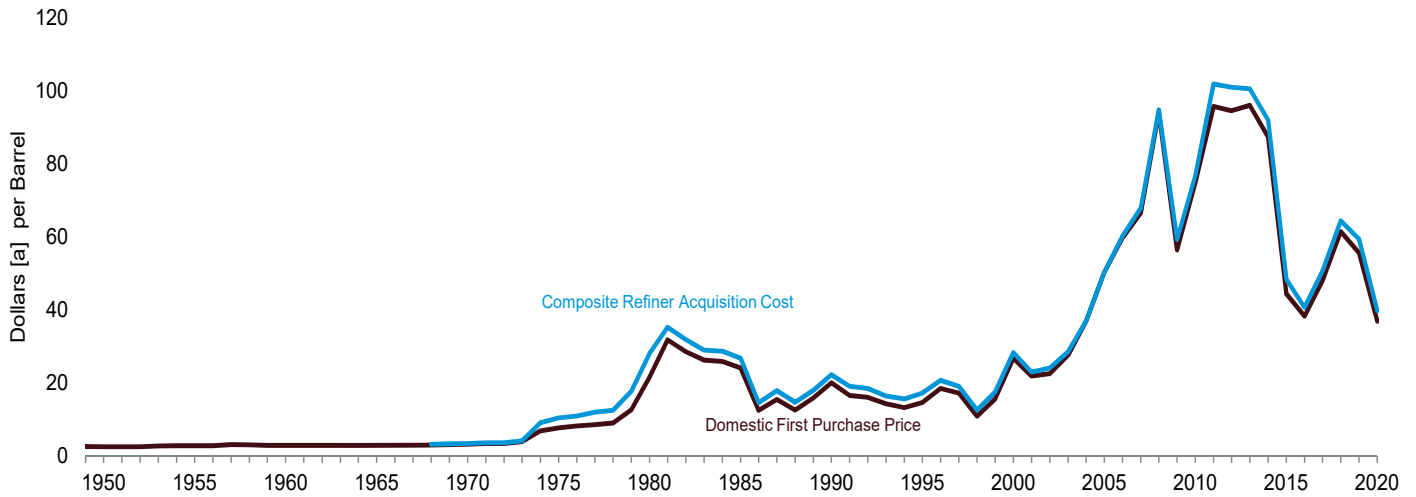
1973–2007: Calculated by EIA using the method described above in Note 2.

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.”

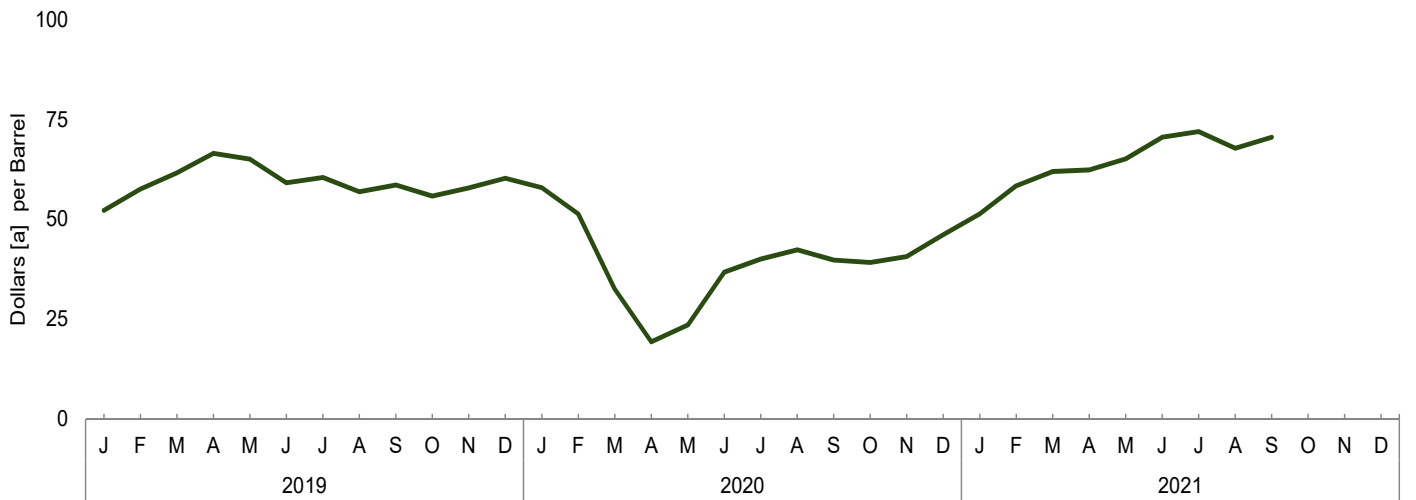
9. Energy Prices

Figure 9.1 Petroleum Prices

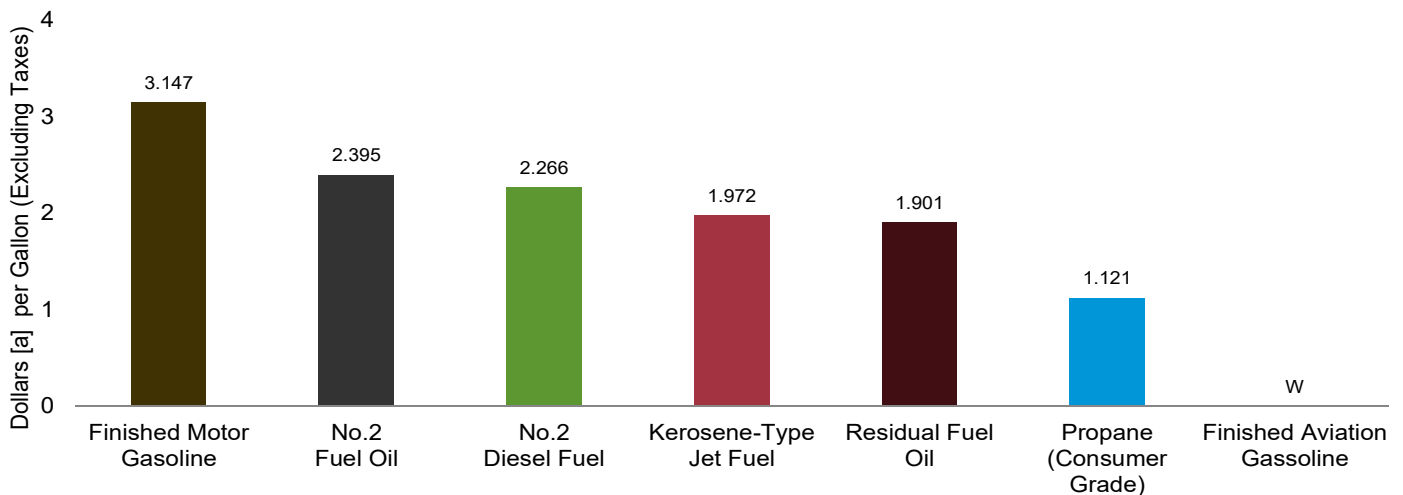
Crude Oil Prices, 1949–2020



Composite Refiner Acquisition Cost, Monthly



Refiner Prices to End Users: Select Products, August 2021



[a] Prices are not adjusted for inflation. See “Nominal Dollars” in Glossary.
W=Value withheld to avoid disclosure of individual company data.

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
1977 Average	8.57	13.24	14.36	9.55	14.53	11.96
1982 Average	28.52	32.02	33.18	31.22	33.55	31.87
1987 Average	15.40	16.69	17.65	17.76	18.13	17.90
1992 Average	15.99	16.77	17.75	18.63	18.20	18.43
1997 Average	17.23	16.94	18.11	19.61	18.53	19.04
1998 Average	10.87	10.76	11.84	13.18	12.04	12.52
1999 Average	15.56	16.47	17.23	17.90	17.26	17.51
2000 Average	26.72	26.27	27.53	29.11	27.70	28.26
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	74.71	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 Average	48.05	45.58	48.50	52.05	49.12	50.68
2018 Average	61.40	56.31	58.89	67.05	60.95	64.38
2019 January	48.00	48.70	49.25	54.06	49.71	52.29
February	52.60	54.23	56.17	58.24	56.66	57.62
March	57.46	57.54	59.48	61.97	61.14	61.64
April	63.00	61.31	63.62	67.21	65.42	66.51
May	59.73	60.74	63.70	65.17	65.03	65.11
June	54.34	54.56	57.43	59.81	58.16	59.16
July	56.47	54.51	57.00	61.47	59.18	60.53
August	53.63	51.98	54.91	57.88	55.41	56.90
September	55.14	52.68	55.06	59.41	57.31	58.60
October	53.14	50.40	53.74	56.69	54.44	55.85
November	54.96	51.87	54.48	59.42	55.27	57.88
December	58.41	51.57	53.92	62.23	56.85	60.27
Total	55.59	54.27	56.60	60.31	57.94	59.38
2020 January	56.55	46.98	51.20	60.39	53.87	57.92
February	49.66	42.13	44.69	54.01	47.39	51.37
March	31.01	24.16	27.14	35.00	28.50	32.55
April	15.18	14.22	17.50	21.07	16.74	19.32
May	18.02	19.28	22.73	24.43	22.56	23.55
June	33.81	33.74	36.17	37.25	36.14	36.80
July	37.44	36.73	38.97	40.56	39.33	40.08
August	39.37	37.39	40.15	42.83	41.72	42.42
September	36.82	36.06	38.19	40.41	38.73	39.81
October	36.39	34.35	37.11	40.06	37.81	39.21
November	38.25	36.44	39.28	41.56	39.15	40.68
December	43.92	41.86	44.78	46.69	45.34	46.20
Total	36.86	33.66	36.42	41.23	37.41	39.75
2021 January	49.73	46.77	49.38	52.45	49.52	51.36
February	56.72	53.08	55.50	60.14	55.67	58.39
March	60.67	57.48	59.12	63.24	59.78	61.96
April	59.87	57.83	60.75	63.25	60.86	62.39
May	62.80	61.76	63.92	65.94	63.81	65.15
June	68.57	R 64.97	R 67.50	71.60	68.85	70.54
July	R 70.12	R 65.52	R 67.90	R 73.28	R 69.88	R 71.97
August	R 65.67	R 61.81	R 64.01	R 69.27	R 65.56	R 67.82
September	NA	NA	NA	E 71.21	E 69.56	E 70.58

^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
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 Average	W	48.34	46.66	54.77	51.30	W	45.60	50.16	49.55	43.30
2018 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	48.25	58.54	54.94	46.13
February	–	56.59	58.52	W	W	W	W	62.58	63.09	51.63
March	–	61.28	60.66	W	67.34	W	–	65.62	65.95	55.66
April	–	67.09	63.13	W	70.60	70.45	–	68.89	70.54	59.56
May	W	65.40	62.16	70.81	W	69.74	–	65.97	67.80	59.17
June	W	61.09	58.75	W	W	W	–	62.67	63.28	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	–	56.42	58.30	48.81
November	–	59.42	51.24	W	60.69	W	–	58.47	60.86	49.22
December	–	58.95	55.23	–	63.59	W	–	61.63	61.72	50.26
Average	66.97	60.61	56.72	67.21	63.48	65.20	48.57	61.43	62.11	52.36
2020 January	–	56.90	53.70	W	49.26	W	–	50.36	51.96	46.61
February	–	W	47.74	W	W	W	–	51.87	53.40	40.68
March	W	27.34	28.59	W	W	W	–	24.18	28.56	23.61
April	W	19.88	12.25	W	21.44	–	–	21.44	22.92	12.23
May	–	W	22.92	W	W	W	–	29.19	30.80	18.09
June	–	33.32	34.36	W	W	W	–	40.59	41.17	32.84
July	–	W	37.95	W	42.98	–	–	40.60	41.32	36.08
August	–	40.34	40.16	W	W	–	–	W	44.02	37.20
September	–	37.36	38.42	W	W	–	–	W	41.19	35.82
October	W	W	37.12	W	–	–	–	–	40.10	34.01
November	–	W	39.55	–	–	W	–	W	W	36.36
December	W	W	45.09	W	W	–	–	W	52.06	40.99
Average	W	36.03	36.00	W	35.35	43.39	–	36.06	38.34	33.22
2021 January	–	W	50.54	W	55.18	–	–	54.23	55.26	45.40
February	–	W	56.46	W	60.73	W	–	58.53	60.66	52.03
March	–	W	59.46	W	W	–	–	62.12	63.76	56.49
April	–	62.48	59.54	W	65.55	–	–	63.85	64.57	56.49
May	W	W	62.26	72.66	67.70	–	–	66.13	68.01	60.31
June	W	W	67.27	W	^R 70.06	W	–	^R 70.06	^R 71.60	64.02
July	W	W	^R 68.53	W	W	–	–	W	^R 74.53	^R 64.65
August	–	W	63.68	W	W	–	–	W	W	61.45

^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
2005 Average	54.31	44.73	53.42	43.47	57.55	50.31	55.28	47.87	49.68	51.36	47.31
2006 Average	64.85	53.90	62.13	53.76	68.26	59.19	67.44	57.37	58.92	61.21	57.14
2007 Average	71.27	60.38	70.91	62.31	78.01	70.78	72.47	66.13	69.83	71.14	63.96
2008 Average	98.18	90.00	93.43	85.97	104.83	94.75	96.95	90.76	93.59	95.49	90.59
2009 Average	61.32	57.60	58.50	57.35	68.01	62.14	63.87	57.78	62.15	61.90	58.58
2010 Average	80.61	72.80	74.25	72.86	83.14	79.29	80.29	72.43	78.60	78.28	74.68
2011 Average	114.05	89.92	102.57	101.21	116.43	108.83	118.45	100.14	108.01	107.84	98.64
2012 Average	114.95	84.24	107.07	102.45	116.88	108.15	W	101.58	107.74	107.56	95.05
2013 Average	110.81	84.41	103.00	99.06	112.87	102.60	111.23	99.34	102.53	102.98	91.99
2014 Average	99.25	81.30	88.29	87.48	102.16	94.91	W	86.88	95.30	93.10	84.67
2015 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 Average	54.17	44.93	50.60	47.73	56.48	52.56	56.11	47.02	51.42	51.26	46.67
2018 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	51.68	59.80	57.34	45.44
February	–	50.48	59.69	59.72	W	66.37	W	52.72	64.07	62.76	53.82
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	67.93	71.30	W	67.05	68.82	62.19
June	W	50.84	65.87	59.32	69.37	65.06	65.41	–	63.71	65.04	55.30
July	W	51.14	64.10	59.50	67.57	64.14	64.63	–	63.83	64.76	55.02
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	49.64	57.88	53.03	65.73	62.36	63.06	–	59.89	60.99	51.93
November	W	49.20	60.91	52.57	69.20	64.85	W	–	62.06	62.97	51.97
December	–	48.36	62.66	56.78	W	65.83	W	–	63.23	63.52	52.13
Average	68.58	51.10	62.83	57.96	68.78	64.86	66.65	52.36	63.27	63.41	54.65
2020 January	W	45.70	62.93	55.93	W	53.68	W	–	55.30	56.42	50.32
February	–	39.83	54.16	49.66	54.23	55.20	W	–	54.48	54.45	43.29
March	W	23.51	34.75	29.42	W	24.34	W	–	27.39	28.49	26.76
April	30.93	13.35	23.24	13.73	W	22.98	W	–	23.42	23.99	15.55
May	W	17.45	28.61	24.35	W	28.84	W	–	29.99	30.70	20.75
June	–	34.85	33.13	35.04	W	40.23	W	–	41.20	41.61	35.20
July	–	37.69	37.64	38.72	W	43.64	45.81	–	42.95	43.61	38.42
August	–	38.89	41.71	40.88	W	43.83	–	–	42.75	43.04	39.86
September	W	35.66	38.27	39.01	W	43.13	W	–	41.83	42.13	37.66
October	W	35.63	38.29	37.53	W	44.98	W	–	43.49	42.11	36.68
November	W	36.98	43.35	40.06	W	W	48.92	–	43.86	45.41	38.87
December	W	41.59	46.62	45.76	53.81	54.19	51.22	–	51.59	52.89	43.75
Average	41.03	33.81	41.04	37.18	46.24	35.84	44.51	–	37.98	39.28	35.95
2021 January	W	46.06	W	51.32	W	58.83	–	–	57.43	58.18	48.21
February	–	51.58	60.79	57.08	W	62.72	66.55	–	60.95	62.41	54.46
March	W	56.03	W	60.74	W	65.49	W	–	64.56	65.26	58.25
April	–	57.36	64.38	60.30	68.45	69.04	W	–	66.60	67.17	59.60
May	70.56	60.48	66.44	63.05	72.44	70.61	W	–	69.15	70.09	62.58
June	W	64.53	69.84	68.09	W	^R 70.17	^R 74.58	–	^R 70.85	^R 72.24	^R 66.68
July	W	^R 65.09	71.74	^R 69.14	^R 67.47	^R 70.20	76.48	–	^R 70.51	^R 71.41	^R 67.52
August	–	61.49	67.43	64.38	W	W	W	–	67.34	68.67	63.46

^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*, November 2021, Table 22.

Table 9.4 Retail Motor Gasoline and On-Highway Diesel Fuel Prices
(Dollars^a per Gallon, Including Taxes)

	Platt's / Bureau of Labor Statistics Data				U.S. Energy Information Administration Data			
	Motor Gasoline by Grade				Regular Motor Gasoline by Area Type			On-Highway Diesel Fuel
	Leaded Regular	Unleaded Regular	Unleaded Premium ^b	All Grades ^c	Conventional Gasoline Areas ^d	Reformulated Gasoline Areas ^e	All Areas	
1950 Average	0.268	NA	NA	NA	--	--	--	--
1955 Average	.291	NA	NA	NA	--	--	--	--
1960 Average	.311	NA	NA	NA	--	--	--	--
1965 Average	.312	NA	NA	NA	--	--	--	--
1970 Average	.357	NA	NA	NA	--	--	--	--
1975 Average	.567	NA	NA	NA	--	--	--	--
1980 Average	1.191	1.245	NA	1.221	--	--	--	--
1985 Average	1.115	1.202	1.340	1.196	--	--	--	--
1990 Average	1.149	1.164	1.349	1.217	NA	NA	NA	NA
1995 Average	--	1.147	1.336	1.205	1.103	1.163	1.111	1.109
2000 Average	--	1.510	1.693	1.563	1.462	1.543	1.484	1.491
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 Average	--	2.408	2.911	2.469	2.333	2.586	2.415	2.650
2018 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	2.459	2.740	2.548	3.048
February	--	2.465	3.071	2.530	2.348	2.645	2.442	2.910
March	--	2.267	2.893	2.334	2.126	2.468	2.234	2.729
April	--	1.876	2.527	1.946	1.721	2.096	1.841	2.493
May	--	1.879	2.490	1.946	1.769	2.084	1.870	2.392
June	--	2.076	2.673	2.141	1.998	2.263	2.082	2.408
July	--	2.176	2.783	2.243	2.099	2.365	2.183	2.434
August	--	2.177	2.795	2.245	2.093	2.374	2.182	2.429
September	--	2.193	2.810	2.260	2.095	2.375	2.183	2.414
October	--	2.159	2.782	2.228	2.073	2.344	2.158	2.389
November	--	2.090	2.727	2.159	2.015	2.312	2.108	2.432
December	--	2.168	2.778	2.235	2.105	2.387	2.195	2.585
Average	--	2.174	2.791	2.242	2.074	2.370	2.168	2.551
2021 January	--	2.326	2.921	2.391	2.244	2.527	2.334	2.681
February	--	2.496	3.073	2.559	2.412	2.694	2.501	2.847
March	--	2.791	3.386	2.856	2.725	2.997	2.810	3.152
April	--	2.839	3.455	2.907	2.771	3.048	2.858	3.130
May	--	2.972	3.596	3.041	2.885	3.202	2.985	3.217
June	--	3.154	3.802	3.245	2.964	3.281	3.064	3.287
July	--	3.233	3.897	3.326	3.044	3.339	3.136	3.339
August	--	3.255	3.938	3.351	3.062	3.368	3.158	3.350
September	--	3.265	3.945	3.361	3.081	3.382	3.175	3.384
October	--	3.385	4.040	3.477	3.193	3.506	3.291	3.612

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

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

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

	Residual Fuel Oil Sulfur Content Less Than or Equal to 1%		Residual Fuel Oil Sulfur Content Greater Than 1%		Average	
	Sales for Resale	Sales to End Users	Sales for Resale	Sales to End Users	Sales for Resale	Sales to End Users
1978 Average	0.293	0.314	0.245	0.275	0.263	0.298
1980 Average .....	.608	.675	.479	.523	.528	.607
1985 Average .....	.610	.644	.560	.582	.577	.610
1990 Average .....	.472	.505	.372	.400	.413	.444
1995 Average .....	.383	.436	.338	.377	.363	.392
2000 Average .....	.627	.708	.512	.566	.566	.602
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 Average	1.112	W	1.117	1.237	1.116	1.287
2018 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	1.220	1.364	1.353	1.594
December	1.758	W	1.460	1.543	1.597	1.745
Average	1.649	W	1.391	1.510	1.428	1.584
2020						
January	1.788	W	1.526	1.634	1.675	1.939
February	1.673	W	1.336	1.557	1.540	1.735
March	1.188	W	.993	1.146	1.121	1.371
April .....	.796	W	.639	.942	.733	.976
May .....	.792	W	NA	.727	.775	.817
June	1.018	W	1.013	.894	1.017	.949
July	1.153	W	1.089	.981	1.137	1.071
August	1.189	W	1.068	1.026	1.135	1.224
September	1.098	W	1.000	1.035	1.066	1.200
October	1.078	W	.996	1.071	1.041	1.151
November	1.164	W	1.098	1.068	1.145	1.145
December	1.351	W	1.266	1.193	1.320	1.290
Average	1.186	W	1.066	1.090	1.143	1.246
2021						
January	1.491	W	1.352	1.344	1.432	1.462
February	1.583	W	1.429	1.469	1.518	1.617
March	1.780	W	1.558	1.590	1.683	1.766
April	1.780	W	1.534	1.556	1.686	1.756
May	1.828	W	1.628	1.552	1.736	1.760
June	1.909	W	1.650	1.608	1.783	1.867
July	1.852	W	1.766	1.721	1.818	1.969
August	1.842	W	1.674	1.666	1.776	1.901

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
NA=Not available. W=Value withheld to avoid disclosure of individual company data.

