

October 2023

Monthly Energy Review

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Monthly Energy Review

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

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

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

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

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

Important notes about the data

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

Comprehensive changes: Each month, most MER tables and figures present data for a new month. These data are usually preliminary (and sometimes estimated or forecasted) and likely to be revised the following month. The first dissemination of most annual data is also preliminary. It is often based on monthly estimates and is likely to be revised later that year after final data are published from sources, according to source data revision policies and publication schedules. In addition, EIA may revise historical data when a major revision in a source publication is needed, when new data sources become available, or when estimation methodologies are improved. A record of current and historical changes to MER data is available at <https://www.eia.gov/totalenergy/data/monthly/whatsnew.php>.

Annual data from 1949: In 2013, EIA expanded the MER to incorporate annual data as far back as 1949 in those data tables that were previously published in both the Annual Energy Review and MER.

Electronic access

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

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

Note: PDF files display selected annual and monthly data; Excel files, CSV files, API files, and data browser display all available annual and monthly data, often with greater precision than the PDF files.

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

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Monthly Energy Review

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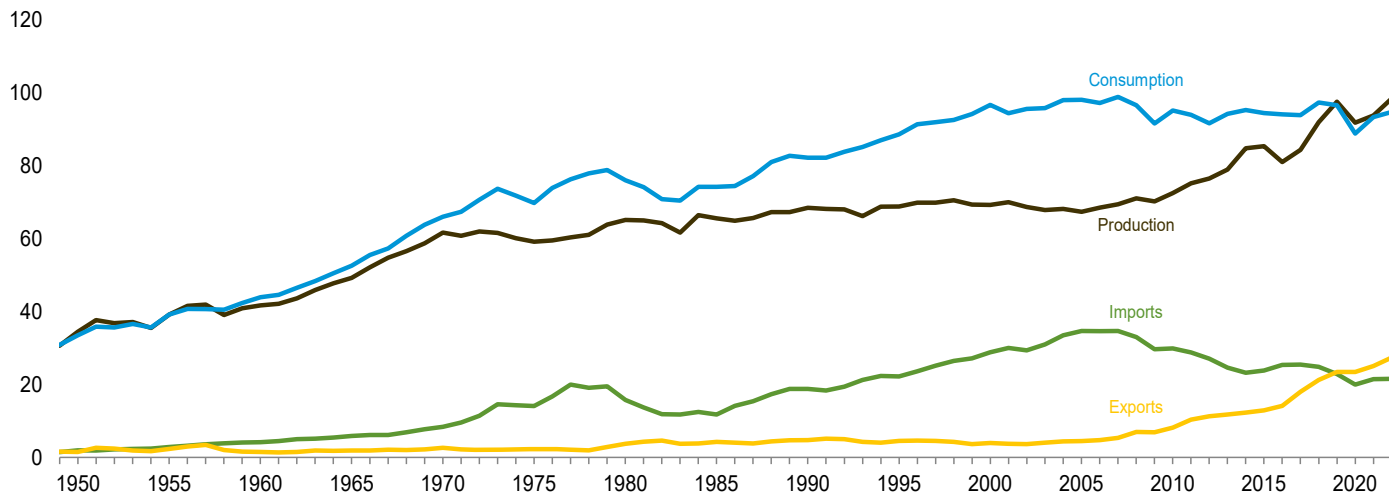
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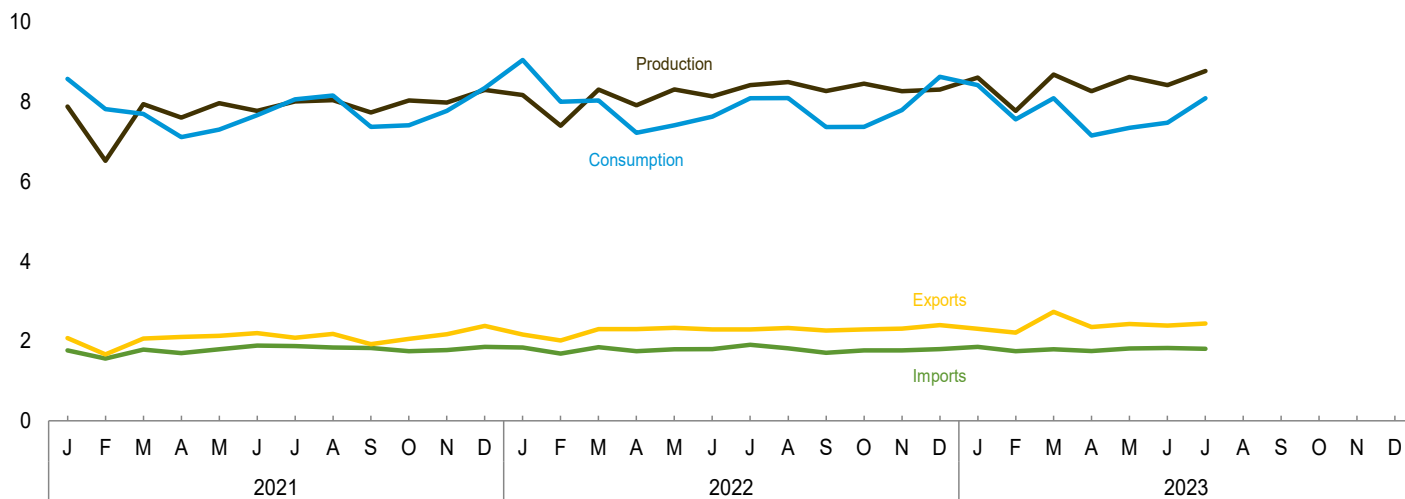
1. Energy Overview

Figure 1.1 Primary Energy Overview
(Quadrillion Btu)

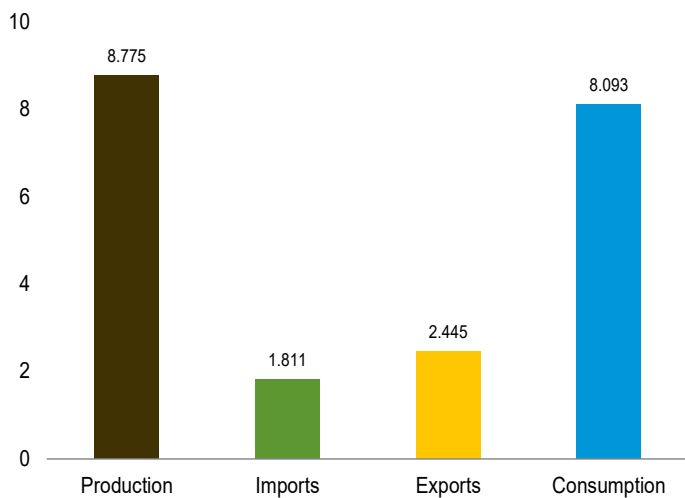
Overview, 1949–2022



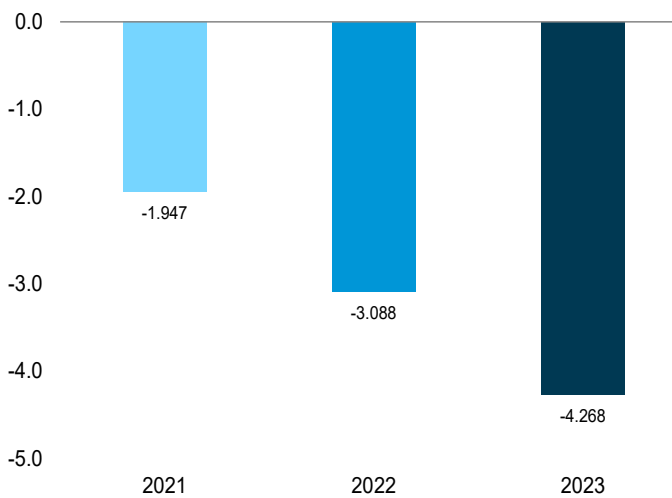
Overview, Monthly



Overview, July 2023



Net Imports, January–July



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

Table 1.1 Primary Energy Overview
(Quadrillion Btu)

	Production				Trade			Stock Change and Other ^d	Consumption			
	Fossil Fuels ^a	Nuclear Electric Power	Renewable Energy ^b	Total	Imports	Exports	Net Imports ^c		Fossil Fuels ^e	Nuclear Electric Power	Renewable Energy ^b	Total ^f
1950 Total	32.553	0.000	1.907	34.460	1.913	1.465	0.448	-1.380	31.615	0.000	1.907	33.527
1955 Total	37.347	.000	1.821	39.168	2.790	2.286	.504	-.457	37.380	.000	1.821	39.215
1960 Total	39.855	.006	1.830	41.691	4.188	1.477	2.710	-.458	42.091	.006	1.830	43.942
1965 Total	47.205	.043	2.008	49.256	5.892	1.829	4.063	-.754	50.515	.043	2.008	52.565
1970 Total	59.152	.239	2.289	61.681	8.342	2.632	5.709	-1.354	63.501	.239	2.289	66.036
1975 Total	54.697	1.900	2.544	59.141	14.032	2.323	11.709	-1.062	65.323	1.900	2.544	69.788
1980 Total	58.979	2.739	3.445	65.164	15.796	3.695	12.101	-1.227	69.782	2.739	3.445	76.038
1985 Total	57.502	4.076	4.018	65.595	11.781	4.196	7.584	1.088	66.035	4.076	4.018	74.268
1990 Total	58.523	6.104	3.863	68.490	18.817	4.752	14.065	-.299	72.281	6.104	3.863	82.256
1995 Total	57.496	7.075	4.295	68.866	22.180	4.496	17.684	2.118	77.162	7.075	4.297	88.668
2000 Total	57.307	7.862	4.093	69.262	28.865	3.962	24.904	2.528	84.620	7.862	4.096	96.694
2005 Total	54.995	8.161	4.220	67.376	34.659	4.462	30.197	.527	85.623	8.161	4.233	98.101
2006 Total	55.877	8.215	4.430	68.521	34.649	4.727	29.921	-1.207	84.477	8.215	4.480	97.235
2007 Total	56.369	8.459	4.582	69.410	34.679	5.338	29.341	.215	85.805	8.459	4.595	98.965
2008 Total	57.527	8.426	5.085	71.038	32.970	6.949	26.021	-.412	83.041	8.426	5.068	96.647
2009 Total	56.612	8.355	5.309	70.276	29.690	6.920	22.770	-1.420	77.862	8.355	5.293	91.626
2010 Total	58.159	8.434	5.943	72.536	29.866	8.176	21.690	.916	80.723	8.434	5.896	95.142
2011 Total	60.529	8.269	6.404	75.202	28.748	10.373	18.375	.389	79.263	8.269	6.308	93.966
2012 Total	62.298	8.062	6.187	76.547	27.068	11.267	15.801	-.670	77.304	8.062	6.150	91.677
2013 Total	64.180	8.244	6.561	78.985	24.623	11.788	12.835	2.433	79.224	8.244	6.587	94.253
2014 Total	69.619	8.338	6.836	84.792	23.241	12.270	10.971	-.428	80.017	8.338	6.799	95.335
2015 Total	70.186	8.337	6.846	85.369	23.794	12.902	10.892	-1.776	79.090	8.337	6.829	94.484
2016 Total	65.435	8.427	7.188	81.050	25.378	14.119	11.259	1.784	78.319	8.427	7.120	94.092
2017 Total	68.448	8.419	7.505	84.372	25.458	17.946	7.512	2.017	77.907	8.419	7.383	93.902
2018 Total	75.780	8.438	7.744	91.963	24.833	21.224	3.610	1.832	81.281	8.438	7.535	97.405
2019 Total	81.399	8.452	7.753	97.604	22.865	23.476	-.610	-.390	80.425	8.452	7.594	96.603
2020 Total	R 76.145	8.251	7.465	R 91.861	19.988	23.464	-3.476	R .467	R 73.139	8.251	7.301	R 88.852
2021 January	R 6.497	.748	.637	R 7.883	1.772	2.083	-.311	R 1.008	R 7.210	.748	.607	R 8.579
February	R 5.318	.657	.553	R 6.528	1.566	1.667	-.101	R 1.400	R 6.614	.657	.547	R 7.827
March	R 6.603	.664	.678	R 7.945	1.788	2.067	-.279	R .037	R 6.359	.664	.667	R 7.703
April	R 6.362	.595	.651	R 7.608	1.703	2.104	-.402	R -.082	R 5.876	.595	.642	R 7.124
May	R 6.624	.661	.690	R 7.975	1.799	2.131	-.332	R -.332	R 5.955	.661	.682	R 7.310
June	R 6.433	.689	.657	R 7.779	1.890	2.204	-.314	R .205	R 6.320	.689	.645	R 7.669
July	R 6.642	.718	.651	R 8.011	1.878	2.085	-.208	R .267	R 6.699	.718	.639	R 8.070
August	R 6.671	.725	.649	R 8.045	1.846	2.183	-.337	R .456	R 6.784	.725	.643	R 8.163
September	R 6.439	.673	.621	R 7.733	1.829	1.925	-.096	R -.261	R 6.083	.673	.611	R 7.375
October	R 6.783	.609	.650	R 8.042	1.752	2.063	-.311	R -.312	R 6.159	.609	.641	R 7.419
November	R 6.671	.654	.664	R 7.989	1.774	2.172	-.397	R .182	R 6.472	.654	.643	R 7.774
December	R 6.862	.738	.707	R 8.306	1.859	2.386	-.527	R .571	R 6.924	.738	.680	R 8.349
Total	R 77.903	8.131	7.807	R 93.841	21.455	25.071	-3.616	R 3.138	R 77.454	8.131	7.644	R 93.363
2022 January	R 6.737	.736	.704	R 8.177	1.841	2.171	-.330	R 1.204	R 7.632	.736	.673	R 9.051
February	R 6.099	.645	.658	R 7.402	1.687	2.017	-.330	R .935	R 6.722	.645	.634	R 8.007
March	R 6.920	.659	.733	R 8.311	1.848	2.306	-.458	R .188	R 6.661	.659	.715	R 8.041
April	R 6.638	.577	.705	R 7.920	1.747	2.303	-.556	R -.136	R 5.950	.577	.692	R 7.227
May	R 6.918	.661	.739	R 8.318	1.795	2.336	-.541	R -.358	R 6.028	.661	.721	R 7.420
June	R 6.731	.685	.727	R 8.143	1.805	2.297	-.492	R -.016	R 6.224	.685	.711	R 7.636
July	R 6.996	.718	.710	R 8.424	1.913	2.294	-.381	R .048	R 6.666	.718	.688	R 8.091
August	R 7.111	.719	.671	R 8.501	1.826	2.331	-.506	R .104	R 6.698	.719	.663	R 8.099
September	R 6.988	.665	.626	R 8.279	1.705	2.266	-.562	R -.346	R 6.083	.665	.611	R 7.372
October	R 7.189	.615	.658	R 8.461	1.771	2.295	-.523	R -.559	R 6.109	.615	.645	R 7.378
November	R 6.936	.647	.689	R 8.272	1.767	2.315	-.548	R .076	R 6.475	.647	.668	R 7.799
December	R 6.906	.721	.685	R 8.312	1.802	2.407	-.606	R .931	R 7.236	.721	.666	R 8.637
Total	R 82.169	8.046	8.304	R 98.519	21.507	27.339	-5.832	R 2.071	R 78.483	8.046	8.088	R 94.758
2023 January	R 7.173	.739	.702	R 8.614	1.855	2.309	-.454	R .264	R 6.989	.739	.685	R 8.424
February	R 6.480	.634	.659	R 7.774	1.746	2.213	-.466	R .261	R 6.285	.634	.643	R 7.569
March	R 7.300	.655	.734	R 8.689	1.795	2.737	-.942	R .349	R 6.715	.655	.718	R 8.097
April	R 6.985	.589	.699	R 8.273	1.756	2.354	-.598	R -.510	R 5.883	.589	.686	R 7.165
May	R 7.247	.641	.740	R 8.628	1.818	2.431	-.612	R -.667	R 5.964	.641	.735	R 7.349
June	R 7.059	.678	R .690	R 8.426	1.828	R 2.389	R -.561	R -.386	R 6.116	.678	.679	R 7.478
July	7.335	.729	.711	8.775	1.811	2.445	-.634	-.047	6.659	.729	.692	8.093
7-Month Total	49.578	4.665	4.935	59.179	12.610	16.877	-4.268	-7.36	44.611	4.665	4.838	54.175
2022 7-Month Total	47.039	4.681	4.976	56.695	12.636	15.724	-3.088	1.866	45.883	4.681	4.835	55.473
2021 7-Month Total	44.478	4.733	4.517	53.727	12.395	14.342	-1.947	2.502	45.032	4.733	4.427	54.283

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

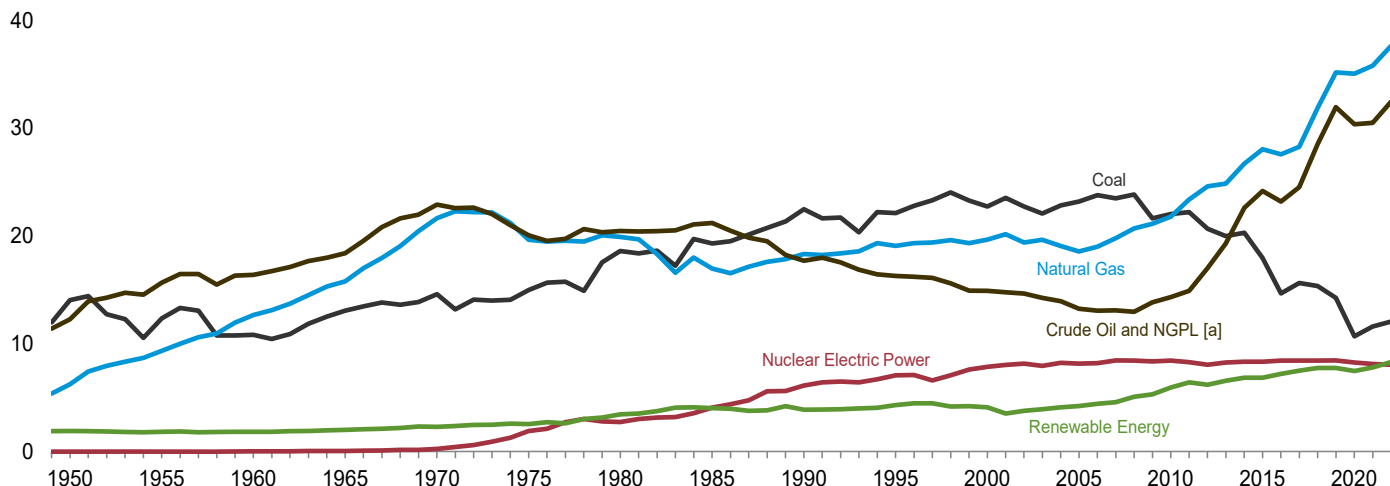
Notes: • See "Primary Energy," "Primary Energy Production," and "Primary Energy Consumption," in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: • **Production:** Table 1.2. • **Trade:** Tables 1.4a and 1.4b. • **Stock Change and Other:** Calculated as consumption minus production and net imports. • **Consumption:** Table 1.3.

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

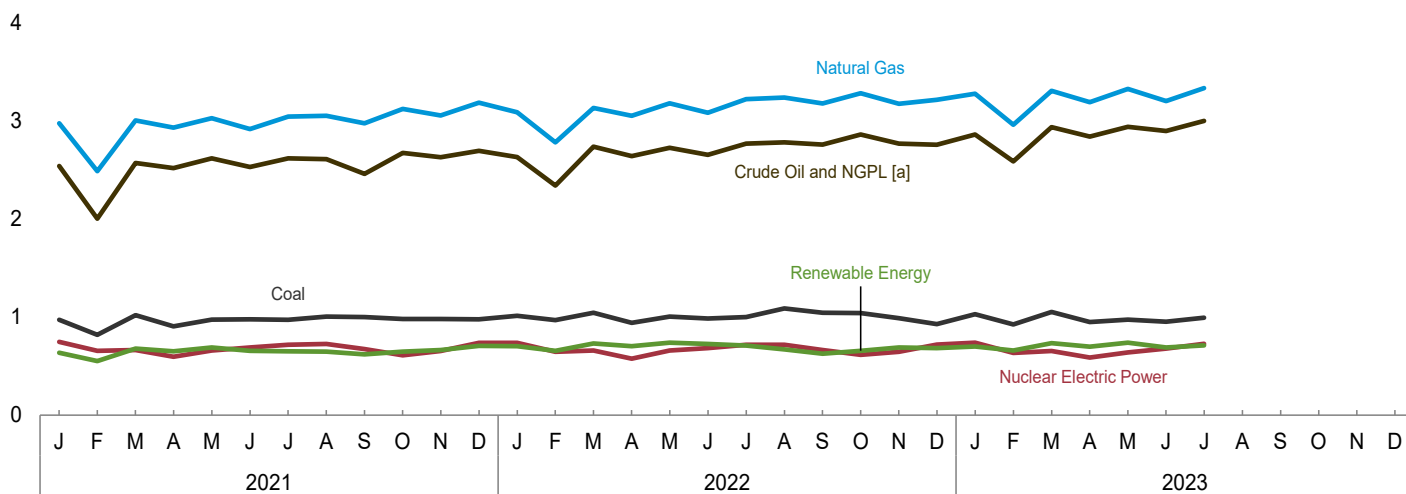
Figure 1.2 Primary Energy Production

(Quadrillion Btu)

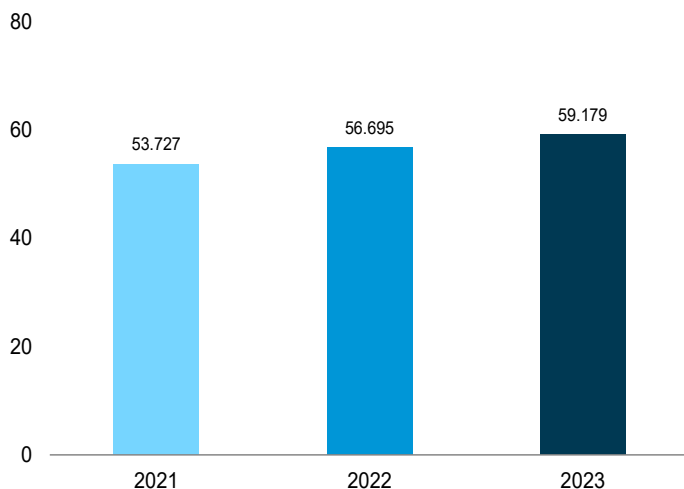
By Source, 1949–2022



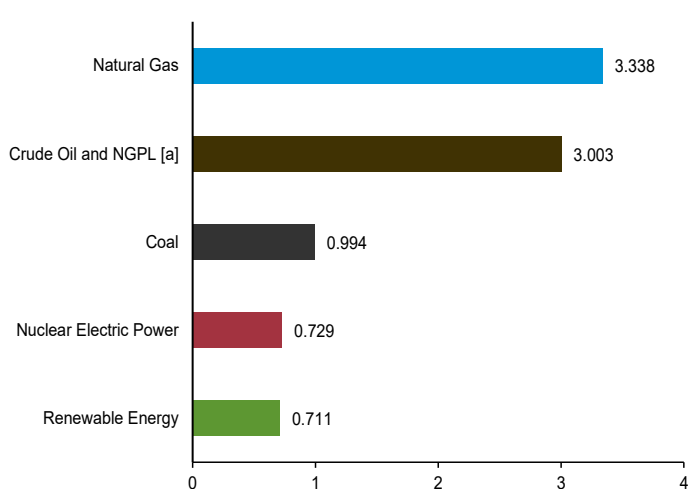
By Source, Monthly



Total, January–July



By Source, July 2023



[a] Natural gas plant liquids.

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

Source: Table 1.2.

Table 1.2 Primary Energy Production by Source
(Quadrillion Btu)

	Fossil Fuels					Nuclear Electric Power	Renewable Energy ^a						Total
	Coal ^b	Natural Gas (Dry)	Crude Oil ^c	NGPL ^d	Total		Hydro-electric Power ^e	Geo-thermal	Solar	Wind	Bio-mass	Total	
1950 Total	14.060	6.233	11.447	0.813	32.553	0.000	0.344	NA	NA	NA	1.562	1.907	34.460
1955 Total	12.370	9.345	14.410	1.223	37.347	.000	.397	NA	NA	NA	1.424	1.821	39.168
1960 Total	10.817	12.656	14.935	1.447	39.855	.006	.510	(s)	NA	NA	1.320	1.830	41.691
1965 Total	13.055	15.775	16.521	1.853	47.205	.043	.672	.001	NA	NA	1.335	2.008	49.256
1970 Total	14.607	21.666	20.401	2.478	59.152	.239	.856	.002	NA	NA	1.431	2.289	61.681
1975 Total	14.989	19.640	17.729	2.338	54.697	1.900	1.034	.011	NA	NA	1.499	2.544	59.141
1980 Total	18.598	19.908	18.249	2.225	58.979	2.739	.953	.017	NA	NA	2.475	3.445	65.164
1985 Total	19.325	16.980	18.992	2.204	57.502	4.076	.970	.032	(s)	(s)	3.016	4.018	65.595
1990 Total	22.488	18.326	15.571	2.138	58.523	6.104	.999	.063	.056	.010	2.735	3.863	68.490
1995 Total	22.130	19.082	13.887	2.398	57.496	7.075	1.061	.060	.064	.011	3.099	4.295	68.866
2000 Total	22.735	19.662	12.358	2.551	57.307	7.862	.940	.069	.059	.019	3.006	4.093	69.262
2005 Total	23.185	18.556	10.974	2.280	54.995	8.161	.922	.084	.052	.061	3.101	4.220	67.376
2006 Total	23.790	19.022	10.767	2.299	55.877	8.215	.987	.086	.054	.091	3.212	4.430	68.521
2007 Total	23.493	19.786	10.741	2.349	56.369	8.459	.845	.091	.057	.118	3.472	4.582	69.410
2008 Total	23.851	20.703	10.613	2.359	57.527	8.426	.869	.097	.061	.189	3.868	5.085	71.038
2009 Total	21.624	21.139	11.340	2.508	56.612	8.355	.933	.105	.063	.252	3.957	5.309	70.276
2010 Total	22.038	21.806	11.610	2.705	58.159	8.434	.888	.111	.068	.323	4.553	5.943	72.536
2011 Total	22.221	23.406	12.012	2.890	60.529	8.269	1.090	.116	.076	.410	4.712	6.404	75.202
2012 Total	20.677	24.610	13.849	3.162	62.298	8.062	.943	.117	.094	.480	4.554	6.187	76.547
2013 Total	20.001	24.859	15.868	3.451	64.180	8.244	.916	.117	.120	.573	4.835	6.561	78.985
2014 Total	20.286	26.718	18.610	4.005	69.619	8.338	.885	.118	.161	.620	5.052	6.836	84.792
2015 Total	17.946	28.067	19.697	4.476	70.186	8.337	.850	.118	.196	.651	5.031	6.846	85.369
2016 Total	14.667	27.576	18.527	4.665	65.435	8.427	.914	.117	.251	.774	5.132	7.188	81.050
2017 Total	15.625	28.289	19.547	4.987	68.448	8.419	1.025	.118	.329	.868	5.166	7.505	84.372
2018 Total	15.363	31.882	22.808	5.727	75.780	8.438	.998	.118	.384	.930	5.314	7.744	91.963
2019 Total	14.256	35.187	25.604	6.352	81.399	8.452	.982	.116	.430	1.010	5.215	7.753	97.604
2020 Total	10.703	35.062	23.575	6.805	76.145	8.251	.973	.118	.511	1.153	4.710	7.465	91.861
2021 January	.974	R 2.978	1.965	.580	R 6.497	.748	.084	.010	.032	.103	.409	.637	R 7.883
February	.821	R 2.491	1.580	.426	R 5.318	.657	.069	.009	.036	.091	.348	.553	R 6.528
March	1.021	R 3.007	2.002	.572	R 6.603	.664	.072	.010	.051	.134	.411	.678	R 7.945
April	.907	R 2.933	1.932	.589	R 6.362	.595	.066	.010	.059	.123	.393	.651	R 7.608
May	.975	R 3.029	2.009	.611	R 6.624	.661	.080	.010	.067	.115	.418	.690	R 7.975
June	.979	R 2.920	1.940	.593	R 6.433	.689	.080	.010	.066	.091	.410	.657	R 7.779
July	.974	R 3.046	2.010	.611	R 6.642	.718	.075	.010	.066	.074	.426	.651	R 8.011
August	1.005	R 3.055	1.989	.622	R 6.671	.725	.069	.010	.064	.092	.413	.649	R 8.045
September	.999	R 2.977	1.864	.599	R 6.439	.673	.058	.010	.059	.099	.395	.621	R 7.733
October	.982	R 3.125	2.040	.636	R 6.783	.609	.058	.010	.050	.110	.422	.650	R 8.042
November	.980	R 3.058	2.011	.621	R 6.671	.654	.066	.010	.042	.122	.424	.664	R 7.989
December	.977	R 3.187	2.060	.638	R 6.862	.738	.080	.010	.035	.136	.445	.707	R 8.306
Total	11.596	R 35.807	23.401	7.099	R 77.903	8.131	.858	.118	.627	1.290	4.914	7.807	R 93.841
2022 January	R 1.013	RE 3.090	2.023	.610	R 6.737	.736	.089	.011	.043	.130	.431	.704	R 8.177
February	R .971	RE 2.784	1.792	.552	R 6.099	.645	.078	.009	.048	.130	.393	.658	R 7.402
March	R 1.045	RE 3.135	2.080	.660	R 6.920	.659	.087	.010	.063	.147	.427	.733	R 8.311
April	R .941	RE 3.056	2.007	.635	R 6.638	.577	.067	.010	.070	.157	.401	.705	R 7.920
May	R 1.007	RE 3.183	2.068	.661	R 6.918	.661	.079	.010	.079	.142	.429	.739	R 8.318
June	R .987	RE 3.087	2.012	.644	R 6.731	.685	.092	.010	.082	.114	.429	.727	R 8.143
July	R 1.001	RE 3.224	2.085	.686	R 6.996	.718	.083	.010	.082	.100	.436	.710	R 8.424
August	R 1.088	RE 3.240	2.112	.672	R 7.111	.719	.074	.010	.076	.083	.427	.671	R 8.501
September	R 1.045	RE 3.181	2.102	.660	R 6.988	.665	.057	.010	.070	.092	.396	.626	R 8.279
October	R 1.041	RE 3.284	2.181	.684	R 7.189	.615	.050	.010	.063	.112	.422	.658	R 8.461
November	R .989	RE 3.178	2.110	.658	R 6.936	.647	.064	.010	.046	.143	.426	.689	R 8.272
December	R .927	RE 3.219	2.139	.621	R 6.906	.721	.075	.011	.040	.134	.426	.685	R 8.312
Total	R 12.054	RE 37.662	24.710	7.742	R 82.169	8.046	.894	.122	.761	1.484	5.044	8.304	R 98.519
2023 January	1.031	RE 3.279	RE 2.215	.648	R 7.173	.739	.078	.010	.045	.133	.435	.702	R 8.614
February	.926	RE 2.963	RE 1.995	.597	R 6.480	.634	.066	.009	.051	.143	.389	.659	R 7.774
March	1.052	RE 3.309	RE 2.250	.688	R 7.300	.655	.070	.010	.068	.151	.434	.734	R 8.689
April	R .950	RE 3.194	RE 2.157	.684	R 6.985	.589	.061	.010	.080	.146	.401	.699	R 8.273
May	R .975	RE 3.328	RE 2.237	.707	R 7.247	.641	.095	.010	.091	.109	.435	.740	R 8.628
June	R .954	RE 3.205	RE 2.200	.700	R 7.059	.678	.067	.010	.093	.094	R .427	R .690	R 8.426
July	.994	3.338	2.289	.714	7.335	.729	.073	.010	.098	.095	.435	.711	8.775
7-Month Total	6.882	E 22.617	E 15.342	4.738	49.578	4.665	.512	.069	.526	.872	2.956	4.935	59.179
2022 7-Month Total	6.965	E 21.560	14.067	4.448	47.039	4.681	.574	.070	.466	.920	2.946	4.976	56.695
2021 7-Month Total	6.653	20.405	13.437	3.983	44.478	4.733	.526	.068	.377	.731	2.815	4.517	53.727

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

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

^c Includes lease condensate.

^d Natural gas 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).

^e Conventional hydroelectric power.

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

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

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

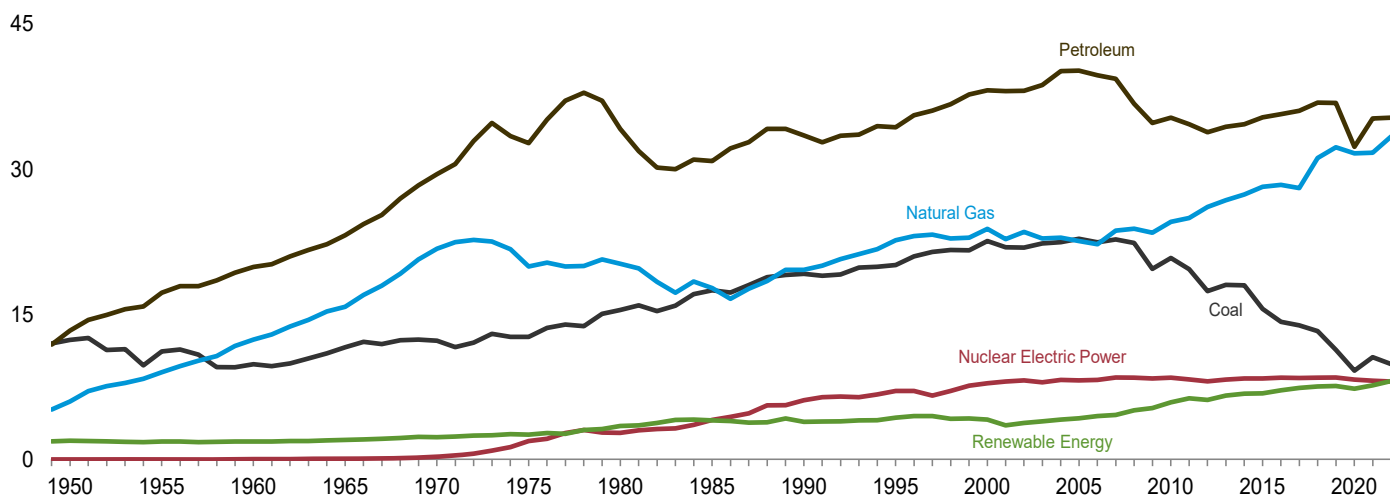
Sources: See end of section.

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

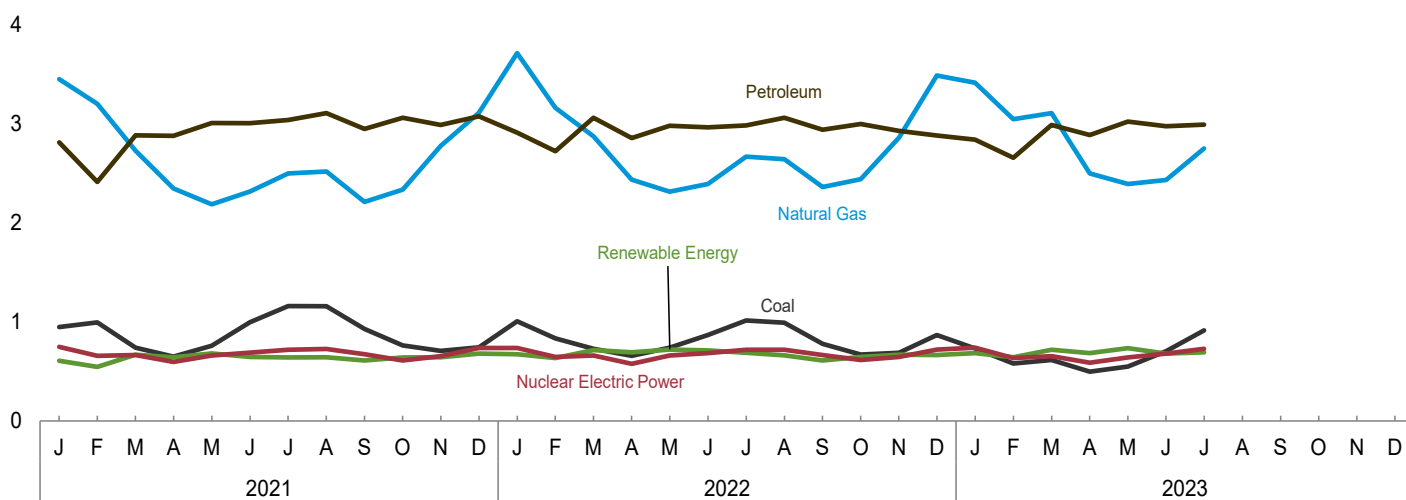
Figure 1.3 Primary Energy Consumption

(Quadrillion Btu)

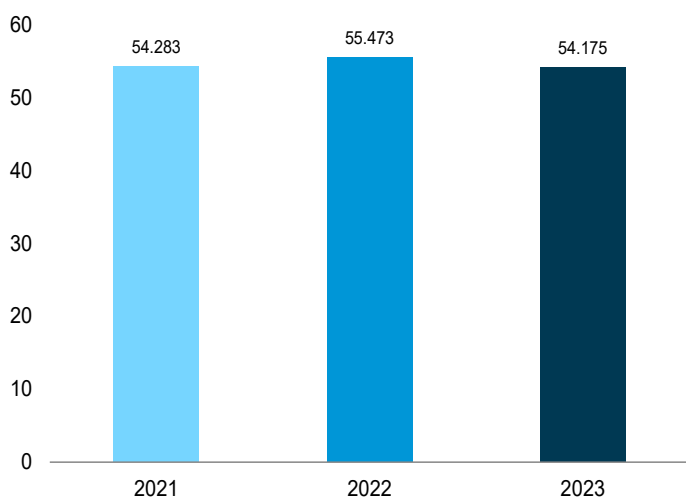
By Source, [a] 1949–2022



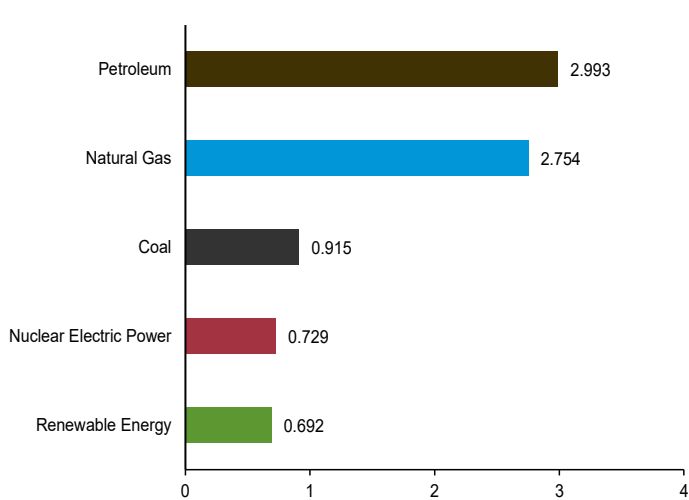
By Source, [a] Monthly



Total, January–July



By Source, [a] July 2023



[a] Small quantities of net imports of coal coke and electricity are not shown.

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

Source: Table 1.3.

Table 1.3 Primary Energy Consumption by Source
(Quadrillion Btu)

	Fossil Fuels ^a				Nuclear Electric Power	Renewable Energy ^b						Total ^g
	Coal	Natural Gas ^c	Petroleum ^d	Total ^e		Hydroelectric Power ^f	Geothermal	Solar	Wind	Bio-mass	Total	
1950 Total	12.347	5.968	13.298	31.615	0.000	0.344	NA	NA	NA	1.562	1.907	33.527
1955 Total	11.167	8.998	17.225	37.380	.000	.397	NA	NA	NA	1.424	1.821	39.215
1960 Total	9.838	12.385	19.874	42.091	.006	.510	(s)	NA	NA	1.320	1.830	43.942
1965 Total	11.581	15.769	23.184	50.515	.043	.672	.001	NA	NA	1.335	2.008	52.565
1970 Total	12.265	21.795	29.499	63.501	.239	.856	.002	NA	NA	1.431	2.289	66.036
1975 Total	12.663	19.948	32.699	65.323	1.900	1.034	.011	NA	NA	1.499	2.544	69.788
1980 Total	15.423	20.235	34.159	69.782	2.739	.953	.017	NA	NA	2.475	3.445	76.038
1985 Total	17.478	17.703	30.866	66.035	4.076	.970	.032	(s)	(s)	3.016	4.018	74.268
1990 Total	19.173	19.603	33.500	72.281	6.104	.999	.063	.056	.010	2.735	3.863	82.256
1995 Total	20.089	22.671	34.341	77.162	7.075	1.061	.060	.064	.011	3.101	4.297	88.668
2000 Total	22.580	23.824	38.152	84.620	7.862	.940	.069	.059	.019	3.008	4.096	96.694
2005 Total	22.797	22.565	40.217	85.623	8.161	.922	.084	.052	.061	3.114	4.233	98.101
2006 Total	22.447	22.239	39.731	84.477	8.215	.987	.086	.054	.091	3.262	4.480	97.235
2007 Total	22.749	23.663	39.368	85.805	8.459	.845	.091	.057	.118	3.485	4.595	98.965
2008 Total	22.387	23.843	36.769	83.041	8.426	.869	.097	.061	.189	3.851	5.068	96.647
2009 Total	19.691	23.416	34.779	77.862	8.355	.933	.105	.063	.252	3.940	5.293	91.626
2010 Total	20.834	24.575	35.321	80.723	8.434	.888	.111	.068	.323	4.506	5.896	95.142
2011 Total	19.658	24.955	34.639	79.263	8.269	1.090	.116	.076	.410	4.616	6.308	93.966
2012 Total	17.378	26.089	33.833	77.304	8.062	.943	.117	.094	.480	4.517	6.150	91.677
2013 Total	18.039	26.805	34.398	79.224	8.244	.916	.117	.120	.573	4.861	6.587	94.253
2014 Total	17.998	27.383	34.658	80.017	8.338	.885	.118	.161	.620	5.016	6.799	95.335
2015 Total	15.549	28.191	35.368	79.090	8.337	.850	.118	.196	.651	5.015	6.829	94.484
2016 Total	14.226	28.400	35.712	78.319	8.427	.914	.117	.251	.774	5.063	7.120	94.092
2017 Total	13.837	28.055	36.043	77.907	8.419	1.025	.118	.329	.868	5.045	7.383	93.902
2018 Total	13.252	31.163	36.892	81.281	8.438	.998	.118	.384	.930	5.105	7.535	97.405
2019 Total	11.316	32.264	36.866	80.425	8.452	.982	.116	.430	1.010	5.056	7.594	96.603
2020 Total	9.181	R 31.640	32.331	R 73.139	8.251	.973	.118	.511	1.153	4.545	7.301	R 88.852
2021 January .....	.947	3.453	2.813	7.210	.748	.084	.010	.032	.103	.379	.607	R 8.579
February .....	.996	R 3.205	2.415	R 6.614	.657	.069	.009	.036	.091	.342	.547	R 7.827
March .....	.741	R 2.732	2.886	R 6.359	.664	.072	.010	.051	.134	.399	.667	R 7.703
April .....	.650	R 2.350	2.880	R 5.876	.595	.066	.010	.059	.123	.383	.642	R 7.124
May .....	.759	R 2.189	3.010	R 5.955	.661	.080	.010	.067	.115	.410	.682	R 7.310
June .....	.997	R 2.319	3.009	R 6.320	.689	.080	.010	.066	.091	.398	.645	R 7.669
July	1.160	R 2.501	3.040	R 6.699	.718	.075	.010	.066	.074	.413	.639	R 8.070
August	1.158	R 2.521	3.111	R 6.784	.725	.069	.010	.064	.092	.407	.643	R 8.163
September .....	.927	R 2.212	2.950	R 6.083	.673	.058	.010	.059	.099	.385	.611	R 7.375
October .....	.762	R 2.337	3.063	R 6.159	.609	.058	.010	.050	.110	.413	.641	R 7.419
November .....	.708	R 2.778	2.991	R 6.472	.654	.066	.010	.042	.122	.403	.643	R 7.774
December .....	.742	R 3.113	3.076	R 6.924	.738	.080	.010	.035	.136	.418	.680	R 8.349
Total	10.549	R 31.711	35.243	R 77.454	8.131	.858	.118	.627	1.290	4.751	7.644	R 93.363
2022 January	1.006	R 3.716	2.915	R 7.632	.736	.089	.011	.043	.130	.400	.673	R 9.051
February .....	.834	R 3.164	2.726	R 6.722	.645	.078	.009	.048	.130	.369	.634	R 8.007
March .....	.729	R 2.874	3.063	R 6.661	.659	.087	.010	.063	.147	.409	.715	R 8.041
April .....	.658	R 2.439	2.858	R 5.950	.577	.067	.010	.070	.157	.388	.692	R 7.227
May .....	.739	R 2.316	2.982	R 6.028	.661	.079	.010	.079	.142	.411	.721	R 7.420
June .....	.867	R 2.394	2.967	R 6.224	.685	.092	.010	.082	.114	.414	.711	R 7.636
July	1.015	R 2.669	2.986	R 6.666	.718	.083	.010	.082	.100	.414	.688	R 8.091
August .....	.993	R 2.645	3.064	R 6.698	.719	.074	.010	.076	.083	.419	.663	R 8.099
September .....	.780	R 2.364	2.943	R 6.083	.665	.057	.010	.070	.092	.382	.611	R 7.372
October .....	.671	R 2.442	2.999	R 6.109	.615	.050	.010	.063	.112	.409	.645	R 7.378
November .....	.687	R 2.860	2.931	R 6.475	.647	.064	.010	.046	.143	.405	.668	R 7.799
December	R .867	R 3.491	2.884	R 7.236	.721	.075	.011	.040	.134	.407	.666	R 8.637
Total	9.846	R 33.375	35.319	R 78.483	8.046	.894	.122	.761	1.484	4.827	8.088	R 94.758
2023 January .....	.732	R 3.418	2.842	R 6.989	.739	.078	.010	.045	.133	.418	.685	R 8.424
February .....	.579	R 3.049	2.658	R 6.285	.634	.066	.009	.051	.143	.373	.643	R 7.569
March .....	.615	R 3.111	2.991	R 6.715	.655	.070	.010	.068	.151	.418	.718	R 8.097
April	R .495	R 2.501	2.888	R 5.883	.589	.061	.010	.080	.146	.388	.686	R 7.165
May	R .549	R 2.392	3.026	R 5.964	.641	.095	.010	.091	.109	.429	.735	R 7.349
June	R .704	R 2.436	2.978	R 6.116	.678	.067	.010	.093	.094	.416	.679	R 7.478
July .....	.915	R 2.754	2.993	R 6.659	.729	.073	.010	.098	.095	.416	.692	R 8.093
7-Month Total	4.590	19.662	20.376	44.611	4.665	.512	.069	.526	.872	2.859	4.838	54.175
2022 7-Month Total	5.848	19.573	20.497	45.883	4.681	.574	.070	.466	.920	2.805	4.835	55.473
2021 7-Month Total	6.251	18.750	20.053	45.032	4.733	.526	.068	.377	.731	2.725	4.427	54.283

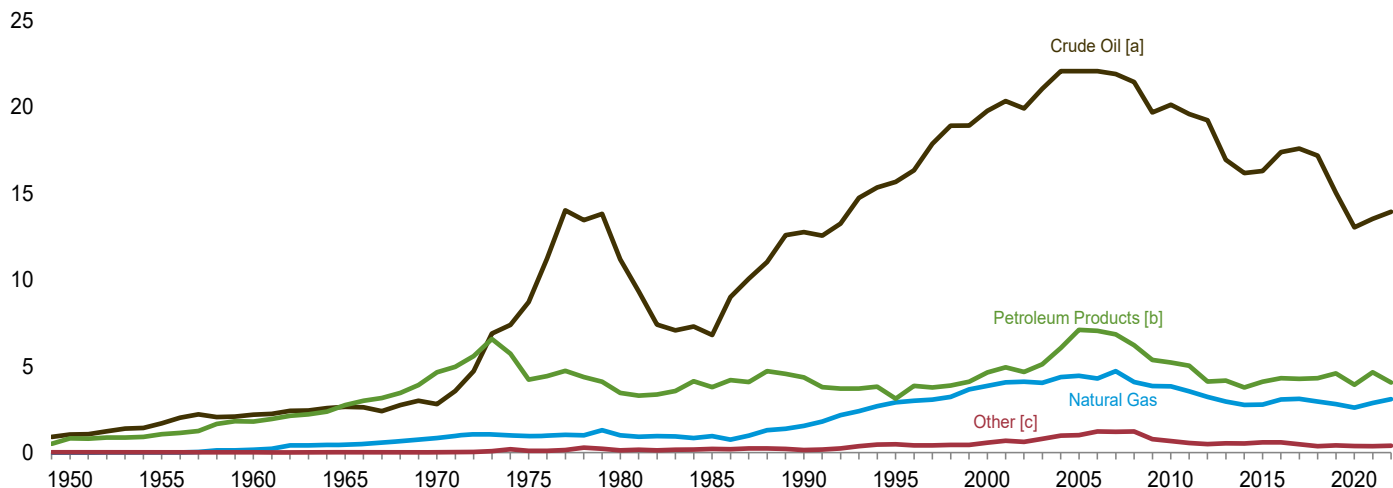
^a Includes non-combustion use of fossil fuels.
^b Most data are estimates. See Tables 10.1–10.2c for notes on series components and estimation; and see Note, "Renewable Energy Production and Consumption," at end of Section 10.
^c Natural gas only; excludes supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
^d Petroleum products supplied; excludes biofuels. Biofuels are included in "Biomass."
^e Includes coal coke net imports. See Table 1.4c.
^f Conventional hydroelectric power.
^g Includes coal coke net imports and electricity net imports, which are not

separately displayed. See Table 1.4c.
R=Revised. NA=Not available. (s)=Less than 0.5 trillion Btu.
Notes: • See "Primary Energy Consumption" in Glossary.
• See Table D1 for estimated energy consumption for 1935–1945. • Totals may not equal sum of components due to independent rounding.
• Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: See end of section.

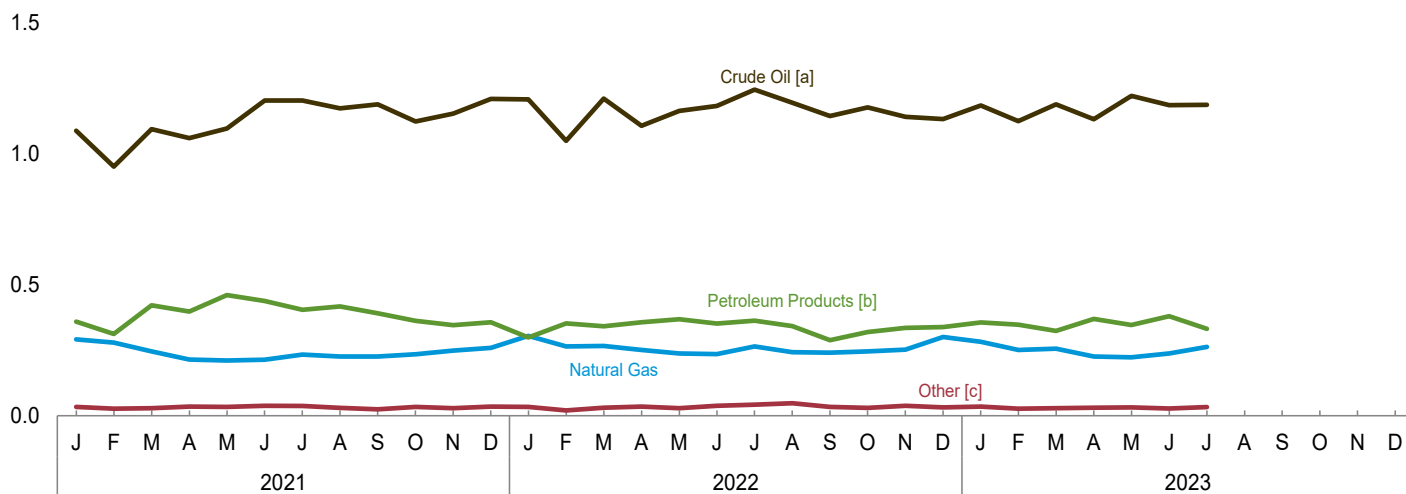
Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Figure 1.4a Primary Energy Imports
(Quadrillion Btu)

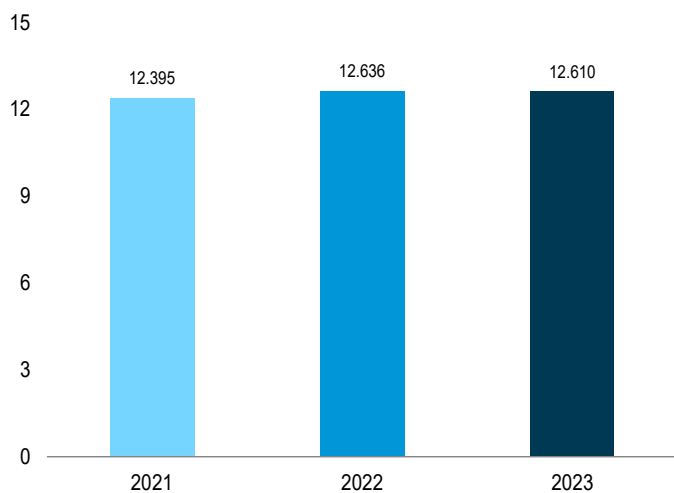
By Source, 1949–2022



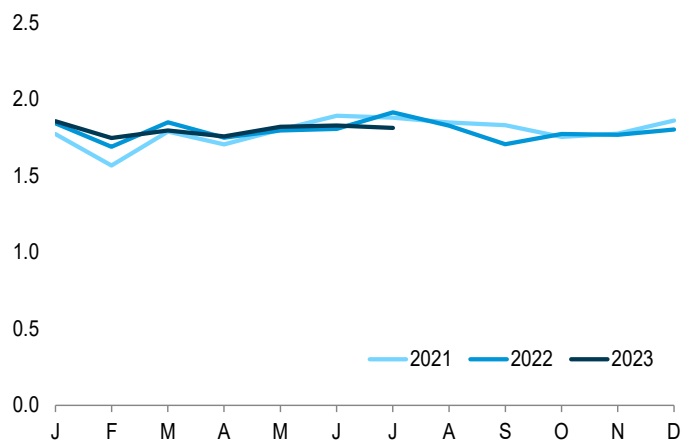
By Source, Monthly



Total, January–July



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 Total .....	.138	.003	2.810	15.045	4.596	19.641	.072	.201	22.865
2020 Total .....	.105	.004	2.615	13.044	3.937	16.980	.074	.210	19.988
2021 January .....	.011	(s)	.291	1.088	.359	1.447	.005	.017	1.772
February .....	.006	(s)	.279	.950	.312	1.262	.005	.014	1.566
March .....	.005	(s)	.245	1.094	.421	1.516	.007	.016	1.788
April .....	.010	(s)	.214	1.059	.397	1.456	.008	.015	1.703
May .....	.010	(s)	.210	1.096	.460	1.556	.006	.016	1.799
June .....	.010	(s)	.213	1.203	.437	1.639	.009	.018	1.890
July .....	.011	(s)	.233	1.203	.404	1.607	.006	.019	1.878
August .....	.007	(s)	.226	1.173	.417	1.590	.006	.016	1.846
September .....	.004	(s)	.226	1.188	.391	1.579	.007	.013	1.829
October .....	.011	(s)	.234	1.123	.362	1.485	.008	.014	1.752
November .....	.009	(s)	.248	1.153	.345	1.498	.008	.010	1.774
December .....	.014	.001	.259	1.209	.356	1.565	.006	.014	1.859
Total .....	.109	.003	2.878	13.539	4.661	18.200	.083	.181	21.455
2022 January .....	.011	(s)	.304	1.207	.298	1.505	.006	.015	1.841
February .....	.006	(s)	.264	1.049	.352	1.402	.003	.011	1.687
March .....	.011	(s)	.266	1.210	.341	1.552	.006	.013	1.848
April .....	.015	(s)	.251	1.106	.356	1.462	.006	.013	1.747
May .....	.007	(s)	.237	1.163	.368	1.530	.006	.015	1.795
June .....	.013	(s)	.235	1.182	.351	1.533	.005	.019	1.805
July .....	.014	(s)	.264	1.244	.363	1.607	.005	.023	1.913
August .....	.017	(s)	.242	1.195	.342	1.537	.006	.025	1.826
September .....	.011	(s)	.240	1.144	.288	1.432	.004	.018	1.705
October .....	.009	(s)	.245	1.177	.319	1.496	.007	.014	1.771
November .....	.015	(s)	.252	1.141	.335	1.477	.010	.012	1.767
December .....	.006	(s)	.300	1.132	.338	1.470	.009	.017	1.802
Total .....	.135	.002	3.100	13.951	4.052	18.003	.073	.194	21.507
2023 January .....	.010	(s)	.282	1.184	.355	1.539	.008	.015	1.855
February .....	.006	(s)	.250	1.124	.347	1.471	.008	.012	1.746
March .....	.006	(s)	.256	1.188	.323	1.510	.009	.013	1.795
April .....	.009	.001	.226	1.131	.369	1.500	.008	.012	1.756
May .....	.007	(s)	.222	1.220	.346	1.566	.011	.013	1.818
June .....	.006	.001	.237	1.185	.379	1.564	.009	.010	1.828
July .....	.007	.001	.262	1.186	.331	1.517	.008	.015	1.811
7-Month Total .....	.051	.003	1.735	8.218	2.449	10.667	.062	.092	12.610
2022 7-Month Total .....	.078	.001	1.820	8.162	2.429	10.591	.037	.109	12.636
2021 7-Month Total .....	.064	.001	1.685	7.693	2.789	10.482	.048	.114	12.395

^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.

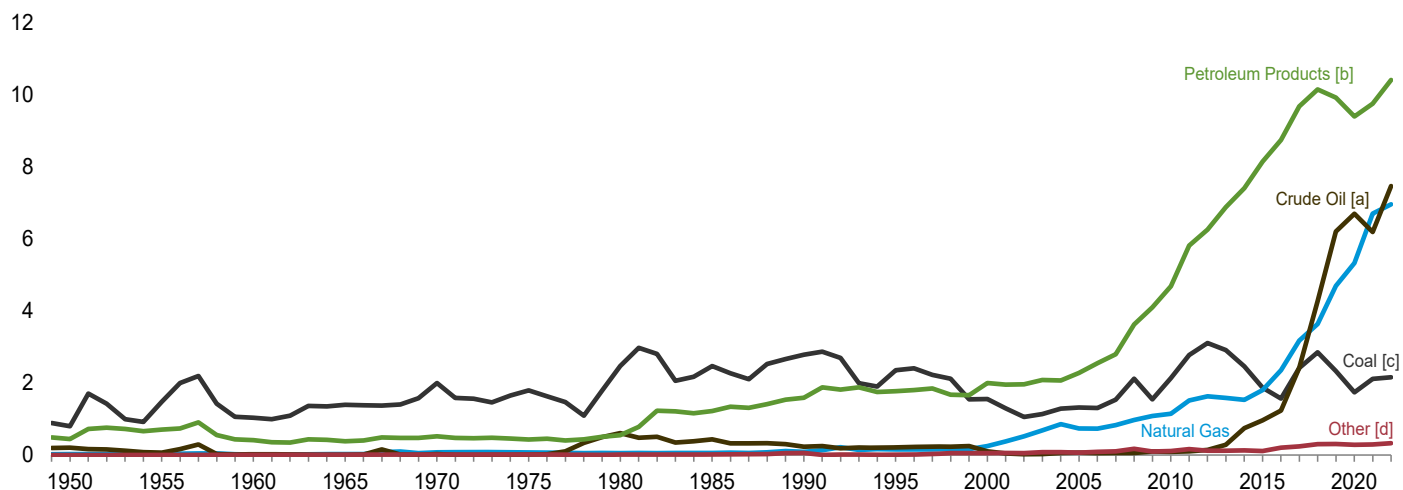
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

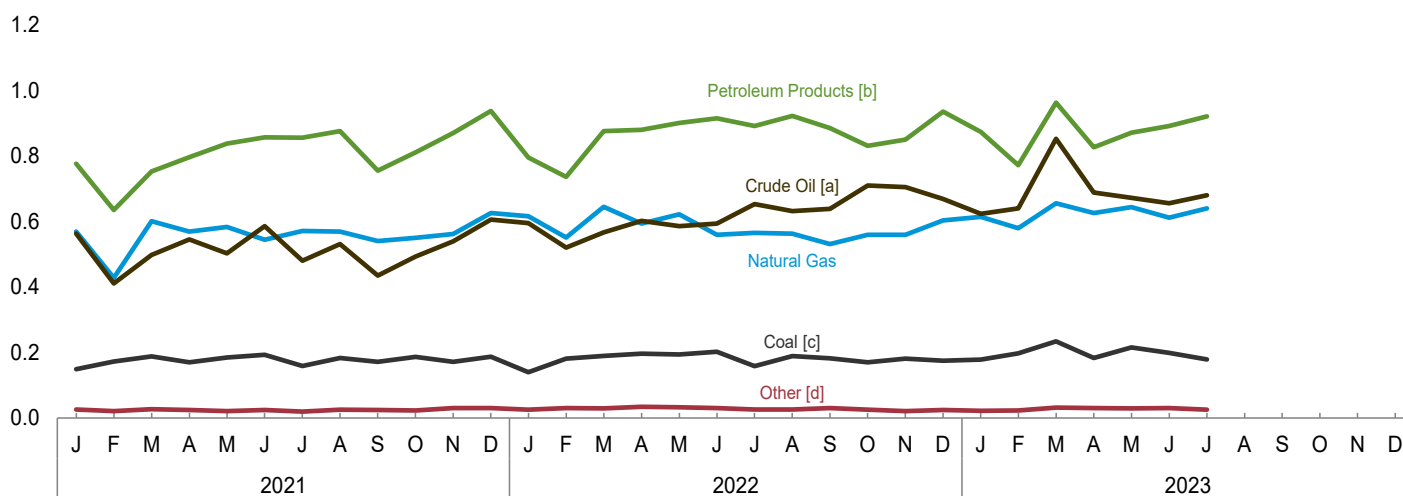
Figure 1.4b Primary Energy Exports

(Quadrillion Btu)

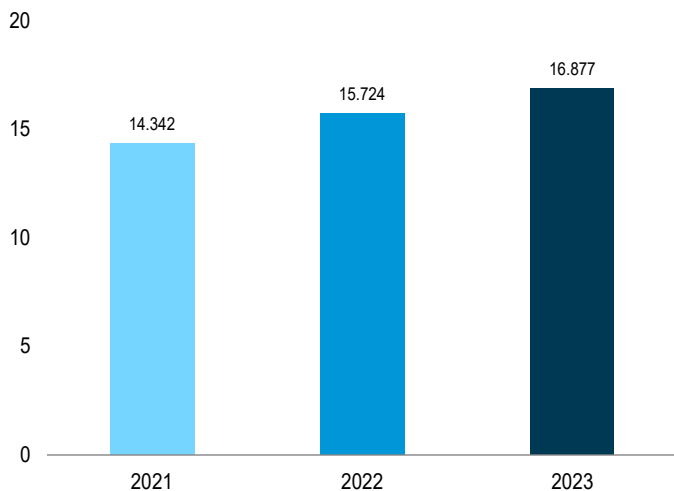
By Source, 1949-2022



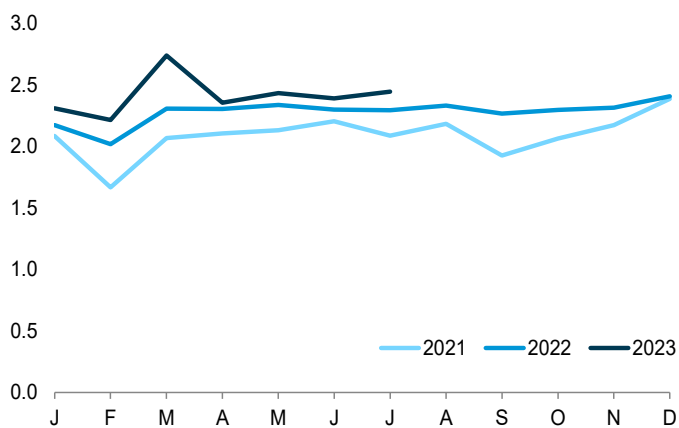
By Source, Monthly



Total, January–July



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 Total	2.305	.024	4.700	6.212	9.926	16.139	.240	.068	23.476
2020 Total	1.725	.017	5.332	6.699	9.410	16.108	.234	.048	23.464
2021 January .....	.146	.003	.569	.563	.776	1.339	.023	.003	2.083
February .....	.169	.003	.428	.411	.635	1.046	.017	.004	1.667
March .....	.187	(s)	.601	.498	.753	1.252	.024	.003	2.067
April .....	.166	.004	.569	.545	.796	1.341	.021	.004	2.104
May .....	.181	.004	.583	.503	.838	1.341	.018	.003	2.131
June .....	.186	.006	.544	.586	.857	1.444	.021	.003	2.204
July .....	.156	.003	.571	.480	.856	1.336	.015	.004	2.085
August .....	.178	.005	.569	.531	.876	1.407	.021	.004	2.183
September .....	.165	.006	.540	.435	.755	1.190	.020	.004	1.925
October .....	.182	.004	.550	.493	.811	1.304	.018	.004	2.063
November .....	.165	.005	.562	.539	.870	1.409	.024	.006	2.172
December .....	.180	.008	.626	.606	.937	1.543	.024	.005	2.386
Total	2.061	.052	6.712	6.191	9.761	15.952	.247	.047	25.071
2022 January .....	.135	.005	.616	.595	.795	1.390	.020	.005	2.171
February .....	.178	.002	.551	.520	.736	1.255	.024	.005	2.017
March .....	.185	.005	.645	.567	.876	1.443	.023	.006	2.306
April .....	.191	.005	.593	.602	.880	1.481	.029	.005	2.303
May .....	.184	.010	.622	.586	.901	1.487	.027	.005	2.336
June .....	.198	.004	.559	.593	.915	1.508	.026	.004	2.297
July .....	.154	.005	.565	.653	.892	1.545	.022	.004	2.294
August .....	.184	.004	.563	.632	.922	1.554	.022	.004	2.331
September .....	.178	.005	.531	.638	.885	1.523	.025	.005	2.266
October .....	.166	.004	.559	.710	.831	1.541	.021	.004	2.295
November .....	.178	.003	.559	.705	.850	1.554	.018	.003	2.315
December .....	.169	.005	.603	.669	.936	1.605	.022	.003	2.407
Total	2.099	.057	6.966	7.468	10.417	17.885	.278	.054	27.339
2023 January .....	.174	.003	.614	.623	.873	1.496	.018	.004	2.309
February .....	.195	.002	.579	.640	.772	1.413	.018	.005	2.213
March .....	.232	.002	.656	.853	.963	1.815	.027	.004	2.737
April .....	.181	.002	.626	.688	.827	1.515	.024	.006	2.354
May .....	.212	.003	R .644	.672	.871	1.543	.024	.004	R 2.431
June .....	.195	.003	.612	.656	.892	1.548	R .026	.005	R 2.389
July .....	.174	.004	.640	.680	.921	1.601	.023	.002	2.445
7-Month Total	1.364	.021	4.371	4.812	6.119	10.931	.160	.030	16.877
2022 7-Month Total	1.224	.036	4.151	4.115	5.993	10.108	.171	.034	15.724
2021 7-Month Total	1.192	.024	3.865	3.587	5.512	9.099	.140	.023	14.342

^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.

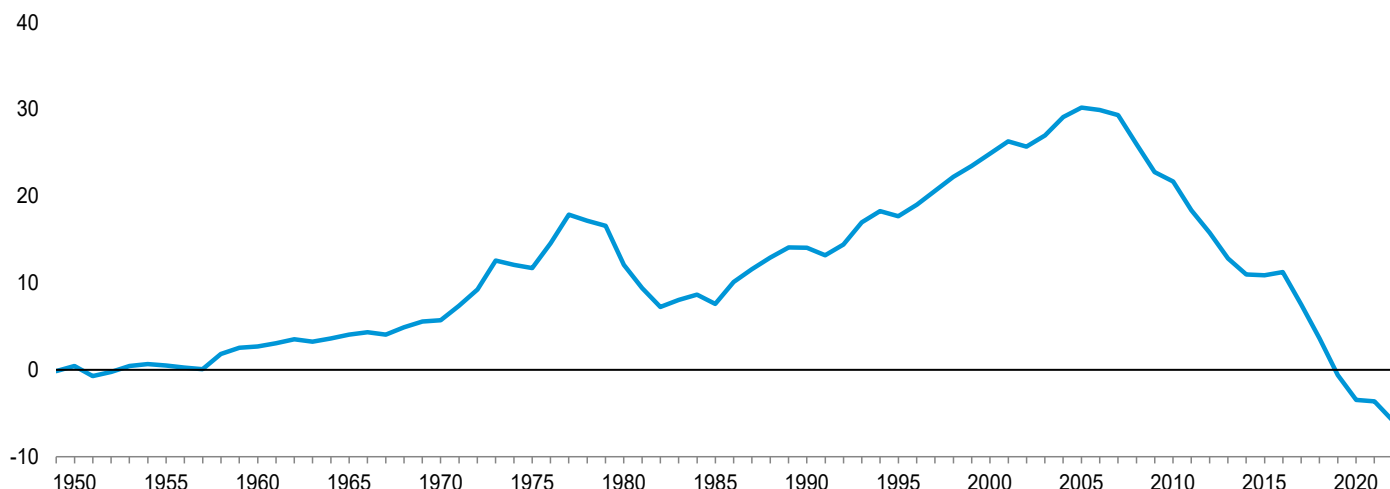
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Sources: See end of section.

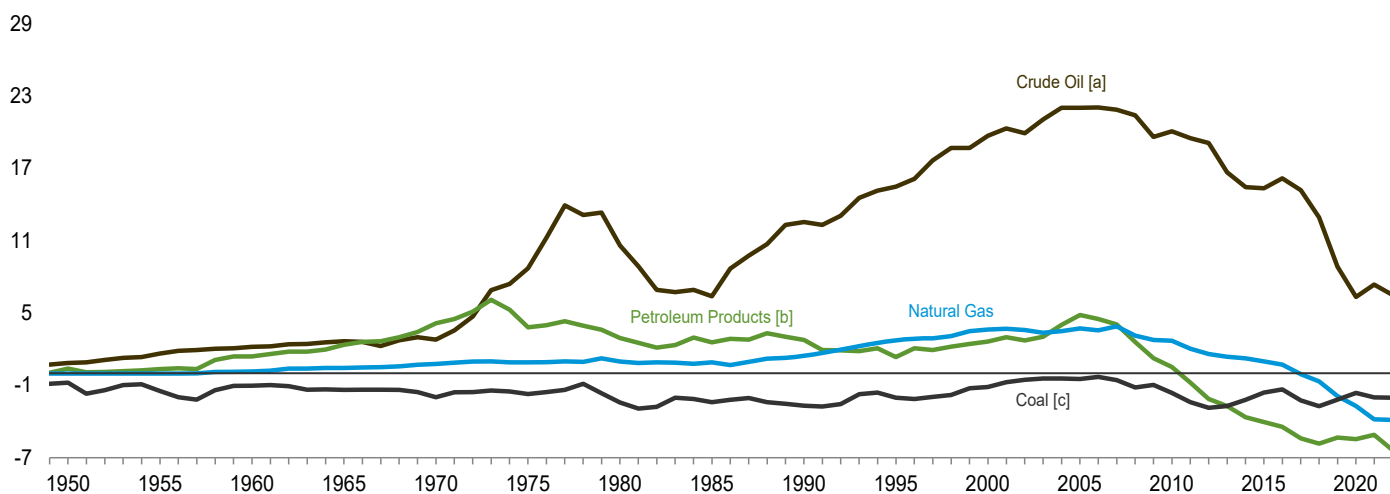
Figure 1.4c Primary Energy Net Imports

(Quadrillion Btu)

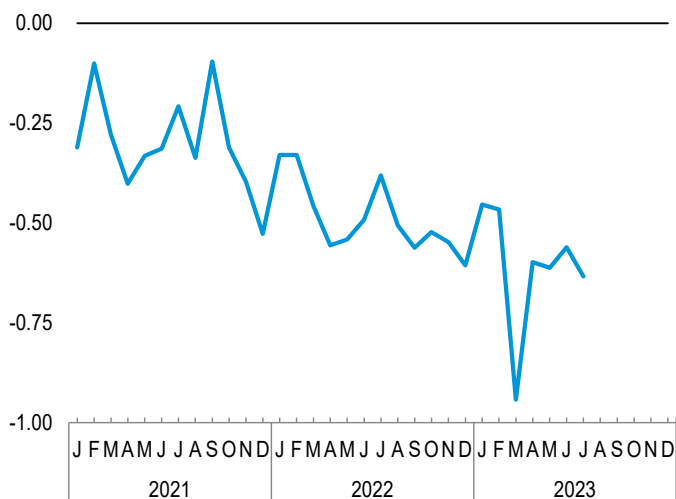
Total, 1949–2022



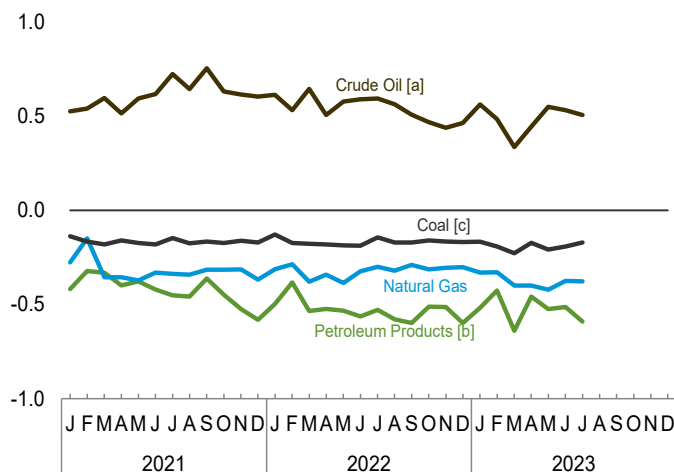
By Major Source, 1949–2022



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	-0.010	-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 Total	-2.167	-.021	-1.889	8.833	-5.331	3.502	-.168	.133	-.610
2020 Total	-1.620	-.013	-2.717	6.345	-5.473	.872	-.159	.161	-3.476
2021 January	-.135	-.003	-.277	.525	-.418	.108	-.017	.014	-.311
February	-.163	-.003	-.149	.538	-.323	.215	-.012	.010	-.101
March	-.182	(s)	-.356	.596	-.332	.264	-.018	.013	-.279
April	-.155	-.004	-.356	.514	-.399	.115	-.012	.011	-.402
May	-.171	-.004	-.373	.593	-.378	.215	-.012	.013	-.332
June	-.176	-.006	-.331	.616	-.421	.196	-.012	.015	-.314
July	-.145	-.003	-.338	.723	-.452	.271	-.009	.015	-.208
August	-.171	-.005	-.342	.642	-.458	.184	-.015	.012	-.337
September	-.160	-.006	-.315	.753	-.363	.389	-.013	.009	-.096
October	-.171	-.004	-.316	.630	-.449	.181	-.010	.010	-.311
November	-.157	-.005	-.314	.614	-.525	.089	-.016	.004	-.397
December	-.166	-.007	-.368	.603	-.581	.022	-.018	.008	-.527
Total	-1.952	-.049	-3.834	7.348	-5.100	2.248	-.163	.134	-3.616
2022 January	-.124	-.005	-.313	.612	-.497	.115	-.013	.010	-.330
February	-.172	-.002	-.287	.530	-.383	.147	-.022	.006	-.330
March	-.174	-.005	-.379	.644	-.535	.109	-.016	.007	-.458
April	-.176	-.005	-.342	.505	-.524	-.019	-.023	.009	-.556
May	-.177	-.010	-.386	.576	-.533	.043	-.021	.009	-.541
June	-.184	-.004	-.324	.589	-.563	.026	-.021	.015	-.492
July	-.139	-.005	-.301	.592	-.529	.062	-.017	.019	-.381
August	-.168	-.004	-.321	.562	-.579	-.017	-.016	.020	-.506
September	-.166	-.005	-.291	.507	-.598	-.091	-.021	.013	-.562
October	-.157	-.004	-.314	.467	-.512	-.044	-.014	.010	-.523
November	-.163	-.003	-.306	.437	-.514	-.077	-.007	.009	-.548
December	-.163	-.005	-.302	.463	-.598	-.135	-.013	.014	-.606
Total	-1.964	-.056	-3.866	6.483	-6.365	.118	-.205	.141	-5.832
2023 January	-.164	-.003	-.331	.561	-.518	.043	-.010	.011	-.454
February	-.190	-.002	-.329	.483	-.426	.058	-.010	.007	-.466
March	-.226	-.002	-.400	.335	-.640	-.305	-.018	.009	-.942
April	-.172	-.002	-.400	.443	-.458	-.015	-.016	.007	-.598
May	-.206	-.003	R-.422	.548	-.525	.023	-.014	.009	R-.612
June	-.189	-.002	-.375	.530	-.514	.016	-.016	.006	R-.561
July	-.167	-.003	-.378	.506	-.591	-.085	-.015	.013	-.634
7-Month Total	-1.314	-.017	-2.636	3.406	-3.670	-.264	-.098	.061	-4.268
2022 7-Month Total	-1.146	-.035	-2.331	4.047	-3.564	.483	-.134	.075	-3.088
2021 7-Month Total	-1.127	-.023	-2.180	4.106	-2.723	1.383	-.091	.091	-1.947

^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.