Notes: • Sales for resale are those made to purchasers other than ultimate consumers. Sales to end users are those made directly to ultimate consumers, including bulk consumers (such as agriculture, industry, and electric utilities) and commercial consumers. • Values for the current month are preliminary.
• Through 1982, prices are U.S. Energy Information Administration (EIA)

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

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

Sources: • **1978–2007:** EIA, *Petroleum Marketing Annual 2007*, Table 17.
• **2008 forward:** EIA, *Petroleum Marketing Monthly*, November 2021, 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
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 Average	1.689	2.682	1.603	1.730	1.600	1.691	.800
2018 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	1.819	2.783	1.922	2.046	1.884	1.974	.655
December	1.757	2.734	1.932	2.087	1.919	1.943	.632
Average	1.858	2.842	1.929	2.017	1.895	1.958	.622
2020 January	1.743	2.752	1.891	2.008	1.863	1.858	.557
February	1.669	2.698	1.613	1.802	1.627	1.671	.530
March	1.127	2.279	1.189	1.115	1.238	1.278	.410
April	.645	1.590	.703	.837	.872	.908	.378
May	1.049	1.869	.690	.848	.795	.878	.454
June	1.311	2.134	1.002	1.099	1.002	1.135	.514
July	1.380	2.253	1.144	1.172	1.152	1.254	.507
August	1.389	2.219	1.162	1.250	1.179	1.275	.536
September	1.354	2.246	1.076	1.215	1.091	1.195	.516
October	1.312	2.217	1.107	1.293	1.089	1.215	.597
November	1.287	2.123	1.180	1.322	1.156	1.315	.630
December	1.394	2.289	1.353	1.585	1.341	1.475	.725
Average	1.330	2.233	1.295	1.310	1.246	1.286	.535
2021 January	1.575	2.482	1.456	1.688	1.481	1.580	.922
February	1.784	2.659	1.599	1.939	1.667	1.806	1.032
March	2.011	2.978	1.720	1.854	1.726	1.956	.985
April	2.055	3.018	1.688	1.816	1.700	1.911	.849
May	2.181	3.107	1.790	1.800	1.806	2.072	.824
June	2.252	3.190	1.871	1.907	1.927	2.147	.950
July	^R 2.337	3.337	1.946	1.940	^R 1.931	^R 2.182	1.075
August	2.302	3.299	1.918	1.899	1.882	2.147	1.110

^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*, November 2021, 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
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 Average	1.976	W	1.629	W	2.010	1.811	.772
2018 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	2.182	W	1.979	W	2.361	2.072	.601
Average	2.245	W	1.970	W	2.269	2.114	.603
2020 January	2.150	W	1.958	W	2.328	2.002	.502
February	2.060	W	1.667	W	2.113	1.835	.469
March	1.862	W	1.257	W	1.813	1.486	.378
April	1.490	W	.740	W	1.220	1.137	.368
May	1.598	W	.728	W	1.162	1.130	.421
June	1.768	W	1.046	3.321	1.338	1.354	.515
July	1.806	2.761	1.175	3.059	1.394	1.431	.518
August	1.814	2.805	1.188	3.163	1.464	1.456	.541
September	1.804	2.613	1.110	W	1.411	1.386	.508
October	1.773	2.495	1.134	W	1.360	1.400	.548
November	1.736	2.485	1.216	W	1.760	1.482	.577
December	1.828	2.674	1.395	W	2.004	1.624	.697
Average	1.829	2.685	1.293	W	1.660	1.486	.502
2021 January	1.986	2.829	1.485	W	2.103	1.713	.908
February	2.201	3.148	1.642	W	2.173	1.933	.972
March	2.442	3.364	1.763	W	2.323	2.111	.964
April	2.493	3.363	1.724	W	2.185	2.090	.851
May	2.683	3.447	1.822	W	2.291	2.177	.833
June	3.000	3.492	1.906	W	2.341	2.228	.966
July	^R 3.105	W	1.981	2.860	2.505	^R 2.282	1.096
August	3.147	W	1.972	W	2.395	2.266	1.121

^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. 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.

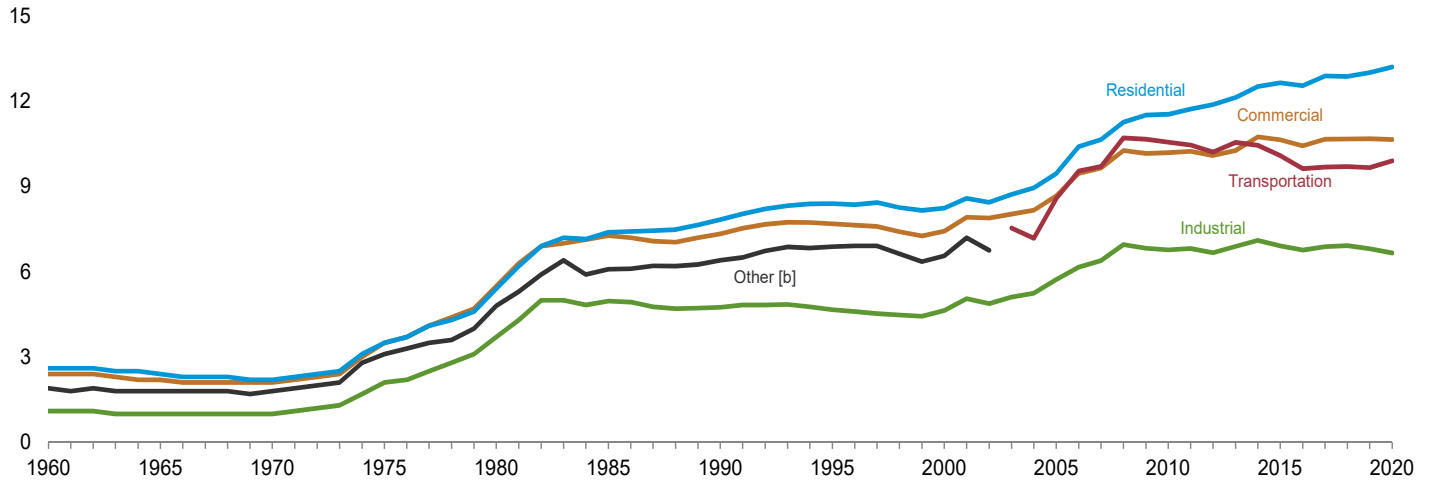
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1978 and monthly data beginning in 1982.

Sources: • **1978–2007:** EIA, *Petroleum Marketing Annual 2007*, Table 2. • **2008 forward:** EIA, *Petroleum Marketing Monthly*, November 2021, Table 2.

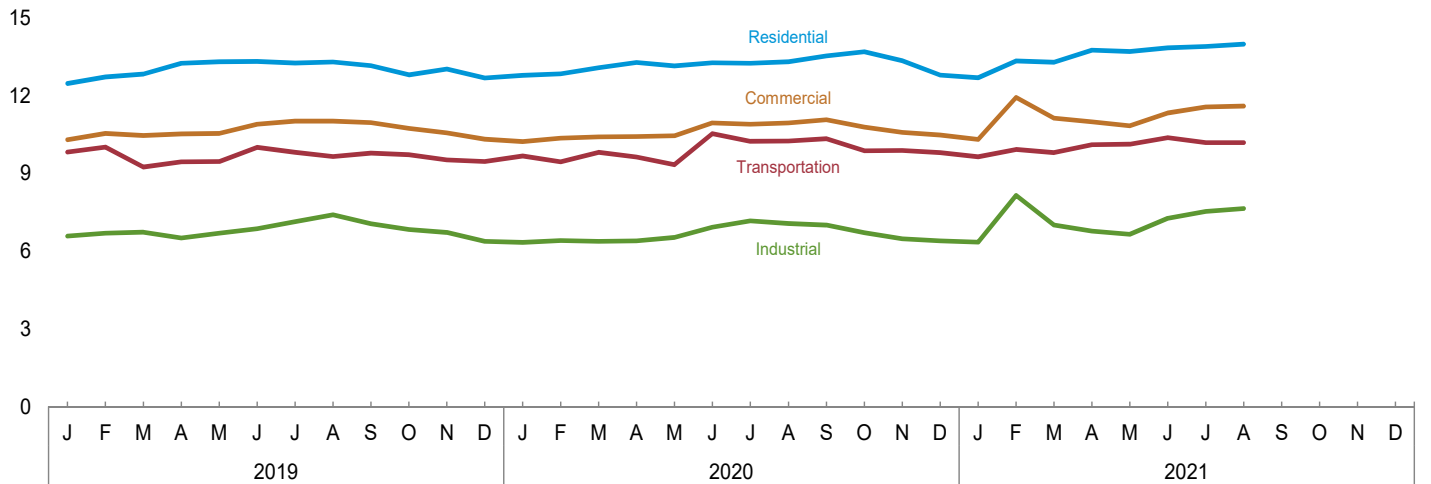
Figure 9.2 Average Retail Prices of Electricity

(Cents [a] per Kilowatthour)

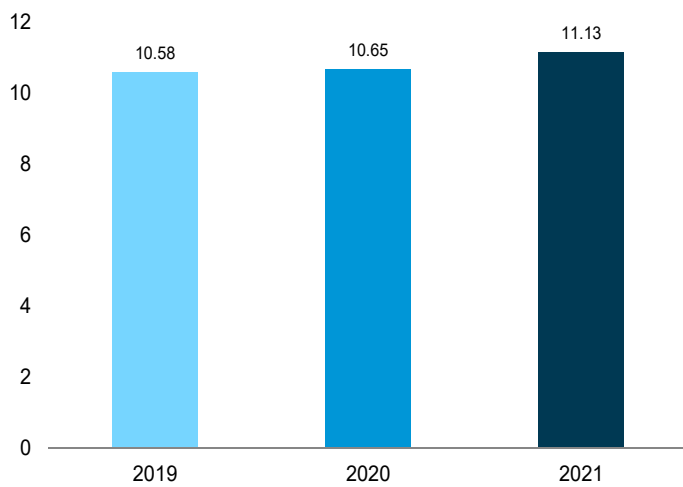
By Sector, 1960–2020



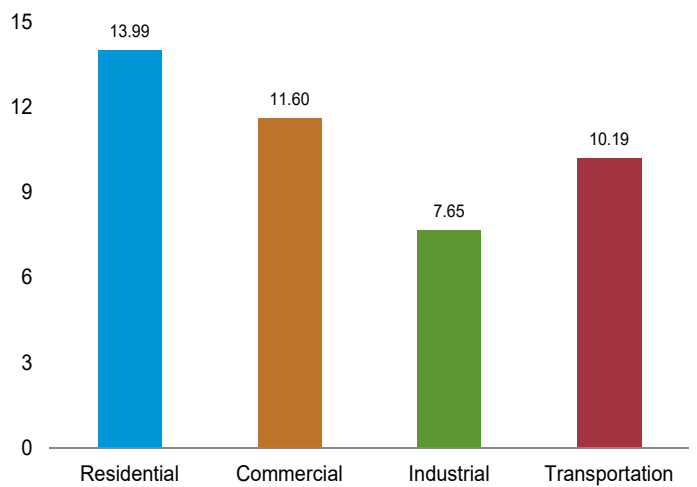
By Sector, Monthly



Total, January–August



By Sector, August 2021



[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
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 Average	12.89	10.66	6.88	9.68	--	10.48
2018 Average	12.87	10.67	6.92	9.70	--	10.53
2019 January	12.47	10.30	6.58	9.83	--	10.24
February	12.72	10.54	6.69	10.02	--	10.40
March	12.84	10.46	6.73	9.25	--	10.34
April	13.25	10.52	6.51	9.45	--	10.24
May	13.31	10.54	6.69	9.46	--	10.38
June	13.32	10.90	6.87	10.01	--	10.74
July	13.26	11.02	7.14	9.82	--	11.00
August	13.30	11.02	7.40	9.65	--	11.05
September	13.16	10.96	7.06	9.78	--	10.82
October	12.81	10.74	6.84	9.72	--	10.39
November	13.03	10.57	6.72	9.52	--	10.38
December	12.68	10.32	6.38	9.46	--	10.22
Average	13.01	10.68	6.81	9.66	--	10.54
2020 January	12.79	10.23	6.34	9.67	--	10.28
February	12.85	10.36	6.41	9.45	--	10.29
March	13.08	10.41	6.38	9.82	--	10.29
April	13.28	10.42	6.40	9.63	--	10.41
May	13.15	10.45	6.53	9.34	--	10.47
June	13.27	10.95	6.93	10.53	--	10.96
July	13.25	10.90	7.17	10.24	--	11.14
August	13.31	10.95	7.07	10.25	--	11.10
September	13.54	11.07	7.01	10.34	--	11.07
October	13.70	10.79	6.71	9.88	--	10.73
November	13.35	10.59	6.48	9.89	--	10.45
December	12.80	10.48	6.40	9.81	--	10.44
Average	13.20	10.65	6.66	9.90	--	10.66
2021 January	12.69	10.31	6.35	9.64	--	10.35
February	13.34	11.93	8.15	9.93	--	11.60
March	13.29	11.13	7.01	9.80	--	10.90
April	13.76	10.99	6.77	10.11	--	10.73
May	13.71	10.84	6.65	10.13	--	10.65
June	13.85	11.34	7.27	10.38	--	11.30
July	13.90	11.57	7.53	10.19	--	11.57
August	13.99	11.60	7.65	10.19	--	11.65
8-Month Average	13.57	11.23	7.18	10.04	--	11.13
2020 8-Month Average	13.14	10.61	6.67	9.86	--	10.65
2019 8-Month Average	13.06	10.68	6.84	9.68	--	10.58

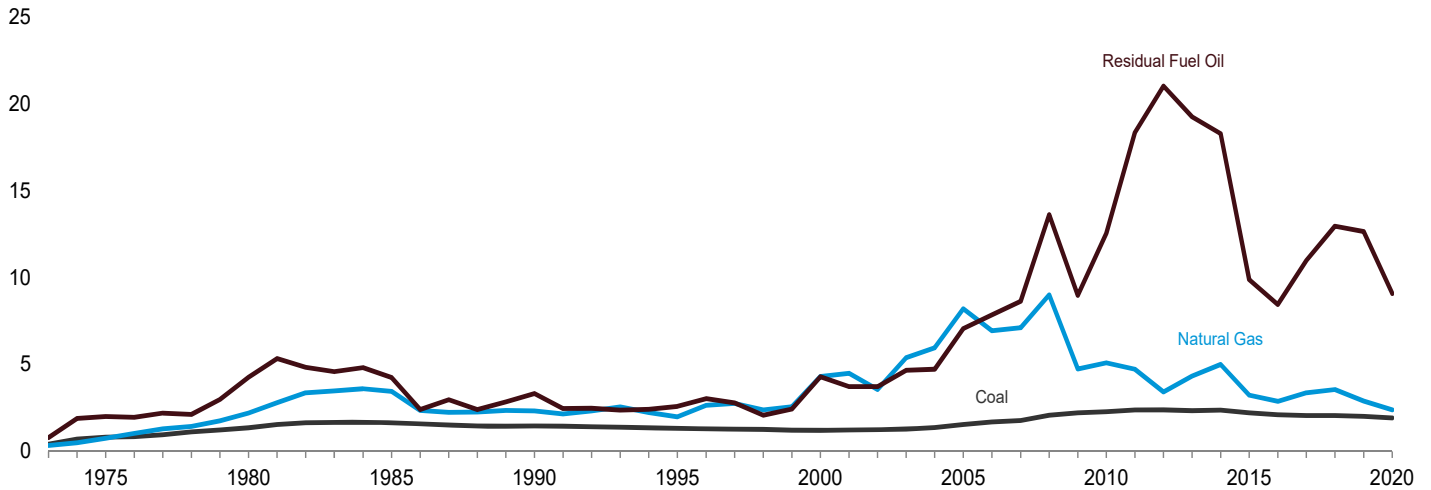
^a Prices are not adjusted for inflation. See "Nominal Price" in Glossary.
^b Commercial sector. For 1960–2002, prices exclude public street and highway lighting, interdepartmental sales, and other sales to public authorities.
^c Industrial sector. For 1960–2002, prices exclude agriculture and irrigation.
^d Transportation sector, including railroads and railways.
^e Public street and highway lighting, interdepartmental sales, other sales to public authorities, agriculture and irrigation, and transportation including railroads and railways.
 NA=Not available. --=Not applicable.
 Notes: • Beginning in 2003, the category "Other" has been replaced by "Transportation," and the categories "Commercial" and "Industrial" have been redefined. • Prices are calculated by dividing revenue by sales. Revenue may not correspond to sales for a particular month because of energy service provider billing and accounting procedures. That lack of correspondence could result in uncharacteristic increases or decreases in the monthly prices. • Prices include state and local taxes, energy or demand charges, customer service charges, environmental surcharges, franchise fees, fuel adjustments, and other miscellaneous charges applied to end-use customers during normal billing operations. Prices do not include deferred charges, credits, or other adjustments, such as fuel or revenue from purchased power, from previous reporting periods. • Through 1979, data are for Classes A and B privately owned electric utilities only.

(Class A utilities are those with operating revenues of \$2.5 million or more; Class B utilities are those with operating revenues between \$1 million and \$2.5 million.) For 1980–1982, data are for selected Class A utilities whose electric operating revenues were \$100 million or more during the previous year. For 1983, data are for a selected sample of electric utilities. Beginning in 1984, data are for a census of electric utilities. Beginning in 1996, data also include energy service providers selling to retail customers. • See Note 7, "Electricity Retail Prices," at end of section for plant coverage, and for information on preliminary and final values. • Geographic coverage is the 50 states and the District of Columbia.
 Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1960 and monthly data beginning in 1976.
 Sources: • **1960–September 1977:** Federal Power Commission, Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • **October 1977–February 1980:** Federal Energy Regulatory Commission (FERC), Form FPC-5, "Monthly Statement of Electric Operating Revenues and Income." • **March 1980–1982:** FERC, Form FERC-5, "Electric Utility Company Monthly Statement." • **1983:** U.S. Energy Information Administration (EIA), Form EIA-826, "Electric Utility Company Monthly Statement." • **1984–2010:** EIA, Form EIA-861, "Annual Electric Power Industry Report." • **2011 forward:** EIA, *Electric Power Monthly*, October 2021, Table 5.3.

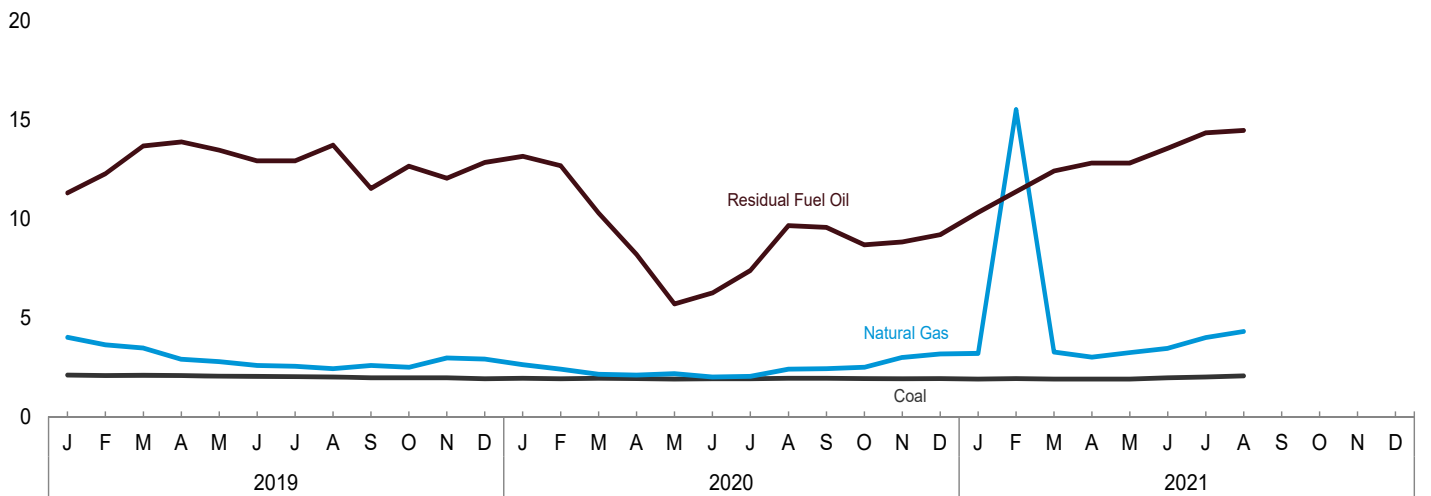
Figure 9.3 Cost of Fossil-Fuel Receipts at Electric Generating Plants

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

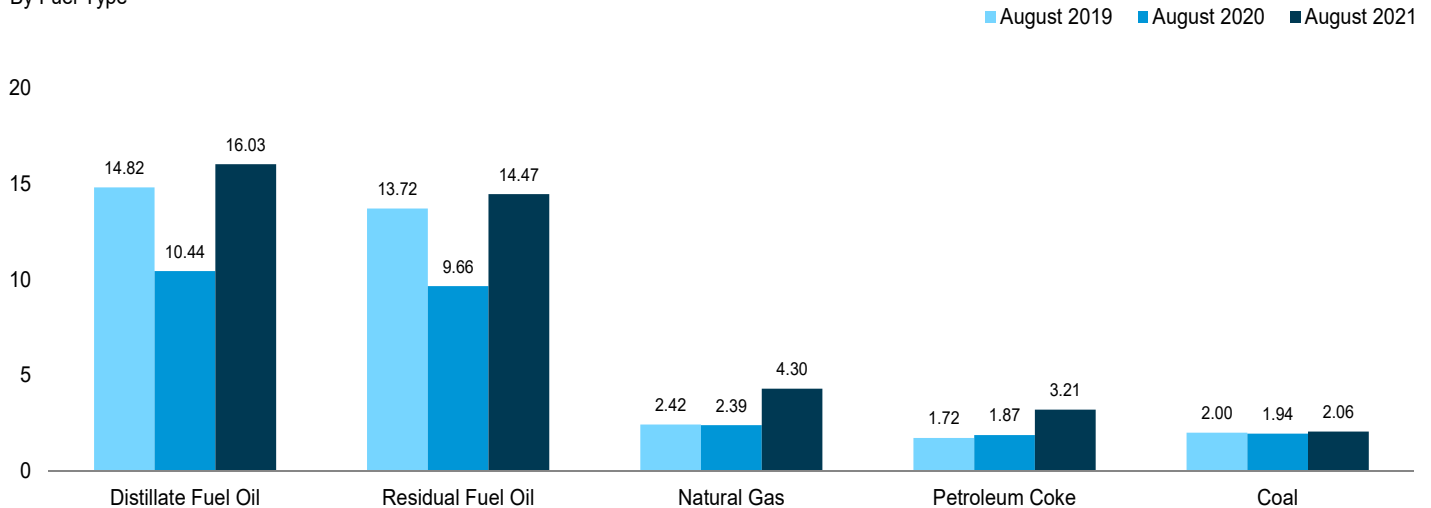
Costs, 1973–2020



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	1.25	3.73	5.34	.78	3.34	3.56	1.86
2005 Average ^g	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 Average	2.06	11.00	13.22	2.13	7.10	3.37	2.65
2018 Average	2.06	12.97	16.16	2.54	9.68	3.55	2.83
2019 January	2.10	11.30	14.12	2.08	8.53	4.00	3.01
February	2.07	12.28	15.19	2.27	9.60	3.63	2.86
March	2.08	13.68	15.70	2.43	10.52	3.46	2.81
April	2.07	13.89	16.35	2.71	11.12	2.89	2.50
May	2.05	13.47	16.19	2.24	9.52	2.77	2.44
June	2.03	12.92	14.85	2.18	9.64	2.58	2.36
July	2.02	12.93	15.10	2.01	7.99	2.54	2.34
August	2.00	13.72	14.82	1.72	6.94	2.42	2.26
September	1.96	11.53	15.04	1.67	9.23	2.59	2.34
October	1.96	12.65	15.37	1.57	10.58	2.49	2.27
November	1.96	12.05	15.28	1.46	7.75	2.96	2.50
December	1.91	12.85	14.73	1.14	8.68	2.91	2.47
Average	2.02	12.66	15.19	1.91	9.07	2.89	2.50
2020 January	1.94	13.15	14.54	1.53	6.32	2.63	2.32
February	1.91	12.68	13.78	1.47	7.12	2.40	2.22
March	1.94	10.29	10.83	1.36	6.61	2.14	2.09
April	1.93	8.19	8.82	1.38	4.55	2.10	2.04
May	1.90	5.69	7.29	1.61	4.26	2.16	2.07
June	1.91	6.25	8.97	1.46	4.61	2.01	1.99
July	1.91	7.38	10.68	1.54	4.96	2.03	2.01
August	1.94	9.66	10.44	1.87	5.27	2.39	2.22
September	1.94	9.56	9.83	1.93	6.21	2.42	2.23
October	1.92	8.68	10.07	2.08	6.63	2.49	2.26
November	1.91	8.83	10.35	2.25	6.10	2.99	2.48
December	1.92	9.20	11.14	2.33	7.01	3.17	2.61
Average	1.92	9.08	10.54	1.70	5.81	2.39	2.21
2021 January	1.90	10.32	12.16	2.59	7.28	3.19	2.63
February	1.93	11.37	13.69	2.33	8.68	15.52	9.34
March	1.90	12.41	14.74	2.56	7.75	3.26	2.63
April	1.90	12.81	14.76	2.88	8.02	3.01	2.51
May	1.90	12.82	15.09	2.73	8.58	3.24	2.62
June	1.96	13.56	15.73	3.34	9.74	3.45	2.83
July	2.01	14.34	16.00	3.35	9.25	3.99	3.19
August	2.06	14.47	16.03	3.21	10.44	4.30	3.39
8-Month Average	1.95	12.71	14.75	2.87	8.69	4.83	3.54
2020 8-Month Average	1.92	9.11	10.58	1.54	5.51	2.23	2.12
2019 8-Month Average	2.05	12.92	15.25	2.14	9.16	2.96	2.56

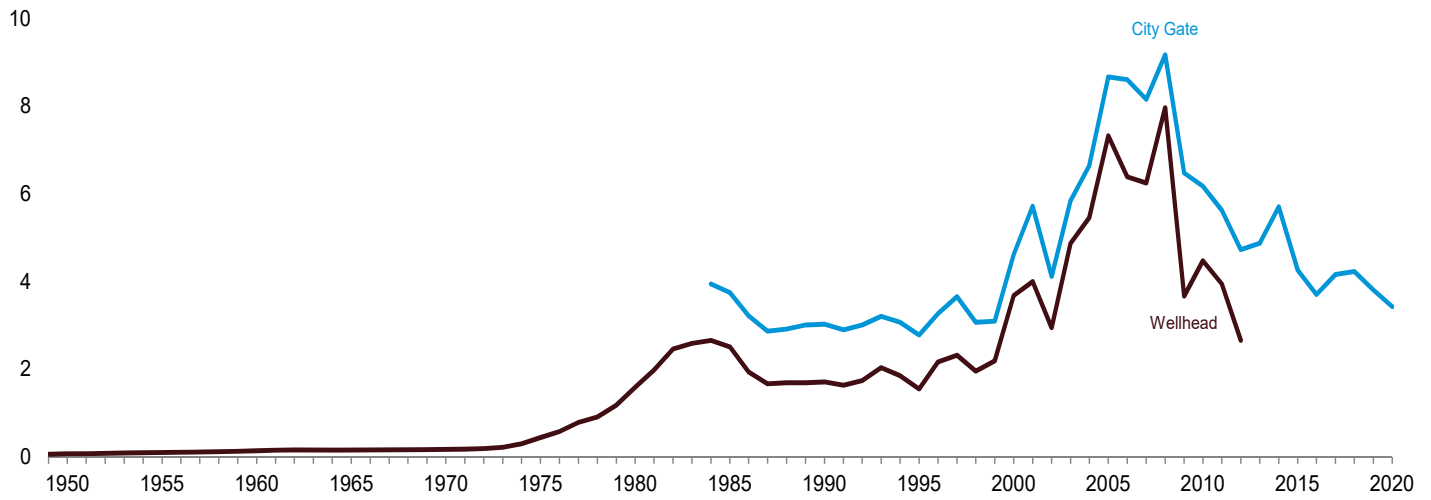
^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.
^b For 1973–2001, electric utility data are for heavy oil (fuel oil nos. 5 and 6, and small amounts of fuel oil no. 4).
^c For 1973–2001, electric utility data are for light oil (fuel oil nos. 1 and 2).
^d For all years, includes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

commercial and industrial sectors.
 NA=Not available.
 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.

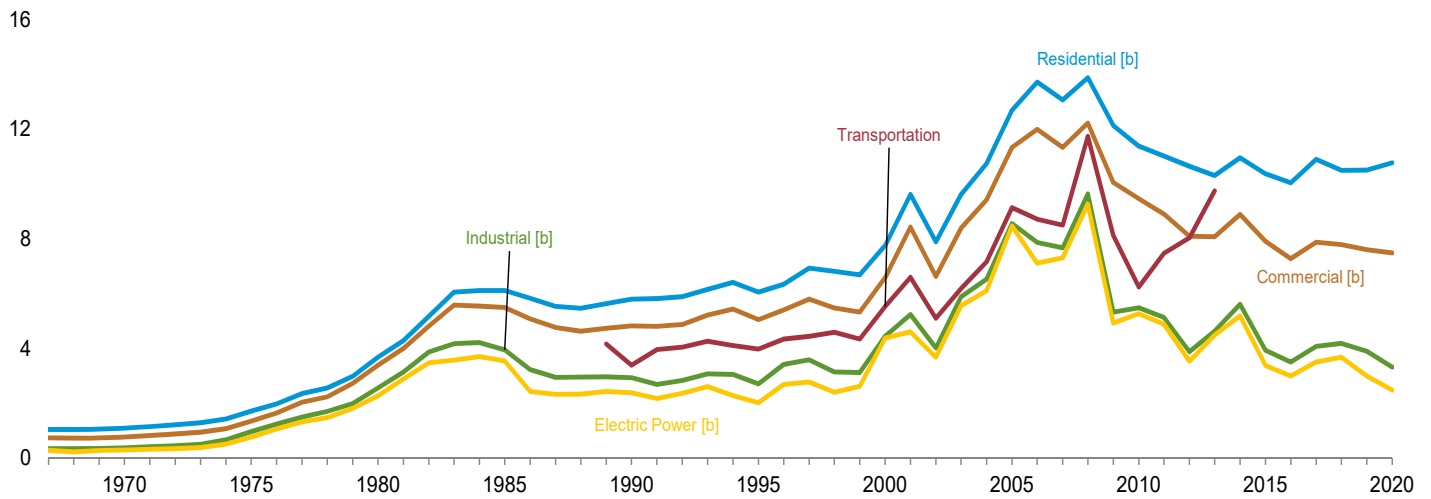
Figure 9.4 Natural Gas Prices

(Dollars [a] per Thousand Cubic Feet)

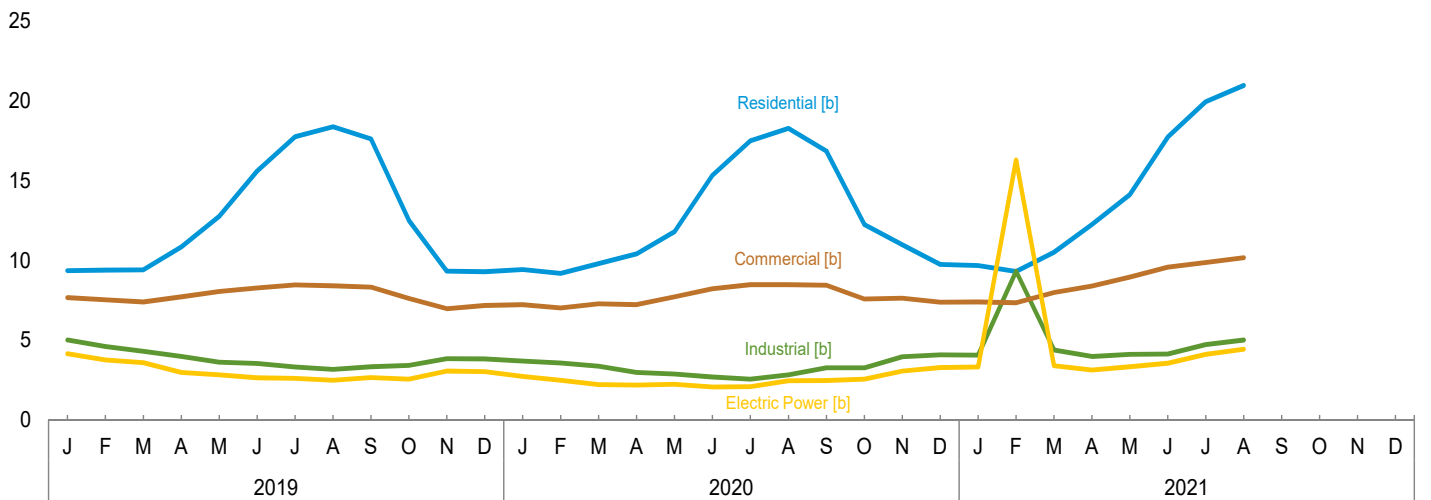
Wellhead and Citygate, 1949–2020



Consuming Sectors, 1967–2020



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 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	96.1
1980 Average	1.59	NA	3.68	NA	3.39	NA	2.56	NA	NA	2.27	96.9	96.9
1985 Average	2.51	3.75	6.12	NA	5.50	NA	3.95	68.8	NA	3.55	94.0	94.0
1990 Average	1.71	3.03	5.80	99.2	4.83	86.6	2.93	35.2	3.39	2.38	76.8	76.8
1995 Average	1.55	2.78	6.06	99.0	5.05	76.7	2.71	24.5	3.98	2.02	71.4	71.4
2000 Average	3.68	4.62	7.76	92.6	6.59	63.9	4.45	19.8	5.54	4.38	50.5	50.5
2005 Average	7.33	8.67	12.70	98.1	11.34	82.1	8.56	24.0	9.14	8.47	91.3	91.3
2006 Average	6.39	8.61	13.73	98.1	12.00	80.8	7.87	23.4	8.72	7.11	93.4	93.4
2007 Average	6.25	8.16	13.08	98.0	11.34	80.4	7.68	22.2	8.50	7.31	92.2	92.2
2008 Average	7.97	9.18	13.89	97.5	12.23	79.7	9.65	20.4	11.75	9.26	101.1	101.1
2009 Average	3.67	6.48	12.14	97.4	10.06	77.8	5.33	18.8	8.13	4.93	101.1	101.1
2010 Average	4.48	6.18	11.39	97.4	9.47	77.5	5.49	18.0	6.25	5.27	100.8	100.8
2011 Average	3.95	5.63	11.03	96.3	8.91	67.3	5.13	16.3	7.48	4.89	101.2	101.2
2012 Average	E 2.66	4.73	10.65	95.8	8.10	65.2	3.88	16.2	8.04	3.54	95.5	95.5
2013 Average	NA	4.88	10.32	95.7	8.08	65.8	4.64	16.6	9.76	4.49	94.9	94.9
2014 Average	NA	5.71	10.97	95.5	8.90	65.8	5.62	15.9	NA	5.19	94.6	94.6
2015 Average	NA	4.26	10.38	95.6	7.91	65.7	3.93	14.8	NA	3.38	94.6	94.6
2016 Average	NA	3.71	10.05	95.8	7.28	64.8	3.51	14.9	NA	2.99	95.6	95.6
2017 Average	NA	4.16	10.91	95.9	7.88	65.4	4.08	14.8	NA	3.51	95.4	95.4
2018 Average	NA	4.23	10.50	96.0	7.79	65.8	4.19	14.5	NA	3.68	95.4	95.4
2019 January	NA	4.03	9.36	96.4	7.67	70.1	5.02	13.7	NA	4.16	96.4	96.4
February	NA	3.91	9.40	96.1	7.54	69.3	4.62	14.1	NA	3.78	95.5	95.5
March	NA	4.07	9.42	96.0	7.40	69.1	4.31	13.7	NA	3.60	95.7	95.7
April	NA	3.72	10.85	95.6	7.72	64.1	3.99	13.0	NA	2.99	96.2	96.2
May	NA	3.66	12.76	95.7	8.06	60.6	3.64	12.7	NA	2.85	97.9	97.9
June	NA	4.17	15.60	95.6	8.29	58.1	3.55	12.4	NA	2.66	97.1	97.1
July	NA	4.17	17.74	95.9	8.47	56.0	3.33	13.0	NA	2.63	96.6	96.6
August	NA	4.15	18.37	96.1	8.41	55.6	3.18	12.4	NA	2.50	96.5	96.5
September	NA	4.07	17.61	96.2	8.34	56.2	3.35	12.2	NA	2.68	96.8	96.8
October	NA	3.42	12.50	96.8	7.63	60.3	3.43	12.0	NA	2.58	96.5	96.5
November	NA	3.46	9.33	96.6	6.98	66.7	3.86	12.7	NA	3.08	96.3	96.3
December	NA	3.50	9.30	96.4	7.19	68.8	3.84	13.0	NA	3.04	96.4	96.4
Average	NA	3.81	10.51	96.2	7.61	65.5	3.90	13.0	NA	2.99	96.5	96.5
2020 January	NA	3.26	9.43	96.4	7.24	69.4	3.70	13.2	NA	2.74	89.2	89.2
February	NA	3.09	9.19	96.3	7.03	68.9	3.58	13.3	NA	2.50	90.4	90.4
March	NA	3.25	9.80	96.0	7.29	66.5	3.38	13.1	NA	2.23	88.9	88.9
April	NA	3.05	10.42	95.9	7.24	63.7	2.99	12.9	NA	2.20	89.7	89.7
May	NA	3.31	11.79	95.7	7.73	58.9	2.90	13.2	NA	2.25	89.6	89.6
June	NA	3.81	15.33	95.9	8.24	56.4	2.71	13.0	NA	2.08	88.3	88.3
July	NA	3.92	17.49	96.3	8.49	55.8	2.57	12.9	NA	2.10	85.5	85.5
August	NA	4.09	18.27	95.9	8.48	54.3	2.84	12.8	NA	2.47	87.3	87.3
September	NA	4.07	16.85	96.6	8.45	54.9	3.29	13.2	NA	2.49	87.8	87.8
October	NA	3.50	12.26	96.6	7.59	60.6	3.28	13.0	NA	2.57	88.4	88.4
November	NA	3.81	10.99	96.8	7.64	65.4	3.98	13.2	NA	3.08	90.7	90.7
December	NA	3.57	9.75	96.8	7.39	69.6	4.10	13.8	NA	3.30	90.8	90.8
Average	NA	3.43	10.78	96.3	7.49	64.6	3.32	13.2	NA	2.48	88.6	88.6
2021 January	NA	3.46	9.68	96.7	7.41	70.3	4.07	13.4	NA	3.33	91.2	91.2
February	NA	12.45	9.31	96.7	7.35	70.2	9.33	12.7	NA	16.29	88.2	88.2
March	NA	4.04	10.51	96.4	7.99	67.9	4.40	13.8	NA	3.41	89.8	89.8
April	NA	3.84	12.25	96.3	8.40	64.9	4.00	13.5	NA	3.14	88.8	88.8
May	NA	4.34	14.13	96.1	8.96	60.3	4.12	13.3	NA	3.35	89.2	89.2
June	NA	4.87	17.73	96.1	9.59	57.0	4.15	13.0	NA	3.57	88.2	88.2
July	NA	5.61	19.94	96.6	9.87	55.5	4.73	12.9	NA	4.13	86.8	86.8
August	NA	5.67	20.96	96.5	10.18	54.8	5.02	13.0	NA	4.45	86.6	86.6
8-Month Average	NA	6.14	11.39	96.5	8.14	65.6	4.93	13.2	NA	5.03	88.4	88.4
2020 8-Month Average	NA	3.30	10.64	96.1	7.42	64.6	3.12	13.1	NA	2.32	88.3	88.3
2019 8-Month Average	NA	3.97	10.58	96.0	7.74	65.7	4.02	13.2	NA	3.07	96.5	96.5

^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.

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*, October 2021, 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*, October 2021, 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*, October 2021, 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*, October 2021, 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*, July issues.

1990–2000: EIA, *Electric Power Monthly*, April 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*, November 2021, 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), November 2021, 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, October 2021, 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, October 2021, 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).

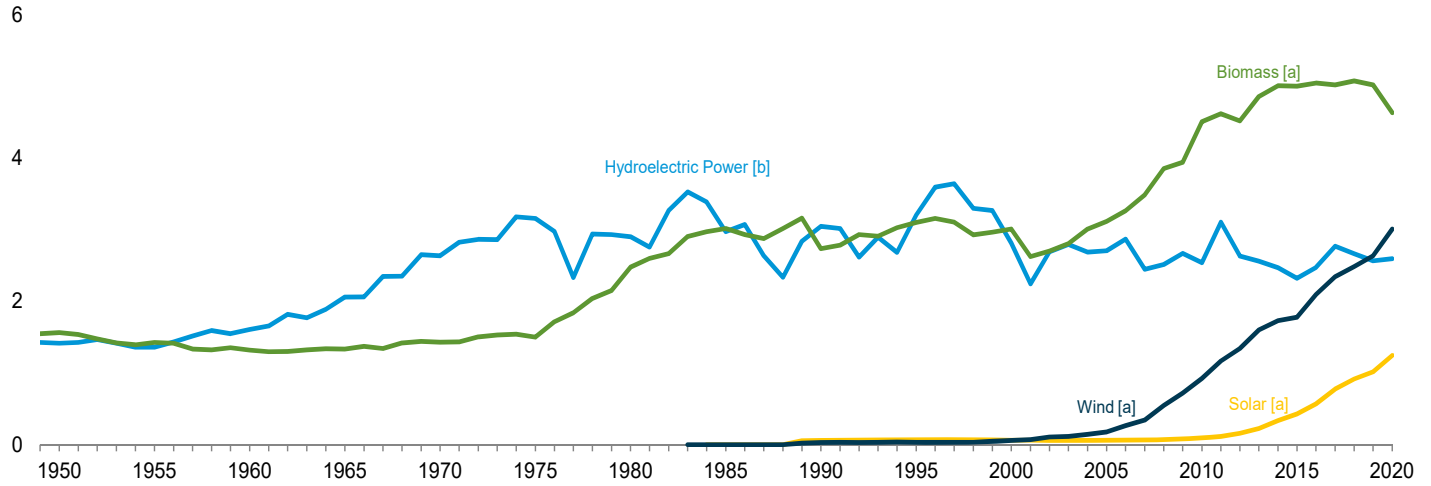
2008 forward: Calculated by EIA as the quantity of natural gas receipts by electric utilities and independent power producers reported on Form EIA-923, "Power Plant Operations Report," divided by the quantity of natural gas consumed by the electric power sector (see MER, Table 7.4b).

10. Renewable Energy

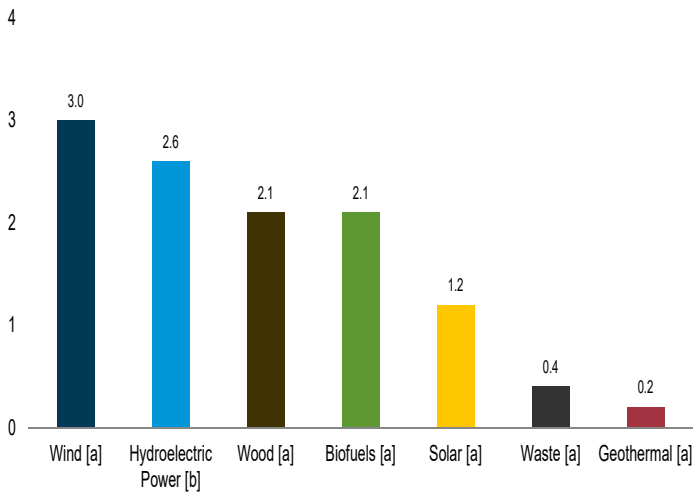
Figure 10.1 Renewable Energy Consumption

(Quadrillion Btu)