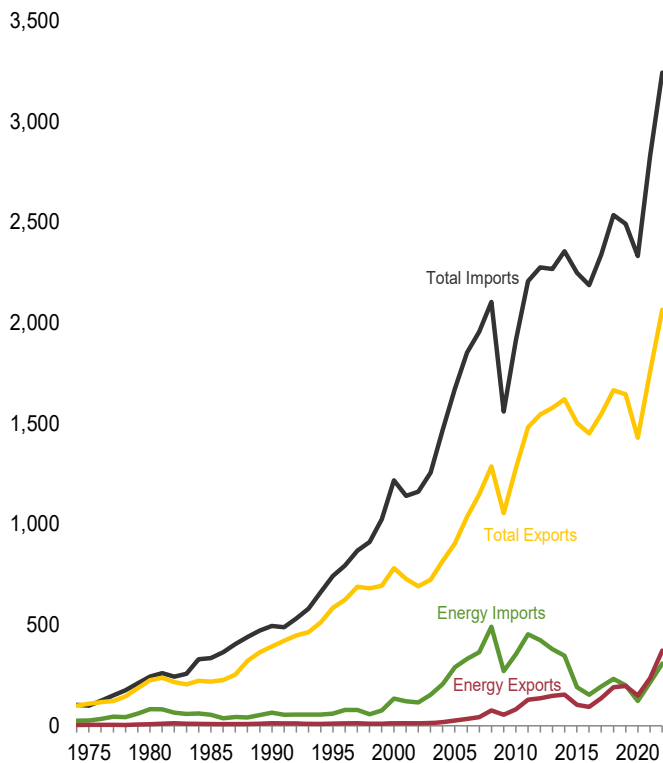
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: Tables 1.4a and 1.4b.

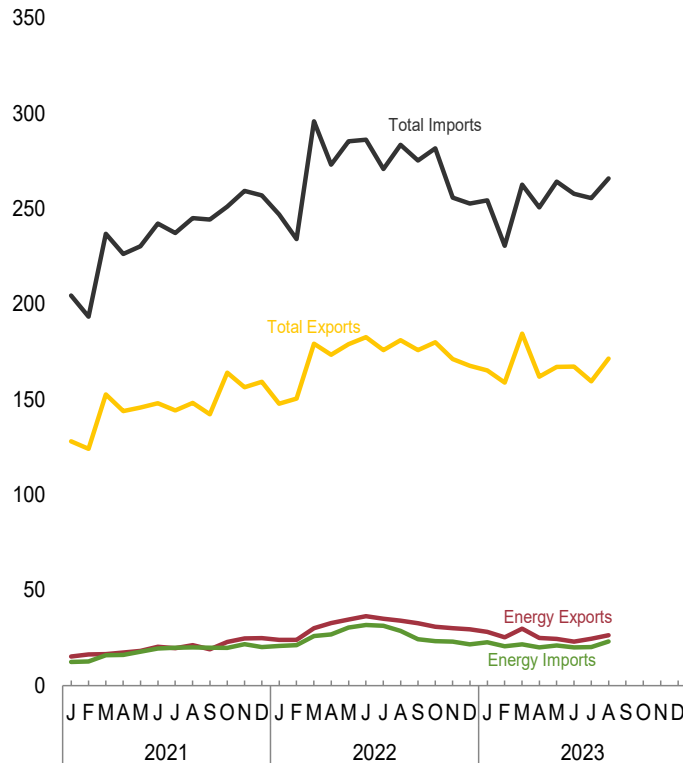
Figure 1.5 Merchandise Trade Value

(Billion Dollars[a])

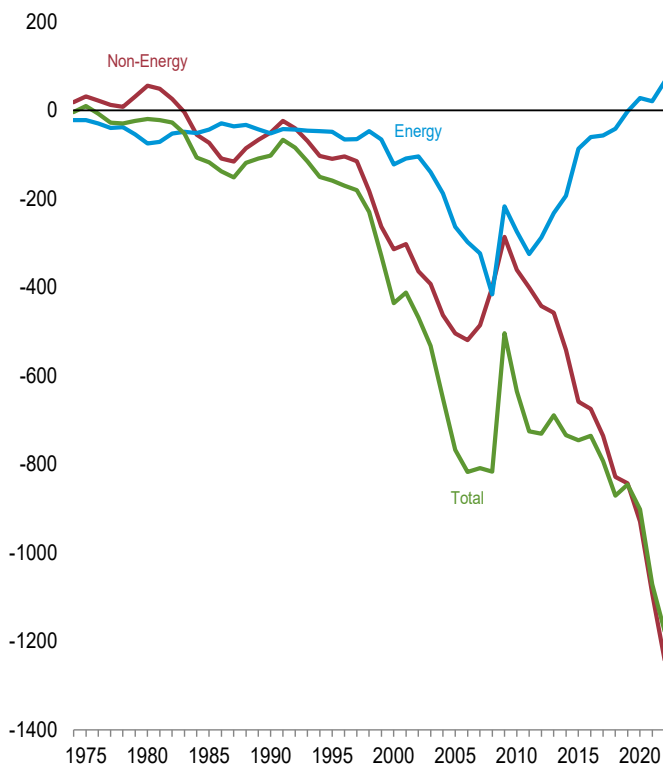
Imports and Exports, 1974–2022



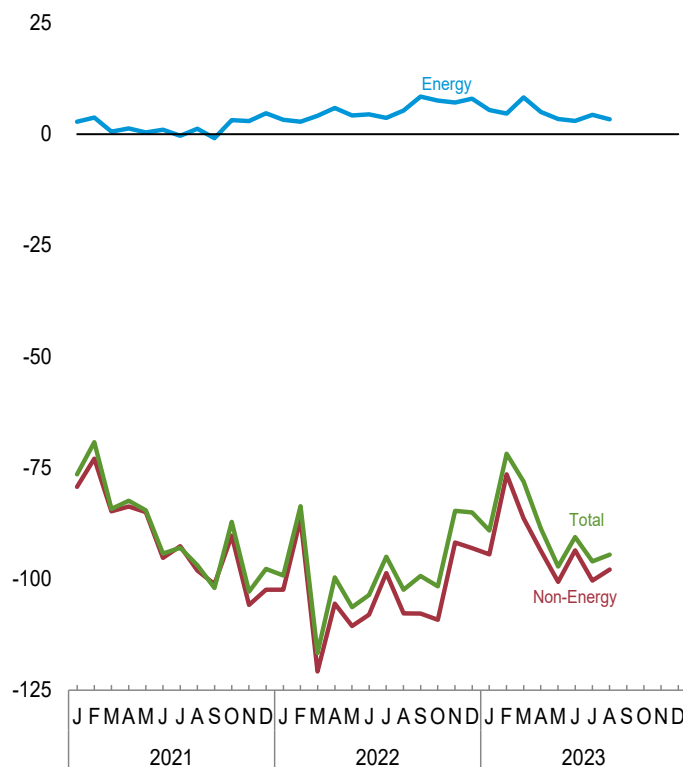
Imports and Exports, Monthly



Trade Balance, 1974–2022



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.

Table 1.5 Merchandise Trade Value
(Million Dollars^a)

	Petroleum ^b			Energy ^c			Non-Energy Balance	Total Merchandise		
	Exports	Imports	Balance	Exports	Imports	Balance		Exports	Imports	Balance
1974 Total	792	24,668	-23,876	3,444	25,454	-22,010	18,126	99,437	103,321	-3,884
1975 Total	907	25,197	-24,289	4,470	26,476	-22,006	31,557	108,856	99,305	9,551
1980 Total	2,833	78,637	-75,803	7,982	82,924	-74,942	55,246	225,566	245,262	-19,696
1985 Total	4,707	50,475	-45,768	9,971	53,917	-43,946	-73,765	218,815	336,526	-117,712
1990 Total	6,901	61,583	-54,682	12,233	64,661	-52,428	-50,068	393,592	496,088	-102,496
1995 Total	6,321	54,368	-48,047	10,358	59,109	-48,751	-110,050	584,742	743,543	-158,801
2000 Total	8,569	102,663	-94,094	11,541	115,748	-104,207	-364,056	693,103	1,161,366	-468,263
2005 Total	19,155	250,068	-230,913	26,488	289,723	-263,235	-504,242	905,978	1,673,455	-767,477
2006 Total	28,171	299,714	-271,543	34,711	332,500	-297,789	-519,515	1,036,635	1,853,938	-817,304
2007 Total	33,293	327,620	-294,327	41,725	364,987	-323,262	-485,501	1,148,199	1,956,962	-808,763
2008 Total	61,695	449,847	-388,152	76,075	491,885	-415,810	-400,389	1,287,442	2,103,641	-816,199
2009 Total	44,509	251,833	-207,324	54,536	271,739	-217,203	-286,379	1,056,043	1,559,625	-503,582
2010 Total	64,753	333,472	-268,719	80,625	354,982	-274,357	-361,005	1,278,495	1,913,857	-635,362
2011 Total	^b 102,180	^b 431,866	^b -329,686	128,989	453,839	-324,850	-400,597	1,482,508	2,207,954	-725,447
2012 Total	111,949	408,509	-296,560	136,054	423,860	-287,806	-442,640	1,545,821	2,276,267	-730,446
2013 Total	123,244	363,141	-239,897	147,572	379,758	-232,186	-457,284	1,578,517	2,267,987	-689,470
2014 Total	127,818	326,709	-198,891	154,498	347,474	-192,976	-541,506	1,621,874	2,356,356	-734,482
2015 Total	85,890	177,455	-91,565	103,612	190,501	-86,889	-658,594	1,503,328	2,248,811	-745,483
2016 Total	74,921	142,920	-67,999	92,971	153,800	-60,829	-674,497	1,451,460	2,186,786	-735,326
2017 Total	104,975	181,672	-76,697	137,920	194,790	-56,870	-735,526	1,547,195	2,339,591	-792,396
2018 Total	149,715	219,493	-69,778	190,888	232,746	-41,858	-828,500	1,665,787	2,536,145	-870,358
2019 Total	156,390	189,040	-32,650	197,740	200,829	-3,089	-842,670	1,645,940	2,491,700	-845,759
2020 Total	110,373	113,077	-2,704	150,074	122,486	27,588	-929,070	1,429,995	2,331,477	-901,482
2021 January	10,253	11,035	-782	15,160	12,361	2,799	-79,276	128,162	204,639	-76,477
February	8,976	10,724	-1,748	16,376	12,681	3,695	-72,958	124,182	193,445	-69,263
March	10,837	14,708	-3,871	16,491	15,937	554	-84,804	152,671	236,921	-84,250
April	12,062	15,133	-3,071	17,352	16,059	1,293	-83,730	144,018	226,454	-82,437
May	12,779	16,813	-4,034	18,179	17,803	376	-84,966	145,815	230,405	-84,590
June	14,762	18,254	-3,492	20,370	19,390	980	-95,241	148,067	242,329	-94,261
July	13,639	18,564	-4,925	19,578	19,936	-358	-92,670	144,270	237,297	-93,028
August	14,485	18,642	-4,157	21,191	19,994	1,197	-98,107	148,295	245,205	-96,910
September	12,197	18,528	-6,331	19,030	19,934	-904	-101,132	142,339	244,375	-102,036
October	14,754	18,041	-3,287	22,861	19,714	3,147	-90,307	164,138	251,297	-87,160
November	16,105	19,854	-3,749	24,652	21,708	2,944	-105,825	156,533	259,414	-102,881
December	16,600	18,352	-1,752	24,910	20,218	4,692	-102,453	159,332	257,093	-97,761
Total	157,448	198,648	-41,200	236,151	215,734	20,417	-1,091,470	1,757,822	2,828,875	-1,071,053
2022 January	16,213	18,180	-1,967	23,981	20,737	3,244	-102,461	147,848	247,065	-99,217
February	15,898	19,117	-3,219	23,981	21,207	2,774	-86,437	150,555	234,219	-83,663
March	20,953	24,082	-3,129	30,134	25,978	4,156	-120,818	179,314	295,975	-116,662
April	22,813	24,904	-2,091	32,722	26,847	5,875	-105,518	173,534	273,177	-99,643
May	23,559	28,205	-4,646	34,610	30,388	4,222	-110,563	179,048	285,388	-106,341
June	25,009	29,559	-4,550	36,284	31,859	4,425	-108,047	182,663	286,285	-103,622
July	25,364	29,009	-3,645	35,002	31,322	3,680	-98,691	175,897	270,907	-95,011
August	23,183	26,196	-3,013	34,022	28,738	5,284	-107,737	181,182	283,635	-102,453
September	21,934	22,030	-96	32,686	24,256	8,430	-107,793	175,980	275,343	-99,363
October	21,317	21,686	-369	30,853	23,322	7,531	-109,166	180,101	281,737	-101,635
November	21,572	21,006	566	30,149	23,029	7,120	-91,807	171,280	255,967	-84,687
December	20,525	19,334	1,191	29,501	21,516	7,985	-93,060	167,755	252,830	-85,075
Total	258,342	283,306	-24,964	373,924	309,198	64,726	-1,242,099	2,065,157	3,242,530	-1,177,373
2023 January	18,737	20,164	-1,427	28,103	22,703	5,400	-94,496	165,342	254,438	-89,096
February	17,530	17,921	-391	25,213	20,601	4,612	-76,468	158,851	230,707	-71,856
March	21,600	18,959	2,641	29,762	21,517	8,245	-86,381	184,621	262,756	-78,136
April	18,214	18,527	-313	25,019	20,013	5,006	-93,694	162,064	250,752	-88,688
May	17,751	19,804	-2,053	24,398	20,960	3,438	-100,659	167,128	264,349	-97,221
June	17,121	18,991	-1,870	23,032	20,046	2,986	-93,570	167,303	257,887	-90,584
July	18,440	19,049	-609	24,519	20,205	4,314	^R -100,361	^R 159,619	^R 255,666	^R -96,047
August	20,088	22,045	-1,957	26,465	23,101	3,364	-97,884	171,503	266,023	-94,520
8-Month Total	149,481	155,460	-5,979	206,511	169,145	37,365	-743,513	1,336,430	2,042,578	-706,148
2022 8-Month Total	172,993	199,251	-26,260	250,736	217,076	33,660	-840,272	1,370,040	2,176,652	-806,612
2021 8-Month Total	97,793	123,873	-26,080	144,697	134,161	10,536	-691,752	1,135,480	1,816,695	-681,216

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

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

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

^R=Revised.

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

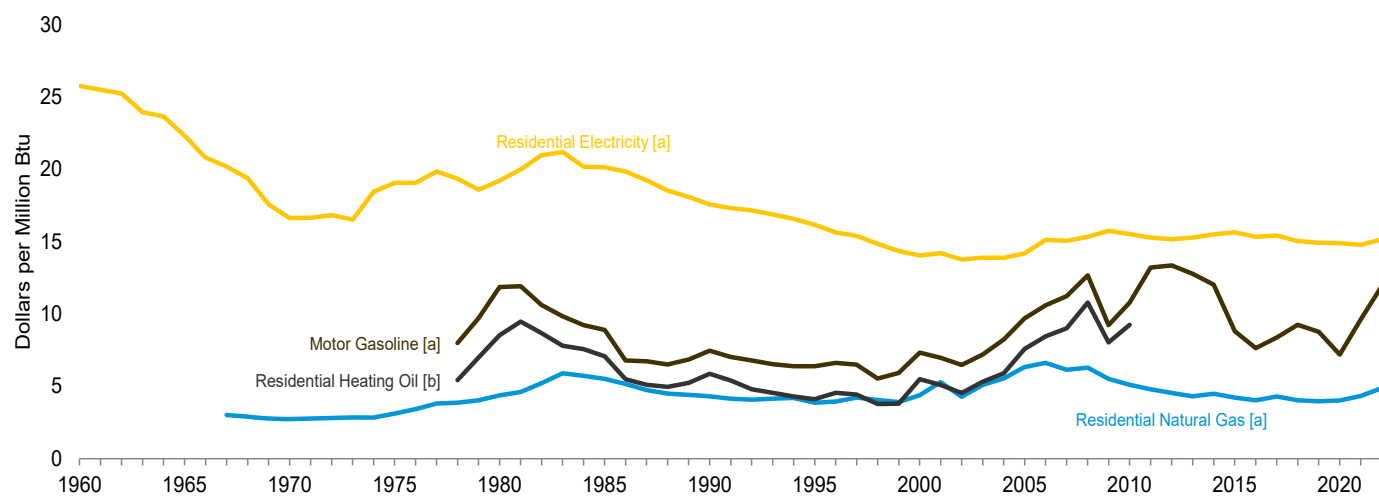
components due to independent rounding. • The U.S. import statistics reflect both government and nongovernment imports of merchandise from foreign countries into the U.S. customs territory, which comprises the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands.

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

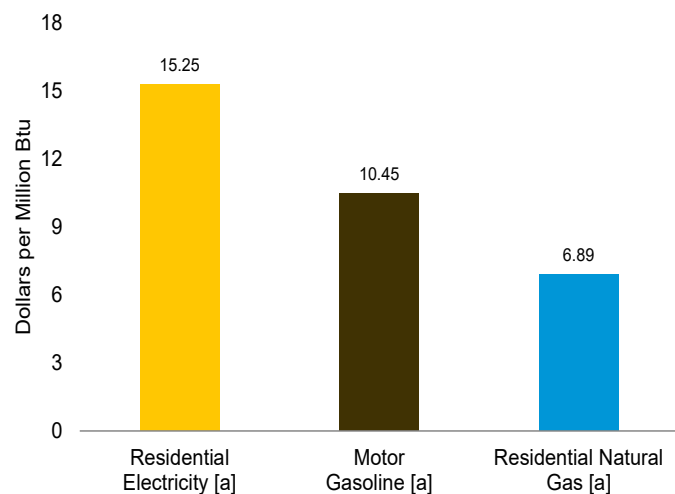
Sources: See end of section.

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

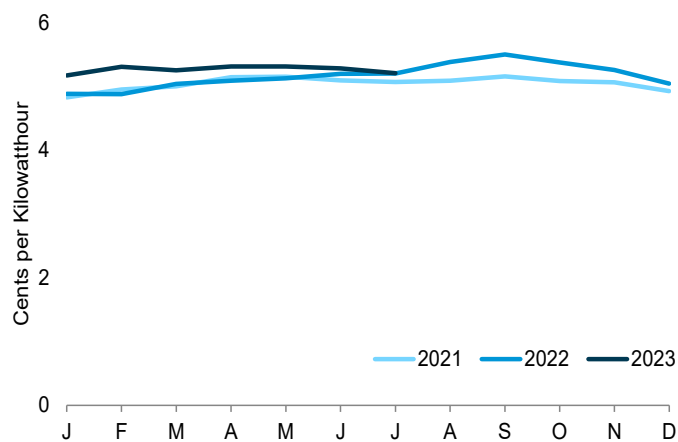
Costs, 1960–2022



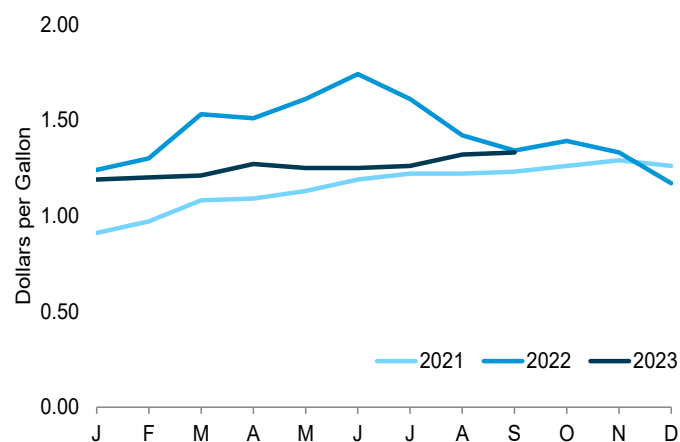
Costs, July 2023



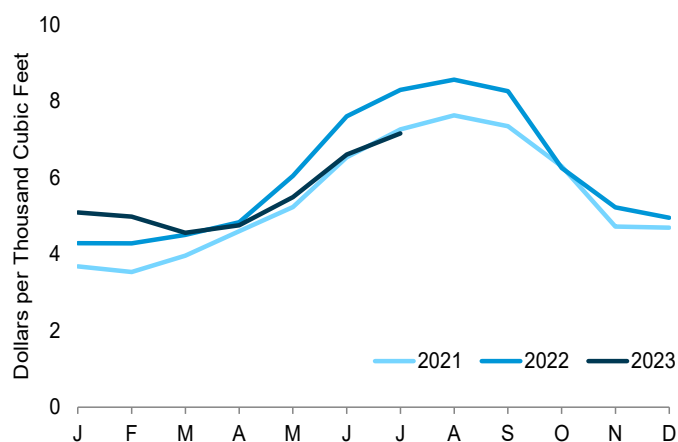
Residential Electricity, [a] Monthly



Motor Gasoline, [a] Monthly



Residential Natural Gas, [a] Monthly



[a] Includes Taxes.

[b] Excludes Taxes.

Note: See "Real Dollars" in Glossary.

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

Source: Tables 1.6.

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

	Consumer Price Index, All Urban Consumers ^a	Motor Gasoline ^b		Residential Heating Oil ^c		Residential Natural Gas ^b		Residential Electricity ^b	
	Index 1982–1984=100	Dollars per Gallon	Dollars per Million Btu	Dollars per Gallon	Dollars per Million Btu	Dollars per Thousand Cubic Feet	Dollars per Million Btu	Cents per 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
1980 Average	82.4	1.482	11.85	1.182	8.52	4.47	4.36	6.6	19.21
1985 Average	107.6	1.112	8.89	0.979	7.06	5.69	5.52	6.87	20.13
1990 Average	130.7	0.931	7.44	0.813	5.86	4.44	4.31	5.99	17.56
1995 Average	152.4	0.791	6.38	0.569	4.10	3.98	3.87	5.51	16.15
2000 Average	172.2	0.908	7.33	0.761	5.49	4.51	4.39	4.79	14.02
2001 Average	177.1	0.864	6.98	0.706	5.09	5.44	5.28	4.84	14.20
2002 Average	179.9	0.801	6.47	0.628	4.52	4.39	4.28	4.69	13.75
2003 Average	184.0	0.890	7.19	0.736	5.31	5.23	5.09	4.74	13.89
2004 Average	188.9	1.018	8.23	0.819	5.91	5.69	5.55	4.74	13.89
2005 Average	195.3	1.197	9.68	1.051	7.58	6.50	6.33	4.84	14.18
2006 Average	201.6	1.307	10.59	1.173	8.46	6.81	6.63	5.16	15.12
2007 Average	207.342	1.374	11.22	1.250	9.01	6.31	6.14	5.14	15.05
2008 Average	215.303	1.541	12.67	1.495	10.78	6.45	6.28	5.23	15.33
2009 Average	214.537	1.119	9.23	1.112	8.02	5.66	5.52	5.37	15.72
2010 Average	218.056	1.301	10.78	1.283	9.25	5.22	5.11	5.29	15.51
2011 Average	224.939	1.590	13.19	NA	NA	4.90	4.80	5.21	15.27
2012 Average	229.594	1.609	13.35	NA	NA	4.64	4.53	5.17	15.17
2013 Average	232.957	1.538	12.77	NA	NA	4.43	4.31	5.21	15.26
2014 Average	236.736	1.447	12.01	NA	NA	4.63	4.49	5.29	15.50
2015 Average	237.017	1.059	8.80	NA	NA	4.38	4.22	5.34	15.64
2016 Average	240.007	0.918	7.63	NA	NA	4.19	4.03	5.23	15.33
2017 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 Average	255.657	1.055	8.77	NA	NA	4.11	3.95	5.09	14.91
2020 Average	258.811	0.866	7.20	NA	NA	4.17	4.01	5.08	14.89
2021 January	261.582	0.914	7.60	NA	NA	3.68	3.54	4.82	14.14
February	263.014	0.973	8.09	NA	NA	3.53	3.40	4.95	14.50
March	264.877	1.078	8.97	NA	NA	R 3.95	R 3.80	5.00	14.65
April	267.054	1.089	9.05	NA	NA	R 4.60	R 4.42	5.14	15.07
May	269.195	1.130	9.40	NA	NA	5.23	5.03	5.15	15.09
June	271.696	1.194	9.93	NA	NA	R 6.53	R 6.28	5.09	14.92
July	273.003	1.218	10.13	NA	NA	7.26	R 6.98	5.07	14.85
August	273.567	1.225	10.19	NA	NA	7.63	R 7.34	5.09	14.91
September	274.310	1.225	10.19	NA	NA	R 7.34	R 7.06	5.15	15.11
October	276.589	1.257	10.46	NA	NA	R 6.29	R 6.05	5.08	14.90
November	277.948	1.287	10.70	NA	NA	4.72	4.54	5.06	14.84
December	278.802	1.257	10.46	NA	NA	4.69	4.52	4.92	14.42
Average	270.970	1.156	9.62	NA	NA	4.50	4.33	5.04	14.77
2022 January	281.148	1.245	10.36	NA	NA	4.28	R 4.13	4.88	14.30
February	283.716	1.295	10.78	NA	NA	R 4.28	R 4.12	4.87	14.29
March	287.504	1.531	12.73	NA	NA	R 4.50	R 4.34	5.04	14.76
April	289.109	1.511	12.57	NA	NA	R 4.83	R 4.66	5.09	14.91
May	292.296	1.606	13.36	NA	NA	R 6.05	R 5.82	5.12	15.01
June	296.311	1.738	14.46	NA	NA	R 7.59	R 7.32	5.20	15.23
July	296.276	1.609	13.39	NA	NA	R 8.29	R 7.98	5.20	15.24
August	296.171	1.420	11.81	NA	NA	R 8.56	R 8.24	5.38	15.76
September	296.808	1.344	11.18	NA	NA	R 8.25	R 7.95	5.50	16.11
October	298.012	1.386	11.53	NA	NA	R 6.25	R 6.02	5.37	15.75
November	297.711	1.329	11.06	NA	NA	R 5.22	R 5.03	5.25	15.40
December	296.797	1.165	9.69	NA	NA	R 4.95	R 4.77	5.04	14.77
Average	292.655	1.432	11.92	NA	NA	5.04	4.86	5.17	15.14
2023 January	299.170	1.188	9.88	NA	NA	R 5.09	R 4.90	5.17	15.16
February	300.840	1.204	10.02	NA	NA	R 4.98	4.80	5.31	15.55
March	301.836	1.213	10.09	NA	NA	4.56	4.39	5.25	15.39
April	303.363	1.265	10.53	NA	NA	R 4.75	R 4.58	5.31	15.56
May	304.127	1.248	10.38	NA	NA	5.49	5.29	5.31	15.55
June	305.109	1.252	10.42	NA	NA	R 6.60	R 6.36	5.28	15.48
July	305.691	1.257	10.45	NA	NA	R 7.15	R 6.89	R 5.20	R 15.25
August	307.026	1.324	11.01	NA	NA	NA	NA	NA	NA
September	307.789	1.334	11.10	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.

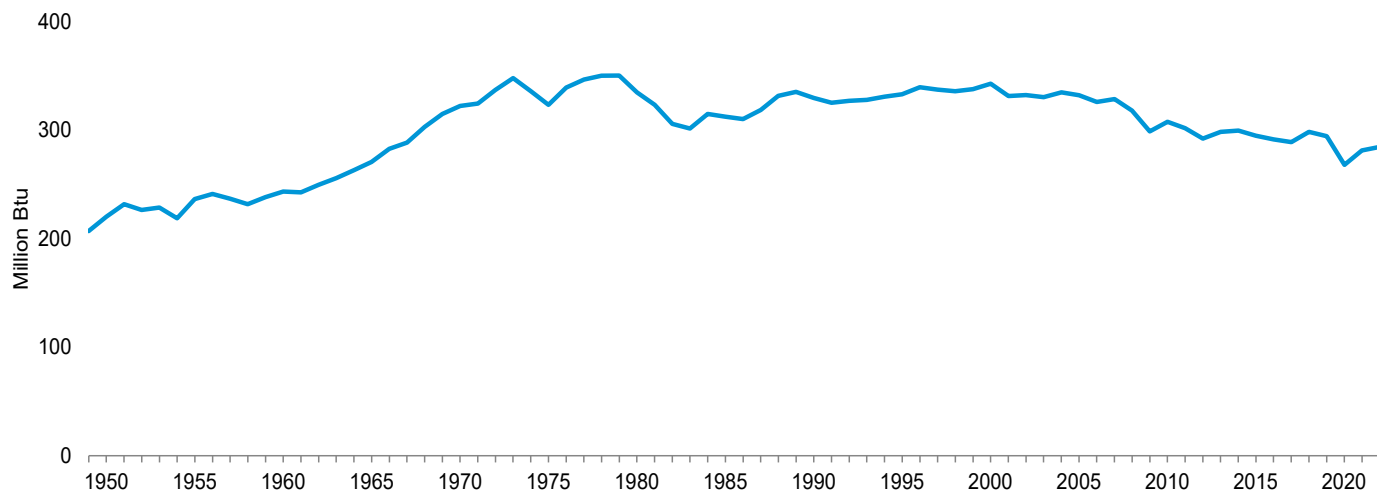
Notes: • See "Real Dollars" in Glossary. • Fuel costs are calculated by using the Urban Consumer Price Index (CPI) developed by the Bureau of Labor Statistics. • Annual averages may not equal average of months due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

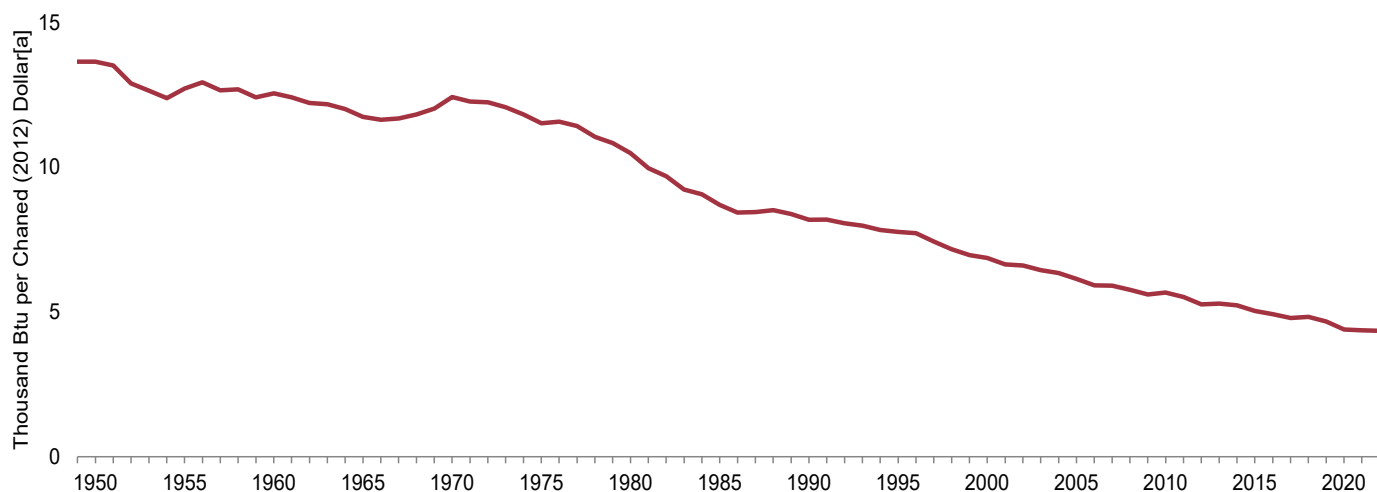
Sources: • **Fuel Prices:** Tables 9.4 (All Grades), 9.8, and 9.10, adjusted by the CPI; and *Monthly Energy Review*, September 2012, Table 9.8c. • **Consumer Price Index, All Urban Consumers:** U.S. Department of Labor, Bureau of Labor Statistics, series ID CUUR0000SA0. • **Conversion Factors:** Tables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

Figure 1.7 Primary Energy Consumption and Energy Expenditures Indicators

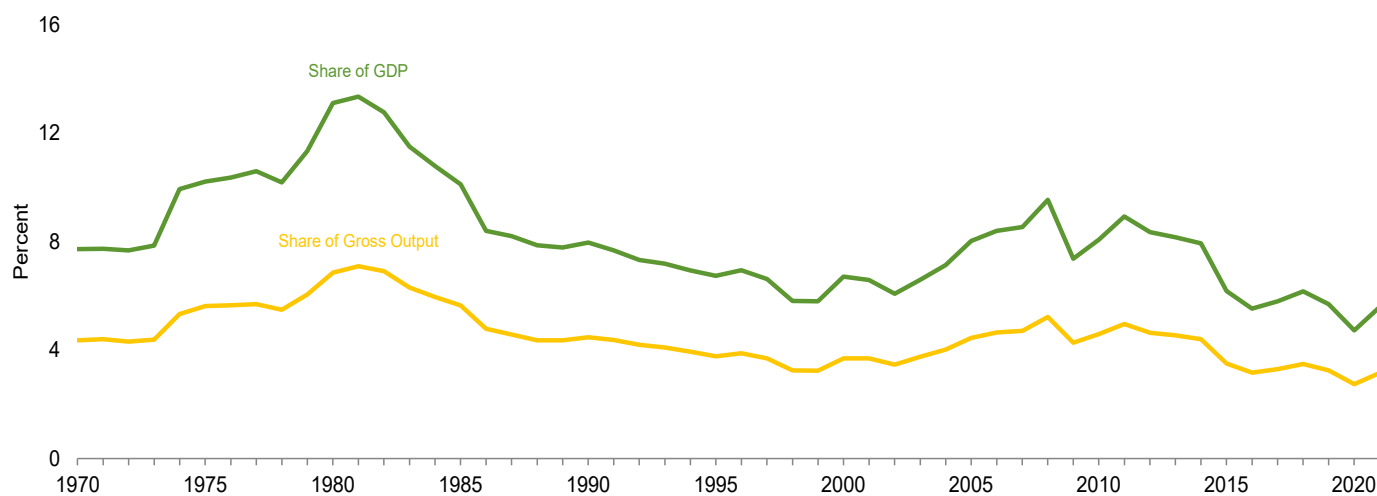
Energy Consumption per Capita, 1949–2022



Primary Energy Consumption per Real Dollar [a] of Gross Domestic Product, 1949–2022



Energy Expenditures as Share of Gross Domestic Product and Gross Output, [b] 1970–2021



[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

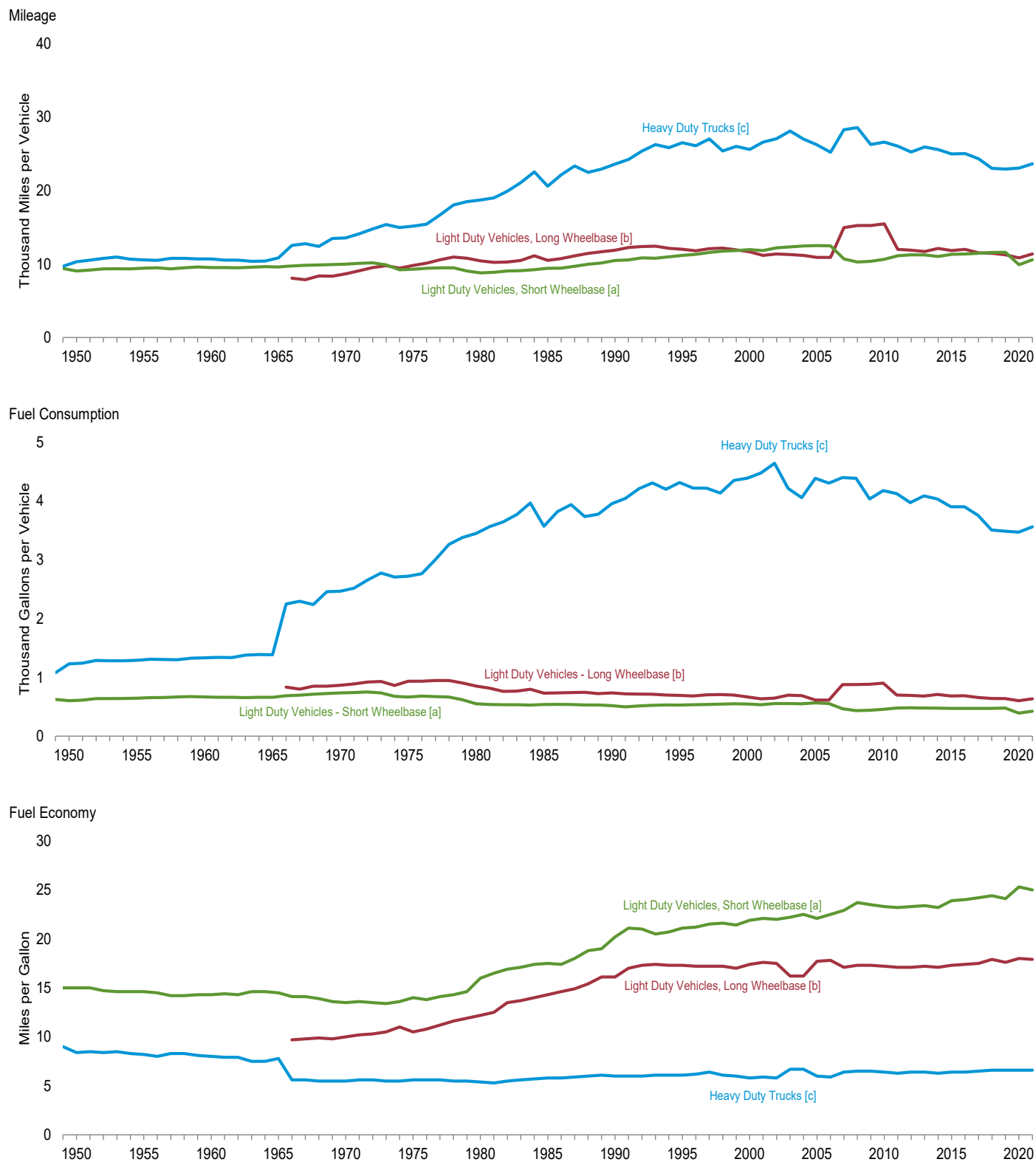
	Primary Energy Consumption ^a			Energy Expenditures ^b				Carbon Dioxide Emissions ^c		
	Consumption	Consumption per Capita	Consumption per Real Dollar ^d of GDP ^e	Expenditures	Expenditures per Capita	Expenditures as Share of GDP ^e	Expenditures as Share of Gross Output ^f	Emissions	Emissions per Capita	Emissions per Real Dollar ^d of GDP ^e
	Quadrillion Btu	Million Btu	Thousand Btu per Chained (2017) 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 (2017) Dollars ^d
1950	33.527	220	R 13.64	NA	NA	NA	NA	2,382	15.6	R 969
1955	39.215	236	R 12.72	NA	NA	NA	NA	2,685	16.2	R 871
1960	43.942	243	R 12.55	NA	NA	NA	NA	2,914	16.1	R 833
1965	52.565	271	R 11.74	NA	NA	NA	NA	3,462	17.8	R 773
1970	66.036	322	R 12.42	82,875	404	7.7	4.4	4,261	20.8	R 802
1975	69.788	323	R 11.51	171,854	796	10.2	5.6	4,428	20.5	R 731
1980	76.038	335	R 10.48	374,350	1,647	13.1	6.9	4,756	20.9	R 655
1981	74.159	323	R 9.97	427,901	1,865	13.3	7.1	4,637	20.2	R 623
1982	70.812	306	R 9.69	426,482	1,841	12.8	6.9	4,404	19.0	R 603
1983	70.489	302	R 9.22	417,622	1,786	11.5	6.3	4,384	18.8	R 574
1984	74.237	315	R 9.06	435,313	1,846	10.8	6.0	4,613	19.6	R 563
1985	74.268	312	R 8.70	438,343	1,842	10.1	5.6	4,605	19.4	R 539
1986	74.458	310	R 8.43	384,091	1,599	8.4	4.8	4,616	19.2	R 523
1987	77.161	318	R 8.44	397,627	1,641	8.2	4.6	4,776	19.7	R 523
1988	81.025	331	R 8.51	411,568	1,683	7.9	4.4	4,998	20.4	R 525
1989	82.711	335	R 8.38	439,051	1,779	7.8	4.4	5,085	20.6	R 515
1990	82.256	330	R 8.18	474,652	1,901	8.0	4.5	5,038	20.2	R 501
1991	82.214	325	R 8.19	472,440	1,867	7.7	4.4	4,991	19.7	R 497
1992	83.836	327	R 8.06	476,845	1,859	7.3	4.2	5,089	19.8	R 489
1993	85.191	328	R 7.97	492,275	1,894	7.2	4.1	5,182	19.9	R 485
1994	87.053	331	R 7.83	504,856	1,919	6.9	3.9	5,262	20.0	R 473
1995	88.668	333	R 7.77	514,624	1,933	6.7	3.8	5,324	20.0	R 467
1996	91.404	339	R 7.72	560,293	2,080	6.9	3.9	5,518	20.5	R 466
1997	91.956	337	R 7.43	567,962	2,083	6.6	3.7	5,589	20.5	R 452
1998	92.602	336	R 7.16	526,283	1,908	5.8	3.2	5,637	20.4	R 436
1999	94.232	338	R 6.96	558,627	2,002	5.8	3.2	5,700	20.4	R 421
2000	96.694	343	R 6.86	687,711	2,437	6.7	3.7	5,889	20.9	R 418
2001	94.416	331	R 6.63	696,242	2,443	6.6	3.7	5,778	20.3	R 406
2002	95.575	332	R 6.60	663,964	2,308	6.1	3.5	5,820	20.2	R 402
2003	95.806	330	R 6.44	755,070	2,603	6.6	3.7	5,887	20.3	R 396
2004	98.033	335	R 6.35	871,210	2,975	7.1	4.0	5,994	20.5	R 388
2005	98.101	332	R 6.14	1,045,730	3,539	8.0	4.4	6,007	20.3	R 376
2006	97.235	326	R 5.92	1,158,821	3,884	8.4	4.6	5,929	19.9	R 361
2007	98.965	329	R 5.90	1,233,869	4,096	8.5	4.7	6,016	20.0	R 359
2008	96.647	318	R 5.76	1,408,759	4,633	9.5	5.2	5,823	19.1	R 347
2009	91.626	299	R 5.60	1,066,528	3,477	7.4	4.3	5,404	17.6	R 331
2010	95.142	308	R 5.67	1,214,278	3,926	8.1	4.6	5,594	18.1	R 333
2011	93.966	302	R 5.51	1,392,468	4,469	8.9	5.0	5,455	17.5	R 320
2012	91.677	292	R 5.26	1,355,175	4,318	8.3	4.6	5,236	16.7	R 300
2013	94.253	298	R 5.29	1,376,402	4,356	8.2	4.5	5,359	17.0	R 301
2014	95.335	300	R 5.22	1,395,430	4,384	R 7.9	4.4	5,414	17.0	R 296
2015	94.484	295	R 5.03	1,128,447	3,519	6.2	3.5	5,262	16.4	R 280
2016	94.092	291	R 4.92	1,038,884	3,217	R 5.5	3.2	5,169	16.0	R 270
2017	93.902	289	R 4.79	1,136,379	3,497	5.8	3.3	5,132	15.8	R 262
2018	97.405	298	R 4.82	1,271,931	3,893	6.2	3.5	5,278	16.2	R 261
2019	96.603	294	R 4.67	1,223,985	3,729	5.7	3.2	5,147	15.7	R 249
2020	R 88.852	268	R 4.39	1,007,785	3,040	R 4.7	R 2.7	R 4,584	13.8	R 227
2021	R 93.363	281	R 4.36	1,317,098	3,967	5.6	3.2	R 4,905	14.8	R 229
2022	R 94.758	284	R 4.34	NA	NA	NA	NA	R 4,939	14.8	R 226

^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.
R=Revised. NA=Not available.
Notes: • Data are estimates. • Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#summary> (Excel and CSV files) for all available annual data beginning in 1949.
Sources: • **Consumption:** Table 1.3. • **Consumption per Capita:**

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

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Figure 1.8 Motor Vehicle Mileage, Fuel Consumption, and Fuel Economy, 1949-2021



[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 axes and 6 or more tires, combination trucks, and other vehicles with 2 axes and 4 tires that are not

passenger cars. For 1966–2006 data are for single-unit truck with 2 axes and 6 or more tires, and combination trucks. Beginning in 2007, data are for single-unit trucks with 2 axes 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
2020	9,928	393	25.3	10,855	603	18.0	23,075	3,470	6.6	10,523	577	18.2
2021	10,589	424	25.0	11,375	635	17.9	23,629	3,563	6.6	11,121	617	18.0

^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 1.9 Electric and Fuel Cell Electric Light-Duty Vehicles Overview

	Electric Light-Duty Vehicles			Fuel Cell Electric Vehicles ^c	All Light-Duty Vehicles ^d	Electric Vehicle Share of All Light-Duty Vehicles
	Battery Electric Vehicles ^a	Plug-In Hybrid Electric Vehicles ^b	Total			
	Thousands of Registered Vehicles					Percent
2012	29.7	64.7	94.4	0.1	231,872.8	(s)
2013	£ 85.7	£ 108.9	£ 194.7	£ 0.2	£ 237,326.1	£ 0.1
2014	127.4	158.8	286.2	0.1	240,796.6	0.1
2015	£ 194.8	£ 196.7	£ 391.5	£ 0.2	£ 248,926.1	£ 0.2
2016	272.6	239.0	511.7	1.1	251,219.0	0.2
2017	£ 353.3	£ 368.3	£ 721.6	£ 4.6	£ 257,206.5	£ 0.3
2018	573.0	491.2	1,064.2	5.9	259,182.4	0.4
2019	755.7	561.2	1,316.9	7.6	261,451.1	0.5
2020	973.5	613.0	1,586.5	8.2	259,976.0	0.6
2021	1,377.8	753.4	2,131.2	11.4	261,365.1	0.8

^a See "Battery Electric Vehicle" in Glossary.

^b See "Plug-In Hybrid Electric Vehicle" in Glossary.

^c See "Fuel Cell Electric Vehicle" in Glossary.

^d Includes internal combustion engine vehicles, electric vehicles, and fuel cell electric vehicles.

E=Estimate. (s)=Less than 0.05 percent.

Notes: • Data are at end of year. • Data are for on-road vehicles less than or equal to 8,500 pounds (includes cars and light trucks). • Data for 2013, 2015, and 2017 are estimates. • The federal government and some states self-register their state-owned vehicles. These vehicles are not included in number of registered

vehicles. • 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 2012.

Sources: • **Electric Light-Duty Vehicles, Fuel Cell Electric Vehicles, and All Light-Duty vehicles:** S&P Global Mobility Vehicles in Operation, as of calendar year end figures for each of the years shown. Data for 2013, 2015, and 2017 are estimates interpolated by EIA. • **Electric Vehicle Share of All Light Duty-Vehicles (defined by EIA as less than or equal to 8,500 lbs):** Calculated as battery electric and plug-in hybrid electric light-duty vehicles divided by all light-duty vehicles by EIA.

Table 1.10 Heating Degree Days by Census Division

	New England ^a	Middle Atlantic ^b	East North Central ^c	West North Central ^d	South Atlantic ^e	East South Central ^f	West South Central ^g	Mountain ^h	Pacific ⁱ	United States
1950 Total	6,794	6,326	7,029	7,457	3,491	3,548	2,277	6,342	3,908	5,364
1955 Total	6,874	6,234	6,488	6,914	3,484	3,515	2,295	6,706	4,321	5,244
1960 Total	6,828	6,391	6,909	7,186	3,760	4,136	2,767	6,282	3,801	5,402
1965 Total	7,030	6,395	6,589	6,934	3,354	3,502	2,237	6,088	3,820	5,145
1970 Total	7,023	6,390	6,721	7,092	3,434	3,824	2,561	6,120	3,727	5,216
1975 Total	6,548	5,895	6,408	6,881	2,948	3,439	2,313	6,261	4,118	4,903
1980 Total	7,071	6,480	6,976	6,837	3,357	3,666	2,495	5,556	3,540	5,077
1985 Total	6,751	5,972	6,668	7,264	2,890	3,662	2,536	6,060	3,937	4,888
1990 Total	5,988	5,254	5,780	6,138	2,299	2,943	1,968	5,392	3,605	4,180
1995 Total	6,688	6,094	6,741	6,911	2,981	3,650	2,149	5,102	3,273	4,640
2000 Total	6,626	5,999	6,316	6,502	2,898	3,552	2,154	4,972	3,463	4,493
2005 Total	6,646	5,951	6,223	6,214	2,769	3,381	1,986	4,896	3,380	4,348
2006 Total	5,886	5,213	5,706	5,822	2,470	3,212	1,802	4,916	3,558	4,040
2007 Total	6,539	5,757	6,075	6,385	2,519	3,188	2,105	4,941	3,507	4,268
2008 Total	6,436	5,784	6,679	7,120	2,704	3,601	2,126	5,233	3,567	4,494
2009 Total	6,645	5,924	6,513	6,842	2,806	3,538	2,154	5,140	3,539	4,480
2010 Total	5,935	5,555	6,187	6,566	3,161	3,949	2,450	5,085	3,625	4,463
2011 Total	6,115	5,485	6,174	6,566	2,561	3,344	2,115	5,327	3,821	4,314
2012 Total	5,564	4,973	5,357	5,517	2,302	2,876	1,651	4,583	3,414	3,773
2013 Total	6,427	5,842	6,622	7,136	2,732	3,649	2,326	5,285	3,365	4,472
2014 Total	6,677	6,206	7,196	7,305	2,957	3,933	2,423	4,758	2,775	4,560
2015 Total	6,521	5,777	6,166	6,090	2,493	3,221	2,087	4,616	2,899	4,096
2016 Total	5,929	5,353	5,701	5,788	2,461	3,093	1,752	4,640	3,030	3,889
2017 Total	6,037	5,333	5,684	6,000	2,237	2,834	1,582	4,593	3,186	3,840
2018 Total	6,325	5,784	6,434	6,971	2,634	3,477	2,252	4,830	3,168	4,293
2019 Total	6,538	5,753	6,428	7,078	2,390	3,180	2,145	5,333	3,545	4,320
2020 Total	5,822	5,214	5,854	6,322	2,259	3,063	1,815	4,807	3,215	3,916
2021 January	1,124	1,065	1,147	1,181	579	738	515	875	550	805
February	1,052	1,016	1,249	1,375	485	716	580	780	493	794
March	837	736	690	673	283	338	200	643	524	508
April	520	440	448	478	154	231	102	404	286	308
May	247	215	243	225	56	83	18	221	175	151
June	15	10	14	14	1	1	0	35	28	12
July	13	4	7	8	0	0	0	5	10	5
August	4	2	5	12	0	0	0	23	14	6
September	68	50	57	68	10	20	1	82	53	40
October	279	206	227	295	70	104	32	344	246	180
November	727	708	780	738	378	522	258	491	324	509
December	914	809	880	995	351	414	205	792	634	616
Total	5,799	5,262	5,747	6,061	2,366	3,166	1,911	4,695	3,338	3,934
2022 January	1,302	1,243	R 1,392	1,443	644	847	R 576	886	538	912
February	992	R 932	R 1,084	1,195	R 412	R 590	R 498	R 804	463	709
March	R 839	R 758	791	R 848	286	388	R 263	R 607	395	524
April	543	495	R 568	578	157	R 218	R 52	421	336	R 342
May	R 186	R 148	R 160	185	31	R 32	4	242	213	123
June	54	27	26	29	1	1	0	69	R 55	26
July	3	2	3	9	0	0	0	7	10	4
August	3	3	14	18	0	0	0	11	8	6
September	107	67	82	84	13	R 23	2	R 65	31	44
October	385	R 394	425	404	R 177	R 241	66	312	R 134	R 257
November	R 613	R 588	R 693	825	R 267	R 428	R 299	R 774	R 523	512
December	R 980	979	1,105	R 1,289	535	R 670	438	928	R 637	782
Total	R 6,007	R 5,636	R 6,342	6,907	R 2,522	R 3,436	R 2,198	R 5,127	3,343	4,240
2023 January	R 921	R 843	996	R 1,183	R 450	R 577	401	R 963	R 635	R 715
February	R 937	R 813	R 879	R 1,030	306	416	R 330	825	591	620
March	R 848	795	R 848	R 956	302	R 400	198	772	R 612	586
April	466	368	R 440	488	116	190	R 86	444	353	296
May	283	243	216	145	65	63	R 7	R 181	195	R 146
June	R 65	R 44	43	23	9	7	0	101	R 113	44
July	1	1	6	17	0	0	0	11	11	5
7-Month Total	3,520	3,107	3,429	3,843	1,247	1,652	1,022	3,296	2,510	2,412
2022 7-Month Total	3,919	3,604	4,024	4,288	1,530	2,075	1,394	3,036	2,011	2,639
2021 7-Month Total	3,806	3,486	3,797	3,954	1,558	2,107	1,415	2,962	2,067	2,583

^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. Heating degree days are the number of degrees that the daily average temperature falls below 65 degrees Fahrenheit (°F). Cooling degree days are the number of degrees that the

daily average temperature rises above 65°F. The daily average temperature is the mean of the maximum and minimum temperatures in a 24-hour period. For example, a weather station recording an average daily temperature of 40°F would report 25 heating degree days for that day (and 0 cooling degree days). If a weather station recorded an average daily temperature of 78°F, cooling degree days for that station would be 13 (and 0 heating degree days). • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

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 1.11 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	296	401	505	646	1,429	1,420	2,281	681	628	872
1955 Total	531	761	922	1,138	1,647	1,673	2,506	779	556	1,145
1960 Total	318	486	626	870	1,599	1,531	2,366	973	795	1,002
1965 Total	310	498	617	831	1,626	1,551	2,460	779	576	980
1970 Total	423	615	746	979	1,759	1,571	2,282	970	732	1,081
1975 Total	422	583	720	937	1,805	1,440	2,161	903	596	1,051
1980 Total	439	679	769	1,158	1,925	1,753	2,651	1,071	652	1,216
1985 Total	324	509	601	780	1,885	1,521	2,519	1,095	759	1,122
1990 Total	429	561	602	912	2,061	1,562	2,526	1,211	835	1,200
1995 Total	471	703	877	927	2,033	1,613	2,398	1,213	791	1,261
2000 Total	278	458	630	983	1,928	1,673	2,773	1,479	772	1,232
2005 Total	598	892	944	1,063	2,102	1,675	2,646	1,372	777	1,389
2006 Total	484	693	733	1,033	2,056	1,647	2,786	1,465	920	1,360
2007 Total	445	693	881	1,102	2,222	1,892	2,477	1,562	828	1,392
2008 Total	462	666	683	818	1,998	1,537	2,500	1,385	917	1,283
2009 Total	349	523	534	698	2,032	1,479	2,588	1,392	894	1,241
2010 Total	634	908	963	1,095	2,274	1,975	2,756	1,356	674	1,456
2011 Total	553	835	858	1,074	2,263	1,727	3,112	1,447	734	1,469
2012 Total	563	815	974	1,221	2,166	1,761	2,914	1,567	918	1,493
2013 Total	540	681	689	891	2,005	1,440	2,535	1,456	891	1,304
2014 Total	419	596	610	812	2,005	1,493	2,474	1,423	1,070	1,295
2015 Total	555	804	729	941	2,401	1,718	2,740	1,469	1,069	1,484
2016 Total	626	887	958	1,072	2,409	1,957	2,882	1,485	930	1,553
2017 Total	450	661	709	910	2,250	1,585	2,718	1,534	1,055	1,422
2018 Total	667	885	972	1,133	2,414	1,929	2,856	1,558	1,005	1,579
2019 Total	535	783	831	951	2,508	1,886	2,758	1,383	843	1,495
2020 Total	644	844	831	964	2,338	1,637	2,735	1,665	1,071	1,518
2021										
January	0	0	0	0	30	5	15	0	10	10
February	0	0	0	0	50	1	4	3	7	12
March	0	0	2	8	73	34	70	7	8	28
April	0	0	0	3	81	17	84	59	24	36
May	8	17	35	43	188	108	229	126	51	100
June	133	165	215	267	347	306	457	347	175	274
July	159	250	238	302	437	397	514	417	296	347
August	238	286	285	300	456	410	555	331	252	357
September	60	94	105	147	280	207	401	222	158	200
October	7	23	29	22	178	98	209	45	27	84
November	0	0	0	0	41	2	31	24	25	18
December	0	0	0	1	66	25	75	0	8	26
Total	604	837	911	1,093	2,226	1,611	2,644	1,582	1,040	1,492
2022										
January	0	0	0	0	28	3	10	R 1	9	R 9
February	0	0	0	0	45	3	5	2	7	11
March	0	0	1	3	83	22	R 41	14	14	27
April	0	0	0	2	97	R 25	R 158	55	R 24	49
May	18	39	79	71	240	R 206	R 386	130	R 45	147
June	R 63	113	178	232	R 375	R 368	R 553	R 290	154	R 271
July	R 261	312	R 263	R 338	R 481	479	R 680	428	R 248	393
August	R 273	303	R 219	276	440	385	R 582	R 354	R 300	359
September	33	R 71	74	121	279	200	403	243	R 212	200
October	0	1	2	8	107	28	131	R 65	R 61	R 55
November	0	0	0	0	89	5	R 25	R 2	11	23
December	0	0	0	0	38	3	13	0	9	11
Total	R 648	839	R 816	R 1,051	R 2,302	R 1,727	R 2,987	R 1,583	R 1,094	R 1,556
2023										
January	0	0	0	0	50	19	R 35	0	8	17
February	0	0	0	0	R 70	17	R 27	0	8	20
March	0	0	0	1	84	27	R 88	3	10	32
April	0	0	1	5	118	29	R 93	41	R 18	44
May	4	12	48	89	R 177	R 141	292	R 116	33	R 110
June	50	R 77	130	226	R 295	R 269	514	R 194	56	R 209
July	278	308	247	282	488	429	648	462	282	391
7-Month Total	332	398	426	603	1,282	933	1,697	815	414	822
2022 7-Month Total	342	464	521	646	1,350	1,106	1,833	920	502	908
2021 7-Month Total	300	433	491	623	1,206	869	1,374	960	570	807

^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 1.12a Non-Combustion Use of Fossil Fuels in Physical Units

	Coal	Natural Gas	Petroleum							
			Asphalt and Road Oil	Hydrocarbon Gas Liquids ^a	Lubricants	Petro-chemical Feedstocks ^b	Petroleum Coke	Special Naphthas	Other ^c	Total
	Thousand Short Tons	Billion Cubic Feet	Thousand Barrels per Day							
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	2,966
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 Total	520	1,114	348	2,342	113	349	21	50	94	3,318
2020 Total	418	R 1,051	343	2,479	102	329	17	45	88	3,403
2021 January	43	R 103	239	2,775	114	325	18	44	80	3,594
February	39	90	206	1,867	110	256	8	29	80	2,556
March	44	R 92	275	2,282	97	301	17	38	81	3,092
April	43	R 88	345	2,538	108	349	14	51	91	3,495
May	44	R 85	388	2,787	107	380	25	51	91	3,828
June	43	R 81	512	2,822	113	371	22	41	88	3,969
July	43	R 84	473	2,764	109	361	14	43	96	3,861
August	43	R 85	492	2,815	97	356	23	39	90	3,913
September	41	R 82	473	2,730	94	348	18	46	94	3,803
October	43	R 88	453	2,741	104	298	16	46	90	3,747
November	42	R 95	364	2,649	112	320	17	38	99	3,599
December	42	R 101	221	2,987	96	362	24	42	102	3,834
Total	509	R 1,074	371	2,652	105	336	18	42	90	3,615
2022 January	41	R 108	243	2,864	125	237	16	41	97	3,624
February	38	R 95	264	2,712	114	203	15	49	107	3,464
March	41	R 99	272	R 2,802	139	249	17	53	94	3,625
April	38	R 92	335	R 2,663	123	267	16	45	93	3,543
May	39	R 88	401	2,603	112	276	12	37	90	3,532
June	37	R 84	493	2,847	93	236	15	48	102	3,834
July	39	R 85	465	2,953	46	266	27	51	99	3,907
August	39	R 86	510	2,608	134	252	20	69	98	3,691
September	37	R 84	472	2,697	99	233	18	52	98	3,669
October	40	R 89	453	R 2,647	130	252	12	45	91	3,631
November	37	R 94	369	2,618	107	228	21	34	93	3,470
December	38	R 99	256	R 2,351	105	243	14	34	93	3,094
Total	464	R 1,102	378	2,697	111	246	17	47	96	3,591
2023 January	39	R 100	231	2,542	117	268	8	47	84	3,297
February	37	R 92	239	2,521	112	221	16	36	93	3,238
March	41	R 98	258	2,539	57	220	22	48	94	3,239
April	R 37	R 93	328	2,752	84	302	23	48	87	3,624
May	R 38	R 88	406	2,898	97	294	16	39	89	3,839
June	R 37	R 83	472	2,968	95	228	13	45	92	3,912
July	39	85	461	2,993	94	258	8	55	98	3,967
7-Month Total	268	638	343	2,747	94	256	15	46	91	3,591
2022 7-Month Total	273	650	354	2,779	107	248	17	46	97	3,649
2021 7-Month Total	299	624	349	2,556	108	336	17	42	87	3,496

^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 1.12b Heat Content of Non-Combustion Use of Fossil Fuels
(Quadrillion Btu)

	Coal	Natural Gas	Petroleum								Total	Percent of Total Energy Consumption
			Asphalt and Road Oil	Hydro-carbon Gas Liquids ^a	Lubri-cants	Petro-chemical Feed-stocks ^b	Petro-leum Coke	Special Naphthas	Other ^c	Total		
1973 Total	0.113	0.916	1.264	0.872	0.359	0.726	0.093	0.169	0.185	3.668	4.696	6.4
1975 Total .....	.099	.777	1.014	.822	.304	.652	.090	.144	.256	3.283	4.159	6.0
1980 Total .....	.084	.777	.962	1.128	.354	1.426	.086	.193	.303	4.451	5.312	7.0
1985 Total .....	.049	.662	1.029	1.194	.322	.817	.096	.159	.201	3.818	4.529	6.1
1990 Total .....	.024	.695	1.170	1.345	.362	1.123	.119	.107	.179	4.406	5.125	6.2
1995 Total .....	.029	.892	1.178	1.716	.346	1.214	.120	.071	.145	4.790	5.711	6.4
1996 Total .....	.028	.921	1.176	1.779	.335	1.209	.126	.075	.146	4.846	5.795	6.3
1997 Total .....	.027	.933	1.224	1.821	.354	1.400	.121	.072	.150	5.142	6.102	6.6
1998 Total .....	.021	.969	1.263	1.819	.371	1.403	.176	.107	.174	5.312	6.302	6.8
1999 Total .....	.021	.932	1.324	1.989	.375	1.329	.192	.145	.161	5.516	6.469	6.9
2000 Total .....	.030	.856	1.240	1.831	.334	1.272	.209	.102	.178	5.167	6.054	6.3
2005 Total .....	.030	.782	1.323	1.701	.312	1.474	.221	.063	.157	5.250	6.062	6.2
2006 Total .....	.018	.589	1.261	1.754	.303	1.477	.232	.070	.180	5.278	5.885	6.1
2007 Total .....	.018	.603	1.197	1.768	.313	1.351	.225	.078	.173	5.106	5.726	5.8
2008 Total .....	.017	.613	1.012	1.564	.291	1.172	.216	.085	.180	4.520	5.150	5.3
2009 Total .....	.012	.526	.873	1.676	.262	1.031	.199	.046	.179	4.265	4.804	5.2
2010 Total .....	.023	.669	.878	1.931	.291	1.096	.087	.026	.188	4.496	5.187	5.5
2011 Total .....	.023	.695	.859	1.947	.276	1.057	.083	.023	.193	4.437	5.156	5.5
2012 Total .....	.023	.724	.827	2.109	.254	.901	.090	.015	.187	4.382	5.128	5.6
2013 Total .....	.023	.741	.783	2.270	.268	.901	.083	.100	.197	4.601	5.366	5.7
2014 Total .....	.018	.749	.793	2.125	.280	.827	.043	.106	.205	4.379	5.146	5.4
2015 Total .....	.017	.730	.832	2.317	.305	.760	.043	.099	.208	4.564	5.310	5.6
2016 Total .....	.014	.755	.853	2.330	.289	.754	.043	.094	.212	4.575	5.344	5.7
2017 Total .....	.015	.774	.849	2.393	.267	.797	.040	.100	.217	4.663	5.452	5.8
2018 Total .....	.017	1.160	.793	2.708	.259	.794	.046	.092	.218	4.910	6.087	6.2
2019 Total .....	.017	1.159	.844	2.746	.250	.704	.044	.096	.198	4.882	6.057	6.3
2020 Total .....	.013	R 1.092	.832	2.870	.227	.669	.036	.087	.186	4.908	R 6.013	6.8
2021 January .....	.001	R .107	.049	.277	.022	.056	.003	.007	.014	.428	R .537	R 6.3
February .....	.001	R .094	.038	.166	.019	.040	.001	.004	.013	.282	R .377	4.8
March .....	.001	R .096	.057	.227	.018	.052	.003	.006	.015	.378	R .475	6.2
April .....	.001	R .092	.069	.239	.020	.058	.002	.008	.016	.411	R .504	7.1
May .....	.001	R .088	.080	.275	.020	.066	.004	.008	.016	.470	R .560	R 7.7
June .....	.001	R .084	.102	.273	.021	.062	.004	.007	.015	.483	R .569	7.4
July .....	.001	R .087	.097	.276	.021	.062	.003	.007	.017	.482	R .571	7.1
August .....	.001	R .088	.101	.281	.018	.062	.004	.006	.016	.489	R .578	7.1
September .....	.001	R .085	.094	.263	.017	.058	.003	.007	.016	.459	R .545	7.4
October .....	.001	R .091	.093	.268	.019	.052	.003	.007	.016	.459	R .551	7.4
November .....	.001	R .099	.072	.248	.020	.053	.003	.006	.017	.421	R .521	6.7
December .....	.001	R .105	.046	.291	.018	.062	.004	.007	.018	.447	R .553	6.6
Total .....	.016	R 1.116	.898	3.084	.233	.684	.038	.081	.190	5.208	R 6.340	6.8
2022 January .....	.001	R .112	.050	.272	.024	.041	.003	.007	.017	.413	R .526	5.8
February .....	.001	R .099	.049	.232	.019	.031	.002	.007	.017	.359	R .458	5.7
March .....	.001	R .102	.056	.268	.026	.043	.003	.009	.017	.421	R .525	6.5
April .....	.001	R .095	.067	.243	.022	.045	.003	.007	.016	.403	R .500	6.9
May .....	.001	R .092	.083	.247	.021	.048	.002	.006	.016	.423	R .516	R 7.0
June .....	.001	R .087	.098	.264	.017	.040	.003	.008	.018	.446	R .534	7.0
July .....	.001	R .088	.096	.283	.009	.046	.005	.008	.018	.464	R .553	6.8
August .....	.001	R .089	.105	.253	.025	.044	.003	.011	.017	.460	R .550	6.8
September .....	.001	R .087	.094	.251	.018	.039	.003	.008	.017	.431	R .519	7.0
October .....	.001	R .093	.093	.251	.024	.044	.002	.007	.016	.439	R .533	7.2
November .....	.001	R .098	.073	R .242	.020	.038	.004	.005	.016	.398	R .497	R 6.4
December .....	.001	R .102	.053	.221	.020	.042	.003	.005	.017	.360	R .464	5.4
Total .....	.015	R 1.144	.916	3.027	.245	.501	.035	.089	.203	5.016	R 6.175	6.5
2023 January .....	.001	R .104	.048	.241	.022	.046	.001	.008	.015	.381	R .486	5.8
February .....	.001	R .096	.044	.211	.019	.035	.003	.005	.015	.332	R .429	5.7
March .....	.001	R .102	.053	.238	.011	.038	.004	.008	.017	.369	R .472	5.8
April .....	.001	R .096	.065	.251	.015	.051	.004	.008	.015	.409	R .507	R 7.1
May .....	.001	R .091	.084	.275	.018	.051	.003	.006	.016	.453	R .545	7.4
June .....	.001	R .086	.094	.275	.017	.038	.002	.007	.016	.450	.537	7.2
July .....	.001	.088	.095	.288	.018	.045	.001	.009	.018	.473	.562	6.9
7-Month Total ....	.009	.662	.483	1.780	.120	.304	.018	.051	.111	2.867	3.538	6.5
2022 7-Month Total ....	.009	.675	.498	1.808	.138	.293	.021	.051	.119	2.929	3.612	6.5
2021 7-Month Total ....	.010	.648	.492	1.733	.139	.396	.021	.047	.106	2.934	3.592	6.6

^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. • **Percent of Total Energy Consumption:** Calculated as total non-combustion use of fossil fuels divided by total primary energy consumption (see Table 1.3).

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

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 1.12b, coal tar values in Table 1.12a 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 1.12b, natural gas values in Table 1.12a 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 1.12b, asphalt and road oil values in Table 1.12a 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 1.12b, distillate fuel oil values in Table 1.12a 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 1.12b, 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 1.12b, lubricants values in Table 1.12a 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 1.12b, naphtha petrochemical feedstock values in 1.12a 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 1.12b, other oils petrochemical feedstock values in 1.12a 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 1.12b, still gas for petrochemical feedstock values in 1.12a 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 1.12b, petroleum coke values in 1.12a 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 1.12b, residual fuel oil values in Table 1.12a 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 1.12b, special naphthas values in Table 1.12a 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 1.12b, waxes values in Table 1.12a 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 1.12b, miscellaneous petroleum products values in Table 1.12a 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.

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 “biofuels 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).

2011–2018: Biomass-based diesel fuel exports data are from U.S. Energy Information Administration (EIA), Petroleum Supply Annual (PSA), Table 31, 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.

2019 forward: Biodiesel exports data are from EIA, 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 biodiesel 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.

1993–2019: “U.S. International Trade in Goods and Services,” Annual Revisions.

2020–2022: “U.S. International Trade in Goods and Services,” 2022 Annual Revisions.

2023: “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.

1994–2019: “U.S. International Trade in Goods and Services,” Annual Revisions.

2020–2022: “U.S. International Trade in Goods and Services,” 2022 Annual Revisions.

2023: “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.

1993–2019: “U.S. International Trade in Goods and Services,” Annual Revisions.

2020–2022: “U.S. International Trade in Goods and Services,” 2022 Annual Revisions.

2023: “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.

1992–2019: “U.S. International Trade in Goods and Services,” Annual Revisions.

2020–2022: “U.S. International Trade in Goods and Services,” 2022 Annual Revisions.

2023: “U.S. International Trade in Goods and Services,” FT-900, monthly.

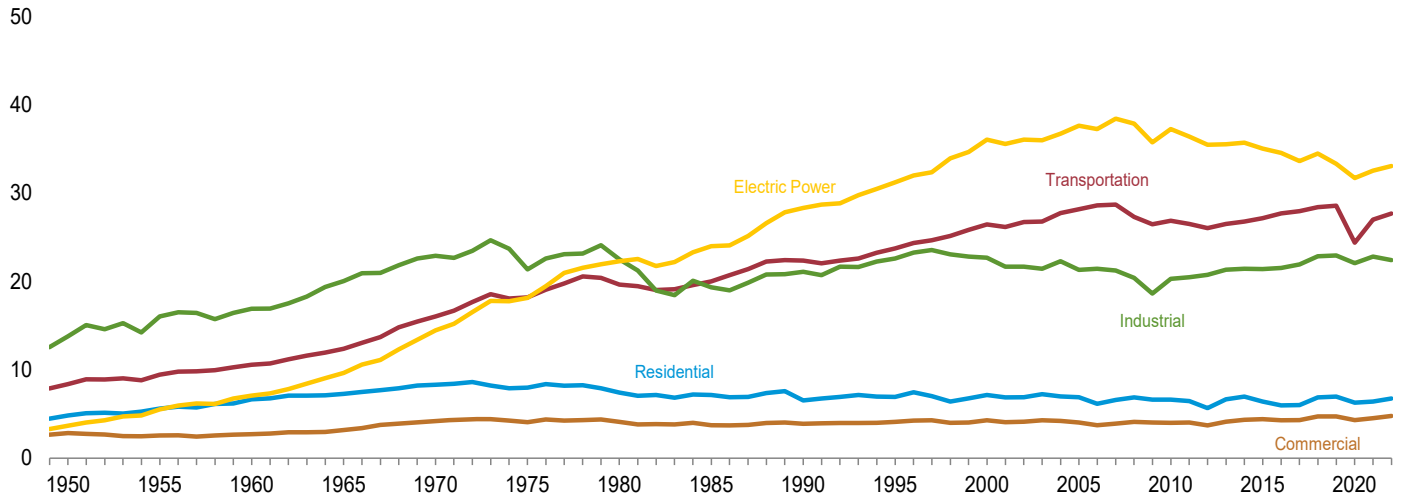
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2. Energy Consumption By Sector

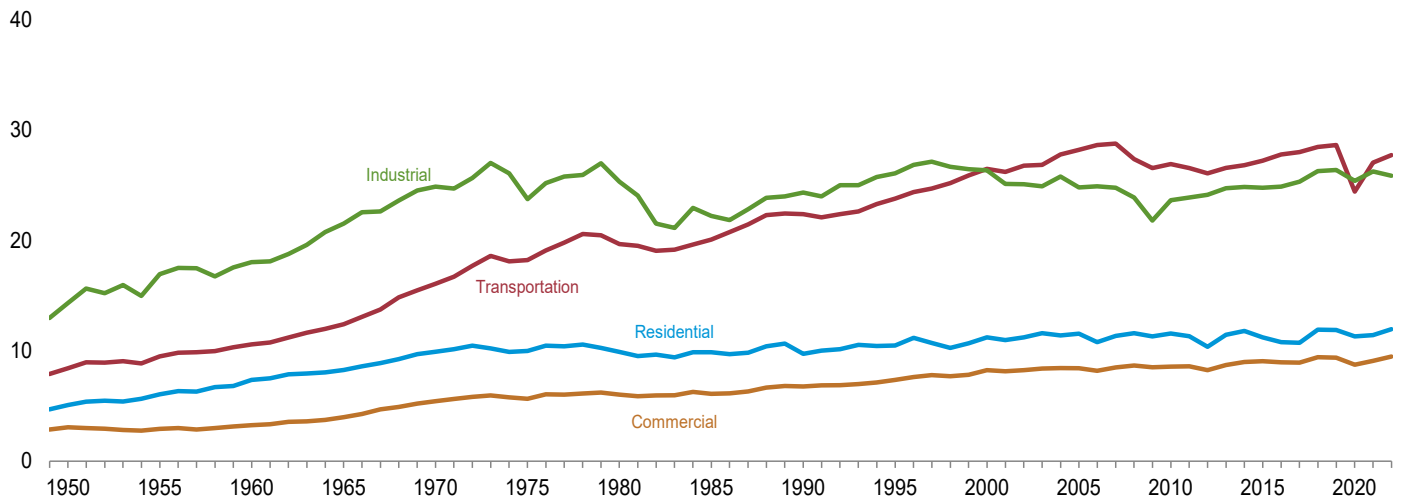
Figure 2.1a Energy Consumption by Sector, 1949–2022

(Quadrillion Btu)

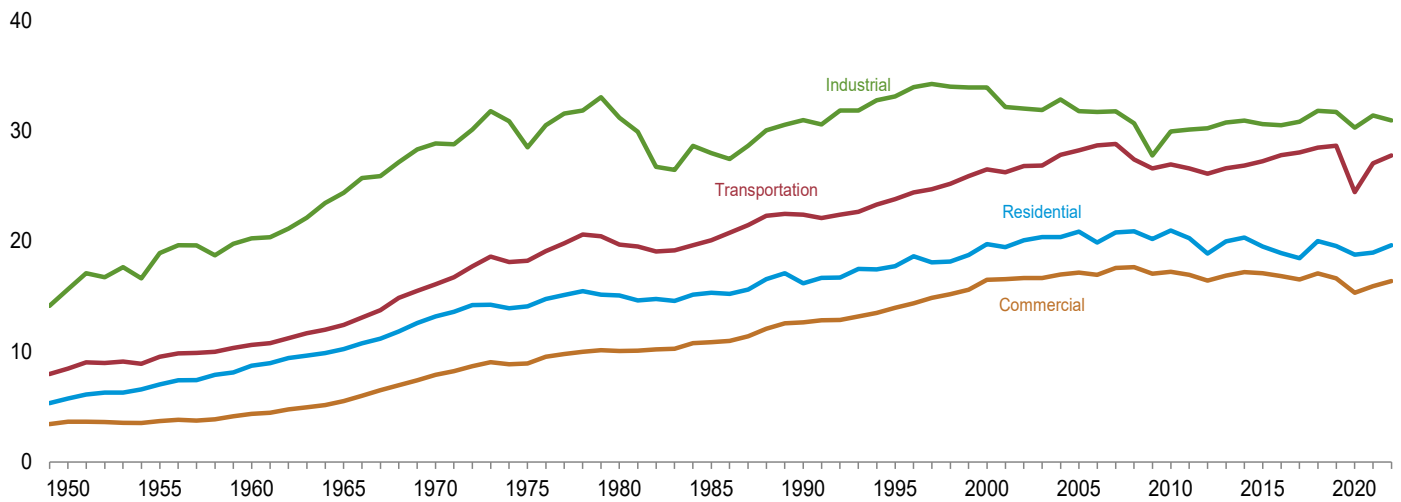
Primary Consumption by Sector



End-Use Consumption by End-Use Sector



Total Consumption by End-Use Sector



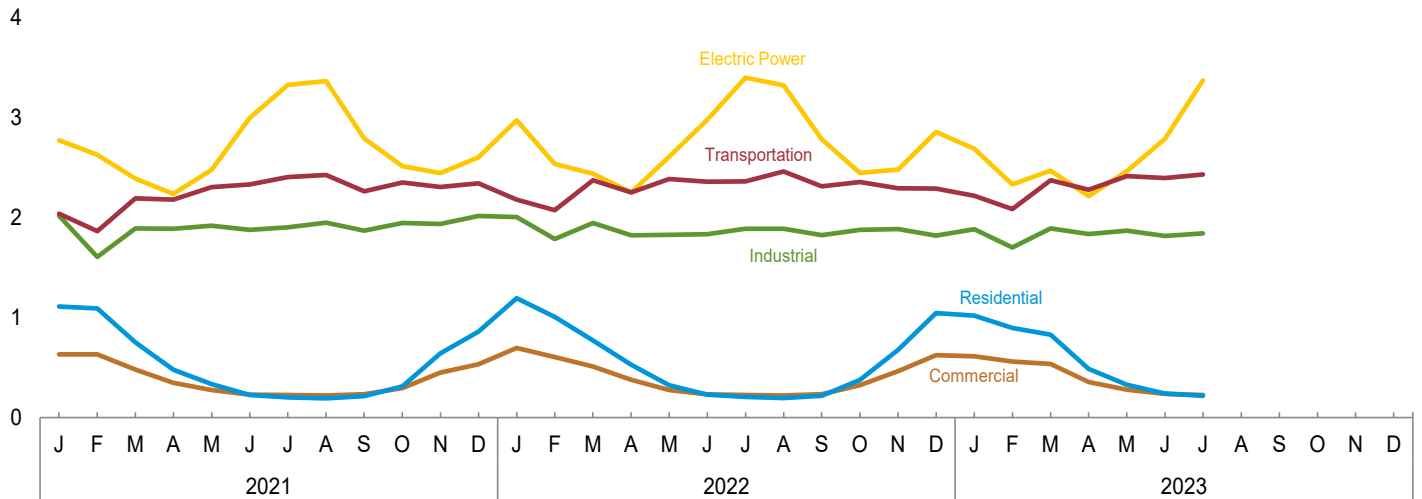
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#consumption>.