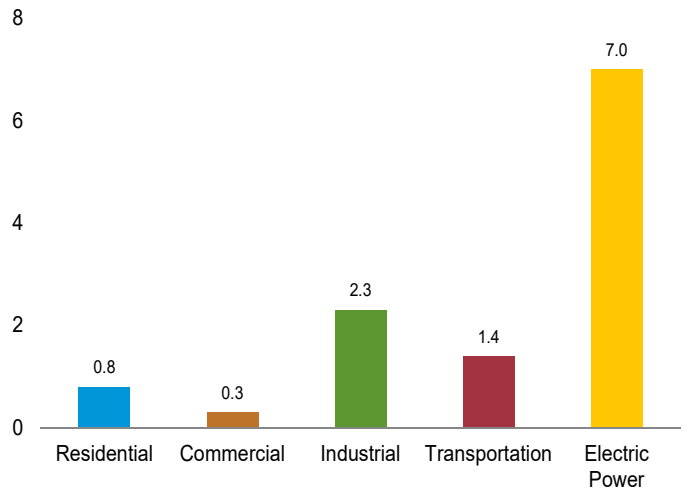
Major Sources, 1949–2020



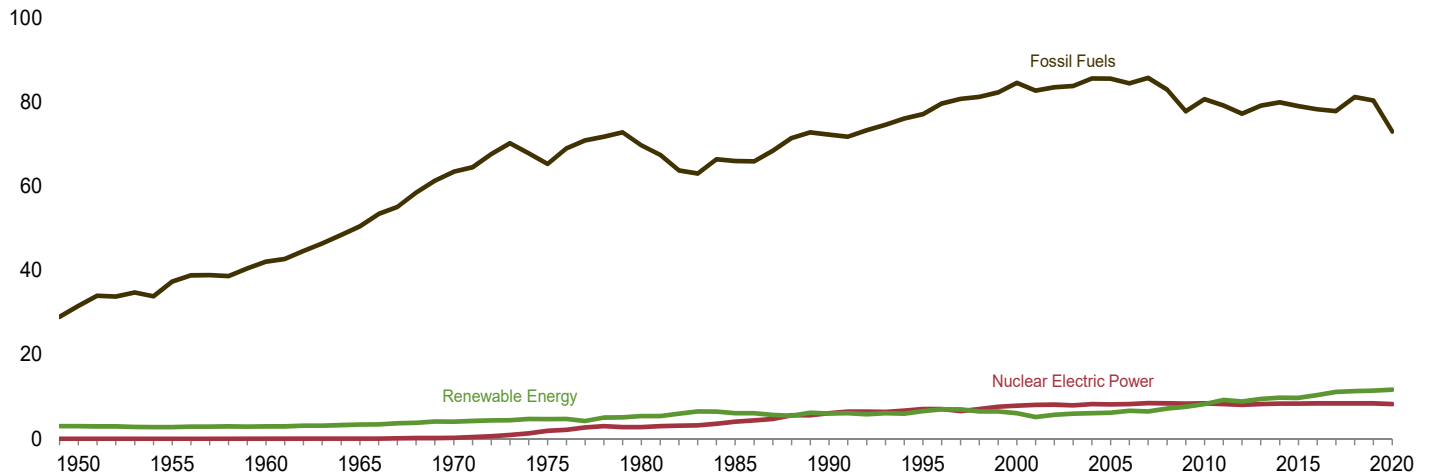
By Source, 2020



By Sector, 2020



Compared With Other Resources, 1949–2020



[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	Hydroelectric Power ^f	Geothermal ^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
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	2,037	4,712	9,308	3,103	212	112	1,168	2,213	462	1,941	4,616	9,212
2012 Total	2,151	1,936	4,554	8,993	2,629	212	159	1,340	2,151	467	1,899	4,517	8,856
2013 Total	2,338	1,996	4,830	9,433	2,562	214	225	1,601	2,338	496	2,022	4,857	9,459
2014 Total	2,401	2,126	5,043	9,789	2,467	214	337	1,728	2,401	516	2,089	5,006	9,752
2015 Total	2,312	2,187	5,017	9,754	2,321	212	427	1,777	2,312	518	2,170	5,000	9,737
2016 Total	2,299	2,309	5,112	10,459	2,472	210	570	2,096	2,226	503	2,313	5,043	10,391
2017 Total	2,263	2,381	5,140	11,237	2,767	210	777	2,343	2,185	495	2,339	5,018	11,116
2018 Total	2,356	2,440	5,283	11,552	2,663	209	915	2,482	2,261	487	2,324	5,073	11,343
2019													
January	203	201	443	950	221	18	52	216	196	39	182	418	926
February	184	183	403	880	204	16	56	201	176	36	178	389	867
March	197	196	431	997	235	18	84	230	189	38	192	420	986
April	186	199	420	1,037	248	16	95	257	178	36	191	405	1,021
May	193	208	437	1,071	285	17	102	230	185	36	208	429	1,063
June	192	203	430	1,007	250	17	110	200	182	36	200	418	995
July	201	209	447	995	222	18	113	197	192	37	205	434	982
August	204	203	444	950	201	18	109	178	193	37	200	431	937
September	192	188	414	910	165	17	95	218	182	35	186	403	899
October	194	199	430	939	163	16	85	246	185	37	199	421	931
November	193	198	428	909	180	14	63	224	184	37	195	416	897
December	202	211	452	949	191	16	53	237	192	39	204	435	932
Total	2,340	2,396	5,178	11,595	2,564	201	1,017	2,635	2,236	442	2,341	5,019	11,436
2020													
January	189	209	438	1,000	226	17	66	254	182	39	194	415	978
February	180	193	409	1,000	235	16	78	262	172	36	183	391	982
March	188	190	416	1,002	210	19	94	263	178	38	169	385	970
April	179	119	334	923	197	18	112	262	171	36	119	326	915
May	187	144	367	1,041	271	18	132	252	179	36	153	368	1,042
June	177	171	381	1,051	259	17	130	263	167	33	180	380	1,050
July	181	187	404	1,006	246	18	139	198	174	35	185	394	997
August	184	185	405	966	214	18	129	200	176	35	182	394	954
September	179	182	395	898	171	18	109	205	169	33	182	384	887
October	182	189	407	946	163	18	101	257	174	36	178	387	926
November	184	193	412	1,006	194	18	81	300	175	35	184	394	988
December	195	196	429	1,017	206	19	74	289	184	38	191	413	1,000
Total	2,207	2,159	4,796	11,854	2,592	214	1,246	3,006	2,101	430	2,100	4,631	11,689
2021													
January	189	186	413	1,014	233	18	79	271	181	38	165	383	984
February	171	148	352	892	197	17	88	238	162	33	149	345	884
March	188	189	414	1,098	190	17	125	352	177	37	191	405	1,089
April	178	182	395	1,047	171	17	144	320	169	35	180	384	1,036
May	189	202	426	1,111	208	18	163	296	180	36	202	419	1,103
June	185	196	414	1,048	222	18	160	235	174	33	196	403	1,036
July	R 192	203	R 430	R 1,000	201	18	160	191	184	35	198	417	987
August	190	190	415	1,015	191	18	157	234	181	35	194	410	1,010
8-Month Total	1,482	1,494	3,258	8,224	1,614	139	1,076	2,136	1,407	282	1,476	3,165	8,130
2020 8-Month Total	1,466	1,399	3,153	7,988	1,859	142	880	1,954	1,399	289	1,366	3,054	7,888
2019 8-Month Total	1,559	1,601	3,455	7,888	1,864	138	721	1,709	1,493	295	1,556	3,344	7,777

^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. Beginning in 2011, includes production of renewable diesel fuel. Beginning in 2014, includes production of other biofuels.

^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, renewable diesel fuel, and other biofuels 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–10.4c and U.S. Energy Information Administration, Form EIA-63C, "Densified Biomass Fuel Report."

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

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

	Residential Sector				Commercial Sector ^a								
	Geo-thermal ^b	Solar ^c	Biomass	Total	Hydro-electric Power ^e	Geo-thermal ^f	Solar ^g	Wind ^h	Biomass				Total
			Wood ^d						Wood ^d	Waste ⁱ	Fuel Ethanol ^{j,k}	Total	
1950 Total	NA	NA	1,006	1,006	NA	NA	NA	NA	19	NA	NA	19	19
1955 Total	NA	NA	775	775	NA	NA	NA	NA	15	NA	NA	15	15
1960 Total	NA	NA	627	627	NA	NA	NA	NA	12	NA	NA	12	12
1965 Total	NA	NA	468	468	NA	NA	NA	NA	9	NA	NA	9	9
1970 Total	NA	NA	401	401	NA	NA	NA	NA	8	NA	NA	8	8
1975 Total	NA	NA	425	425	NA	NA	NA	NA	8	NA	NA	8	8
1980 Total	NA	NA	850	850	NA	NA	NA	NA	21	NA	NA	21	21
1985 Total	NA	NA	1,010	1,010	NA	NA	NA	NA	24	NA	(s)	24	24
1990 Total	6	55	580	640	1	3	(s)	-	66	28	(s)	94	98
1995 Total	7	63	520	589	1	5	(s)	-	72	40	(s)	113	119
2000 Total	9	58	420	486	1	8	1	-	71	47	(s)	119	128
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	681	(s)	20	57	1	79	47	^k 26	152	230
2016 Total	40	162	445	646	2	20	62	1	84	48	26	158	242
2017 Total	40	193	429	662	2	20	76	1	84	48	25	156	255
2018 Total	40	221	524	785	2	20	94	2	84	47	25	156	274
2019 January	3	13	46	63	(s)	2	6	(s)	7	4	2	13	21
February	3	15	42	59	(s)	2	6	(s)	7	3	2	12	20
March	3	21	46	70	(s)	2	9	(s)	7	3	2	13	24
April	3	23	45	71	(s)	2	10	(s)	7	3	2	12	24
May	3	26	46	75	(s)	2	10	(s)	7	3	2	12	25
June	3	26	45	74	(s)	2	11	(s)	7	3	2	12	25
July	3	27	46	77	(s)	2	11	(s)	7	3	2	13	26
August	3	26	46	76	(s)	2	11	(s)	7	3	2	13	25
September	3	23	45	71	(s)	2	9	(s)	7	3	2	12	24
October	3	20	46	70	(s)	2	8	(s)	7	3	2	13	23
November	3	16	45	64	(s)	2	6	(s)	7	3	2	12	21
December	3	15	46	64	(s)	2	6	(s)	7	3	2	13	21
Total	40	251	544	835	2	24	103	2	84	39	26	149	279
2020 January	3	16	39	58	NM	2	7	(s)	7	3	2	13	22
February	3	18	36	58	NM	2	8	(s)	7	3	2	12	22
March	3	24	39	66	NM	2	10	(s)	7	3	2	12	24
April	3	26	38	67	NM	2	11	(s)	7	3	1	11	24
May	3	30	39	72	NM	2	12	(s)	7	3	2	12	26
June	3	30	38	71	NM	2	12	(s)	7	3	2	12	26
July	3	31	39	73	NM	2	13	(s)	7	3	2	12	27
August	3	29	39	71	NM	2	12	(s)	7	3	2	12	26
September	3	26	38	66	(s)	2	11	(s)	7	3	2	11	24
October	3	24	39	66	NM	2	10	(s)	7	3	2	12	23
November	3	20	38	60	NM	2	8	(s)	7	3	2	12	21
December	3	18	39	60	NM	2	7	(s)	7	3	2	12	22
Total	40	291	458	788	2	24	121	2	83	36	23	141	289
2021 January	3	19	39	60	NM	2	8	(s)	7	3	2	12	22
February	3	20	35	58	NM	2	9	(s)	6	3	2	11	22
March	3	28	39	70	NM	2	12	(s)	7	3	2	12	26
April	3	31	37	72	NM	2	13	(s)	7	3	2	11	27
May	3	35	39	76	NM	2	14	(s)	7	3	2	12	29
June	3	35	37	76	NM	2	14	(s)	7	3	2	12	29
July	3	36	39	77	NM	2	15	(s)	7	3	2	12	30
August	3	33	39	75	NM	2	14	(s)	7	3	2	12	29
8-Month Total	26	236	302	564	1	16	100	1	55	24	16	95	213
2020 8-Month Total	26	204	305	535	1	16	85	1	56	24	15	94	198
2019 8-Month Total	26	177	362	566	1	16	73	1	56	26	17	100	191

^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.

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			Fuel Ethanol ^{l,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
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	NA	935
2010 Total	16	4	3	—	1,409	168	17	727	2,320	2,343	1,041	33	NA	1,075
2011 Total	17	4	4	(s)	1,438	165	17	756	2,375	2,401	1,045	113	8	1,166
2012 Total	22	4	7	(s)	1,462	159	17	711	2,349	2,383	1,045	115	10	1,169
2013 Total	33	4	9	(s)	1,489	187	18	709	2,403	2,449	1,072	182	39	1,292
2014 Total	12	4	11	1	1,495	190	14	757	2,456	2,484	1,093	181	40	1,314
2015 Total	13	4	14	(s)	1,476	190	18	776	2,460	2,491	1,110	191	50	1,351
2016 Total	12	4	19	1	1,474	174	18	801	2,467	2,503	1,143	266	59	1,469
2017 Total	13	4	22	1	1,442	168	18	821	2,450	2,490	1,156	253	65	1,474
2018 Total	10	4	24	1	1,432	165	19	824	2,440	2,480	1,152	243	60	1,456
2019 January	1	(s)	2	(s)	123	14	1	67	206	209	89	16	7	112
February	1	(s)	2	(s)	112	13	1	61	187	190	90	17	7	113
March	1	(s)	2	(s)	120	14	2	66	201	205	95	20	8	123
April	1	(s)	3	(s)	113	13	2	66	193	197	94	20	8	122
May	1	(s)	3	(s)	116	13	2	69	199	204	103	22	10	134
June	1	(s)	3	(s)	114	12	2	68	196	201	100	20	8	128
July	1	(s)	3	(s)	120	12	2	69	204	207	100	22	9	131
August	1	(s)	3	(s)	121	12	2	68	203	207	100	21	8	129
September	(s)	(s)	3	(s)	113	12	1	62	189	192	93	19	8	120
October	1	(s)	2	(s)	117	14	2	66	198	201	101	19	9	129
November	1	(s)	2	(s)	117	13	2	67	198	201	99	17	9	125
December	1	(s)	2	(s)	121	14	2	71	207	210	98	19	13	130
Total	9	4	28	1	1,407	156	19	800	2,381	2,423	1,162	231	104	1,497
2020 January	1	(s)	2	(s)	119	14	2	70	206	209	96	17	8	120
February	1	(s)	2	(s)	113	13	1	64	192	195	88	18	9	115
March	1	(s)	3	(s)	116	14	1	62	193	197	77	19	9	104
April	1	(s)	3	(s)	113	13	1	36	163	168	54	19	8	82
May	1	(s)	3	(s)	118	13	1	45	177	182	78	19	8	105
June	1	(s)	3	1	108	12	1	55	176	181	90	20	12	122
July	1	(s)	3	1	113	12	1	60	187	192	90	23	9	121
August	1	(s)	3	1	111	12	1	60	185	190	89	21	9	119
September	1	(s)	3	1	112	12	1	59	183	188	88	22	10	120
October	1	(s)	3	1	114	13	1	62	191	195	85	21	6	112
November	1	(s)	2	1	116	13	1	63	194	198	87	20	11	117
December	1	(s)	2	1	121	14	1	63	200	204	89	22	13	124
Total	9	4	32	6	1,376	156	16	699	2,247	2,298	1,011	239	112	1,362
2021 January	1	(s)	2	1	119	14	1	60	195	199	79	13	10	101
February	1	(s)	2	1	105	12	1	48	166	170	73	15	10	98
March	1	(s)	3	1	114	14	2	61	191	196	94	19	13	126
April	1	(s)	3	1	112	13	1	59	185	190	87	18	13	118
May	1	(s)	4	1	120	14	2	65	200	205	100	19	15	133
June	1	(s)	4	1	113	12	2	64	190	195	97	18	13	128
July	1	(s)	4	(s)	120	12	2	66	199	205	100	18	11	129
August	1	(s)	4	1	115	12	2	61	190	195	97	18	15	130
8-Month Total	6	3	25	5	918	104	12	484	1,517	1,556	727	138	99	964
2020 8-Month Total	6	3	22	2	912	104	11	452	1,479	1,513	662	155	72	889
2019 8-Month Total	7	3	19	1	939	103	12	534	1,589	1,618	771	157	65	992

^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 Renewable diesel fuel and other biofuels consumption. Although there is renewable diesel fuel and other biofuels use in other sectors, all consumption is assigned to the transportation sector.

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
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 Total	2,752	147	486	2,341	229	280	510	6,235
2018 Total	2,651	145	576	2,480	221	275	496	6,348
2019 January	220	12	32	216	19	22	41	520
February	203	11	34	201	16	19	36	485
March	233	12	52	229	16	21	37	564
April	247	11	60	257	14	20	34	608
May	284	12	63	229	16	21	37	624
June	249	12	70	200	16	20	37	567
July	221	12	72	197	19	21	40	541
August	200	12	69	178	19	21	40	500
September	164	12	60	218	17	20	37	491
October	162	10	54	246	15	21	35	507
November	179	8	38	224	16	20	36	486
December	190	10	30	237	18	22	39	507
Total	2,553	134	635	2,632	201	248	448	6,402
2020 January	225	11	41	254	17	21	38	569
February	234	11	50	262	16	20	36	593
March	209	13	57	263	15	21	37	579
April	196	13	72	262	13	20	33	575
May	270	13	86	252	15	20	35	656
June	258	12	85	262	15	18	33	650
July	246	13	92	198	16	20	35	583
August	214	12	84	199	19	20	39	548
September	170	12	70	205	13	19	33	489
October	162	12	65	256	14	19	33	529
November	194	13	52	299	15	19	34	591
December	205	13	48	288	17	21	37	590
Total	2,581	147	802	2,998	185	238	424	6,952
2021 January	232	12	51	270	16	20	36	601
February	196	11	57	237	16	18	35	536
March	189	11	83	351	17	20	37	671
April	171	11	97	319	13	19	32	629
May	208	12	110	295	15	19	35	659
June	221	12	107	234	17	19	35	609
July	200	12	106	190	18	20	38	547
August	190	12	105	233	19	19	39	580
8-Month Total	1,607	94	715	2,130	132	155	287	4,833
2020 8-Month Total	1,851	97	568	1,950	126	160	287	4,753
2019 8-Month Total	1,856	94	452	1,707	136	166	301	4,410

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

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

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

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

^e Wood and wood-derived fuels.

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

tire-derived fuels).

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

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

Notes: • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: Tables 7.2b, 7.4b, and A6.

Table 10.3 Fuel Ethanol Overview

	Feed-stock ^a	Losses and Co-products ^b	Denaturant ^c	Production ^d			Trade ^d	Stocks ^{d,f}	Stock Change ^{d,g}	Consumption ^d			Consumption Minus Denaturant ^h
							Net Imports ^e						
							TBtu						
1981 Total	13	6	40	1,978	83	7	NA	NA	NA	1,978	83	7	7
1985 Total	93	42	294	14,693	617	52	NA	NA	NA	14,693	617	52	51
1990 Total	111	49	356	17,802	748	63	NA	NA	NA	17,802	748	63	62
1995 Total	198	86	647	32,325	1,358	115	387	2,186	-207	32,919	1,383	117	114
2000 Total	233	99	773	38,627	1,622	138	116	3,400	-624	39,367	1,653	140	137
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 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 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	550	31,603	1,327	112	-3,243	25,115	1,697	26,663	1,120	95	93
February	160	61	498	28,599	1,201	102	-2,283	24,506	-609	26,925	1,131	96	94
March	173	65	504	30,863	1,296	110	-3,653	23,396	-1,110	28,320	1,189	101	99
April	174	66	462	30,981	1,301	110	-3,195	23,331	-65	27,851	1,170	99	97
May	182	69	471	32,466	1,364	115	-2,355	22,843	-488	30,599	1,285	109	107
June	179	68	505	31,898	1,340	113	-2,340	22,583	-260	29,818	1,252	106	104
July	182	69	512	32,541	1,367	116	-2,312	22,892	309	29,920	1,257	106	104
August	179	68	513	31,921	1,341	113	-2,397	22,727	-165	29,689	1,247	106	103
September	164	62	474	29,232	1,228	104	-1,237	23,012	285	27,710	1,164	99	96
October	173	66	504	30,941	1,300	110	-1,998	21,784	-1,228	30,171	1,267	107	105
November	176	66	536	31,358	1,317	111	-2,029	21,646	-138	29,467	1,238	105	102
December	186	71	560	33,275	1,398	118	-3,234	22,352	706	29,335	1,232	104	102
Total	2,104	796	6,089	375,678	15,778	1,336	-30,276	22,352	-1,066	346,468	14,552	1,232	1,206
2020													
January	186	70	549	33,346	1,401	119	-3,282	23,884	1,532	28,532	1,198	101	99
February	170	64	482	30,511	1,281	109	-3,646	24,582	698	26,167	1,099	93	91
March	164	62	482	29,409	1,235	105	-3,657	27,505	2,923	22,829	959	81	79
April	95	36	312	17,003	714	60	-2,180	26,124	-1,381	16,204	681	58	56
May	118	44	383	21,157	889	75	-1,691	22,190	-3,934	23,400	983	83	81
June	145	54	473	25,959	1,090	92	-1,700	19,472	-2,718	26,977	1,133	96	94
July	160	60	531	28,708	1,206	102	-1,481	19,784	312	26,915	1,130	96	93
August	158	60	513	28,420	1,194	101	-1,453	20,142	358	26,609	1,118	95	92
September	155	58	498	27,779	1,167	99	-1,520	20,008	-134	26,393	1,109	94	92
October	165	62	546	29,614	1,244	105	-2,525	21,738	1,730	25,358	1,065	90	88
November	167	63	563	29,915	1,256	106	-2,105	23,502	1,765	26,044	1,094	93	90
December	168	63	564	30,108	1,265	107	-2,450	24,663	1,161	26,497	1,113	94	92
Total	1,850	696	5,897	331,928	13,941	1,181	-27,692	24,663	2,311	301,925	12,681	1,074	1,050
2021													
January	160	60	491	28,847	1,212	103	-3,956	26,080	ⁱ 1,393	23,498	987	84	82
February	127	48	391	22,928	963	82	-2,437	24,715	-1,365	21,856	918	78	76
March	163	61	508	29,338	1,232	104	-3,190	22,836	-1,879	28,028	1,177	100	97
April	157	59	483	28,218	1,185	100	-2,695	22,344	-491	26,015	1,093	93	90
May	174	65	533	31,223	1,311	111	-1,686	22,013	-331	29,868	1,254	106	104
June	170	64	529	30,682	1,289	109	-1,663	21,966	-47	29,066	1,221	103	101
July	175	65	542	31,436	1,320	112	-884	22,660	693	29,859	1,254	106	104
August	162	61	470	29,076	1,221	103	-1,661	21,116	-1,544	28,959	1,216	103	101
8-Month Total	1,288	482	3,946	231,749	9,733	824	-18,171	21,116	-3,571	217,148	9,120	772	755
2020 8-Month Total	1,196	450	3,725	214,513	9,010	763	-19,091	20,142	-2,210	197,632	8,301	703	687
2019 8-Month Total	1,406	532	4,015	250,872	10,537	892	-21,777	22,727	-691	229,786	9,651	817	800

^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 2020 stocks value (24,687 thousand barrels), not the final 2020 value (24,663 thousand barrels) that is shown under "Stocks." NA=Not available.

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Fuel ethanol data in thousand barrels are converted to million gallons by multiplying by 0.042, and are converted to Btu by multiplying by the approximate heat content of fuel ethanol—see Table A3. • Through 1980, data are not available. For 1981–1992, data are estimates. For 1993–2008, only data for feedstock, losses and co-products, and denaturant are estimates. Beginning in 2009, only data for feedstock, and losses and co-products, are estimates. • See "Denaturant," "Ethanol," "Fuel Ethanol," and "Fuel Ethanol Minus Denaturant" in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

Table 10.4a Biodiesel Overview

	Feed-stock ^b	Losses and Co-products ^c	Production ^a			Trade ^a			Stocks ^{a,e}	Stock Change ^{a,f}	Consumption ^a		
						Imports	Exports	Net Imports ^d					
						TBtu	TBtu	TBtu					
2001 Total	1	(s)	204	9	1	81	41	40	NA	NA	244	10	1
2005 Total	12	(s)	2,162	91	12	214	213	1	NA	NA	2,163	91	12
2006 Total	32	(s)	5,963	250	32	1,105	856	250	NA	NA	6,213	261	33
2007 Total	63	1	11,662	490	62	3,455	6,696	-3,241	NA	NA	8,422	354	45
2008 Total	88	1	16,145	678	87	7,755	16,673	-8,918	NA	NA	7,228	304	39
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
2011 Total	125	2	23,035	967	123	890	1,799	-908	2,005	^h 1,028	21,099	886	113
2012 Total	128	2	23,588	991	126	853	3,056	-2,203	1,984	-20	21,406	899	115
2013 Total	176	2	32,368	1,359	173	8,152	4,675	3,477	3,810	1,825	34,020	1,429	182
2014 Total	165	2	30,452	1,279	163	4,578	1,974	2,604	3,131	-679	33,735	1,417	181
2015 Total	163	2	30,080	1,263	161	8,399	2,091	6,308	3,943	813	35,575	1,494	191
2016 Total	203	3	37,327	1,568	200	16,879	2,098	14,781	6,398	2,454	49,653	2,085	266
2017 Total	206	3	37,993	1,596	204	9,374	2,228	7,146	4,268	-2,130	47,269	1,985	253
2018 Total	240	3	44,222	1,857	237	3,969	2,470	1,499	4,662	394	45,326	1,904	243
2019 January	19	(s)	3,427	144	18	308	85	223	5,354	692	2,957	124	16
February	17	(s)	3,108	131	17	233	91	142	5,502	148	3,101	130	17
March	18	(s)	3,353	141	18	543	226	317	5,389	-113	3,783	159	20
April	20	(s)	3,623	152	19	410	370	40	5,330	-59	3,721	156	20
May	20	(s)	3,681	155	20	281	440	-159	4,815	-515	4,037	170	22
June	18	(s)	3,370	142	18	310	300	10	4,408	-406	3,787	159	20
July	21	(s)	3,776	159	20	333	392	-59	4,088	-321	4,039	170	22
August	20	(s)	3,712	156	20	216	291	-75	3,860	-228	3,865	162	21
September	18	(s)	3,377	142	18	280	238	42	3,706	-154	3,574	150	19
October	19	(s)	3,436	144	18	314	158	156	3,738	32	3,560	150	19
November	16	(s)	3,034	127	16	417	56	361	3,887	149	3,246	136	17
December	17	(s)	3,163	133	17	433	83	350	3,907	20	3,493	147	19
Total	223	3	41,060	1,725	220	4,078	2,730	1,348	3,907	-756	43,163	1,813	231
2020 January	17	(s)	3,196	134	17	336	31	305	4,273	367	3,134	132	17
February	17	(s)	3,139	132	17	302	89	213	4,220	-54	3,405	143	18
March	20	(s)	3,594	151	19	333	228	105	4,429	209	3,490	147	19
April	19	(s)	3,422	144	18	611	526	85	4,411	-18	3,525	148	19
May	20	(s)	3,630	152	19	475	496	-21	4,513	102	3,507	147	19
June	20	(s)	3,590	151	19	446	523	-77	4,318	-195	3,709	156	20
July	21	(s)	3,849	162	21	346	376	-30	3,879	-439	4,258	179	23
August	21	(s)	3,872	163	21	234	512	-278	3,563	-316	3,910	164	21
September	21	(s)	3,790	159	20	360	426	-66	3,221	-342	4,066	171	22
October	20	(s)	3,743	157	20	420	113	307	3,418	197	3,853	162	21
November	20	(s)	3,621	152	19	448	73	375	3,741	323	3,673	154	20
December	20	(s)	3,761	158	20	373	64	309	3,665	-76	4,146	174	22
Total	235	3	43,207	1,815	232	4,684	3,458	1,226	3,665	-241	44,675	1,876	239
2021 January	17	(s)	3,115	131	17	228	222	6	4,565	ⁱ 681	2,440	102	13
February	13	(s)	2,406	101	13	263	122	141	4,253	-312	2,859	120	15
March	18	(s)	3,371	142	18	361	267	94	4,116	-137	3,603	151	19
April	17	(s)	3,210	135	17	500	494	6	4,011	-105	3,320	139	18
May	19	(s)	3,537	149	19	316	585	-269	3,778	-233	3,501	147	19
June	18	(s)	3,241	136	17	446	646	-200	3,540	-238	3,279	138	18
July	18	(s)	3,336	140	18	357	489	-132	3,470	-71	3,275	138	18
August	18	(s)	3,325	140	18	287	548	-261	3,124	-345	3,409	143	18
8-Month Total	139	2	25,542	1,073	137	2,758	3,372	-614	3,124	-759	25,687	1,079	138
2020 8-Month Total	154	2	28,293	1,188	152	3,083	2,782	301	3,563	-344	28,937	1,215	155
2019 8-Month Total	152	2	28,049	1,178	150	2,634	2,196	438	3,860	-803	29,290	1,230	157

^a Data are for "biodiesel," which is primarily fatty acid methyl esters (FAME). See "Biodiesel" in Glossary.