Source: Tables 2.1a–2.1b.

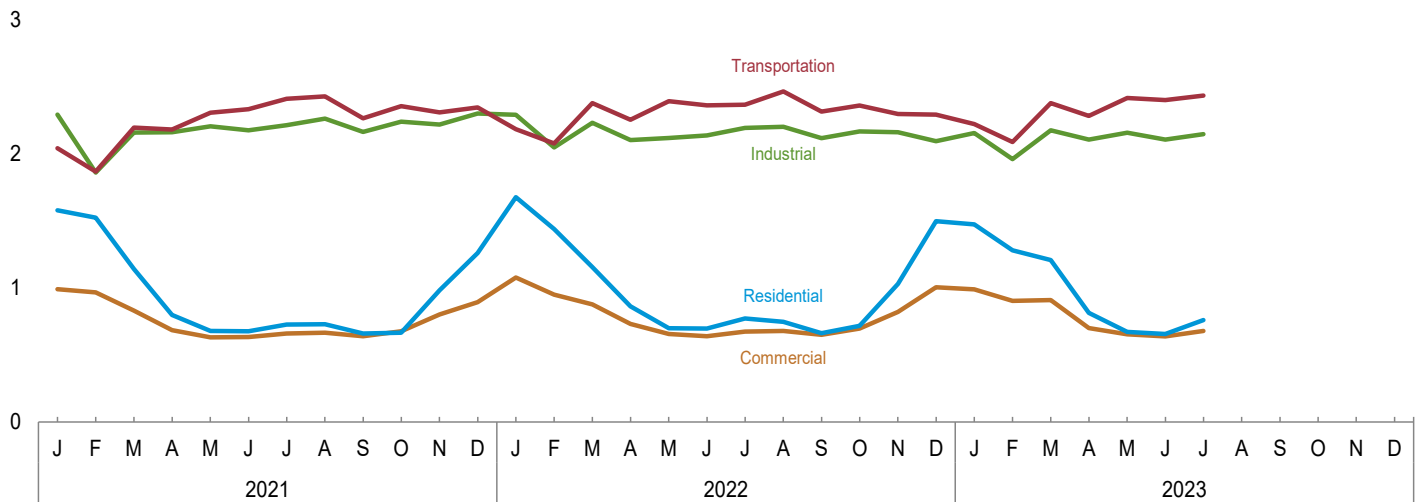
Figure 2.1b Energy Consumption by Sector, Monthly

(Quadrillion Btu)

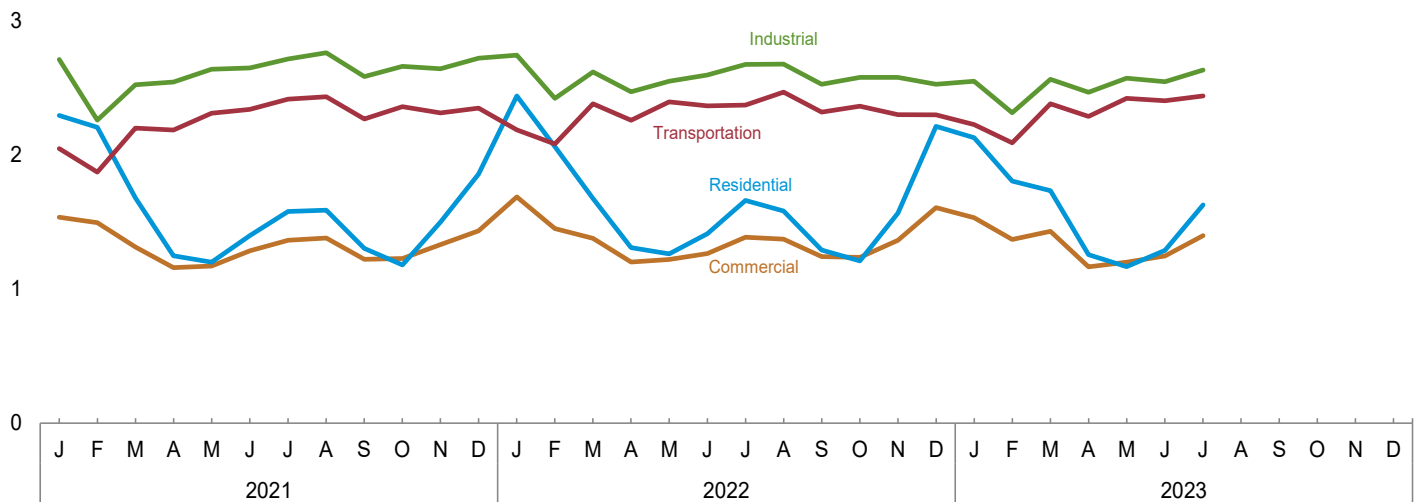
Primary Consumption by Sector



End-Use Consumption by End-Use Sector



Total Consumption by End-Use Sector



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

Source: Tables 2.1a—2.1b.

Table 2.1a Energy Consumption: Residential, Commercial, and Industrial Sectors
(Trillion Btu)

	End-Use Sectors														
	Residential					Commercial ^a					Industrial ^a				
	Pri- mary ^b	Elec- tricity ^c	End Use ^d	Elec- trical System Energy Losses ^e	Total ^f	Pri- mary ^b	Elec- tricity ^c	End Use ^d	Elec- trical System Energy Losses ^e	Total ^f	Pri- mary ^b	Elec- tricity ^c	End Use ^d	Elec- trical System Energy Losses ^e	Total ^f
1950 Total	4,830	246	5,076	661	5,736	2,834	225	3,059	604	3,663	13,820	500	14,319	1,340	15,659
1955 Total	5,608	438	6,046	990	7,036	2,561	350	2,911	791	3,702	16,046	887	16,933	2,005	18,938
1960 Total	6,651	687	7,339	1,387	8,726	2,723	543	3,266	1,096	4,362	16,923	1,107	18,030	2,234	20,264
1965 Total	7,280	993	8,273	1,950	10,223	3,177	789	3,966	1,549	5,514	20,063	1,463	21,526	2,873	24,399
1970 Total	8,323	1,591	9,914	3,264	13,178	4,237	1,201	5,438	2,464	7,902	22,918	1,948	24,866	3,995	28,862
1975 Total	7,990	2,007	9,997	4,103	14,100	4,059	1,598	5,657	3,267	8,924	21,378	2,346	23,725	4,797	28,522
1980 Total	7,440	2,448	9,888	5,194	15,082	4,105	1,906	6,011	4,044	10,055	22,527	2,781	25,308	5,900	31,209
1985 Total	7,149	2,709	9,858	5,486	15,344	3,732	2,351	6,084	4,762	10,845	19,363	2,855	22,218	5,782	28,000
1990 Total	6,552	3,153	9,705	6,501	16,206	3,892	2,860	6,753	5,898	12,650	21,100	3,226	24,326	6,652	30,978
1995 Total	6,934	3,557	10,491	7,256	17,747	4,099	3,252	7,352	6,634	13,985	22,622	3,455	26,077	7,048	33,125
2000 Total	7,156	4,069	11,225	8,507	19,732	4,277	3,956	8,233	8,271	16,504	22,721	3,631	26,352	7,592	33,945
2005 Total	6,901	4,638	11,538	9,340	20,879	4,051	4,351	8,401	8,762	17,163	21,322	3,477	24,799	7,003	31,803
2006 Total	6,154	4,611	10,765	9,119	19,884	3,745	4,435	8,180	8,769	16,949	21,436	3,451	24,886	6,823	31,710
2007 Total	6,588	4,750	11,338	9,472	20,811	3,920	4,560	8,479	9,092	17,571	21,273	3,507	24,780	6,993	31,773
2008 Total	6,887	4,711	11,598	9,296	20,894	4,096	4,559	8,655	8,996	17,651	20,443	3,444	23,888	6,797	30,685
2009 Total	6,634	4,657	11,291	8,918	20,208	4,050	4,459	8,509	8,540	17,049	18,657	3,130	21,787	5,995	27,782
2010 Total	6,635	4,933	11,568	9,419	20,987	4,014	4,539	8,553	8,666	17,219	20,317	3,314	23,631	6,328	29,958
2011 Total	6,465	4,855	11,319	8,967	20,286	4,051	4,531	8,583	8,370	16,952	20,494	3,382	23,876	6,247	30,123
2012 Total	5,672	4,690	10,362	8,510	18,871	3,702	4,528	8,230	8,216	16,446	20,765	3,363	24,128	6,103	30,230
2013 Total	6,669	4,759	11,428	8,554	19,983	4,134	4,562	8,696	8,200	16,897	21,357	3,362	24,719	6,043	30,762
2014 Total	6,976	4,801	11,778	8,560	20,338	4,356	4,614	8,969	8,226	17,195	21,449	3,404	24,853	6,068	30,921
2015 Total	6,423	4,791	11,214	8,306	19,520	4,404	4,643	9,047	8,050	17,097	21,411	3,366	24,777	5,836	30,613
2016 Total	5,968	4,815	10,783	8,146	18,929	4,281	4,665	8,945	7,893	16,838	21,549	3,333	24,882	5,639	30,520
2017 Total	6,017	4,704	10,721	7,751	18,471	4,318	4,616	8,934	7,606	16,540	21,951	3,358	25,309	5,534	30,843
2018 Total	6,885	5,013	11,897	8,126	20,023	4,715	4,715	9,429	7,643	17,072	22,864	3,414	26,278	5,535	31,813
2019 Total	6,974	4,914	11,889	7,686	19,575	4,732	4,643	9,375	7,263	16,638	22,946	3,420	26,366	5,349	31,716
2020 Total	6,296	4,997	11,293	7,502	18,795	4,335	4,393	8,728	6,595	15,322	22,103	3,272	25,376	4,913	30,288
2021 January	1,112	466	1,578	713	R 2,292	R 633	357	R 990	545	R 1,535	2,020	272	2,292	416	R 2,709
February	1,093	432	1,525	678	R 2,204	R 631	336	R 967	527	R 1,494	1,607	253	1,860	398	R 2,258
March	751	390	1,141	535	1,677	R 480	351	R 831	482	R 1,312	R 1,893	265	R 2,158	363	R 2,521
April	478	320	798	450	1,248	348	337	685	473	R 1,158	R 1,888	272	R 2,160	381	R 2,541
May	334	345	679	519	1,198	R 276	357	R 633	537	R 1,170	R 1,920	286	R 2,206	429	R 2,636
June	225	451	676	721	1,397	229	406	635	650	R 1,284	R 1,878	296	R 2,174	473	R 2,647
July	201	527	728	848	1,576	224	436	R 660	702	R 1,362	R 1,902	311	R 2,213	500	R 2,712
August	191	538	729	856	1,586	R 220	447	R 667	712	R 1,379	R 1,951	312	R 2,263	497	R 2,760
September	214	447	661	641	1,302	R 234	406	R 640	582	R 1,222	R 1,870	293	R 2,162	420	R 2,582
October	R 312	355	667	511	1,178	R 293	383	R 676	551	R 1,227	R 1,948	291	R 2,240	419	R 2,659
November	640	343	983	514	1,497	R 449	353	R 802	529	R 1,331	R 1,936	282	R 2,218	422	R 2,640
December	R 858	402	1,260	595	1,855	531	363	R 894	539	R 1,433	R 2,018	282	R 2,300	418	R 2,718
Total	R 6,409	5,017	11,426	7,564	R 18,991	R 4,547	4,533	R 9,080	6,834	R 15,914	R 22,833	3,414	R 26,247	5,147	R 31,394
2022 January	R 1,195	481	R 1,676	763	R 2,439	R 695	383	R 1,078	607	R 1,686	R 2,006	284	R 2,290	451	R 2,741
February	R 1,007	431	R 1,438	621	R 2,059	R 603	347	R 950	507	R 1,450	R 1,788	259	R 2,047	373	R 2,420
March	R 771	383	R 1,155	520	R 1,674	R 510	368	R 878	499	R 1,376	R 1,948	283	R 2,231	383	R 2,615
April	R 528	335	R 863	444	R 1,307	R 376	354	R 731	469	R 1,200	R 1,823	277	R 2,101	367	R 2,468
May	R 321	379	700	561	R 1,261	276	380	656	563	R 1,218	R 1,827	290	R 2,118	430	R 2,548
June	227	469	696	R 714	1,411	R 231	409	R 640	624	R 1,264	R 1,835	301	R 2,136	459	R 2,594
July	R 206	565	772	R 888	1,660	224	451	R 675	709	R 1,385	R 1,889	304	R 2,194	478	R 2,672
August	R 195	552	747	835	R 1,581	220	458	678	693	R 1,370	R 1,889	312	R 2,202	473	R 2,675
September	217	445	662	627	R 1,289	R 233	418	651	R 589	1,241	R 1,825	291	R 2,116	R 409	R 2,525
October	R 374	344	718	491	R 1,209	R 321	376	698	538	R 1,235	R 1,879	287	R 2,166	410	R 2,576
November	R 675	355	R 1,030	536	R 1,565	R 463	358	R 821	541	R 1,362	R 1,887	274	R 2,161	R 414	R 2,576
December	R 1,044	454	R 1,498	713	R 2,211	R 625	381	R 1,006	R 599	R 1,605	R 1,819	274	R 2,093	431	R 2,525
Total	R 6,761	5,193	R 11,953	R 7,692	R 19,646	R 4,776	4,685	R 9,461	R 6,940	R 16,401	R 22,417	3,438	R 25,854	5,093	R 30,947
2023 January	R 1,021	453	R 1,474	653	R 2,127	R 613	376	989	541	R 1,530	R 1,883	272	R 2,155	392	R 2,548
February	895	386	R 1,281	R 522	R 1,804	R 559	344	R 903	466	R 1,369	R 1,702	259	R 1,961	351	R 2,312
March	828	379	1,207	525	1,732	536	375	R 910	519	R 1,430	R 1,893	280	R 2,174	388	R 2,561
April	R 484	331	R 815	441	1,256	354	347	702	463	R 1,165	R 1,836	270	R 2,106	359	R 2,465
May	R 327	345	R 672	495	R 1,167	R 277	378	655	543	R 1,198	R 1,870	287	R 2,157	412	R 2,569
June	R 240	417	R 657	630	1,287	237	402	638	607	R 1,245	R 1,816	290	R 2,106	438	R 2,544
July	216	544	760	866	1,626	226	452	678	719	R 1,397	R 1,843	304	2,147	483	2,630
7-Month Total	4,011	2,855	6,866	4,132	10,997	2,803	2,674	5,477	3,858	9,335	12,844	1,961	14,805	2,823	17,628
2022 7-Month Total	4,257	3,044	7,301	4,512	11,813	2,915	2,693	5,608	3,971	9,579	13,117	1,999	15,116	2,941	18,058
2021 7-Month Total	4,194	2,932	7,126	4,464	11,591	2,821	2,580	5,400	3,915	9,316	13,109	1,954	15,063	2,961	18,024

^a Includes energy consumed at combined-heat-and-power (CHP) and electricity-only plants within the sector.

^b Energy consumed in the form that it is first accounted for, before any transformation to secondary or tertiary forms of energy. See "Primary Energy Consumption" in Glossary.

^c Electricity sold to the sector. See "Electricity Sales to Ultimate Customers" in Glossary.

^d Sum of "Primary" and "Electricity." See "End-Use Energy Consumption" in Glossary.

^e Calculated as the difference between primary energy consumed by the electric power sector and the energy content of electricity sales to ultimate customers sent to the end-use sectors. Allocated proportionally to the electricity sales to ultimate customers in each end-use sector. See Note 1, "Electrical System Energy Losses,"

at end of section.

^f Equal to end-use energy consumption plus electrical system energy losses.

R=Revised.

Notes: • Data are estimates. • 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: Tables 2.2–2.4

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Table 2.1b Energy Consumption: Transportation Sector, Total End-Use Sectors, and Electric Power Sector (Trillion Btu)

	End-Use Sectors										Electric Power Sector ^a	Primary Total ^h
	Transportation					Total						
	Primary ^b	Elec- tricity ^c	End Use ^d	Electrical System Energy Losses ^e	Total ^f	Primary ^b	Elec- tricity ^c	End Use ^d	Electrical System Energy Losses ^e	Total ^g	Primary ^b	
1950 Total	8,383	23	8,407	62	8,469	29,867	994	30,861	2,666	33,527	3,661	33,527
1955 Total	9,474	20	9,494	45	9,539	33,690	1,695	35,385	3,830	39,215	5,525	39,215
1960 Total	10,560	10	10,570	21	10,591	36,856	2,348	39,204	4,738	43,942	7,086	43,942
1965 Total	12,399	10	12,409	20	12,428	42,919	3,254	46,173	6,392	52,565	9,646	52,565
1970 Total	16,062	11	16,073	22	16,094	51,540	4,751	56,291	9,745	66,036	14,495	66,036
1975 Total	18,211	10	18,221	21	18,241	51,638	5,961	57,599	12,188	69,787	18,149	69,788
1980 Total	19,659	11	19,670	23	19,694	53,731	7,146	60,878	15,162	76,040	22,309	76,038
1985 Total	20,042	14	20,056	29	20,084	50,285	7,929	58,214	16,059	74,273	23,988	74,268
1990 Total	22,366	16	22,382	33	22,415	53,910	9,255	63,165	19,084	82,250	28,340	82,256
1995 Total	23,757	17	23,774	35	23,808	57,412	10,281	67,694	20,973	88,666	31,254	88,668
2000 Total	26,456	18	26,474	38	26,512	60,610	11,674	72,284	24,409	96,693	36,083	96,694
2005 Total	28,179	26	28,205	52	28,257	60,452	12,491	72,944	25,158	98,101	37,649	98,101
2006 Total	28,618	25	28,643	50	28,693	59,953	12,522	72,474	24,761	97,235	37,283	97,235
2007 Total	28,727	28	28,755	56	28,811	60,508	12,845	73,353	25,613	98,966	38,458	98,965
2008 Total	27,339	26	27,366	52	27,417	58,765	12,740	71,505	25,141	96,646	37,881	96,647
2009 Total	26,510	27	26,536	51	26,587	55,851	12,272	68,123	23,503	91,626	35,775	91,626
2010 Total	26,894	26	26,920	50	26,970	57,860	12,812	70,672	24,463	95,135	37,275	95,142
2011 Total	26,523	26	26,549	48	26,598	57,533	12,794	70,327	23,632	93,959	36,426	93,966
2012 Total	26,057	25	26,082	45	26,127	56,195	12,606	68,801	22,874	91,675	35,480	91,677
2013 Total	26,541	26	26,567	47	26,614	58,701	12,709	71,410	22,845	94,255	35,554	94,253
2014 Total	26,802	26	26,828	47	26,875	59,583	12,845	72,428	22,902	95,329	35,747	95,335
2015 Total	27,182	26	27,208	45	27,253	59,420	12,826	72,246	22,237	94,483	35,063	94,484
2016 Total	27,741	26	27,767	43	27,810	59,539	12,838	72,376	21,720	94,097	34,558	94,092
2017 Total	27,979	26	28,005	42	28,047	60,265	12,704	72,969	20,932	93,901	33,636	93,902
2018 Total	28,435	26	28,461	42	28,504	62,898	13,168	76,066	21,346	97,412	34,514	97,405
2019 Total	28,602	26	28,628	41	28,669	63,255	13,004	76,259	20,339	96,598	33,343	96,603
2020 Total	24,394	22	24,417	34	24,450	57,128	12,685	69,813	19,043	88,856	31,728	88,852
2021 January	2,040	2	2,042	3	2,045	5,806	1,097	6,903	1,678	8,581	2,775	8,579
February	1,865	2	1,867	3	1,869	5,196	1,023	6,219	1,607	7,825	2,629	7,827
March	2,194	2	2,196	3	2,198	5,318	1,008	6,325	1,382	7,708	2,390	7,703
April	2,179	2	2,181	2	2,183	4,893	931	5,824	1,306	7,130	2,237	7,124
May	2,305	2	2,307	2	2,309	4,835	990	5,825	1,488	7,313	2,478	7,310
June	2,332	2	2,334	3	2,337	4,665	1,155	5,819	1,846	7,666	3,001	7,669
July	2,408	2	2,410	3	2,413	4,736	1,276	6,011	2,052	8,063	3,328	8,070
August	2,427	2	2,428	3	2,432	4,788	1,300	6,088	2,068	8,156	3,368	8,163
September	2,262	2	2,264	3	2,267	4,580	1,148	5,728	1,645	7,373	2,793	7,375
October	2,353	2	2,355	3	2,357	4,907	1,031	5,938	1,483	7,421	2,514	7,419
November	2,307	2	2,308	3	2,311	5,332	980	6,311	1,467	7,778	2,447	7,774
December	2,343	2	2,345	3	2,348	5,750	1,049	6,799	1,554	8,354	2,603	8,349
Total	27,015	22	27,037	33	27,070	60,804	12,986	73,790	19,578	93,368	32,564	93,363
2022 January	2,180	2	2,182	3	2,185	6,076	1,151	7,227	1,824	9,051	2,975	9,051
February	2,075	2	2,077	3	2,080	5,473	1,039	6,512	1,497	8,009	2,536	8,007
March	2,375	2	2,377	3	2,380	5,605	1,036	6,641	1,404	8,045	2,441	8,041
April	2,253	2	2,254	2	2,257	4,980	968	5,949	1,283	7,232	2,251	7,227
May	2,389	2	2,391	3	2,394	4,814	1,051	5,865	1,557	7,421	2,608	7,420
June	2,360	2	2,361	3	2,364	4,652	1,181	5,834	1,799	7,633	2,981	7,636
July	2,364	2	2,366	3	2,369	4,683	1,323	6,006	2,079	8,085	3,402	8,091
August	2,463	2	2,465	3	2,467	4,767	1,324	6,091	2,003	8,094	3,327	8,099
September	2,312	2	2,314	3	2,317	4,587	1,155	5,742	1,628	7,371	2,784	7,372
October	2,357	2	2,359	3	2,362	4,931	1,009	5,940	1,442	7,382	2,450	7,378
November	2,294	2	2,296	3	2,299	5,319	989	6,308	1,494	7,802	2,483	7,799
December	2,291	2	2,293	3	2,296	5,779	1,111	6,891	1,747	8,638	2,858	8,637
Total	27,713	23	27,735	33	27,769	61,666	13,338	75,004	19,758	94,762	33,096	94,758
2023 January	2,219	2	2,221	3	2,224	5,737	1,102	6,839	1,589	8,428	2,691	8,424
February	2,085	2	2,087	3	2,089	5,241	991	6,232	1,342	7,574	2,333	7,569
March	2,375	2	2,377	3	2,380	5,632	1,036	6,668	1,435	8,103	2,471	8,097
April	2,281	2	2,283	2	2,285	4,956	950	5,905	1,265	7,171	2,215	7,165
May	2,415	2	2,417	3	2,419	4,890	1,011	5,901	1,452	7,353	2,464	7,349
June	2,397	2	2,399	3	2,402	4,690	1,111	5,801	1,678	7,479	2,789	7,478
July	2,432	2	2,434	3	2,437	4,717	1,302	6,019	2,071	8,090	3,373	8,093
7-Month Total	16,205	13	16,218	19	16,237	35,862	7,503	43,365	10,832	54,197	18,335	54,175
2022 7-Month Total	15,995	13	16,008	19	16,027	36,283	7,750	44,033	11,443	55,476	19,193	55,473
2021 7-Month Total	15,324	13	15,336	19	15,355	35,448	7,478	42,926	11,360	54,286	18,838	54,283

^a Includes NAICS 22 electricity-only and CHP plants whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for electric utilities only. For 1989 forward, data are for electric utilities and independent power producers.

^b Energy consumed in the form that it is first accounted for, before any transformation to secondary or tertiary forms of energy. See "Primary Energy Consumption" in Glossary.

^c Electricity sold to the sector. See "Electricity Sales to Ultimate Customers" in Glossary.

^d Sum of "Primary" and "Electricity." See "End-Use Energy Consumption" in Glossary.

^e Calculated as the difference between primary energy consumed by the electric power sector and the energy content of electricity sales to ultimate customers sent to the end-use sectors. Allocated proportionally to the electricity sales to ultimate customers in each end-use sector. See Note 1, "Electrical System Energy Losses," at end of section.

^f Equal to end-use energy consumption plus electrical system energy losses.

^g Equal to the sum of total energy consumption in the four end-use sectors, which does not equal total primary energy consumption due to the use of sector-specific conversion factors for coal and natural gas.

^h Total primary energy consumption. See Table 1.3.

R=Revised.

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

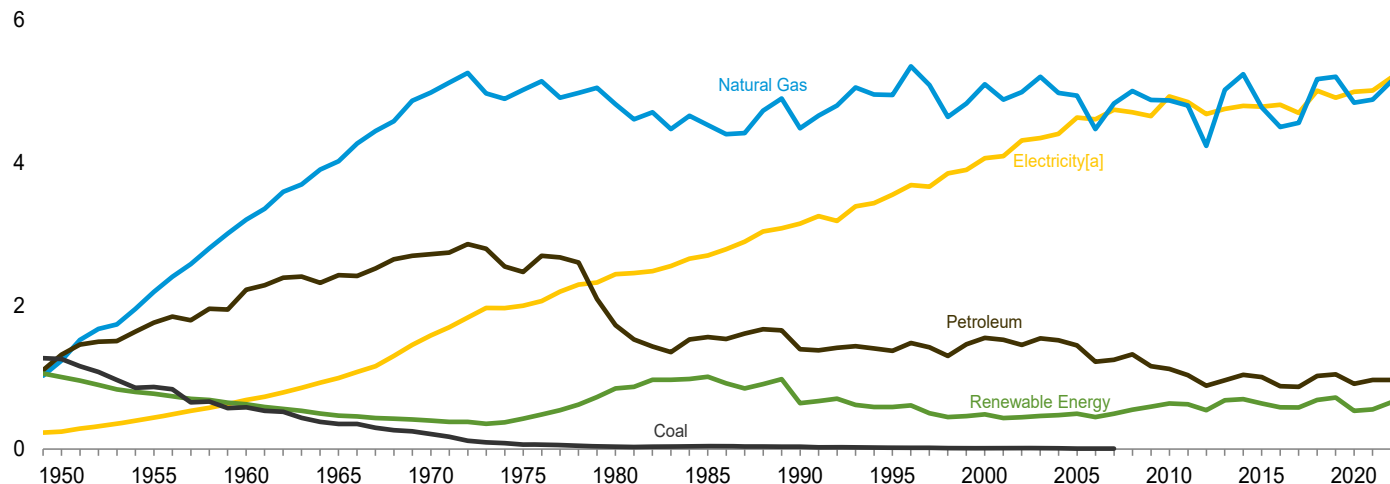
Sources: • End-Use Sectors: Tables 2.2–2.5. • Electric Power Sector: Table 2.6. • Primary Total: Table 1.3.

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

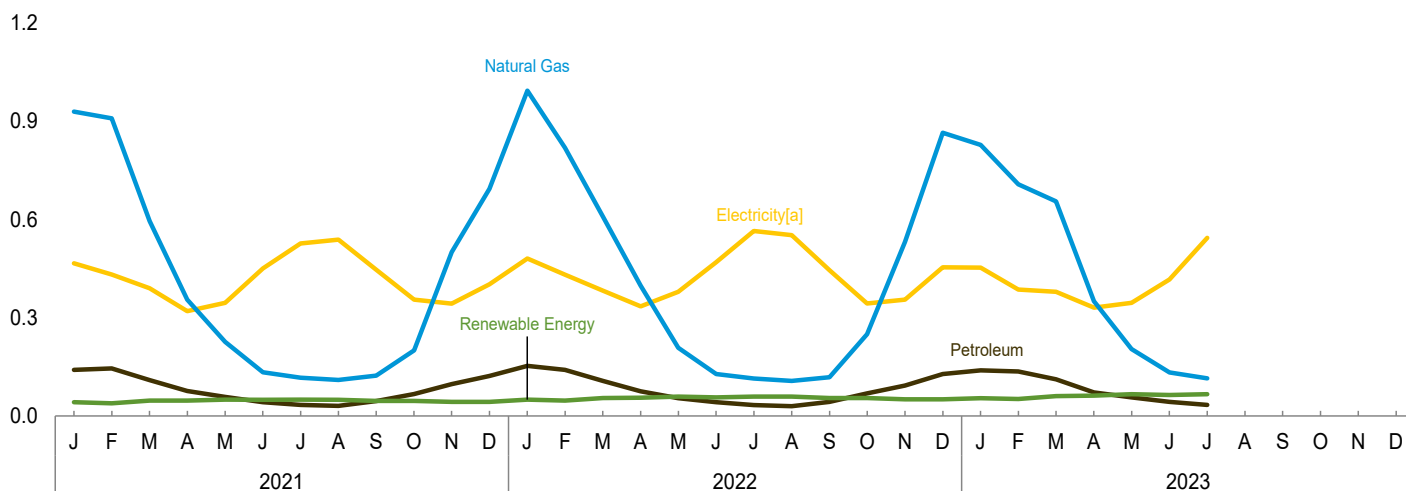
Figure 2.2 Residential Sector Energy Consumption

(Quadrillion Btu)

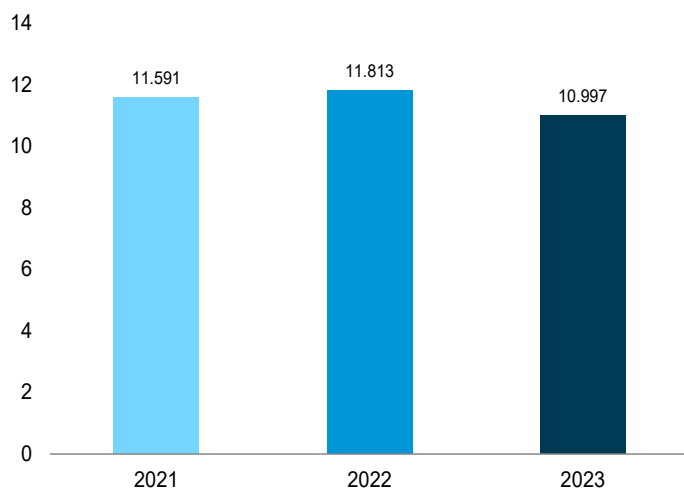
By Major Source, 1949–2022



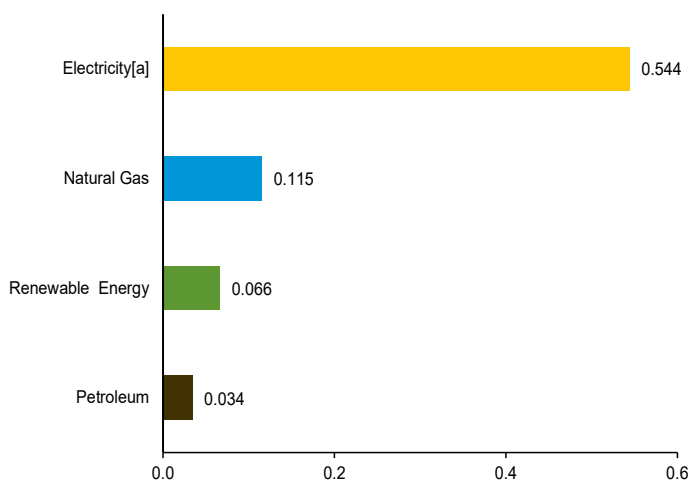
By Major Source, Monthly



Total, January–July



By Major Source, July 2023



[a] Electricity sales to ultimate customers.

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

Source: Table 2.2.

Table 2.2 Residential Sector Energy Consumption
(Trillion Btu)

	End-Use Energy Consumption ^a											Electrical System Energy Losses ^g	Total
	Primary Consumption ^b								Elec- tricity ⁱ	Total End Use			
	Fossil Fuels				Renewable Energy ^c								
	Coal	Natural Gas ^d	Petro- leum	Total	Geo- thermal	Solar ^e	Bio- mass	Total					
1950 Total	1,261	1,240	1,322	3,824	NA	NA	1,006	1,006	4,830	246	5,076	661	5,736
1955 Total	867	2,198	1,767	4,833	NA	NA	775	775	5,608	438	6,046	990	7,036
1960 Total	585	3,212	2,228	6,025	NA	NA	627	627	6,651	687	7,339	1,387	8,726
1965 Total	352	4,028	2,432	6,812	NA	NA	468	468	7,280	993	8,273	1,950	10,223
1970 Total	209	4,987	2,726	7,922	NA	NA	401	401	8,323	1,591	9,914	3,264	13,178
1975 Total	63	5,023	2,479	7,565	NA	NA	425	425	7,990	2,007	9,997	4,103	14,100
1980 Total	31	4,825	1,734	6,590	NA	NA	850	850	7,440	2,448	9,888	5,194	15,082
1985 Total	39	4,534	1,566	6,139	NA	NA	1,010	1,010	7,149	2,709	9,858	5,486	15,344
1990 Total	31	4,487	1,395	5,912	6	55	580	640	6,552	3,153	9,705	6,501	16,206
1995 Total	17	4,954	1,374	6,345	7	63	520	589	6,934	3,557	10,491	7,256	17,747
2000 Total	11	5,105	1,554	6,670	9	57	420	486	7,156	4,069	11,225	8,507	19,732
2005 Total	8	4,946	1,450	6,405	16	49	430	495	6,901	4,638	11,538	9,340	20,879
2006 Total	6	4,476	1,222	5,704	18	51	380	450	6,154	4,611	10,765	9,119	19,884
2007 Total	8	4,835	1,249	6,092	22	53	420	495	6,588	4,750	11,338	9,472	20,811
2008 Total	NA	5,010	1,325	6,335	26	56	470	552	6,887	4,711	11,598	9,296	20,894
2009 Total	NA	4,883	1,158	6,041	33	56	504	593	6,634	4,657	11,291	8,918	20,208
2010 Total	NA	4,878	1,120	5,999	37	59	541	636	6,635	4,933	11,568	9,419	20,987
2011 Total	NA	4,805	1,034	5,838	40	62	524	626	6,465	4,855	11,319	8,967	20,286
2012 Total	NA	4,242	886	5,128	40	66	438	544	5,672	4,690	10,362	8,510	18,871
2013 Total	NA	5,023	963	5,986	40	72	572	683	6,669	4,759	11,428	8,554	19,983
2014 Total	NA	5,242	1,036	6,279	40	79	579	697	6,976	4,801	11,778	8,560	20,338
2015 Total	NA	4,777	1,007	5,784	40	87	513	639	6,423	4,791	11,214	8,306	19,520
2016 Total	NA	4,506	878	5,384	40	100	445	584	5,968	4,815	10,783	8,146	18,929
2017 Total	NA	4,563	871	5,435	40	113	430	582	6,017	4,704	10,721	7,751	18,471
2018 Total	NA	5,174	1,022	6,197	40	123	525	688	6,885	5,013	11,897	8,126	20,023
2019 Total	NA	5,208	1,045	6,253	40	136	546	721	6,974	4,914	11,889	7,686	19,575
2020 Total	NA	4,846	914	5,760	40	151	345	536	6,296	4,997	11,293	7,502	18,795
2021 January	NA	R 929	141	1,070	3	9	29	42	1,112	466	1,578	713	R 2,292
February	NA	R 909	145	1,054	3	10	26	39	1,093	432	1,525	678	R 2,204
March	NA	595	109	704	3	14	29	47	751	390	1,141	535	1,677
April	NA	355	76	R 430	3	16	28	47	478	320	798	450	1,248
May	NA	226	58	284	3	17	29	50	334	345	679	519	1,198
June	NA	134	42	176	3	18	28	49	225	451	676	721	1,397
July	NA	117	34	151	3	18	29	50	201	527	728	848	1,576
August	NA	110	31	R 142	3	17	29	49	191	538	729	856	1,586
September	NA	123	45	167	3	15	28	46	214	447	661	641	1,302
October	NA	200	67	267	3	13	29	46	R 312	355	667	511	1,178
November	NA	500	97	597	3	11	28	43	640	343	983	514	1,497
December	NA	694	122	R 815	3	10	29	43	R 858	402	1,260	595	1,855
Total	NA	R 4,889	967	5,856	40	169	344	553	R 6,409	5,017	11,426	7,564	R 18,991
2022 January	NA	R 993	153	R 1,145	3	11	36	50	R 1,195	481	R 1,676	763	R 2,439
February	NA	R 819	141	R 960	3	12	32	47	R 1,007	431	R 1,438	621	R 2,059
March	NA	R 609	107	R 716	3	16	36	55	R 771	383	R 1,155	520	R 1,674
April	NA	R 398	75	R 472	3	18	35	56	R 528	335	R 863	444	R 1,307
May	NA	208	54	263	3	19	36	59	R 321	379	700	561	R 1,261
June	NA	128	42	170	3	19	35	57	227	469	696	R 714	1,411
July	NA	114	33	147	3	20	36	59	R 206	565	772	R 888	R 1,660
August	NA	107	30	137	3	19	36	59	R 195	552	747	835	R 1,581
September	NA	R 118	43	162	3	17	35	55	217	445	662	627	R 1,289
October	NA	R 250	69	319	3	16	36	55	R 374	344	718	491	R 1,209
November	NA	R 532	93	R 624	3	13	35	51	R 675	355	R 1,030	536	R 1,565
December	NA	R 865	128	R 993	3	12	36	51	R 1,044	454	R 1,498	713	R 2,211
Total	NA	R 5,140	966	R 6,106	40	192	422	654	R 6,761	5,193	R 11,953	R 7,692	R 19,646
2023 January	NA	R 828	139	R 967	3	13	38	54	R 1,021	453	R 1,474	653	R 2,127
February	NA	R 708	136	R 844	3	14	35	52	895	386	R 1,281	R 522	R 1,804
March	NA	655	112	767	3	19	38	61	828	379	1,207	525	1,732
April	NA	R 350	72	R 422	3	22	37	62	R 484	331	R 815	441	1,256
May	NA	204	57	R 262	3	24	38	66	R 327	345	R 672	495	R 1,167
June	NA	R 133	43	R 176	3	24	37	64	R 240	417	R 657	630	1,287
July	NA	115	34	149	3	25	38	66	216	544	760	866	1,626
7-Month Total	NA	2,993	594	3,586	23	140	262	425	4,011	2,855	6,866	4,132	10,997
2022 7-Month Total	NA	3,270	603	3,873	23	115	245	383	4,257	3,044	7,301	4,512	11,813
2021 7-Month Total	NA	3,264	605	3,869	23	102	200	325	4,194	2,932	7,126	4,464	11,591

^a Sum of "Total Primary" and "Electricity." See "End-Use Energy Consumption" in Glossary.

^b Energy consumed in the form that it is first accounted for, before any transformation to secondary or tertiary forms of energy. See "Primary Energy Consumption" in Glossary.

^c See Table 10.2a for notes on series components.

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

^e Includes small-scale solar photovoltaic (PV) electricity and solar thermal energy in the residential sector. See Tables 10.2a and 10.5.

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

^g Total losses are calculated as the primary energy consumed by the electric power sector minus the energy content of electricity sales to ultimate customers.

Total losses are allocated to the end-use sectors in proportion to each sector's share of total electricity sales to ultimate customers. See Note 1, "Electrical System Energy Losses," at end of section.

R=Revised. NA=Not available.

Notes: • Data are estimates, except for electricity sales to ultimate customers. • 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.

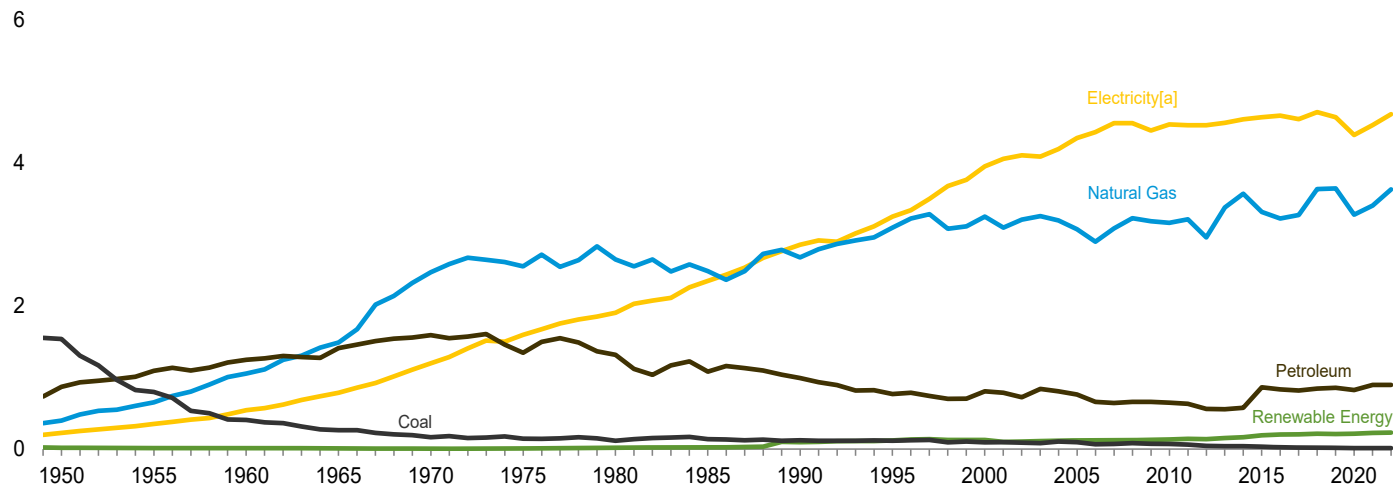
Sources: See end of section.

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

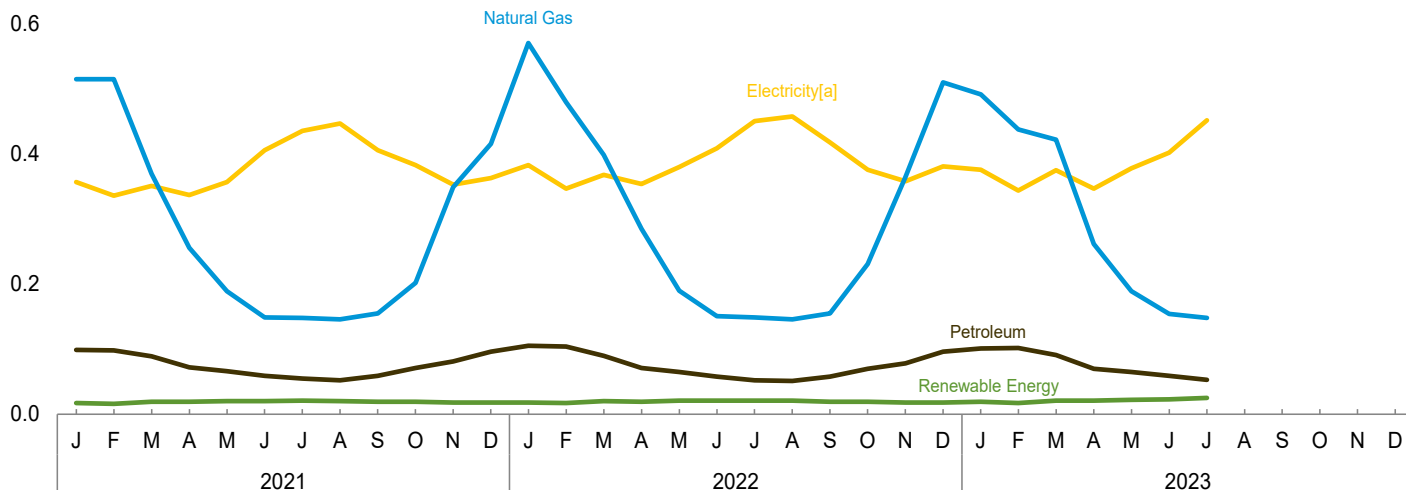
Figure 2.3 Commercial Sector Energy Consumption

(Quadrillion Btu)

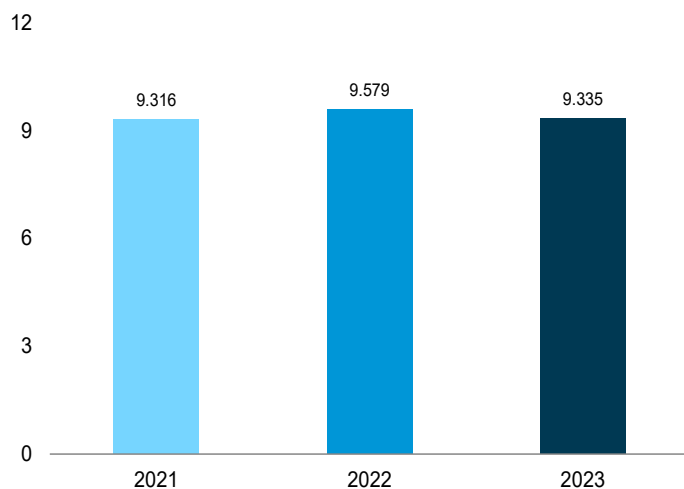
By Major Source, 1949–2022



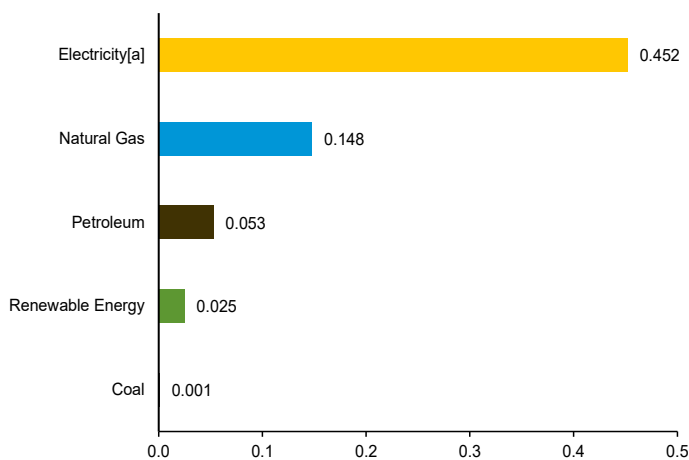
By Major Source, Monthly



Total, January–July



By Major Source, July 2023



[a] Electricity sales to ultimate customers.

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

Source: Table 2.3.

Table 2.3 Commercial Sector Energy Consumption
(Trillion Btu)

	End-Use Energy Consumption ^a													Electrical System Energy Losses ⁱ	Total
	Primary Consumption ^b										Total Primary	Elec- tricity ^h	Total End Use		
	Fossil Fuels				Renewable Energy ^c										
	Coal	Natural Gas ^d	Petro- leum ^e	Total	Hydro- electric Power ^f	Geo- thermal	Solar ^g	Wind	Bio- mass	Total					
1950 Total	1,542	401	872	2,815	NA	NA	NA	NA	19	19	2,834	225	3,059	604	3,663
1955 Total	801	651	1,095	2,547	NA	NA	NA	NA	15	15	2,561	350	2,911	791	3,702
1960 Total	407	1,056	1,248	2,711	NA	NA	NA	NA	12	12	2,723	543	3,266	1,096	4,362
1965 Total	265	1,490	1,413	3,168	NA	NA	NA	NA	9	9	3,177	789	3,966	1,549	5,514
1970 Total	165	2,473	1,592	4,229	NA	NA	NA	NA	8	8	4,237	1,201	5,438	2,464	7,902
1975 Total	147	2,558	1,346	4,051	NA	NA	NA	NA	8	8	4,059	1,598	5,657	3,267	8,924
1980 Total	115	2,651	1,318	4,084	NA	NA	NA	NA	21	21	4,105	1,906	6,011	4,044	10,055
1985 Total	137	2,488	1,083	3,708	NA	NA	NA	NA	24	24	3,732	2,351	6,084	4,762	10,845
1990 Total	124	2,680	991	3,795	(s)	3	(s)	—	94	97	3,892	2,860	6,753	5,898	12,650
1995 Total	117	3,096	769	3,982	(s)	5	(s)	—	113	118	4,099	3,252	7,352	6,634	13,985
2000 Total	92	3,252	807	4,150	(s)	8	(s)	—	119	127	4,277	3,956	8,233	8,271	16,504
2005 Total	97	3,073	761	3,931	(s)	14	1	—	105	120	4,051	4,351	8,401	8,762	17,163
2006 Total	65	2,902	661	3,627	(s)	14	1	—	103	118	3,745	4,435	8,180	8,769	16,949
2007 Total	70	3,085	646	3,801	(s)	14	1	—	103	119	3,920	4,560	8,479	9,092	17,571
2008 Total	81	3,228	660	3,970	(s)	15	2	—	109	126	4,096	4,559	8,655	8,996	17,651
2009 Total	73	3,187	659	3,919	(s)	17	3	(s)	112	131	4,050	4,459	8,509	8,540	17,049
2010 Total	70	3,165	647	3,881	(s)	19	4	(s)	111	134	4,014	4,539	8,553	8,666	17,219
2011 Total	62	3,216	632	3,910	(s)	20	7	(s)	115	141	4,051	4,531	8,583	8,370	16,952
2012 Total	44	2,960	560	3,563	(s)	20	11	(s)	108	139	3,702	4,528	8,230	8,216	16,446
2013 Total	41	3,380	558	3,979	(s)	20	15	(s)	120	155	4,134	4,562	8,696	8,200	16,897
2014 Total	40	3,572	578	4,190	(s)	20	19	(s)	127	166	4,356	4,614	8,969	8,226	17,195
2015 Total	31	3,316	864	4,211	(s)	20	21	(s)	152	193	4,404	4,643	9,047	8,050	17,097
2016 Total	24	3,224	832	4,079	1	20	23	(s)	158	201	4,281	4,665	8,945	7,893	16,838
2017 Total	21	3,273	820	4,113	1	20	28	(s)	156	205	4,318	4,616	8,934	7,606	16,540
2018 Total	19	3,638	845	4,502	1	20	35	1	156	213	4,715	4,715	9,429	7,643	17,072
2019 Total	17	3,647	857	4,521	1	21	40	1	149	211	4,732	4,643	9,375	7,263	16,638
2020 Total	15	R 3,279	827	R 4,120	1	21	46	1	147	215	R 4,335	4,393	R 8,728	6,595	R 15,322
2021 January	2	R 515	99	R 616	(s)	2	3	(s)	12	17	R 633	357	R 990	545	R 1,535
February	2	R 515	98	R 615	(s)	2	3	(s)	11	16	R 631	336	R 967	527	R 1,494
March	1	R 370	89	R 461	(s)	2	5	(s)	13	19	R 480	351	R 831	482	R 1,312
April	1	R 256	72	R 329	(s)	2	5	(s)	12	19	348	337	685	473	1,158
May	1	189	66	R 256	(s)	2	5	(s)	12	20	R 276	357	R 633	537	R 1,170
June	1	149	59	209	(s)	2	6	(s)	12	20	229	406	635	650	R 1,284
July	1	148	55	R 203	(s)	2	6	(s)	13	21	224	436	R 660	702	1,362
August	1	R 146	52	R 199	(s)	2	5	(s)	13	20	R 220	447	R 667	712	1,379
September	1	R 155	59	R 215	(s)	2	5	(s)	12	19	R 234	406	R 640	582	R 1,222
October	1	R 202	71	R 275	(s)	2	4	(s)	13	19	R 293	383	R 676	551	R 1,227
November	1	R 349	81	R 431	(s)	2	3	(s)	12	18	R 449	353	R 802	529	R 1,331
December	1	416	96	R 513	(s)	2	3	(s)	13	18	531	363	R 894	539	R 1,433
Total	15	R 3,409	898	R 4,322	1	21	54	1	149	225	R 4,547	4,533	R 9,080	6,834	R 15,914
2022 January	2	R 571	105	R 677	(s)	2	3	(s)	12	18	R 695	383	R 1,078	607	R 1,686
February	2	R 480	104	R 586	(s)	2	4	(s)	11	17	R 603	347	R 950	500	R 1,450
March	1	R 399	90	R 490	NM	2	5	(s)	13	20	R 510	368	R 878	499	R 1,376
April	1	R 285	71	R 357	NM	2	6	(s)	12	19	R 376	354	R 731	469	R 1,200
May	1	190	65	255	NM	2	6	(s)	12	21	276	380	656	563	R 1,218
June	1	R 151	58	R 210	NM	2	6	(s)	12	21	R 231	409	R 640	624	R 1,264
July	1	R 149	52	203	(s)	2	6	(s)	13	21	224	451	R 675	709	1,385
August	1	146	51	199	NM	2	6	(s)	13	21	220	458	678	693	1,370
September	1	R 155	58	214	(s)	2	6	(s)	12	19	R 233	418	R 651	R 589	1,241
October	1	R 231	70	R 302	NM	2	5	(s)	12	19	R 321	376	698	538	R 1,235
November	1	R 365	78	R 445	(s)	2	4	(s)	12	18	R 463	358	R 821	541	R 1,362
December	R 2	R 510	96	R 607	(s)	2	3	(s)	12	18	R 625	381	R 1,006	R 599	R 1,605
Total	14	R 3,633	897	R 4,545	1	22	61	1	147	231	R 4,776	4,685	R 9,461	R 6,940	R 16,401
2023 January	1	492	101	595	(s)	2	4	(s)	13	19	R 613	376	989	541	R 1,530
February	1	R 438	102	R 542	(s)	2	4	(s)	11	17	R 559	344	R 903	466	R 1,369
March	1	R 422	91	R 515	NM	2	6	(s)	13	21	536	375	R 910	519	1,430
April	1	262	70	334	NM	2	7	(s)	12	21	354	347	702	463	1,165
May	1	R 189	65	255	NM	2	7	(s)	13	22	R 277	378	655	543	1,198
June	1	154	59	214	NM	2	7	(s)	14	23	237	402	638	607	1,245
July	1	148	53	202	NM	2	7	(s)	16	25	226	452	678	719	1,397
7-Month Total	7	2,106	543	2,656	1	12	42	(s)	91	146	2,803	2,674	5,477	3,858	9,335
2022 7-Month Total	8	2,226	544	2,778	1	13	37	(s)	85	136	2,915	2,693	5,608	3,971	9,579
2021 7-Month Total	9	2,141	539	2,689	1	12	33	(s)	86	132	2,821	2,580	5,400	3,915	9,316

^a Sum of "Total Primary" and "Electricity." See "End-Use Energy Consumption" in Glossary.

^b Energy consumed in the form that it is first accounted for, before any transformation to secondary or tertiary forms of energy. See "Primary Energy Consumption" in Glossary.

^c See Table 10.2a for notes on series components.

^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 Conventional hydroelectric power.

^g Includes small-scale solar photovoltaic (PV) electricity and solar thermal energy in the commercial sector. See Tables 10.2a and 10.5.

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

ⁱ Total losses are calculated as the primary energy consumed by the electric power sector minus the energy content of electricity sales to ultimate customers. Total losses are allocated to the end-use sectors in proportion to each sector's

share of total electricity sales to ultimate customers. 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 sales to ultimate customers 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.

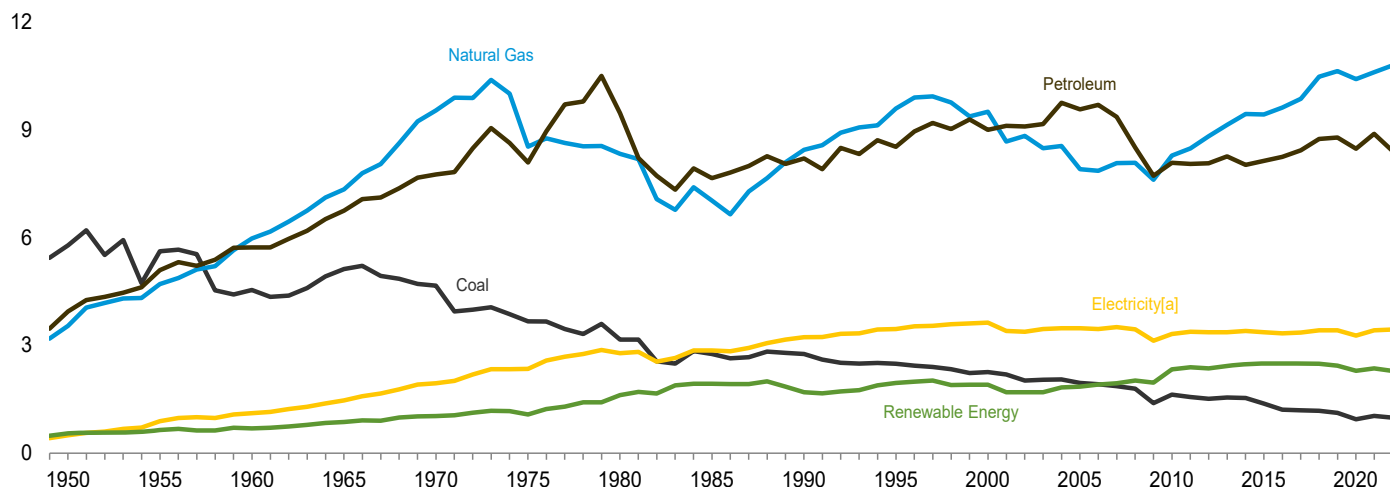
Sources: See end of section.

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

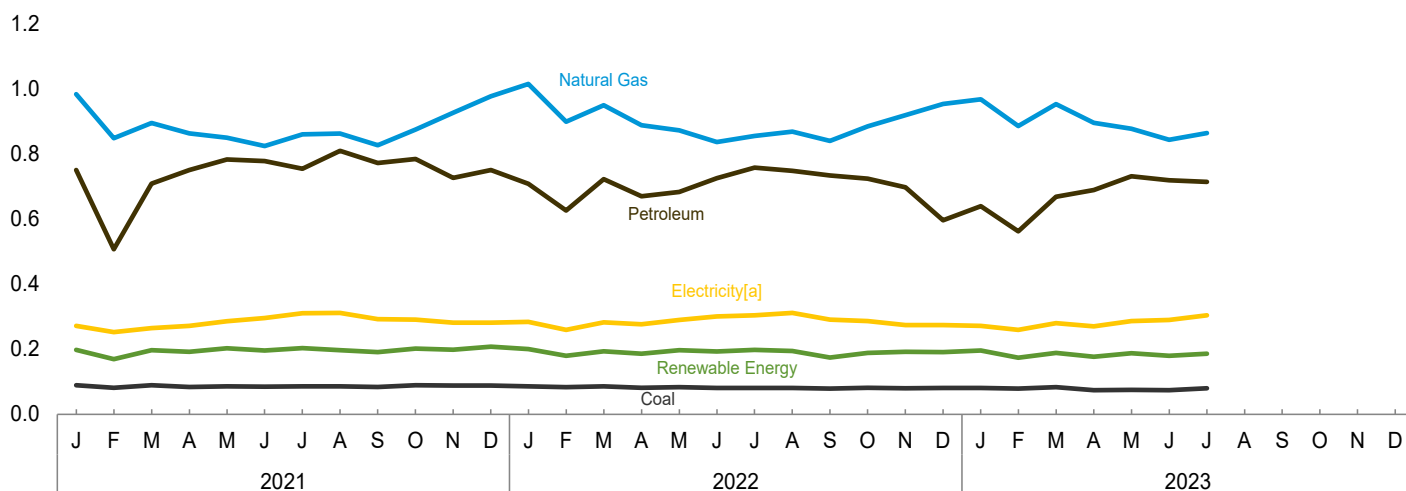
Figure 2.4 Industrial Sector Energy Consumption

(Quadrillion Btu)

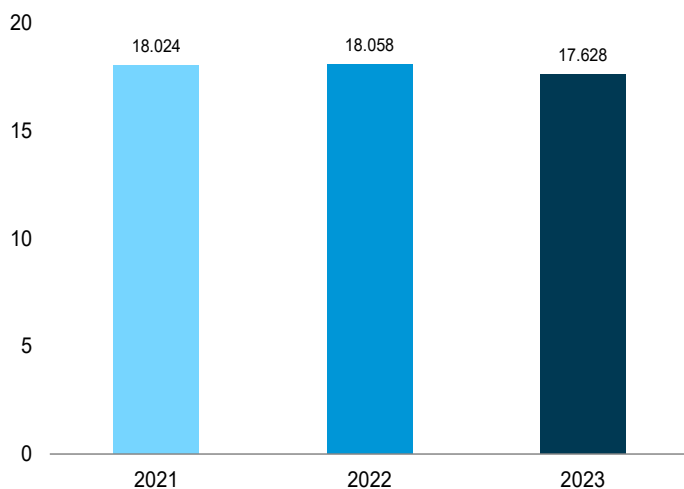
By Major Source, 1949–2022



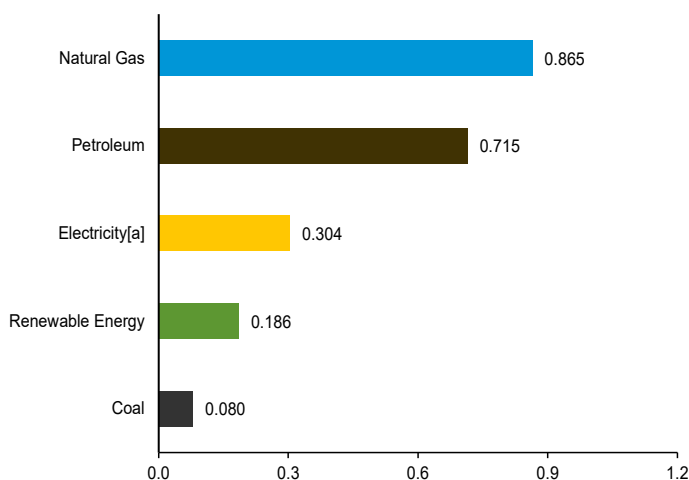
By Major Source, Monthly



Total, January–July



By Major Source, July 2023



[a] Electricity sales to ultimate customers.

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

Source: Table 2.4.

Table 2.4 Industrial Sector Energy Consumption
(Trillion Btu)

	End-Use Energy Consumption ^a													Electrical System Energy Losses ^k	Total
	Primary Consumption ^b										Total Primary	Elec- tricity ^j	Total End Use		
	Fossil Fuels ^c				Renewable Energy ^d										
	Coal	Natural Gas ^e	Petro- leum ^f	Total ^g	Hydro- electric Power ^h	Geo- thermal	Solar ⁱ	Wind	Bio- mass	Total					
1950 Total	5,781	3,546	3,943	13,271	17	NA	NA	NA	532	549	13,820	500	14,319	1,340	15,659
1955 Total	5,620	4,701	5,093	15,404	11	NA	NA	NA	631	642	16,046	887	16,933	2,005	18,938
1960 Total	4,543	5,973	5,720	16,231	12	NA	NA	NA	680	692	16,923	1,107	18,030	2,234	20,264
1965 Total	5,127	7,339	6,750	19,197	11	NA	NA	NA	855	866	20,063	1,463	21,526	2,873	24,399
1970 Total	4,656	9,536	7,754	21,888	11	NA	NA	NA	1,019	1,030	22,918	1,948	24,866	3,995	28,862
1975 Total	3,667	8,532	8,092	20,304	11	NA	NA	NA	1,063	1,074	21,378	2,346	23,725	4,797	28,522
1980 Total	3,155	8,333	9,464	20,916	11	NA	NA	NA	1,600	1,611	22,527	2,781	25,308	5,900	31,209
1985 Total	2,760	7,032	7,656	17,434	11	NA	NA	NA	1,918	1,928	19,363	2,855	22,218	5,782	28,000
1990 Total	2,756	8,443	8,200	19,403	10	2	(s)	—	1,684	1,696	21,100	3,226	24,326	6,652	30,978
1995 Total	2,488	9,592	8,525	20,666	18	3	(s)	—	1,934	1,955	22,622	3,455	26,077	7,048	33,125
2000 Total	2,256	9,500	8,999	20,821	14	4	(s)	—	1,881	1,900	22,721	3,631	26,352	7,592	33,945
2005 Total	1,954	7,907	9,567	19,472	11	4	(s)	—	1,834	1,849	21,322	3,477	24,799	7,003	31,803
2006 Total	1,914	7,861	9,693	19,529	10	4	(s)	—	1,892	1,906	21,436	3,451	24,886	6,823	31,710
2007 Total	1,865	8,074	9,363	19,326	5	5	(s)	—	1,937	1,947	21,273	3,507	24,780	6,993	31,773
2008 Total	1,793	8,083	8,502	18,420	6	5	(s)	—	2,012	2,023	20,443	3,444	23,888	6,797	30,685
2009 Total	1,392	7,609	7,720	16,698	6	4	1	—	1,948	1,959	18,657	3,130	21,787	5,995	27,782
2010 Total	1,631	8,278	8,083	17,986	6	4	1	—	2,320	2,331	20,317	3,314	23,631	6,328	29,958
2011 Total	1,561	8,481	8,055	18,107	6	4	1	(s)	2,375	2,387	20,494	3,382	23,876	6,247	30,123
2012 Total	1,513	8,819	8,066	18,401	8	4	2	(s)	2,349	2,363	20,765	3,363	24,128	6,103	30,230
2013 Total	1,546	9,140	8,260	18,930	12	4	3	(s)	2,407	2,427	21,357	3,362	24,719	6,043	30,762
2014 Total	1,530	9,441	8,021	18,971	4	4	4	(s)	2,466	2,478	21,449	3,404	24,853	6,068	30,921
2015 Total	1,380	9,426	8,135	18,923	5	4	5	(s)	2,474	2,489	21,411	3,366	24,777	5,836	30,613
2016 Total	1,205	9,617	8,243	19,046	4	4	7	(s)	2,487	2,503	21,549	3,333	24,882	5,639	30,520
2017 Total	1,195	9,864	8,427	19,458	5	4	8	(s)	2,475	2,493	21,951	3,358	25,309	5,534	30,843
2018 Total	1,180	10,474	8,747	20,375	4	4	9	(s)	2,471	2,489	22,864	3,414	26,278	5,535	31,813
2019 Total	1,117	10,630	8,785	20,511	4	4	11	(s)	2,416	2,435	22,946	3,420	26,366	5,349	31,716
2020 Total	938	10,410	8,476	19,811	3	4	12	2	2,270	2,292	22,103	3,272	25,376	4,913	30,288
2021 January	89	985	751	1,822	(s)	(s)	1	(s)	197	198	2,020	272	2,292	416	2,709
February	82	849	508	1,437	(s)	(s)	1	(s)	168	170	1,607	253	1,860	398	2,258
March	89	896	710	1,696	(s)	(s)	1	(s)	195	197	1,893	265	2,158	363	2,521
April	84	864	751	1,696	(s)	(s)	1	(s)	191	192	1,888	272	2,160	381	2,541
May	86	851	784	1,717	(s)	(s)	1	(s)	201	203	1,920	286	2,206	429	2,636
June	85	825	779	1,683	(s)	(s)	1	(s)	194	196	1,878	296	2,174	473	2,647
July	86	861	755	1,698	(s)	(s)	1	(s)	202	204	1,902	311	2,213	500	2,712
August	86	863	810	1,753	(s)	(s)	1	(s)	195	197	1,951	312	2,263	497	2,760
September	84	828	773	1,679	(s)	(s)	1	(s)	189	191	1,870	293	2,162	420	2,582
October	89	876	785	1,746	(s)	(s)	1	(s)	200	202	1,948	291	2,240	419	2,659
November	88	927	727	1,738	(s)	(s)	1	(s)	197	199	1,936	282	2,218	422	2,640
December	88	978	751	1,810	(s)	(s)	1	(s)	207	208	2,018	282	2,300	418	2,718
Total	1,036	10,603	8,885	20,476	3	4	14	(s)	2,336	2,357	22,833	3,414	26,247	5,147	31,394
2022 January	86	1,016	709	1,806	(s)	(s)	1	(s)	198	200	2,006	284	2,290	451	2,741
February	83	900	627	1,608	(s)	(s)	1	(s)	178	180	1,788	259	2,047	373	2,420
March	86	951	723	1,755	(s)	(s)	1	(s)	192	194	1,948	283	2,231	383	2,615
April	82	889	671	1,637	(s)	(s)	1	(s)	184	186	1,823	277	2,101	367	2,468
May	83	873	684	1,630	(s)	(s)	2	(s)	195	197	1,827	290	2,118	430	2,548
June	81	838	726	1,641	(s)	(s)	2	(s)	191	193	1,835	301	2,136	459	2,594
July	81	856	759	1,692	(s)	(s)	2	(s)	196	198	1,889	304	2,194	478	2,672
August	81	869	749	1,695	(s)	(s)	2	(s)	192	195	1,889	312	2,202	473	2,675
September	79	841	735	1,650	(s)	(s)	1	(s)	173	175	1,825	291	2,116	409	2,525
October	82	886	725	1,690	(s)	(s)	1	(s)	187	189	1,879	287	2,166	410	2,576
November	80	920	698	1,696	(s)	(s)	1	(s)	190	192	1,887	274	2,161	414	2,576
December	81	955	597	1,628	(s)	(s)	1	(s)	190	191	1,819	274	2,093	431	2,525
Total	987	10,793	8,404	20,128	3	4	15	(s)	2,266	2,288	22,417	3,438	25,854	5,093	30,947
2023 January	81	969	640	1,687	(s)	(s)	1	(s)	195	196	1,883	272	2,155	392	2,548
February	79	887	563	1,528	(s)	(s)	1	(s)	173	174	1,702	259	1,961	351	2,312
March	83	954	669	1,705	(s)	(s)	1	(s)	187	189	1,893	280	2,174	388	2,561
April	74	897	690	1,659	(s)	(s)	2	(s)	175	177	1,836	270	2,106	359	2,465
May	75	878	732	1,682	(s)	(s)	2	(s)	186	188	1,870	287	2,157	412	2,569
June	74	844	720	1,636	(s)	(s)	2	(s)	178	180	1,816	290	2,106	438	2,544
July	80	865	715	1,657	(s)	(s)	2	(s)	184	186	1,843	304	2,147	483	2,630
7-Month Total	546	6,296	4,729	11,553	2	2	10	(s)	1,277	1,291	12,844	1,961	14,805	2,823	17,628
2022 7-Month Total	583	6,322	4,899	11,769	2	2	9	(s)	1,334	1,348	13,117	1,999	15,116	2,941	18,058
2021 7-Month Total	602	6,131	5,039	11,749	2	2	8	(s)	1,348	1,360	13,109	1,954	15,063	2,961	18,024

^a Sum of "Total Primary" and "Electricity." See "End-Use Energy Consumption" in Glossary.

^b Energy consumed in the form that it is first accounted for, before any transformation to secondary or tertiary forms of energy. See "Primary Energy Consumption" in Glossary.

^c Includes non-combustion use of fossil fuels.

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

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

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

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

^h Conventional hydroelectric power.

ⁱ Includes both utility-scale and small-scale solar photovoltaic (PV) electricity net generation in the industrial sector. See Tables 10.2b and 10.5.

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

^k Total losses are calculated as the primary energy consumed by the electric

power sector minus the energy content of electricity sales to ultimate customers. Total losses are allocated to the end-use sectors in proportion to each sector's share of total electricity sales to ultimate customers. 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 sales to ultimate customers.

• 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.