^b Total vegetable oil and other biomass inputs to the production of biodiesel. See "Biodiesel Feedstock" entry in the "Thermal Conversion Factor Source Documentation" at the end of Appendix A.

^c 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.

^d Net imports equal imports minus exports.

^e 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.

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

^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 2020 stocks value (3,884 thousand barrels), not the final 2020 value (3,665 thousand barrels) that is shown under "Stocks."

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

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Biodiesel data in thousand barrels are converted to million gallons by multiplying by 0.042, and are converted to Btu by multiplying by 5.359 million Btu per barrel (the approximate heat content of biodiesel—see Table A1). • Through 2000, data are not available. Beginning in 2001, data not from 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 10.4b Renewable Diesel Fuel Overview

	Feed-stock ^c	Losses and Co-products ^d	Production ^{a,e}			Trade ^{a,b}	Stocks ^{a,f}	Stock Change ^{a,g}	Consumption ^{a,h}		
						Imports					
			TBtu	TBtu	Mbbl	MMgal			TBtu	Mbbl	Mbbl
2011 Total	NA	NA	1,477	62	8	-	7	7	1,470	62	8
2012 Total	NA	NA	1,248	52	7	605	94	87	1,766	74	10
2013 Total	NA	NA	2,697	113	15	4,921	691	597	7,021	295	39
2014 Total	NA	NA	3,789	159	21	2,873	350	-341	7,003	294	38
2015 Total	NA	NA	4,211	177	23	4,874	634	284	8,801	370	48
2016 Total	NA	NA	5,750	241	32	5,304	1,315	681	10,373	436	57
2017 Total	NA	NA	6,151	258	34	4,509	753	-562	11,222	471	62
2018 Total	NA	NA	7,273	305	40	4,124	1,727	974	10,423	438	57
2019 January	NA	NA	869	36	5	543	1,965	238	1,174	49	6
February	NA	NA	957	40	5	304	2,097	132	1,129	47	6
March	NA	NA	851	36	5	459	2,049	-48	1,358	57	7
April	NA	NA	918	39	5	407	1,984	-65	1,390	58	8
May	NA	NA	961	40	5	646	1,853	-131	1,738	73	10
June	NA	NA	947	40	5	600	2,055	202	1,345	56	7
July	NA	NA	1,102	46	6	546	2,048	-7	1,655	70	9
August	NA	NA	719	30	4	433	1,707	-341	1,493	63	8
September	NA	NA	969	41	5	325	1,554	-153	1,447	61	8
October	NA	NA	1,156	49	6	696	1,821	267	1,585	67	9
November	NA	NA	1,009	42	6	499	1,771	-50	1,558	65	9
December	NA	NA	1,257	53	7	685	1,491	-280	2,222	93	12
Total	NA	NA	11,715	492	64	6,143	1,491	-236	18,094	760	99
2020 January	NA	NA	997	42	5	605	1,714	223	1,379	58	8
February	NA	NA	888	37	5	411	1,388	-326	1,625	68	9
March	NA	NA	1,077	45	6	452	1,431	43	1,486	62	8
April	NA	NA	920	39	5	664	1,557	126	1,458	61	8
May	NA	NA	1,105	46	6	505	1,741	184	1,426	60	8
June	NA	NA	1,267	53	7	615	1,536	-205	2,087	88	11
July	NA	NA	1,112	47	6	318	1,508	-28	1,458	61	8
August	NA	NA	1,046	44	6	435	1,379	-129	1,610	68	9
September	NA	NA	1,146	48	6	517	1,356	-23	1,686	71	9
October	NA	NA	601	25	3	617	1,426	70	1,148	48	6
November	NA	NA	1,168	49	6	645	1,387	-39	1,852	78	10
December	NA	NA	1,376	58	8	874	1,287	-100	2,350	99	13
Total	NA	NA	12,702	533	70	6,658	1,287	-204	19,564	822	107
2021 January	NA	NA	^e 1,335	^e 56	^e 7	771	1,719	432	1,674	70	9
February	NA	NA	1,156	49	6	741	1,985	266	1,631	69	9
March	NA	NA	1,250	53	7	893	1,974	-11	2,154	90	12
April	NA	NA	1,205	51	7	1,013	1,942	-33	2,251	95	12
May	NA	NA	1,503	63	8	870	1,767	-175	2,548	107	14
June	NA	NA	1,315	55	7	1,092	1,935	168	2,239	94	12
July	NA	NA	1,706	72	9	549	2,300	365	1,890	79	10
August	NA	NA	1,679	71	9	597	2,063	-237	2,513	106	14
8-Month Total	NA	NA	11,150	468	61	6,526	2,063	776	16,900	710	93
2020 8-Month Total	NA	NA	8,412	353	46	4,005	1,379	-112	12,529	526	69
2019 8-Month Total	NA	NA	7,323	308	40	3,938	1,707	-20	11,281	474	62

^a Data are for "renewable diesel fuel," which is commonly called "non-ester renewable diesel" and "green diesel," and which is chemically similar to petroleum diesel fuel.

^b Data are for imports only; data for exports are not available.

^c Total vegetable oil and other biomass inputs to the production of renewable diesel fuel.

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

^e Through 2020, production data are from U.S. Environmental Protection Agency. Beginning in 2021, production data are from EIA. See sources at end of section.

^f Stocks are at end of period. Includes renewable diesel fuel stocks at refineries and bulk terminals. Beginning in 2021, also includes renewable diesel fuel stocks at renewable fuel production plants.

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

an increase.

^h Consumption, which is calculated as production plus imports minus stock change, also includes amounts of exports that cannot currently be differentiated from consumption.

NA=Not available. --=No data reported.

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Renewable diesel fuel data in thousand barrels are converted to million gallons by multiplying by 0.042, and are converted to Btu by multiplying by 5.494 million Btu per barrel (the approximate heat content of renewable diesel fuel—see Table A1). • Through 2010, data are not available, or there is incomplete data coverage. Beginning in 2011, data not from 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 2011.

Sources: See end of section.

Table 10.4c Other Biofuels Overview

	Feed-stock ^c	Losses and Co-products ^d	Production ^{a,e}			Trade ^{a,b}		Stocks ^{a,f}	Stock Change ^{a,g}	Consumption ^{a,h}		
						Imports						
			TBtu	TBtu	Mbbl	MMgal	TBtu	Mbbl	Mbbl	Mbbl	Mbbl	MMgal	TBtu
2014 Total	NA	NA	290	12	2	—	7	2	288	12	2	
2015 Total	NA	NA	393	17	2	—	4	-3	^R 396	^R 17	2	
2016 Total	NA	NA	503	21	3	—	43	39	464	20	2	
2017 Total	NA	NA	570	24	3	—	28	-15	585	25	3	
2018 Total	NA	NA	611	26	3	—	54	26	585	25	3	
2019												
January	NA	NA	59	2	(s)	—	56	2	57	2	(s)	
February	NA	NA	66	3	(s)	—	58	2	64	3	(s)	
March	NA	NA	80	3	(s)	—	61	3	77	3	(s)	
April	NA	NA	66	3	(s)	—	44	-17	83	3	(s)	
May	NA	NA	81	3	(s)	—	43	-1	82	3	(s)	
June	NA	NA	48	2	(s)	—	42	-1	49	2	(s)	
July	NA	NA	58	2	(s)	—	44	2	56	2	(s)	
August	NA	NA	34	1	(s)	—	49	5	29	1	(s)	
September	NA	NA	69	3	(s)	—	49	0	69	3	(s)	
October	NA	NA	56	2	(s)	—	40	-9	65	3	(s)	
November	NA	NA	68	3	(s)	—	45	5	63	3	(s)	
December	NA	NA	104	4	1	—	50	5	99	4	1	
Total	NA	NA	791	33	4	—	50	-4	795	33	4	
2020												
January	NA	NA	55	2	(s)	—	45	-5	60	3	(s)	
February	NA	NA	55	2	(s)	—	43	-2	57	2	(s)	
March	NA	NA	75	3	(s)	—	47	4	71	3	(s)	
April	NA	NA	76	3	(s)	—	46	-1	77	3	(s)	
May	NA	NA	56	2	(s)	—	48	2	54	2	(s)	
June	NA	NA	60	3	(s)	—	46	-2	62	3	(s)	
July	NA	NA	98	4	1	—	42	-4	102	4	1	
August	NA	NA	59	2	(s)	—	41	-1	60	3	(s)	
September	NA	NA	73	3	(s)	—	33	-8	81	3	(s)	
October	NA	NA	29	1	(s)	—	30	-3	32	1	(s)	
November	NA	NA	62	3	(s)	—	27	-3	65	3	(s)	
December	NA	NA	62	3	(s)	—	27	0	62	3	(s)	
Total	NA	NA	761	32	4	—	27	-23	784	33	4	
2021												
January ⁱ	NA	NA	^e 181	^e 8	^e 1	—	136	109	72	3	(s)	
February	NA	NA	172	7	1	—	151	15	157	7	1	
March	NA	NA	165	7	1	—	131	-20	185	8	1	
April	NA	NA	140	6	1	—	101	-29	169	7	1	
May	NA	NA	127	5	1	—	119	18	109	5	1	
June	NA	NA	91	4	(s)	—	74	-45	136	6	1	
July	NA	NA	125	5	1	27	89	15	137	6	1	
August	NA	NA	139	6	1	—	85	-5	144	6	1	
8-Month Total	NA	NA	1,139	48	6	27	85	58	1,109	47	6	
2020 8-Month Total	NA	NA	536	23	3	—	41	-9	545	23	3	
2019 8-Month Total	NA	NA	494	21	3	—	49	-5	499	21	3	

^a Data are for renewable heating oil, renewable jet fuel (sustainable aviation fuel), renewable naphtha and gasoline, and other biofuels and biointermediates. Through 2020, also includes small amounts of biobutanol.

^b Data are for imports only; data for exports are not available.

^c Total vegetable oil and other biomass inputs to the production of other biofuels.

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

^e Through 2020, production data are from U.S. Environmental Protection Agency. Beginning in 2021, production data are from EIA. See sources at end of section.

^f Stocks are at end of period. Includes other biofuels stocks at refineries and bulk terminals. Beginning in 2021, also includes other biofuels stocks at renewable fuel production plants.

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

^h Consumption, which is calculated as production plus imports minus stock

change, also includes amounts of exports that cannot currently be differentiated from consumption.

ⁱ There is a discontinuity in the time series between 2020 and 2021. Beginning in 2021, there is expanded coverage of other biofuels due to the incorporation of data from EIA, Form EIA-819, "Monthly Report of Biofuels, Fuels from Non-Biogenic Wastes, Fuel Oxygenates, Isooctane, and Isooctene."

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

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Other biofuels 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 other biofuels—see Table A1).

• Through 2013, data are not available, or there is incomplete data coverage. Beginning in 2014, data not from 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 2014.

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 ⁱ	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
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	64	98	57	19	174	237	5	(s)	328	333	570
2017 Total	65	128	71	22	221	286	5	(s)	486	491	777
2018 Total	65	156	89	24	269	334	5	(s)	576	581	915
2019 January	4	10	6	1	17	20	(s)	(s)	32	32	52
February	4	11	6	2	18	22	(s)	(s)	34	34	56
March	5	15	8	2	26	31	(s)	(s)	52	53	84
April	6	17	9	2	29	35	(s)	(s)	60	60	95
May	7	19	10	3	32	38	1	(s)	63	64	102
June	7	19	10	3	32	39	1	(s)	70	71	110
July	7	20	10	3	33	40	1	(s)	72	72	113
August	7	19	10	3	32	39	1	(s)	69	70	109
September	6	17	9	3	29	35	(s)	(s)	60	61	95
October	5	15	8	2	25	31	(s)	(s)	54	54	85
November	4	12	6	2	20	24	(s)	(s)	38	39	63
December	4	11	6	2	18	22	(s)	(s)	30	31	53
Total	65	186	98	27	311	377	5	1	635	641	1,017
2020 January	4	12	7	2	21	24	(s)	(s)	41	41	66
February	4	14	7	2	23	27	(s)	(s)	50	51	78
March	5	18	10	3	30	36	(s)	(s)	57	58	94
April	6	21	11	3	34	40	1	(s)	72	72	112
May	7	23	12	3	38	45	1	(s)	86	87	132
June	7	23	12	3	38	45	1	(s)	85	86	130
July	7	24	12	3	39	46	1	(s)	92	93	139
August	7	23	12	3	37	44	1	(s)	84	85	129
September	6	20	10	3	33	39	1	(s)	70	70	109
October	5	19	9	3	30	36	(s)	(s)	65	65	101
November	4	15	7	2	25	29	(s)	(s)	52	52	81
December	4	14	7	2	22	26	(s)	(s)	48	48	74
Total	65	226	115	31	372	436	6	1	802	809	1,246
2021 January	4	15	8	2	24	28	(s)	(s)	51	51	79
February	4	16	8	2	26	30	(s)	(s)	57	58	88
March	5	22	11	3	36	42	1	(s)	83	83	125
April	6	25	13	3	41	47	1	(s)	97	97	144
May	7	28	14	3	45	52	1	(s)	110	111	163
June	7	28	14	4	46	52	1	(s)	107	107	160
July	7	29	14	4	46	53	1	(s)	106	107	160
August	7	27	14	3	44	51	1	(s)	105	106	157
8-Month Total	46	190	96	24	309	355	5	1	715	721	1,076
2020 8-Month Total	45	158	81	22	261	307	4	1	568	573	880
2019 8-Month Total	46	131	69	19	219	265	4	1	452	456	721

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

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

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

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

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

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

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

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

end of Section 7.

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

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

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

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

Notes: • Distributed (small-scale) solar energy data for all years, and utility-scale solar energy data for the current two years, are estimates. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> (Excel and CSV files) for all available annual and monthly data beginning in 1984.

Sources: See end of section.

Table 10.6 Solar Electricity Net Generation
(Million Kilowatthours)

	Distributed ^a Solar Generation ^b				Utility-Scale ^c Solar Generation ^b				Total
	Residential Sector	Commercial Sector	Industrial Sector	Total	Commercial Sector ^d	Industrial Sector ^e	Electric Power Sector ^f	Total	
1985 Total	NA	NA	NA	NA	NA	NA	11	11	11
1990 Total	12	18	4	33	—	—	367	367	400
1995 Total	20	30	7	58	—	—	497	497	554
2000 Total	39	59	13	110	—	—	493	493	604
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 Total	13,942	7,685	2,364	23,990	521	42	52,724	53,287	77,277
2018 Total	17,105	9,798	2,636	29,539	525	47	63,253	63,825	93,365
2019 January	1,107	629	168	1,903	30	4	3,546	3,580	5,483
February	1,205	676	178	2,059	34	5	3,798	3,836	5,895
March	1,727	933	254	2,914	50	7	5,841	5,899	8,813
April	1,935	1,032	278	3,245	54	8	6,690	6,752	9,997
May	2,130	1,110	309	3,549	58	9	7,095	7,162	10,711
June	2,175	1,118	311	3,604	63	10	7,898	7,971	11,575
July	2,268	1,171	321	3,760	69	10	8,053	8,133	11,893
August	2,184	1,116	311	3,611	64	9	7,803	7,877	11,488
September	1,930	994	281	3,205	55	8	6,754	6,817	10,022
October	1,697	881	255	2,833	46	7	6,040	6,093	8,926
November	1,346	683	198	2,228	36	5	4,323	4,364	6,592
December	1,210	657	179	2,047	26	4	3,423	3,453	5,500
Total	20,914	11,002	3,041	34,957	587	85	71,265	71,937	106,894
2020 January	1,385	736	192	2,313	36	5	4,615	4,657	6,970
February	1,578	834	212	2,624	43	7	5,657	5,706	8,330
March	2,050	1,082	292	3,424	52	8	6,436	6,496	9,920
April	2,311	1,189	316	3,817	64	10	8,052	8,126	11,943
May	2,611	1,309	349	4,269	74	14	9,679	9,767	14,035
June	2,611	1,305	354	4,270	72	13	9,555	9,641	13,911
July	2,681	1,356	370	4,407	78	14	10,386	10,478	14,885
August	2,541	1,302	358	4,201	68	12	9,428	9,508	13,708
September	2,243	1,159	322	3,724	56	11	7,824	7,891	11,615
October	2,089	1,018	291	3,399	52	10	7,284	7,346	10,744
November	1,731	809	226	2,767	42	8	5,845	5,895	8,662
December	1,538	783	204	2,526	36	7	5,338	5,381	7,907
Total	25,370	12,884	3,486	41,740	673	121	90,097	90,891	132,631
2021 January	1,671	861	216	2,749	35	8	5,689	5,732	8,481
February	1,774	935	231	2,939	41	8	6,452	6,502	9,441
March	2,492	1,273	327	4,092	63	13	9,267	9,342	13,435
April	2,824	1,413	356	4,593	71	14	10,837	10,923	15,516
May	3,123	1,540	392	5,055	80	16	12,370	12,467	17,522
June	3,173	1,555	394	5,122	73	16	11,974	12,063	17,185
July	3,209	1,606	404	5,220	72	15	11,890	11,978	17,197
August	3,019	1,545	392	4,956	74	17	11,830	11,921	16,877
8-Month Total	21,286	10,727	2,713	34,726	510	107	80,311	80,928	115,654
2020 8-Month Total	17,769	9,114	2,442	29,325	487	83	63,807	64,378	93,703
2019 8-Month Total	14,731	7,786	2,128	24,646	423	61	50,724	51,209	75,855

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

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

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

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

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

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

NA=Not available. —=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, renewable diesel fuel, and other biofuels 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, and the production of renewable diesel fuel and other biofuels. 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 2019 forward, the annual estimates are assumed by EIA to be equal to that of 2018). 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 10.4a.

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 10.4a. Transportation sector biodiesel consumption is assumed to equal total biodiesel consumption.

Transportation Sector, Other Biomass

2011–2013: Transportation sector other biomass consumption is equal to renewable diesel fuel consumption from Table 10.4b.

2014 forward: Transportation sector other biomass consumption is the sum of renewable diesel fuel consumption from Table 10.4b and other biofuels consumption from Table 10.4c.

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, renewable diesel fuel, and other biofuels.

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).

2009–2020: 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.

2021: 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."

2009–2020: EIA, PSA, annual reports, Table 1, data for net production of fuel ethanol at renewable fuels and oxygenate plants.

2021: EIA, PSM, monthly reports, Table 1, data for net production of fuel ethanol at renewable fuels and oxygenate plants.

Trade, Stocks, and Stock Change

1992–2020: EIA, PSA, annual reports, Table 1.

2021: 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).

2009–2020: EIA, PSA, annual reports, Table 1. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments.

2021: 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 10.4a 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.

2011–2020: EIA, *Petroleum Supply Annual (PSA)*, annual reports, Table 1, data for renewable fuels except fuel ethanol.

2021: EIA, Form EIA-819, "Monthly Report of Biofuels, Fuels from Non-Biogenic Wastes, Fuel Oxygenates, Isooctane, and Isooctene," data for biodiesel.

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 and 2020: EIA, PSA, annual report, Tables 25 and 31, data for biodiesel.

2021: EIA, PSM, monthly reports, Tables 37 and 49, data for biodiesel.

Biodiesel Stocks and Stock Change

2009–2018: EIA, Form EIA-22M, "Monthly Biodiesel Production Survey," data for biodiesel; and Form EIA-810, "Monthly Refinery Report," Form EIA-812, "Monthly Product Pipeline Report," and Form EIA-815, "Monthly Bulk Terminal and Blender Report," data for "biomass-based diesel fuel."

2019–September 2020: EIA, Form EIA-22M, "Monthly Biodiesel Production Survey," Form EIA-810, "Monthly Refinery Report," and Form EIA-815, "Monthly Bulk Terminal and Blender Report," data for biodiesel.

October 2020 forward: EIA, Form EIA-810, "Monthly Refinery Report," Form EIA-815, "Monthly Bulk Terminal and Blender Report," and Form EIA-819, "Monthly Report of Biofuels, Fuels from Non-Biogenic Wastes, Fuel Oxygenates, Isooctane, and Isooctene," data for biodiesel.

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.

Table 10.4b Sources

Renewable Diesel Fuel Production

2011–2020: U.S. Environmental Protection Agency, "RINs Generated Transactions—Generation Summary Report," updated on September 10, 2021. Data are for volumes (in gallons); for "domestic" producer type; for fuel "non-ester renewable diesel."

2021: EIA, Form EIA-819, "Monthly Report of Biofuels, Fuels from Non-Biogenic Wastes, Fuel Oxygenates, Isooctane, and Isooctene," data for renewable diesel fuel.

Renewable Diesel Fuel Trade (Imports)

2012–2020: EIA, PSA, annual reports, Table 25, data for "other renewable diesel fuel."

2021: EIA, PSM, monthly reports, Table 37, data for "other renewable diesel fuel."

Renewable Diesel Fuel Stocks and Stock Change

2011–2020: EIA, Form EIA-810, "Monthly Refinery Report," and Form EIA-815, "Monthly Bulk Terminal and Blender Report," data for "other renewable diesel fuel."