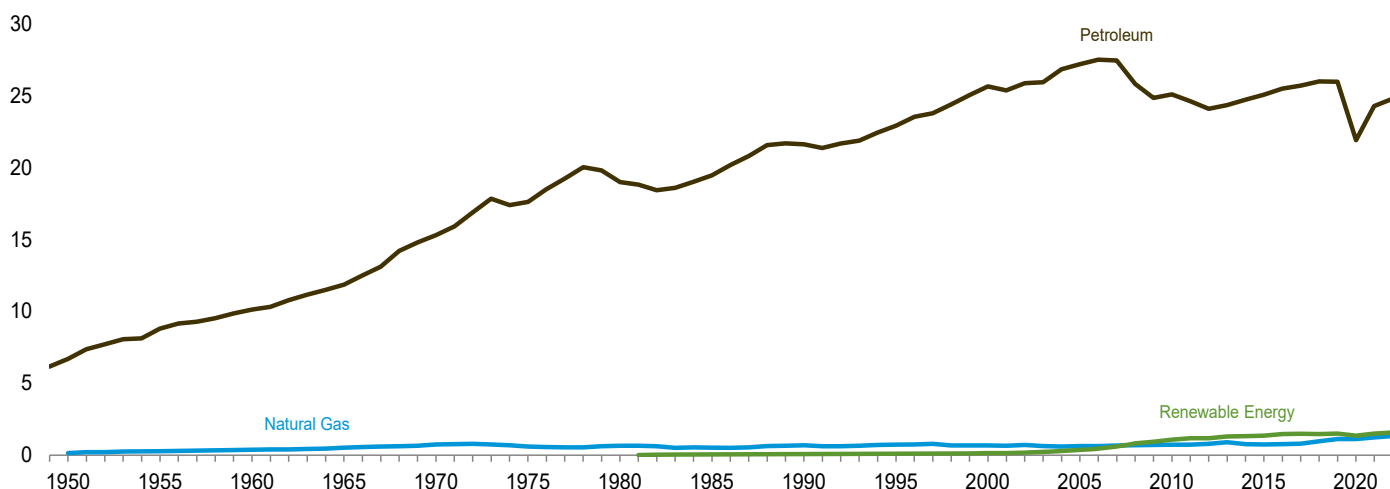
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#consumption> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

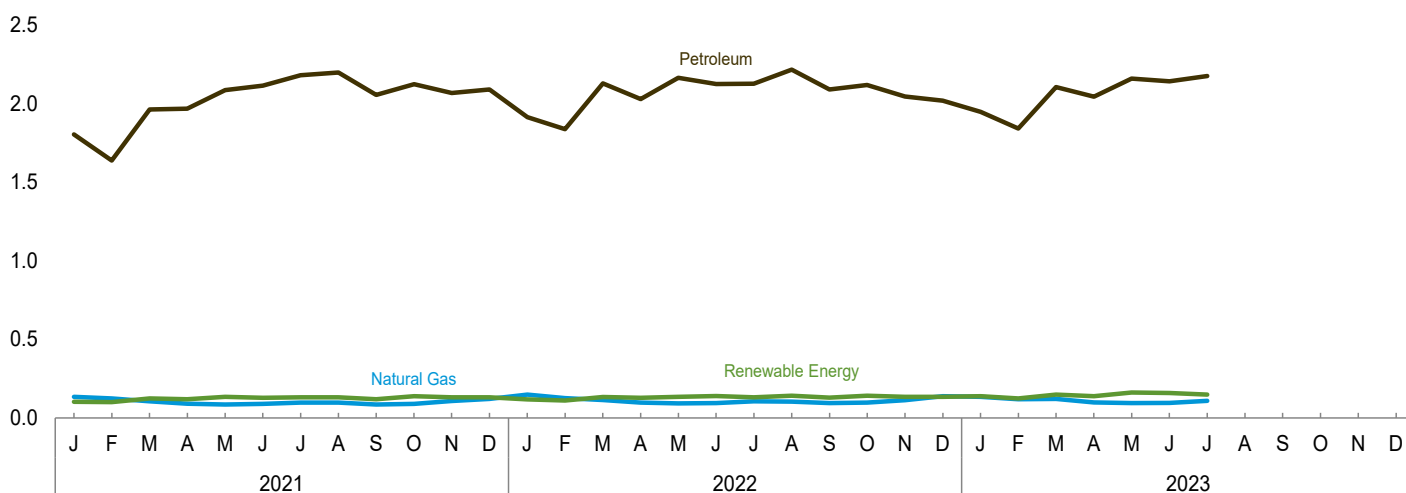
Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Figure 2.5 Transportation Sector Energy Consumption
(Quadrillion Btu)

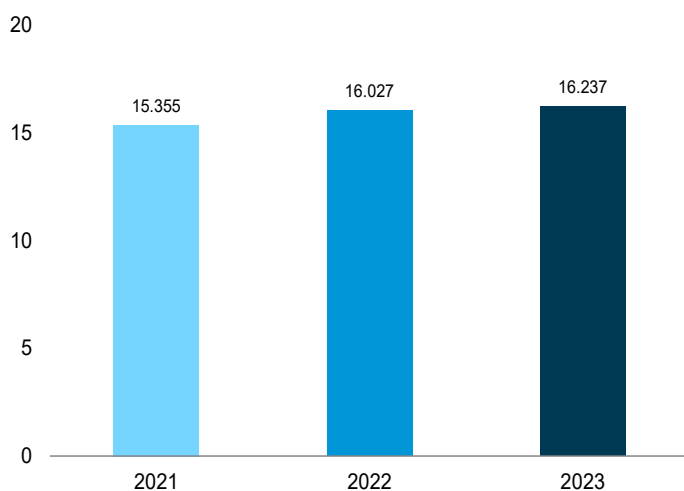
By Major Source, 1949–2022



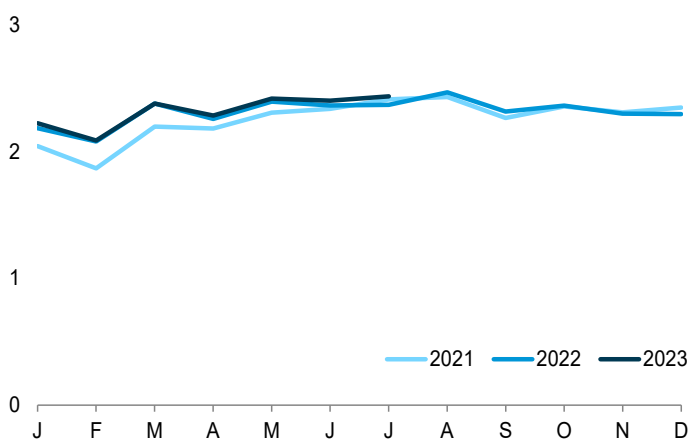
By Major Source, Monthly



Total, January–July



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)

	End-Use Energy Consumption ^a								Electrical System Energy Losses ^g	Total
	Primary Consumption ^b					Electricity ⁱ	Total End Use			
	Fossil Fuels				Renewable Energy ^c					
	Coal	Natural Gas ^d	Petroleum ^e	Total	Biomass					
						Total Primary				
1950 Total	1,564	130	6,690	8,383	NA	8,383	23	8,407	62	8,469
1955 Total	421	254	8,799	9,474	NA	9,474	20	9,494	45	9,539
1960 Total	75	359	10,125	10,560	NA	10,560	10	10,570	21	10,591
1965 Total	16	517	11,866	12,399	NA	12,399	10	12,409	20	12,428
1970 Total	7	745	15,311	16,062	NA	16,062	11	16,073	22	16,094
1975 Total	1	595	17,615	18,211	NA	18,211	10	18,221	21	18,241
1980 Total	(h)	650	19,009	19,659	NA	19,659	11	19,670	23	19,694
1985 Total	(h)	519	19,472	19,992	50	20,042	14	20,056	29	20,084
1990 Total	(h)	679	21,626	22,305	60	22,366	16	22,382	33	22,415
1995 Total	(h)	724	22,920	23,644	112	23,757	17	23,774	35	23,808
2000 Total	(h)	672	25,649	26,321	135	26,456	18	26,474	38	26,512
2005 Total	(h)	624	27,217	27,840	339	28,179	26	28,205	52	28,257
2006 Total	(h)	625	27,518	28,143	475	28,618	25	28,643	50	28,693
2007 Total	(h)	663	27,462	28,126	602	28,727	28	28,755	56	28,811
2008 Total	(h)	692	25,823	26,515	825	27,339	26	27,366	52	27,417
2009 Total	(h)	715	24,860	25,575	935	26,510	27	26,536	51	26,587
2010 Total	(h)	719	25,100	25,819	1,075	26,894	26	26,920	50	26,970
2011 Total	(h)	734	24,623	25,357	1,166	26,523	26	26,549	48	26,598
2012 Total	(h)	780	24,108	24,888	1,169	26,057	25	26,082	45	26,127
2013 Total	(h)	887	24,361	25,248	1,292	26,541	26	26,567	47	26,614
2014 Total	(h)	760	24,728	25,487	1,314	26,802	26	26,828	47	26,875
2015 Total	(h)	745	25,086	25,831	1,351	27,182	26	27,208	45	27,253
2016 Total	(h)	757	25,515	26,272	1,469	27,741	26	27,767	43	27,810
2017 Total	(h)	799	25,707	26,506	1,474	27,979	26	28,005	42	28,047
2018 Total	(h)	962	26,017	26,979	1,456	28,435	26	28,461	42	28,504
2019 Total	(h)	1,114	25,992	27,106	1,497	28,602	26	28,628	41	28,669
2020 Total	(h)	1,109	21,930	23,039	1,355	24,394	22	24,417	34	24,450
2021 January	(h)	135	1,804	R 1,938	102	2,040	2	2,042	3	2,045
February	(h)	125	1,638	1,764	101	1,865	2	R 1,867	3	1,869
March	(h)	106	1,962	2,068	125	2,194	2	2,196	3	2,198
April	(h)	91	1,968	R 2,059	120	2,179	2	R 2,181	2	2,183
May	(h)	85	2,086	2,171	134	2,305	2	R 2,307	2	2,309
June	(h)	90	2,114	2,204	128	2,332	2	2,334	3	2,337
July	(h)	97	2,181	R 2,278	131	2,408	2	2,410	3	2,413
August	(h)	R 98	2,197	2,295	132	R 2,427	2	2,428	3	R 2,432
September	(h)	86	2,056	2,142	120	2,262	2	2,264	3	2,267
October	(h)	90	2,124	2,214	139	2,353	2	2,355	3	2,357
November	(h)	108	2,067	2,175	132	2,307	2	2,308	3	2,311
December	(h)	121	2,090	2,211	132	2,343	2	2,345	3	2,348
Total	(h)	R 1,232	24,287	R 25,519	1,496	R 27,015	22	R 27,037	33	R 27,070
2022 January	(h)	R 148	1,913	R 2,061	118	R 2,180	2	R 2,182	3	R 2,185
February	(h)	R 126	1,837	R 1,963	112	R 2,075	2	R 2,077	3	R 2,080
March	(h)	R 114	2,128	R 2,242	133	R 2,375	2	R 2,377	3	R 2,380
April	(h)	R 97	2,028	R 2,125	128	R 2,253	2	R 2,254	2	R 2,257
May	(h)	R 92	2,163	R 2,255	135	R 2,389	2	R 2,391	3	R 2,394
June	(h)	R 95	2,125	R 2,220	140	R 2,360	2	R 2,361	3	R 2,364
July	(h)	R 106	2,126	R 2,232	132	R 2,364	2	R 2,366	3	R 2,369
August	(h)	R 105	2,216	R 2,321	141	R 2,463	2	R 2,465	3	R 2,467
September	(h)	R 94	2,090	R 2,183	129	R 2,312	2	R 2,314	3	R 2,317
October	(h)	R 97	2,118	R 2,215	142	R 2,357	2	R 2,359	3	R 2,362
November	(h)	R 113	2,046	R 2,159	135	R 2,294	2	R 2,296	3	R 2,299
December	(h)	R 139	2,018	R 2,157	135	R 2,291	2	R 2,293	3	R 2,296
Total	(h)	R 1,326	24,808	R 26,134	1,579	R 27,713	23	R 27,735	33	R 27,769
2023 January	(h)	R 134	1,948	R 2,081	138	R 2,219	2	R 2,221	3	R 2,224
February	(h)	R 119	1,841	R 1,960	125	R 2,085	2	R 2,087	3	R 2,089
March	(h)	R 122	2,105	R 2,227	149	R 2,375	2	R 2,377	3	R 2,380
April	(h)	R 99	2,044	R 2,142	139	R 2,281	2	R 2,283	2	R 2,285
May	(h)	R 95	2,158	R 2,253	162	R 2,415	2	R 2,417	3	R 2,419
June	(h)	R 96	2,142	R 2,239	159	R 2,397	2	R 2,399	3	R 2,402
July	(h)	109	2,175	2,283	149	2,432	2	2,434	3	2,437
7-Month Total	(h)	773	14,412	15,186	1,019	16,205	13	16,218	19	16,237
2022 7-Month Total	(h)	778	14,320	15,098	897	15,995	13	16,008	19	16,027
2021 7-Month Total	(h)	730	13,753	14,483	841	15,324	13	15,336	19	15,355

^a Sum of "Total Primary" and "Electricity." See "End-Use Energy Consumption" in Glossary.

^b Energy consumed in the form that it is first accounted for, before any transformation to secondary or tertiary forms of energy. See "Primary Energy Consumption" in Glossary.

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

^d Natural gas consumed in the operation of pipelines and smaller amounts consumed as vehicle fuel. Does not include supplemental gaseous fuels—see Note 3, "Supplemental Gaseous Fuels," at end of Section 4.

^e Does not include biofuels. Biofuels are included in "Biomass." Includes non-combustion use of lubricants.

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

^g Total losses are calculated as the primary energy consumed by the electric power sector minus the energy content of electricity sales to ultimate customers. Total losses are allocated to the end-use sectors in proportion to each sector's

share of total electricity sales to ultimate customers. See Note 1, "Electrical System Energy Losses," at end of section.

^h 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 sales to ultimate customers 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.

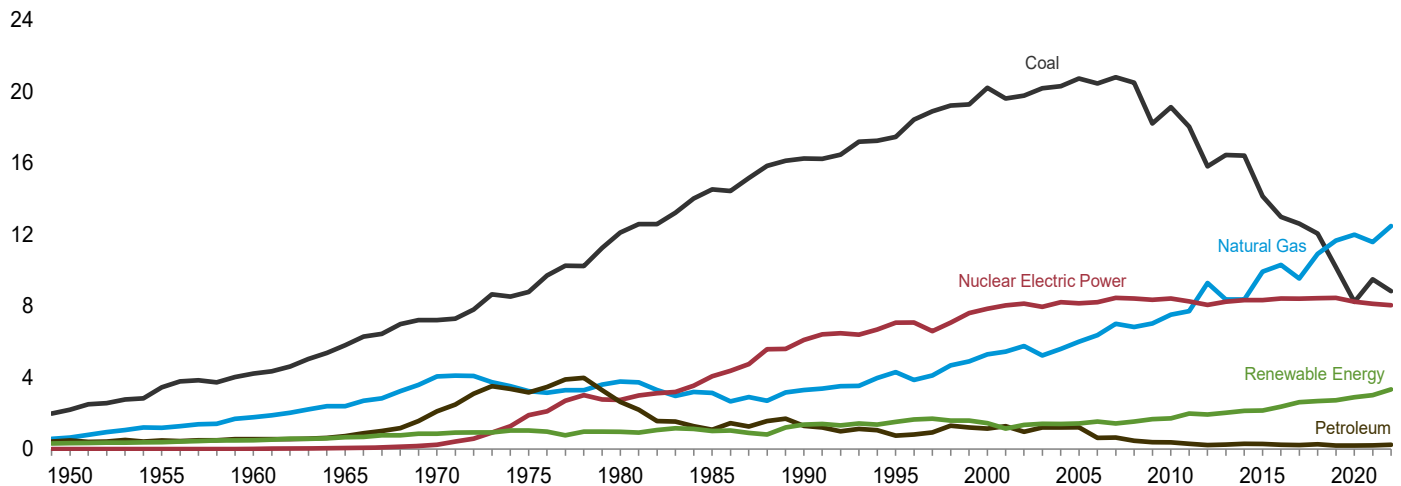
Sources: See end of section.

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

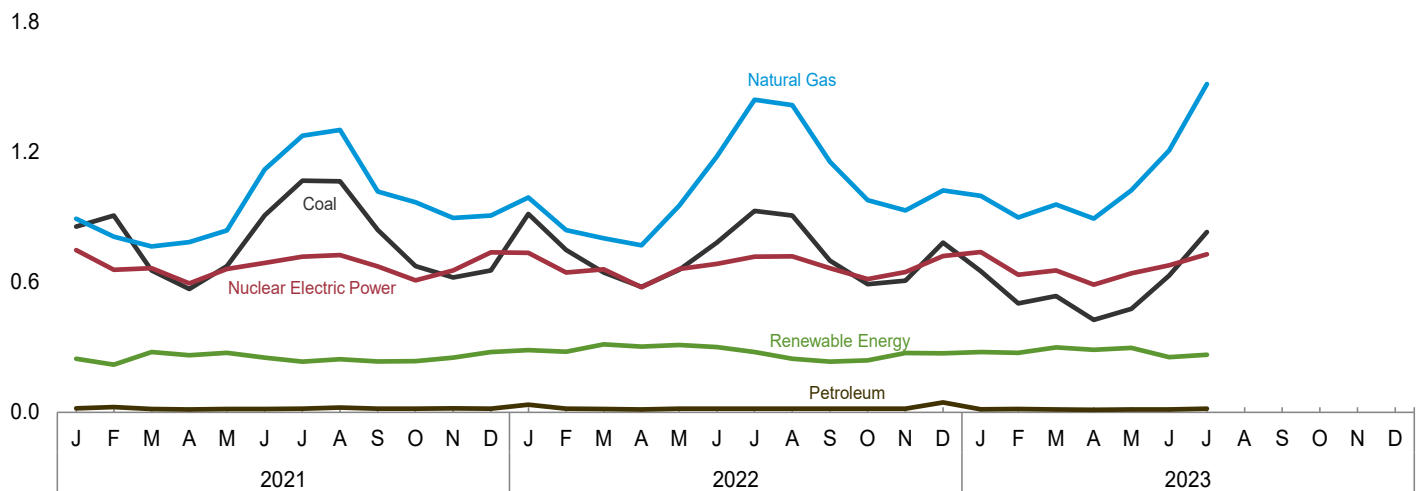
Figure 2.6 Electric Power Sector Energy Consumption

(Quadrillion Btu)

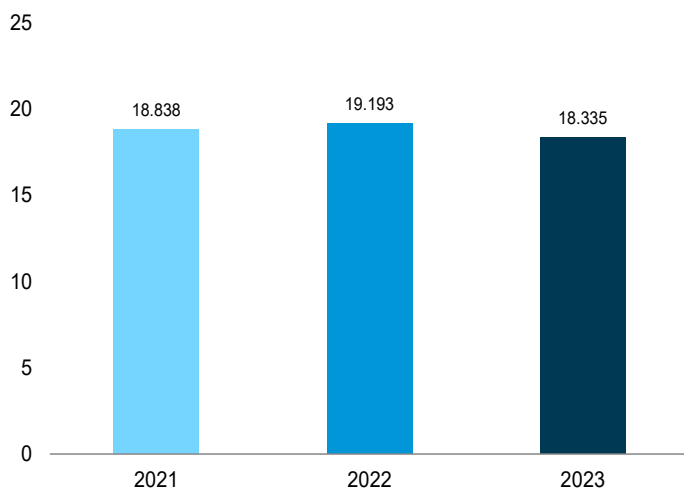
By Major Source, 1949–2022



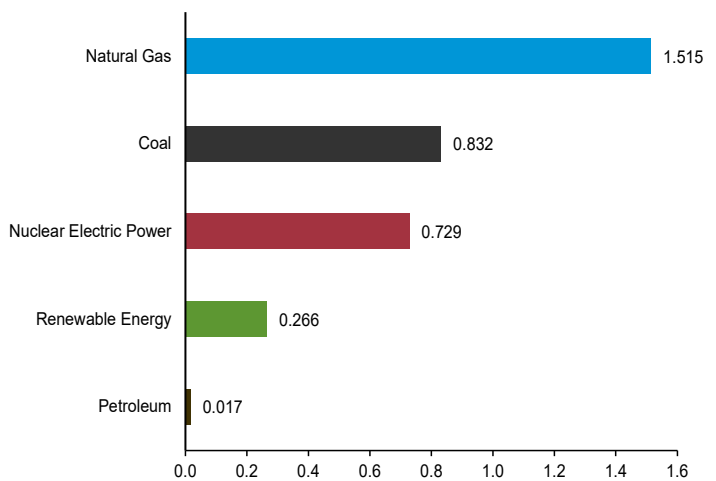
By Major Source, Monthly



Total, January–July



By Major Source, July 2023



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

Source: Table 2.6.

Table 2.6 Electric Power Sector Energy Consumption
(Trillion Btu)

	Primary Consumption ^a												Electricity Net Imports ^f	Total Primary
	Fossil Fuels				Nuclear Electric Power	Renewable Energy ^b								
	Coal	Natural Gas ^c	Petroleum	Total		Hydroelectric Power ^d	Geothermal	Solar ^e	Wind	Biomass	Total			
1950 Total	2,199	651	472	3,322	0	327	NA	NA	NA	5	333	6	3,661	
1955 Total	3,458	1,194	471	5,123	0	385	NA	NA	NA	3	389	14	5,525	
1960 Total	4,228	1,785	553	6,565	6	498	(s)	NA	NA	2	499	15	7,086	
1965 Total	5,821	2,395	722	8,938	43	661	1	NA	NA	3	665	(s)	9,646	
1970 Total	7,227	4,054	2,117	13,399	239	845	2	NA	NA	4	851	7	14,495	
1975 Total	8,786	3,240	3,166	15,191	1,900	1,024	11	NA	NA	2	1,037	21	18,149	
1980 Total	12,123	3,778	2,634	18,534	2,739	942	17	NA	NA	4	964	71	22,309	
1985 Total	14,542	3,135	1,090	18,767	4,076	959	32	(s)	(s)	14	1,006	140	23,988	
1990 Total	16,261	3,309	1,289	20,859	6,104	989	53	1	10	317	1,369	8	28,340	
1995 Total	17,466	4,302	755	22,523	7,075	1,042	46	2	11	422	1,522	134	31,254	
2000 Total	20,220	5,293	1,144	26,658	7,862	926	48	2	19	453	1,447	115	36,083	
2005 Total	20,737	6,015	1,222	27,974	8,161	911	50	2	61	406	1,430	85	37,649	
2006 Total	20,462	6,375	637	27,474	8,215	977	50	2	91	412	1,531	63	37,283	
2007 Total	20,808	7,005	648	28,461	8,459	839	50	2	118	423	1,432	107	38,458	
2008 Total	20,513	6,829	459	27,801	8,426	864	51	3	189	435	1,541	112	37,881	
2009 Total	18,225	7,022	382	25,630	8,355	926	51	3	252	441	1,674	116	35,775	
2010 Total	19,133	7,528	370	27,031	8,434	882	52	4	323	459	1,720	89	37,275	
2011 Total	18,035	7,712	295	26,042	8,269	1,083	52	6	410	437	1,988	127	36,426	
2012 Total	15,821	9,287	214	25,322	8,062	934	53	14	480	453	1,935	161	35,480	
2013 Total	16,451	8,376	255	25,082	8,244	904	54	30	572	470	2,030	197	35,554	
2014 Total	16,427	8,362	295	25,085	8,338	880	54	59	619	530	2,143	182	35,747	
2015 Total	14,138	9,926	276	24,341	8,337	845	54	83	650	525	2,158	227	35,063	
2016 Total	12,996	10,301	244	23,542	8,427	909	54	121	774	505	2,363	227	34,558	
2017 Total	12,622	9,555	218	22,395	8,419	1,019	54	180	867	510	2,630	192	33,636	
2018 Total	12,053	10,922	260	23,235	8,438	993	54	216	929	496	2,689	152	34,514	
2019 Total	10,181	11,658	189	22,028	8,452	978	51	243	1,009	448	2,729	133	33,343	
2020 Total	8,229	12,000	184	20,413	8,251	969	53	302	1,150	428	2,902	161	31,728	
2021 January	856	892	18	1,765	748	83	4	19	102	38	247	14	2,775	
February	908	810	24	1,742	657	68	4	21	91	35	220	10	2,629	
March	654	765	15	1,435	664	72	4	32	134	37	278	13	2,390	
April	569	785	13	1,367	595	66	4	37	123	32	263	11	2,237	
May	675	839	15	1,529	661	79	4	42	115	34	275	13	2,478	
June	909	1,121	15	2,045	689	80	4	41	91	36	252	15	3,001	
July	1,068	1,277	17	2,362	718	75	4	41	74	38	233	15	3,328	
August	1,066	1,302	21	2,388	725	69	4	41	92	38	244	12	3,368	
September	841	1,019	17	1,877	673	58	4	38	99	35	234	9	2,793	
October	675	968	16	1,659	609	58	4	31	110	33	236	10	2,514	
November	622	896	18	1,536	654	66	5	26	122	34	252	4	2,447	
December	655	907	17	1,579	738	80	5	21	136	37	278	8	2,603	
Total	9,498	11,583	205	21,285	8,131	854	53	391	1,289	426	3,014	134	32,564	
2022 January	915	991	35	R 1,942	736	89	5	28	130	35	287	10	2,975	
February	749	840	17	1,606	645	78	4	32	130	35	279	6	2,536	
March	644	803	15	1,462	659	86	5	40	147	35	313	7	2,441	
April	578	771	13	1,363	577	66	4	46	157	30	303	9	2,251	
May	657	953	17	1,627	661	78	5	52	142	34	310	9	2,608	
June	783	R 1,180	17	R 1,980	685	91	5	54	114	36	300	15	R 2,981	
July	929	R 1,442	16	2,387	718	82	5	53	100	38	278	19	3,402	
August	907	1,417	17	2,341	719	74	5	49	83	37	247	20	3,327	
September	700	R 1,155	17	R 1,873	665	57	5	46	92	34	233	13	R 2,784	
October	591	978	17	1,586	615	50	4	42	112	32	240	10	R 2,450	
November	607	931	16	R 1,554	647	64	5	29	143	33	273	9	R 2,483	
December	783	1,024	45	R 1,852	721	74	5	24	134	34	272	14	R 2,858	
Total	8,844	R 12,486	243	R 21,574	8,046	890	56	493	1,483	413	3,335	141	R 33,096	
2023 January	651	998	14	1,663	739	78	5	28	133	34	278	11	2,691	
February	503	899	15	1,417	634	66	4	32	143	30	275	7	2,333	
March	536	R 958	13	R 1,507	655	70	4	42	151	32	299	9	2,471	
April	426	894	12	1,332	589	61	5	51	146	26	288	7	2,215	
May	478	1,025	13	1,516	641	95	5	58	109	31	297	9	2,464	
June	631	1,208	13	1,852	678	67	4	60	94	29	254	6	2,789	
July	832	1,515	17	2,364	729	73	5	64	95	30	266	13	3,373	
7-Month Total	4,057	7,496	98	11,651	4,665	509	31	334	871	211	1,957	61	18,335	
2022 7-Month Total	5,256	6,981	130	12,366	4,681	571	32	305	919	243	2,071	75	19,193	
2021 7-Month Total	5,639	6,489	116	12,245	4,733	524	30	234	731	251	1,769	91	18,838	

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

Notes: • Data are for fuels consumed to produce electricity and useful thermal output. • The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. • See Note 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.

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

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	Transportation	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	22.0	32.1	18.8	10.3	7.1	19.0	10.8	47.1	7.7	29.0	22.4	1,143.4
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	945.9
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
2021	6.4	650.7	15.9	27.5	14.4	9.1	5.4	14.5	8.1	45.5	5.6	30.3	18.1	851.5
2022	8.0	622.5	16.5	26.3	13.4	9.6	6.3	14.5	8.4	48.3	5.5	30.8	17.3	827.2

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

^b U.S. Department of Homeland Security.

^c General Services Administration.

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

^e National Aeronautics and Space Administration.

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

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

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

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

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

Table 2.8 U.S. Government Energy Consumption by Source, Fiscal Years

(Trillion Btu)

Fiscal Year ^a	Coal	Natural Gas ^b	Petroleum						Other Mobility Fuels ^f	Electricity	Purchased Steam and Other ^g	Total
			Aviation Gasoline	Fuel Oil ^c	Jet Fuel	LPG ^d	Motor Gasoline ^e	Total				
1975	77.9	166.2	22.0	376.0	707.4	5.6	63.2	1,174.2	0.0	141.5	5.1	1,565.0
1976	71.3	151.8	11.6	329.7	610.0	4.7	60.4	1,016.4	.0	139.3	4.6	1,383.4
1977	68.4	141.2	8.8	348.5	619.2	4.1	61.4	1,042.1	.0	141.1	5.7	1,398.5
1978	66.0	144.7	6.2	332.3	601.1	3.0	60.1	1,002.9	.0	141.0	6.4	1,360.9
1979	65.1	148.9	4.7	327.1	618.6	3.7	59.1	1,013.1	.0	141.2	7.1	1,375.4
1980	63.5	147.3	4.9	307.7	638.7	3.8	56.5	1,011.6	.2	141.9	6.8	1,371.2
1981	65.1	142.2	4.6	351.3	653.3	3.5	53.2	1,066.0	.2	144.5	6.2	1,424.2
1982	68.6	146.2	3.6	349.4	672.7	3.7	53.1	1,082.5	.2	147.5	6.2	1,451.4
1983	62.4	147.8	2.6	329.5	673.4	3.8	51.6	1,060.8	.2	151.5	9.0	1,431.8
1984	65.3	157.4	1.9	342.9	693.7	3.9	51.2	1,093.6	.2	155.9	10.1	1,482.5
1985	64.8	149.9	1.9	292.6	705.7	3.8	50.4	1,054.3	.2	167.2	13.9	1,450.3
1986	63.8	140.9	1.4	271.6	710.2	3.6	45.3	1,032.1	.3	155.8	13.7	1,406.7
1987	67.0	145.6	1.0	319.5	702.3	3.6	43.1	1,069.5	.4	169.9	13.9	1,466.3
1988	60.2	144.6	6.0	284.8	617.2	2.7	41.2	951.9	.4	171.2	32.0	1,360.3
1989	48.7	152.4	.8	245.3	761.7	3.5	41.1	1,052.4	2.2	188.6	20.6	1,464.7
1990	44.3	159.4	.5	245.2	732.4	3.8	37.2	1,019.1	2.6	193.6	19.1	1,438.0
1991	45.9	154.1	.4	232.6	774.5	3.0	34.1	1,044.7	6.0	192.7	18.3	1,461.7
1992	51.7	151.2	1.0	200.6	628.2	3.0	35.6	868.4	8.4	192.5	22.5	1,294.8
1993	38.3	152.9	.7	187.0	612.4	3.5	34.5	838.1	5.8	193.1	18.6	1,246.8
1994	35.0	143.9	.6	198.5	550.7	3.2	29.5	782.6	7.7	190.9	18.2	1,178.2
1995	31.7	149.4	.3	178.4	522.3	3.0	31.9	735.9	8.4	184.8	18.2	1,128.5
1996	23.3	147.3	.2	170.5	513.0	3.1	27.6	714.4	18.7	184.0	20.1	1,107.7
1997	22.5	153.8	.3	180.0	475.7	2.6	39.0	697.6	14.5	183.6	19.2	1,091.2
1998	23.9	140.4	.2	174.5	445.5	3.5	43.0	666.8	5.9	181.4	18.8	1,037.1
1999	21.2	137.4	.1	162.1	444.7	2.4	41.1	650.4	.4	180.0	21.5	1,010.9
2000	22.7	133.8	.2	171.3	403.1	2.5	43.9	621.0	1.8	193.6	20.2	993.1
2001	18.8	133.7	.2	176.9	415.2	3.1	42.5	638.0	4.8	188.4	18.6	1,002.3
2002	16.9	133.7	.2	165.6	472.9	2.8	41.3	682.8	3.2	188.3	18.5	1,043.4
2003	18.1	135.5	.3	190.8	517.9	3.2	46.3	758.4	3.3	193.8	23.2	1,132.3
2004	17.4	135.3	.2	261.4	508.2	2.9	44.1	816.9	3.1	197.1	22.0	1,191.7
2005	17.1	135.7	.4	241.4	492.2	3.4	48.8	786.1	5.6	197.6	24.3	1,166.4
2006	23.5	132.6	.6	209.3	442.6	2.7	48.3	703.6	2.1	196.7	18.2	1,076.4
2007	20.4	131.5	.4	212.9	461.1	2.7	46.5	723.7	2.9	194.9	16.7	1,090.2
2008	20.8	129.6	.4	198.4	525.4	2.3	49.0	775.4	3.6	196.2	17.9	1,143.4
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	945.9
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	173.7	20.3	849.0
2021	5.3	129.6	.4	122.2	352.0	1.7	44.9	521.2	1.9	173.1	20.5	851.5
2022	3.5	128.8	.2	126.4	326.9	1.6	44.4	499.5	1.8	171.8	21.8	827.2

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

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

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

^d Liquefied petroleum gases, primarily propane.

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

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

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

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

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

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

Energy Consumption by Sector

Note 1. Electrical System Energy Losses. Electrical system energy losses are calculated as the difference between total primary consumption by the electric power sector (see Table 2.6) and the total energy content of electricity sales to ultimate customers (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. 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 Sales to Ultimate Customers

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

End-Use Energy Consumption

1949 forward: Residential sector end-use energy consumption is the sum of residential sector total primary energy consumption and residential sector electricity sales to ultimate customers.

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 sales to ultimate customers 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 sales to ultimate customers 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 sales to ultimate customers, 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 Sales to Ultimate Customers

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

End-Use Energy Consumption

1949 forward: Commercial sector end-use energy consumption is the sum of commercial sector total primary energy consumption and commercial sector electricity sales to ultimate customers.

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 sales to ultimate customers 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 sales to ultimate customers 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 sales to ultimate customers, 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 Sales to Ultimate Customers

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

End-Use Energy Consumption

1949 forward: Industrial sector end-use energy consumption is the sum of industrial sector total primary energy consumption and residential sector electricity sales to ultimate customers.

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 sales to ultimate customers 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 sales to ultimate customers 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 sales to ultimate customers, 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 “biofuels 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 Sales to Ultimate Customers

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

End-Use Energy Consumption

1949 forward: Transportation sector end-use energy consumption is the sum of transportation sector total primary energy consumption and residential sector electricity sales to ultimate customers.

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 sales to ultimate customers 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 sales to ultimate customers 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 sales to ultimate customers, 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

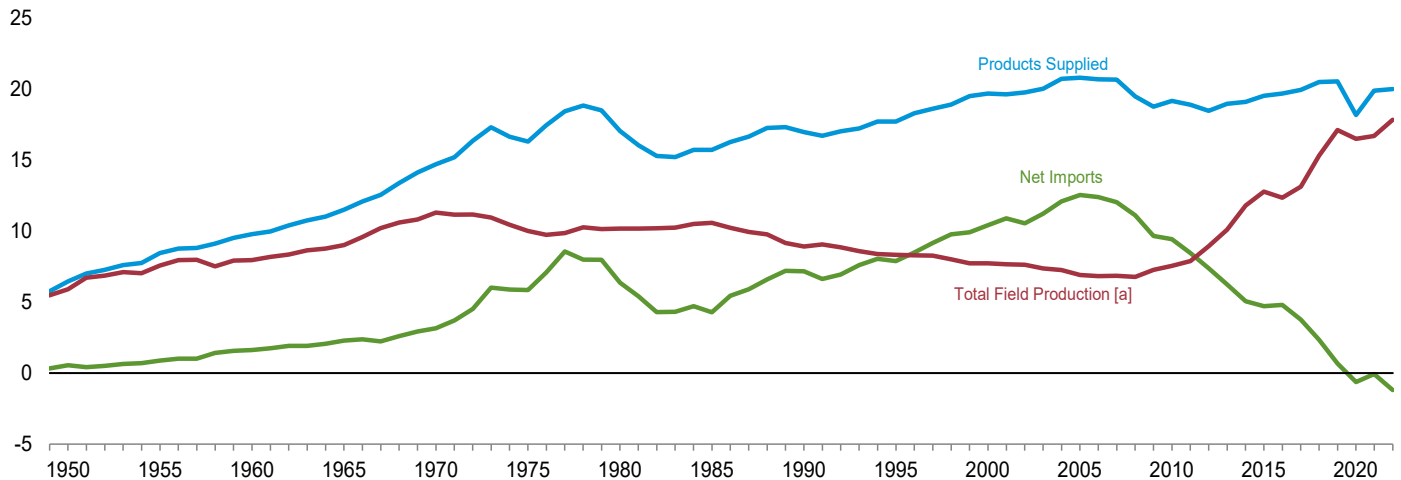
1949 forward: Electric power sector total primary energy consumption is the sum of the electric power sector consumption values for fossil fuels, nuclear electric power, and renewable energy, plus electricity net imports.

3. Petroleum

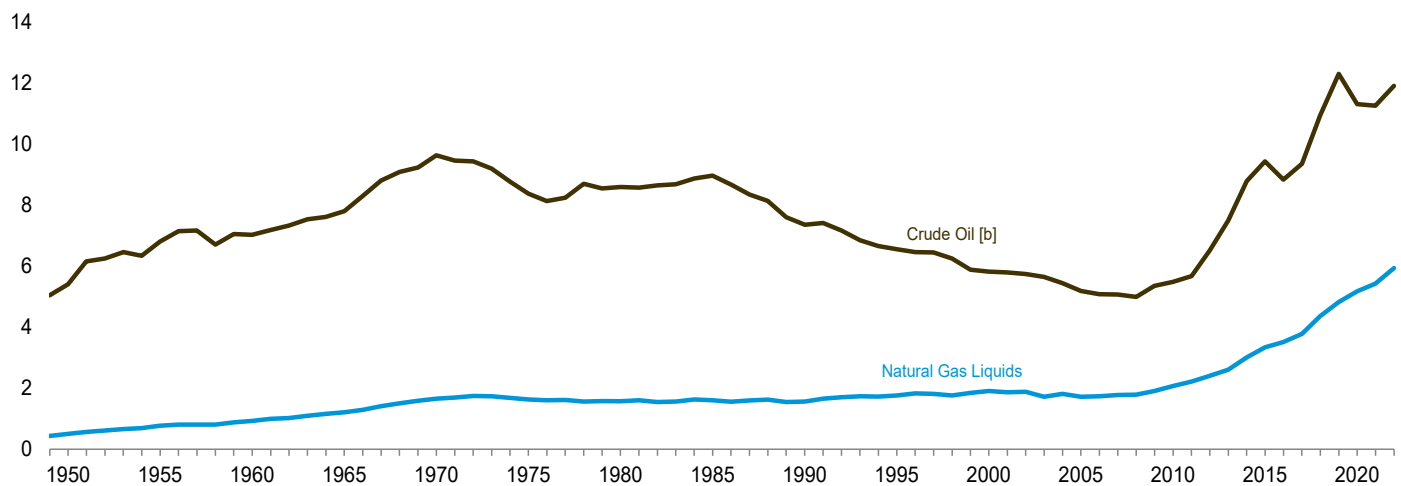
Figure 3.1 Petroleum Overview

(Million Barrels Per Day)

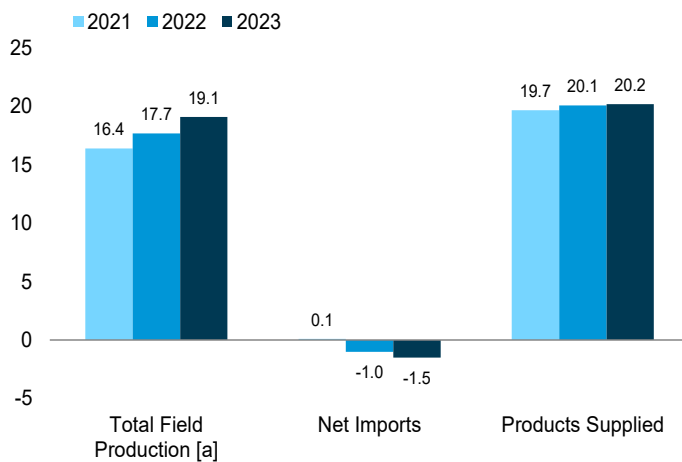
Overview, 1949–2022



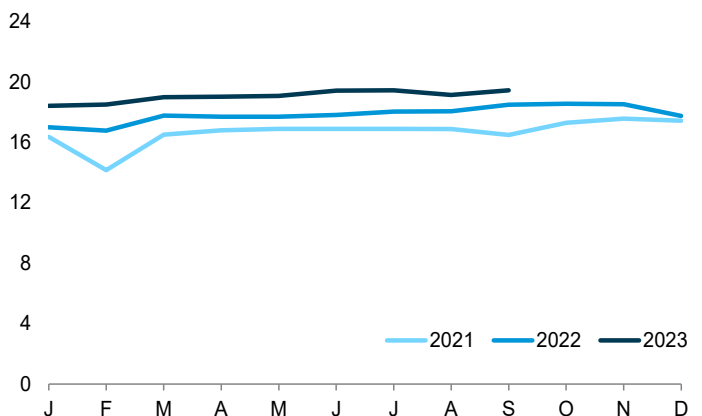
Crude Oil and Natural Gas Liquids Field Production, 1949–2022



Overview, January–September



Total Field Production [a], Monthly



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

[b] Includes lease condensate.

(s)=Less than 500 barrels per day and greater than -500 barrels per day.
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.
Source: Table 3.1.

Table 3.1 Petroleum Overview
(Thousand Barrels per Day)

	Field Production ^a					Biofuels Plant Net Production ^e	Processing Gain ^f	Trade			Stock Change ^j	Adjustments ^{c,j}	Petroleum Products Supplied
	Crude Oil ^{b,c}			Natural Gas Liquids	Total ^c			Imports ^g	Exports	Net Imports ^h			
	48 States ^d	Alaska	Total										
1950 Average	5,407	0	5,407	499	5,906	NA	2	850	305	545	-56	-51	6,458
1955 Average	6,807	0	6,807	771	7,578	NA	34	1,248	368	880	(s)	-37	8,455
1960 Average	7,034	2	7,035	929	7,965	NA	146	1,815	202	1,613	-83	-8	9,797
1965 Average	7,774	30	7,804	1,210	9,014	NA	220	2,468	187	2,281	-8	-10	11,512
1970 Average	9,408	229	9,637	1,660	11,297	NA	359	3,419	259	3,161	103	-16	14,697
1975 Average	8,183	191	8,375	1,633	10,007	NA	460	6,056	209	5,846	32	41	16,322
1980 Average	6,980	1,617	8,597	1,573	10,170	NA	597	6,909	544	6,365	140	64	17,056
1985 Average	7,146	1,825	8,971	1,609	10,581	NA	557	5,067	781	4,286	-103	200	15,726
1990 Average	5,582	1,773	7,355	1,559	8,914	NA	683	8,018	857	7,161	107	338	16,988
1995 Average	5,076	1,484	6,560	1,762	8,322	NA	774	8,835	949	7,886	-246	496	17,725
2000 Average	4,851	970	5,822	1,911	7,733	NA	948	11,459	1,040	10,419	-69	532	19,701
2005 Average	4,320	864	5,184	1,717	6,901	NA	989	13,714	1,165	12,549	^k 146	509	20,802
2006 Average	4,345	741	5,086	1,739	6,825	NA	994	13,707	1,317	12,390	59	537	20,687
2007 Average	4,352	722	5,074	1,783	6,857	NA	996	13,468	1,433	12,036	-152	640	20,680
2008 Average	4,317	683	5,000	1,784	6,783	NA	993	12,915	1,802	11,114	195	803	19,498
2009 Average	4,711	645	5,357	1,910	7,267	746	979	11,691	2,024	9,667	107	221	18,771
2010 Average	4,885	600	5,484	2,074	7,558	907	1,068	11,793	2,353	9,441	42	246	19,178
2011 Average	5,113	561	5,674	2,216	7,890	1,016	1,076	11,436	2,986	8,450	-138	325	18,896
2012 Average	5,998	526	6,524	2,408	8,932	964	1,059	10,598	3,205	7,393	151	285	18,482
2013 Average	6,981	515	7,495	2,606	10,101	1,002	1,087	9,859	3,621	6,237	-138	400	18,967
2014 Average	8,295	496	8,791	3,015	11,805	1,055	1,081	9,241	4,176	5,065	267	362	19,100
2015 Average	8,957	483	9,439	3,342	12,782	1,095	1,062	9,449	4,738	4,711	431	313	19,532
2016 Average	8,356	490	8,846	3,509	12,356	1,158	1,118	10,055	5,261	4,795	125	390	19,692
2017 Average	8,863	495	9,357	3,783	13,140	1,198	1,111	10,144	6,376	3,768	-364	370	19,952
2018 Average	10,472	479	10,951	4,369	15,321	1,234	1,138	9,943	7,601	2,341	44	522	20,512
2019 Average	11,845	466	12,311	4,825	17,136	1,125	1,069	9,141	8,471	670	28	572	20,543
2020 Average	10,871	448	11,318	5,175	16,493	1,009	923	7,863	8,498	-635	176	573	18,186
2021 January	10,679	458	11,137	5,217	16,355	1,073	889	7,918	8,419	-501	-300	698	18,814
February	9,459	457	9,916	4,247	14,163	947	780	7,648	7,291	357	-1,227	225	17,699
March	10,898	453	11,351	5,148	16,499	1,095	865	8,327	7,896	431	254	497	19,132
April	10,872	446	11,318	5,477	16,795	1,086	937	8,268	8,709	-441	-549	816	19,744
May	10,946	443	11,390	5,497	16,886	1,159	1,038	8,558	8,460	98	-25	843	20,050
June	10,926	440	11,366	5,515	16,881	1,170	953	9,308	9,365	-56	-959	679	20,586
July	11,012	380	11,392	5,502	16,894	1,177	949	8,801	8,434	368	-105	679	20,172
August	10,868	409	11,276	5,596	16,872	1,101	989	8,714	8,867	-153	-900	863	20,573
September	10,492	430	10,921	5,571	16,493	1,079	935	8,934	7,772	1,162	-93	376	20,139
October	11,127	437	11,564	5,721	17,285	1,208	1,013	8,136	8,226	-90	-164	797	20,377
November	11,336	446	11,782	5,773	17,555	1,256	1,013	8,475	9,185	-710	-947	513	20,573
December	11,227	451	11,678	5,741	17,419	1,234	1,092	8,553	9,714	-1,161	-1,385	658	20,657
Average	10,830	437	11,268	5,425	16,693	1,136	956	8,474	8,536	-62	-527	641	19,890
2022 January	11,030	450	11,480	5,508	16,988	1,206	988	8,177	8,690	-513	-448	496	19,613
February	10,808	450	11,258	5,514	16,772	1,183	924	8,457	8,735	-278	-1,212	377	20,190
March	11,366	440	11,806	5,952	17,758	1,197	1,004	8,449	9,070	-621	-780	365	20,483
April	11,328	442	11,770	5,917	17,687	1,157	1,050	8,247	9,665	-1,418	-620	630	19,727
May	11,287	447	11,734	5,961	17,695	1,206	1,087	8,348	9,379	-1,031	-207	675	19,840
June	11,382	419	11,800	6,008	17,809	1,246	1,111	8,625	9,798	-1,173	-718	723	20,433
July	11,403	432	11,834	6,189	18,023	1,228	1,100	8,744	9,675	-931	-309	815	19,926
August	11,572	413	11,985	6,061	18,046	1,189	1,010	8,367	9,747	-1,380	-826	574	20,265
September	11,895	430	12,325	6,154	18,479	1,126	1,082	8,029	9,854	-1,825	-859	408	20,129
October	11,943	435	12,378	6,168	18,545	1,225	1,014	8,145	9,575	-1,430	-93	560	20,007
November	11,931	445	12,376	6,139	18,515	1,280	1,023	8,342	9,979	-1,637	-463	570	20,214
December	11,691	447	12,138	5,600	17,739	1,191	986	8,026	10,035	-2,009	-664	757	19,327
Average	11,473	437	11,911	5,933	17,844	1,203	1,032	8,329	9,520	-1,191	-542	581	20,010
2023 January	E 12,120	E 448	E 12,568	5,850	E 18,418	1,240	1,026	8,402	9,367	-964	1,048	477	19,149
February	E 12,086	E 446	E 12,532	5,961	E 18,494	1,240	957	8,892	9,736	-843	435	347	19,759
March	E 12,335	E 435	E 12,770	6,211	E 18,982	1,254	917	8,236	11,271	-3,035	-1,173	792	20,083
April	E 12,216	E 434	E 12,650	6,373	E 19,023	1,238	1,012	8,470	9,782	-1,312	241	315	20,037
May	RE 12,264	E 430	RE 12,694	6,376	RE 19,070	1,296	944	8,552	9,652	-1,100	167	^R 353	20,396
June	RE 12,477	E 423	RE 12,900	6,527	RE 19,426	1,345	1,071	8,836	10,028	-1,192	-93	^R -29	20,716
July	RE 12,594	RE 397	RE 12,991	^R 6,445	RE 19,437	^R 1,313	^R 1,076	^R 8,270	^R 10,029	^R -1,758	^R 236	^R 294	^R 20,124
August	E 12,363	E 395	E 12,758	E 6,375	E 19,133	E 1,325	E 1,068	E 8,790	E 10,521	E -1,731	E -386	E 897	E 21,077
September	E 12,502	E 418	E 12,920	E 6,521	E 19,441	E 1,314	E 1,030	E 8,662	E 10,375	E -1,713	E 643	E 828	E 20,258
9-Month Average	E 12,330	E 425	E 12,755	E 6,295	E 19,051	E 1,285	E 1,012	E 8,563	E 10,088	E -1,525	E 119	E 477	E 20,181
2022 9-Month Average	11,345	436	11,781	5,922	17,702	1,193	1,040	8,383	9,405	-1,022	-587	564	20,066
2021 9-Month Average	10,696	435	11,131	5,317	16,448	1,100	927	8,503	8,366	137	-424	635	19,672

^a Crude oil production on leases, and 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).

^b Includes lease condensate.

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

^d United States excluding Alaska and Hawaii.

^e Biofuels plant net production of fuel ethanol, biodiesel, renewable diesel fuel, other biofuels, natural gasoline, finished motor gasoline, and motor gasoline blending components. For 2009–2018, also includes oxygenates (excluding fuel ethanol).

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

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

^h Net imports equal imports minus exports.

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

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

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

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

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

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

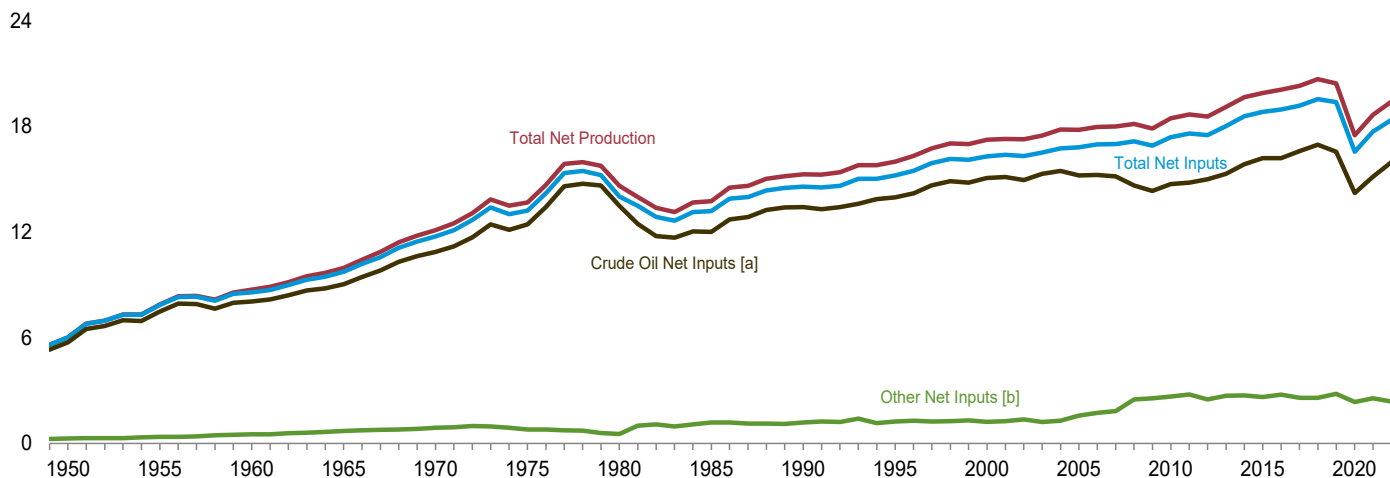
Sources: See end of section.

Weekly Petroleum Status Report (WPSR) statistics are undergoing an upgrade to incorporate data for unfinished oils (refinery feedstocks) and natural gas liquids transferred to crude oil supply. Until the WPSR conversion is completed, data for the current two months are not directly comparable to historical data.

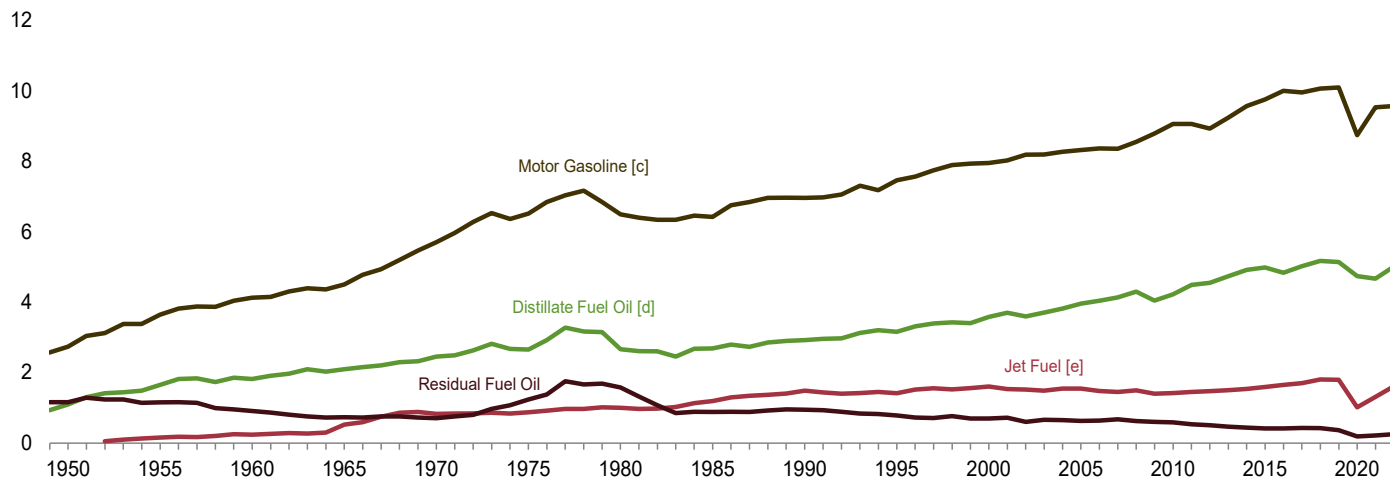
Figure 3.2 Refinery and Blender Net Inputs and Net Production

(Million Barrels per Day)

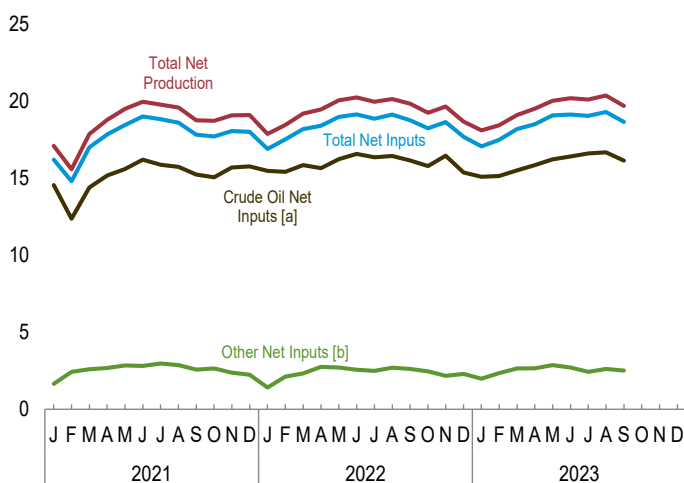
Net Inputs and Net Production, 1949–2022



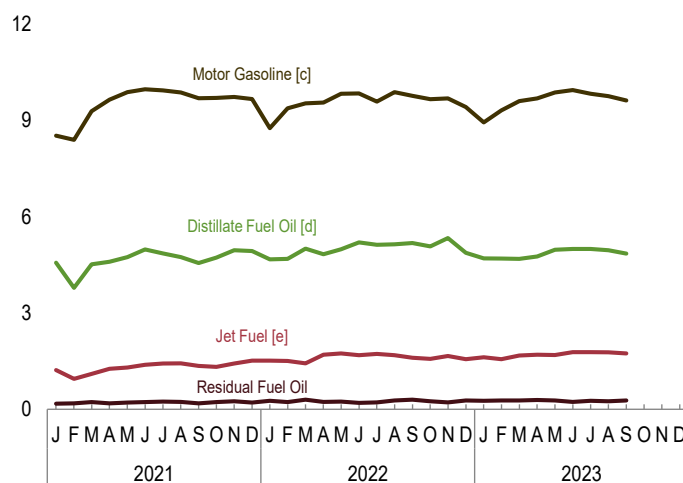
Net Production, Selected Products, 1949–2022



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 biodiesel and renewable diesel fuel blended

into distillate fuel oil.

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

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

Source: Table 3.2.

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

	Refinery and Blender Net Inputs ^a				Refinery and Blender Net Production ^b									
	Crude Oil ^c	Natural Gas Liquids ^d	Other Liquids ^e	Total	Distillate Fuel Oil ^f	Hydrocarbon Gas Liquids			Total ^h	Jet Fuel ⁱ	Motor Gasoline ^j	Residual Fuel Oil	Other Products ^k	Total
						Propane/Propylene								
						Propane	Propylene	Total ^g						
1950 Average	5,739	259	19	6,018	1,093	NA	NA	NA	80	(i)	2,735	1,165	947	6,019
1955 Average	7,480	345	32	7,857	1,651	NA	NA	NA	119	155	3,648	1,152	1,166	7,891
1960 Average	8,067	455	61	8,583	1,823	NA	NA	NA	212	241	4,126	908	1,420	8,729
1965 Average	9,043	618	88	9,750	2,096	NA	NA	NA	293	523	4,507	736	1,814	9,970
1970 Average	10,870	763	121	11,754	2,454	E 184	E 55	239	345	827	5,699	706	2,082	12,113
1975 Average	12,442	710	72	13,225	2,653	E 179	E 60	238	311	871	6,518	1,235	2,097	13,685
1980 Average	13,481	462	81	14,025	2,661	E 202	E 72	273	330	999	6,492	1,580	2,559	14,622
1985 Average	12,002	509	681	13,192	2,686	E 223	E 72	295	391	1,189	6,419	882	2,183	13,750
1990 Average	13,409	467	713	14,589	2,925	299	105	404	499	1,488	6,959	950	2,452	15,272
1995 Average	13,973	471	775	15,220	3,155	352	151	503	654	1,416	7,459	788	2,522	15,994
2000 Average	15,067	380	849	16,295	3,580	366	217	583	705	1,606	7,951	696	2,705	17,243
2005 Average	15,220	441	1,149	16,811	3,954	311	229	540	573	1,546	8,318	628	2,782	17,800
2006 Average	15,242	501	1,238	16,981	4,040	302	241	543	627	1,481	8,364	635	2,827	17,975
2007 Average	15,156	505	1,337	16,999	4,133	330	232	562	655	1,448	8,358	673	2,728	17,994
2008 Average	14,648	485	2,019	17,153	4,294	312	207	519	630	1,493	8,548	620	2,561	18,146
2009 Average	14,336	485	2,082	16,904	4,048	291	246	537	623	1,396	8,786	598	2,431	17,882
2010 Average	14,724	442	2,219	17,385	4,223	282	278	560	659	1,418	9,059	585	2,509	18,452
2011 Average	14,806	490	2,300	17,596	4,492	270	282	552	619	1,449	9,058	537	2,518	18,673
2012 Average	14,999	509	1,997	17,505	4,550	276	277	553	630	1,471	8,926	501	2,487	18,564
2013 Average	15,312	496	2,211	18,019	4,733	284	281	564	623	1,499	9,234	467	2,550	19,106
2014 Average	15,848	511	2,214	18,574	4,916	306	281	587	653	1,541	9,570	435	2,537	19,654
2015 Average	16,188	517	2,119	18,824	4,983	283	276	559	615	1,590	9,754	417	2,527	19,886
2016 Average	16,187	536	2,238	18,961	4,834	307	280	587	632	1,650	9,995	418	2,550	20,079
2017 Average	16,590	566	2,031	19,187	5,024	307	285	592	628	1,702	9,954	427	2,563	20,298
2018 Average	16,969	575	2,011	19,555	5,168	301	293	594	634	1,806	10,061	425	2,599	20,693
2019 Average	16,563	571	2,237	19,371	5,137	288	282	570	606	1,796	10,095	361	2,444	20,439
2020 Average	14,212	508	1,846	16,566	4,738	264	264	528	546	1,018	8,742	188	2,257	17,489
2021 January	14,542	593	1,066	16,201	4,560	259	296	555	367	1,226	8,523	179	2,234	17,090
February	12,371	483	1,939	14,793	3,782	219	245	464	343	949	8,395	188	1,917	15,573
March	14,387	520	2,078	16,985	4,519	271	267	538	594	1,101	9,286	224	2,126	17,850
April	15,162	451	2,227	17,841	4,596	280	299	579	779	1,263	9,644	187	2,310	18,778
May	15,596	430	2,423	18,449	4,745	301	324	625	900	1,308	9,874	209	2,450	19,487
June	16,190	414	2,395	19,000	4,981	301	306	608	881	1,383	9,961	229	2,518	19,953
July	15,852	432	2,538	18,822	4,856	289	298	587	850	1,423	9,934	245	2,462	19,771
August	15,726	433	2,430	18,589	4,742	288	296	584	805	1,435	9,866	231	2,499	19,578
September	15,232	544	2,038	17,814	4,555	260	279	538	607	1,356	9,686	185	2,360	18,748
October	15,045	696	1,957	17,699	4,727	276	269	545	487	1,321	9,698	222	2,257	18,712
November	15,684	775	1,604	18,063	4,950	287	301	588	383	1,424	9,731	246	2,341	19,076
December	15,757	806	1,437	18,000	4,926	294	305	599	388	1,512	9,666	210	2,389	19,092
Average	15,147	549	2,011	17,706	4,668	278	291	568	617	1,311	9,529	213	2,325	18,662
2022 January	15,468	653	764	16,885	4,670	271	279	550	382	1,517	8,758	270	2,276	17,873
February	15,397	593	1,528	17,518	4,682	272	276	547	454	1,504	9,373	228	2,202	18,442
March	15,847	532	1,805	18,183	5,004	275	284	559	631	1,436	9,525	301	2,290	19,187
April	15,648	470	2,285	18,402	4,835	298	285	583	810	1,699	9,547	232	2,329	19,452
May	16,239	453	2,272	18,963	4,988	289	286	576	849	1,741	9,825	245	2,401	20,050
June	16,571	439	2,120	19,130	5,197	296	273	569	861	1,686	9,834	205	2,457	20,241
July	16,358	474	2,023	18,854	5,124	292	276	568	847	1,724	9,580	217	2,463	19,955
August	16,428	487	2,205	19,119	5,142	294	263	557	800	1,683	9,872	274	2,357	20,130
September	16,141	607	2,001	18,750	5,183	283	252	535	611	1,601	9,760	296	2,381	19,832
October	15,776	650	1,807	18,232	5,077	274	224	498	404	1,568	9,654	253	2,290	19,246
November	16,450	738	1,436	18,624	5,338	288	234	522	338	1,659	9,682	219	2,411	19,647
December	15,377	725	1,576	17,678	4,873	262	229	492	337	1,562	9,415	272	2,204	18,664
Average	15,977	568	1,819	18,364	5,011	283	263	546	611	1,615	9,569	251	2,339	19,397
2023 January	15,086	743	1,239	17,068	4,703	266	233	499	352	1,623	8,934	262	2,220	18,094
February	15,128	686	1,665	17,479	4,696	269	226	495	409	1,566	9,306	276	2,183	18,435
March	15,513	555	2,102	18,170	4,685	279	247	526	633	1,679	9,600	276	2,213	19,087
April	15,840	498	2,161	18,498	4,757	286	261	547	806	1,702	9,681	287	2,279	19,511
May	16,207	475	2,393	19,075	4,966	288	256	544	843	1,691	9,869	278	2,373	20,019
June	16,395	501	2,221	19,117	4,996	284	252	535	846	1,780	9,944	230	2,393	20,188
July	R 16,598	R 469	R 1,967	R 19,033	R 4,994	R 290	R 255	R 544	R 810	R 1,780	R 9,826	R 264	R 2,435	R 20,109
August	E 16,677	RF 493	RE 2,114	RF 19,283	E 4,954	NA	NA	RE 600	F 814	E 1,775	E 9,756	E 248	RE 2,804	RE 20,352
September	E 16,127	F 594	E 1,926	F 18,647	E 4,845	NA	NA	E 567	F 611	E 1,745	E 9,614	E 272	E 2,590	E 19,678
9-Month Average	E 15,959	E 556	E 1,978	E 18,494	E 4,845	NA	NA	E 540	E 682	E 1,706	E 9,616	E 266	E 2,390	E 19,505
2022 9-Month Average	16,016	522	1,890	18,429	4,983	286	275	560	696	1,622	9,564	252	2,352	19,469
2021 9-Month Average	15,030	478	2,127	17,635	4,600	275	291	565	683	1,274	9,472	209	2,323	18,562

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

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

^c Includes lease condensate.

^d Ethane, propane, normal butane, isobutane, and natural gasoline (pentanes plus).

^e Unfinished oils (net). Beginning in 1981, also includes aviation gasoline blending components (net) and motor gasoline blending components (net). Beginning in 1993, also includes fuel ethanol. Beginning in 2009, also includes biofuels (excluding fuel ethanol), hydrogen, and other hydrocarbons. For 2009–2018, also includes oxygenates (excluding fuel ethanol).

^f 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.

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

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

ⁱ Beginning in 1965, includes kerosene-type jet fuel. (Through 1964, kerosene-type jet fuel is included with kerosene in "Other Products.") For

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

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

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

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

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

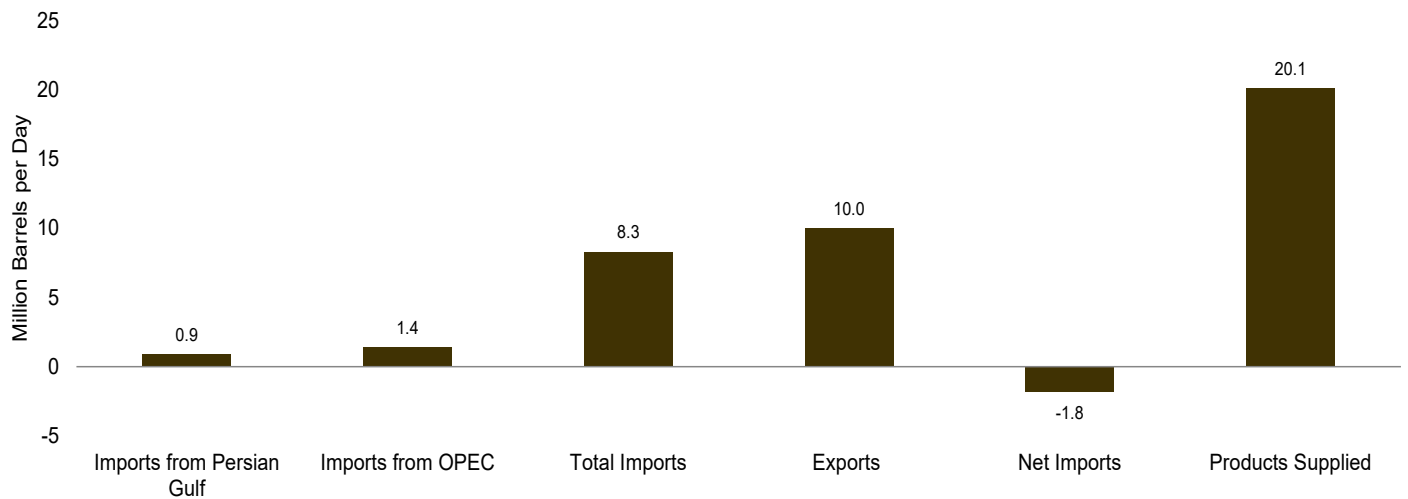
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

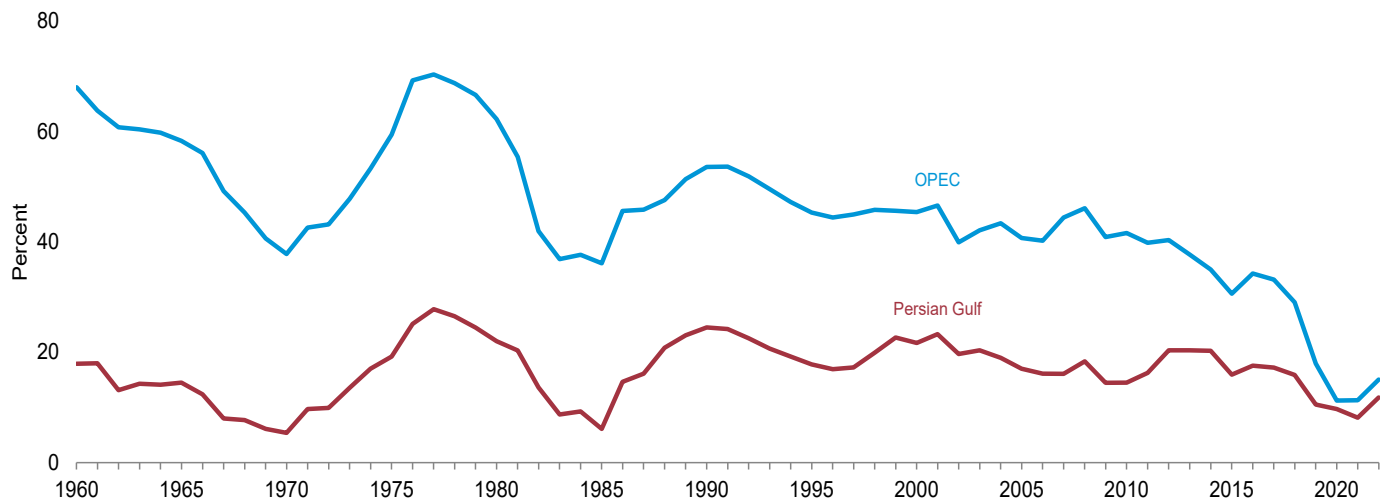
Weekly Petroleum Status Report (WPSR) statistics are undergoing an upgrade to incorporate data for unfinished oils (refinery feedstocks) and natural gas liquids transferred to crude oil supply. Until the WPSR conversion is completed, data for the current two months are not directly comparable to historical data.

Figure 3.3a Petroleum Trade: Overview

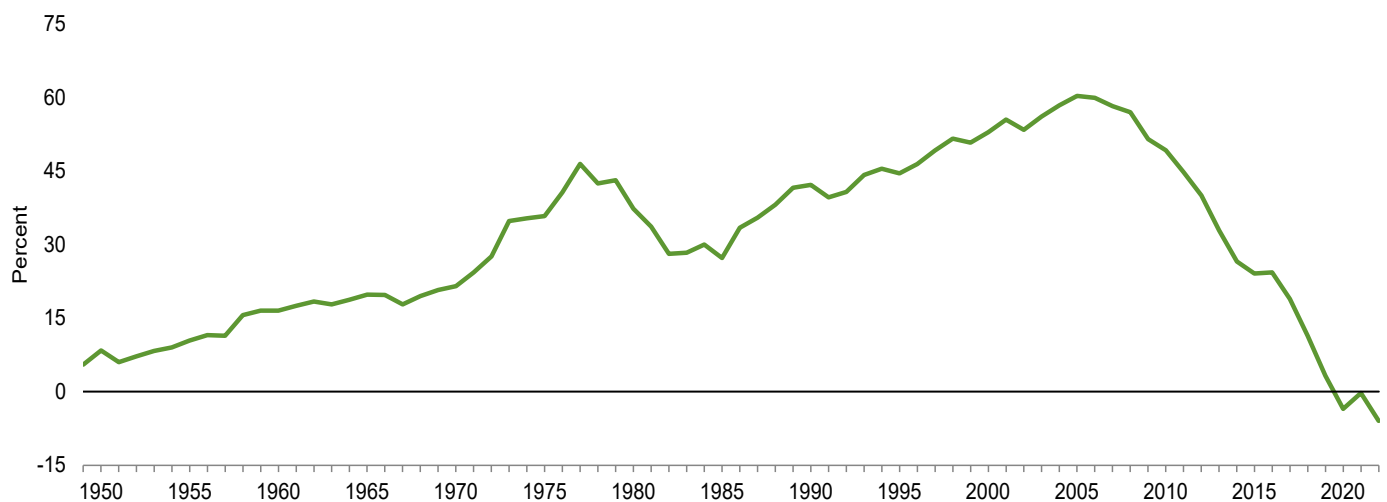
Overview, July 2023



Imports From OPEC and Persian Gulf as Share of Total Imports, 1960–2022



Net Imports as Share of Products Supplied, 1949–2022



Note: OPEC=Organization of the Petroleum Exporting Countries.

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

Source: Table 3.3a.

Table 3.3a Petroleum Trade: Overview

	Imports From Persian Gulf ^a	Imports From OPEC ^b	Imports	Exports	Net Imports	Products Supplied	As Share of Products Supplied				As Share of Total Imports	
							Imports From Persian Gulf ^a	Imports From OPEC ^b	Imports	Net Imports	Imports From Persian Gulf ^a	Imports From OPEC ^b
Thousand Barrels per Day							Percent					
1950 Average	NA	NA	850	305	545	6,458	NA	NA	13.2	8.4	NA	NA
1955 Average	NA	NA	1,248	368	880	8,455	NA	NA	14.8	10.4	NA	NA
1960 Average	326	1,233	1,815	202	1,613	9,797	3.3	12.6	18.5	16.5	17.9	68.0
1965 Average	359	1,439	2,468	187	2,281	11,512	3.1	12.5	21.4	19.8	14.5	58.3
1970 Average	184	1,294	3,419	259	3,161	14,697	1.3	8.8	23.3	21.5	5.4	37.8
1975 Average	1,165	3,601	6,056	209	5,846	16,322	7.1	22.1	37.1	35.8	19.2	59.5
1980 Average	1,519	4,300	6,909	544	6,365	17,056	8.9	25.2	40.5	37.3	22.0	62.2
1985 Average	311	1,830	5,067	781	4,286	15,726	2.0	11.6	32.2	27.3	6.1	36.1
1990 Average	1,966	4,296	8,018	857	7,161	16,988	11.6	25.3	47.2	42.2	24.5	53.6
1995 Average	1,573	4,002	8,835	949	7,886	17,725	8.9	22.6	49.8	44.5	17.8	45.3
2000 Average	2,488	5,203	11,459	1,040	10,419	19,701	12.6	26.4	58.2	52.9	21.7	45.4
2005 Average	2,334	5,587	13,714	1,165	12,549	20,802	11.2	26.9	65.9	60.3	17.0	40.7
2006 Average	2,211	5,517	13,707	1,317	12,390	20,687	10.7	26.7	66.3	59.9	16.1	40.2
2007 Average	2,163	5,980	13,468	1,433	12,036	20,680	10.5	28.9	65.1	58.2	16.1	44.4
2008 Average	2,370	5,954	12,915	1,802	11,114	19,498	12.2	30.5	66.2	57.0	18.4	46.1
2009 Average	1,689	4,776	11,691	2,024	9,667	18,771	9.0	25.4	62.3	51.5	14.4	40.9
2010 Average	1,711	4,906	11,793	2,353	9,441	19,178	8.9	25.6	61.5	49.2	14.5	41.6
2011 Average	1,861	4,555	11,436	2,986	8,450	18,896	9.9	24.1	60.5	44.7	16.3	39.8
2012 Average	2,156	4,271	10,598	3,205	7,393	18,482	11.7	23.1	57.3	40.0	20.3	40.3
2013 Average	2,009	3,720	9,859	3,621	6,237	18,967	10.6	19.6	52.0	32.9	20.4	37.7
2014 Average	1,875	3,237	9,241	4,176	5,065	19,100	9.8	16.9	48.4	26.5	20.3	35.0
2015 Average	1,507	2,894	9,449	4,738	4,711	19,532	7.7	14.8	48.4	24.1	15.9	30.6
2016 Average	1,766	3,446	10,055	5,261	4,795	19,692	9.0	17.5	51.1	24.3	17.6	34.3
2017 Average	1,746	3,366	10,144	6,376	3,768	19,952	8.8	16.9	50.8	18.9	17.2	33.2
2018 Average	1,578	2,888	9,943	7,601	2,341	20,512	7.7	14.1	48.5	11.4	15.9	29.0
2019 Average	963	1,639	9,141	8,471	670	20,543	4.7	8.0	44.5	3.3	10.5	17.9
2020 Average	766	886	7,863	8,498	-635	18,186	4.2	4.9	43.2	-3.5	9.7	11.3
2021 January	380	603	7,918	8,419	-501	18,814	2.0	3.2	42.1	-2.7	4.8	7.6
February	465	724	7,648	7,291	357	17,699	2.6	4.1	43.2	2.0	6.1	9.5
March	598	828	8,327	7,896	431	19,132	3.1	4.3	43.5	2.3	7.2	9.9
April	636	942	8,268	8,709	-441	19,744	3.2	4.8	41.9	-2.2	7.7	11.4
May	635	916	8,558	8,460	98	20,050	3.2	4.6	42.7	0.5	7.4	10.7
June	844	1,176	9,308	9,365	-56	20,586	4.1	5.7	45.2	-0.3	9.1	12.6
July	840	1,160	8,801	8,434	368	20,172	4.2	5.8	43.6	1.8	9.5	13.2
August	751	1,082	8,714	8,867	-153	20,573	3.7	5.3	42.4	-0.7	8.6	12.4
September	740	987	8,934	7,772	1,162	20,139	3.7	4.9	44.4	5.8	8.3	11.0
October	720	975	8,136	8,226	-90	20,377	3.5	4.8	39.9	-0.4	8.9	12.0
November	808	1,046	8,475	9,185	-710	20,573	3.9	5.1	41.2	-3.5	9.5	12.3
December	860	1,062	8,553	9,714	-1,161	20,657	4.2	5.1	41.4	-5.6	10.1	12.4
Average	691	959	8,474	8,536	-62	19,890	3.5	4.8	42.6	-0.3	8.2	11.3
2022 January	985	1,096	8,177	8,690	-513	19,613	5.0	5.6	41.7	-2.6	12.0	13.4
February	810	1,099	8,457	8,735	-278	20,190	4.0	5.4	41.9	-1.4	9.6	13.0
March	808	978	8,449	9,070	-621	20,483	3.9	4.8	41.2	-3.0	9.6	11.6
April	1,007	1,238	8,247	9,665	-1,418	19,727	5.1	6.3	41.8	-7.2	12.2	15.0
May	1,005	1,334	8,348	9,379	-1,031	19,840	5.1	6.7	42.1	-5.2	12.0	16.0
June	1,209	1,554	8,625	9,798	-1,173	20,433	5.9	7.6	42.2	-5.7	14.0	18.0
July	1,228	1,503	8,744	9,675	-931	19,926	6.2	7.5	43.9	-4.7	14.0	17.2
August	882	1,233	8,367	9,747	-1,380	20,265	4.4	6.1	41.3	-6.8	10.5	14.7
September	863	1,123	8,029	9,854	-1,825	20,129	4.3	5.6	39.9	-9.1	10.8	14.0
October	892	1,206	8,145	9,575	-1,430	20,007	4.5	6.0	40.7	-7.1	10.9	14.8
November	1,046	1,384	8,342	9,979	-1,637	20,214	5.2	6.8	41.3	-8.1	12.5	16.6
December	1,026	1,290	8,026	10,035	-2,009	19,327	5.3	6.7	41.5	-10.4	12.8	16.1
Average	981	1,254	8,329	9,520	-1,191	20,010	4.9	6.3	41.6	-6.0	11.8	15.1
2023 January	956	1,267	8,402	9,367	-964	19,149	5.0	6.6	43.9	-5.0	11.4	15.1
February	1,047	1,391	8,892	9,736	-843	19,759	5.3	7.0	45.0	-4.3	11.8	15.6
March	952	1,404	8,236	11,271	-3,035	20,083	4.7	7.0	41.0	-15.1	11.6	17.1
April	956	1,569	8,470	9,782	-1,312	20,037	4.8	7.8	42.3	-6.5	11.3	18.5
May	764	1,311	8,552	9,652	-1,100	20,396	3.7	6.4	41.9	-5.4	8.9	15.3
June	883	1,391	8,836	10,028	-1,192	20,716	4.3	6.7	42.7	-5.8	10.0	15.7
July	R 886	R 1,383	R 8,270	R 10,029	R -1,758	R 20,124	R 4.4	R 6.9	R 41.1	R -8.7	R 10.7	R 16.7
August	NA	NA	E 8,790	E 10,521	E -1,731	E 21,077	NA	NA	E 41.7	E -8.2	NA	NA
September	NA	NA	E 8,662	E 10,375	E -1,713	E 20,258	NA	NA	E 42.8	E -8.5	NA	NA
9-Month Average	NA	NA	E 8,563	E 10,088	E -1,525	E 20,181	NA	NA	E 42.4	E -7.6	NA	NA
2022 9-Month Average	979	1,241	8,383	9,405	-1,022	20,066	4.9	6.2	41.8	-5.1	11.7	14.8
2021 9-Month Average	655	937	8,503	8,366	137	19,672	3.3	4.8	43.2	0.7	7.7	11.0

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

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

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

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

receipts from U.S. territories.

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

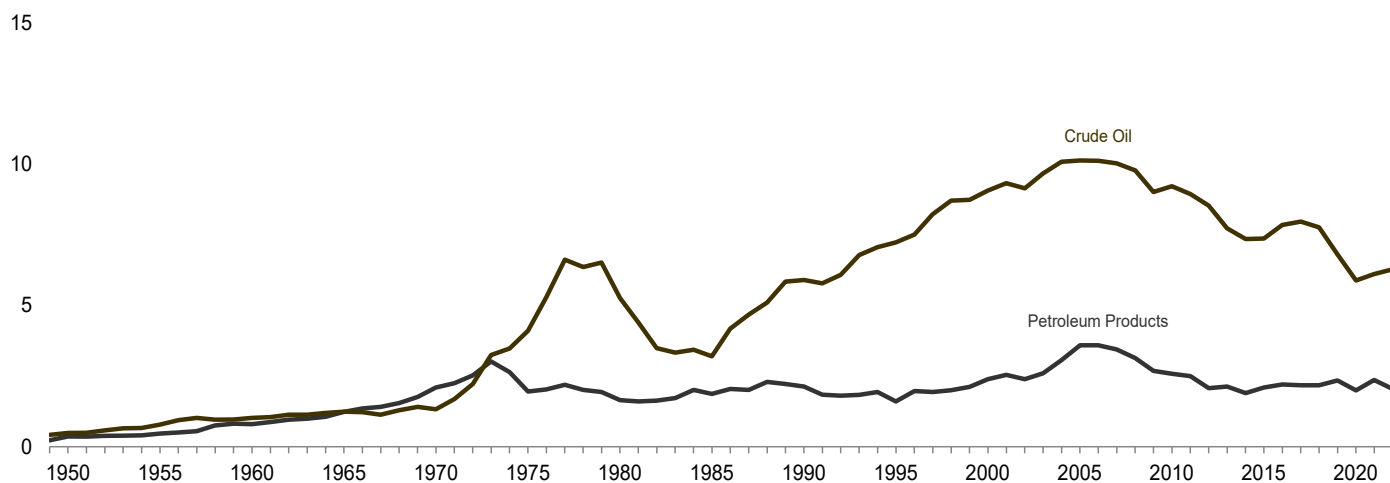
Sources: • **1949–1975:** Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976–1980:** U.S. Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • **1981–2022:** EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • **2023:** 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.

Weekly Petroleum Status Report (WPSR) statistics are undergoing an upgrade to incorporate data for unfinished oils (refinery feedstocks) and natural gas liquids transferred to crude oil supply. Until the WPSR conversion is completed, data for the current two months are not directly comparable to historical data.

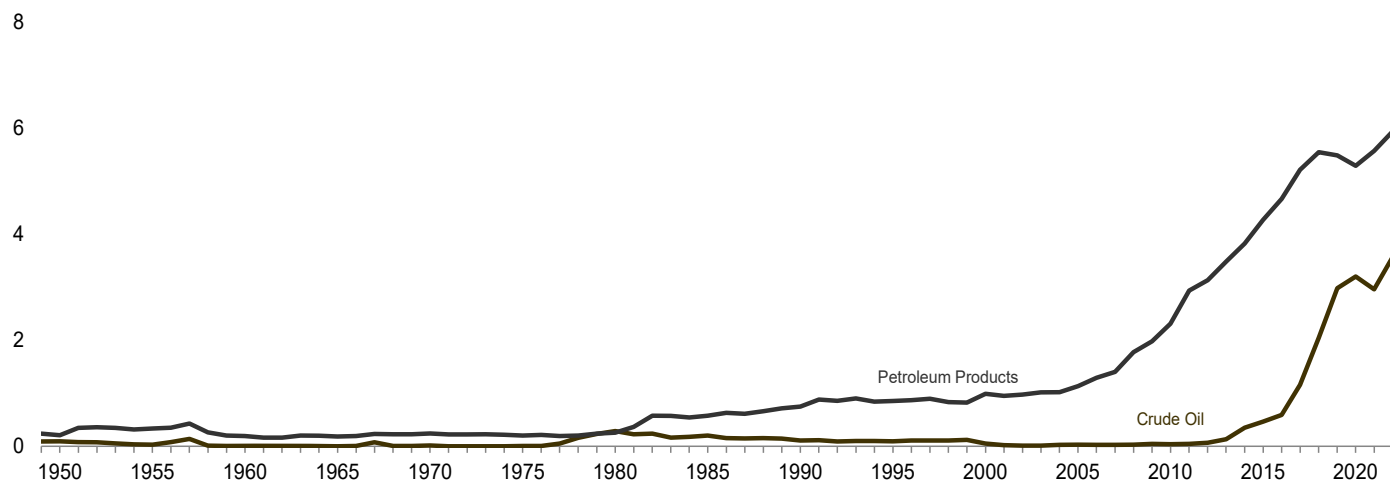
Figure 3.3b Petroleum Trade: Imports and Exports by Type

(Million Barrels per Day)

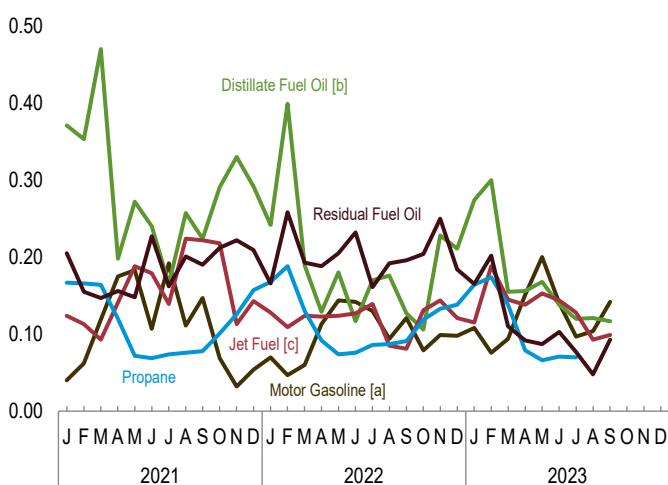
Imports Overview, 1949–2022



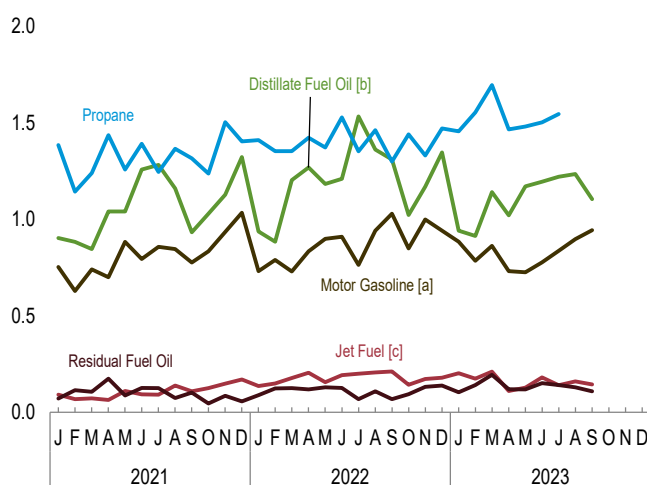
Exports Overview, 1949–2022



Imports, Selected Products, Monthly



Exports, Selected Products, Monthly



[a] Includes fuel ethanol blended into motor gasoline.

[b] Includes biodiesel and renewable diesel fuel blended into distillate fuel oil.

[c] Includes kerosene-type jet fuel only.

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

Sources: Tables 3.3b and 3.3e.

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

	Crude Oil ^a		Distillate Fuel Oil	Hydrocarbon Gas Liquids				Jet Fuel ^e	Motor Gasoline ^f	Residual Fuel Oil	Other ^g	Total
	SPR ^b	Total		Propane/Propylene			Total ^d					
				Propane	Propylene	Total ^c						
1950 Average	--	487	7	NA	NA	--	--	(^e)	(s)	329	27	850
1955 Average	--	782	12	NA	NA	--	--	(^e)	13	417	24	1,248
1960 Average	--	1,015	35	NA	NA	NA	4	34	27	637	62	1,815
1965 Average	--	1,238	36	NA	NA	NA	21	81	28	946	119	2,468
1970 Average	--	1,324	147	NA	NA	26	58	144	67	1,528	150	3,419
1975 Average	--	4,105	155	NA	NA	60	185	133	184	1,223	70	6,056
1980 Average	44	5,263	142	NA	NA	84	226	80	140	939	120	6,909
1985 Average	118	3,201	200	NA	NA	67	235	39	381	510	501	5,067
1990 Average	27	5,894	278	NA	NA	115	197	108	342	504	695	8,018
1995 Average	--	7,230	193	95	6	102	192	106	265	187	662	8,835
2000 Average	8	9,071	295	154	7	161	256	162	427	352	897	11,459
2005 Average	52	10,126	329	219	14	233	374	190	603	530	1,562	13,714
2006 Average	8	10,118	365	201	26	228	360	186	475	350	1,854	13,707
2007 Average	7	10,031	304	162	20	182	276	217	413	372	1,856	13,468
2008 Average	19	9,783	213	162	23	185	275	103	302	349	1,891	12,915
2009 Average	56	9,013	225	126	21	147	194	81	223	331	1,623	11,691
2010 Average	--	9,213	228	93	29	121	179	98	134	366	1,574	11,793
2011 Average	--	8,935	179	82	28	110	183	69	105	328	1,637	11,436
2012 Average	--	8,527	126	85	31	116	170	55	44	256	1,421	10,598
2013 Average	--	7,730	155	103	24	127	182	84	45	225	1,438	9,859
2014 Average	--	7,344	195	89	19	108	143	94	49	173	1,242	9,241
2015 Average	--	7,363	200	104	19	124	156	132	71	192	1,335	9,449
2016 Average	--	7,850	147	120	22	142	180	147	59	205	1,468	10,055
2017 Average	--	7,969	151	133	23	156	196	160	32	189	1,448	10,144
2018 Average	--	7,768	175	139	18	157	197	124	45	211	1,422	9,943
2019 Average	--	6,801	202	133	16	149	207	164	94	149	1,525	9,141
2020 Average	--	5,875	218	113	13	126	160	150	106	166	1,188	7,863
2021 January	--	5,787	371	167	16	183	235	124	40	205	1,157	7,918
February	--	5,589	353	166	16	182	242	113	62	155	1,135	7,648
March	--	5,819	470	164	16	180	223	93	119	147	1,455	8,327
April	--	5,819	198	120	14	134	170	141	175	156	1,610	8,268
May	--	5,828	272	72	14	86	126	188	183	148	1,814	8,558
June	--	6,607	240	69	14	84	133	179	107	227	1,815	9,308
July	--	6,398	165	74	14	88	131	139	192	162	1,614	8,801
August	--	6,236	257	76	12	88	133	224	111	201	1,551	8,714
September	--	6,525	224	78	13	91	137	222	147	190	1,489	8,934
October	--	5,971	291	101	11	112	160	218	69	212	1,215	8,136
November	--	6,334	330	126	17	143	182	113	32	222	1,262	8,475
December	--	6,429	292	157	14	171	211	143	54	209	1,216	8,553
Average	--	6,114	288	114	14	128	173	158	108	186	1,446	8,474
2022 January	--	6,397	242	168	13	182	224	128	70	166	951	8,177
February	--	6,160	399	188	14	202	243	109	47	258	1,241	8,457
March	--	6,417	189	130	17	146	195	124	60	193	1,270	8,449
April	--	6,060	129	92	15	107	155	123	113	188	1,481	8,247
May	--	6,164	180	74	14	88	138	124	144	205	1,394	8,348
June	--	6,474	117	76	12	88	125	127	142	232	1,409	8,625
July	--	6,597	170	86	14	100	139	139	130	161	1,408	8,744
August	--	6,333	176	87	14	101	163	85	94	192	1,324	8,367
September	--	6,269	127	91	8	99	148	81	121	196	1,087	8,029
October	--	6,239	106	119	6	125	175	131	79	204	1,211	8,145
November	--	6,253	228	133	11	143	195	144	99	250	1,173	8,342
December	--	5,999	211	138	14	152	195	121	98	184	1,217	8,026
Average	--	6,281	188	115	13	127	174	120	100	202	1,264	8,329
2023 January	--	6,277	274	164	16	180	227	115	108	165	1,236	8,402
February	--	6,596	300	174	15	188	231	188	76	202	1,299	8,892
March	--	6,295	155	138	14	153	203	145	94	110	1,234	8,236
April	--	6,194	156	79	14	93	137	138	151	92	1,602	8,470
May	--	6,470	168	66	16	82	129	153	200	87	1,346	8,552
June	--	6,494	138	71	15	86	130	144	140	103	1,687	8,836
July	--	R 6,287	R 120	R 70	R 15	R 84	R 132	R 128	R 97	R 77	R 1,430	R 8,270
August	--	E 6,851	E 121	NA	NA	E 87	NA	E 93	E 104	E 48	NA	E 8,790
September	--	E 6,849	E 117	NA	NA	E 86	NA	E 99	E 142	E 93	NA	E 8,662
9-Month Average	--	E 6,478	E 171	NA	NA	E 115	NA	E 133	E 124	E 108	NA	E 8,563
2022 9-Month Average	--	6,321	190	110	13	123	169	116	103	198	1,285	8,383
2021 9-Month Average	--	6,070	283	109	14	124	170	158	127	177	1,518	8,503

^a Includes lease condensate.

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

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

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

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

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

^g Asphalt and road oil, aviation gasoline blending components, kerosene, lubricants, petrochemical feedstocks, petroleum coke, unfinished oils, waxes, 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 1993, also includes fuel ethanol. Beginning in 2005, also includes naphtha-type jet fuel. Beginning in 2009, also includes biofuels (excluding fuel ethanol) and other hydrocarbons. For 2011–2018, also includes oxygenates (excluding fuel ethanol).

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

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

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

Sources: • 1949–1975: Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • 1976–1980: U.S. Energy Information Administration (EIA), *Energy Data Reports, Petroleum Statement, Annual*, annual reports. • 1981–2022: EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • 2023: EIA, *Petroleum Supply Monthly*, monthly reports; and, for the current two months, *Weekly Petroleum Status Report* data system and *Monthly Energy Review* data system calculations.

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

	Algeria ^a	Angola ^b	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 Average	78	38	341	45	63	193	530	27	92	231	1,639
2020 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	—	69	828
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	577	21	—	—	1,176
July	38	47	237	37	95	150	452	96	—	8	1,160
August	27	65	131	46	114	140	471	81	—	8	1,082
September	22	29	40	51	96	132	547	71	—	—	987
October	39	24	185	47	128	87	419	46	—	—	975
November	52	57	165	43	83	87	555	3	—	—	1,046
December	39	2	223	34	55	110	550	38	—	10	1,062
Average	40	36	157	33	91	125	430	40	—	9	959
2022 January	—	69	261	58	76	29	553	34	—	17	1,096
February	29	75	235	14	79	127	518	14	—	9	1,099
March	29	33	204	22	97	49	536	8	—	—	978
April	38	25	269	54	82	95	537	135	—	5	1,238
May	96	33	303	65	54	169	595	19	—	1	1,334
June	74	46	335	50	83	156	802	9	—	2	1,554
July	106	44	536	23	54	103	553	83	—	2	1,503
August	53	50	306	25	68	163	483	52	—	34	1,233
September	47	72	282	—	62	61	500	67	—	32	1,123
October	59	76	295	77	121	52	480	17	—	30	1,206
November	133	32	380	59	76	131	553	14	—	8	1,384
December	43	15	326	61	93	134	605	13	—	—	1,290
Average	59	47	311	42	79	105	559	39	—	12	1,254
2023 January	41	(s)	370	31	60	194	497	23	40	11	1,267
February	61	18	435	67	56	168	512	4	58	12	1,391
March	31	35	368	25	56	205	483	54	109	38	1,404
April	97	73	365	26	87	232	526	15	140	7	1,569
May	87	53	304	40	75	161	356	48	185	2	1,311
June	78	48	311	60	112	154	485	17	126	2	1,391
July	98	45	303	48	20	164	514	6	153	32	1,383
7-Month Average	70	39	350	42	66	183	481	24	117	15	1,387
2022 7-Month Average	53	46	307	41	75	103	585	43	—	5	1,258
2021 7-Month Average	42	36	162	25	87	135	374	34	—	12	908

^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. • **1981–2022:** EIA, *Petroleum Supply Annual*, annual reports. • **2023:** 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 Average	193	4,432	373	(a)	650	113	91	520	146	—	984	7,502
2020 Average	126	4,125	284	186	751	82	29	540	85	1	770	6,977
2021 January	121	4,471	205	164	747	75	31	649	42	42	767	7,316
February	56	4,308	272	134	613	77	56	453	74	34	847	6,924
March	83	4,512	167	142	568	192	92	749	119	67	807	7,498
April	77	4,046	223	251	708	189	56	688	68	26	996	7,327
May	96	4,046	235	196	728	154	98	844	88	59	1,099	7,643
June	157	4,591	197	153	788	161	67	850	154	25	989	8,132
July	220	4,181	157	120	851	143	94	761	121	7	985	7,641
August	177	4,236	198	198	715	132	59	795	127	4	992	7,632
September	260	4,277	141	165	814	174	74	632	113	(s)	1,297	7,947
October	188	4,105	205	144	650	64	75	635	129	(s)	966	7,162
November	175	4,537	217	127	700	83	62	595	80	2	852	7,429
December	101	4,775	228	219	645	71	96	405	126	—	826	7,491
Average	143	4,340	203	168	711	126	72	673	104	22	952	7,514
2022 January	110	4,576	200	100	758	69	48	283	81	—	856	7,081
February	175	4,485	240	130	778	113	43	586	76	—	731	7,357
March	166	4,614	257	144	832	81	19	575	51	—	731	7,471
April	139	4,222	261	132	788	59	54	360	70	—	924	7,009
May	150	4,214	308	212	938	113	38	—	128	—	913	7,014
June	205	4,290	240	182	813	119	42	—	142	—	1,036	7,071
July	262	4,389	298	141	897	85	44	—	94	—	1,031	7,241
August	208	4,412	233	186	802	65	30	—	106	—	1,094	7,135
September	223	4,429	173	272	794	104	48	—	122	—	744	6,906
October	248	4,249	252	151	867	50	36	—	163	—	924	6,939
November	238	4,324	223	197	657	85	33	—	119	—	1,081	6,958
December	189	4,183	218	178	762	56	56	—	118	—	976	6,736
Average	193	4,365	242	169	808	83	41	147	106	—	921	7,075
2023 January	126	4,514	204	176	896	66	31	—	110	—	1,011	7,135
February	184	4,698	220	146	957	114	23	—	118	—	1,041	7,501
March	192	4,424	219	111	933	63	(s)	—	56	—	832	6,831
April	155	4,140	204	140	813	117	84	—	107	—	1,142	6,901
May	157	4,523	241	191	913	107	65	—	78	—	968	7,242
June	302	4,330	213	88	1,030	123	53	—	140	—	1,166	7,445
July	245	4,110	214	192	948	137	46	—	100	—	895	6,888
7-Month Average	194	4,388	216	149	927	104	43	—	101	—	1,006	7,129
2022 7-Month Average	172	4,399	258	149	830	91	41	254	92	—	890	7,177
2021 7-Month Average	117	4,308	207	166	716	142	71	717	95	37	928	7,503

^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.

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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 Average	2,982	1,306	1,098	1,830	220	815	229	1,090	8,471
2020 Average	3,206	1,187	1,262	2,081	96	722	148	1,058	8,498
2021 January	3,173	902	1,384	2,261	92	753	72	1,167	8,419
February	2,566	882	1,143	2,004	68	628	115	1,028	7,291
March	2,808	846	1,239	2,269	73	741	107	1,052	7,896
April	3,175	1,041	1,435	2,424	65	700	174	1,131	8,709
May	2,834	1,040	1,256	2,340	110	882	88	1,166	8,460
June	3,414	1,257	1,391	2,428	93	795	127	1,251	9,365
July	2,704	1,281	1,244	2,182	91	857	125	1,193	8,434
August	2,992	1,160	1,365	2,458	139	846	74	1,197	8,867
September	2,534	932	1,315	2,218	109	775	102	1,101	7,772
October	2,779	1,028	1,237	2,229	126	833	46	1,185	8,226
November	3,137	1,127	1,502	2,499	149	934	86	1,254	9,185
December	3,413	1,321	1,402	2,377	170	1,033	56	1,344	9,714
Average	2,963	1,069	1,327	2,309	107	816	97	1,173	8,536
2022 January	3,354	937	1,409	2,267	136	731	89	1,176	8,690
February	3,244	883	1,352	2,269	150	789	124	1,275	8,735
March	3,196	1,202	1,352	2,328	178	729	126	1,312	9,070
April	3,505	1,267	1,421	2,421	205	833	118	1,316	9,665
May	3,306	1,182	1,372	2,449	156	898	130	1,259	9,379
June	3,454	1,210	1,527	2,643	193	909	127	1,262	9,798
July	3,680	1,532	1,351	2,339	200	763	68	1,093	9,675
August	3,564	1,361	1,461	2,478	206	940	109	1,088	9,747
September	3,716	1,309	1,299	2,381	212	1,028	68	1,141	9,854
October	4,002	1,021	1,439	2,402	143	849	95	1,063	9,575
November	4,105	1,169	1,330	2,372	173	998	132	1,029	9,979
December	3,771	1,346	1,470	2,556	180	941	139	1,102	10,035
Average	3,576	1,204	1,399	2,409	178	867	110	1,175	9,520
2023 January	3,514	940	1,456	2,565	202	884	104	1,158	9,367
February	3,998	913	1,553	2,646	174	785	141	1,079	9,736
March	4,807	1,141	1,695	2,841	211	862	195	1,214	11,271
April	4,009	1,020	1,465	2,619	111	731	120	1,172	9,782
May	3,789	1,170	1,479	2,413	128	725	119	1,308	9,652
June	3,821	1,194	1,501	2,528	181	777	151	1,376	10,028
July	R 3,835	R 1,220	R 1,545	R 2,501	R 140	R 837	R 142	R 1,353	R 10,029
August	E 4,364	E 1,234	NA	NA	E 160	E 897	E 129	NA	E 10,521
September	E 4,200	E 1,104	NA	NA	E 145	E 943	E 109	NA	E 10,375
9-Month Average	E 4,038	E 1,106	NA	NA	E 161	E 827	E 134	NA	E 10,088
2022 9-Month Average	3,448	1,212	1,394	2,398	182	846	106	1,213	9,405
2021 9-Month Average	2,913	1,039	1,309	2,290	94	777	109	1,144	8,366

^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 biofuels (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. • **1981–2022:** EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • **2023:** 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 Average	474	1,035	196	460	555	1,158	451	126	580	336	3,102	8,471
2020 Average	438	932	715	471	519	1,042	456	167	451	350	2,959	8,498
2021 January	434	798	808	608	641	979	159	141	613	258	2,981	8,419
February	417	806	457	587	407	984	522	234	376	165	2,336	7,291
March	292	866	848	515	351	1,135	341	120	501	258	2,669	7,896
April	331	922	602	515	451	1,121	568	330	583	350	2,936	8,709
May	345	795	715	520	431	1,363	374	144	530	370	2,872	8,460
June	475	856	645	730	584	1,197	378	349	844	314	2,993	9,365
July	531	835	549	460	384	1,226	395	298	713	377	2,667	8,434
August	534	885	549	541	532	1,107	382	273	580	356	3,129	8,867
September	372	762	492	435	459	1,072	442	220	557	297	2,664	7,772
October	460	764	647	496	431	1,085	458	94	280	397	3,113	8,226
November	386	875	787	533	562	1,145	515	228	634	342	3,179	9,185
December	438	853	463	859	613	1,434	511	296	563	323	3,361	9,714
Average	418	835	632	566	488	1,156	419	227	565	318	2,913	8,536
2022 January	301	757	430	685	514	1,062	307	452	555	289	3,337	8,690
February	268	781	790	517	505	1,067	566	431	539	275	2,997	8,735
March	522	761	599	344	400	1,054	539	486	470	263	3,631	9,070
April	518	852	646	345	426	1,289	548	401	471	537	3,632	9,665
May	412	773	502	472	511	1,270	414	346	535	404	3,739	9,379
June	475	1,004	479	416	382	1,161	574	459	546	290	4,012	9,798
July	531	954	669	344	437	1,059	535	326	517	406	3,897	9,675
August	361	906	757	253	646	1,332	492	322	576	491	3,612	9,747
September	449	846	554	620	448	1,276	608	452	640	571	3,389	9,854
October	213	809	869	651	576	1,018	559	327	608	496	3,449	9,575
November	328	880	731	820	586	1,060	591	360	651	351	3,620	9,979
December	347	815	671	381	578	1,169	674	337	491	582	3,990	10,035
Average	394	845	641	486	501	1,152	533	391	550	414	3,613	9,520
2023 January	209	817	773	276	621	1,164	602	330	481	328	3,767	9,367
February	218	847	956	363	619	1,153	516	529	650	357	3,527	9,736
March	282	786	1,478	459	633	1,413	925	88	534	494	4,180	11,271
April	198	732	1,331	490	476	1,058	767	393	567	422	3,349	9,782
May	302	740	805	470	507	1,007	748	267	580	438	3,790	9,652
June	305	852	914	421	500	1,083	1,174	364	534	370	3,511	10,028
July	208	823	873	402	658	1,178	1,147	222	452	411	3,654	10,029
7-Month Average	246	799	1,019	412	574	1,152	843	310	541	404	3,687	9,985
2022 7-Month Average	434	840	585	446	453	1,137	496	414	519	353	3,613	9,291
2021 7-Month Average	403	840	664	561	464	1,146	388	230	596	300	2,784	8,377

NA=Not available. — =No data reported.

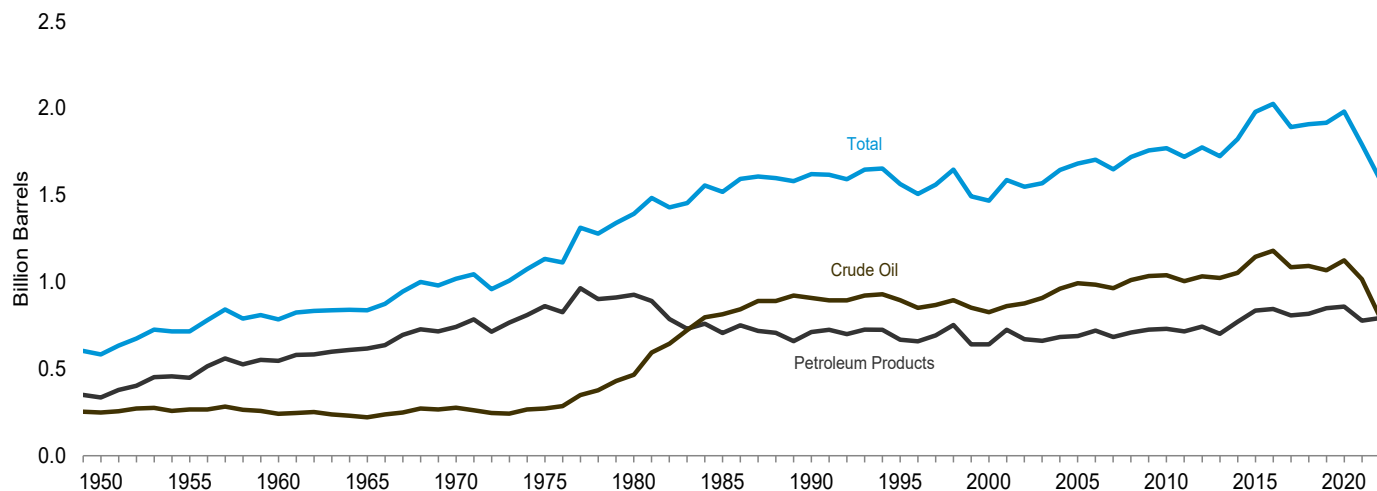
Notes: • Totals may not equal sum of components due to independent rounding. • U.S. geographic coverage is the 50 states and the District of Columbia.

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.

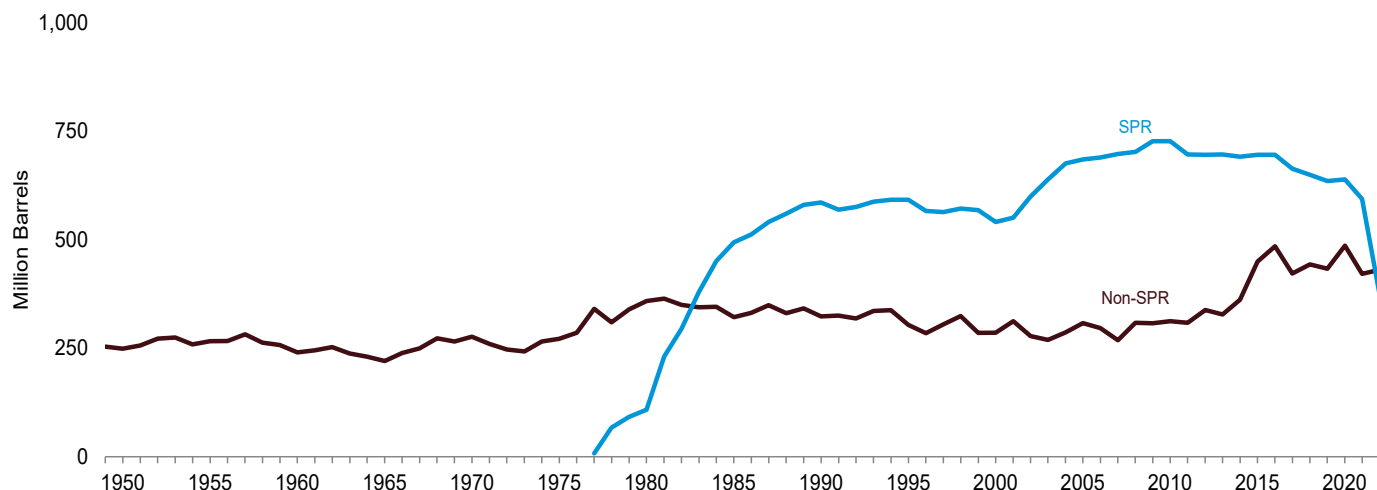
Sources: • **1960–1972:** Bureau of Mines, *Minerals Yearbook*, annual reports. • **1973–1975:** Bureau of Mines, Mineral Industry Surveys, *Petroleum Statement, Annual*, annual reports. • **1976–1980:** U.S. Energy Information Administration (EIA), Energy Data Reports, *Petroleum Statement, Annual*, annual reports. • **1981–2022:** EIA, *Petroleum Supply Annual*, annual reports. • **2023:** EIA, *Petroleum Supply Monthly*, monthly reports.

Figure 3.4 Petroleum Stocks

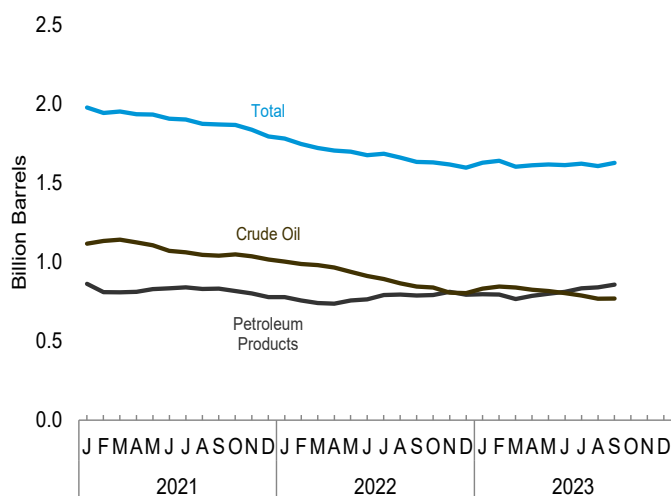
Overview, 1949–2022



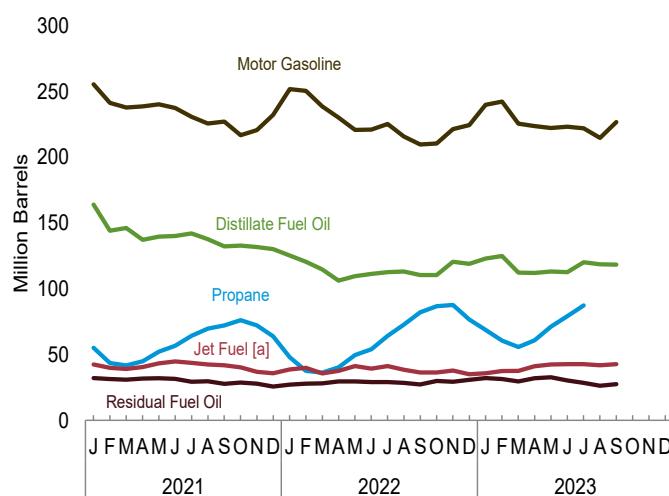
SPR and Non-SPR Crude Oil Stocks, 1949–2022



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 ⁱ	Motor Gasoline ^j	Residual Fuel Oil ^k	Other ^l	Total
	SPR ^b	Non-SPR ^{c,d}	Total ^d		Propane/Propylene			Total ^h					
					Propane	Propylene	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	74	28	209	54	1,018
1975 Year	--	271	271	209	NA	NA	82	133	30	235	74	181	1,133
1980 Year	108	358	466	205	NA	NA	71	137	42	261	92	189	1,392
1985 Year	493	321	814	144	NA	NA	39	82	40	223	50	165	1,519
1990 Year	586	323	908	132	NA	NA	49	104	52	220	49	156	1,621
1995 Year	592	303	895	130	NA	NA	43	100	40	202	37	158	1,563
2000 Year	541	286	826	118	NA	NA	41	88	45	196	36	159	1,468
2005 Year	685	308	992	136	NA	NA	57	117	42	208	37	148	1,682
2006 Year	689	296	984	144	NA	NA	62	125	39	212	42	157	1,703
2007 Year	697	268	965	134	NA	NA	52	106	39	218	39	146	1,648
2008 Year	702	308	1,010	146	NA	NA	55	127	38	214	36	149	1,719
2009 Year	727	307	1,034	166	NA	NA	50	113	43	223	37	142	1,758
2010 Year	727	312	1,039	164	46	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 Year	635	433	1,068	140	80	2	81	212	40	254	31	172	1,917
2020 Year	638	485	1,124	161	70	1	71	228	39	243	30	156	1,981
2021 January	638	476	1,114	164	55	1	56	197	43	255	32	169	1,975
February	638	494	1,132	144	44	1	45	178	40	241	31	174	1,941
March	638	502	1,140	146	42	1	43	177	39	238	31	178	1,949
April	633	489	1,123	137	45	1	46	186	41	239	32	176	1,932
May	628	477	1,105	140	52	1	53	196	43	240	32	175	1,931
June	621	448	1,069	140	57	1	58	205	45	237	32	174	1,903
July	621	439	1,060	142	64	1	66	222	44	231	29	172	1,899
August	621	422	1,043	138	70	1	71	229	42	226	30	164	1,872
September	618	420	1,038	132	72	1	73	236	42	227	28	166	1,869
October	611	437	1,047	133	76	1	78	236	40	217	29	162	1,864
November	601	433	1,035	132	72	2	74	221	37	221	28	163	1,835
December	594	421	1,015	130	64	1	65	193	36	232	26	161	1,792
2022 January	588	414	1,002	125	48	1	49	161	39	252	27	173	1,778
February	579	409	987	121	38	1	39	141	40	250	28	177	1,744
March	566	414	980	115	36	1	37	142	36	239	28	181	1,720
April	548	417	965	106	40	1	41	154	38	230	29	179	1,702
May	523	415	938	110	50	1	51	177	41	221	29	178	1,695
June	493	418	911	111	54	1	55	187	39	221	29	175	1,674
July	468	424	892	113	64	1	65	209	41	225	29	175	1,683
August	445	420	865	113	73	1	74	231	38	216	29	166	1,658
September	416	429	845	111	82	1	83	244	37	210	27	159	1,632
October	399	440	838	110	87	1	88	243	36	210	30	160	1,629
November	388	417	805	121	88	1	89	236	38	221	29	165	1,615
December	372	430	802	119	77	1	78	211	35	224	31	172	1,595
2023 January	372	460	831	123	69	1	70	188	36	240	32	176	1,626
February	372	472	844	125	61	1	61	175	38	242	31	184	1,638
March	371	465	837	112	56	1	57	174	38	225	30	186	1,602
April	364	460	824	112	61	1	62	188	41	224	32	189	1,609
May	354	461	815	113	71	1	72	207	42	222	33	182	1,614
June	347	455	802	113	79	1	80	225	43	223	30	175	1,612
July	347	^R 440	^R 787	^R 120	^R 87	^R 1	^R 89	^R 243	^R 43	^R 222	^R 29	^R 175	^R 1,619
August	^E 350	^E 417	^E 767	^E 119	NA	NA	^E 96	^{RF} 261	^E 42	^E 215	^E 26	^{RE} 176	^E 1,605
September	^E 351	^E 417	^E 768	^E 118	NA	NA	^E 101	^F 269	^E 43	^E 227	^E 28	^E 172	^E 1,625

^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 biofuels (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.

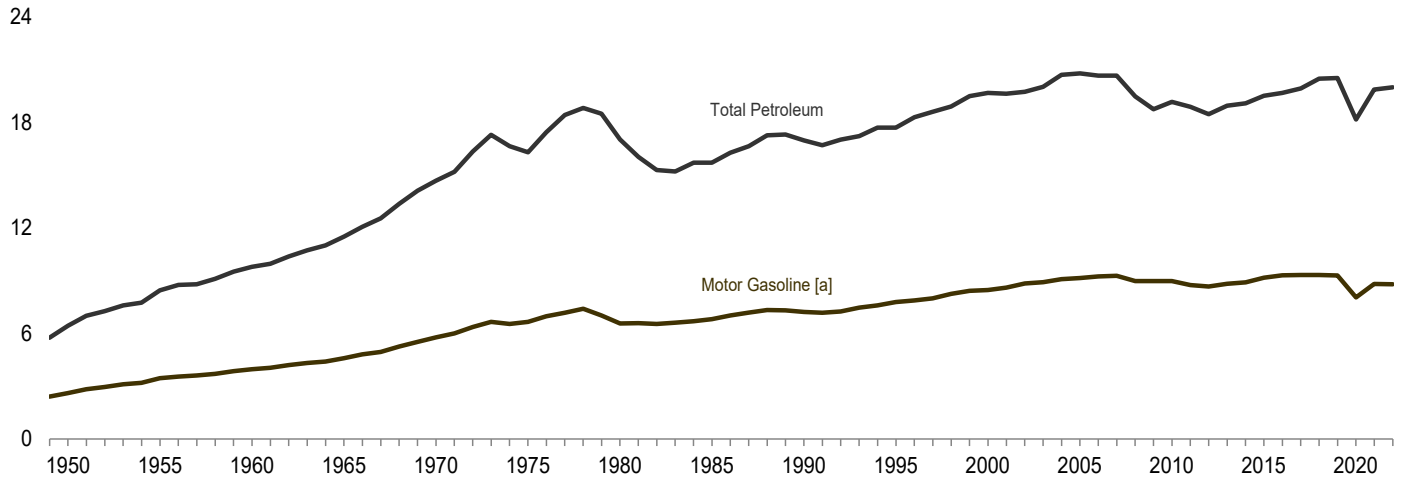
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

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. • **1981–2022:** EIA, *Petroleum Supply Annual*, annual reports, and unpublished revisions. • **2023:** EIA, *Petroleum Supply Monthly*, monthly reports, and unpublished revisions; and, for the current two months, *Weekly Petroleum Status Report* data system, Short-Term Integrated Forecasting System, and *Monthly Energy Review* data system calculations.

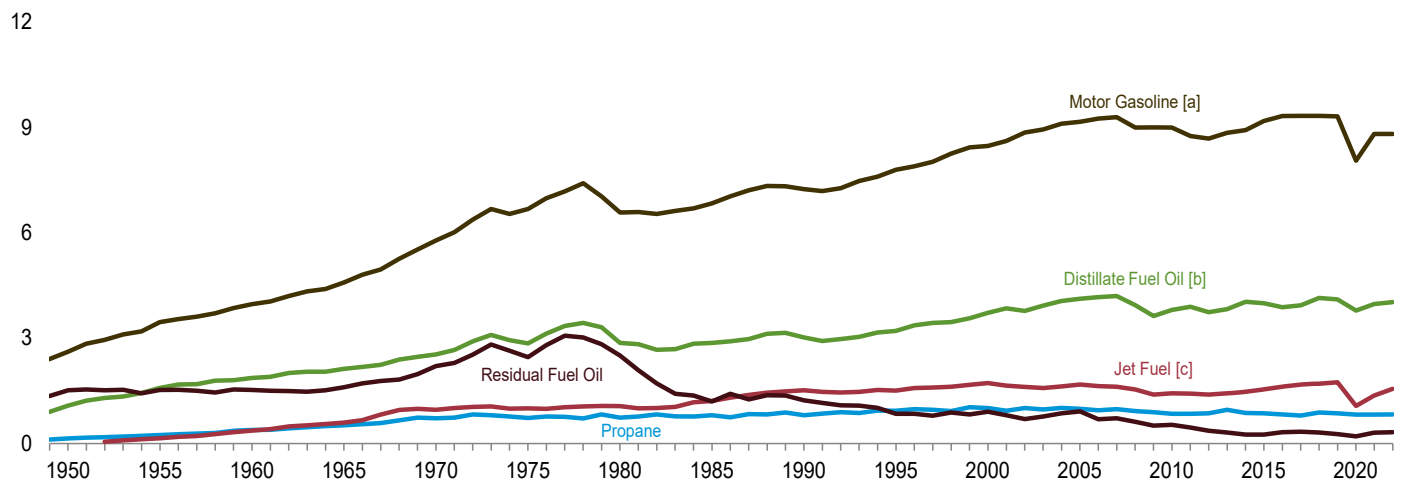
Figure 3.5 Petroleum Products Supplied by Type

(Million Barrels per Day)

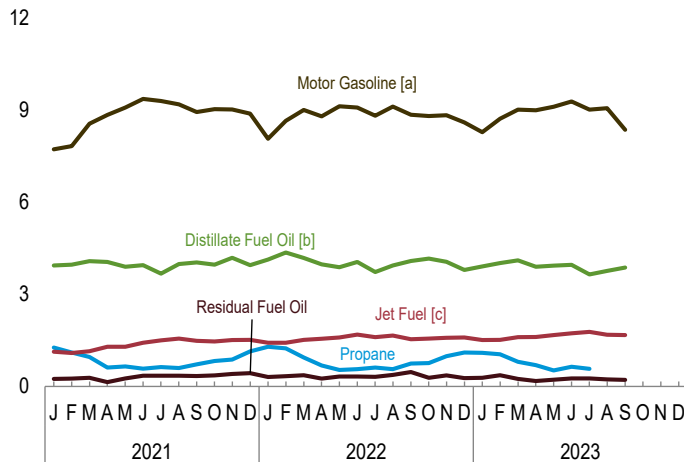
Total Petroleum and Motor Gasoline, 1949–2022



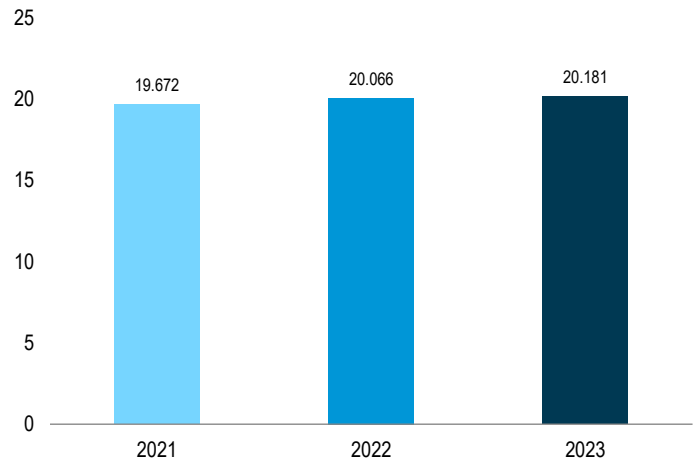
Selected Products, 1949–2022



Selected Products, Monthly



Total, January–September



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

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

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

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.
Source: Table 3.5.

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

	Asphalt and Road Oil	Avia- tion Gaso- line	Distil- late Fuel Oil ^a	Hydrocarbon Gas Liquids				Jet Fuel ^d	Kero- sene	Lubri- cants	Motor Gaso- line ^e	Petro- leum Coke	Resid- ual Fuel Oil	Other ^f	Total
				Propane/Propylene			Total ^c								
				Pro- pane	Propy- lene	Total ^b									
1950 Average	180	108	1,082	E 146	E 13	E 158	234	(d)	323	106	2,616	41	1,517	250	6,458
1955 Average	254	192	1,592	E 251	E 22	E 273	404	154	320	116	3,463	67	1,526	366	8,455
1960 Average	302	161	1,872	E 386	E 33	E 419	621	371	271	117	3,969	149	1,529	435	9,797
1965 Average	368	120	2,126	E 523	E 45	E 568	841	602	267	129	4,593	202	1,608	657	11,512
1970 Average	447	55	2,540	E 727	E 55	E 782	1,224	967	263	136	5,785	212	2,204	866	14,697
1975 Average	419	39	2,851	E 730	E 60	E 790	1,352	1,001	159	137	6,675	247	2,462	982	16,322
1980 Average	396	35	2,866	E 742	E 72	E 813	1,590	1,068	158	159	6,579	237	2,508	1,460	17,056
1985 Average	425	27	2,868	E 810	E 72	E 883	1,721	1,218	114	145	6,831	264	1,202	909	15,726
1990 Average	483	24	3,021	E 812	E 105	E 917	1,705	1,522	43	164	7,235	339	1,229	1,225	16,988
1995 Average	486	21	3,207	E 938	E 157	E 1,096	2,100	1,514	54	156	7,789	365	852	1,180	17,725
2000 Average	525	20	3,722	E 1,011	E 224	E 1,235	2,434	1,725	67	166	8,472	406	909	1,255	19,701
2005 Average	546	19	4,118	E 986	E 243	E 1,229	2,146	1,679	70	141	9,159	515	920	1,489	20,802
2006 Average	521	18	4,169	E 947	E 268	E 1,215	2,135	1,633	54	137	9,253	522	689	1,557	20,687
2007 Average	494	17	4,196	E 983	E 252	E 1,235	2,191	1,622	32	142	9,286	490	723	1,487	20,680
2008 Average	417	15	3,945	E 924	E 230	E 1,154	2,044	1,539	14	131	8,989	464	622	1,317	19,498
2009 Average	360	14	3,631	E 893	E 267	E 1,160	2,127	1,393	18	118	8,997	427	511	1,175	18,771
2010 Average	362	15	3,800	852	305	1,157	2,263	1,432	20	131	8,993	376	535	1,251	19,178
2011 Average	355	15	3,899	851	310	1,161	2,250	1,425	12	125	8,753	361	461	1,240	18,896
2012 Average	340	14	3,741	862	308	1,170	2,293	1,398	5	114	8,682	360	369	1,165	18,482
2013 Average	323	12	3,827	969	306	1,275	2,501	1,434	5	121	8,843	354	319	1,227	18,967
2014 Average	327	12	4,037	870	298	1,167	2,443	1,470	9	126	8,921	347	257	1,151	19,100
2015 Average	343	11	3,995	865	295	1,160	2,550	1,548	6	138	9,178	349	259	1,153	19,532
2016 Average	351	11	3,877	833	301	1,134	2,541	1,614	9	130	9,317	345	326	1,170	19,692
2017 Average	351	11	3,932	803	309	1,111	2,637	1,682	5	121	9,327	316	342	1,228	19,952
2018 Average	327	12	4,146	888	311	1,199	3,014	1,707	5	117	9,329	327	318	1,210	20,512
2019 Average	348	13	4,103	868	298	1,166	3,139	1,743	7	113	9,309	303	275	1,189	20,543
2020 Average	343	11	3,786	824	278	1,101	3,228	1,076	7	102	8,049	260	208	1,116	18,186
2021 January	239	11	3,936	1,271	323	1,593	4,043	1,131	7	114	7,723	269	247	1,093	18,814
February	206	5	3,968	1,102	266	1,368	3,011	1,087	35	110	7,824	153	255	1,046	17,699
March	275	9	4,077	957	282	1,239	3,193	1,150	2	97	8,553	257	280	1,238	19,132
April	345	15	4,048	614	312	926	3,231	1,292	5	108	8,839	204	138	1,517	19,744
May	388	9	3,900	646	338	984	3,390	1,292	1	107	9,081	345	263	1,275	20,050
June	512	17	3,946	582	318	900	3,365	1,426	(s)	113	9,362	306	346	1,193	20,586
July	473	11	3,675	631	311	942	3,315	1,501	1	109	9,297	226	351	1,213	20,172
August	492	15	3,984	601	311	912	3,380	1,563	2	97	9,182	341	344	1,171	20,573
September	473	14	4,032	713	286	999	3,322	1,485	2	94	8,932	273	341	1,170	20,139
October	453	12	3,967	825	276	1,102	3,412	1,467	12	104	9,027	239	357	1,328	20,377
November	364	10	4,190	873	314	1,187	3,543	1,507	5	112	9,021	269	410	1,142	20,573
December	221	11	3,950	1,141	324	1,464	4,025	1,517	1	96	8,879	339	432	1,185	20,657
Average	371	12	3,972	829	305	1,134	3,440	1,370	6	105	8,816	269	314	1,215	19,890
2022 January	243	7	4,129	1,294	298	1,592	3,979	1,418	32	125	8,062	240	304	1,072	19,613
February	264	13	4,365	1,239	291	1,529	3,730	1,418	2	114	8,650	229	327	1,078	20,190
March	272	14	4,183	941	304	1,246	3,592	1,520	1	139	9,005	251	366	1,140	20,483
April	335	11	3,976	681	302	983	3,263	1,547	3	123	8,799	237	255	1,178	19,727
May	401	9	3,876	540	297	837	3,030	1,591	6	112	9,119	197	321	1,177	19,840
June	493	17	4,049	565	281	846	3,243	1,686	1	93	9,075	233	318	1,225	20,433
July	465	9	3,722	613	290	903	3,353	1,603	3	46	8,812	371	312	1,231	19,926
August	510	18	3,940	563	281	844	2,996	1,654	(s)	134	9,115	285	376	1,236	20,265
September	472	11	4,087	746	261	1,006	3,160	1,534	3	99	8,847	273	465	1,178	20,129
October	453	12	4,163	758	232	989	3,225	1,558	1	130	8,807	192	277	1,189	20,007
November	369	13	4,059	986	240	1,226	3,423	1,584	5	107	8,827	303	359	1,164	20,214
December	256	11	3,793	1,104	237	1,341	3,319	1,593	6	105	8,596	227	273	1,149	19,327
Average	378	12	4,026	834	276	1,110	3,357	1,560	5	111	8,810	253	329	1,169	20,010
2023 January	231	6	3,902	1,095	261	1,356	3,479	1,510	37	117	8,282	127	279	1,179	19,149
February	239	11	4,018	1,046	245	1,291	3,410	1,520	19	112	8,715	225	365	1,125	19,759
March	258	12	4,103	806	252	1,058	3,309	1,606	3	57	9,007	298	248	1,181	20,083
April	328	9	3,900	692	270	963	3,334	1,615	10	84	8,996	311	176	1,274	20,037
May	406	14	3,930	520	276	796	3,344	1,673	15	97	9,105	225	223	1,365	20,396
June	472	14	3,958	636	267	903	3,403	1,735	5	95	9,279	184	261	1,310	20,716
July	R 461	R 15	R 3,648	R 569	R 266	R 835	R 3,391	R 1,770	R 13	R 94	R 9,013	R 138	R 261	R 1,321	R 20,124
August	F 501	RF 14	E 3,763	NA	NA	E 946	RF 3,337	E 1,682	RF 3	RF 92	E 9,063	RF 269	E 231	RE 2,123	E 21,077
September	F 463	F 9	E 3,869	NA	NA	E 742	F 3,391	E 1,675	F 6	F 89	E 8,354	F 252	E 214	E 1,938	E 20,258
9-Month Average	E 374	E 12	E 3,898	NA	NA	E 986	E 3,377	E 1,644	E 12	E 93	E 8,870	E 225	E 250	E 1,426	E 20,181
2022 9-Month Average	385	12	4,033	795	289	1,084	3,370	1,553	6	110	8,833	258	338	1,169	20,066
2021 9-Month Average	379	12	3,951	789	306	1,094	3,366	1,327	6	105	8,762	265	286	1,214	19,672

^a 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. Beginning in 2021, also includes renewable heating oil blended into distillate fuel oil.

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

^c Ethane, propane, normal butane, isobutane, and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unfractionated stream. Through 2021, also includes natural gasoline (pentanes plus).

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

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

^f Petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1981,

also includes negative barrels per day of distillate and residual fuel oil reclassified as unfinished oils (through 2021), 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. Beginning in 2021, also includes biofuels (excluding fuel ethanol) products supplied.

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

Notes: • Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c.

See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

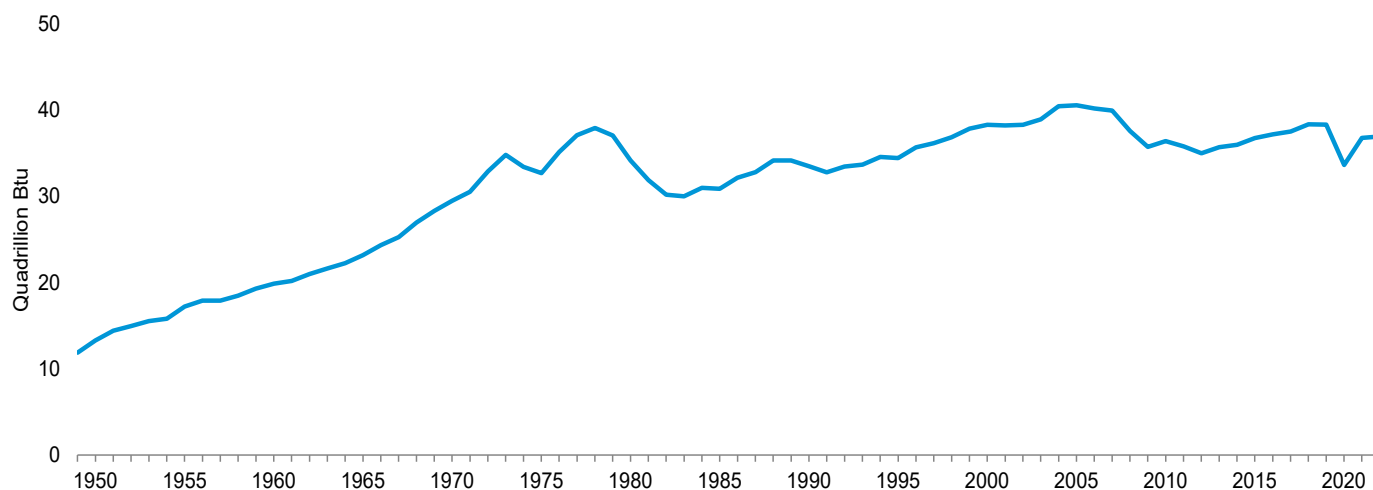
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

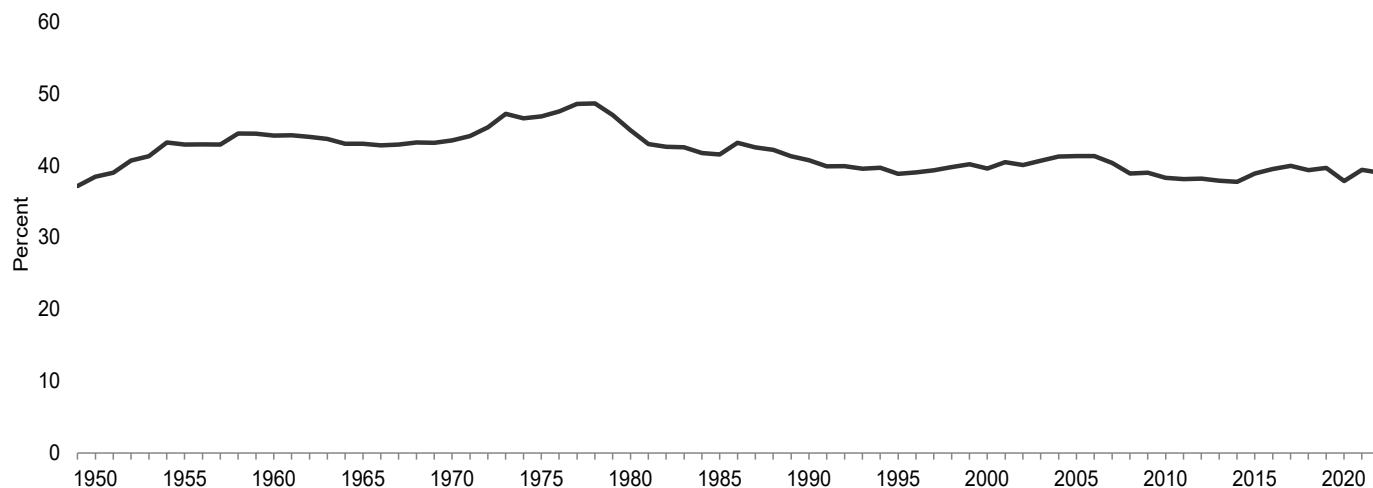
Weekly Petroleum Status Report (WPSR) statistics are undergoing an upgrade to incorporate data for unfinished oils (refinery feedstocks) and natural gas liquids transferred to crude oil supply. Until the WPSR conversion is completed, data for the current two months are not directly comparable to historical data.

Figure 3.6 Heat Content of Petroleum Products Supplied by Type

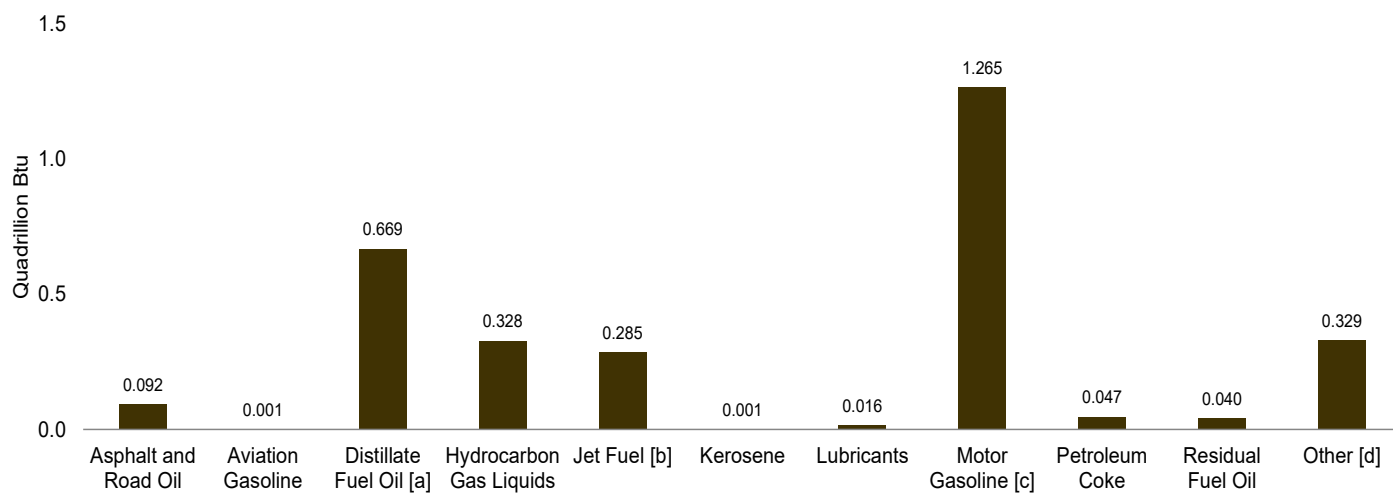
Total, 1949–2022



Petroleum Products Supplied as Share of Total Energy Consumption, 1949–2022



By Product, September 2023



[a] Includes biodiesel and renewable diesel fuel blended into distillate fuel oil.

[b] Includes kerosene-type jet fuel only.

[c] Includes fuel ethanol blended into motor gasoline.

[d] All petroleum products not separately displayed.

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

Sources: Tables 1.1 and 3.6.

Table 3.6 Heat Content of Petroleum Products Supplied by Type

(Trillion Btu)

	Asphalt and Road Oil	Avia- tion Gaso- line	Distil- late Fuel Oil ^a	Hydrocarbon Gas Liquids				Jet Fuel ^d	Kero- sene	Lubri- cants	Motor Gaso- line ^e	Petro- leum Coke	Resid- ual Fuel Oil	Other ^f	Total
				Propane/Propylene			Total ^c								
				Pro- pane	Propy- lene	Total ^b									
1950 Total	435	199	2,300	E 204	E 18	E 222	326	(d)	668	236	5,015	90	3,482	546	13,298
1955 Total	615	354	3,385	E 352	E 30	E 383	562	301	662	258	6,640	147	3,502	798	17,225
1960 Total	734	298	3,992	E 543	E 47	E 589	866	739	563	259	7,631	328	3,517	947	19,874
1965 Total	890	222	4,519	E 733	E 63	E 796	1,170	1,215	553	286	8,806	444	3,691	1,390	23,184
1970 Total	1,082	100	5,401	E 1,019	E 77	E 1,096	1,667	1,973	544	301	11,091	465	5,057	1,817	29,499
1975 Total	1,014	71	6,061	E 1,024	E 84	E 1,108	1,811	2,047	329	304	12,798	542	5,649	2,071	32,699
1980 Total	962	64	6,110	E 1,043	E 100	E 1,143	2,135	2,190	329	354	12,648	522	5,772	3,073	34,159
1985 Total	1,029	50	6,098	E 1,136	E 101	E 1,237	2,252	2,497	236	322	13,098	582	2,759	1,945	30,866
1990 Total	1,170	45	6,422	E 1,138	E 147	E 1,285	2,259	3,129	88	362	13,872	745	2,820	2,589	33,500
1995 Total	1,178	40	6,812	E 1,316	E 220	E 1,536	2,791	3,132	112	346	14,794	802	1,955	2,499	34,458
2000 Total	1,276	36	7,927	E 1,421	E 315	E 1,735	3,216	3,580	140	369	16,127	895	2,091	2,636	38,292
2005 Total	1,323	35	8,745	E 1,382	E 341	E 1,723	2,812	3,475	144	312	17,358	1,125	2,111	3,122	40,561
2006 Total	1,261	33	8,831	E 1,328	E 375	E 1,703	2,768	3,379	111	303	17,511	1,141	1,581	3,276	40,196
2007 Total	1,197	32	8,858	E 1,379	E 352	E 1,731	2,835	3,358	67	313	17,428	1,072	1,659	3,134	39,952
2008 Total	1,012	28	8,346	E 1,299	E 323	E 1,622	2,656	3,193	30	291	16,799	1,017	1,432	2,788	37,591
2009 Total	873	27	7,657	E 1,252	E 374	E 1,626	2,707	2,883	36	262	16,714	937	1,173	2,483	35,752
2010 Total	878	27	8,011	E 1,194	E 428	E 1,621	2,881	2,963	41	291	16,632	831	1,228	2,645	36,427
2011 Total	859	27	8,211	E 1,194	E 434	E 1,628	2,811	2,950	25	276	16,175	801	1,058	2,621	35,815
2012 Total	827	25	7,898	E 1,212	E 432	E 1,645	2,887	2,901	11	254	16,085	802	849	2,474	35,012
2013 Total	783	22	8,051	E 1,358	E 429	E 1,787	3,166	2,969	11	268	16,332	786	731	2,583	35,702
2014 Total	793	22	8,492	E 1,219	E 417	E 1,636	3,067	3,042	19	280	16,473	772	590	2,430	35,978
2015 Total	832	21	8,402	E 1,212	E 413	E 1,626	3,221	3,204	13	305	16,941	776	595	2,435	36,745
2016 Total	853	20	8,170	E 1,171	E 423	E 1,594	3,184	3,350	18	289	17,238	771	751	2,553	37,198
2017 Total	849	21	8,263	E 1,126	E 432	E 1,557	3,272	3,481	11	267	17,201	708	784	2,667	37,525
2018 Total	793	22	8,715	E 1,245	E 436	E 1,680	3,720	3,533	11	259	17,209	730	729	2,630	38,351
2019 Total	844	23	8,625	E 1,217	E 418	E 1,635	3,897	3,608	14	250	17,166	678	631	2,585	38,322
2020 Total	832	20	7,976	E 1,158	E 390	E 1,548	3,956	2,234	16	227	14,883	583	478	2,433	33,638
2021 January	49	2	703	E 151	E 38	E 190	433	199	1	22	1,209	51	48	201	2,918
February	38	1	641	E 118	E 29	E 147	291	173	6	19	1,106	26	45	174	2,519
March	57	1	729	E 114	E 33	E 147	339	202	(s)	18	1,339	49	55	227	3,015
April	69	2	700	E 71	E 36	E 107	322	220	1	20	1,339	38	26	268	3,004
May	80	1	697	E 77	E 40	E 117	350	227	(s)	20	1,422	66	51	234	3,148
June	102	3	682	E 67	E 37	E 104	340	243	(s)	21	1,418	56	65	212	3,142
July	97	2	657	E 75	E 37	E 112	345	264	(s)	21	1,455	43	68	223	3,175
August	101	2	712	E 72	E 37	E 109	353	275	(s)	18	1,437	65	67	216	3,246
September	94	2	697	E 82	E 33	E 115	335	253	(s)	17	1,353	50	64	208	3,074
October	93	2	709	E 98	E 33	E 131	351	258	2	19	1,413	45	70	243	3,206
November	72	2	725	E 101	E 36	E 137	354	256	1	20	1,367	49	77	203	3,127
December	46	2	706	E 136	E 38	E 174	418	267	(s)	18	1,390	64	84	217	3,212
Total	898	22	8,357	E 1,162	E 427	E 1,589	4,230	2,835	12	233	16,250	603	721	2,623	36,784
2022 January	50	1	738	E 154	E 35	E 190	405	249	6	24	1,262	46	59	197	3,037
February	49	2	705	E 133	E 31	E 164	341	225	(s)	19	1,223	39	58	179	2,841
March	56	2	748	E 112	E 36	E 148	362	267	(s)	26	1,409	48	71	209	3,200
April	67	2	687	E 78	E 35	E 113	313	263	1	22	1,333	44	48	210	2,989
May	83	1	693	E 64	E 35	E 100	298	280	1	21	1,427	38	62	217	3,121
June	98	3	700	E 65	E 32	E 97	310	287	(s)	17	1,375	43	60	218	3,110
July	96	1	665	E 73	E 34	E 107	331	282	(s)	9	1,379	71	61	227	3,122
August	105	3	704	E 67	E 33	E 100	300	291	(s)	25	1,427	55	73	227	3,210
September	94	2	707	E 86	E 30	E 116	305	261	1	18	1,340	51	88	210	3,075
October	93	2	744	E 90	E 28	E 118	320	274	(s)	24	1,378	37	54	219	3,146
November	73	2	702	E 114	E 28	E 141	335	270	1	20	1,337	56	68	207	3,070
December	53	2	678	E 131	E 28	E 160	337	280	1	20	1,345	43	53	211	3,023
Total	916	22	8,470	E 1,169	E 386	E 1,555	3,957	3,228	11	245	16,236	570	756	2,532	36,943
2023 January	48	1	697	E 130	E 31	E 161	353	265	7	22	1,296	24	54	216	2,984
February	44	1	649	E 113	E 26	E 139	307	241	3	19	1,232	39	64	187	2,787
March	53	2	733	E 96	E 30	E 126	330	282	1	11	1,410	57	48	216	3,143
April	65	1	674	E 80	E 31	E 111	319	275	2	15	1,363	57	33	225	3,030
May	84	2	702	E 62	E 33	E 95	328	294	3	18	1,425	43	43	249	3,192
June	94	2	684	E 73	E 31	E 104	326	295	1	17	1,405	34	49	232	3,141
July	R 95	R 2	R 652	R 68	R 32	R 99	R 336	R 311	R 2	R 18	R 1,411	R 26	R 51	R 242	R 3,146
August	F 103	F 2	F 672	NA	NA	E 113	RF 334	E 296	F (s)	RF 17	E 1,419	RF 51	E 45	RE 365	E 3,305
September	F 92	F 1	F 669	NA	NA	E 86	F 328	E 285	F 1	F 16	E 1,265	F 47	E 40	E 329	E 3,074
9-Month Total	E 678	E 16	E 6,133	NA	NA	E 1,033	E 2,962	E 2,545	E 19	E 154	E 12,226	E 379	E 429	E 2,261	E 27,801
2022 9-Month Total	697	17	6,346	833	303	1,136	2,966	2,405	9	181	12,175	434	581	1,895	27,704
2021 9-Month Total	687	16	6,218	827	320	1,147	3,107	2,054	9	175	12,080	444	490	1,960	27,240

^a 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. Beginning in 2021, also includes renewable heating oil blended into distillate fuel oil.

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

^c Ethane, propane, normal butane, isobutane, and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unfractionated stream. Through 2021, also includes natural gasoline (pentanes plus).

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

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

^f Petrochemical feedstocks, still gas (refinery gas), waxes, and miscellaneous products. Beginning in 1964, also includes special naphthas. Beginning in 1981,

also includes negative barrels per day of distillate and residual fuel oil reclassified as unfinished oils (through 2021), 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. Beginning in 2021, also includes biofuels (excluding fuel ethanol) products supplied.

R=Revised, E=Estimate, F=Forecast, NA=Not available. (s)=Less than 0.5 trillion Btu and greater than -0.5 trillion Btu.

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

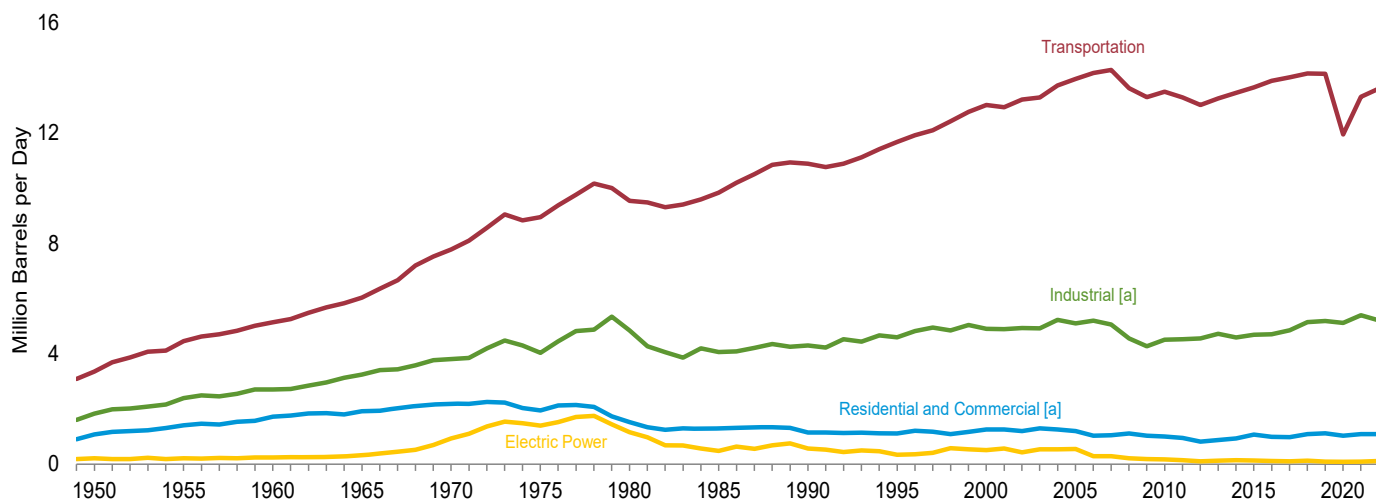
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#petroleum> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

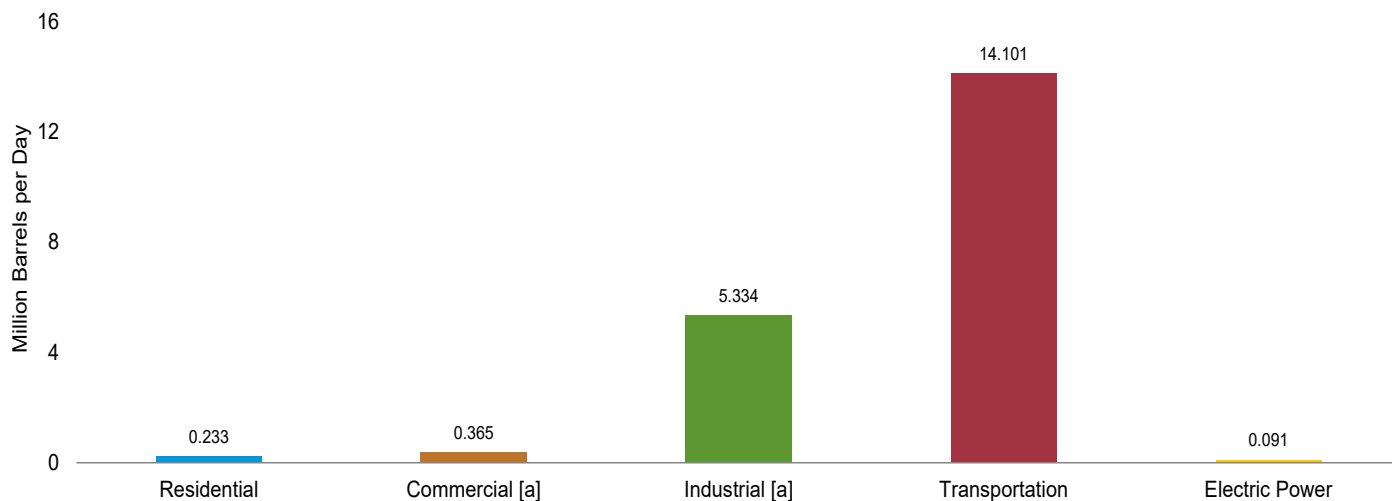
Weekly Petroleum Status Report (WPSR) statistics are undergoing an upgrade to incorporate data for unfinished oils (refinery feedstocks) and natural gas liquids transferred to crude oil supply. Until the WPSR conversion is completed, data for the current two months are not directly comparable to historical data.