2021: EIA, Form EIA-810, "Monthly Refinery Report," Form EIA-815, "Monthly Bulk Terminal and Blender Report," and Form EIA-819, "Monthly Report of Biofuels, Fuels from Non-Biogenic Wastes, Fuel Oxygenates, Isooctane, and Isooctene," data for renewable diesel fuel.

Renewable Diesel Fuel Consumption

2011 forward: Calculated as renewable diesel fuel production plus renewable diesel fuel imports minus renewable diesel fuel stock change.

Table 10.4c Sources

Other Biofuels Production

2011–2020: U.S. Environmental Protection Agency, "RINs Generated Transactions—Generation Summary Report," updated on September 10, 2021. Data are for volumes (in gallons); for "domestic" producer type; for fuels "renewable

heating oil," "renewable jet fuel," "naphtha," "LPG," "butanol," "cellulosic diesel," and "cellulosic renewable gasoline blendstock."

2021: EIA, Form EIA-819, "Monthly Report of Biofuels, Fuels from Non-Biogenic Wastes, Fuel Oxygenates, Isooctane, and Isooctene." Data are for renewable heating oil, renewable jet fuel, renewable naphtha and gasoline, and "other renewable fuels and intermediate products."

Other Biofuels Trade (Imports)

2012–2020: EIA, PSA, annual reports, Table 25, data for "other renewable fuels."

2021: EIA, PSM, monthly reports, Table 37, data for "other renewable fuels."

Other Biofuels Stocks and Stock Change

2011–2020: EIA, Form EIA-810, "Monthly Refinery Report," and Form EIA-815, "Monthly Bulk Terminal and Blender Report," data for "other renewable fuels."

2021: EIA, Form EIA-810, "Monthly Refinery Report," and Form EIA-815, "Monthly Bulk Terminal and Blender Report," data for "other renewable fuels and intermediate products"; and Form EIA-819, "Monthly Report of Biofuels, Fuels from Non-Biogenic Wastes, Fuel Oxygenates, Isooctane, and Isooctene," data for renewable heating oil, renewable jet fuel, renewable naphtha and gasoline, and "other renewable fuels and intermediate products."

Other Biofuels Consumption

2014 forward: Calculated as other biofuels production plus other biofuels imports minus other biofuels stock change.

Table 10.5 Sources

Distributed Solar Energy Consumption: Heat

Annual Data

1989–2009: Annual estimates by the U.S. Energy Information Administration (EIA) based on EIA, Form EIA-63A, "Annual Solar Thermal Collector/Reflector Shipments Report." Solar energy consumption by solar thermal non-electric applications (mainly in the residential sector, but with some in the commercial and industrial sectors) is based on assumptions about the stock of equipment in place and other factors.

2010 forward: Annual estimates based on commercial sector solar thermal growth rates from EIA's *Annual Energy Outlook* (AEO) data system. (Annual estimates are subject to revision when a new AEO is released.)

Monthly Data

1989–2013: Monthly estimates for each year are obtained by allocating a given year's annual value to the months in that year. Each month's allocator is the average of that month's "Distributed Solar Energy Consumption: Electricity, Total" values in 2014 and 2015. The allocators, when rounded, are as follows: January—5%; February—6%; March—8%;

April—9%; May—10%; June—10%; July—10%; August—10%; September—9%; October—9%; November—7%; and December—7%.

2014 forward: 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.

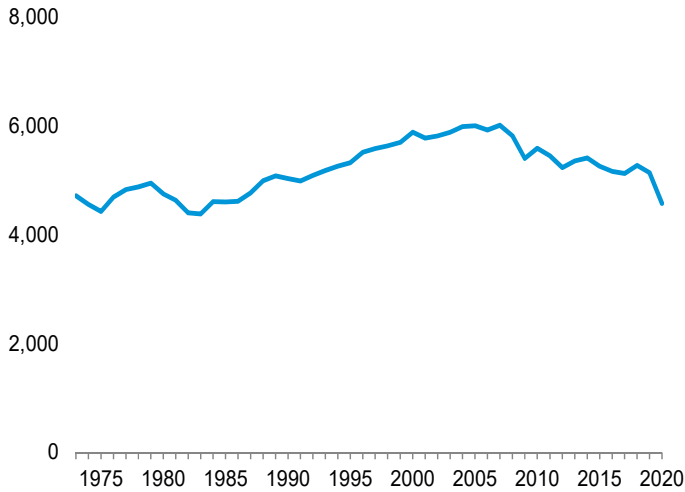
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11. Environment

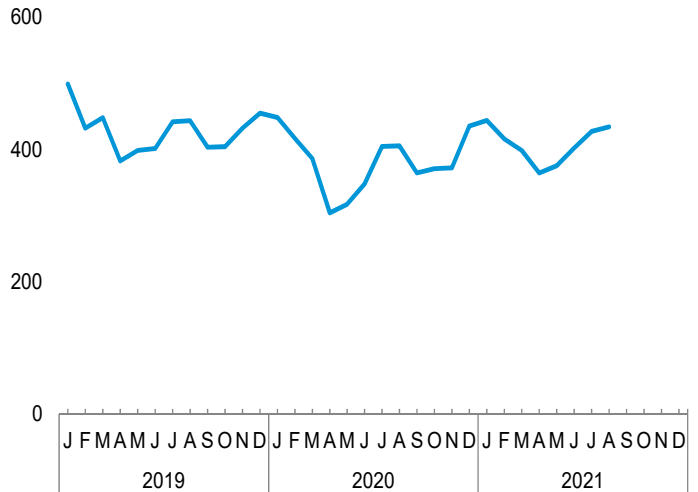
Figure 11.1 Carbon Dioxide Emissions From Energy Consumption by Source

(Million Metric Tons of Carbon Dioxide)

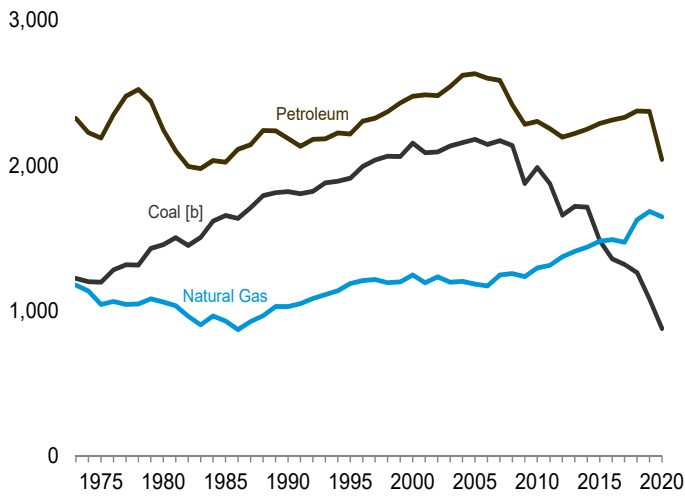
Total [a], 1973–2020



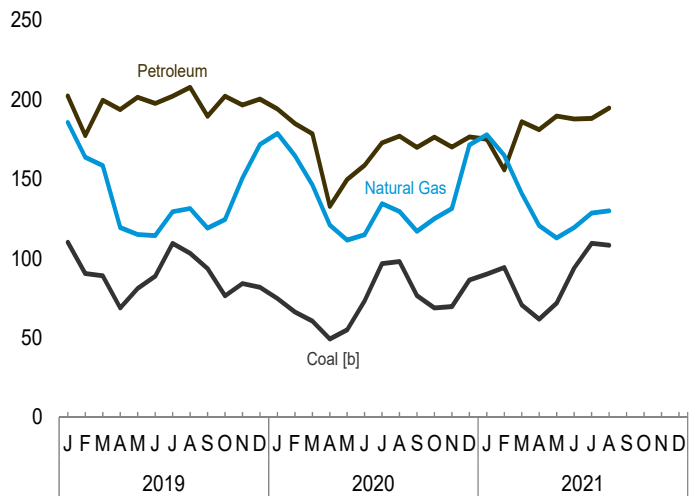
Total [a], Monthly



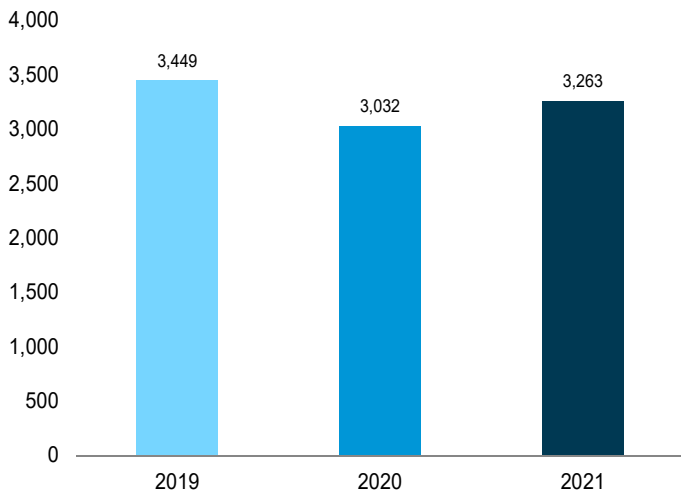
By Major Source, 1973–2020



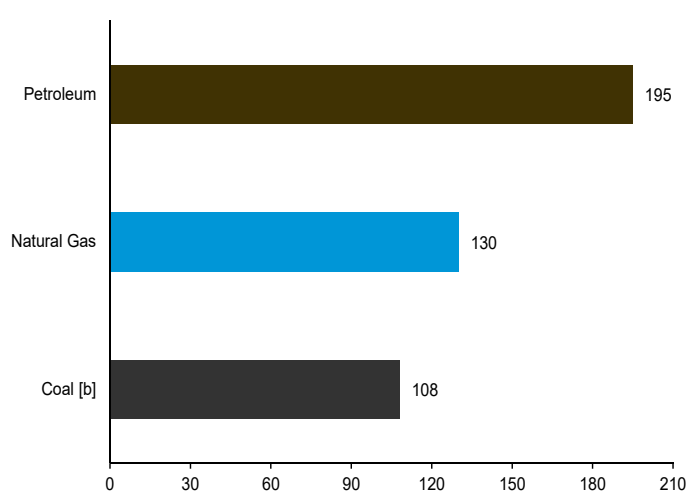
By Major Source, Monthly



Total [a], January–August



By Major Source, August 2021



[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	1,221	1,175	6	485	80	154	33	13	911	55	486	102	2,325	4,721
1975 Total	1,195	1,043	5	447	73	146	24	11	911	52	424	97	2,190	4,428
1980 Total	1,454	1,058	4	451	78	156	24	13	901	50	433	134	2,244	4,756
1985 Total	1,655	927	3	450	82	178	17	12	933	56	207	86	2,024	4,605
1990 Total	1,820	1,026	3	475	75	223	6	13	988	72	212	119	2,185	5,038
1995 Total	1,912	1,185	3	504	90	222	8	13	1,042	77	147	111	2,216	5,324
2000 Total	2,155	1,246	3	592	106	259	10	14	1,141	85	157	111	2,277	5,889
2005 Total	2,180	1,182	2	653	92	251	11	12	1,205	110	159	140	2,633	6,007
2006 Total	2,146	1,170	2	658	86	244	8	11	1,217	106	119	151	2,602	5,929
2007 Total	2,171	1,245	2	657	90	242	5	12	1,209	99	125	147	2,587	6,016
2008 Total	2,139	1,255	2	619	89	231	2	11	1,134	94	107	130	2,418	5,823
2009 Total	1,875	1,233	2	563	86	208	3	10	1,127	87	88	111	2,283	5,404
2010 Total	1,986	1,292	2	591	84	214	3	11	1,107	81	92	119	2,304	5,594
2011 Total	1,876	1,312	2	600	79	213	2	10	1,074	78	79	118	2,255	5,455
2012 Total	1,658	1,372	2	577	75	210	1	9	1,066	78	64	114	2,195	5,236
2013 Total	1,718	1,408	2	581	85	214	1	10	1,077	77	55	120	2,221	5,359
2014 Total	1,713	1,438	2	614	86	220	1	10	1,085	77	44	112	2,251	5,414
2015 Total	1,482	1,479	1	606	86	231	1	11	1,114	77	45	116	2,290	5,262
2016 Total	1,355	1,490	1	583	83	242	1	11	1,134	77	56	124	2,313	5,169
2017 Total	1,318	1,471	1	591	85	251	1	10	1,131	71	59	130	2,331	5,131
2018 Total	1,263	1,626	2	626	98	255	1	10	1,131	73	55	127	2,377	5,277
2019 January	110	186	(s)	56	13	21	(s)	1	91	6	5	11	202	499
February	90	164	(s)	50	11	18	(s)	1	84	2	4	7	177	432
March	89	159	(s)	54	10	22	(s)	1	95	6	3	10	200	448
April	69	119	(s)	51	7	22	(s)	1	94	4	3	12	194	383
May	81	115	(s)	53	7	23	(s)	1	98	6	3	12	202	399
June	89	114	(s)	49	7	22	(s)	1	97	7	5	10	198	402
July	110	129	(s)	50	7	23	(s)	1	98	8	5	10	202	442
August	103	131	(s)	52	7	23	(s)	1	102	6	5	12	208	444
September	94	119	(s)	49	7	21	(s)	1	92	5	4	11	190	403
October	76	125	(s)	54	9	22	(s)	1	96	4	5	12	202	404
November	84	151	(s)	53	10	21	(s)	1	91	6	3	11	197	432
December	82	172	(s)	50	11	23	(s)	1	92	7	4	12	200	455
Total	1,078	1,684	2	621	105	261	1	9	1,128	67	47	131	2,372	5,144
2020 January	75	179	(s)	52	11	21	(s)	1	90	5	3	11	194	449
February	66	165	(s)	49	9	19	(s)	1	87	5	3	12	185	417
March	60	146	(s)	51	10	18	(s)	1	80	5	1	13	179	386
April	49	121	(s)	44	7	8	(s)	1	59	3	1	10	133	304
May	55	111	(s)	44	7	8	(s)	1	74	4	1	11	150	317
June	73	115	(s)	43	6	10	(s)	1	82	4	3	10	159	348
July	97	134	(s)	46	7	12	(s)	1	87	5	5	10	173	405
August	98	130	(s)	47	7	13	(s)	1	88	7	4	10	177	406
September	77	117	(s)	47	8	11	(s)	1	85	6	5	8	170	365
October	69	125	(s)	52	9	13	(s)	1	86	4	4	8	176	371
November	70	131	(s)	48	10	14	(s)	1	79	6	3	9	170	372
December	86	172	(s)	50	13	15	(s)	1	80	5	3	10	177	435
Total	875	1,647	1	572	104	161	1	8	977	58	36	123	2,042	4,575
2021 January	90	178	(s)	52	13	14	(s)	1	79	5	4	8	175	444
February	94	165	(s)	47	10	13	(s)	1	72	3	3	7	156	416
March	71	141	(s)	53	10	15	(s)	1	88	4	4	11	186	399
April	62	121	(s)	50	8	16	(s)	1	88	4	2	12	181	365
May	72	113	(s)	51	8	17	(s)	1	94	6	4	10	190	376
June	94	119	(s)	50	8	18	(s)	1	92	6	5	9	188	402
July	110	129	(s)	48	7	19	(s)	1	96	4	5	9	188	427
August	108	130	(s)	51	8	20	(s)	1	94	7	5	10	195	434
8-Month Total	701	1,096	1	400	72	130	1	6	702	39	32	76	1,459	3,263
2020 8-Month Total	574	1,101	1	376	64	109	1	5	647	38	22	87	1,349	3,032
2019 8-Month Total	741	1,118	1	415	68	174	1	6	757	45	31	85	1,583	3,449

^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.

(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.

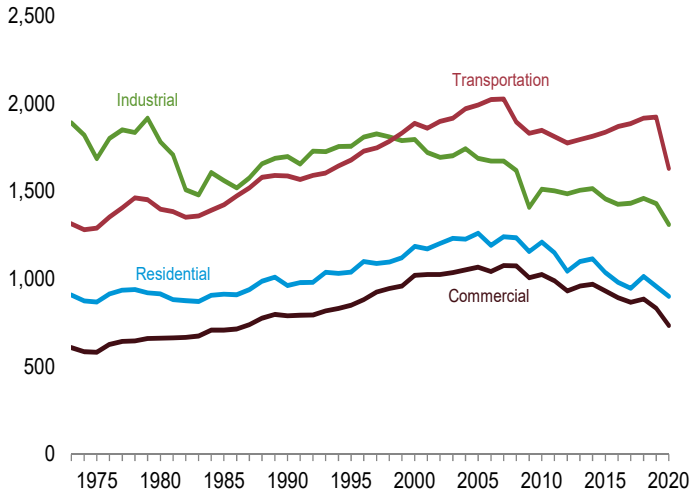
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#environment> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

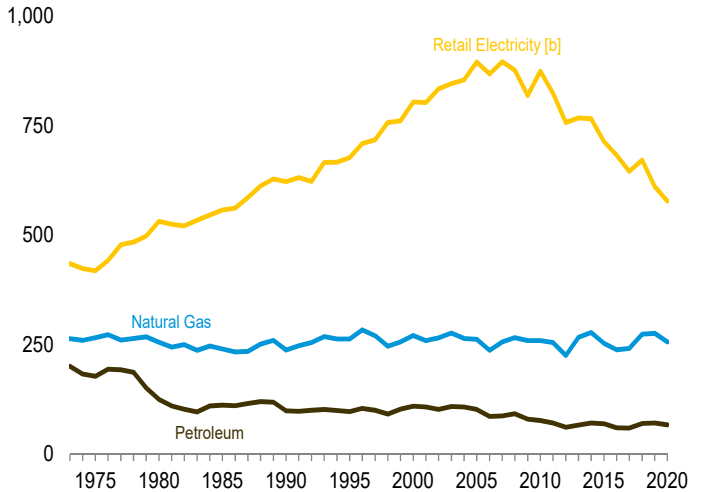
Figure 11.2 Carbon Dioxide Emissions From Energy Consumption by Sector

(Million Metric Tons of Carbon Dioxide)

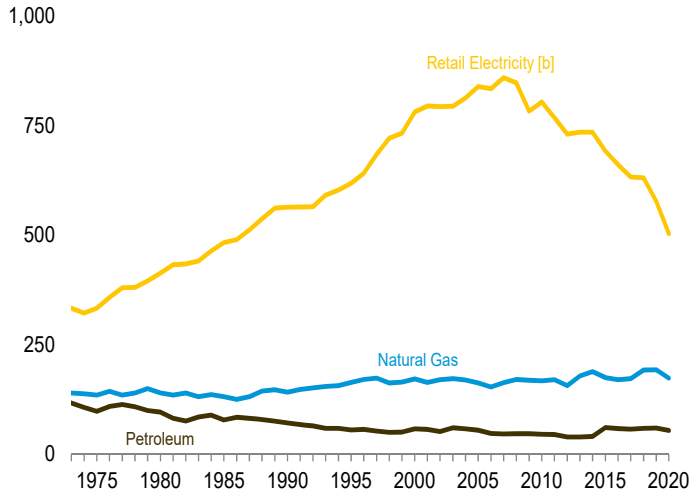
Total [a] by End-Use Sector [b], 1973–2020



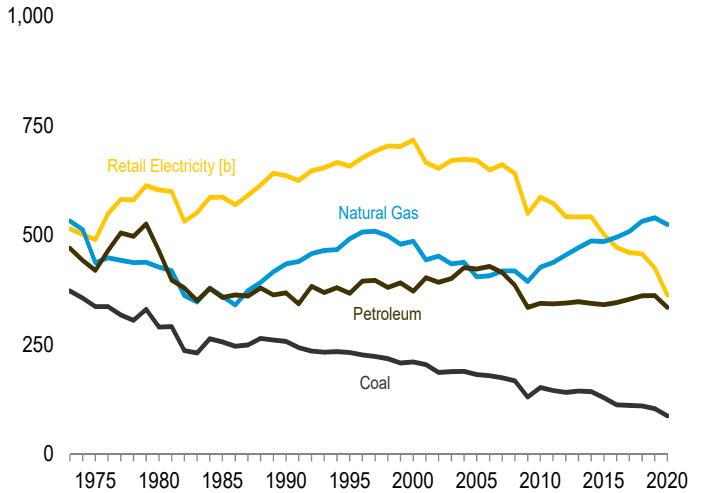
Residential Sector by Major Source, 1973–2020



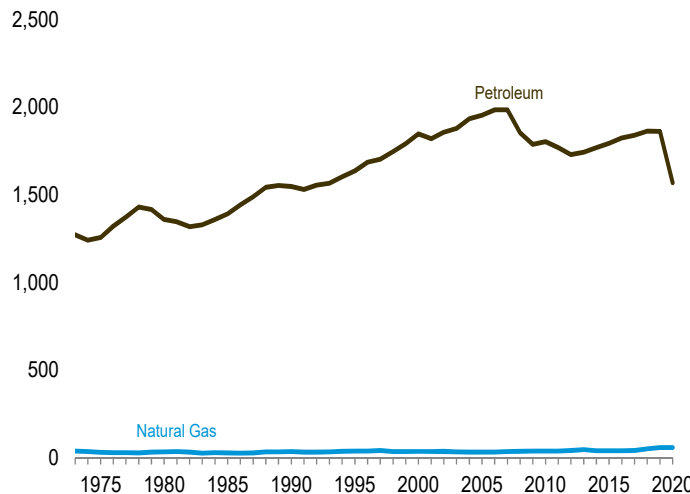
Commercial Sector by Major Source, 1973–2020



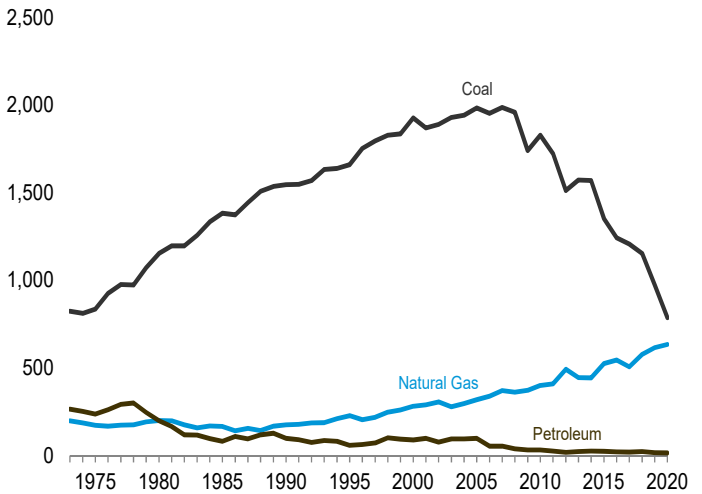
Industrial Sector by Major Source, 1973–2020



Transportation Sector by Major Source, 1973–2020



Electric Power Sector by Major Source, 1973–2020



[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	148	36	17	201	435	908
1975 Total	6	266	134	32	12	178	419	869
1980 Total	3	256	97	20	8	125	531	915
1985 Total	4	240	81	20	12	112	557	913
1990 Total	3	238	72	22	5	99	622	962
1995 Total	2	263	67	25	5	97	677	1,039
2000 Total	1	271	68	35	7	109	804	1,185
2005 Total	1	262	64	32	6	102	895	1,260
2006 Total	1	237	53	28	5	86	868	1,191
2007 Total	1	256	54	30	3	87	896	1,240
2008 Total	NA	266	56	35	2	92	877	1,234
2009 Total	NA	259	43	34	2	80	818	1,157
2010 Total	NA	259	42	33	2	77	874	1,210
2011 Total	NA	255	39	31	1	71	823	1,149
2012 Total	NA	225	36	25	1	61	757	1,043
2013 Total	NA	266	36	29	1	66	767	1,100
2014 Total	NA	278	40	31	1	71	766	1,115
2015 Total	NA	253	41	28	1	70	714	1,037
2016 Total	NA	238	32	27	1	60	683	981
2017 Total	NA	241	32	27	1	60	645	946
2018 Total	NA	274	38	32	1	70	671	1,015
2019 January	NA	52	5	6	(s)	11	61	124
February	NA	44	4	5	(s)	9	50	103
March	NA	38	4	4	(s)	8	47	93
April	NA	18	2	3	(s)	5	34	57
May	NA	12	2	2	(s)	4	41	56
June	NA	7	2	1	(s)	3	51	61
July	NA	6	2	1	(s)	3	70	79
August	NA	6	2	1	(s)	3	67	76
September	NA	6	1	1	(s)	3	57	65
October	NA	13	2	2	(s)	4	42	60
November	NA	32	4	4	(s)	8	44	85
December	NA	41	5	5	(s)	10	49	100
Total	NA	276	35	35	1	71	611	958
2020 January	NA	45	4	5	(s)	10	48	103
February	NA	40	3	5	(s)	8	42	90
March	NA	29	3	4	(s)	7	37	73
April	NA	21	3	3	(s)	6	33	59
May	NA	13	3	2	(s)	5	37	56
June	NA	7	2	1	(s)	3	52	63
July	NA	6	1	1	(s)	2	75	83
August	NA	6	1	1	(s)	2	71	80
September	NA	7	2	1	(s)	3	52	62
October	NA	13	2	2	(s)	5	41	60
November	NA	24	3	3	(s)	6	39	69
December	NA	44	4	5	(s)	9	54	106
Total	NA	256	32	34	1	67	578	901
2021 January	NA	48	3	6	(s)	9	56	113
February	NA	47	3	5	(s)	9	56	113
March	NA	31	3	4	(s)	7	41	79
April	NA	19	2	3	(s)	5	34	57
May	NA	12	2	2	(s)	3	39	54
June	NA	7	1	1	(s)	2	58	68
July	NA	6	1	1	(s)	2	71	79
August	NA	6	1	1	(s)	2	72	80
8-Month Total	NA	176	16	22	(s)	39	428	643
2020 8-Month Total	NA	168	22	21	1	44	395	607
2019 8-Month Total	NA	183	23	23	(s)	46	421	650

^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.