Figure 3.7 Petroleum Consumption by Sector

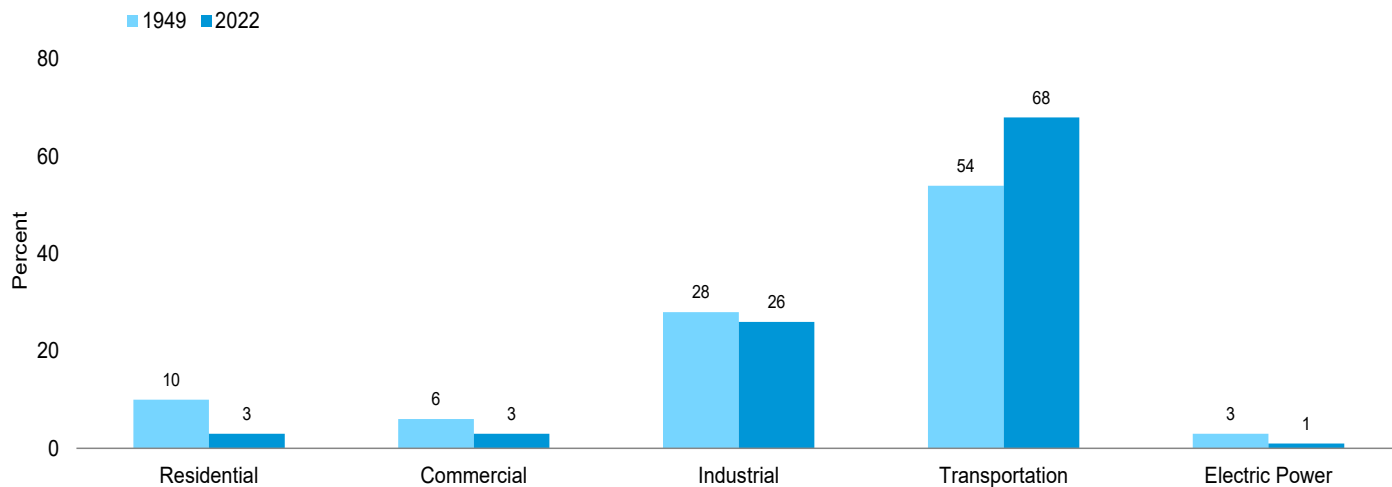
By Sector, 1949–2022



By Sector, July 2023



Sector Shares, 1949 and 2022



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

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

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

	Residential Sector				Commercial Sector ^a						
	Distillate Fuel Oil	HGL ^b Propane	Kero-sene	Total	Distillate Fuel Oil	HGL ^b Propane	Kero-sene	Motor Gasoline ^{c,d}	Petroleum Coke	Residual Fuel Oil	Total
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 Average	223	402	5	630	155	130	1	200	(s)	1	487
2020 Average	193	352	5	551	131	143	1	201	(s)	1	477
2021 January	345	661	6	1,012	239	253	1	178	0	2	673
February	400	711	27	1,138	277	268	4	180	(s)	2	733
March	300	462	2	764	208	191	(s)	197	(s)	2	598
April	212	335	4	550	147	152	1	204	0	1	504
May	177	222	1	400	123	117	(s)	209	0	1	450
June	156	129	(s)	285	108	88	(s)	216	0	1	412
July	105	124	1	229	72	86	(s)	214	0	1	374
August	90	125	2	216	62	86	(s)	212	0	1	361
September	157	149	2	308	109	94	(s)	206	0	1	410
October	206	242	9	457	143	123	1	208	(s)	1	476
November	242	474	4	720	168	195	1	208	(s)	1	573
December	323	534	1	859	224	213	(s)	205	(s)	2	645
Average	225	345	5	575	156	155	1	203	(s)	1	516
2022 January	367	694	25	1,086	255	263	4	186	(s)	2	710
February	460	614	2	1,076	319	238	(s)	199	(s)	3	760
March	298	450	1	749	207	187	(s)	208	(s)	2	604
April	200	343	2	545	139	154	(s)	203	(s)	1	498
May	167	198	5	371	116	109	1	210	(s)	1	438
June	147	138	1	286	102	91	(s)	209	(s)	1	403
July	99	124	2	225	69	86	(s)	203	(s)	1	359
August	85	125	(s)	210	59	87	(s)	210	0	1	356
September	149	150	2	301	103	95	(s)	204	(s)	1	403
October	195	282	(s)	^R 478	135	^R 136	(s)	203	0	1	475
November	229	^R 453	4	686	159	189	1	203	(s)	2	553
December	306	612	4	922	212	238	1	198	(s)	2	651
Average	224	347	4	575	155	156	1	203	(s)	1	516
2023 January	367	^R 570	29	966	255	225	4	191	(s)	2	677
February	460	552	15	1,027	319	219	2	201	(s)	3	744
March	298	489	2	789	207	200	(s)	208	(s)	2	616
April	200	314	8	521	139	145	1	207	0	1	494
May	167	213	11	391	116	114	2	210	0	1	443
June	147	150	4	301	102	94	1	214	0	1	412
July	99	125	10	233	69	87	1	208	0	1	365
7-Month Average	246	343	11	600	171	154	2	205	(s)	2	534
2022 7-Month Average	246	364	5	615	171	161	1	203	(s)	2	537
2021 7-Month Average	240	375	5	620	166	164	1	200	(s)	1	533

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

^b Hydrocarbon gas liquids.

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

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

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

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

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

Sources: See end of section.

Due to the suspension of Form EIA-782A, Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report, sectoral distillate and residual fuel oil consumption after April 2022 are estimates.

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

	Industrial Sector ^a												
	Asphalt and Road Oil	Distil- late Fuel Oil	Hydrocarbon Gas Liquids				Kero- sene	Lubri- cants	Motor Gasoline ^{d,e}	Petroleum Coke	Resid- ual Fuel Oil	Other ^f	Total
			Propane/Propylene			Total ^c							
			Pro- pane	Propy- lene	Total ^b								
1950 Average	180	328	12	13	24	100	132	43	131	41	617	250	1,822
1955 Average	254	466	59	22	81	212	116	47	173	67	686	366	2,387
1960 Average	302	476	98	33	131	333	78	48	198	149	689	435	2,708
1965 Average	368	541	152	45	197	470	80	62	179	202	689	657	3,247
1970 Average	447	577	201	55	256	699	89	70	150	203	708	866	3,808
1975 Average	419	630	242	60	302	863	58	68	116	246	658	982	4,038
1980 Average	396	621	445	72	516	1,293	87	82	82	234	586	1,460	4,842
1985 Average	425	526	497	72	569	1,408	21	75	114	261	326	909	4,065
1990 Average	483	541	471	105	576	1,364	6	84	97	325	179	1,225	4,304
1995 Average	486	532	566	157	723	1,727	7	80	105	328	147	1,180	4,594
2000 Average	525	563	500	224	724	1,923	8	86	79	361	105	1,255	4,903
2005 Average	546	594	506	243	749	1,666	19	72	187	404	123	1,489	5,100
2006 Average	521	594	521	268	789	1,710	14	71	198	425	104	1,557	5,193
2007 Average	494	595	536	252	787	1,744	6	73	161	412	84	1,487	5,056
2008 Average	417	637	389	230	619	1,510	2	67	131	394	84	1,317	4,559
2009 Average	360	509	383	267	650	1,617	2	61	128	363	57	1,175	4,272
2010 Average	362	547	371	305	676	1,782	4	61	140	310	52	1,251	4,510
2011 Average	355	586	395	310	705	1,794	2	58	138	295	59	1,240	4,525
2012 Average	340	602	481	308	789	1,912	1	53	136	319	30	1,165	4,559
2013 Average	323	601	526	306	832	2,058	1	57	142	295	21	1,227	4,724
2014 Average	327	648	401	298	698	1,974	1	59	114	290	18	1,151	4,582
2015 Average	343	555	434	295	729	2,119	1	64	e 140	295	15	1,153	4,685
2016 Average	351	548	412	301	714	2,120	1	61	142	289	23	1,170	4,703
2017 Average	351	572	376	309	684	2,210	1	56	143	269	22	1,228	4,852
2018 Average	327	595	392	311	703	2,518	1	55	146	278	19	1,210	5,149
2019 Average	348	573	327	298	626	2,598	1	53	145	267	18	1,189	5,191
2020 Average	343	506	323	278	600	2,726	1	50	146	218	14	1,116	5,120
2021 January	239	653	349	323	672	3,121	1	56	126	222	16	1,009	5,444
February	206	507	115	266	381	2,024	4	54	127	103	16	924	3,966
March	275	643	297	282	578	2,533	(s)	47	139	215	18	1,108	4,978
April	345	619	120	312	433	2,738	1	53	144	175	9	1,385	5,468
May	388	515	300	338	638	3,044	(s)	52	148	310	17	1,132	5,604
June	512	498	358	318	676	3,141	(s)	55	152	273	22	1,064	5,717
July	473	362	414	311	725	3,098	(s)	53	151	181	22	1,090	5,431
August	492	557	383	311	694	3,161	(s)	47	149	292	21	1,027	5,748
September	473	618	464	286	749	3,073	(s)	46	145	230	22	1,061	5,668
October	453	535	454	276	730	3,041	1	51	147	197	23	1,164	5,611
November	364	728	196	314	511	2,867	1	55	147	214	26	984	5,385
December	221	527	386	324	710	3,270	(s)	47	144	298	28	1,029	5,565
Average	371	563	322	305	627	2,933	1	51	143	227	20	1,082	5,392
2022 January	243	672	330	298	628	3,016	4	61	131	204	8	948	5,287
February	264	677	380	291	670	2,871	(s)	55	141	185	9	937	5,139
March	272	670	297	304	601	2,948	(s)	68	146	217	9	987	5,317
April	335	557	177	302	479	2,759	(s)	60	143	202	6	1,015	5,078
May	401	484	225	297	523	2,715	1	55	148	153	7	1,021	4,986
June	493	543	329	281	610	3,007	(s)	46	148	188	7	1,025	5,456
July	465	377	396	290	686	3,136	(s)	23	143	338	7	1,066	5,556
August	510	509	344	281	R 625	2,777	(s)	65	148	248	8	1,052	5,318
September	472	626	494	261	754	2,908	(s)	48	144	230	10	1,008	5,446
October	453	635	333	232	R 564	R 2,800	(s)	63	143	153	6	991	5,245
November	369	625	337	240	R 578	2,774	1	52	144	263	8	973	5,208
December	256	358	247	237	485	2,462	1	51	140	177	8	963	R 4,416
Average	378	560	324	276	600	2,847	1	54	143	213	8	999	5,204
2023 January	231	573	R 293	261	R 554	2,678	4	57	135	100	7	970	4,756
February	239	476	268	245	513	2,631	2	55	142	199	8	916	4,667
March	258	625	111	252	362	2,613	(s)	28	146	276	7	944	4,897
April	328	512	226	270	497	2,868	1	41	146	293	5	1,039	5,233
May	406	516	186	276	R 462	R 3,010	2	47	148	204	5	1,054	5,392
June	472	492	385	267	652	3,152	1	47	151	160	6	1,010	5,490
July	461	338	351	266	617	3,172	2	46	147	99	6	1,064	5,334
7-Month Average	343	505	259	263	522	2,877	2	46	145	189	6	1,001	5,114
2022 7-Month Average	354	567	304	295	599	2,923	1	52	143	213	8	1,000	5,262
2021 7-Month Average	349	543	282	308	589	2,824	1	53	141	213	17	1,103	5,244

^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, and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unfractionated stream. Through 2021, also includes natural gasoline (pentanes plus).

^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 (through 2021), and other products (from both primary and secondary supply) reclassified as gasoline blending components. Beginning in 1983, also includes crude oil burned as fuel. Beginning in 2005, also includes naphtha-type jet fuel.

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

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

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

Sources: See end of section.

Due to the suspension of Form EIA-782A, *Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report*, sectoral distillate and residual fuel oil consumption after April 2022 are estimates.

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

	Transportation Sector									Electric Power Sector ^a			
	Aviation Gasoline	Distillate Fuel Oil ^c	HGL ^b	Jet Fuel ^e	Lubricants	Motor Gasoline ^{f,g}	Residual Fuel Oil	Other ^h	Total	Distillate Fuel Oil ⁱ	Petroleum Coke	Residual Fuel Oil ⁱ	Total
			Propane ^d										
1950 Average	108	226	2	(^e)	64	2,433	524	NA	3,356	15	NA	192	207
1955 Average	192	372	9	154	70	3,221	440	NA	4,458	15	NA	191	206
1960 Average	161	418	13	371	68	3,736	367	NA	5,135	10	NA	231	241
1965 Average	120	514	23	602	67	4,374	336	NA	6,036	14	NA	302	316
1970 Average	55	738	32	967	66	5,589	332	NA	7,778	66	9	853	928
1975 Average	39	998	31	992	70	6,512	310	NA	8,951	107	1	1,280	1,388
1980 Average	35	1,311	13	1,062	77	6,441	608	NA	9,546	79	2	1,069	1,151
1985 Average	27	1,491	21	1,218	71	6,667	342	NA	9,838	40	3	435	478
1990 Average	24	1,722	16	1,522	80	7,080	443	NA	10,888	45	14	507	566
1995 Average	21	1,973	13	1,514	76	7,674	397	NA	11,668	51	37	247	334
2000 Average	20	2,422	8	1,725	81	8,370	386	NA	13,012	82	45	378	505
2005 Average	19	2,858	20	1,679	68	8,948	365	NA	13,957	54	111	382	547
2006 Average	18	3,017	20	1,633	67	9,029	395	NA	14,178	35	97	157	289
2007 Average	17	3,037	16	1,622	69	9,093	433	NA	14,287	42	78	173	293
2008 Average	15	2,738	29	1,539	64	8,834	402	NA	13,621	34	70	104	209
2009 Average	14	2,626	20	1,393	57	8,841	344	(^h)	13,297	33	63	79	175
2010 Average	15	2,764	^d 3	1,432	70	8,824	389	(^h)	13,496	38	65	67	170
2011 Average	15	2,849	3	1,425	67	8,591	338	(^h)	13,269	30	66	41	137
2012 Average	14	2,719	3	1,398	61	8,525	291	(^h)	13,011	25	41	33	99
2013 Average	12	2,804	4	1,434	65	8,679	253	(^h)	13,252	26	59	34	119
2014 Average	12	2,928	5	1,470	67	8,778	195	(^h)	13,455	39	57	41	137
2015 Average	11	2,974	7	1,548	74	^g 8,835	202	(^h)	13,651	33	54	41	128
2016 Average	11	2,944	8	1,614	70	8,973	271	(^h)	13,891	26	57	31	113
2017 Average	11	2,976	9	1,682	64	8,988	290	(^h)	14,019	26	47	29	101
2018 Average	12	3,118	9	1,707	62	8,984	263	(^h)	14,156	38	49	34	121
2019 Average	13	3,127	9	1,743	59	8,965	231	(^h)	14,146	26	36	26	88
2020 Average	11	2,935	6	1,076	52	7,703	170	(^h)	11,953	21	42	23	86
2021 January	11	2,677	7	1,131	59	7,420	202	84	11,591	23	46	27	96
February	5	2,715	7	1,087	56	7,516	206	122	11,714	68	49	31	148
March	9	2,904	7	1,150	50	8,217	240	130	12,707	22	42	21	85
April	15	3,047	7	1,292	55	8,492	108	132	13,148	25	29	20	74
May	9	3,061	7	1,292	55	8,724	225	143	13,515	24	35	21	80
June	17	3,157	7	1,426	58	8,994	300	129	14,088	27	32	24	84
July	11	3,113	7	1,501	56	8,932	304	123	14,047	23	45	24	92
August	15	3,247	7	1,563	50	8,821	287	144	14,136	28	49	35	112
September	14	3,125	7	1,485	48	8,581	290	109	13,658	23	43	29	94
October	12	3,060	7	1,467	53	8,672	308	164	13,743	24	42	24	89
November	10	3,026	7	1,507	57	8,666	360	158	13,791	27	54	23	103
December	11	2,846	7	1,517	49	8,530	379	155	13,496	30	40	23	93
Average	12	2,999	7	1,370	54	8,469	268	133	13,312	28	42	25	95
2022 January	7	2,751	7	1,418	64	7,745	223	125	12,341	84	36	71	190
February	13	2,877	7	1,418	58	8,310	288	141	13,113	32	43	27	102
March	14	2,981	7	1,520	71	8,651	332	153	13,730	27	34	24	84
April	11	3,058	7	1,547	63	8,453	228	163	13,530	22	35	20	76
May	9	3,082	7	1,591	58	8,761	290	156	13,954	26	44	22	92
June	17	3,228	7	1,686	48	8,718	288	200	14,192	28	45	22	95
July	9	3,148	7	1,603	24	8,465	278	165	13,699	29	32	26	87
August	18	3,259	7	1,654	69	8,757	342	183	14,290	29	37	25	91
September	11	3,184	7	1,534	50	8,499	424	170	13,881	25	43	30	98
October	12	3,174	7	1,558	66	8,461	240	198	13,716	24	39	30	93
November	13	3,021	7	1,584	55	8,480	323	190	13,674	25	41	27	93
December	11	2,773	7	1,593	54	8,258	208	187	13,090	144	49	56	249
Average	12	3,045	7	1,560	57	8,464	289	169	13,602	41	40	32	113
2023 January	6	2,681	7	1,510	60	7,957	243	209	12,672	26	26	26	79
February	11	2,737	7	1,520	58	8,372	315	209	13,229	27	26	38	92
March	12	2,949	7	1,606	29	8,653	213	237	13,707	25	22	26	73
April	9	3,026	7	1,615	43	8,642	144	235	13,721	24	18	25	67
May	14	3,104	7	1,673	50	8,747	192	311	14,098	26	21	25	72
June	14	3,193	7	1,735	49	8,914	229	299	14,439	24	24	25	74
July	15	3,121	7	1,770	48	8,659	225	257	14,101	22	40	29	91
7-Month Average	12	2,975	7	1,634	48	8,564	222	252	13,713	25	25	28	78
2022 7-Month Average	11	3,019	7	1,541	55	8,444	275	158	13,511	35	38	30	104
2021 7-Month Average	11	2,955	7	1,270	55	8,335	227	123	12,985	30	40	24	93

^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 3.7b.)

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

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

^h Biofuels (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 biofuels (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 petroleum consumption by all sectors, see petroleum products supplied data in Table 3.5. Petroleum products supplied is an approximation of petroleum consumption and is synonymous with the term "petroleum consumption" in Tables 3.7a–3.8c. Other measurements of consumption by fuel type or sector may differ. For example, jet fuel product supplied may not equal jet fuel consumed by U.S.-flagged aircraft. See Note 1, "Petroleum Products Supplied and Petroleum Consumption," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

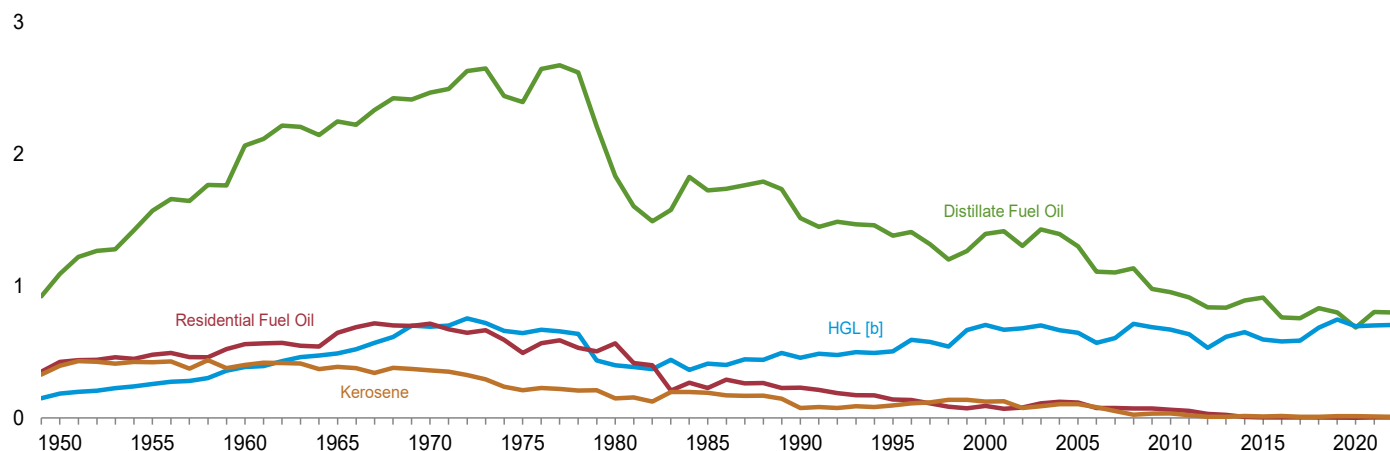
Sources: See end of section.

Due to the suspension of Form EIA-782A, Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report, sectoral distillate and residual fuel oil consumption after April 2022 are estimates.

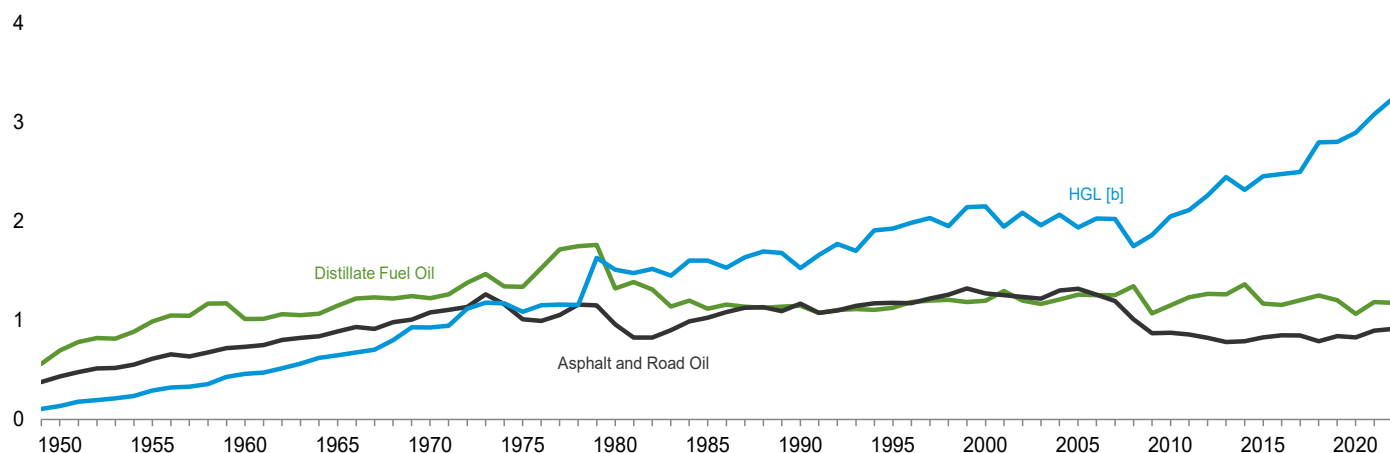
Figure 3.8a Heat Content of Petroleum Consumption by End-Use Sector, 1949-2022

(Quadrillion Btu)

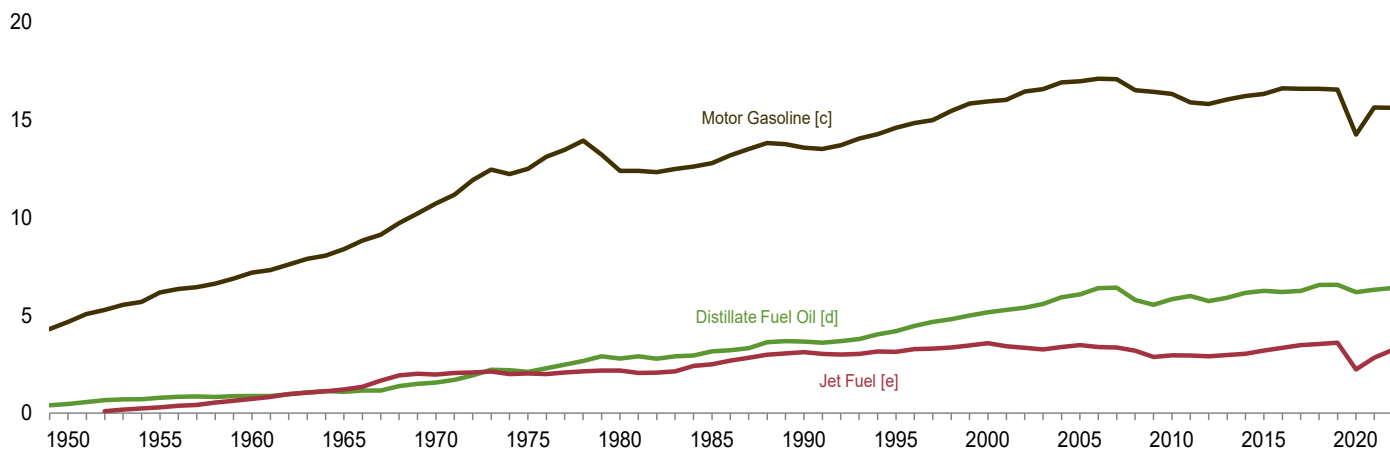
Residential and Commercial [a] Sectors, Selected Products



Industrial [a] Sector, Selected Products



Transportation Sector, Selected Products



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

[b] Hydrocarbon gas liquids.

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

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

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

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

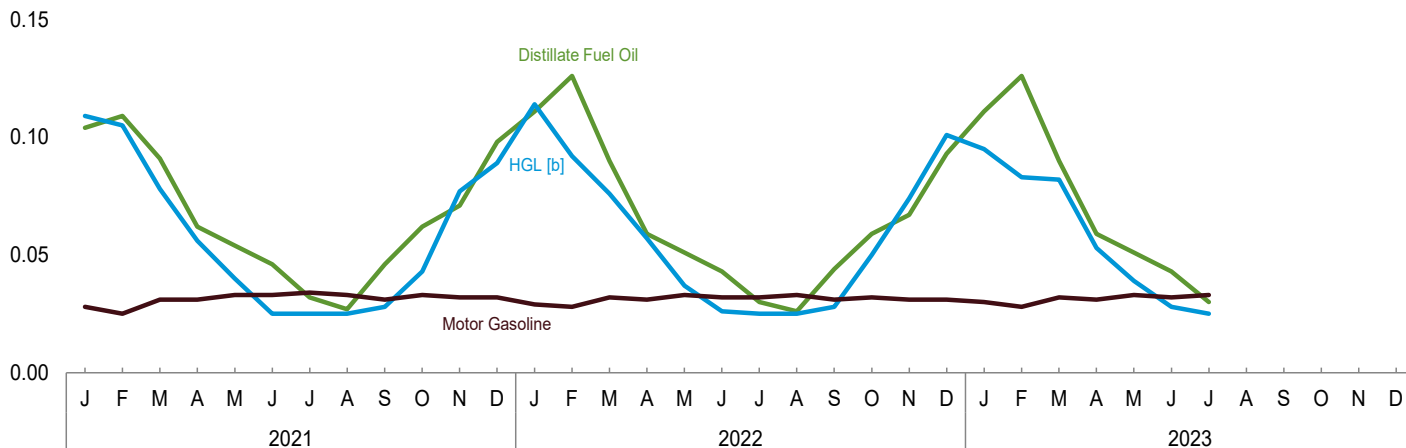
Web Page: <http://www.eia.gov/totalenergy/data/monthly/#petroleum>.

Sources: Tables 3.8a–3.8c.

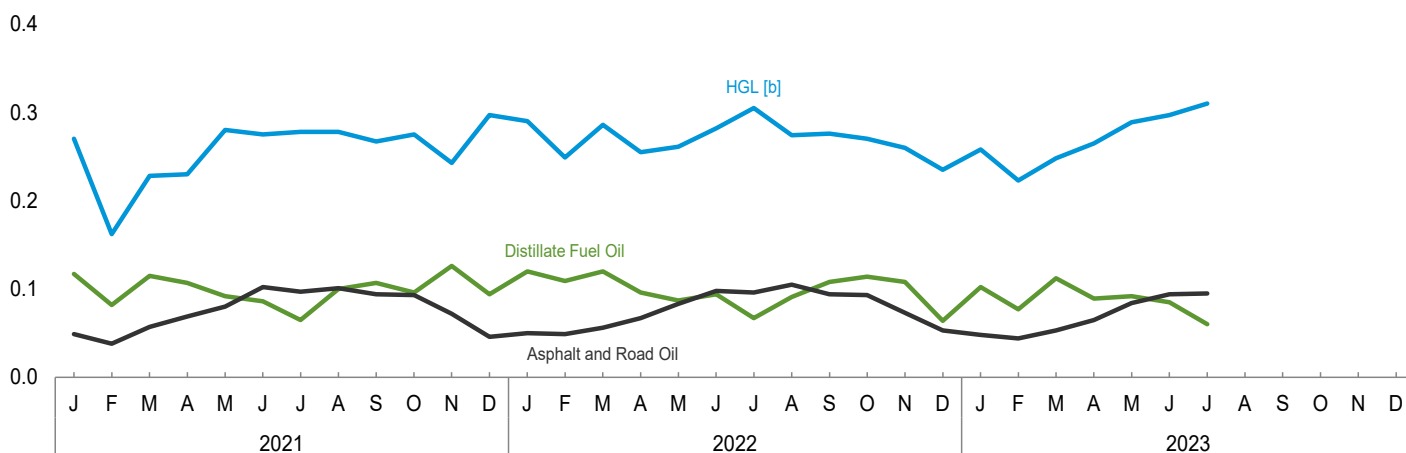
Figure 3.8b Heat Content of Petroleum Consumption by End-Use Sector, Monthly

(Quadrillion Btu)

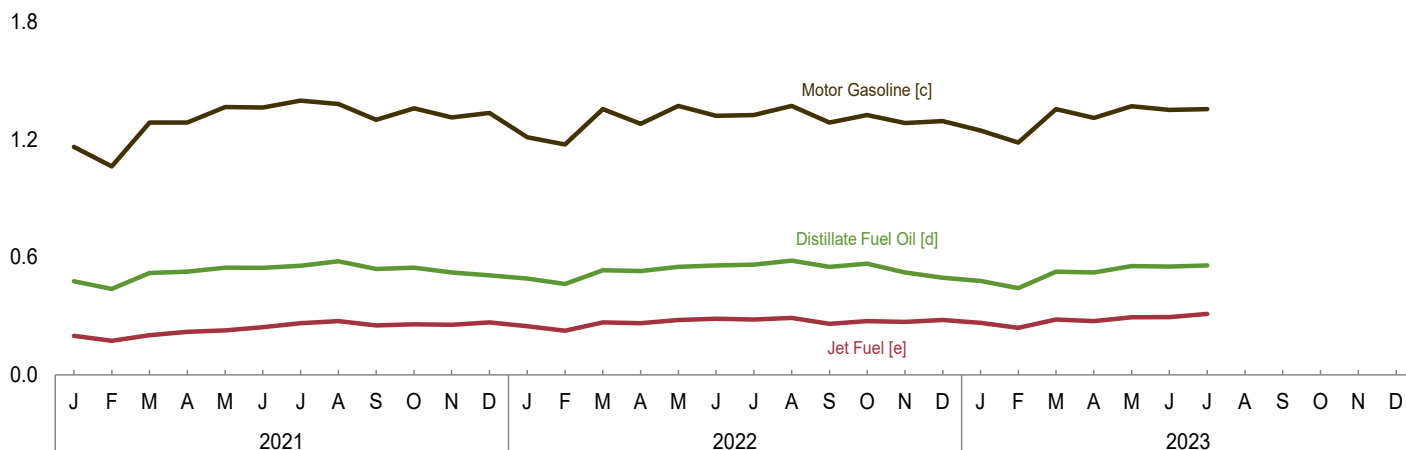
Residential and Commercial [a] Sectors, Selected Products



Industrial [a] Sector, Selected Products



Transportation Sector, Selected Products



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

[b] Hydrocarbon gas liquids.

[c] Includes fuel ethanol blended into motor gasoline.

[d] Includes biodiesel and renewable diesel fuel 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 Total	471	563	11	1,045	327	182	2	369	(s)	2	883
2020 Total	408	495	11	914	276	201	2	371	(s)	2	853
2021 January	62	79	1	141	43	30	(s)	28	0	(s)	101
February	65	77	4	145	45	29	1	25	(s)	(s)	100
March	54	55	(s)	109	37	23	(s)	31	(s)	(s)	91
April	37	39	1	76	25	17	(s)	31	0	(s)	74
May	32	26	(s)	58	22	14	(s)	33	0	(s)	69
June	27	15	(s)	42	19	10	(s)	33	0	(s)	62
July	19	15	(s)	34	13	10	(s)	34	0	(s)	57
August	16	15	(s)	31	11	10	(s)	33	0	(s)	55
September	27	17	(s)	45	19	11	(s)	31	0	(s)	61
October	37	29	2	67	26	15	(s)	33	(s)	(s)	73
November	42	55	1	97	29	22	(s)	32	(s)	(s)	83
December	58	64	(s)	122	40	25	(s)	32	(s)	(s)	98
Total	474	484	9	967	328	217	1	375	(s)	3	925
2022 January	66	83	4	153	46	31	1	29	(s)	(s)	107
February	74	66	(s)	141	51	26	(s)	28	(s)	1	106
March	53	54	(s)	107	37	22	(s)	32	(s)	(s)	92
April	35	^R 40	(s)	75	24	18	(s)	31	(s)	(s)	73
May	30	24	1	54	21	13	(s)	33	(s)	(s)	67
June	25	16	(s)	42	18	10	(s)	32	(s)	(s)	60
July	18	15	(s)	33	12	10	(s)	32	(s)	(s)	55
August	15	15	(s)	30	11	10	(s)	33	0	(s)	54
September	26	17	(s)	43	18	11	(s)	31	(s)	(s)	60
October	35	34	(s)	69	24	16	(s)	32	0	(s)	72
November	40	52	1	93	27	22	(s)	31	(s)	(s)	80
December	55	73	1	128	38	28	(s)	31	(s)	(s)	98
Total	471	487	8	966	326	218	1	374	(s)	3	924
2023 January	66	68	5	139	46	27	1	30	(s)	(s)	103
February	74	59	2	136	51	24	(s)	28	(s)	1	104
March	53	58	(s)	112	37	24	(s)	32	(s)	(s)	94
April	35	36	1	72	24	17	(s)	31	0	(s)	73
May	30	25	2	57	21	14	(s)	33	0	(s)	68
June	25	17	1	43	18	11	(s)	32	0	(s)	61
July	18	15	2	34	12	10	(s)	33	0	(s)	55
7-Month Total	301	279	13	594	209	126	2	220	(s)	2	558
2022 7-Month Total	301	296	6	603	209	131	1	217	(s)	2	560
2021 7-Month Total	294	305	6	605	204	133	1	214	(s)	2	554

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

^b Hydrocarbon gas liquids.

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

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

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

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

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

Sources: See end of section.

Due to the suspension of Form EIA-782A, *Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report*, sectoral distillate and residual fuel oil consumption after April 2022 are estimates.

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

	Industrial Sector ^a												
	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	Total
			Propane/Propylene			Total ^c							
			Pro-pane	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	9,464
1985 Total	1,029	1,119	696	101	798	1,813	44	166	218	575	748	1,945	7,656
1990 Total	1,170	1,150	660	147	807	1,781	12	186	185	714	411	2,589	8,200
1995 Total	1,178	1,130	794	220	1,014	2,269	15	178	200	721	337	2,499	8,527
2000 Total	1,276	1,199	703	315	1,017	2,498	16	190	150	796	241	2,636	9,001
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	520	428	947	2,207	7	136	260	694	120	2,645	8,099
2011 Total	859	1,236	554	434	988	2,172	4	127	254	663	135	2,621	8,071
2012 Total	827	1,271	677	432	1,109	2,351	2	118	252	717	70	2,474	8,082
2013 Total	783	1,266	737	429	1,165	2,545	1	125	263	663	48	2,583	8,278
2014 Total	793	1,366	562	417	978	2,409	3	131	210	653	41	2,430	8,035
2015 Total	832	1,170	609	413	1,022	2,618	2	142	^e 258	663	34	2,435	8,153
2016 Total	853	1,157	579	423	1,002	2,592	2	135	262	653	52	2,553	8,261
2017 Total	849	1,205	527	432	959	2,673	1	125	264	610	50	2,667	8,446
2018 Total	793	1,254	550	436	985	3,024	2	122	269	629	43	2,630	8,766
2019 Total	844	1,206	459	418	877	3,139	1	118	267	602	41	2,585	8,803
2020 Total	832	1,068	454	390	843	3,252	3	111	269	495	32	2,433	8,495
2021 January	49	117	42	38	80	323	(s)	11	20	43	3	187	752
February	38	82	12	29	41	185	1	9	18	18	3	155	509
March	57	115	35	33	69	260	(s)	9	22	41	3	205	712
April	69	107	14	36	50	265	(s)	10	22	33	2	246	753
May	80	92	36	40	76	309	(s)	10	23	59	3	209	786
June	102	86	41	37	78	314	(s)	10	23	51	4	191	781
July	97	65	49	37	86	319	(s)	10	24	35	4	202	756
August	101	100	46	37	83	327	(s)	9	23	56	4	191	811
September	94	107	53	33	86	306	(s)	8	22	43	4	190	775
October	93	96	54	33	87	306	(s)	10	23	38	5	216	786
November	72	126	23	36	59	277	(s)	10	22	40	5	177	729
December	46	94	46	38	84	328	(s)	9	23	57	5	191	753
Total	898	1,186	451	427	878	3,519	1	113	264	515	46	2,360	8,904
2022 January	50	120	39	35	75	290	1	12	21	39	2	176	710
February	49	109	41	31	72	249	(s)	9	20	32	2	158	629
March	56	120	35	36	72	286	(s)	13	23	42	2	184	724
April	67	96	20	35	55	255	(s)	11	22	38	1	183	673
May	83	87	27	35	62	261	(s)	10	23	30	1	191	685
June	98	94	38	32	70	282	(s)	8	22	35	1	186	728
July	96	67	47	34	82	305	(s)	4	22	65	1	199	761
August	105	91	41	33	74	274	(s)	12	23	48	2	196	751
September	94	108	57	30	87	276	(s)	9	22	43	2	182	736
October	93	114	40	28	67	270	(s)	12	22	30	1	185	727
November	73	108	39	28	^R 67	260	(s)	10	22	49	1	176	700
December	53	64	29	28	58	235	(s)	10	22	35	1	180	599
Total	916	1,179	454	386	840	3,242	1	120	264	486	18	2,196	8,423
2023 January	48	102	35	31	66	258	1	11	21	19	1	181	642
February	44	77	29	26	55	223	(s)	9	20	35	1	155	565
March	53	112	13	30	43	248	(s)	5	23	53	1	176	671
April	65	89	26	31	57	265	(s)	7	22	54	1	187	691
May	84	92	22	33	55	289	(s)	9	23	39	1	196	733
June	94	85	44	31	75	297	(s)	8	23	30	1	183	722
July	95	60	42	32	73	310	(s)	9	23	19	1	199	716
7-Month Total	483	617	211	214	425	1,889	2	59	155	250	8	1,277	4,740
2022 7-Month Total	498	694	248	240	487	1,928	1	67	153	282	10	1,276	4,910
2021 7-Month Total	492	664	229	250	479	1,976	1	68	151	280	23	1,395	5,050

^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, and refinery olefins (ethylene, propylene, butylene, and isobutylene). Through 1983, also includes plant condensate and unfractionated stream. Through 2021, also includes natural gasoline (pentanes plus).

^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 (through 2021), 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.

Due to the suspension of Form EIA-782A, *Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report*, sectoral distillate and residual fuel oil consumption after April 2022 are estimates.

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

	Transportation Sector									Electric Power Sector ^a			
	Avia- tion Gasoline	Distil- late Fuel Oil ^c	HGL ^b	Jet Fuel ^e	Lubri- cants	Motor Gasoline ^{f,g}	Resid- ual Fuel Oil	Other ^h	Total	Distil- late Fuel Oil ⁱ	Petrol- eum Coke	Resid- ual Fuel Oil	Total
			Pro- pane ^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	25	2,963	155	16,320	892	(^h)	26,187	80	137	154	370
2011 Total	27	5,997	5	2,950	148	15,877	776	(^h)	25,780	64	138	93	295
2012 Total	25	5,736	5	2,901	135	15,795	671	(^h)	25,268	52	85	77	214
2013 Total	22	5,894	6	2,969	143	16,030	581	(^h)	25,645	55	123	77	255
2014 Total	22	6,154	8	3,042	149	16,209	447	(^h)	26,030	82	118	95	295
2015 Total	21	6,251	10	3,204	163	16,308	463	(^h)	26,420	70	112	94	276
2016 Total	20	6,197	12	3,350	154	16,601	623	(^h)	26,958	55	118	71	244
2017 Total	21	6,248	12	3,481	142	16,576	665	(^h)	27,146	55	97	66	218
2018 Total	22	6,550	13	3,533	137	16,573	604	(^h)	27,432	81	101	78	260
2019 Total	23	6,567	12	3,608	131	16,531	529	(^h)	27,402	54	76	59	189
2020 Total	20	6,179	9	2,234	116	14,243	391	(^h)	23,191	44	87	53	184
2021 January	2	478	1	199	11	1,162	39	14	1,906	4	8	5	18
February	1	438	1	173	10	1,063	36	18	1,739	11	8	5	24
March	1	519	1	202	9	1,286	47	22	2,087	4	7	4	15
April	2	527	1	220	10	1,287	20	22	2,088	4	5	4	13
May	1	547	1	227	10	1,366	44	24	2,220	4	6	4	15
June	3	546	1	243	11	1,363	57	21	2,242	5	6	4	15
July	2	556	1	264	11	1,398	59	21	2,311	4	8	5	17
August	2	580	1	275	9	1,381	56	24	2,329	5	9	7	21
September	2	540	1	253	9	1,300	55	18	2,177	4	7	5	17
October	2	547	1	258	10	1,358	60	28	2,262	4	7	5	16
November	2	523	1	256	10	1,313	68	26	2,199	5	9	4	18
December	2	508	1	267	9	1,335	74	26	2,222	5	7	4	17
Total	22	6,309	10	2,835	119	15,611	615	263	25,783	60	88	57	205
2022 January	1	491	1	249	12	1,212	44	21	2,032	15	6	14	35
February	2	464	1	225	10	1,175	51	21	1,949	5	7	5	17
March	2	533	1	267	13	1,354	65	26	2,261	5	6	5	15
April	2	529	1	263	11	1,280	43	27	2,156	4	6	4	13
May	1	551	1	280	11	1,371	57	26	2,297	5	8	4	17
June	3	558	1	287	9	1,321	54	33	2,265	5	8	4	17
July	1	562	1	282	4	1,325	54	28	2,258	5	6	5	16
August	3	582	1	291	13	1,371	67	31	2,358	5	7	5	17
September	2	551	1	261	9	1,287	80	28	2,218	4	7	6	17
October	2	567	1	274	13	1,324	47	33	2,261	4	7	6	17
November	2	522	1	270	10	1,284	61	31	2,181	4	7	5	16
December	2	495	1	280	10	1,293	41	31	2,153	26	9	11	45
Total	22	6,406	10	3,228	125	15,597	662	336	26,387	87	83	73	243
2023 January	1	479	1	265	11	1,245	47	35	2,085	5	5	5	14
February	1	442	1	241	10	1,184	55	32	1,966	4	4	7	15
March	2	527	1	282	5	1,354	41	40	2,253	4	4	5	13
April	1	523	1	275	8	1,309	27	38	2,182	4	3	5	12
May	2	555	1	294	9	1,369	37	53	2,320	5	4	5	13
June	2	552	1	295	9	1,350	43	49	2,301	4	4	5	13
July	2	558	1	311	9	1,355	44	43	2,323	4	7	6	17
7-Month Total	12	3,634	6	1,964	62	9,167	296	290	15,431	30	31	37	98
2022 7-Month Total	12	3,688	6	1,853	71	9,038	367	182	15,217	43	46	40	130
2021 7-Month Total	12	3,610	6	1,527	71	8,924	302	142	14,594	37	48	32	116

^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 Biofuels (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 biofuels (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.

Due to the suspension of Form EIA-782A, Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report, sectoral distillate and residual fuel oil consumption after April 2022 are estimates.

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 1.12a and 1.12b). In general, except for crude oil, product supplied of each product is computed as follows: field production, plus transfers to crude oil supply, plus biofuels 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, and unpublished revisions; 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.)

1981–2022: 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.)

2023: 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.)

1981–2022: 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.)

2023: EIA, *Petroleum Supply Monthly*, monthly reports, and unpublished revisions; 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 (through 2021), 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). 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). Total HGL product supplied is equal to the data in trillion Btu for LPG.

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.

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.

Other Products

Prior to the current two months, product supplied data in thousand barrels per day for "other" products are from the PSA, PSM, and earlier publications (see sources for Table 3.5). "Other" 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 biofuels 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" products supplied is the sum of the data in trillion Btu for the individual products.

For the current two months, total "Other" 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.

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.

1981–2022: EIA, *Petroleum Supply Annual* (PSA), annual reports, and unpublished revisions.

2023: EIA, *Petroleum Supply Monthly* (PSM), monthly reports, and unpublished revisions.

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.

Biofuels Excluding Fuel Ethanol

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

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. Through 2020, 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), annual reports.

1973–1978: 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 (including farm) portion is added to sales for oil company, off-highway diesel, and all other uses. The transportation sector sales total is the sum of sales for railroad, vessel bunkering, on-highway diesel, and military uses.

1979–2020: The residential sector and commercial sector sales totals are directly from the Sales reports. The industrial sector sales total is the sum of sales for industrial, farm, oil company, off-highway diesel, and all other uses. The transportation sector sales total is the sum of sales for railroad, vessel bunkering, on-highway diesel, and military uses.

2021 forward: 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 consumption as reported in EIA's State Energy Data System (SEDS). Shares for the current year are based on the most recent data year in SEDS.

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. (Note that beginning in May 2022, residential sector and commercial sector consumption estimates for each month are based on the previous year's monthly percent increase in No. 2 heating oil sales.)

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 1.10. 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 1.10. 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

Through 2020, 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), annual reports.

1973–1978: Each year's sales category called "heating" is allocated to the residential, commercial, and industrial (including farm) sectors in proportion to the 1979 shares; and this estimated industrial (including farm) portion is added to sales for all other uses.

1979–2020: The residential sector and commercial sector sales totals are directly from the Sales reports. The industrial sector sales total is the sum of sales for industrial, farm, and all other uses.

2021 forward: Kerosene product supplied is allocated to the individual end-use sectors (residential, commercial, and industrial) in proportion to each sector's share of consumption as reported in EIA's State Energy Data System (SEDS). Shares for the current year are based on the most recent data year in SEDS.

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. Through 2020, 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), annual reports.

1973–1978: 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 this estimated industrial portion is added to sales for oil company and all other uses. Transportation sector sales are the sum of sales for railroad, vessel bunkering, and military uses.

1979–2020: Commercial sector sales are directly from the Sales reports. Industrial sector sales are the sum of sales for industrial, oil company, and all other uses. Transportation sector sales are the sum of sales for railroad, vessel bunkering, and military uses.

2021 forward: 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 consumption as reported in EIA's State Energy Data System (SEDS). Shares for the current year are based on the most recent data year in SEDS.

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. (Note that beginning in May 2022, commercial sector consumption estimates for each month are based on the previous year's monthly percent increase in No. 2 heating oil sales.)

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 Products

Consumption of biofuels excluding fuel ethanol is assigned to the transportation sector. Consumption of all remaining 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.

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.

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.

Other Products

Industrial sector "Other" data are equal to the "Other" data in Table 3.6 minus transportation sector "Other" (biofuels excluding fuel ethanol) data (see sources for Table 3.8c).

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.

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.

Other Products

Beginning in 2021, transportation sector consumption data in thousand barrels per day for biofuels excluding fuel ethanol are from Table 3.7c, and 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.

Total Petroleum

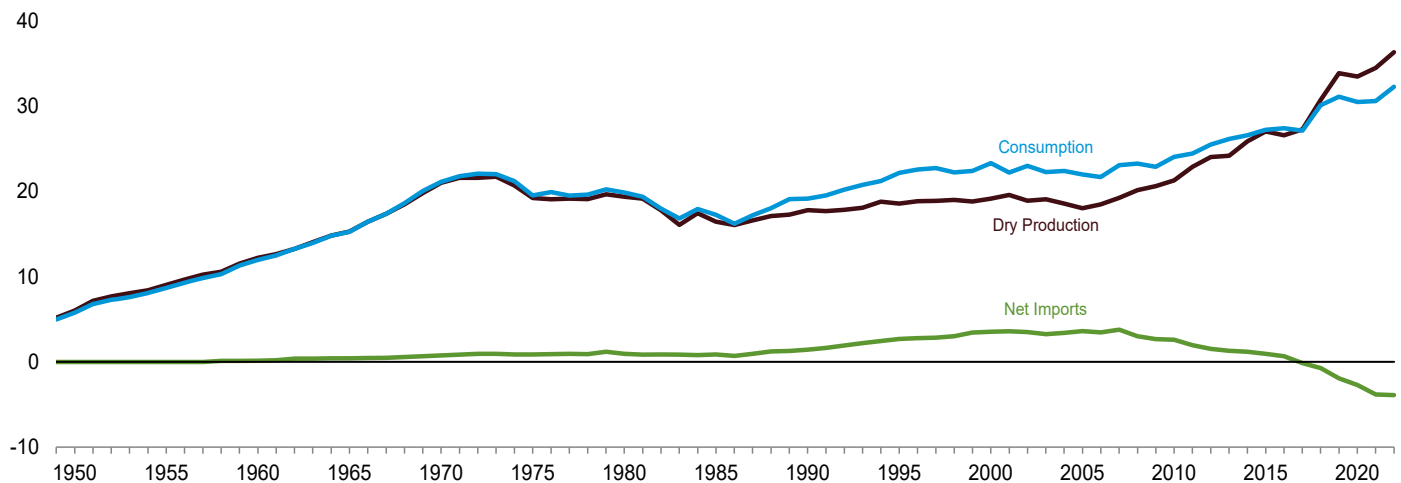
Transportation sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under "Transportation Sector" in Table 3.8c. Electric power sector total petroleum consumption is the sum of the data in trillion Btu for the petroleum products shown under "Electric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

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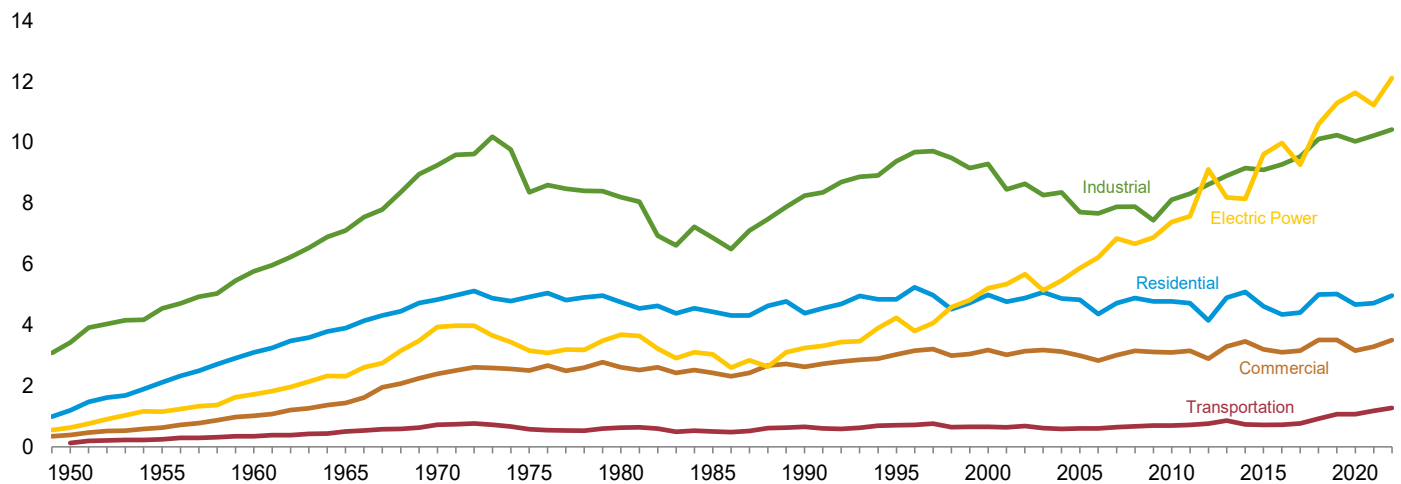
4. Natural Gas

Figure 4.1 Natural Gas
(Trillion Cubic Feet)

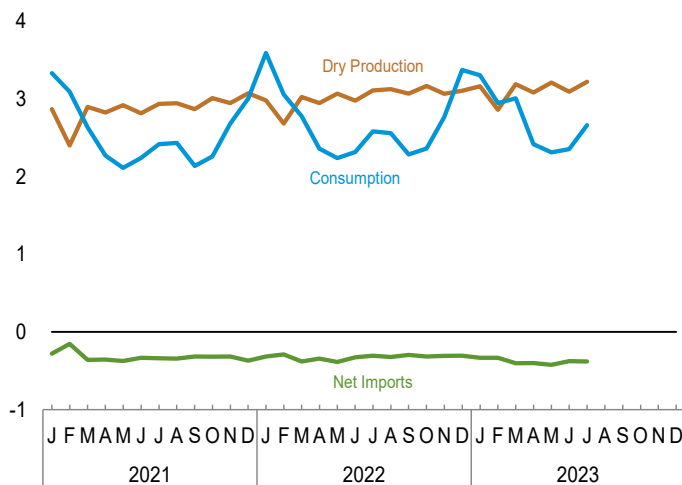
Overview, 1949–2022



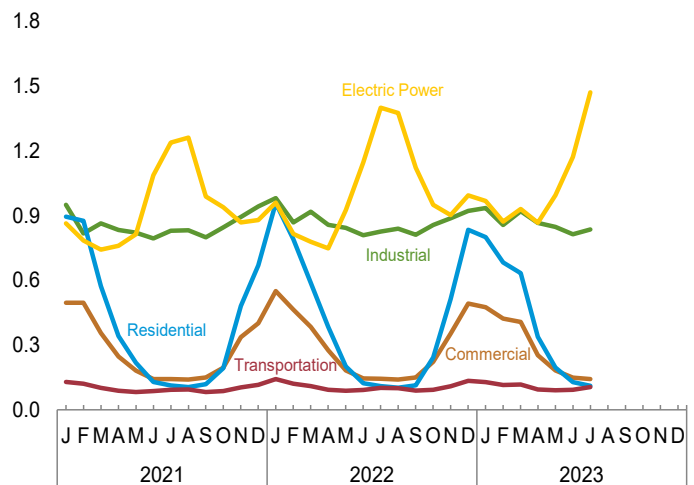
Consumption by Sector, 1949–2022



Overview, Monthly



Consumption by Sector, Monthly



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

Table 4.1 Natural Gas Overview
(Billion Cubic Feet)

	Gross Withdrawals ^a	Marketed Production (Wet) ^b	NGPL Production ^c	Dry Gas Production ^d	Supplemental Gaseous Fuels ^e	Trade			Net Storage Withdrawals ^f	Balancing Item ^g	Consumption ^h
						Imports	Exports	Net Imports			
1950 Total	8,480	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	12,771	543	12,228	NA	156	11	144	-132	-274	11,967
1965 Total	17,963	16,040	753	15,286	NA	456	26	430	-118	-319	15,280
1970 Total	23,786	21,921	906	21,014	NA	821	70	751	-398	-228	21,139
1975 Total	21,104	20,109	872	19,236	NA	953	73	880	-344	-235	19,538
1980 Total	21,870	20,180	777	19,403	155	985	49	936	23	-640	19,877
1985 Total	19,607	17,270	816	16,454	126	950	55	894	235	-428	17,281
1990 Total	21,523	18,594	784	17,810	123	1,532	86	1,447	-513	307	19,174
1995 Total	23,744	19,506	908	18,599	110	2,841	154	2,687	415	396	22,207
2000 Total	24,174	20,198	1,016	19,182	90	3,782	244	3,538	829	-306	23,333
2005 Total	23,457	18,927	876	18,051	64	4,341	729	3,612	52	236	22,014
2006 Total	23,535	19,410	906	18,504	66	4,186	724	3,462	-436	103	21,699
2007 Total	24,664	20,196	930	19,266	63	4,608	822	3,785	192	-203	23,104
2008 Total	25,636	21,112	953	20,159	61	3,984	963	3,021	34	2	23,277
2009 Total	26,057	21,648	1,024	20,624	65	3,751	1,072	2,679	-355	-103	22,910
2010 Total	26,816	22,382	1,066	21,316	65	3,741	1,137	2,604	-13	115	24,087
2011 Total	28,479	24,036	1,134	22,902	60	3,469	1,506	1,963	-354	-94	24,477
2012 Total	29,542	25,283	1,250	24,033	61	3,138	1,619	1,519	-9	-66	25,538
2013 Total	29,523	25,562	1,357	24,206	55	2,883	1,572	1,311	546	38	26,155
2014 Total	31,405	27,498	1,608	25,890	60	2,695	1,514	1,181	-254	-283	26,593
2015 Total	32,915	28,772	1,707	27,065	59	2,718	1,784	935	-547	-268	27,244
2016 Total	32,592	28,400	1,808	26,592	57	3,006	2,335	671	340	-216	27,444
2017 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	-290	30,149
2019 Total	40,780	36,447	2,548	33,899	61	2,742	4,658	-1,916	-503	-397	31,143
2020 Total	R 40,730	R 36,521	2,710	R 33,811	63	2,551	5,285	-2,734	-180	R -387	R 30,574
2021 January	R 3,504	R 3,106	R 234	R 2,872	R 5	284	564	-279	719	R 18	R 3,335
February	R 2,939	R 2,597	R 195	R 2,402	5	272	424	-152	795	R 46	R 3,096
March	R 3,510	R 3,136	R 236	R 2,900	6	239	595	-357	64	R 27	R 2,640
April	R 3,428	R 3,059	R 230	R 2,829	5	208	564	-356	-180	R -27	R 2,272
May	R 3,525	R 3,158	R 238	R 2,921	6	205	578	-373	R -423	R -13	R 2,116
June	R 3,390	R 3,045	R 229	R 2,816	5	208	539	-331	-254	R 6	R 2,242
July	R 3,509	R 3,177	R 239	R 2,938	6	228	566	-338	-175	R -12	R 2,418
August	R 3,535	R 3,186	R 240	R 2,946	6	221	564	-343	-164	R -9	2,436
September	R 3,441	R 3,104	R 233	R 2,871	5	220	536	-315	-398	R -25	R 2,138
October	R 3,613	R 3,258	R 245	R 3,013	6	228	545	-317	-368	R -75	R 2,259
November	R 3,564	R 3,189	R 240	R 2,949	6	242	557	-315	137	R -92	R 2,685
December	R 3,720	R 3,323	R 250	R 3,073	6	253	621	-368	330	R -33	R 3,008
Total	R 41,677	R 37,338	R 2,809	R 34,529	66	2,808	6,653	-3,845	R 83	R -188	R 30,646
2022 January	R 3,628	R 3,235	R 252	R 2,983	R 6	296	611	-315	R 1,013	R -95	R 3,593
February	R 3,266	R 2,914	R 227	R 2,687	R 5	258	546	-288	R 673	R -17	R 3,059
March	R 3,663	R 3,282	R 256	R 3,026	6	259	639	-380	R 171	R -43	2,781
April	R 3,568	R 3,199	R 250	R 2,950	6	245	587	-342	R -220	R -33	R 2,360
May	R 3,695	R 3,332	R 260	R 3,072	6	231	617	-386	R -412	R -39	R 2,241
June	R 3,565	R 3,232	R 252	R 2,980	R 6	229	554	-325	R -332	R -13	R 2,317
July	R 3,736	R 3,375	R 263	R 3,112	6	257	560	-303	R -187	R -46	2,583
August	R 3,730	R 3,392	R 265	R 3,128	6	236	558	-322	R -213	R -39	R 2,559
September	R 3,669	R 3,330	R 260	R 3,071	R 6	234	526	-293	R -446	R -50	R 2,288
October	R 3,814	R 3,438	R 268	R 3,170	R 6	240	554	-315	R -432	R -66	R 2,364
November	R 3,712	R 3,327	R 259	R 3,067	R 6	246	554	-308	R 78	R -77	R 2,767
December	R 3,755	R 3,370	R 263	R 3,107	R 6	293	597	-304	R 588	R -21	R 3,376
Total	R 43,802	R 39,428	R 3,075	R 36,353	R 73	3,024	6,904	-3,880	R 281	R -539	R 32,288
2023 January	E 3,820	RE 3,429	264	RE 3,165	R 7	275	608	-333	455	R 12	R 3,307
February	E 3,456	RE 3,103	242	RE 2,860	R 6	244	574	-330	399	R 14	R 2,949
March	E 3,858	RE 3,475	281	RE 3,194	6	250	650	-401	224	R -14	R 3,009
April	E 3,729	RE 3,362	279	RE 3,083	5	220	621	-400	-268	R (s)	R 2,420
May	RE 3,869	RE 3,500	287	RE 3,212	R 6	216	R 638	R -422	R -452	R -30	2,315
June	RE 3,722	RE 3,378	284	RE 3,094	4	232	607	-375	-342	R -25	R 2,356
July	E 3,845	E 3,509	288	E 3,222	6	256	634	-378	-133	-52	2,665
7-Month Total	E 26,300	E 23,755	1,925	E 21,831	41	1,693	4,332	-2,639	-117	-95	19,020
2022 7-Month Total	25,122	22,571	1,760	20,810	42	1,776	4,114	-2,338	706	-285	18,934
2021 7-Month Total	23,804	21,277	1,601	19,677	38	1,644	3,831	-2,187	546	45	18,119

^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" on

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

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

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

Sources: • **Imports and Exports:** 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*, September 2023, 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 Total	0	0	2,687	0	2	3	0	0	0	47	0	0	3	2,742
2020 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	(s)	228
August	0	0	221	0	(s)	0	0	0	0	0	0	0	0	221
September	0	0	219	0	(s)	0	0	0	0	1	0	0	0	220
October	0	0	228	0	(s)	0	0	0	0	0	0	0	0	228
November	0	0	241	0	(s)	0	0	0	0	2	0	0	(s)	242
December	0	0	251	0	(s)	0	0	0	0	2	0	0	(s)	253
Total	0	0	2,785	0	2	0	0	0	0	21	0	0	(s)	2,808
2022 January	0	0	290	0	(s)	0	0	0	0	6	0	0	(s)	296
February	0	0	253	0	(s)	0	0	0	0	4	0	0	(s)	258
March	0	0	257	0	(s)	0	0	0	0	3	0	0	(s)	259
April	0	0	245	0	(s)	0	0	0	0	0	0	0	(s)	245
May	0	0	230	0	(s)	0	0	0	0	(s)	0	0	(s)	231
June	0	0	229	0	(s)	0	0	0	0	0	0	0	(s)	229
July	0	0	254	0	(s)	0	0	0	0	3	0	0	0	257
August	0	0	233	0	(s)	0	0	0	0	3	0	0	(s)	236
September	0	0	234	0	(s)	0	0	0	0	0	0	0	(s)	234
October	0	0	239	0	(s)	0	0	0	0	0	0	0	0	240
November	0	0	245	0	(s)	0	0	0	0	1	0	0	0	246
December	0	0	290	0	(s)	0	0	0	0	3	0	0	0	293
Total	0	0	3,000	0	1	0	0	0	0	24	0	0	(s)	3,024
2023 January	0	0	272	0	(s)	0	0	0	0	1	0	0	1	275
February	0	0	239	0	1	0	0	0	0	4	0	0	(s)	244
March	0	0	248	0	(s)	0	0	0	0	1	0	0	(s)	250
April	0	0	220	0	(s)	0	0	0	0	0	0	0	(s)	220
May	0	0	215	0	(s)	0	0	0	0	1	0	0	(s)	216
June	0	0	232	0	(s)	0	0	0	0	0	0	0	(s)	232
July	0	0	255	0	(s)	0	0	0	0	1	0	0	0	256
7-Month Total	0	0	1,681	0	1	0	0	0	0	9	0	0	1	1,693
2022 7-Month Total	0	0	1,758	0	1	0	0	0	0	17	0	0	^R (s)	1,776
2021 7-Month Total	0	0	1,626	0	1	0	0	0	0	17	0	0	^R (s)	1,644

^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*, September 2023, 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 Total	54	973	90	7	118	91	201	2,010	270	167	31	119	527	4,658
2020 Total	112	904	81	214	90	124	288	2,026	317	200	124	160	644	5,285
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	50	36	14	29	183	22	23	0	14	97	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	194	50	23	0	0	75	564
September	38	72	8	49	7	24	10	179	31	31	24	3	59	536
October	41	62	6	42	9	11	38	186	34	36	19	3	58	545
November	11	85	3	50	10	15	34	166	31	23	47	31	52	557
December	24	109	3	17	34	3	24	167	38	33	38	60	70	621
Total	308	937	122	453	171	196	355	2,171	453	215	189	195	887	6,653
2022 January	17	82	3	0	50	7	22	176	22	49	45	60	78	611
February	11	75	0	3	40	7	10	155	27	39	44	25	110	546
March	2	105	3	8	64	10	18	170	19	59	17	57	107	639
April	3	80	4	10	56	14	13	177	14	40	7	40	129	587
May	15	79	10	0	47	7	24	186	18	40	7	11	172	617
June	4	70	0	7	38	11	22	186	25	30	8	3	151	554
July	5	70	7	1	53	14	18	190	34	34	0	4	129	560
August	11	75	0	10	34	10	20	183	36	26	0	21	132	558
September	0	62	3	10	58	11	7	169	20	21	5	51	108	526
October	3	73	0	23	42	7	11	172	39	26	10	46	102	554
November	0	90	0	17	51	10	24	161	14	26	31	77	51	554
December	0	99	0	7	38	14	21	159	25	34	18	69	113	597
Total	72	960	30	97	571	123	209	2,084	293	427	192	464	1,382	6,904
2023 January	0	105	3	18	34	7	18	169	25	14	36	63	116	608
February	0	96	0	3	39	14	14	152	23	32	13	72	116	574
March	1	106	7	5	29	10	20	180	11	38	12	70	160	650
April	4	76	0	3	53	15	14	169	25	14	14	76	159	621
May	4	78	6	7	52	7	28	193	11	12	0	32	207	638
June	9	75	4	20	46	14	R 28	204	17	12	0	0	178	607
July	0	77	8	39	21	20	40	209	16	34	0	0	169	634
7-Month Total	18	613	29	95	273	88	162	1,277	127	157	75	313	1,105	4,332
2022 7-Month Total	58	561	27	29	349	70	126	1,240	159	293	127	200	875	4,114
2021 7-Month Total	159	538	85	244	104	123	229	1,280	269	70	60	98	573	3,831

^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.

R=Revised. (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*, September 2023, 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											Total				
	Residential	Commercial ^a	Lease and Plant Fuel	Industrial			Total	Transportation			Electric Power Sector ^{f,g}					
				Other Industrial		Total		Pipelines ^d and Distribution ^e	Vehicle Fuel	Total						
				CHP ^b	Non-CHP ^c											
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	10,599	30,149				
2019 Total	5,019	3,515	1,823	1,374	7,042	8,417	10,240	1,018	53	1,071	11,299	31,143				
2020 Total	4,674	R 3,163	R 1,825	1,458	R 6,755	R 8,213	R 10,038	1,018	49	1,067	11,632	R 30,574				
2021 January	895	R 496	R 154	125	R 670	R 796	R 950	125	5	130	864	R 3,335				
February	876	R 496	R 129	102	R 588	R 690	R 818	R 117	4	121	785	R 3,096				
March	574	R 357	R 155	109	R 600	R 709	R 864	98	5	102	742	R 2,640				
April	342	R 247	R 152	107	R 575	R 682	R 833	83	4	R 88	761	R 2,272				
May	218	R 182	R 157	110	R 554	R 664	R 821	77	5	R 82	814	R 2,116				
June	130	R 143	R 151	116	R 528	R 644	R 795	82	4	R 87	1,087	R 2,242				
July	113	R 143	R 157	125	R 548	R 673	R 830	R 89	5	93	1,238	R 2,418				
August	106	R 141	R 158	122	R 552	R 674	R 832	R 90	5	94	1,262	2,436				
September	R 119	150	R 154	111	R 534	R 645	R 799	78	4	82	989	R 2,138				
October	193	R 195	R 162	114	R 570	R 684	R 845	82	5	87	939	R 2,259				
November	482	R 337	R 158	116	R 620	R 736	R 894	99	4	104	868	R 2,685				
December	669	R 401	R 165	122	R 656	R 778	R 943	112	5	116	879	R 3,008				
Total	R 4,717	R 3,289	R 1,851	1,379	R 6,995	R 8,375	R 10,225	R 1,131	54	R 1,186	11,229	R 30,646				
2022 January	R 958	R 551	R 154	125	R 701	R 826	R 981	R 137	R 6	R 143	961	R 3,593				
February	R 791	R 464	R 139	111	R 618	R 729	R 868	R 116	R 5	R 121	815	R 3,059				
March	R 588	R 385	R 157	118	R 642	R 761	R 918	R 105	R 6	R 110	779	R 2,781				
April	R 384	R 276	R 153	108	R 598	R 706	R 858	R 88	R 5	R 93	748	R 2,360				
May	201	183	R 159	108	R 575	R 684	R 843	83	R 6	R 89	925	R 2,241				
June	124	R 146	R 154	108	R 547	R 655	R 809	R 86	R 5	R 92	1,146	R 2,317				
July	110	R 144	R 161	114	R 551	R 665	R 826	R 97	R 6	R 102	1,400	2,583				
August	103	141	R 162	116	R 560	R 677	R 839	R 96	R 6	R 101	1,375	R 2,559				
September	114	150	R 159	108	R 545	R 653	R 812	R 85	R 5	R 90	1,122	R 2,288				
October	242	R 223	R 164	111	R 581	R 692	R 856	R 88	R 6	R 93	950	R 2,364				
November	R 513	R 353	R 159	115	R 615	R 729	R 888	R 104	R 5	R 109	903	R 2,767				
December	R 835	R 492	R 161	118	R 643	R 761	R 922	R 128	R 6	R 134	993	R 3,376				
Total	R 4,964	R 3,509	R 1,883	1,360	R 7,177	R 8,537	R 10,420	R 1,212	R 65	R 1,277	12,118	R 32,288				
2023 January	R 800	475	RE 164	122	R 649	R 772	R 935	E 124	E 5	RE 129	968	R 3,307				
February	R 683	423	RE 148	109	R 599	R 708	R 856	E 111	E 4	RE 115	872	R 2,949				
March	R 633	408	RE 166	118	R 638	R 755	R 921	E 113	E 5	RE 118	930	R 3,009				
April	R 338	253	RE 161	103	R 603	R 706	R 866	E 91	E 4	RE 95	867	R 2,420				
May	197	R 183	RE 167	109	R 572	R 681	R 848	E 87	E 5	RE 91	995	2,315				
June	R 128	R 149	RE 161	113	R 540	R 653	R 814	E 88	E 4	RE 93	1,172	R 2,356				
July	111	143	E 168	116	552	668	836	E 100	E 5	E 105	1,471	2,665				
7-Month Total	2,890	2,034	E 1,134	790	4,153	4,943	6,077	E 714	E 31	E 745	7,274	19,020				
2022 7-Month Total	3,157	2,149	1,078	792	4,233	5,025	6,103	712	38	750	6,775	18,934				
2021 7-Month Total	3,148	2,065	1,055	794	4,063	4,857	5,912	671	32	702	6,291	18,119				

^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)*, September 2023, 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*, September 2023, 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 Total	4,380	3,188	7,568	480	17.7	3,653	4,153	-500
2020 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	4,389	1,859	6,248	-222	-10.7	904	122	782
March	4,388	1,801	6,189	-228	-11.2	321	262	59
April	4,379	1,975	6,354	-357	-15.3	173	347	-174
May	4,381	2,390	6,771	-388	-14.0	76	492	-416
June	4,434	2,585	7,019	-548	-17.5	140	388	-248
July	4,434	2,755	7,189	-539	-16.4	171	341	-170
August	4,435	2,917	7,352	-605	-17.2	186	346	-159
September	4,437	3,306	7,743	-534	-13.9	83	473	-391
October	4,438	3,665	8,103	-263	-6.7	91	452	-361
November	4,439	3,533	7,971	-399	-10.1	321	189	132
December	4,438	3,210	7,648	-131	-3.9	513	190	323
Total	4,438	3,210	7,648	-131	-3.9	3,761	3,678	83
2022 January	4,437	2,216	6,653	-419	-15.9	1,069	76	994
February	4,434	1,562	5,997	-297	-16.0	761	102	R 658
March	4,434	1,401	5,835	-400	-22.2	394	231	163
April	4,440	1,612	6,052	-363	-18.4	140	354	-214
May	4,442	2,002	6,444	-388	-16.2	81	485	-403
June	4,443	2,325	6,768	-260	-10.0	114	438	-324
July	4,444	2,505	6,950	-250	-9.1	182	362	-180
August	4,446	2,709	7,155	-208	-7.1	176	382	-206
September	4,445	3,146	7,590	-160	-4.8	100	536	-436
October	4,443	3,569	8,012	-96	-2.6	89	511	-422
November	4,442	3,501	R 7,943	-32	-9	R 333	261	R 72
December	R 4,451	R 2,925	R 7,376	R -285	R -8.9	R 735	160	R 574
Total	R 4,451	R 2,925	R 7,376	R -285	R -8.9	R 4,175	3,898	R 277
2023 January	4,451	2,470	6,920	254	11.4	608	153	455
February	4,450	2,072	6,522	510	32.6	530	131	399
March	4,449	1,850	6,299	448	32.0	396	173	224
April	4,451	2,116	6,567	504	31.3	126	394	-268
May	4,465	R 2,556	R 7,021	R 554	27.7	81	R 533	R -452
June	4,463	2,900	7,363	575	24.7	105	447	-342
July	4,464	3,033	7,497	528	21.1	183	316	-133
7-Month Total	--	--	--	--	--	2,030	2,147	-117
2022 7-Month Total	--	--	--	--	--	2,742	2,047	695
2021 7-Month Total	--	--	--	--	--	2,567	2,028	539

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

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

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

R=Revised; --=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. **2015–2020**—EIA, *NGA*, annual reports. **2021 forward**—EIA, *NGM*, September 2023, 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*, September 2023, 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	9,265	9,269							

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 1.12a and 1.12b); "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.

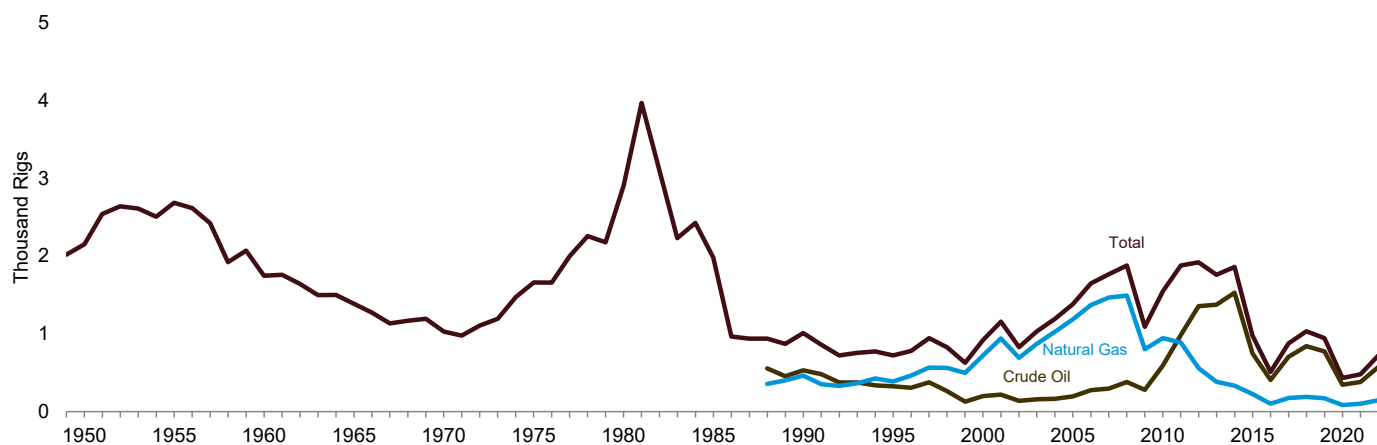
Annual and final monthly data are from the annual EIA Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition," and FE-746R, "Import and Export of Natural Gas."

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*.

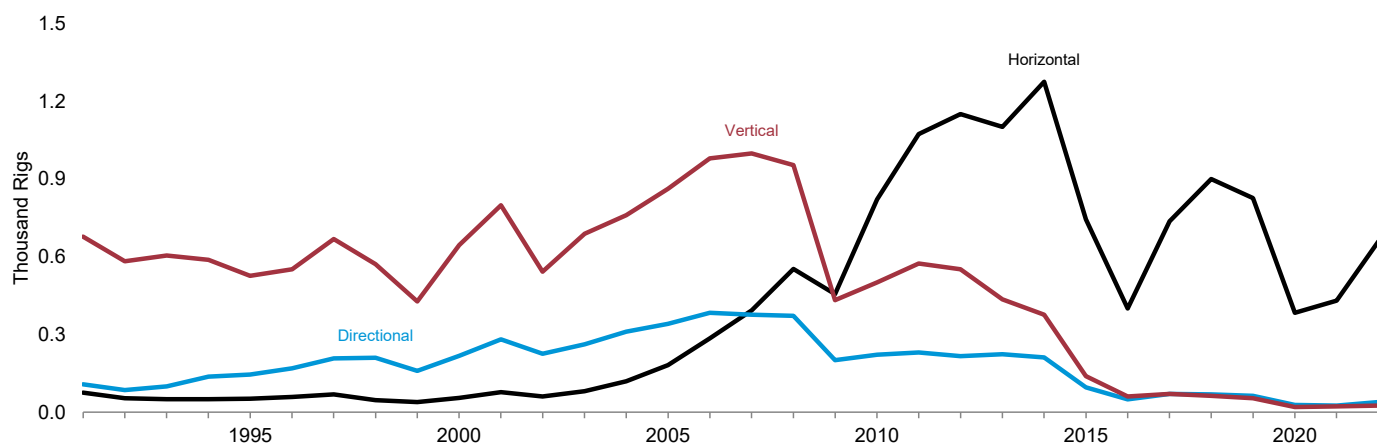
5. Crude Oil and Natural Gas Resource Development

Figure 5.1 Crude Oil and Natural Gas Drilling Activity Measurements

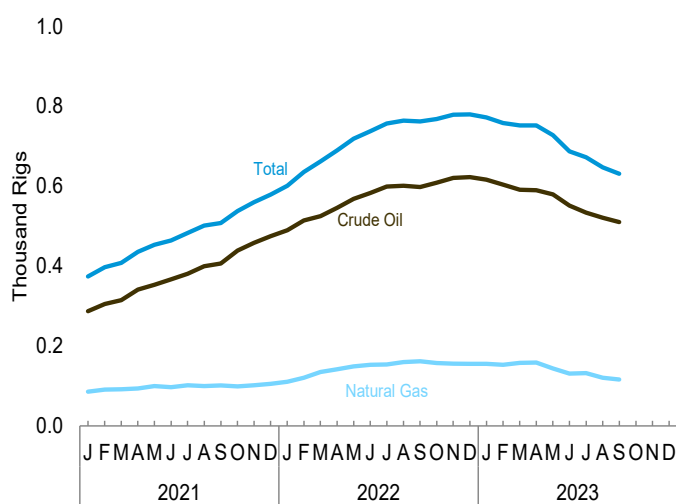
Rotary Rigs in Operation by Type, 1949–2022



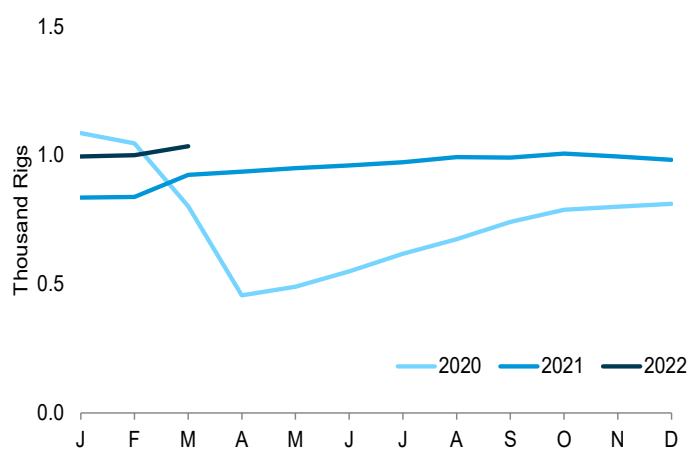
Rotary Rigs in Operation by Trajectory, 1991–2022



Rotary Rigs in Operation by Type, Monthly



Active Well Service Rig Count, Monthly



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

Sources: Table 5.1.

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

	Rotary Rigs in Operation ^{a,b}							Active Well Service Rig Count ^d	
	By Location ^c		By Type ^c		By Trajectory ^c				Total ^c
	Onshore	Offshore	Crude Oil	Natural Gas	Horizontal	Directional	Vertical		
1950 Average	NA	NA	NA	NA	NA	NA	NA	2,154	NA
1955 Average	NA	NA	NA	NA	NA	NA	NA	2,686	NA
1960 Average	NA	NA	NA	NA	NA	NA	NA	1,748	NA
1965 Average	NA	NA	NA	NA	NA	NA	NA	1,388	NA
1970 Average	NA	NA	NA	NA	NA	NA	NA	1,028	NA
1975 Average	1,554	106	NA	NA	NA	NA	NA	1,660	2,486
1980 Average	2,678	231	NA	NA	NA	NA	NA	2,909	4,089
1985 Average	1,774	206	NA	NA	NA	NA	NA	1,980	4,716
1990 Average	902	108	532	464	NA	NA	NA	1,010	3,658
1995 Average	622	101	323	385	52	145	526	723	3,041
2000 Average	778	140	197	720	55	217	645	918	2,692
2005 Average	1,290	93	194	1,186	181	341	862	1,383	2,222
2006 Average	1,559	90	274	1,372	285	384	980	1,649	2,364
2007 Average	1,695	72	297	1,466	393	376	999	1,768	2,388
2008 Average	1,814	65	379	1,491	553	372	954	1,879	2,515
2009 Average	1,046	44	278	801	456	201	433	1,090	1,722
2010 Average	1,514	31	591	943	822	222	501	1,546	1,854
2011 Average	1,846	32	984	887	1,074	230	574	1,879	2,075
2012 Average	1,871	48	1,357	558	1,151	216	552	1,919	2,113
2013 Average	1,705	56	1,373	383	1,102	224	435	1,761	2,064
2014 Average	1,804	57	1,527	333	1,275	211	376	1,862	2,024
2015 Average	943	35	750	226	744	95	139	978	1,481
2016 Average	486	23	408	100	400	49	60	509	1,061
2017 Average	856	20	703	172	737	70	70	876	1,187
2018 Average	1,013	19	841	190	900	69	63	1,032	1,292
2019 Average	920	23	774	169	826	63	54	943	1,253
2020 Average	417	15	345	85	384	28	20	433	738
2021 January	358	16	287	86	334	21	19	374	835
February	381	17	305	91	357	18	23	397	838
March	395	13	315	92	369	15	24	408	923
April	424	12	341	94	396	20	20	436	936
May	439	14	353	100	411	27	16	453	950
June	451	13	367	97	420	26	18	464	960
July	468	16	381	102	435	31	17	483	973
August	486	15	400	100	455	28	18	501	993
September	502	6	407	101	465	16	27	508	991
October	526	12	439	99	481	28	29	538	1,006
November	545	15	458	102	503	34	23	560	995
December	565	14	475	105	523	31	26	579	982
Average	464	14	380	98	431	25	22	478	949
2022 January	583	18	490	111	543	35	23	601	995
February	622	14	514	121	578	32	26	636	1,000
March	649	12	525	135	605	34	24	662	1,035
April	677	13	546	142	632	32	25	690	NA
May	701	17	568	149	657	37	25	719	NA
June	723	16	583	153	673	39	27	738	NA
July	740	16	599	154	687	41	29	757	NA
August	746	18	601	160	695	39	30	764	NA
September	747	16	598	162	694	44	24	762	NA
October	754	14	609	157	704	42	23	768	NA
November	763	16	621	156	711	45	23	779	NA
December	763	16	623	155	708	45	26	780	NA
Average	708	15	574	147	659	39	25	723	NA
2023 January	756	16	616	155	701	47	24	772	NA
February	742	16	604	153	698	42	18	758	NA
March	736	17	591	158	691	47	14	752	NA
April	733	19	590	159	685	48	19	752	NA
May	707	21	580	144	657	52	19	728	NA
June	667	20	551	131	617	51	18	687	NA
July	654	19	534	132	602	52	18	672	NA
August	629	18	521	121	576	52	19	647	NA
September	613	19	510	116	561	55	15	631	NA
9-Month Average	691	18	565	140	642	50	18	709	NA
2022 9-Month Average	690	15	560	144	643	37	26	706	NA
2021 9-Month Average	434	14	351	96	405	22	20	448	933

^a Data are for rigs drilling for crude oil, rigs drilling for natural gas, and other rigs (not shown separately) drilling for miscellaneous purposes, such as service wells, injection wells, and stratigraphic tests.

^b 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.

^c Not shown under "By Type" are other rigs drilling for miscellaneous purposes, such as service wells, injection wells, and stratigraphic tests. Therefore, the sum of "Crude Oil" and "Natural Gas" may not equal "Total" values. In addition, for "By Location," "By Type," and "By Trajectory," the sum of the components in each category may not equal "Total" values due to independent rounding.

^d 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.

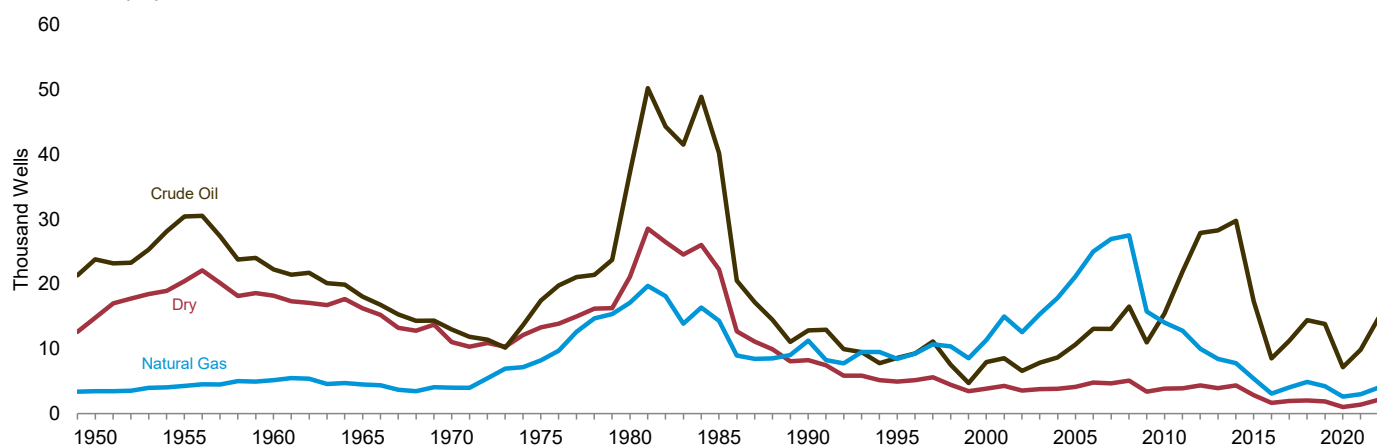
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#crude> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

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-reportsother>. • **Active Well Service Rig Count:** Energy Workforce & Technology Council, Houston, TX.

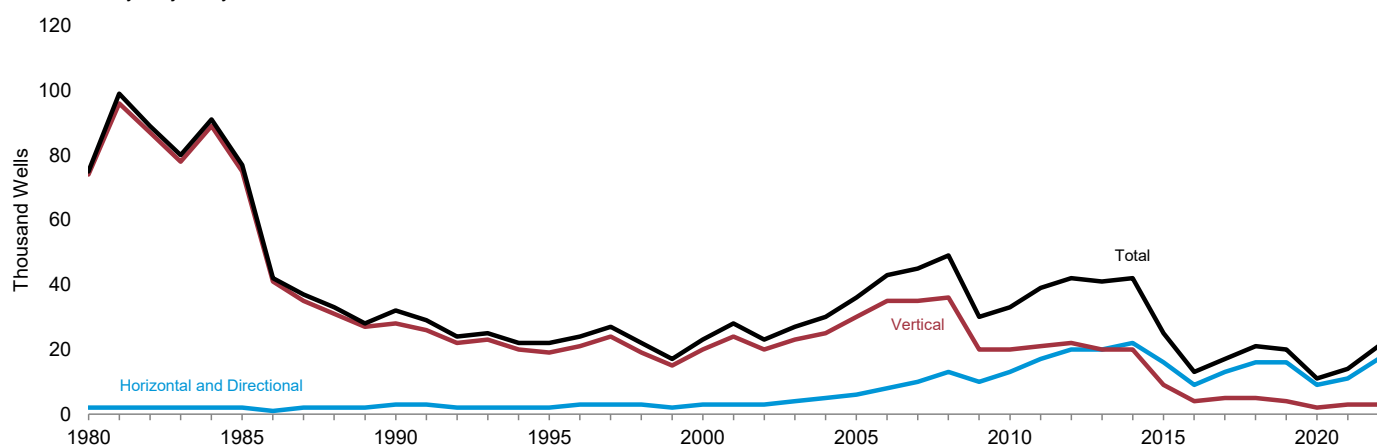
Data after March 2022 from the Energy Workforce & Technology Council were not available in time for this publication.

Figure 5.2 Crude Oil and Natural Gas Wells and Footage Drilled

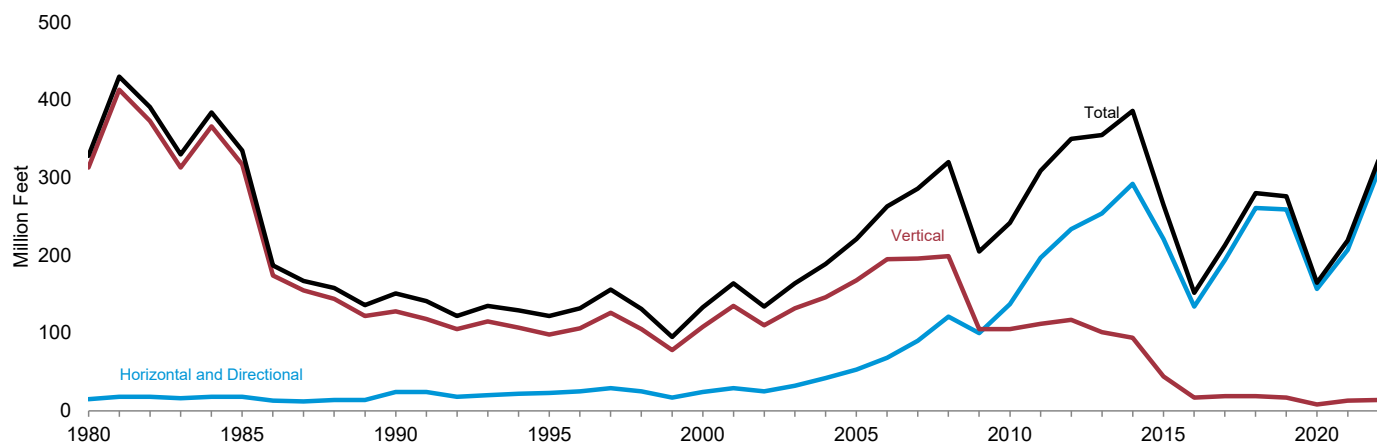
Wells Drilled by Type, 1949–2022



Wells Drilled by Trajectory, 1980–2022



Footage Drilled by Trajectory, 1980–2022



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

Sources: Table 5.2.

Table 5.2 Crude Oil and Natural Gas Wells and Footage Drilled

	Wells Drilled						Footage Drilled					
	By Type			By Trajectory			By Type			By Trajectory		
	Crude Oil	Natural Gas	Dry	Horizontal and Directional	Vertical	Total	Crude Oil	Natural Gas	Dry	Horizontal and Directional	Vertical	Total
	Number						Thousand Feet					
1950 Total	23,812	3,439	14,799	NA	NA	42,050	NA	NA	NA	NA	NA	157,358
1955 Total	30,432	4,266	20,452	NA	NA	55,150	NA	NA	NA	NA	NA	226,182
1960 Total	22,258	5,149	18,212	NA	NA	45,619	NA	NA	NA	NA	NA	192,176
1965 Total	18,065	4,482	16,226	NA	NA	38,773	NA	NA	NA	NA	NA	174,882
1970 Total	12,968	4,011	11,031	NA	NA	28,010	NA	NA	NA	NA	NA	138,556
1975 Total	17,449	8,200	13,321	NA	NA	38,970	NA	NA	NA	NA	NA	182,199
1980 Total	37,209	17,108	21,125	1,677	73,765	75,442	137,273	92,649	98,054	14,607	313,369	327,976
1985 Total	40,217	14,309	22,270	2,184	74,612	76,796	152,575	77,699	104,791	17,944	317,122	335,066
1990 Total	12,839	11,246	8,245	2,839	27,987	32,330	57,153	52,870	41,360	23,619	127,764	151,383
1995 Total	R 8,592	R 8,431	R 4,926	R 2,486	R 19,463	R 21,949	R 41,696	R 53,323	R 26,528	R 23,055	R 98,491	R 121,546
2000 Total	R 7,939	R 11,356	R 3,874	R 2,910	R 20,259	R 23,169	R 34,802	R 75,222	R 22,684	R 24,329	R 108,379	R 132,708
2005 Total	R 10,648	R 21,188	R 4,130	R 5,988	R 29,978	R 35,966	R 49,605	R 148,783	R 22,918	R 52,961	R 168,345	R 221,306
2006 Total	R 13,080	R 25,023	R 4,797	R 7,724	R 35,176	R 42,900	R 61,178	R 175,978	R 25,442	R 67,601	R 194,996	R 262,597
2007 Total	R 13,053	R 26,943	R 4,684	R 10,091	R 34,589	R 44,680	R 62,798	R 197,818	R 25,736	R 89,985	R 196,367	R 286,352
2008 Total	16,525	R 27,501	5,067	12,948	36,145	49,093	80,561	R 213,372	26,261	R 120,985	R 199,209	320,194
2009 Total	10,974	R 15,738	R 3,368	R 10,022	R 20,058	30,080	56,465	R 131,095	R 17,322	R 99,694	R 105,188	204,882
2010 Total	R 15,434	14,044	3,846	12,894	R 20,430	R 33,324	R 93,158	R 129,995	R 19,129	R 137,101	R 105,182	R 242,283
2011 Total	R 21,923	R 12,798	R 3,895	R 17,191	R 21,425	R 38,616	R 154,554	R 135,664	R 18,898	R 197,011	R 112,104	R 309,115
2012 Total	R 27,864	9,994	R 4,334	R 19,793	R 22,399	R 42,192	R 218,475	11,244	R 20,823	R 233,765	R 116,778	R 350,542
2013 Total	R 28,284	8,445	R 3,925	R 20,458	R 20,196	R 40,654	R 235,770	99,571	R 19,904	R 254,416	R 100,828	R 355,244
2014 Total	R 29,753	R 7,776	R 4,329	R 22,320	R 19,538	R 41,858	R 267,644	R 95,606	R 23,207	R 292,013	R 94,444	R 386,456
2015 Total	R 17,316	5,355	2,827	R 16,017	R 9,481	R 25,498	R 177,785	70,736	R 16,599	R 221,402	R 43,717	R 265,120
2016 Total	R 8,491	3,062	R 1,651	R 9,078	R 4,126	R 13,204	R 98,472	43,389	R 9,652	R 134,364	R 17,149	R 151,513
2017 Total	R 11,242	R 4,054	1,937	R 12,630	R 4,603	R 17,233	R 139,130	R 60,894	R 12,967	R 193,495	R 19,497	R 212,991
2018 Total	R 14,425	R 4,873	2,005	R 16,465	R 4,838	R 21,303	R 188,630	R 77,121	R 13,791	R 260,619	R 18,923	R 279,542
2019 Total	R 13,816	R 4,242	R 1,847	R 15,737	R 4,168	R 19,905	R 191,440	R 71,011	R 13,645	R 259,455	R 16,641	R 276,096
2020 Total	R 7,200	R 2,590	R 1,043	R 8,926	R 1,907	R 10,833	R 109,877	R 47,618	R 8,139	R 158,095	R 7,540	R 165,635
2021 January	R 718	R 221	R 110	R 822	227	R 1,049	R 11,149	R 4,158	R 806	R 15,184	R 929	R 16,113
February	R 747	R 229	R 114	R 871	R 219	R 1,090	R 11,599	R 4,308	R 835	R 15,881	R 861	R 16,742
March	R 774	R 230	R 117	R 891	R 230	R 1,121	R 12,030	R 4,331	R 858	R 16,310	R 908	R 17,219
April	R 837	R 234	R 125	R 989	207	R 1,196	R 13,104	R 4,359	R 907	R 17,577	R 794	R 18,371
May	R 860	R 277	R 129	R 1,049	R 217	R 1,266	R 13,310	R 5,194	R 942	R 18,615	R 831	R 19,446
June	R 899	245	R 133	R 1,034	R 243	R 1,277	R 13,930	R 4,712	R 973	R 18,636	R 979	R 19,615
July	R 933	R 255	R 139	R 1,099	R 228	R 1,327	R 14,597	R 4,833	R 1,026	R 19,486	970	R 20,456
August	R 987	R 252	R 145	R 1,118	R 266	R 1,384	R 15,420	R 4,770	R 1,069	R 20,220	R 1,038	R 21,258
September	R 991	R 293	R 145	R 1,119	R 310	R 1,429	R 15,379	R 5,509	R 1,062	R 20,712	R 1,238	R 21,949
October	R 1,069	305	R 153	R 1,226	R 301	R 1,527	R 16,568	R 5,768	R 1,119	R 22,275	R 1,180	R 23,455
November	R 1,116	R 281	R 160	R 1,273	R 284	R 1,557	R 17,422	R 5,315	R 1,179	R 22,817	R 1,098	R 23,916
December	R 1,157	270	R 165	R 1,322	R 270	R 1,592	R 18,128	R 5,125	R 1,220	R 23,440	R 1,033	R 24,473
Total	R 11,088	R 3,092	R 1,635	R 12,813	R 3,002	R 15,815	R 172,635	R 58,381	R 11,996	R 231,154	R 11,858	R 243,012
2022 January	R 1,199	R 278	R 172	R 1,381	R 268	R 1,649	R 18,937	R 5,320	R 1,282	R 24,486	R 1,052	R 25,539
February	R 1,259	R 304	R 182	R 1,488	R 257	R 1,745	R 20,111	R 5,883	R 1,372	R 26,383	R 983	R 27,366
March	R 1,288	R 338	R 190	R 1,541	R 275	R 1,816	R 20,477	R 6,510	R 1,425	R 27,323	R 1,090	R 28,413
April	R 1,338	R 357	R 198	R 1,599	R 294	R 1,893	R 21,159	R 6,840	R 1,478	R 28,352	R 1,125	R 29,476
May	R 1,391	R 375	R 206	R 1,685	R 287	R 1,972	R 22,180	R 7,244	R 1,550	R 29,876	R 1,098	R 30,974
June	R 1,429	R 385	R 212	R 1,726	R 300	R 2,026	R 22,737	R 7,422	R 1,592	R 30,603	R 1,148	R 31,751
July	R 1,471	R 388	R 218	R 1,786	R 291	R 2,077	R 23,591	R 7,539	R 1,650	R 31,667	R 1,113	R 32,780
August	R 1,476	R 401	R 219	R 1,780	R 316	R 2,096	R 23,421	R 7,709	R 1,640	R 31,561	R 1,209	R 32,769
September	R 1,468	R 406	R 218	R 1,791	R 301	R 2,092	R 23,419	R 7,847	R 1,641	R 31,756	R 1,151	R 32,907
October	R 1,493	R 394	R 220	R 1,778	R 329	R 2,107	R 23,621	R 7,552	R 1,643	R 31,525	R 1,290	R 32,815
November	R 1,523	R 391	R 223	R 1,855	R 282	R 2,137	R 24,613	R 7,656	R 1,701	R 32,891	R 1,079	R 33,969
December	R 1,528	R 389	R 223	R 1,874	R 266	R 2,140	R 24,864	R 7,669	R 1,712	R 33,227	R 1,017	R 34,245
Total	R 16,863	R 4,406	R 2,481	R 20,284	R 3,466	R 23,750	R 269,130	R 85,190	R 18,686	R 359,651	R 13,354	R 373,005
2023 January	R 1,511	R 388	R 221	R 1,877	R 243	R 2,120	R 24,788	R 7,711	R 1,711	R 33,281	R 929	R 34,210
February	R 1,481	R 383	R 217	R 1,890	R 191	R 2,081	R 24,769	R 7,760	R 1,713	R 33,511	R 731	R 34,242
March	R 1,452	R 396	R 217	R 1,839	R 226	R 2,065	R 23,930	R 7,907	R 1,688	R 32,607	R 918	R 33,525
April	R 1,449	R 398	R 216	R 1,870	R 193	R 2,063	R 24,157	R 8,039	R 1,699	R 33,157	R 738	R 33,895
May	R 1,426	R 362	R 209	R 1,800	R 197	R 1,997	R 23,730	R 7,298	R 1,641	R 31,915	R 754	R 32,669
June	R 1,357	R 330	R 198	R 1,695	R 190	R 1,885	R 22,575	R 6,651	R 1,554	R 30,054	R 727	R 30,780
July	R 1,317	R 333	R 194	R 1,662	R 182	R 1,844	R 21,924	R 6,716	R 1,524	R 29,469	R 696	R 30,165
August	R 1,284	R 305	R 186	R 1,580	R 195	R 1,775	R 21,208	R 6,103	R 1,450	R 28,015	R 746	R 28,761
September	1,258	293	182	1,574	159	1,733	21,116	5,958	1,442	27,908	608	28,516
9-Month Total	12,535	3,188	1,840	15,787	1,776	17,563	208,197	64,145	14,422	279,916	6,847	286,763
2022 9-Month Total	12,319	3,232	1,815	14,777	2,589	17,366	196,032	62,313	13,630	262,008	9,968	271,976
2021 9-Month Total	7,746	2,236	1,157	8,992	2,147	11,139	120,517	42,173	8,478	162,621	8,548	171,169

R=Revised. NA=Not available.

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. 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 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 Markit, Inc.

Crude Oil and Natural Gas Resource Development

Note. Crude Oil and Natural Gas Wells. The U.S. Energy Information Administration (EIA) considers six well types in the *Monthly Energy Review* (MER): “completed for crude oil,” “completed for natural gas,” “dry hole,” “vertical,” “horizontal and directional,” and “total.” Wells that produce both crude oil and natural gas are categorized by the state. EIA includes both developmental wells and exploratory wells in the six well types, but excludes all other classes of wells drilled in connection with the search for producible hydrocarbons. If a lateral well (such as a service well, stratigraphic test well, observation well, etc.) is drilled at the same time as the original hole, EIA does not separately count the lateral well. However, EIA includes all of the well footage. EIA counts only horizontal wells after the first lateral is drilled and does not count pilot holes.

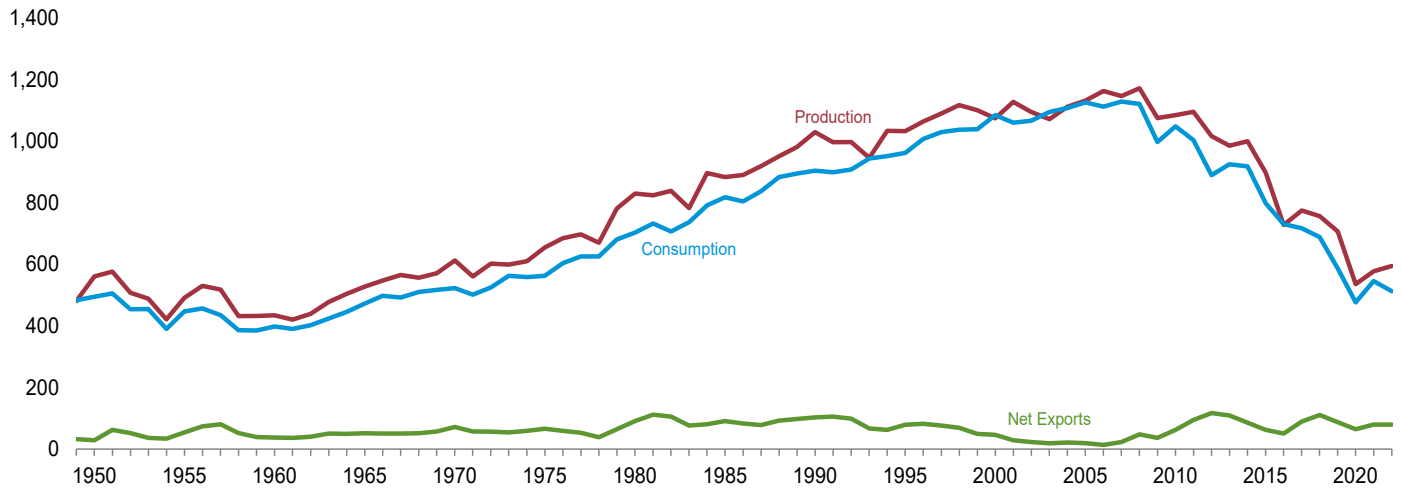
Prior to the March 1985 MER, drilling statistics consisted of completion data for crude oil, natural gas, and dry wells as reported to the American Petroleum Institute (API) during a given month. Due to time lags between the date of well completion and the date of completion reporting to the API, as-reported well completions were an inaccurate indicator of drilling activity. For example, in 1982, as-reported well completions increased, while the number of actual completions decreased. As a result, for 1973 forward, the data shown in this section are revised estimates based on the partial data available from IHS Markit. EIA continuously revises these estimates as new data become available. Each month, EIA estimates the latest 36 months of wells using the rig count and a 3-month average wells per rig ratio. EIA applies three conditions to the result: 1) if the model result is less than the actual reported value, then EIA uses the reported value, and 2) the published total well count is the maximum of the modeled total, or the sum of modeled oil, gas, and dry, or the sum of modeled horizontal and vertical well counts, and 3) the modeled component well counts are prorated so that they add exactly to the total published well count. EIA uses a similar process to estimate drilled footage using a 6-month average footage-per-well ratio. Because there is no reported dry rig count data, EIA estimates the number of dry wells using a 6-month average dry-wells-to-total-wells ratio, which EIA then applies to the modeled total wells. In general, the most recent 12 months of estimated well counts will have the highest errors because they are the farthest from the average well-per-rig ratio used in the model (at least 25 months).

6. Coal

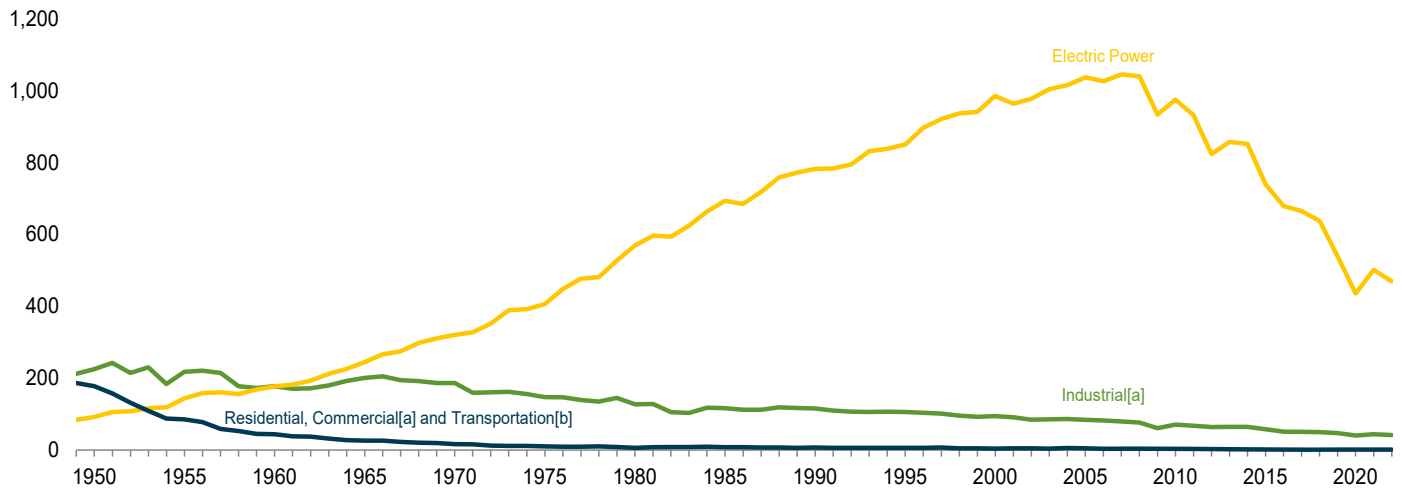
Figure 6.1 Coal

(Million Short Tons)

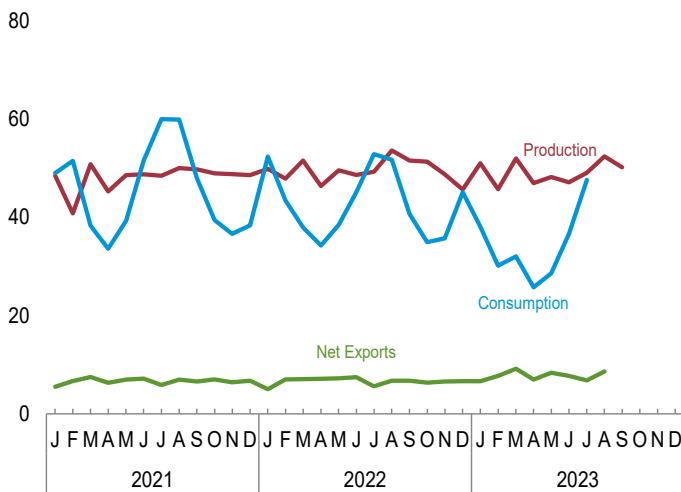
Overview, 1949–2022



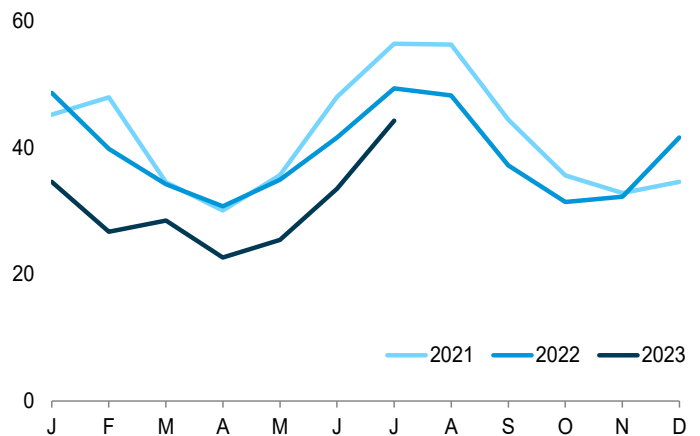
Consumption by Sector, 1949–2022



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	-2,357	10,858	917,731
2015 Total	896,941	9,969	11,318	73,958	-62,640	40,824	5,331	798,115
2016 Total	728,364	10,138	9,846	60,271	-50,425	-45,338	2,346	731,071
2017 Total	774,609	9,951	7,803	96,945	-89,142	-26,467	5,029	716,856
2018 Total	756,167	10,431	5,954	116,244	-110,290	-37,194	5,397	688,105
2019 Total	706,309	8,003	6,697	93,765	-87,068	35,463	5,238	586,543
2020 Total	535,434	6,880	5,137	69,067	-63,929	-5,438	7,129	476,693
2021 January	48,496	695	525	6,021	-5,497	-9,707	4,392	49,010
February	40,817	692	309	6,990	-6,682	-15,276	-1,417	51,521
March	50,818	689	241	7,728	-7,488	1,716	3,972	38,331
April	45,295	384	509	6,843	-6,334	5,920	-209	33,634
May	48,607	574	512	7,482	-6,970	2,464	466	39,282
June	48,773	601	509	7,692	-7,183	-9,211	-188	51,590
July	48,473	727	564	6,446	-5,882	-14,664	-2,041	60,022
August	50,039	694	368	7,353	-6,985	-14,666	-1,491	59,904
September	49,760	604	202	6,796	-6,594	-5,249	1,058	47,960
October	48,954	571	526	7,516	-6,991	4,330	-1,231	39,435
November	48,825	644	436	6,834	-6,399	7,251	-804	36,623
December	48,576	787	689	7,413	-6,724	2,626	1,646	38,368
Total	577,431	7,663	5,388	85,115	-79,727	-44,466	4,154	545,679
2022 January	49,887	R 838	503	5,518	-5,016	R -7,364	R 717	52,357
February	47,875	R 711	289	7,305	-7,016	R -3,289	R 1,426	R 43,434
March	51,548	R 662	530	7,578	-7,048	R 5,426	R 1,792	R 37,944
April	46,387	R 667	684	7,803	-7,118	R 4,865	R 800	R 34,272
May	49,553	R 861	325	7,538	-7,213	R 2,436	R 2,265	R 38,499
June	48,670	R 718	627	8,092	-7,465	R -5,361	R 2,154	R 45,130
July	49,301	R 812	660	6,289	-5,629	R -7,666	R -701	R 52,852
August	53,601	R 813	779	7,545	-6,766	R -3,580	R -476	R 51,705
September	51,574	R 691	531	7,280	-6,749	R 4,074	R 813	R 40,629
October	51,332	R 690	404	6,782	-6,378	R 8,389	R 2,302	R 34,952
November	48,754	R 752	689	7,286	-6,596	R 6,066	R 1,096	35,747
December	45,673	R 719	292	6,940	-6,648	R -4,276	R -1,097	R 45,117
Total	594,155	R 8,934	6,313	85,956	-79,642	R -281	R 11,090	512,638
2023 January	51,010	415	479	7,140	-6,661	R 4,760	R 1,892	38,112
February	45,713	538	260	7,995	-7,735	R 7,379	R 972	30,164
March	51,984	535	281	9,485	-9,204	R 9,512	R 1,774	32,029
April	46,969	R 438	426	7,408	-6,982	R 9,027	R 5,604	R 25,794
May	48,223	R 462	305	8,692	-8,387	R 8,466	R 3,254	R 28,580
June	47,146	R 495	282	8,003	-7,721	R 1,642	R 1,622	R 36,655
July	49,065	RF 599	326	7,141	-6,816	R -8,292	R 3,505	R 47,635
August	52,455	NA	R 355	R 8,999	R -8,644	NA	NA	NA
September	50,203	NA	NA	NA	NA	NA	NA	NA
9-Month Total	442,766	NA	NA	NA	NA	NA	NA	NA
2022 9-Month Total	448,397	6,773	4,928	64,948	-60,020	-10,460	8,788	396,822
2021 9-Month Total	431,076	5,661	3,738	63,352	-59,614	-58,673	4,543	431,253

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

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

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

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

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

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

quantities lost or to data reporting problems.

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

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

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

Sources: See end of section.

Table 6.2 Coal Consumption by Sector
(Thousand Short Tons)

	End-Use Sectors										Electric Power Sector ^{a,f}	Total
	Resi- dential	Commercial			Coke Plants	Industrial			Total	Trans- portation		
		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)	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 Total	(i)	519	357	876	17,967	10,892	18,203	29,095	47,062	(h)	538,606	586,543
2020 Total	(i)	473	320	793	14,414	9,453	16,207	25,660	40,073	(h)	435,827	476,693
2021 January	(i)	52	33	85	1,491	874	1,364	2,238	3,729	(h)	45,196	49,010
February	(i)	65	41	106	1,351	811	1,315	2,126	3,476	(h)	47,938	51,521
March	(i)	50	31	81	1,519	801	1,415	2,216	3,735	(h)	34,514	38,331
April	(i)	39	19	57	1,477	758	1,286	2,044	3,521	(h)	30,056	33,634
May	(i)	31	15	45	1,527	767	1,293	2,059	3,586	(h)	35,651	39,282
June	(i)	34	16	50	1,485	774	1,278	2,052	3,538	(h)	48,002	51,590
July	(i)	35	14	49	1,474	845	1,278	2,124	3,598	(h)	56,375	60,022
August	(i)	40	16	55	1,482	791	1,319	2,110	3,593	(h)	56,256	59,904
September	(i)	43	17	61	1,409	820	1,280	2,100	3,509	(h)	44,390	47,960
October	(i)	46	24	70	1,495	800	1,454	2,255	3,750	(h)	35,615	39,435
November	(i)	50	26	76	1,438	865	1,395	2,261	3,699	(h)	32,849	36,623
December	(i)	49	25	74	1,439	795	1,467	2,261	3,701	(h)	34,593	38,368
Total	(i)	534	277	811	17,589	9,700	16,145	25,845	43,434	(h)	501,435	545,679
2022 January	(i)	46	46	R 92	1,432	898	1,305	2,203	3,636	(h)	48,629	52,357
February	(i)	44	R 47	R 91	1,309	790	1,441	2,231	3,540	(h)	39,803	R 43,434
March	(i)	32	R 29	R 61	1,412	893	1,355	2,248	3,659	(h)	34,224	R 37,944
April	(i)	23	R 16	R 39	1,318	817	1,368	2,185	3,503	(h)	30,730	R 34,272
May	(i)	29	R 12	R 41	1,349	873	1,316	2,189	3,539	(h)	34,920	R 38,499
June	(i)	46	R 17	R 63	1,281	849	1,329	2,179	3,460	(h)	41,608	R 45,130
July	(i)	49	R 8	R 57	1,334	841	1,271	2,112	3,446	(h)	49,348	R 52,852
August	(i)	50	10	60	1,334	838	1,261	2,099	3,434	(h)	48,211	R 51,705
September	(i)	48	R 12	R 60	1,263	783	1,326	2,109	3,373	(h)	37,196	R 40,629
October	(i)	45	R 25	R 70	1,373	842	1,271	2,113	3,485	(h)	31,397	R 34,952
November	(i)	47	32	79	1,288	828	1,289	2,117	3,405	(h)	32,264	35,747
December	(i)	49	R 38	R 88	1,315	887	1,220	2,106	R 3,421	(h)	41,608	R 45,117
Total	(i)	508	292	800	16,009	10,138	15,753	25,891	41,900	(h)	469,938	512,638
2023 January	(i)	41	42	83	1,354	883	1,198	2,081	3,435	(h)	34,594	38,112
February	(i)	39	39	78	1,266	771	1,325	2,096	3,362	(h)	26,724	30,164
March	(i)	35	36	71	1,405	775	1,312	2,087	3,492	(h)	28,465	32,029
April	(i)	35	R 18	R 53	R 1,263	737	R 1,103	R 1,840	R 3,103	(h)	22,639	R 25,794
May	(i)	31	R 16	R 47	R 1,302	756	R 1,075	R 1,831	R 3,133	(h)	25,400	R 28,580
June	(i)	24	R 12	R 36	R 1,287	729	R 1,096	R 1,825	R 3,112	(h)	33,507	R 36,655
July	(i)	28	F 9	F 37	F 1,362	744	F 1,261	F 2,004	F 3,366	(h)	44,232	47,635
7-Month Total	(i)	233	E 172	E 404	E 9,239	5,396	E 8,369	E 13,764	E 23,004	(h)	215,561	238,969
2022 7-Month Total	(i)	269	175	443	9,436	5,960	9,387	15,347	24,783	(h)	279,262	304,488
2021 7-Month Total	(i)	306	169	474	10,325	5,629	9,229	14,859	25,183	(h)	297,731	323,389

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

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

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

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

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

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

^g Included in "Commercial Other."

^h Included in "Industrial Non-CHP."

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

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

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

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

Sources: See end of section.

Table 6.3 Coal Stocks by Sector
(Thousand Short Tons)

	Producers ^a and Distributors	End-Use Sectors					Electric Power Sector ^{d,e}	Total
		Residential ^b and Commercial	Industrial			Total		
			Coke Plants	Other ^c	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	151,792	197,971
2015 Year	35,871	394	2,236	4,382	6,618	7,012	195,912	238,795
2016 Year	25,309	360	1,675	3,637	5,312	5,672	162,476	193,457
2017 Year	23,999	310	1,718	3,242	4,960	5,270	137,721	166,991
2018 Year	21,692	247	1,807	3,258	5,065	5,312	102,793	129,796
2019 Year	31,320	246	2,333	3,258	5,591	5,838	128,102	165,260
2020 Year	23,640	250	1,654	2,848	4,501	4,751	131,431	159,822
2021 January	21,805	243	1,618	2,744	4,362	4,605	123,705	150,115
February	22,682	236	1,581	2,641	4,223	4,459	107,698	134,839
March	22,629	229	1,545	2,538	4,083	4,312	109,614	136,555
April	22,532	223	1,648	2,567	4,215	4,438	115,505	142,475
May	22,444	217	1,750	2,596	4,346	4,563	117,932	144,939
June	22,361	210	1,853	2,625	4,478	4,688	108,678	135,727
July	21,420	207	1,833	2,629	4,462	4,669	94,974	121,063
August	19,986	204	1,814	2,632	4,446	4,650	81,762	106,398
September	19,042	201	1,794	2,636	4,430	4,631	77,476	101,149
October	19,026	193	1,749	2,632	4,381	4,574	81,880	105,479
November	19,022	184	1,704	2,628	4,332	4,516	89,192	112,730
December	19,013	176	1,658	2,624	4,283	4,459	91,884	115,356
2022 January	RF 19,114	170	1,636	R 2,551	R 4,187	4,356	84,522	R 107,992
February	RF 19,360	163	1,613	R 2,478	R 4,090	R 4,254	81,089	R 104,703
March	RF 19,674	157	1,590	R 2,404	R 3,994	R 4,151	86,304	R 110,129
April	RF 19,801	158	1,600	R 2,394	R 3,994	R 4,152	91,041	R 114,994
May	RF 20,200	158	1,610	2,384	3,994	4,152	93,077	R 117,430
June	RF 20,597	158	1,620	2,374	3,994	4,153	87,319	R 112,069
July	RF 20,439	168	1,629	2,426	4,055	4,223	79,741	R 104,402
August	RF 20,315	177	1,638	2,478	4,115	4,293	76,214	R 100,822
September	RF 20,445	187	1,646	2,529	4,176	4,363	80,089	R 104,896
October	RF 20,846	180	1,640	2,519	4,159	4,339	88,100	R 113,286
November	RF 21,029	173	1,633	2,509	4,143	4,316	94,007	R 119,352
December	RF 20,820	167	1,627	2,499	4,126	4,293	89,963	R 115,075
2023 January	RF 21,446	165	1,635	2,483	4,118	4,283	94,107	R 119,836
February	RF 22,453	163	1,643	2,467	4,110	4,273	100,488	R 127,214
March	RF 22,390	162	1,650	2,451	4,102	4,263	110,073	R 136,726
April	RF 22,292	R 161	R 1,662	R 2,556	R 4,217	R 4,379	119,082	R 145,753
May	RF 22,196	R 161	R 1,673	R 2,660	R 4,333	R 4,494	127,529	R 154,219
June	RF 22,092	R 160	R 1,684	R 2,765	R 4,449	R 4,609	129,160	R 155,862
July	F 21,051	F 200	F 1,754	F 2,784	F 4,538	F 4,738	121,780	147,569

^a Excludes stocks in transit or held outside of the United States.
^b Through 1979, data are for the residential and commercial sectors. Beginning in 2008, data are for the commercial sector only.
^c 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.
^d 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.
^e Excludes waste coal. Through 1998, data are for electric utilities only. Beginning in 1999, data are for electric utilities and independent power producers.
R=Revised. NA=Not available. F=Forecast.

Notes: • Stocks are at end of period. • Electric power sector monthly values are from Table 7.5; producers and distributors monthly values are estimates derived from collected 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 1.12a and 1.12b).

Industrial Other—Through 1977, monthly consumption data for the other industrial sector (all industrial users minus coke plants) were derived by using reported data to modify baseline consumption figures from the most recent U.S. Census Bureau Annual Survey of Manufactures or Census of Manufactures. For 1978 and 1979, monthly estimates were derived from data reported on Forms EIA-3 and EIA-6. For 1980–1987, monthly figures were estimated by proportioning quarterly data by using the ratios of monthly-to-quarterly consumption data in 1979, the last year in which monthly data were reported on Form EIA-3. Beginning in 1988, monthly consumption for the other industrial sector is estimated from reported quarterly data by using ratios derived from industrial production indices published by the Board of Governors of the Federal Reserve System. Indices for six major industry groups are used as the basis for calculating the ratios: food manufacturing, which is North American Industry Classification System (NAICS) code 311; paper manufacturing, NAICS 322; chemical manufacturing, NAICS 325; petroleum and coal products, NAICS 324; non-metallic mineral products manufacturing, NAICS 327; and primary metal manufacturing, NAICS 331. The monthly ratios are computed as the monthly sum of the weighted indices as a proportion of the quarterly sum of the weighted indices by using the 1977 proportion as the weights. Through 2007, quarterly consumption data for the other industrial sector were derived by adding beginning stocks at manufacturing plants to current receipts and subtracting ending stocks at manufacturing plants. In this calculation, current receipts are the greater of either reported receipts from manufacturing plants (Form EIA-3) or reported shipments to the other industrial sector (Form EIA-6), thereby ensuring that agriculture, forestry, fishing, and construction consumption data were included where appropriate. Beginning in 2008, quarterly consumption totals for other industrial coal include data for manufacturing and mining only. Over time, surveyed coal consumption data for agriculture, forestry, fishing, and construction dwindled to about 20–30 thousand short tons annually. Therefore, in 2008, EIA consolidated its programs by eliminating agriculture, forestry, fishing, and construction as surveyed sectors.

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

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

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

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

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

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

Electric Power Sector—Monthly stocks data at electric power plants are taken directly from reported data.

Note 4. Coal Forecast Values. Data values preceded by “F” in this section are forecast values. They are derived from EIA’s Short-Term Integrated Forecasting System (STIFS). The model is driven primarily by data and assumptions about key macroeconomic variables, the world oil price, and weather. The coal forecast relies on other variables as well, such as alternative fuel prices (natural gas and oil) and power generation by sources other than fossil fuels, including nuclear and hydroelectric power. Each month, EIA staff review the model output and make adjustments, if appropriate, based on their knowledge of developments in the coal industry.

The STIFS model results are published monthly in EIA’s *Short-Term Energy Outlook*, which is accessible on the Web at <http://www.eia.gov/forecasts/steo/>.

Table 6.1 Sources

Production

1949–September 1977: U.S. Department of the Interior, Bureau of Mines, *Minerals Yearbook and Minerals Industry Surveys*.

October 1977 forward: U.S. Energy Information Administration (EIA), *Weekly Coal Production*.

Waste Coal Supplied

1989–1997: EIA, Form EIA-867, “Annual Nonutility Power Producer Report.”

1998–2000: EIA, Form EIA-860B, “Annual Electric Generator Report—Nonutility.”

2001–2003: EIA, Form EIA-906, “Power Plant Report,” and Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing Plants,” and predecessor forms.

2004–2007: EIA, Form EIA-906, “Power Plant Report,” Form EIA-920, “Combined Heat and Power Plant Report,” and Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing Plants,” and predecessor forms.

2008 forward: EIA, Form EIA-923, “Power Plant Operations Report,” and Form EIA-3, “Quarterly Survey of Industrial, Commercial, and Institutional Coal Users” (formerly called, “Quarterly Survey of Non-Electric Sector Coal Data”); and, for forecast values, EIA, Short-Term Integrated Forecasting System.

Imports and Exports

1949 forward: U.S. Department of Commerce, U.S. Census Bureau, Monthly Reports IM 145 (Imports) and EM 545 (Exports).

Stock Change

1950 forward: Calculated from data in Table 6.3.

Losses and Unaccounted for

1949 forward: Calculated as the sum of production, imports, and waste coal supplied, minus exports, stock change, and consumption.

Consumption

1949 forward: Table 6.2.

Table 6.2 Sources

Residential and Commercial Total

Through 2007, coal consumption by the residential and commercial sectors combined is reported to the U.S. Energy Information Administration (EIA). EIA estimates the sectors individually using the method described in Note 2, “Consumption,” at the end of Section 6. Data for the residential and commercial sectors combined are from:

1949–1976: U.S. Department of the Interior (DOI), Bureau of Mines (BOM), *Minerals Yearbook*.

January–September 1977: DOI, BOM, Form 6-1400, “Monthly Coal Report, Retail Dealers—Upper Lake Docks.” October 1977–1979: EIA, Form EIA-2, “Monthly Coal Report, Retail Dealers—Upper Lake Docks.”

1980–1997: EIA, Form EIA-6, “Coal Distribution Report,” quarterly.

1998–2007: DOI, Mine Safety and Health Administration, Form 7000-2, “Quarterly Coal Consumption and Quality Report—Coke Plants.”

Commercial Total

Beginning in 2008, coal consumption by the commercial (excluding residential) sector is reported to EIA. Data for total commercial consumption are from: 2008 forward: EIA, Form EIA-3, “Quarterly Survey of Industrial, Commercial, and Institutional Coal Users” (formerly called, “Quarterly Survey of Non-Electric Sector Coal Data”); and, for forecast values, EIA, Short-Term Integrated Forecasting System (STIFS).

Commercial CHP

1989 forward: Table 7.4c.

Commercial Other

1949 forward: Calculated as “Commercial Total” minus “Commercial CHP.”

Industrial Coke Plants

1949–September 1977: DOI, BOM, *Minerals Yearbook* and *Minerals Industry Surveys*.

October 1977–1980: EIA, Form EIA-5/5A, “Coke and Coal Chemicals—Monthly/Annual Supplement.”

1981–1984: EIA, Form EIA-5/5A, “Coke Plant Report—Quarterly/Annual Supplement.”

1985 forward: EIA, Form EIA-5, “Quarterly Coal Consumption and Quality Report—Coke Plants”; and, for forecast values, EIA, STIFS.

Other Industrial Total

1949–September 1977: DOI, BOM, *Minerals Yearbook* and *Minerals Industry Surveys*.

October 1977–1979: EIA, Form EIA-3, “Quarterly Coal Consumption and Quality Report—Manufacturing Plants,” and predecessor forms.

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

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

2008 forward: EIA, Form EIA-3, “Quarterly Survey of Industrial, Commercial, and Institutional Coal Users” (formerly called, “Quarterly Survey of Non-Electric Sector Coal Data”) and Form EIA-7A, “Coal Production Report,” annual; and, for forecast values, EIA, STIFS.

Other Industrial CHP

1989 forward: Table 7.4c.

Other Industrial Non-CHP

1949 forward: Calculated as “Other Industrial Total” minus “Other Industrial CHP.”

Transportation

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

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

October–December 1977: EIA, Form EIA-6, “Coal Distribution Report,” quarterly.

Electric Power

1949 forward: Table 7.4b.

Table 6.3 Sources

Producers and Distributors

1973–1979: U.S. Department of the Interior (DOI), Bureau of Mines (BOM), Form 6-1419Q, “Distribution of Bituminous Coal and Lignite Shipments.”

1980–1997: U.S. Energy Information Administration (EIA), Form EIA-6, “Coal Distribution Report,” quarterly.

1998–2007: EIA, Form EIA-6A, “Coal Distribution Report,” annual.

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

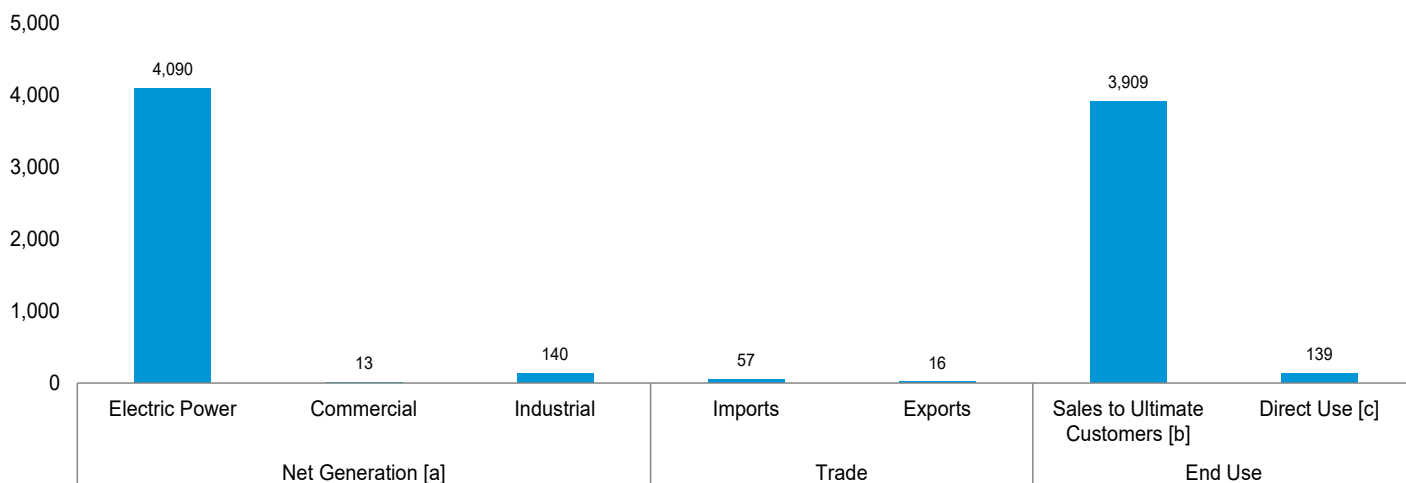
1949 forward: Table 7.5.

7. Electricity

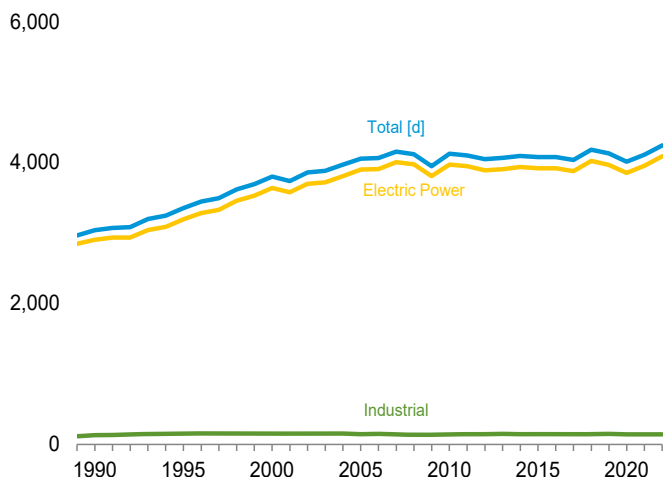
Figure 7.1 Electricity Overview

(Billion Kilowatthours)

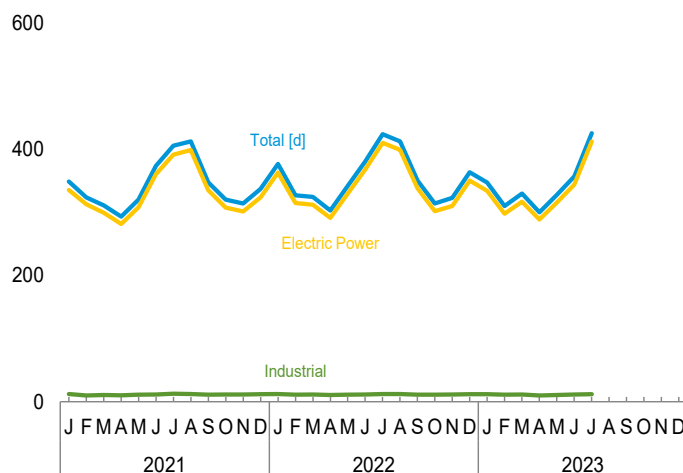
Overview, 2022



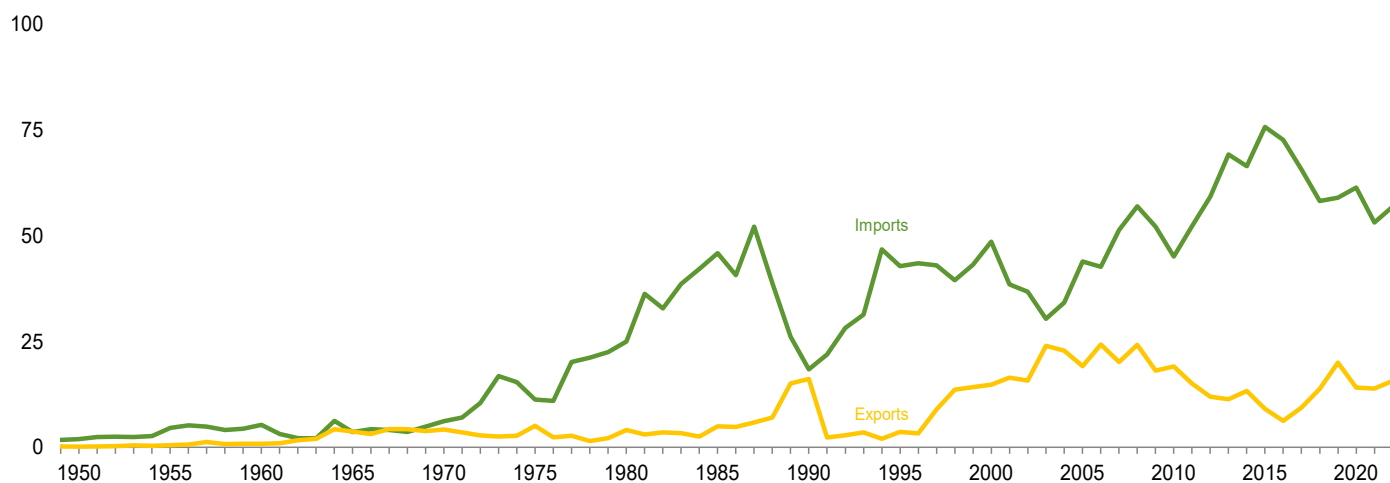
Net Generation [a] by Sector, 1989–2022



Net Generation [a] by Sector, Monthly



Trade, 1949–2022



[a] Data are for utility-scale facilities.

[b] Electricity 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		Sales to Ultimate Customers ^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	3,920	13	146	4,079	76	9	67	245	3,759	141	3,900
2016 Total	3,919	13	146	4,078	73	6	67	242	3,762	140	3,902
2017 Total	3,879	13	144	4,035	66	9	56	227	3,723	141	3,864
2018 Total	4,021	13	147	4,181	58	14	44	222	3,859	144	4,003
2019 Total	3,968	14	149	4,131	59	20	39	215	3,811	143	3,954
2020 Total	3,854	13	143	4,010	61	14	47	201	3,718	139	3,856
2021 January	336	1	13	349	5	1	4	19	321	^E 12	334
February	313	1	10	324	4	1	3	17	300	^E 10	310
March	299	1	11	311	5	1	4	9	295	^E 11	306
April	282	1	11	293	4	1	3	13	273	^E 11	283
May	308	1	11	320	5	1	4	23	290	^E 11	301
June	361	1	12	374	5	1	4	28	338	^E 12	350
July	392	1	13	406	6	1	4	23	374	^E 13	387
August	399	1	13	413	5	1	3	23	381	^E 13	394
September	335	1	11	348	4	1	3	3	336	^E 11	348
October	308	1	12	320	4	1	3	9	302	^E 11	314
November	301	1	12	314	3	2	1	17	287	^E 12	299
December	324	1	12	337	4	2	2	20	307	^E 12	320
Total	3,957	13	140	4,110	53	14	39	204	3,806	139	3,945
2022 January	363	1	13	377	4	1	3	30	337	^E 13	350
February	315	1	11	327	3	2	2	13	304	^E 11	316
March	312	1	12	325	4	2	2	11	304	^E 12	315
April	292	1	11	303	4	1	2	11	284	^E 11	294
May	330	1	11	342	4	2	3	26	308	^E 11	319
June	368	1	12	381	6	1	4	27	346	^E 11	358
July	410	1	12	424	7	1	5	29	388	^E 12	400
August	399	1	12	413	7	1	6	18	388	^E 12	400
September	339	1	11	351	5	1	4	5	339	^E 11	350
October	302	1	11	314	4	1	3	10	296	^E 11	307
November	310	1	12	323	4	1	3	24	290	^E 12	302
December	351	1	12	364	5	1	4	30	326	^E 12	338
Total	4,090	13	140	4,243	57	16	41	236	3,909	^E 139	4,048
2023 January	334	1	12	347	4	1	3	16	323	^E 12	335
February	298	1	11	310	4	2	2	11	290	^E 11	301
March	317	1	12	330	4	1	3	17	304	^E 12	315
April	289	1	10	300	4	2	2	14	278	^E 10	289
May	316	1	11	328	4	1	3	23	296	^E 11	307
June	344	1	12	357	3	1	2	22	326	^E 12	337
July	412	2	12	426	^F 4	^F 1	^F 4	36	382	^E 12	394
7-Month Total	2,311	8	79	2,398	^E 27	^E 9	^E 18	138	2,199	^E 80	2,279
2022 7-Month Total	2,390	8	82	2,479	32	10	22	148	2,271	^E 81	2,352
2021 7-Month Total	2,290	7	80	2,377	33	7	27	133	2,192	^E 80	2,271

^a Electricity net generation at utility-scale facilities. Does not include 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 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. ^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.

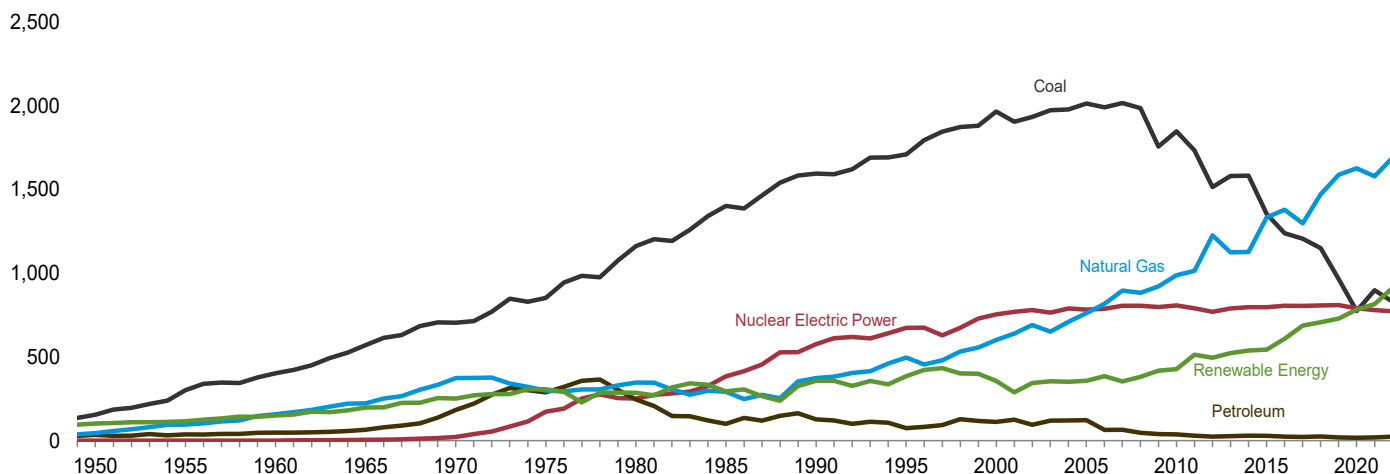
• Data values preceded by "F" are derived from the U.S. Energy Information Administration's Short-Term Integrated Forecasting System. See Note 3, "Electricity Forecast Values," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states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

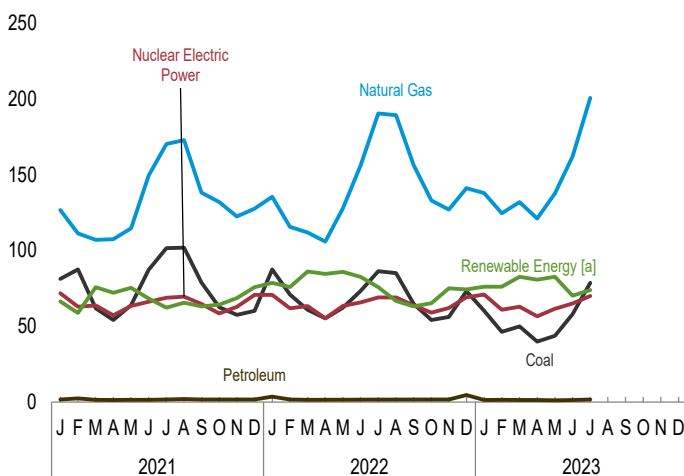
Sources: See end of section.

Figure 7.2 Electricity Net Generation
(Billion Kilowatthours)

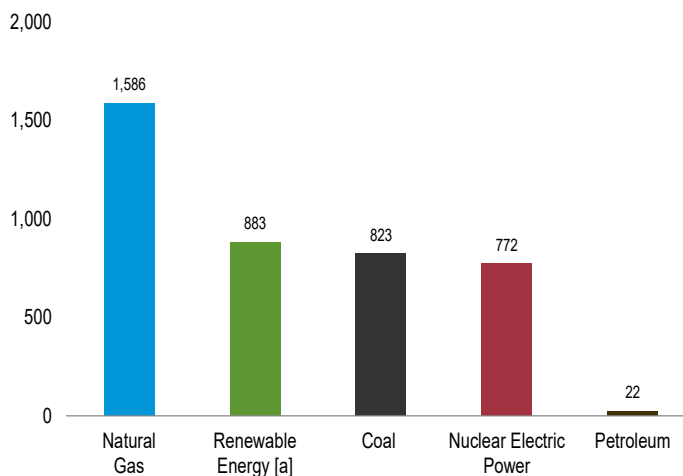
Total (All Sectors), Major Sources, 1949–2022



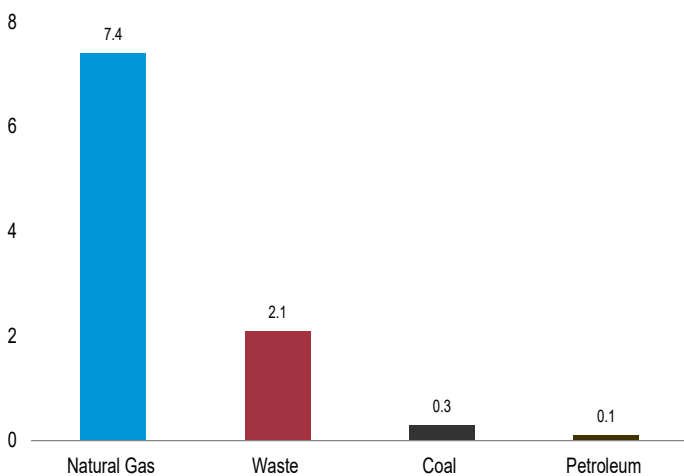
Total (All Sectors), Major Sources, Monthly



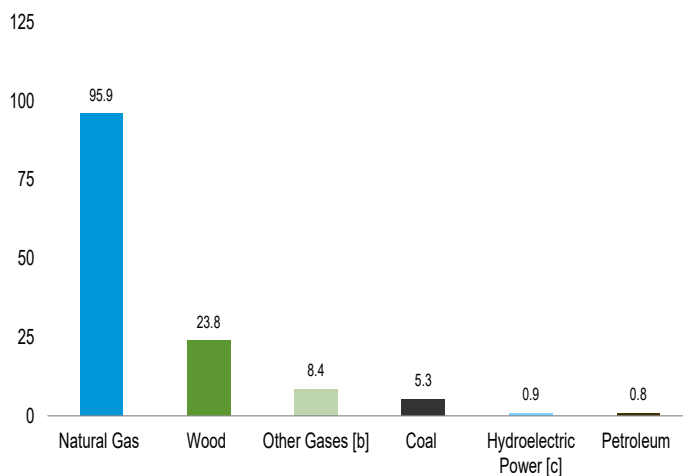
Electric Power Sector, Major Sources, 2022



Commercial Sector, Major Sources, 2022



Industrial Sector, Major Sources, 2022



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

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

[c] Conventional hydroelectric power.

Note: Data are for utility-scale facilities.

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

Sources: Tables 7.2a-7.2c.