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			Total
1973 Total	15	140	48	9	5	6	NA	50	118	334	607
1975 Total	14	136	43	8	4	6	NA	37	98	334	582
1980 Total	11	141	38	6	3	8	NA	42	97	414	662
1985 Total	13	132	47	6	2	7	NA	17	79	484	708
1990 Total	12	142	40	6	1	8	0	17	72	564	790
1995 Total	11	164	35	7	2	1	(s)	11	56	619	850
2000 Total	9	172	37	9	2	3	(s)	7	58	781	1,021
2005 Total	9	163	33	8	2	3	(s)	9	55	840	1,067
2006 Total	6	154	30	8	1	3	(s)	6	48	834	1,042
2007 Total	7	164	28	8	1	4	(s)	6	46	860	1,077
2008 Total	8	171	29	10	(s)	3	(s)	5	47	848	1,074
2009 Total	7	169	29	9	(s)	3	(s)	5	47	784	1,007
2010 Total	7	168	29	9	(s)	3	(s)	5	46	804	1,025
2011 Total	6	171	29	9	(s)	3	(s)	4	45	768	990
2012 Total	4	157	26	9	(s)	3	(s)	2	40	731	932
2013 Total	4	179	25	10	(s)	3	(s)	2	40	736	958
2014 Total	4	189	26	10	(s)	4	(s)	1	41	736	970
2015 Total	3	175	27	9	(s)	25	(s)	(s)	61	692	932
2016 Total	2	171	24	9	(s)	25	(s)	(s)	59	661	893
2017 Total	2	173	24	10	(s)	24	(s)	(s)	58	633	866
2018 Total	2	193	24	11	(s)	24	(s)	(s)	59	631	885
2019											
January	(s)	30	4	2	(s)	2	(s)	(s)	7	51	89
February	(s)	26	3	1	(s)	2	(s)	(s)	6	44	76
March	(s)	23	3	1	(s)	2	(s)	(s)	6	45	74
April	(s)	14	2	1	(s)	2	(s)	(s)	5	38	57
May	(s)	10	1	1	(s)	2	0	(s)	4	45	60
June	(s)	8	1	1	(s)	2	0	(s)	4	49	61
July	(s)	8	1	1	(s)	2	0	(s)	4	60	72
August	(s)	8	2	1	(s)	2	0	(s)	4	59	71
September	(s)	8	1	1	(s)	2	0	(s)	3	53	64
October	(s)	12	1	1	(s)	2	0	(s)	4	45	61
November	(s)	21	3	1	(s)	2	0	(s)	6	44	72
December	(s)	25	3	1	(s)	2	(s)	(s)	7	44	76
Total	2	193	24	11	(s)	24	(s)	(s)	60	577	832
2020											
January	(s)	27	3	1	(s)	2	(s)	(s)	6	42	75
February	(s)	25	2	1	(s)	2	(s)	(s)	6	38	68
March	(s)	19	2	1	(s)	2	0	(s)	5	37	61
April	(s)	13	2	1	(s)	1	0	(s)	4	30	48
May	(s)	9	2	1	(s)	2	0	(s)	5	33	47
June	(s)	7	1	1	(s)	2	0	(s)	4	43	54
July	(s)	7	1	1	(s)	2	0	(s)	3	56	67
August	(s)	7	1	1	(s)	2	0	(s)	3	55	65
September	(s)	8	1	1	(s)	2	0	(s)	4	45	57
October	(s)	11	2	1	(s)	2	0	(s)	4	42	58
November	(s)	16	2	1	(s)	2	0	(s)	5	38	59
December	(s)	25	2	1	(s)	2	0	(s)	6	43	74
Total	1	174	22	11	(s)	21	(s)	(s)	55	504	734
2021											
January	(s)	27	2	2	(s)	2	0	(s)	5	43	75
February	(s)	27	2	1	(s)	2	(s)	(s)	5	44	76
March	(s)	19	2	1	(s)	2	(s)	(s)	5	37	61
April	(s)	13	1	1	(s)	2	0	(s)	4	35	53
May	(s)	10	1	1	(s)	2	0	(s)	4	40	54
June	(s)	8	1	1	(s)	2	0	(s)	3	52	63
July	(s)	8	1	1	(s)	2	0	(s)	3	59	70
August	(s)	8	1	1	(s)	2	0	(s)	3	59	70
8-Month Total	1	120	11	7	(s)	15	(s)	(s)	34	368	523
2020 8-Month Total	1	114	15	7	(s)	14	(s)	(s)	36	334	485
2019 8-Month Total	1	127	16	7	(s)	16	(s)	(s)	40	391	559

^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.

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	373	-1	533	107	31	11	7	18	54	139	102	471	515	1,891
1975 Total	338	2	437	98	30	9	6	16	52	113	97	420	490	1,686
1980 Total	291	-4	427	97	52	13	7	11	50	101	134	465	604	1,782
1985 Total	257	-2	361	82	54	3	6	16	55	56	86	358	587	1,561
1990 Total	258	1	435	85	45	1	7	13	69	31	119	369	636	1,699
1995 Total	232	7	492	83	57	1	7	14	69	25	111	368	658	1,757
2000 Total	211	7	486	89	61	1	7	11	75	18	111	373	717	1,795
2005 Total	182	5	405	94	49	3	6	25	86	21	140	423	671	1,687
2006 Total	180	7	407	93	48	2	6	26	85	18	151	430	649	1,673
2007 Total	175	3	419	93	50	1	6	21	83	14	147	415	661	1,672
2008 Total	168	5	419	99	41	(s)	6	17	79	15	130	386	641	1,619
2009 Total	131	-3	395	79	41	(s)	5	16	73	10	111	335	550	1,408
2010 Total	152	-1	428	85	42	1	5	17	67	9	119	345	587	1,511
2011 Total	146	1	438	91	38	(s)	5	17	64	10	118	343	574	1,502
2012 Total	142	(s)	455	94	42	(s)	4	17	69	5	114	345	543	1,485
2013 Total	145	-2	472	94	46	(s)	5	17	64	4	120	349	542	1,505
2014 Total	144	-2	487	101	45	(s)	5	14	65	3	112	345	543	1,516
2015 Total	129	-2	486	87	48	(s)	5	17	66	2	116	342	502	1,457
2016 Total	113	-2	496	86	46	(s)	5	17	65	4	124	347	472	1,426
2017 Total	112	-3	509	89	48	(s)	5	17	61	4	130	354	461	1,432
2018 Total	111	-3	532	93	54	(s)	5	18	62	3	127	362	457	1,459
2019														
January	9	(s)	50	10	5	(s)	(s)	1	5	(s)	11	34	38	130
February	9	(s)	45	9	4	(s)	(s)	1	1	(s)	7	24	33	110
March	9	(s)	47	9	4	(s)	(s)	1	5	(s)	10	30	34	120
April	8	(s)	43	8	4	(s)	(s)	1	4	(s)	12	29	30	111
May	9	(s)	44	8	4	(s)	(s)	2	5	(s)	12	32	34	118
June	9	(s)	41	6	5	(s)	(s)	1	7	(s)	10	30	36	116
July	9	(s)	42	6	5	(s)	(s)	2	7	(s)	10	30	42	122
August	9	(s)	44	6	5	(s)	(s)	2	6	(s)	12	31	41	124
September	8	(s)	42	7	5	(s)	(s)	1	4	(s)	11	29	37	117
October	9	(s)	44	9	5	(s)	(s)	1	4	(s)	12	32	33	118
November	8	(s)	47	7	5	(s)	(s)	1	6	(s)	11	31	34	121
December	9	(s)	50	5	5	(s)	(s)	1	6	(s)	12	30	32	121
Total	105	-2	540	89	58	(s)	4	18	60	3	131	363	425	1,430
2020														
January	8	(s)	49	10	4	(s)	(s)	1	4	(s)	11	32	30	119
February	8	(s)	46	10	3	(s)	(s)	1	1	(s)	12	32	28	114
March	8	(s)	46	9	5	(s)	(s)	1	4	(s)	13	33	28	114
April	7	(s)	41	4	3	(s)	(s)	1	3	(s)	10	21	23	93
May	6	(s)	40	3	4	(s)	(s)	1	4	(s)	11	24	25	96
June	7	(s)	39	4	5	(s)	(s)	1	3	(s)	10	23	30	99
July	7	(s)	41	5	5	(s)	(s)	1	4	(s)	10	26	36	110
August	7	(s)	42	6	5	(s)	(s)	1	6	(s)	10	29	37	115
September	7	(s)	42	7	6	(s)	(s)	1	5	(s)	8	28	31	107
October	8	(s)	44	9	6	(s)	(s)	1	4	(s)	8	28	31	111
November	8	(s)	45	8	6	(s)	(s)	1	5	(s)	9	30	29	111
December	8	(s)	49	8	6	(s)	(s)	1	4	(s)	10	30	32	119
Total	88	-1	525	83	59	(s)	4	15	50	2	123	335	363	1,310
2021														
January	8	(s)	49	11	6	(s)	(s)	1	4	(s)	8	30	32	120
February	8	(s)	42	8	3	(s)	(s)	1	2	(s)	7	22	32	104
March	8	(s)	45	10	5	(s)	(s)	1	4	(s)	11	32	27	112
April	8	(s)	43	9	5	(s)	(s)	1	4	(s)	12	31	28	110
May	8	(s)	43	8	6	(s)	(s)	1	5	(s)	10	31	32	113
June	8	-1	41	8	6	(s)	(s)	1	6	(s)	9	31	37	117
July	8	(s)	43	6	6	(s)	(s)	1	3	(s)	9	26	41	118
August	7	-1	43	8	7	(s)	(s)	1	6	(s)	10	32	41	123
8-Month Total	64	-3	350	67	42	(s)	3	11	34	2	76	235	272	917
2020 8-Month Total	58	-1	345	51	35	(s)	3	10	32	1	87	219	238	860
2019 8-Month Total	70	-1	357	61	38	(s)	3	12	39	2	85	239	287	952

^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.

(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 Electricity ^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	164	3	152	6	887	55	1,272	2	1,314
1975 Total	(s)	32	5	157	3	144	6	889	53	1,257	2	1,291
1980 Total	(h)	34	4	207	1	155	6	882	105	1,361	2	1,397
1985 Total	(h)	28	3	234	2	178	6	910	59	1,393	3	1,423
1990 Total	(h)	36	3	271	1	223	7	967	76	1,548	3	1,587
1995 Total	(h)	38	3	310	1	222	6	1,026	68	1,637	3	1,679
2000 Total	(h)	36	3	386	1	259	7	1,128	67	1,848	4	1,888
2005 Total	(h)	33	2	453	2	251	6	1,177	63	1,954	5	1,992
2006 Total	(h)	33	2	476	2	244	5	1,188	68	1,985	5	2,023
2007 Total	(h)	35	2	476	1	242	6	1,184	75	1,986	5	2,026
2008 Total	(h)	37	2	430	3	231	5	1,114	70	1,854	5	1,896
2009 Total	(h)	38	2	406	2	208	5	1,107	59	1,789	5	1,832
2010 Total	(h)	38	2	429	(s)	214	6	1,086	67	1,804	5	1,847
2011 Total	(h)	39	2	436	(s)	213	5	1,054	58	1,769	4	1,813
2012 Total	(h)	41	2	417	(s)	210	5	1,047	50	1,730	4	1,776
2013 Total	(h)	47	2	421	(s)	214	5	1,057	44	1,744	4	1,795
2014 Total	(h)	40	2	441	(s)	220	6	1,067	34	1,769	4	1,814
2015 Total	(h)	39	1	447	(s)	231	6	1,073	35	1,794	4	1,837
2016 Total	(h)	40	1	437	(s)	242	6	1,092	47	1,826	4	1,869
2017 Total	(h)	42	1	442	(s)	251	5	1,090	50	1,841	4	1,886
2018 Total	(h)	51	2	466	(s)	255	5	1,090	45	1,863	4	1,918
2019 January	(h)	7	(s)	37	(s)	21	(s)	87	4	149	(s)	156
February	(h)	6	(s)	34	(s)	18	(s)	81	3	137	(s)	143
March	(h)	6	(s)	38	(s)	22	(s)	91	3	155	(s)	160
April	(h)	4	(s)	39	(s)	22	1	90	2	154	(s)	158
May	(h)	4	(s)	41	(s)	23	(s)	94	2	160	(s)	165
June	(h)	4	(s)	40	(s)	22	(s)	93	4	160	(s)	164
July	(h)	5	(s)	42	(s)	23	(s)	94	4	164	(s)	169
August	(h)	5	(s)	42	(s)	23	(s)	98	4	168	(s)	172
September	(h)	4	(s)	39	(s)	21	(s)	88	4	153	(s)	157
October	(h)	4	(s)	42	(s)	22	(s)	92	4	160	(s)	165
November	(h)	5	(s)	38	(s)	21	(s)	88	2	150	(s)	155
December	(h)	6	(s)	37	(s)	23	(s)	89	3	152	(s)	158
Total	(h)	59	2	468	(s)	261	5	1,086	40	1,862	3	1,924
2020 January	(h)	6	(s)	34	(s)	21	(s)	86	3	145	(s)	152
February	(h)	6	(s)	33	(s)	19	(s)	84	2	139	(s)	145
March	(h)	5	(s)	36	(s)	18	(s)	77	1	133	(s)	138
April	(h)	4	(s)	34	(s)	8	(s)	57	1	100	(s)	105
May	(h)	4	(s)	35	(s)	8	(s)	71	1	115	(s)	119
June	(h)	4	(s)	36	(s)	10	(s)	79	2	128	(s)	132
July	(h)	5	(s)	38	(s)	12	(s)	84	4	139	(s)	144
August	(h)	5	(s)	39	(s)	13	(s)	85	4	141	(s)	145
September	(h)	4	(s)	37	(s)	11	(s)	82	4	134	(s)	138
October	(h)	4	(s)	39	(s)	13	(s)	83	3	138	(s)	142
November	(h)	5	(s)	35	(s)	14	(s)	76	2	128	(s)	133
December	(h)	6	(s)	35	(s)	15	(s)	77	2	130	(s)	137
Total	(h)	58	1	432	(s)	161	4	941	30	1,570	3	1,631
2021 January	(h)	6	(s)	35	(s)	14	(s)	76	3	129	(s)	136
February	(h)	6	(s)	32	(s)	13	(s)	69	3	117	(s)	123
March	(h)	5	(s)	38	(s)	15	(s)	85	4	141	(s)	147
April	(h)	4	(s)	38	(s)	16	(s)	85	2	140	(s)	145
May	(h)	4	(s)	39	(s)	17	(s)	90	3	150	(s)	154
June	(h)	4	(s)	39	(s)	18	(s)	89	4	150	(s)	155
July	(h)	5	(s)	40	(s)	19	(s)	92	4	156	(s)	160
August	(h)	5	(s)	41	(s)	20	(s)	90	4	156	(s)	161
8-Month Total	(h)	39	1	303	(s)	130	3	676	27	1,141	2	1,181
2020 8-Month Total	(h)	39	1	286	(s)	109	3	623	18	1,039	2	1,080
2019 8-Month Total	(h)	39	1	313	(s)	174	3	729	26	1,246	2	1,288

^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.

(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	823	199	20	2	242	264	NA	NA	1,286
1975 Total	836	172	17	(s)	221	237	NA	NA	1,245
1980 Total	1,153	200	12	1	185	198	NA	NA	1,551
1985 Total	1,383	166	6	1	75	82	NA	NA	1,631
1990 Total	1,547	175	7	3	87	98	(s)	6	1,826
1995 Total	1,660	228	8	8	43	59	(s)	10	1,957
2000 Total	1,926	281	13	10	65	89	(s)	10	2,306
2005 Total	1,983	319	9	24	66	98	(s)	11	2,411
2006 Total	1,953	338	5	21	27	53	(s)	12	2,356
2007 Total	1,986	371	7	17	30	53	(s)	11	2,422
2008 Total	1,958	362	5	15	18	38	(s)	12	2,371
2009 Total	1,740	373	5	13	14	32	(s)	11	2,157
2010 Total	1,828	400	6	14	12	31	(s)	11	2,270
2011 Total	1,723	409	5	14	7	26	(s)	11	2,170
2012 Total	1,512	493	4	9	6	18	(s)	11	2,035
2013 Total	1,571	444	4	13	6	22	(s)	11	2,049
2014 Total	1,568	443	6	12	7	25	(s)	11	2,048
2015 Total	1,351	525	5	11	7	24	(s)	11	1,912
2016 Total	1,242	545	4	12	5	21	(s)	11	1,820
2017 Total	1,207	506	4	10	5	19	(s)	11	1,743
2018 Total	1,153	577	6	10	6	22	(s)	11	1,764
2019 January	101	46	1	1	(s)	2	(s)	1	150
February	82	43	(s)	1	(s)	1	(s)	1	126
March	80	44	(s)	1	(s)	1	(s)	1	126
April	60	40	(s)	(s)	(s)	1	(s)	1	103
May	72	46	(s)	1	(s)	2	(s)	1	120
June	80	54	(s)	1	(s)	1	(s)	1	136
July	101	68	(s)	1	(s)	2	(s)	1	172
August	95	70	(s)	1	(s)	2	(s)	1	167
September	85	59	(s)	1	(s)	1	(s)	1	147
October	68	51	(s)	(s)	(s)	1	(s)	1	121
November	76	45	(s)	(s)	(s)	1	(s)	1	123
December	73	50	(s)	1	(s)	1	(s)	1	125
Total	974	616	4	8	4	16	(s)	11	1,617
2020 January	66	51	(s)	1	(s)	1	(s)	1	120
February	58	48	(s)	1	(s)	1	(s)	1	108
March	52	48	(s)	1	(s)	1	(s)	1	102
April	43	42	(s)	1	(s)	1	(s)	1	86
May	48	45	(s)	1	(s)	1	(s)	1	96
June	66	57	(s)	1	(s)	2	(s)	1	126
July	90	75	(s)	1	(s)	2	(s)	1	167
August	91	70	(s)	1	(s)	2	(s)	1	163
September	70	57	(s)	(s)	(s)	1	(s)	1	128
October	61	52	(s)	(s)	(s)	1	(s)	1	115
November	62	42	(s)	1	(s)	1	(s)	1	106
December	79	48	(s)	1	(s)	1	(s)	1	129
Total	787	633	3	8	4	16	(s)	11	1,447
2021 January	82	47	(s)	1	(s)	1	(s)	1	132
February	87	43	1	1	(s)	2	(s)	1	133
March	62	41	(s)	1	(s)	1	(s)	1	105
April	54	41	(s)	(s)	(s)	1	(s)	1	97
May	64	45	(s)	1	(s)	1	(s)	1	111
June	87	59	(s)	1	(s)	1	(s)	1	148
July	102	67	(s)	1	(s)	1	(s)	1	171
August	101	68	(s)	1	1	2	(s)	1	173
8-Month Total	639	411	3	6	3	11	(s)	7	1,069
2020 8-Month Total	515	435	2	6	3	11	(s)	7	969
2019 8-Month Total	671	412	3	6	3	12	(s)	7	1,102

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

^b Natural gas, excluding supplemental gaseous fuels.

^c Distillate fuel oil, excluding biodiesel.

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

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

NA=Not available. (s)=Less than 0.5 million metric tons.

Notes: • Data are estimates for carbon dioxide emissions from energy

consumption. See "Section 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	Commercial ^e	Industrial ^f	Transportation	Electric Power ^g	Total
1973 Total	143	(s)	NA	NA	143	33	1	109	NA	(s)	143
1975 Total	140	(s)	NA	NA	141	40	1	100	NA	(s)	141
1980 Total	232	(s)	NA	NA	232	80	2	150	NA	(s)	232
1985 Total	252	14	3	NA	270	95	2	168	3	1	270
1990 Total	208	24	4	NA	237	54	8	147	4	23	237
1995 Total	222	30	8	NA	260	49	9	166	8	28	260
2000 Total	212	27	9	NA	248	39	9	161	9	29	248
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	209	46	81	20	355	42	14	155	98	47	355
2017 Total	205	45	82	19	351	40	14	152	98	47	351
2018 Total	212	44	82	18	356	49	14	151	97	46	356
2019 January	18	4	6	1	30	4	1	13	7	4	30
February	17	3	6	1	27	4	1	12	7	3	27
March	18	3	7	1	29	4	1	13	8	3	29
April	17	3	7	1	28	4	1	12	8	3	28
May	17	3	7	2	30	4	1	12	9	3	30
June	17	3	7	1	29	4	1	12	8	3	29
July	18	3	7	2	30	4	1	13	8	4	30
August	18	3	7	2	30	4	1	13	8	4	30
September	17	3	7	1	28	4	1	12	8	3	28
October	17	3	7	1	29	4	1	12	8	3	29
November	17	3	7	1	29	4	1	12	8	3	29
December	18	4	7	1	30	4	1	13	8	4	30
Total	210	40	83	17	350	51	13	147	97	41	350
2020 January	17	4	7	1	29	4	1	13	8	4	29
February	16	3	6	1	27	3	1	12	7	3	27
March	17	3	5	1	27	4	1	12	7	3	27
April	16	3	4	1	25	4	1	12	5	3	25
May	17	3	6	1	27	4	1	12	7	3	27
June	16	3	6	1	27	4	1	11	8	3	27
July	16	3	6	2	28	4	1	12	8	3	28
August	16	3	6	2	28	4	1	12	8	4	28
September	16	3	6	2	27	4	1	12	8	3	27
October	16	3	6	2	27	4	1	12	7	3	27
November	16	3	6	1	27	4	1	12	7	3	27
December	17	3	6	2	29	4	1	13	8	3	29
Total	197	39	72	18	326	43	13	144	87	39	326
2021 January	17	3	6	1	27	4	1	13	6	3	27
February	15	3	5	1	25	3	1	11	6	3	25
March	17	3	7	1	28	4	1	12	8	3	28
April	16	3	6	1	27	4	1	12	7	3	27
May	17	3	7	1	29	4	1	13	8	3	29
June	16	3	7	1	28	4	1	12	8	3	28
July	17	3	7	1	29	4	1	12	8	3	29
August	17	3	7	1	28	4	1	12	8	4	28
8-Month Total	132	26	52	10	219	28	8	96	60	26	219
2020 8-Month Total	131	26	47	11	216	29	8	96	57	26	216
2019 8-Month Total	140	27	55	12	233	34	9	98	64	28	233

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

^b Wood and wood-derived fuels.

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

^d Fuel ethanol minus denaturant.

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

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

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

NA=Not available. (s)=Less than 0.5 million metric tons.

Notes: • Carbon dioxide emissions from biomass energy consumption are excluded from the energy-related carbon dioxide emissions reported in Tables 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.

The vast majority of U.S. 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 of CO₂ emissions from all sources, as well as emissions for other greenhouse gases, see the U.S. Environmental Protection Agency's *Inventory of U.S. Greenhouse Gas Emissions and Sinks* reports at <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>.

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 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 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 renewable diesel fuel heat content factor in MER Table A1, and then subtracted from the distillate fuel oil consumption values.

2012–2020: 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 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 renewable diesel fuel heat content factor in MER Table A1, and then subtracted from the distillate fuel oil consumption values.

2021 forward: To remove the biodiesel and renewable diesel fuel portions 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 biodiesel and renewable diesel fuel heat content factors 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, other oils, petroleum coke, residual fuel oil, special naphthas, still gas, waxes, and miscellaneous petroleum products. See Tables 1.11a and 1.11b for estimates of fossil fuel non-combustion uses.

In the non-combustion use of these fuels, some of the carbon is stored (sequestered) in the final product, and EIA subtracts this from the fuel consumption values in Steps 1 and 2. EIA calculates the amount of carbon sequestered as the product of the non-combustion use of fossil fuels shown in MER Table 1.11b and the following carbon sequestration factors. The factors range from 0.00 to 1.00. A factor of 0.00 indicates that the fuel does not sequester any carbon (all is emitted), while a factor of 1.00 indicates that the fuel sequesters all of the carbon (none is emitted). EIA uses the following carbon sequestration factors: coal—0.75; natural gas used to produce hydrogen—0.00; natural gas used for other manufacturing—0.44; asphalt and road oil—1.00; distillate fuel oil—0.50; hydrocarbon gas liquids—0.80; lubricants—0.50; naphthas used for petrochemical feedstock—0.75; other oils used for petrochemical feedstock—0.50; petroleum coke used for aluminum production—0.00; petroleum coke used for other manufacturing—0.50; residual fuel oil—0.50; special naphthas—0.00; still gas—0.80; waxes—1.00; and miscellaneous petroleum products—1.00.

Step 4. Determine Carbon Dioxide Emissions From Energy Consumption

EIA calculates carbon dioxide (CO₂) emissions data in million metric tons as the product of the consumption values in trillion Btu from Steps 1 and 2 (minus the carbon sequestered by non-combustion use in Step 3) and the annual CO₂ emissions factors at https://www.eia.gov/environment/emissions/xls/CO2_coefs_detailed.xls.

Except for plant condensate and unfractionated stream (which are EIA estimates), the CO₂ emissions factors for fossil fuels are from the U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, Tables A-32, A-38, and A-232. EIA converts metric tons of carbon to metric tons of CO₂ using the approximate molar mass (44/12)—see <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>.

Coal—EIA calculates coal CO₂ emissions 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—EIA calculates coal coke net imports CO₂ emissions for the industrial sector.

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

Petroleum—EIA calculates CO₂ emissions for each petroleum product and sector. 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). EIA estimates residential, commercial, and transportation sector HGL emissions as the product of the HGL consumption values in trillion Btu from MER Tables 3.8a and 3.8c and the propane emissions factor. EIA estimates industrial sector HGL emissions as total HGL emissions minus emissions by the other sectors.

Geothermal and Non-Biomass Waste—EIA estimates annual CO₂ emissions data for geothermal and non-biomass waste on Form EIA-923, "Power Plant Operations Report" (and predecessor forms). EIA estimates monthly data 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—EIA calculates wood, biomass waste, and biofuel CO₂ emissions for each sector. Total emissions for each biomass fuel are the sum of the sectoral emissions. EIA uses the following CO₂ emissions factors, in million metric tons CO₂ per quadrillion Btu: wood—93.80; biomass waste—90.70; fuel ethanol—68.44; and biodiesel—73.84. For 1973–1988, EIA estimates the biomass portion of waste in MER Tables 10.2a–10.2c as 67%; for 1989–2000, the annual biomass portion of waste ranges from 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 <https://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 Biofuels
(Million Btu per Barrel, Except as Noted)

Commodity	Heat Content	Commodity	Heat Content
Asphalt and Road Oil	6.636	Motor Gasoline (Finished)—see Tables A2 and A3	
Aviation Gasoline (Finished)	5.048	Motor Gasoline Blending Components (MGBC)	
Aviation Gasoline Blending Components	5.048	Through 2006	5.253
Crude Oil—see Table A2		Beginning in 2007	5.222
Distillate Fuel Oil—see Table A3 for averages		Oxygenates (excluding Fuel Ethanol)	4.247
15 ppm sulfur and under	5.770	Petrochemical Feedstocks	
Greater than 15 ppm to 500 ppm sulfur	5.817	Naphtha Less Than 401°F	5.248
Greater than 500 ppm sulfur	5.825	Other Oils Equal to or Greater Than 401°F	5.825
Hydrocarbon Gas Liquids		Petroleum Coke—see Table A3 for averages	
Natural Gas Liquids		Total, through 2003	6.024
Ethane	2.783	Catalyst, beginning in 2004	^a 6.287
Propane	3.841	Marketable, beginning in 2004	5.719
Normal Butane	4.353	Residual Fuel Oil	6.287
Isobutane	4.183	Special Naphthas	5.248
Natural Gasoline (Pentanes Plus)	4.638	Still Gas	
Refinery Olefins		Through 2015	^b 6.000
Ethylene	2.436	Beginning in 2016	^a 6.287
Propylene	3.835	Unfinished Oils	5.825
Butylene	4.377	Waxes	5.537
Isobutylene	4.355	Miscellaneous Products	5.796
Hydrogen	^c 6.287	Other Hydrocarbons	5.825
Jet Fuel, Kerosene Type	5.670	Biofuels, Fuel Ethanol—see Table A3	
Jet Fuel, Naphtha Type	5.355	Biofuels, Biodiesel	5.359
Kerosene	5.670	Biofuels, Renewable Diesel Fuel	5.494
Lubricants	6.065	Biofuels, Other	5.359

^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).

^c Hydrogen has a gross heat content of 323.6 Btu per standard cubic foot (at 60 degrees Fahrenheit and 1 atmosphere), and 6.287 million Btu per residual fuel oil equivalent barrel. For hydrogen, barrels can be converted to standard cubic feet by multiplying by 19,426 standard cubic feet per barrel of residual fuel oil equivalent.

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 ^d	Crude Oil ^a	Petroleum Products		Total ^d
	Natural Gas Plant Liquids ^b	Motor Gasoline ^c		Total Products ^d	Motor Gasoline ^e			Total Products ^d		
1950	5.800	4.470	5.943	5.253	6.263	6.080	5.800	5.253	5.751	5.766
1955	5.800	4.346	5.924	5.253	6.234	6.040	5.800	5.253	5.765	5.768
1960	5.800	4.253	5.911	5.253	6.161	6.021	5.800	5.253	5.835	5.834
1965	5.800	4.197	5.872	5.253	6.123	5.997	5.800	5.253	5.742	5.743
1970	5.800	4.090	5.822	5.253	6.088	5.985	5.800	5.253	5.811	5.810
1975	5.800	3.923	5.821	5.253	5.935	5.858	5.800	5.253	5.747	5.748
1980	5.800	^b 3.864	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	^e 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	^e 5.222	5.151	5.258
2018	5.706	3.591	6.063	5.222	^d 5.491	^d 5.938	5.721	5.222	^d 5.088	^d 5.259
2019	5.698	3.607	6.061	5.222	5.464	5.908	5.708	5.222	5.022	5.263
2020	5.691	3.593	6.066	5.222	5.513	5.927	5.709	5.222	4.924	5.220
2021	^E 5.691	^E 3.593	^E 6.066	^E 5.222	^E 5.513	^E 5.927	^E 5.709	^E 5.222	^E 4.924	^E 5.220

^a Includes lease condensate.

^b Natural gas processing plant production of natural gas liquids (ethane, propane, normal butane, isobutane, and natural gasoline). Through 1980, also includes natural gas processing plant production of finished petroleum products (aviation gasoline, distillate fuel oil, jet fuel, kerosene, motor gasoline, special naphthas, and miscellaneous products).

^c Excludes fuel ethanol, methyl tertiary butyl ether (MTBE), and other oxygenates blended into motor gasoline.

^d 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.

^e For 2006–2016, includes MTBE blended into motor gasoline; excludes MTBE in other years. For all years, excludes fuel ethanol and other non-MTBE oxygenates blended into motor gasoline.

^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	4.921	5.316	5.956	5.204	5.778	3.489	5.067	6.059	3.562	5.880
2011	4.657	5.176	4.887	5.315	5.900	5.193	5.776	3.423	5.063	6.077	3.561	5.859
2012	4.714	5.126	4.844	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	3.461	5.057	6.085	3.558	5.776
2016	4.631	5.022	4.798	5.303	5.885	5.161	5.773	3.424	5.055	6.104	3.558	5.755
2017	4.623	5.006	4.768	5.305	5.893	5.153	5.772	3.400	5.053	6.132	3.556	5.735
2018	4.620	4.971	4.664	5.310	5.896	5.122	5.772	3.381	5.054	6.122	3.553	5.715
2019	4.540	4.962	4.645	5.307	5.900	5.111	5.771	3.401	5.052	6.132	3.555	5.694
2020	E 4.529	E 4.951	E 4.538	E 5.298	E 5.889	E 5.054	E 5.770	E 3.349	E 5.052	E 6.130	E 3.557	E 5.674
2021	E 4.529	E 4.951	E 4.538	E 5.298	E 5.889	E 5.054	E 5.770	E 3.349	E 5.052	E 6.130	E 3.557	E 5.654

^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 biodiesel and renewable diesel fuel 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 biodiesel and renewable diesel fuel 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.

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	1,140	1,038	1,040	1,034	1,038	1,025	1,009
2020	1,146	1,037	1,039	^P 1,033	1,037	1,025	1,009
2021	^E 1,146	^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.

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					Total	Imports		Exports
			Residential and Commercial Sectors ^c	Industrial Sector		Electric Power Sector ^{e,f}					
				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	20.053	11.513	19.084	28.629	20.721	18.903	19.292	20.558	24.584	24.800	
2020	^P 19.858	^P 10.301	^P 18.297	^P 28.717	^P 20.414	^P 18.856	^P 19.236	^P 20.347	^P 24.986	^P 24.800	
2021	^E 19.858	^E 10.301	^E 18.297	^E 28.717	^E 20.414	^E 18.856	^E 19.236	^E 20.347	^E 24.986	^E 24.800	

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

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

^c Through 2007, used as the thermal conversion factor for coal consumption by the residential and commercial sectors. Beginning in 2008, used as the thermal conversion factor for coal consumption by the commercial sector only.

^d Includes transportation. Excludes coal synfuel plants.

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

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

P=Preliminary. E=Estimate. NA=Not available.

Note: The values in this table are for gross heat contents. See "Heat Content" in Glossary.

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

Sources: See "Thermal Conversion Factor Source Documentation," which follows Table A6.

Table A6. Approximate Heat Rates for Electricity, and Heat Content of Electricity
(Btu per Kilowatthour)

	Approximate Heat Rates ^a for Electricity Net Generation						Heat Content ^j of Electricity ^k
	Fossil Fuels ^b				Nuclear ^h	Noncombustible Renewable Energy ^{9,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	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	10,481	11,095	7,821	9,104	10,455	9,104	3,412
2019	10,551	11,205	7,732	8,905	10,442	8,905	3,412
2020	E 10,551	E 11,205	E 7,732	E 8,905	E 10,442	E 8,905	3,412
2021	E 10,551	E 11,205	E 7,732	E 8,905	E 10,442	E 8,905	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).

⁹ 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_2021, October 2021.

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_2021, October 2021.

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. EIA estimated a thermal conversion factor of 323.6 Btu per standard cubic foot (at 60 degrees Fahrenheit and 1 atmosphere), based on data published by the National Research Council and National Academy of Engineering, in Appendix H of *The Hydrogen Economy: Opportunities, Costs, Barriers, and R&D Needs*, 2004. EIA also assumed a thermal conversion factor of 6.287 million Btu per residual fuel oil equivalent 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_2021, October 2021.

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_2021, October 2021.

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_2021, October 2021—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_2021, October 2021.

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_2021, October 2021.

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_2021, October 2021) 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.

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.

Other Biofuels. EIA assumed the thermal conversion factor to be 5.359 million Btu per barrel or equal to the thermal conversion factor for **Biodiesel**.

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_2021, October 2021.

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	3,713.5	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	4,445.0	5.1	2,857.3	6,759.2	.42273	5,462.0
1981	229.5	4,526.3	5.1	3,207.0	6,930.7	.46273	6,033.5
1982	231.7	4,606.5	5.0	3,343.8	6,805.8	.49132	6,175.0
1983	233.8	4,687.7	5.0	3,634.0	7,117.7	.51056	6,631.0
1984	235.8	4,766.5	4.9	4,037.6	7,632.8	.52898	7,313.8
1985	237.9	4,848.4	4.9	4,339.0	7,951.1	.54571	7,775.7
1986	240.1	4,932.4	4.9	4,579.6	8,226.4	.55670	8,031.0
1987	242.3	5,019.0	4.8	4,855.2	8,511.0	.57046	8,707.5
1988	244.5	5,106.4	4.8	5,236.4	8,866.5	.59059	9,434.2
1989	246.8	5,193.4	4.8	5,641.6	9,192.1	.61374	10,069.8
1990	249.6	5,282.0	4.7	5,963.1	9,365.5	.63671	10,624.6
1991	253.0	5,365.3	4.7	6,158.1	9,355.4	.65825	10,808.0
1992	256.5	5,449.4	4.7	6,520.3	9,684.9	.67325	11,381.0
1993	259.9	5,530.9	4.7	6,858.6	9,951.5	.68920	12,024.4
1994	263.1	5,610.7	4.7	7,287.2	10,352.4	.70392	12,826.8
1995	266.3	5,691.8	4.7	7,639.7	10,630.3	.71868	13,653.2
1996	269.4	5,772.0	4.7	8,073.1	11,031.4	.73183	14,463.4
1997	272.6	5,850.7	4.7	8,577.6	11,521.9	.74445	15,393.3
1998	275.9	5,928.2	4.7	9,062.8	12,038.3	.75283	16,216.8
1999	279.0	6,005.1	4.6	9,630.7	12,610.5	.76370	17,272.3
2000	282.2	6,081.9	4.6	10,252.3	13,131.0	.78078	18,623.9
2001	285.0	6,159.1	4.6	10,581.8	13,262.1	.79790	18,888.3
2002	287.6	6,236.7	4.6	10,936.4	13,493.1	.81052	19,178.3
2003	290.1	6,314.7	4.6	11,458.2	13,879.1	.82557	20,141.2
2004	292.8	6,393.1	4.6	12,213.7	14,406.4	.84780	21,690.2
2005	295.5	6,471.5	4.6	13,036.6	14,912.5	.87421	23,512.9
2006	298.4	6,551.9	4.6	13,814.6	15,338.3	.90066	24,931.4
2007	301.2	6,634.4	4.5	14,451.9	15,626.0	.92486	26,238.5
2008	304.1	6,718.3	4.5	14,712.8	15,604.7	.94285	26,989.2
2009	306.8	6,801.8	4.5	14,448.9	15,208.8	.95004	24,919.5
2010	309.3	6,884.0	4.5	14,992.1	15,598.8	.96111	26,422.4
2011	311.6	6,965.9	4.5	15,542.6	15,840.7	.98118	27,999.5
2012	313.9	7,047.8	4.5	16,197.0	16,197.0	1.00000	29,186.8
2013	316.1	7,130.5	4.4	16,784.9	16,495.4	1.01755	30,291.3
2014	318.4	7,212.9	4.4	17,527.3	16,912.0	1.03638	31,740.0
2015	320.7	7,294.3	4.4	18,238.3	17,432.2	1.04624	32,222.3
2016	323.1	7,375.3	4.4	18,745.1	17,730.5	1.05722	32,882.2
2017	325.1	7,455.1	4.4	19,543.0	18,144.1	1.07710	34,474.7
2018	326.8	7,533.7	4.3	20,611.9	18,687.8	1.10296	36,603.4
2019	328.3	7,612.1	4.3	21,433.2	19,091.7	1.12265	37,817.0
2020	329.5	7,693.3	4.3	20,932.8	18,422.6	1.13626	36,737.4

^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 2020). • **World Population: 1950 forward**—DOC, U.S. Census Bureau, International Database (December 2020). • **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 (August 2021), 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 (March 2021).

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		
	Trans- formed Into Electricity ^{d,e}	Adjustment for Fossil Fuel Equivalence ^f	Total Primary Energy ^g	Direct Consump- tion ^h	Trans- formed Into Electricity ^{d,i}	Adjustment for Fossil Fuel Equivalence ^f	Total Primary Energy ^j	Trans- formed Into Electricity ^{d,i}	Adjustment for Fossil Fuel Equivalence ^f	Total Primary Energy ^g
1950	344	1,071	1,415	NA	NA	NA	NA	NA	NA	NA
1955	397	963	1,360	NA	NA	NA	NA	NA	NA	NA
1960	510	1,098	1,608	NA	(s)	(s)	(s)	NA	NA	NA
1965	672	1,387	2,059	NA	1	1	2	NA	NA	NA
1970	856	1,777	2,634	NA	2	4	6	NA	NA	NA
1975	1,034	2,120	3,155	NA	11	23	34	NA	NA	NA
1980	953	1,948	2,900	NA	17	35	53	NA	NA	NA
1981	900	1,858	2,758	NA	19	40	59	NA	NA	NA
1982	1,066	2,200	3,266	NA	17	34	51	NA	NA	NA
1983	1,144	2,383	3,527	NA	21	43	64	(s)	(s)	(s)
1984	1,107	2,279	3,386	NA	26	54	81	(s)	(s)	(s)
1985	970	2,000	2,970	NA	32	66	97	(s)	(s)	(s)
1986	1,003	2,068	3,071	NA	35	73	108	(s)	(s)	(s)
1987	863	1,772	2,635	NA	37	76	112	(s)	(s)	(s)
1988	771	1,563	2,334	NA	35	71	106	(s)	(s)	(s)
1989	^e 928	1,909	2,837	9	ⁱ 50	102	162	^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	1,665	2,663	64	54	91	209	930	1,552	2,482
2019	982	1,581	2,564	64	53	85	201	1,010	1,625	2,635
2020	993	1,599	2,592	64	58	93	214	1,152	1,854	3,006

^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 kilowatthours (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 kilowatthours multiplied by the total fossil fuels heat rate factors (see Table A6). The captured energy consumed as electricity equals electricity net generation in kilowatthours multiplied by 3,412 Btu/kWh, the heat content of electricity (see Table A6).

^g Electricity net generation in kilowatthours 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 kilowatthours multiplied by the total fossil fuels heat rate factors (see Table A6).

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

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

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

Sources: • **Conventional Hydroelectric Power and Wind:** Tables 7.2a, 10.1, and A6. • **Geothermal:** Tables 7.2a, 10.1, 10.2a, 10.2b, and A6.

Table E1b. Noncombustible Renewable Primary Energy Consumption: Solar and Total
(Trillion Btu)

	Solar ^a						Total ^b		
	Distributed ^c			Utility-Scale ^d			Captured Energy ⁱ	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	Total Primary Energy ⁱ			
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	1,815	2,922	4,737
2016	64	64	109	123	210	570	2,057	3,291	5,348
2017	65	82	139	182	309	777	2,339	3,758	6,097
2018	65	101	168	218	363	915	2,430	3,839	6,269
2019	65	119	192	245	395	1,017	2,538	3,879	6,417
2020	65	142	229	310	499	1,246	2,783	4,275	7,058

^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, Fuel ethanol, Other biofuels,** and **Renewable diesel fuel.**

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, Other biofuels, Renewable diesel fuel,** 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 **Biodiesel** and **Renewable diesel fuel.**

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, fuel ethanol, other biofuels,** and **renewable diesel fuel.** **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.

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 2007–2019), Equatorial Guinea (2017 forward), Gabon (1974–1994 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 biofuels: Fuels and fuel blending components, except **biodiesel**, **renewable diesel fuel**, and **fuel ethanol**, produced from renewable biomass.

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 or PADD: 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.

Petroleum Administration for Defense District (PADD): The 50 U.S. states and the District of Columbia are divided into five districts, with PADD 1 further split into three subdistricts. PADDs 6 and 7 encompass U.S. territories. The PADDs include the states and territories listed below:

PADD 1 (East Coast).

PADD 1A (New England): Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

PADD 1B (Central Atlantic): Delaware, District of Columbia, Maryland, New Jersey, New York, and Pennsylvania.

PADD 1C (Lower Atlantic): Florida, Georgia, North Carolina, South Carolina, Virginia, and West Virginia.

PADD 2 (Midwest): Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, and Wisconsin.

PADD 3 (Gulf Coast): Alabama, Arkansas, Louisiana, Mississippi, New Mexico, and Texas.

PADD 4 (Rocky Mountain): Colorado, Idaho, Montana, Utah, and Wyoming.

PADD 5 (West Coast): Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington.

PADD 6: U.S. Virgin Islands and Puerto Rico.

PADD 7: Guam, American Samoa and the Northern Mariana Islands Territory.

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, biodiesel, renewable diesel fuel, and other biofuels** consumption; losses and co-products from the production of fuel ethanol and biodiesel; and electricity net imports (converted to Btu using the electricity heat content of 3,412 Btu per kilowatt-hour). 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 **fuel ethanol** and **biodiesel** feedstock; and **renewable diesel fuel** and **other biofuels** production.

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: **Diesel fuel** and diesel fuel blending components produced from renewable sources that are coprocessed with **petroleum** feedstocks and meet requirements of advanced biofuels. 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 **Biodiesel**, **Other biofuels**, and **Renewable diesel fuel**.

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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