Table 7.2a Electricity Net Generation: Total (All Sectors)

(Sum of Tables 7.2b and 7.2c; Million Kilowatthours)

	Fossil Fuels				Nuclear Electric Power	Hydro- electric Pumped Storage ^e	Renewable Energy						Total ⁱ
	Coal ^a	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)	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	-6,288	254,831	37,300	17,734	14,840	864	55,363	4,119,388
2009 Total	1,755,904	38,937	920,797	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	1,126,635	12,022	797,166	-6,174	259,367	42,340	21,650	15,877	17,691	181,655	4,093,564
2015 Total	1,352,398	28,249	1,334,668	13,117	797,178	-5,091	249,080	41,929	21,703	15,918	24,893	190,719	4,078,714
2016 Total	1,239,149	24,205	1,379,271	12,807	805,694	-6,686	267,812	40,947	21,813	15,826	36,054	226,993	4,077,574
2017 Total	1,205,835	21,390	1,297,703	12,469	804,950	-6,495	300,333	41,124	21,610	15,927	53,287	254,303	4,035,443
2018 Total	1,149,487	25,226	1,471,843	13,463	807,084	-5,905	292,524	40,936	20,896	15,967	63,825	272,667	4,180,988
2019 Total	964,957	18,341	1,588,533	12,591	809,409	-5,261	287,874	38,543	18,964	15,473	71,937	295,882	4,130,574
2020 Total	773,393	17,341	1,626,790	11,818	789,879	-5,321	285,274	36,219	18,493	15,890	89,199	337,938	4,009,767
2021 January	81,240	1,638	126,530	1,035	71,732	-424	24,560	3,229	1,595	1,347	5,559	30,060	349,210
February	87,470	2,249	111,183	820	62,954	-425	20,137	2,859	1,399	1,287	6,330	26,716	323,900
March	61,904	1,436	107,019	860	63,708	-236	21,220	3,108	1,574	1,242	9,296	39,205	311,397
April	53,956	1,224	107,416	871	57,092	-197	19,389	2,785	1,465	1,288	10,892	36,158	293,308
May	63,873	1,369	114,676	914	63,394	-416	23,309	2,966	1,514	1,335	12,457	33,787	320,181
June	87,265	1,385	149,376	974	66,070	-376	23,454	3,088	1,470	1,277	12,197	26,672	373,856
July	101,537	1,563	170,189	1,046	68,832	-685	22,098	3,248	1,497	1,351	12,192	21,716	405,624
August	101,855	1,943	172,716	1,031	69,471	-670	20,328	3,315	1,470	1,337	11,967	27,071	412,865
September	78,877	1,588	138,214	984	64,520	-434	17,022	3,005	1,437	1,343	11,214	28,998	347,744
October	62,572	1,549	131,852	1,062	58,401	-427	17,133	2,835	1,440	1,319	9,268	32,215	320,202
November	57,426	1,670	122,433	871	62,749	-377	19,373	2,890	1,393	1,366	7,795	35,751	314,310
December	60,025	1,559	127,586	930	70,720	-445	23,562	3,134	1,536	1,484	6,091	39,849	337,104
Total	897,999	19,173	1,579,190	11,397	779,645	-5,112	251,585	36,463	17,790	15,975	115,258	378,197	4,109,699
2022 January	87,485	3,539	135,409	984	70,577	-493	26,213	3,089	1,469	1,566	8,171	38,080	377,106
February	70,746	1,646	115,538	837	61,852	-412	22,904	2,981	1,320	1,310	9,333	37,984	326,931
March	60,743	1,429	111,806	896	63,154	-318	25,356	3,012	1,434	1,376	11,898	43,014	324,772
April	55,023	1,242	105,729	914	55,290	-265	19,573	2,731	1,377	1,333	13,476	45,960	303,324
May	62,225	1,528	127,714	1,061	63,382	-467	23,071	3,052	1,441	1,384	15,198	41,668	342,215
June	73,287	1,577	156,242	998	65,715	-589	26,892	3,239	1,440	1,363	16,058	33,483	380,649
July	86,263	1,487	190,437	1,133	68,857	-768	24,193	3,478	1,468	1,438	15,749	29,302	424,013
August	85,000	1,586	189,197	1,020	68,897	-640	21,713	3,351	1,426	1,442	14,442	24,355	412,710
September	64,817	1,619	156,286	1,049	63,733	-598	16,812	2,871	1,341	1,412	13,504	27,032	350,722
October	54,071	1,564	133,025	985	58,945	-434	14,638	2,647	1,410	1,344	12,252	32,824	314,111
November	56,170	1,565	126,944	964	62,041	-495	18,764	3,004	1,361	1,469	8,484	41,826	322,959
December	73,164	4,601	141,138	1,043	69,094	-554	21,870	3,114	1,402	1,564	7,033	39,282	363,625
Total	828,993	23,383	1,689,465	11,884	771,537	-6,034	261,999	36,569	16,889	17,002	145,598	434,812	4,243,136
2023 January	60,121	1,328	137,731	1,002	70,870	-611	22,954	3,095	1,430	1,414	8,137	39,076	347,437
February	46,315	1,417	124,428	912	60,807	-448	19,338	2,638	1,276	1,316	9,381	42,015	310,201
March	49,863	1,255	131,987	984	62,820	-538	20,630	2,692	1,349	1,369	12,274	44,355	329,856
April	39,880	1,205	120,941	717	56,501	-313	17,917	2,344	1,218	1,374	14,973	42,848	300,344
May	43,653	1,151	137,714	905	61,473	-483	27,983	2,810	1,383	1,368	17,000	32,040	327,859
June	57,771	1,206	161,853	916	64,965	-560	19,632	2,650	1,350	1,269	17,775	27,466	357,140
July	78,672	1,514	200,621	1,014	69,888	-648	21,500	2,811	1,367	1,333	18,988	27,726	425,655
7-Month Total	376,276	9,077	1,015,276	6,449	447,324	-3,601	149,956	19,039	9,373	9,443	98,529	255,525	2,398,491
2022 7-Month Total	495,772	12,448	942,875	6,823	448,826	-3,313	168,202	21,582	9,949	9,771	89,883	269,492	2,479,010
2021 7-Month Total	537,244	10,864	886,388	6,520	453,783	-2,759	154,166	21,284	10,514	9,126	68,923	214,313	2,377,476

^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 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: Tables 7.2b and 7.2c.

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

	Fossil Fuels				Nuclear Electric Power	Hydro-electric Pumped Storage ^e	Renewable Energy						Total ^j
	Coal ^a	Petroleum ^b	Natural Gas ^c	Other Gases ^d			Conventional Hydro-electric Power ^f	Biomass		Geo-thermal	Solar ⁱ	Wind	
								Wood ^g	Waste ^h				
1950 Total	154,520	33,734	44,559	NA	0	(f)	95,938	390	NA	NA	NA	NA	329,141
1955 Total	301,363	37,138	95,285	NA	0	(f)	112,975	276	NA	NA	NA	NA	547,038
1960 Total	403,067	47,987	157,970	NA	518	(f)	145,833	140	NA	33	NA	NA	755,549
1965 Total	570,926	64,801	221,559	NA	3,657	(f)	193,851	269	NA	189	NA	NA	1,055,252
1970 Total	704,394	184,183	372,890	NA	21,804	(f)	247,714	136	220	525	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	1,917,649
1980 Total	1,161,562	245,994	346,240	NA	251,116	(f)	276,021	275	158	5,073	NA	NA	2,286,439
1985 Total	1,402,128	200,202	291,946	NA	383,691	(f)	281,149	743	640	9,325	11	6	2,469,841
1990 Total ^k	1,572,109	118,864	309,486	621	576,862	-3,508	289,753	7,032	11,500	15,434	367	2,789	2,901,322
1995 Total	1,686,056	68,146	419,179	1,927	673,402	-2,725	305,410	7,597	17,986	13,378	497	3,164	3,194,230
2000 Total	1,943,111	105,192	517,978	2,028	753,893	-5,539	271,338	8,916	20,307	14,093	493	5,593	3,637,529
2005 Total	1,992,054	116,482	683,829	3,777	781,986	-6,558	267,040	10,570	13,031	14,692	550	17,811	3,902,192
2006 Total	1,969,797	59,708	734,417	4,254	787,219	-6,558	286,254	10,341	13,927	14,568	508	26,589	3,908,077
2007 Total	1,998,390	61,306	814,752	4,042	806,425	-6,896	245,843	10,711	14,294	14,637	612	34,450	4,005,343
2008 Total	1,968,838	42,881	802,372	3,200	806,208	-6,288	253,096	10,638	15,379	14,840	864	55,363	3,974,349
2009 Total	1,741,123	35,811	841,006	3,058	798,855	-4,627	271,506	10,738	15,954	15,009	891	73,886	3,809,837
2010 Total	1,827,738	34,679	901,389	2,967	806,968	-5,501	258,455	11,446	16,376	15,219	1,206	94,636	3,972,386
2011 Total	1,717,891	28,202	926,290	2,939	790,204	-6,421	317,531	10,733	15,989	15,316	1,727	120,121	3,948,186
2012 Total	1,500,557	20,072	1,132,791	2,984	769,331	-4,950	273,859	11,050	16,555	15,562	4,164	140,749	3,890,358
2013 Total	1,567,722	24,510	1,028,949	4,322	789,016	-4,681	265,058	12,302	16,918	15,775	8,724	167,742	3,903,715
2014 Total	1,568,774	28,043	1,033,198	3,358	797,166	-6,174	258,046	15,027	17,602	15,877	17,304	181,496	3,936,961
2015 Total	1,340,993	26,505	1,238,842	3,715	797,178	-5,091	247,636	14,563	17,823	15,918	24,456	190,547	3,920,407
2016 Total	1,229,663	22,710	1,280,344	3,912	805,694	-6,686	266,326	13,420	18,183	15,826	35,497	226,790	3,918,977
2017 Total	1,197,838	20,039	1,198,014	4,126	804,950	-6,495	298,711	13,641	18,084	15,927	52,724	254,074	3,878,625
2018 Total	1,142,173	23,928	1,368,532	4,086	807,084	-5,905	291,148	13,385	17,623	15,934	63,253	272,396	4,020,877
2019 Total	958,732	17,220	1,479,858	4,037	809,409	-5,261	286,652	12,020	16,091	15,031	71,265	295,604	3,968,348
2020 Total	767,702	16,333	1,522,299	3,174	789,879	-5,321	284,059	11,211	15,625	15,441	88,511	337,153	3,853,656
2021 January	80,765	1,553	117,191	337	71,732	-424	24,449	1,078	1,331	1,303	5,523	30,038	335,508
February	87,027	2,146	103,855	195	62,954	-425	20,053	1,028	1,173	1,248	6,293	26,693	312,790
March	61,447	1,357	99,285	197	63,708	-236	21,095	982	1,314	1,225	9,233	39,173	299,400
April	53,539	1,156	99,826	270	57,092	-197	19,278	781	1,217	1,250	10,818	36,131	281,725
May	63,416	1,292	106,669	289	63,394	-416	23,201	921	1,270	1,284	12,377	33,764	308,036
June	86,787	1,324	140,552	321	66,070	-376	23,370	1,042	1,241	1,237	12,119	26,652	360,919
July	101,058	1,499	160,593	312	68,832	-685	21,999	1,142	1,249	1,311	12,114	21,702	391,705
August	101,383	1,878	163,213	331	69,471	-670	20,237	1,157	1,223	1,295	11,890	27,054	399,043
September	78,388	1,530	129,872	299	64,520	-434	16,928	964	1,195	1,300	11,144	28,975	335,240
October	62,124	1,481	123,316	343	58,401	-427	17,039	863	1,200	1,271	9,211	32,191	307,591
November	56,942	1,600	113,712	180	62,749	-377	19,272	914	1,141	1,322	7,746	35,723	301,458
December	59,566	1,492	118,519	232	70,720	-445	23,469	1,025	1,278	1,428	6,054	39,820	323,766
Total	892,440	18,308	1,476,603	3,304	779,645	-5,112	250,391	11,897	14,834	15,473	114,523	377,917	3,957,181
2022 January	87,000	3,450	125,909	278	70,577	-493	26,102	999	1,214	1,509	8,113	38,052	363,272
February	70,302	1,568	107,336	235	61,852	-412	22,805	1,079	1,100	1,262	9,269	37,955	314,842
March	60,251	NM	103,130	256	63,154	-318	25,247	1,010	1,180	1,330	11,818	42,983	311,932
April	54,595	1,181	97,912	280	55,290	-265	19,478	790	1,139	1,284	13,385	45,929	291,528
May	61,733	1,455	119,517	371	63,382	-467	22,967	1,002	1,201	1,337	15,101	41,640	329,773
June	72,802	1,510	147,919	285	65,715	-589	26,786	1,129	1,212	1,328	15,950	33,461	368,035
July	85,765	1,414	181,324	358	68,857	-768	24,099	1,285	1,234	1,402	15,645	29,284	410,444
August	84,491	1,517	179,980	278	68,897	-640	21,615	1,214	1,195	1,403	14,344	24,340	399,158
September	64,369	1,549	147,974	316	63,733	-598	16,732	1,055	1,133	1,372	13,409	27,015	338,551
October	53,643	1,498	124,620	274	58,945	-434	14,564	921	1,170	1,313	12,166	32,802	301,972
November	55,754	1,492	118,215	247	62,041	-495	18,677	1,018	1,122	1,414	8,428	41,796	310,191
December	72,702	4,434	132,332	270	69,094	-554	21,766	1,119	1,156	1,506	6,986	39,256	350,582
Total	823,407	22,435	1,586,169	3,450	771,537	-6,034	260,838	12,622	14,057	16,460	144,615	434,513	4,090,280
2023 January	59,692	1,255	128,822	290	70,870	-611	22,843	1,076	1,155	1,356	8,083	39,049	334,351
February	45,931	1,358	116,085	243	60,807	-448	19,244	857	1,028	1,268	9,323	41,985	298,090
March	49,479	1,179	123,216	264	62,820	-538	20,528	825	1,089	1,317	12,193	44,324	317,121
April	39,505	1,146	113,371	170	56,501	-313	17,832	604	963	1,324	14,883	42,820	289,171
May	43,267	1,099	129,599	279	61,473	-483	27,876	891	1,118	1,322	16,899	32,018	315,817
June	57,376	1,151	152,938	246	64,965	-560	19,557	868	1,040	1,232	17,673	27,449	344,327
July	78,251	1,453	191,269	296	69,888	-648	21,411	1,007	976	1,333	18,875	27,713	412,110
7-Month Total	373,501	8,640	955,301	1,788	447,324	-3,601	149,290	6,128	7,369	9,152	97,928	255,358	2,310,986
2022 7-Month Total	492,449	11,944	883,048	2,065	448,826	-3,313	167,485	7,294	8,281	9,452	89,281	269,303	2,389,827
2021 7-Month Total	534,038	10,327	827,970	1,920	453,783	-2,759	153,445	6,973	8,797	8,858	68,477	214,153	2,290,082

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

^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 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. NM=Not meaningful.

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

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

Sources: See end of section.

Table 7.2c Electricity Net Generation: Commercial and Industrial Sectors
(Subset of Table 7.2a; Million Kilowatthours)

	Commercial Sector ^a					Industrial Sector ^b							
	Coal ^c	Petro- leum ^d	Natural Gas ^e	Biomass	Total ^g	Coal ^c	Petro- leum ^d	Natural Gas ^e	Other Gases ^h	Hydro- electric Power ⁱ	Biomass		Total ^k
				Waste ^f							Wood ^j	Waste ^f	
1950 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,946	NA	NA	4,946
1955 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,261	NA	NA	3,261
1960 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,607	NA	NA	3,607
1965 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,134	NA	NA	3,134
1970 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,244	NA	NA	3,244
1975 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,106	NA	NA	3,106
1980 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,161	NA	NA	3,161
1985 Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,161	NA	NA	3,161
1990 Total	796	589	3,272	812	5,837	21,107	7,008	60,007	9,641	2,975	25,379	949	130,830
1995 Total	998	379	5,162	1,519	8,232	22,372	6,030	71,717	11,943	5,304	28,868	900	151,025
2000 Total	1,097	432	4,262	1,985	7,903	22,056	5,597	78,798	11,927	4,135	28,652	839	156,673
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 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 Total	240	100	8,110	2,053	13,046	5,451	908	96,381	8,644	1,001	24,916	814	143,064
2021 January	26	10	638	191	1,096	449	75	8,701	698	86	2,141	73	12,606
February	34	10	561	163	973	410	93	6,767	624	62	1,816	62	10,136
March	25	8	557	182	988	432	71	7,177	663	103	2,118	78	11,010
April	19	9	484	178	938	399	60	7,107	601	89	1,996	70	10,645
May	13	9	506	177	966	443	69	7,501	626	84	2,039	66	11,179
June	19	7	647	175	1,101	459	54	8,176	652	60	2,031	54	11,837
July	20	8	729	188	1,204	458	56	8,868	735	76	2,088	60	12,715
August	23	7	764	187	1,242	449	59	8,739	700	70	2,140	59	12,579
September	25	6	651	183	1,115	464	52	7,691	686	75	2,026	58	11,389
October	29	8	603	172	1,040	419	60	7,933	719	76	1,960	68	11,571
November	26	8	587	181	1,031	459	61	8,134	691	83	1,964	71	11,820
December	21	10	619	178	1,074	438	58	8,448	697	70	2,092	80	12,264
Total	280	98	7,346	2,156	12,768	5,278	767	95,240	8,093	936	24,413	800	139,750
2022 January	29	NM	658	183	1,148	456	73	8,842	706	81	2,075	72	12,686
February	18	7	569	155	987	427	71	7,633	602	74	1,888	64	11,102
March	18	6	588	180	1,054	474	NM	8,088	640	84	1,991	74	11,785
April	12	6	547	171	1,007	416	55	7,270	633	75	1,929	68	10,789
May	13	7	572	171	1,042	478	NM	7,625	690	76	2,032	68	11,400
June	26	9	615	173	1,102	458	58	7,707	713	75	2,090	55	11,511
July	25	8	721	174	1,194	473	65	8,393	775	63	2,175	61	12,375
August	30	8	729	170	1,204	479	61	8,488	742	72	2,110	60	12,348
September	29	5	643	159	1,072	418	65	7,669	733	62	1,804	50	11,099
October	26	5	541	173	967	403	61	7,864	711	58	1,720	67	11,172
November	25	5	556	172	999	391	67	8,173	717	67	1,975	67	11,769
December	24	NM	629	172	1,075	438	150	8,177	773	82	1,983	74	11,968
Total	275	99	7,366	2,053	12,852	5,311	849	95,929	8,434	870	23,772	779	140,005
2023 January	15	7	602	201	1,101	414	66	8,307	712	87	2,008	75	11,986
February	18	7	554	179	1,006	366	52	7,789	669	74	1,774	69	11,105
March	17	5	586	185	1,063	367	71	8,184	720	82	1,860	74	11,672
April	19	3	680	188	1,174	356	56	6,889	547	68	1,724	67	9,999
May	17	4	574	194	1,080	369	48	7,542	626	75	1,916	71	10,962
June	NM	4	656	249	1,259	387	51	8,259	669	54	1,771	61	11,554
July	13	5	749	330	1,502	409	56	8,603	718	68	1,793	61	12,043
7-Month Total	105	36	4,401	1,526	8,184	2,670	401	55,573	4,661	508	12,846	478	79,321
2022 7-Month Total	142	59	4,269	1,206	7,534	3,182	444	55,558	4,759	528	14,180	462	81,649
2021 7-Month Total	157	60	4,122	1,254	7,266	3,050	477	54,296	4,600	561	14,230	463	80,128

^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 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 small-scale solar photovoltaic generation shown on Table 10.6.

NA=Not available. NM=Not meaningful.

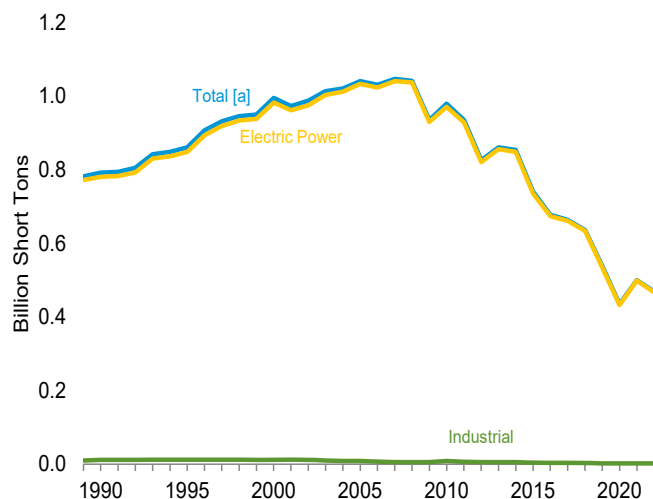
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is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

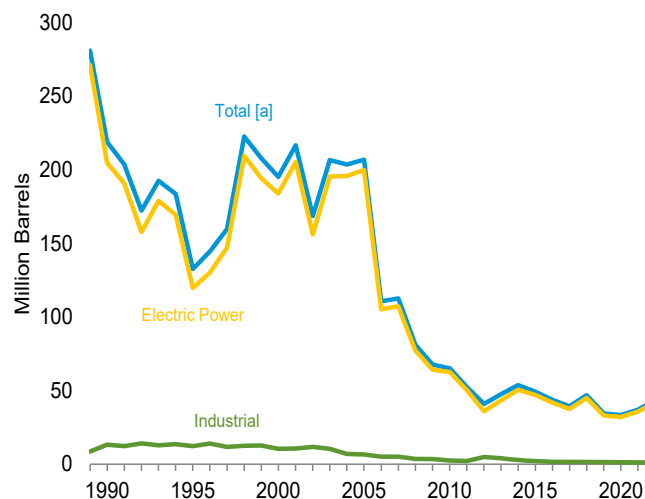
Sources: See end of section.

Figure 7.3 Consumption of Selected Combustible Fuels for Electricity Generation

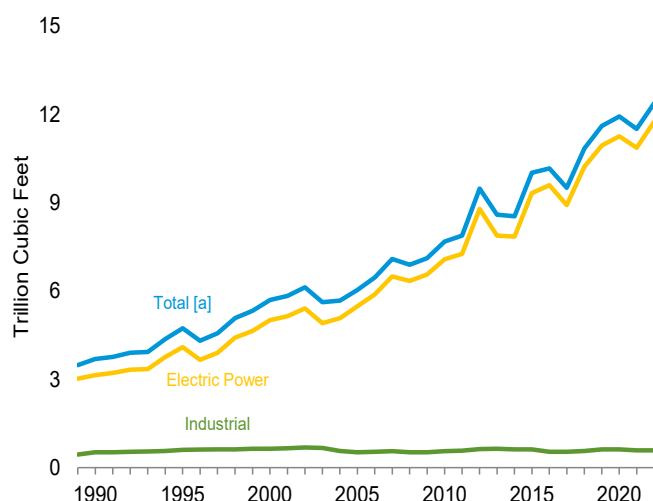
Coal by Sector, 1989–2022



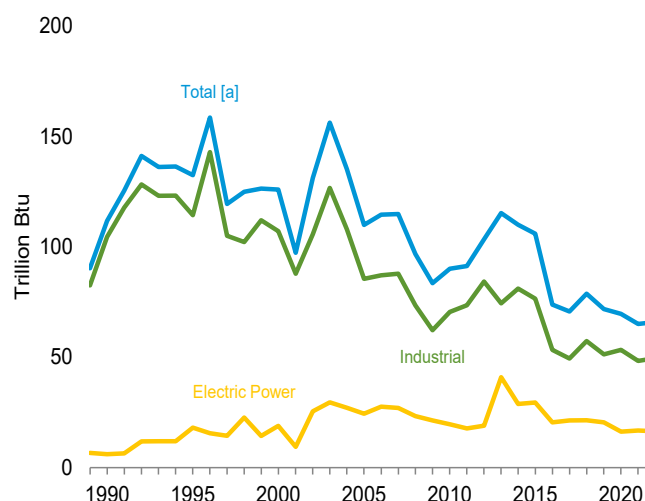
Petroleum by Sector, 1989–2022



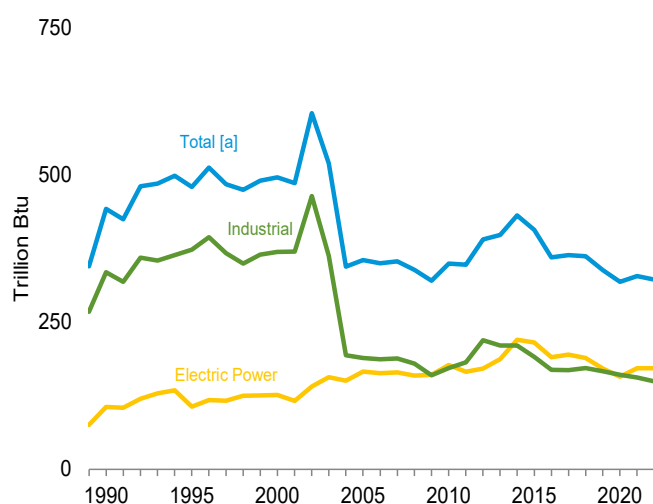
Natural Gas by Sector, 1989–2022



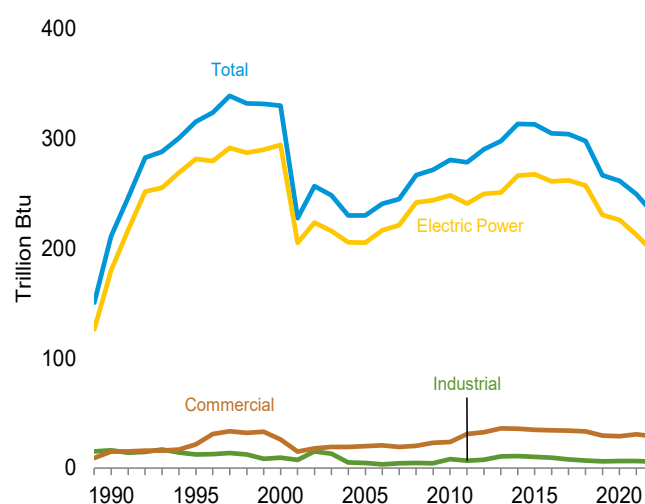
Other Gases [b] by Sector, 1989–2022



Wood by Sector, 1989–2022



Waste by Sector, 1989–2022



[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	Petroleum					Natural Gas ^f	Other Gases ^g	Biomass		Other ^j
		Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e	Total ^e			Wood ^h	Waste ⁱ	
	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	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	10,842	79	362	298	190
2019 Total	537,620	9,620	9,251	1,965	2,724	34,454	11,613	72	338	267	199
2020 Total	435,351	7,991	8,299	1,719	3,077	33,391	11,928	70	318	262	193
2021 January	45,095	739	829	160	282	3,137	889	6	29	22	16
February	47,821	1,899	844	246	274	4,358	801	5	26	19	14
March	34,416	710	642	137	260	2,787	761	5	27	22	16
April	29,995	780	587	134	173	2,367	779	5	24	20	15
May	35,613	779	640	106	220	2,624	835	5	27	21	15
June	47,913	845	705	175	195	2,702	1,111	5	28	21	16
July	56,262	734	727	171	278	3,021	1,267	6	30	21	16
August	56,131	891	1,068	235	299	3,688	1,289	6	30	21	16
September	44,291	714	860	165	255	3,017	1,011	6	27	21	16
October	35,574	770	725	159	262	2,966	963	6	25	20	15
November	32,788	820	666	162	325	3,270	892	5	26	20	15
December	34,469	942	705	162	247	3,044	904	5	28	21	16
Total	500,367	10,623	8,998	2,012	3,070	36,982	11,503	65	328	250	187
2022 January	48,491	2,605	2,168	246	220	6,118	984	5	27	20	15
February	39,703	912	748	151	238	3,002	835	5	28	18	14
March	34,129	844	719	143	193	2,671	803	5	27	20	15
April	30,634	682	582	119	205	2,410	770	5	23	19	14
May	34,866	822	682	70	271	2,932	947	6	26	20	15
June	41,533	877	646	153	268	3,014	1,166	6	29	20	15
July	49,235	911	789	177	209	2,923	1,420	6	31	20	15
August	48,108	915	764	187	231	3,019	1,399	6	30	19	14
September	37,106	767	866	155	262	3,098	1,144	6	26	19	14
October	31,313	767	894	165	240	3,028	973	5	23	19	14
November	32,169	778	784	142	242	2,914	928	5	25	19	14
December	41,491	4,473	1,712	792	307	8,511	1,016	6	27	19	14
Total	468,779	15,354	11,353	2,500	2,887	43,640	12,385	66	322	232	171
2023 January	34,523	822	803	196	140	2,522	992	5	27	20	12
February	26,689	773	1,059	155	128	2,629	893	5	23	17	11
March	28,400	784	797	173	114	2,323	953	5	23	18	11
April	22,623	725	749	145	104	2,140	886	4	19	17	11
May	25,378	821	748	230	99	2,295	1,018	5	24	19	12
June	33,466	750	747	161	124	2,277	1,196	5	23	18	12
July	44,171	693	893	128	220	2,816	1,494	6	25	19	13
7-Month Total	215,251	5,368	5,796	1,189	930	17,002	7,431	36	165	128	82
2022 7-Month Total	278,591	7,654	6,333	1,059	1,605	23,070	6,926	38	191	137	102
2021 7-Month Total	297,114	6,486	4,974	1,129	1,682	20,997	6,443	37	192	147	108

^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: Tables 7.3b and 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 ^j
		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	10,224	21	189	257	125
2019 Total	535,382	9,254	9,163	1,724	2,545	32,868	10,939	21	171	231	133
2020 Total	433,477	7,609	8,228	1,523	2,917	31,947	11,258	16	157	226	132
2021 January	44,948	704	820	147	270	3,022	832	2	15	19	11
February	47,682	1,865	834	202	264	4,223	756	1	15	17	9
March	34,282	674	635	119	248	2,667	713	1	14	19	11
April	29,868	744	581	118	163	2,259	732	1	11	17	10
May	35,469	752	634	85	208	2,508	786	1	13	18	10
June	47,763	816	700	159	185	2,600	1,057	1	14	18	10
July	56,110	702	722	155	267	2,917	1,208	2	17	18	11
August	55,979	859	1,060	218	290	3,585	1,230	2	16	18	11
September	44,131	686	852	156	246	2,924	960	2	14	18	10
October	35,427	736	716	145	252	2,855	911	2	13	17	10
November	32,630	795	657	147	313	3,163	838	1	13	16	10
December	34,324	912	696	147	237	2,938	848	1	15	18	11
Total	498,614	10,246	8,908	1,798	2,942	35,660	10,872	17	171	212	124
2022 January	48,335	2,562	2,152	231	210	5,993	928	1	14	17	10
February	39,556	887	734	138	226	2,891	785	1	16	16	9
March	33,970	817	707	131	184	2,575	749	1	14	17	10
April	30,503	659	576	104	196	2,318	722	1	11	16	10
May	34,707	785	675	55	259	2,811	897	2	14	17	10
June	41,376	846	640	137	258	2,916	1,115	1	15	17	10
July	49,078	879	782	160	NM	NM	1,365	2	17	17	10
August	47,947	884	759	171	220	2,915	1,342	1	17	17	10
September	36,963	742	859	136	252	2,996	1,092	2	14	16	10
October	31,178	743	885	152	230	2,930	921	1	12	16	10
November	32,034	756	777	128	230	2,810	875	1	13	16	10
December	41,343	4,425	1,693	682	297	8,286	963	1	15	16	10
Total	466,989	14,985	11,240	2,226	2,761	42,255	11,753	16	172	197	118
2023 January	34,380	794	792	167	132	2,411	937	1	14	16	9
February	26,562	750	1,048	142	122	2,548	843	1	11	14	8
March	28,274	757	785	159	102	2,211	899	1	12	15	8
April	22,499	704	739	130	NM	NM	840	1	8	14	8
May	25,248	797	742	214	92	2,212	968	1	12	15	9
June	33,335	727	741	138	118	2,194	1,142	1	12	14	7
July	44,027	668	887	107	211	2,719	1,437	1	14	13	6
7-Month Total	214,324	5,196	5,735	1,057	873	16,354	7,066	9	83	101	55
2022 7-Month Total	277,525	7,434	6,267	957	1,532	22,318	6,560	10	101	117	69
2021 7-Month Total	296,123	6,259	4,927	985	1,605	20,195	6,084	10	100	125	72

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

^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. NM=Not meaningful. (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 Total	76	257	56	30	2,161	1,329	618	51	167	6	45
2020 Total	72	242	52	29	1,802	1,202	619	53	160	6	40
2021 January	8	22	4	3	139	93	53	4	14	1	4
February	11	21	3	2	128	114	42	4	12	1	3
March	7	23	3	3	127	98	45	4	13	1	3
April	6	24	3	3	121	83	44	4	13	1	3
May	4	20	3	3	140	96	46	4	13	1	3
June	6	20	4	3	144	83	50	4	13	(s)	3
July	7	23	4	3	145	82	55	4	14	(s)	3
August	7	20	5	3	145	83	54	4	13	(s)	3
September	8	16	4	3	153	76	47	4	13	(s)	3
October	9	25	4	2	138	87	48	4	13	1	3
November	8	19	4	3	149	89	50	4	13	1	3
December	7	23	4	3	138	83	52	4	13	1	4
Total	87	256	46	31	1,666	1,066	585	48	156	6	39
2022 January	8	33	4	2	148	93	53	4	13	1	3
February	6	16	4	2	141	95	47	4	12	(s)	3
March	5	15	4	3	154	81	50	4	12	1	3
April	3	17	3	2	127	75	45	4	12	1	3
May	7	28	3	2	152	93	47	4	13	1	3
June	8	21	4	2	149	78	47	4	13	(s)	3
July	8	22	4	2	150	88	52	5	14	(s)	3
August	9	19	4	2	152	86	52	4	13	(s)	3
September	9	12	4	2	134	90	47	4	11	(s)	2
October	7	12	3	2	128	85	48	4	11	1	2
November	7	12	4	3	128	92	49	4	12	1	2
December	7	34	4	2	142	191	50	4	12	1	2
Total	84	240	45	29	1,706	1,146	587	50	149	6	32
2023 January	6	18	4	3	138	93	51	4	13	1	1
February	6	12	3	3	121	70	47	4	11	1	1
March	5	11	4	3	121	101	50	4	12	1	1
April	6	7	4	3	119	73	42	3	11	1	1
May	5	11	4	3	125	71	47	4	12	1	1
June	2	11	4	4	128	73	50	4	11	(s)	1
July	4	13	5	5	140	84	52	4	11	(s)	1
7-Month Total	35	83	27	23	891	564	338	27	81	4	7
2022 7-Month Total	44	150	26	17	1,021	602	340	28	89	4	20
2021 7-Month Total	48	153	25	18	944	649	334	27	91	4	23

^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.

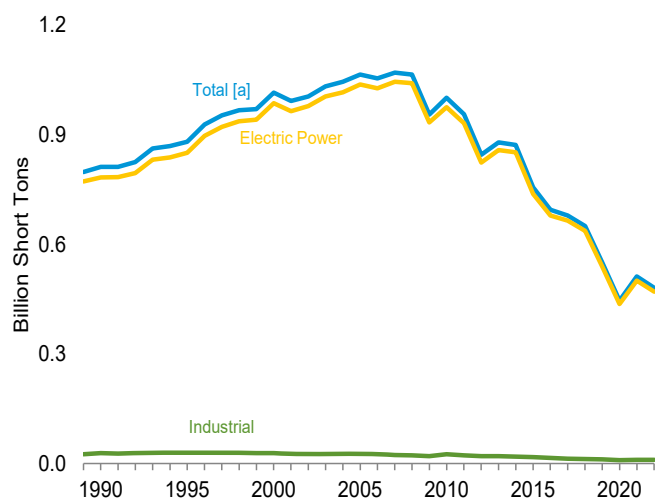
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Data are for fuels consumed to produce electricity. Through 1988, data are not available. •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

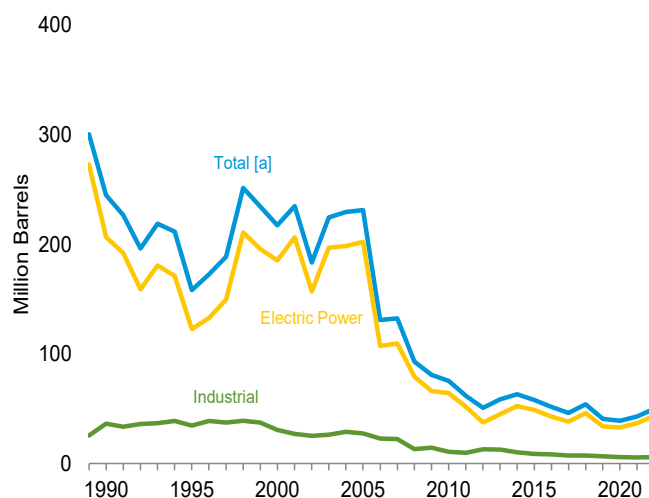
Sources: • **1989–1997:** U.S. Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • **1998–2000:** EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • **2001–2003:** EIA, Form EIA-906, "Power Plant Report." • **2004–2007:** EIA, Form EIA-906,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

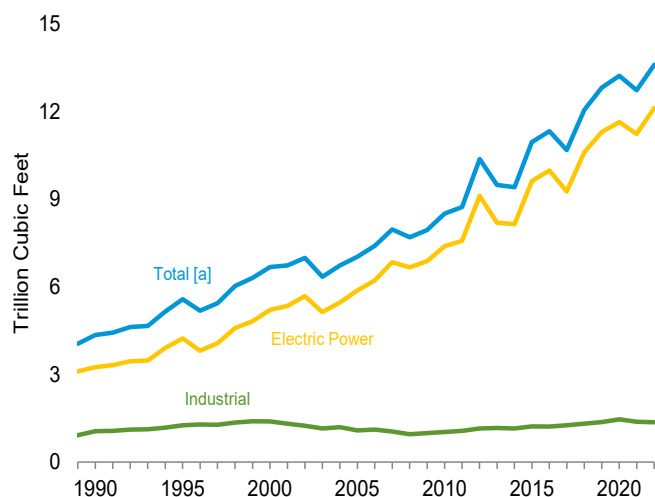
Coal by Sector, 1989–2022



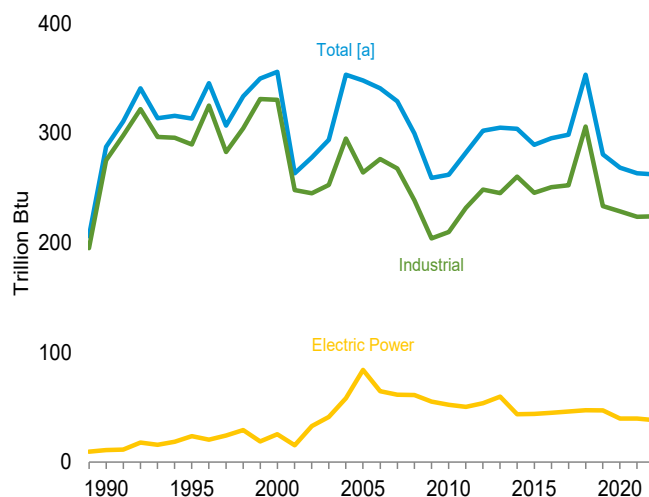
Petroleum by Sector, 1989–2022



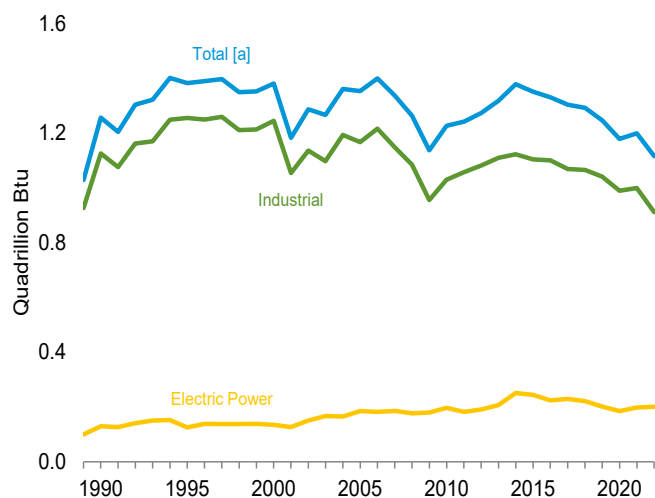
Natural Gas by Sector, 1989–2022



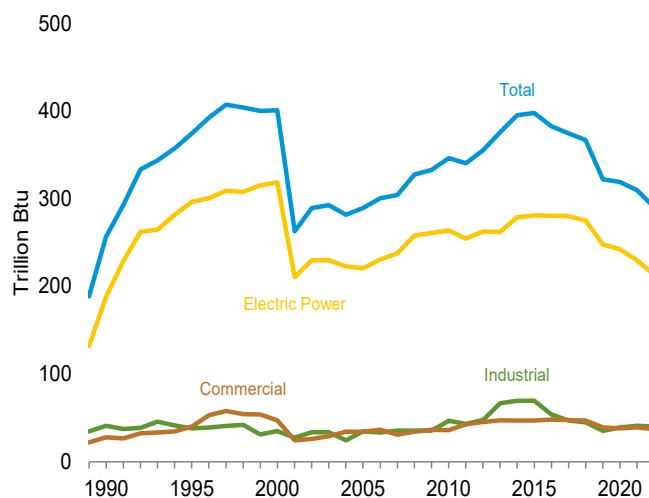
Other Gases [b] by Sector, 1989–2022



Wood by Sector, 1989–2022



Waste by Sector, 1989–2022



[a] Includes commercial sector.

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

Note: Data are for utility-scale facilities.

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

Sources: Tables 7.4a-7.4c.

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

	Coal ^a	Petroleum					Natural Gas ^f	Other Gases ^g	Biomass		Other ^j
		Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e	Total ^e			Wood ^h	Waste ⁱ	
	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	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	13,571	2,185	5,021	50,805	10,371	302	1,273	355	252
2013 Total	879,078	10,277	14,199	2,212	6,338	58,378	9,479	305	1,318	376	236
2014 Total	871,741	15,107	16,615	2,908	5,695	63,106	9,410	304	1,378	395	236
2015 Total	756,226	12,924	16,136	3,008	5,188	58,009	10,952	290	1,351	398	237
2016 Total	693,958	10,278	12,231	2,173	5,352	51,441	11,322	296	1,330	383	238
2017 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	12,048	353	1,291	367	226
2019 Total	550,017	10,369	10,049	2,580	3,563	40,811	12,809	281	1,246	322	234
2020 Total	445,753	8,604	8,974	2,160	3,856	39,020	13,221	269	1,178	319	226
2021 January	46,122	825	933	202	356	3,738	1,000	23	104	28	19
February	48,815	2,051	932	322	339	4,998	896	19	93	25	16
March	35,365	796	712	170	326	3,309	860	22	100	28	19
April	30,852	841	646	164	235	2,827	876	21	97	26	17
May	36,448	823	698	141	288	3,101	932	21	100	26	18
June	48,810	880	752	212	254	3,116	1,213	22	99	24	18
July	57,256	777	786	203	341	3,471	1,374	23	106	25	19
August	57,086	932	1,138	273	360	4,145	1,396	23	104	25	19
September	45,253	755	932	188	317	3,460	1,109	22	99	25	18
October	36,462	816	820	192	321	3,432	1,062	23	97	25	18
November	33,764	860	751	198	382	3,718	994	22	96	25	18
December	35,436	984	793	205	311	3,539	1,011	22	104	28	19
Total	511,669	11,340	9,895	2,470	3,830	42,855	12,724	264	1,199	310	218
2022 January	49,573	2,762	2,326	296	275	6,760	1,098	23	97	26	17
February	40,637	971	861	186	301	3,523	935	19	92	24	16
March	35,148	902	815	175	266	3,222	907	21	91	27	17
April	31,570	728	647	159	263	2,848	865	21	88	24	16
May	35,822	875	749	105	341	3,434	1,043	24	95	25	17
June	42,502	925	712	190	322	3,437	1,262	22	96	23	17
July	50,239	985	872	220	259	3,371	1,524	23	101	24	18
August	49,099	967	824	223	303	3,527	1,502	22	99	23	17
September	38,028	804	948	194	311	3,501	1,239	22	86	22	16
October	32,284	813	979	204	304	3,516	1,069	22	86	24	16
November	33,139	832	863	174	313	3,432	1,027	21	91	24	16
December	42,544	4,693	1,857	920	362	9,282	1,122	23	93	25	16
Total	480,584	16,255	12,451	3,045	3,620	49,853	13,591	263	1,115	290	199
2023 January	35,518	920	912	247	206	3,108	1,100	23	95	26	15
February	27,534	843	1,155	187	177	3,069	990	21	82	23	13
March	29,276	863	906	210	197	2,963	1,057	22	87	24	14
April	23,410	779	840	180	153	2,562	979	20	75	22	13
May	26,187	869	817	267	185	2,880	1,112	22	85	24	14
June	34,260	784	814	207	192	2,763	1,294	22	80	22	14
July	45,004	732	956	166	299	3,349	1,597	23	84	23	15
7-Month Total	221,189	5,791	6,400	1,463	1,408	20,695	8,129	153	588	163	97
2022 7-Month Total	285,491	8,146	6,981	1,330	2,027	26,595	7,633	153	660	173	118
2021 7-Month Total	303,667	6,993	5,461	1,414	2,138	24,561	7,152	151	700	182	127

^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: Tables 7.4b and 7.4c.

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

		Petroleum					Natural Gas ^f	Other Gases ^g	Biomass		Other ^j
		Coal ^a	Distillate Fuel Oil ^b	Residual Fuel Oil ^c	Other Liquids ^d	Petroleum Coke ^e			Total ^e	Wood ^h		Waste^{i}
	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	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	61	177	258	131
2009 Total	933,627	12,035	28,782	2,210	4,611	66,081	6,873	55	180	261	124
2010 Total	975,052	13,790	24,503	1,877	4,777	64,055	7,387	52	196	264	124
2011 Total	932,484	11,021	14,803	1,658	4,837	51,667	7,574	50	182	255	143
2012 Total	823,551	9,080	12,203	1,339	2,974	37,495	9,111	54	190	262	143
2013 Total	857,962	9,598	12,283	1,489	4,285	44,794	8,191	60	207	262	139
2014 Total	851,602	14,235	15,132	2,208	4,132	52,235	8,146	44	251	279	137
2015 Total	738,444	12,193	14,929	2,131	3,907	48,787	9,613	44	244	281	136
2016 Total	678,554	9,510	11,242	1,322	4,138	42,763	9,985	45	224	281	139
2017 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	10,599	47	221	275	136
2019 Total	538,606	9,336	9,352	1,750	2,655	33,712	11,299	47	201	248	145
2020 Total	435,827	7,673	8,382	1,543	3,057	32,885	11,632	40	185	242	144
2021 January	45,196	708	841	151	286	3,131	864	4	18	20	12
February	47,938	1,915	854	216	276	4,364	785	2	17	18	10
March	34,514	681	654	121	259	2,750	742	2	16	20	12
April	30,056	751	599	121	173	2,333	761	3	13	19	11
May	35,651	758	646	86	217	2,573	814	3	15	20	11
June	48,002	822	711	160	195	2,668	1,087	4	17	19	11
July	56,375	706	739	157	279	2,995	1,238	4	19	19	12
August	56,256	863	1,077	220	306	3,691	1,262	4	19	19	12
September	44,390	691	866	159	256	2,994	989	4	16	19	11
October	35,615	742	732	147	258	2,910	939	4	14	18	11
November	32,849	801	681	149	323	3,245	868	3	15	18	11
December	34,593	921	714	149	249	3,032	879	3	17	20	12
Total	501,435	10,359	9,115	1,835	3,075	36,686	11,229	40	197	229	134
2022 January	48,629	2,598	2,195	242	221	6,142	961	3	17	19	11
February	39,803	897	752	140	242	3,000	815	3	18	17	10
March	34,224	825	729	134	208	2,728	779	3	16	19	11
April	30,730	664	593	106	207	2,399	748	3	13	17	10
May	34,920	792	693	57	271	2,896	925	4	16	18	11
June	41,608	852	659	139	269	2,994	1,146	3	18	18	11
July	49,348	887	804	163	NM	NM	1,400	4	20	18	11
August	48,211	889	782	176	232	3,007	1,375	3	19	18	11
September	37,196	748	885	139	261	3,075	1,122	3	17	17	10
October	31,397	749	916	155	243	3,036	950	3	15	17	10
November	32,264	762	808	131	244	2,918	903	3	15	17	10
December	41,608	4,466	1,729	686	306	8,411	993	3	17	17	11
Total	469,938	15,129	11,544	2,268	2,905	43,463	12,118	38	200	213	127
2023 January	34,594	805	820	170	163	2,612	968	3	16	18	10
February	26,724	762	1,072	145	147	2,715	872	3	14	16	9
March	28,465	765	807	161	136	2,415	930	3	15	17	9
April	22,639	713	762	133	NM	NM	867	3	10	15	9
May	25,400	807	767	217	130	2,443	995	3	14	16	9
June	33,507	734	763	141	143	2,355	1,172	3	15	15	8
July	44,232	673	911	109	246	2,923	1,471	3	16	14	7
7-Month Total	215,561	5,259	5,902	1,077	1,074	17,610	7,274	21	100	111	60
2022 7-Month Total	279,262	7,515	6,424	981	1,619	23,016	6,775	23	117	126	75
2021 7-Month Total	297,731	6,340	5,044	1,011	1,684	20,813	6,291	22	115	135	78

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

^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. NM=Not meaningful. (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 Total	519	707	135	39	10,892	6,393	1,374	234	1,040	35	61
2020 Total	473	527	131	38	9,453	5,609	1,458	229	989	39	55
2021 January	52	56	11	3	874	551	125	20	86	4	5
February	65	76	10	3	811	558	102	17	76	4	4
March	50	56	9	3	801	503	109	19	84	4	5
April	39	52	8	3	758	442	107	17	83	4	4
May	31	48	8	3	767	481	110	18	85	3	4
June	34	39	10	3	774	410	116	18	82	2	5
July	35	47	11	4	845	428	125	19	87	3	5
August	40	41	11	3	791	413	122	19	85	3	5
September	43	34	10	3	820	433	111	19	82	3	4
October	46	55	9	3	800	466	114	19	82	4	5
November	50	48	9	3	865	425	116	19	80	4	5
December	49	62	10	3	795	445	122	19	86	4	5
Total	534	614	117	39	9,700	5,555	1,379	224	999	41	55
2022 January	46	133	11	3	898	485	125	20	80	4	4
February	44	53	10	3	790	470	111	17	73	4	4
March	32	56	10	3	893	437	118	18	74	4	4
April	23	50	9	3	817	399	108	18	75	4	4
May	29	64	9	3	873	474	108	19	79	4	4
June	46	47	9	3	849	396	108	18	78	2	4
July	49	66	10	3	841	447	114	20	80	2	4
August	50	49	10	3	838	471	116	19	79	2	4
September	48	24	9	3	783	401	108	18	69	2	3
October	45	27	8	3	842	454	111	19	71	3	3
November	47	30	9	3	828	484	115	19	75	4	4
December	49	166	10	3	887	705	118	20	76	4	3
Total	508	766	113	37	10,138	5,624	1,360	224	911	40	44
2023 January	41	80	10	4	883	416	122	20	78	4	2
February	39	37	9	3	771	317	109	19	68	4	2
March	35	37	10	3	775	512	118	20	72	4	2
April	35	16	9	3	737	398	103	18	65	4	2
May	31	22	8	3	756	415	109	18	71	4	2
June	24	27	9	5	729	381	113	19	65	2	2
July	28	31	10	6	744	396	116	19	68	2	2
7-Month Total	233	250	65	28	5,396	2,835	790	132	486	25	13
2022 7-Month Total	269	470	66	22	5,960	3,108	792	130	540	24	27
2021 7-Month Total	306	375	66	23	5,629	3,373	794	129	583	24	32

^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).

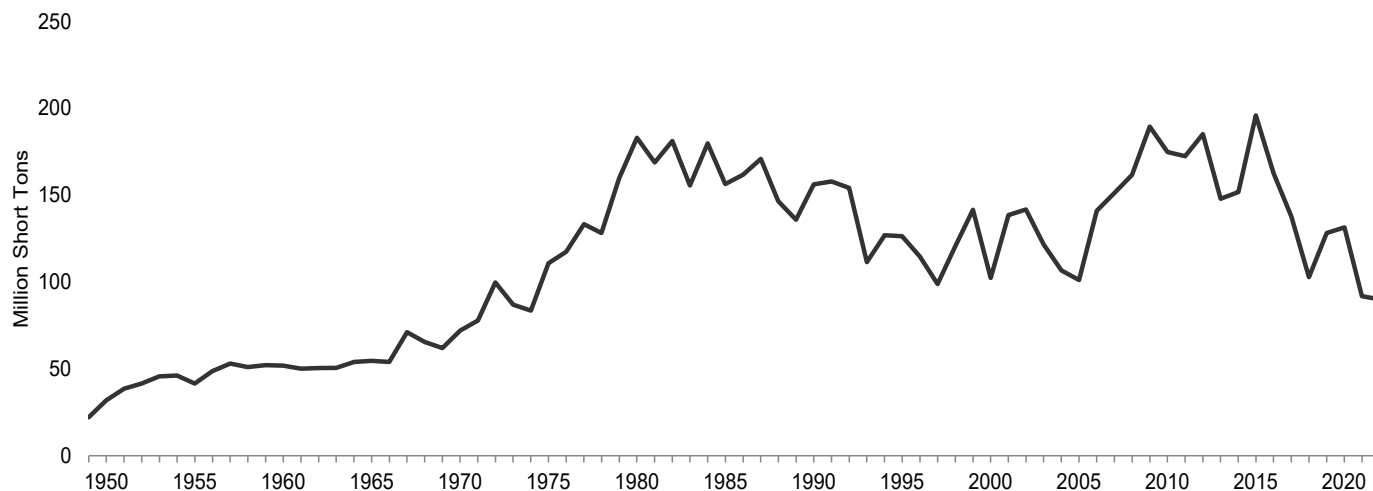
Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is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

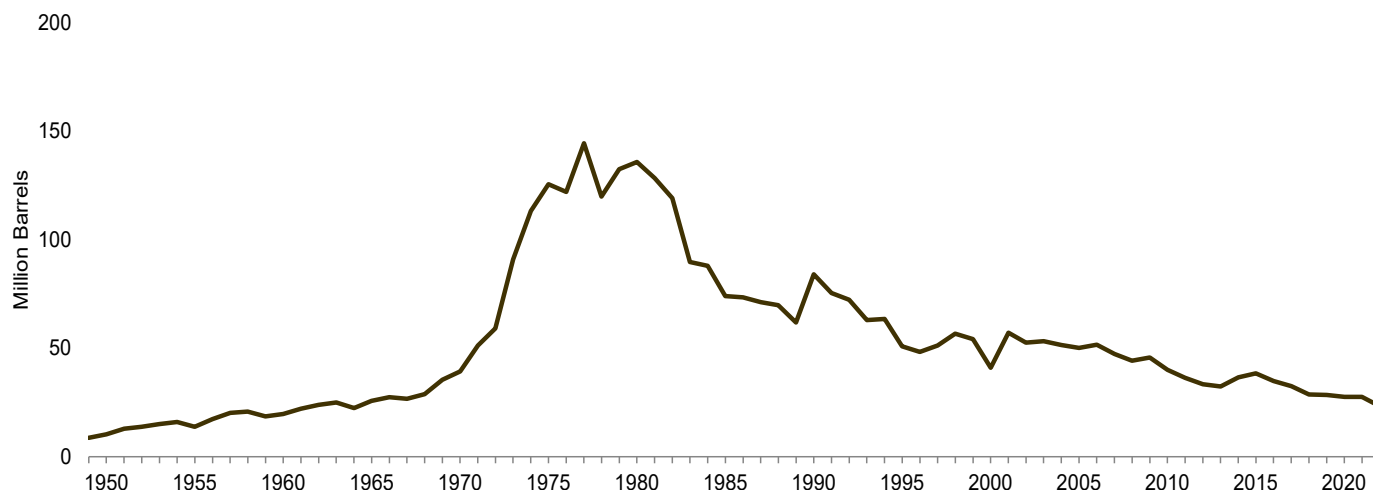
Sources: • **1989–1997:** U.S. Energy Information Administration (EIA), Form EIA-867, "Annual Nonutility Power Producer Report." • **1998–2000:** EIA, Form EIA-860B, "Annual Electric Generator Report—Nonutility." • **2001–2003:** EIA, Form EIA-906, "Power Plant Report." • **2004–2007:** EIA, Form EIA-906,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

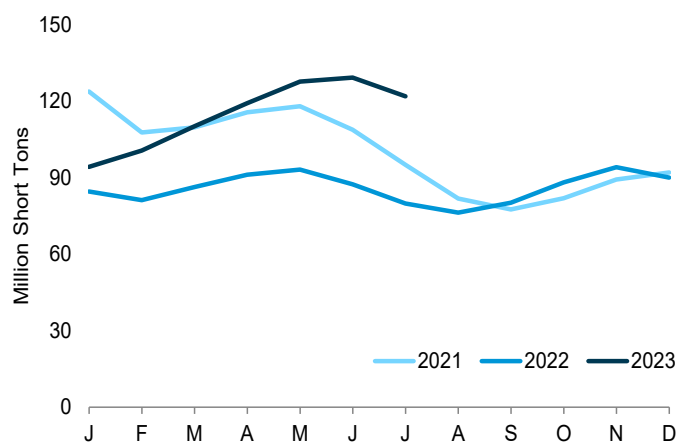
Coal, 1949–2022



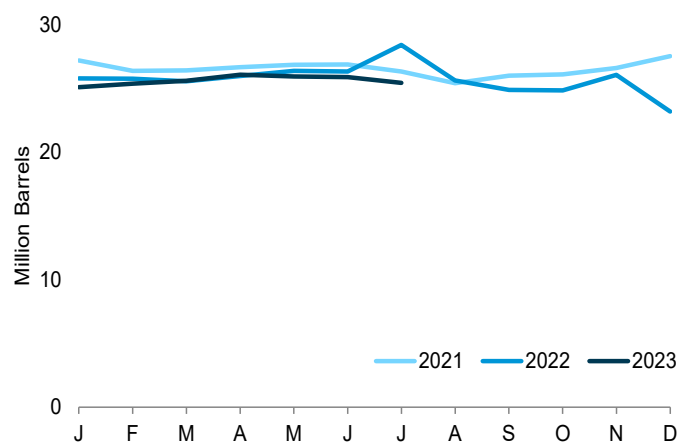
Total Petroleum, 1949–2022



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	151,792	18,309	12,764	1,249	827	36,459
2015 Year	195,912	17,955	12,566	1,173	1,340	38,396
2016 Year	162,476	17,855	11,789	949	845	34,818
2017 Year	137,721	16,342	10,930	816	864	32,407
2018 Year	102,793	16,436	8,785	756	539	28,674
2019 Year	128,102	16,733	8,549	678	471	28,317
2020 Year	131,431	17,116	8,269	678	298	27,552
2021 January	123,705	17,226	8,014	673	253	27,177
February	107,698	16,792	7,819	695	207	26,342
March	109,614	16,734	7,815	700	230	26,400
April	115,505	16,538	7,628	711	353	26,644
May	117,932	16,649	7,465	727	397	26,827
June	108,678	16,584	7,281	718	454	26,855
July	94,974	16,486	6,850	713	453	26,316
August	81,762	16,506	6,429	653	360	25,389
September	77,476	16,620	6,819	661	375	25,977
October	81,880	16,880	6,828	670	339	26,073
November	89,192	17,231	6,951	698	340	26,580
December	91,884	18,220	7,038	744	302	27,513
2022 January	84,522	17,456	5,968	658	336	25,765
February	81,089	17,721	5,869	651	299	25,734
March	86,304	17,612	5,563	605	350	25,528
April	91,041	17,484	5,745	607	424	25,957
May	93,077	17,880	5,670	634	432	26,342
June	87,319	17,707	5,921	611	414	26,309
July	79,741	19,510	5,978	551	468	28,381
August	76,214	16,879	5,800	480	488	25,598
September	80,089	16,667	5,701	471	405	24,865
October	88,100	16,740	5,860	469	351	24,823
November	94,007	17,634	5,935	472	401	26,047
December	89,963	15,856	5,431	364	304	23,169
2023 January	94,107	17,069	5,728	402	374	25,071
February	100,488	17,344	5,757	402	368	25,344
March	110,073	16,950	5,669	382	514	25,570
April	119,082	16,899	5,726	390	607	26,051
May	127,529	16,880	5,638	385	600	25,904
June	129,160	17,158	5,669	367	533	25,861
July	121,780	17,069	5,774	366	441	25,414

^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

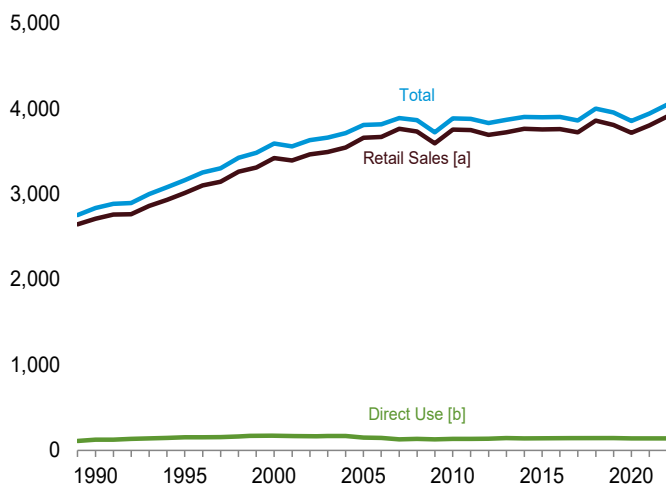
primary business is to sell electricity, or electricity and heat, to the public. • Stocks are at end of period. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

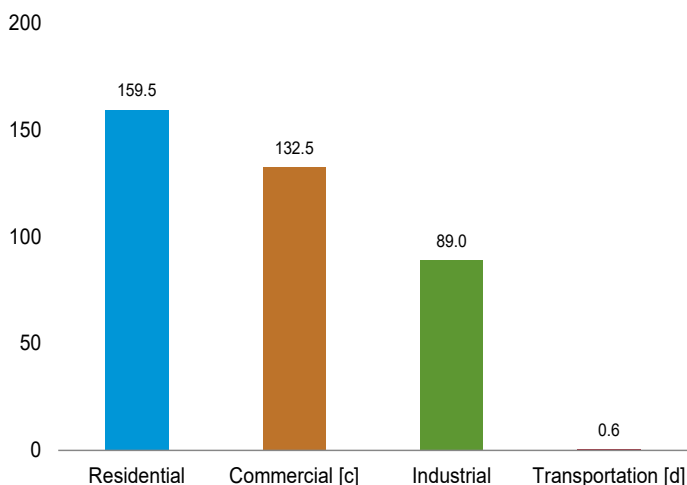
Sources: • **1949–September 1977:** Federal Power Commission, Form FPC-4, "Monthly Power Plant Report." • **October 1977–1981:** Federal Energy Regulatory Commission, Form FPC-4, "Monthly Power Plant Report." • **1982–1988:** U.S. Energy Information Administration (EIA), Form EIA-759, "Monthly Power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

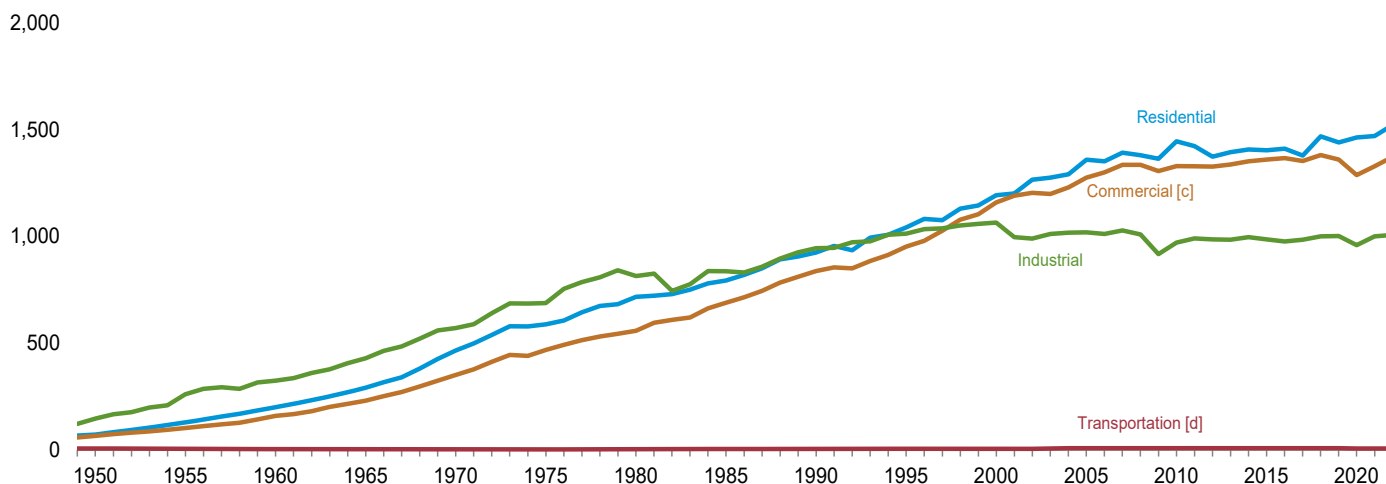
Electricity End Use Overview, 1989–2022



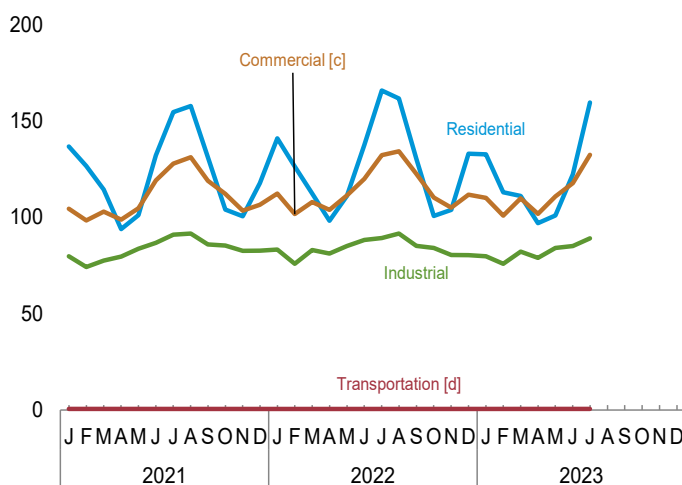
Sales to Ultimate Customers [a] by Sector, July 2023



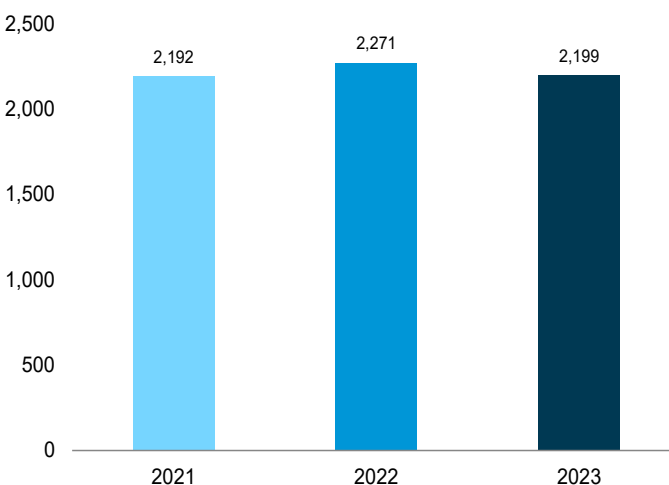
Sales to Ultimate Customers [a] by Sector, 1949–2022



Sales to Ultimate Customers [a] by Sector, Monthly



Sales to Ultimate Customers [a] Total, January–July



[a] Electricity 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)

	Sales to Ultimate Customers ^a					Direct Use ^f	Total End Use ^g
	Residential	Commercial ^b	Industrial ^c	Transportation ^d	Total 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	139,837	3,902,298
2017 Total	1,378,648	1,352,888	984,298	7,523	3,723,356	140,959	3,864,315
2018 Total	1,469,093	1,381,755	1,000,673	7,665	3,859,185	143,904	4,003,089
2019 Total	1,440,289	1,360,877	1,002,353	7,632	3,811,150	143,270	3,954,421
2020 Total	1,464,605	1,287,440	959,082	6,548	3,717,674	138,703	3,856,377
2021 January	136,682	104,498	79,750	567	321,496	E 12,480	333,977
February	126,550	98,356	74,245	548	299,698	E 10,118	309,816
March	114,374	102,877	77,552	542	295,345	E 10,928	306,273
April	93,891	98,721	79,661	506	272,779	E 10,550	283,329
May	101,160	104,711	83,703	487	290,061	E 11,062	301,122
June	132,153	119,053	86,702	508	338,415	E 11,784	350,199
July	154,495	127,856	91,052	546	373,948	E 12,678	386,626
August	157,792	131,111	91,576	560	381,039	E 12,589	393,628
September	131,111	118,989	85,817	527	336,444	E 11,388	347,832
October	103,992	112,246	85,356	533	302,127	E 11,486	313,613
November	100,591	103,506	82,545	492	287,134	E 11,705	298,839
December	117,696	106,516	82,655	521	307,387	E 12,148	319,535
Total	1,470,487	1,328,439	1,000,613	6,334	3,805,874	138,915	3,944,789
2022 January	141,057	112,289	83,317	565	337,227	E 12,600	349,827
February	126,320	101,655	75,952	565	304,492	E 11,011	315,503
March	112,391	107,850	82,955	579	303,775	E 11,694	315,469
April	98,206	103,820	81,212	513	283,751	E 10,744	294,494
May	111,044	111,361	85,092	529	308,025	E 11,332	319,358
June	137,481	120,012	88,231	513	346,236	E 11,489	357,725
July	165,715	132,308	89,169	566	387,757	E 12,359	400,116
August	161,645	134,164	91,588	535	387,932	E 12,343	400,275
September	130,379	122,533	85,141	557	338,611	E 11,086	349,697
October	100,724	110,297	84,052	540	295,614	E 11,057	306,670
November	103,945	104,961	80,427	548	289,880	E 11,629	301,509
December	132,982	111,783	80,396	592	325,753	E 11,880	337,633
Total	1,521,886	1,373,031	1,007,533	6,602	3,909,053	E 139,223	4,048,276
2023 January	132,694	110,077	79,719	568	323,058	E 11,919	334,978
February	113,081	100,855	75,924	549	290,409	E 11,030	301,440
March	111,058	109,890	82,088	565	303,601	E 11,599	315,200
April	97,020	101,819	79,004	508	278,350	E 10,176	288,527
May	101,023	110,858	84,024	518	296,423	E 10,968	307,392
June	122,257	117,714	85,036	567	325,574	E 11,670	337,244
July	159,530	132,470	89,003	620	381,623	E 12,337	393,960
7-Month Total	836,665	783,682	574,798	3,895	2,199,039	E 79,700	2,278,740
2022 7-Month Total	892,212	789,294	585,929	3,829	2,271,263	E 81,229	2,352,492
2021 7-Month Total	859,305	756,072	572,664	3,702	2,191,742	E 79,599	2,271,342

^a Electricity 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 Sales to public railroads and railway systems only.

^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 Sales to Ultimate Customers" 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.

Table 7.7a Electric Net Summer Capacity: Total (All Sectors)

(Sum of Tables 7.7b, 7.7c, and 7.7d; Million Kilowatts)

	Fossil Fuels				Nuclear Electric Power	Hydro-electric Pumped Storage	Renewable Energy							Battery Storage	Total ⁱ
	Coal ^a	Petroleum ^b	Natural Gas ^c	Total ^d			Conventional Hydro-electric Power ^e	Biomass		Geo-thermal	Solar ^h	Wind	Total		
								Wood ^f	Waste ^g						
1950 Year	NA	NA	NA	50.0	0.0	(e)	19.2	(s)	(j)	NA	NA	NA	19.2	NA	69.2
1955 Year	NA	NA	NA	86.8	.0	(e)	27.4	(s)	(j)	NA	NA	NA	27.4	NA	114.2
1960 Year	NA	NA	NA	130.8	.4	(e)	35.8	.1	(j)	(s)	NA	NA	35.9	NA	167.1
1965 Year	NA	NA	NA	182.9	.8	(e)	51.0	.1	(j)	(s)	NA	NA	51.1	NA	234.8
1970 Year	NA	NA	NA	265.4	7.0	(e)	63.8	.1	(j)	.1	NA	NA	64.0	NA	336.4
1975 Year	NA	NA	NA	375.1	37.3	(e)	78.4	.1	(j)	.5	NA	NA	79.0	NA	491.3
1980 Year	NA	NA	NA	444.1	51.8	(e)	81.7	.1	(j)	.9	NA	NA	82.7	NA	578.6
1985 Year	NA	NA	NA	485.0	79.4	(e)	88.9	.2	(j)	1.6	(k)	(s)	90.8	NA	655.2
1990 Year ^l	307.4	77.9	140.8	527.8	99.6	19.5	73.9	5.5	2.5	2.7	.3	1.8	86.8	NA	734.1
1995 Year	311.4	66.6	174.5	554.2	99.5	21.4	78.6	6.8	3.5	3.0	.3	1.7	93.9	NA	769.5
2000 Year	315.1	61.8	219.6	598.9	97.9	19.5	79.4	6.1	3.9	2.8	.4	2.4	94.9	NA	811.7
2005 Year	313.4	58.5	383.1	757.1	100.0	21.3	77.5	6.2	3.6	2.3	.4	8.7	98.7	NA	978.0
2006 Year	313.0	58.1	388.3	761.6	100.3	21.5	77.8	6.4	3.7	2.3	.4	11.3	101.9	NA	986.2
2007 Year	312.7	56.1	392.9	764.0	100.3	21.9	77.9	6.7	4.1	2.2	.5	16.5	108.0	NA	994.9
2008 Year	313.3	57.4	397.2	769.9	100.8	21.9	77.9	6.9	4.2	2.2	.5	24.7	116.4	NA	1,010.2
2009 Year	314.3	56.8	400.9	773.9	101.0	22.2	78.5	6.9	4.3	2.4	.6	34.3	127.1	NA	1,025.4
2010 Year	317.3	55.6	405.1	780.3	101.2	22.2	78.8	7.0	4.4	2.4	.9	39.1	132.6	(s)	1,039.1
2011 Year	317.6	51.5	415.2	786.2	101.4	22.3	78.7	7.1	4.5	2.4	1.5	45.7	139.9	.1	1,051.3
2012 Year	309.7	47.2	422.4	781.2	101.9	22.4	78.7	7.5	4.8	2.6	3.2	59.1	155.9	.1	1,063.0
2013 Year	303.3	43.5	425.4	774.3	99.2	22.4	79.2	8.4	5.0	2.6	6.6	60.0	161.8	.1	1,060.1
2014 Year	299.1	41.1	432.2	774.3	98.6	22.5	79.7	8.4	5.2	2.5	10.3	64.2	170.3	.2	1,068.4
2015 Year	279.7	36.8	439.4	758.5	98.7	22.6	79.7	9.0	5.1	2.5	13.7	72.6	182.5	.3	1,064.1
2016 Year	266.6	34.4	446.8	750.3	99.6	22.8	79.9	8.9	5.1	2.5	22.0	81.3	199.7	.6	1,074.3
2017 Year	256.5	33.3	456.0	748.2	99.6	22.8	79.8	8.8	5.1	2.5	27.0	87.6	210.8	.7	1,084.4
2018 Year	242.8	32.2	470.2	747.8	99.4	22.8	79.9	8.7	5.0	2.4	31.9	94.4	222.3	.9	1,094.7
2019 Year	228.7	31.4	476.6	739.1	98.1	22.8	79.8	8.4	4.7	2.6	37.5	103.6	236.5	1.0	1,099.1
2020 Year	215.6	27.6	485.8	731.2	96.5	23.0	79.9	8.3	4.6	2.6	48.1	118.4	261.9	1.5	1,115.7
2021 January	214.6	28.8	486.3	731.6	96.6	23.0	79.8	8.1	4.5	2.6	48.7	119.0	262.7	1.6	1,117.1
February	214.6	28.8	486.3	731.6	96.6	23.0	79.8	8.1	4.5	2.6	49.4	120.0	264.4	1.7	1,118.8
March	214.1	28.8	486.4	731.2	96.6	23.0	79.8	7.9	4.5	2.6	51.0	121.1	267.0	1.8	1,121.1
April	213.7	28.8	486.7	731.2	95.5	23.0	79.8	7.9	4.5	2.6	51.5	121.9	268.3	2.0	1,121.5
May	213.2	28.8	486.7	730.6	95.5	23.0	79.9	7.9	4.5	2.6	52.2	123.2	270.3	2.5	1,123.5
June	212.2	28.3	487.2	729.6	95.5	23.0	79.9	7.9	4.5	2.6	52.9	124.9	272.7	2.8	1,125.2
July	212.2	28.3	488.3	730.6	95.5	23.0	79.9	7.9	4.5	2.6	53.7	126.1	274.7	3.0	1,128.5
August	212.2	28.3	489.0	731.3	95.5	23.0	79.9	7.9	4.5	2.6	55.2	126.5	276.6	3.1	1,131.1
September	212.2	28.2	488.8	731.1	95.5	23.0	79.9	7.9	4.5	2.6	56.2	126.8	277.9	3.3	1,132.5
October	211.3	28.2	490.2	731.6	95.5	23.0	79.9	7.9	4.5	2.6	57.0	128.2	280.1	3.8	1,135.6
November	211.3	28.2	490.2	731.6	95.5	23.0	79.9	7.9	4.5	2.6	58.0	129.4	282.2	4.4	1,138.4
December	209.8	28.2	491.9	731.8	95.5	23.0	79.9	7.9	4.5	2.6	61.6	132.8	289.2	4.7	1,145.9
2022 January	208.9	28.0	492.0	730.8	95.5	23.0	79.9	8.0	4.5	2.6	62.6	133.9	291.5	4.9	1,147.2
February	208.8	28.0	492.0	730.8	95.5	23.0	79.9	8.0	4.5	2.6	63.0	133.9	291.9	4.9	1,147.6
March	207.6	28.0	492.0	729.5	95.5	23.0	80.0	8.0	4.5	2.6	63.9	135.0	293.9	5.2	1,148.7
April	207.2	27.9	492.1	729.0	95.5	23.0	80.0	8.0	4.5	2.6	64.4	136.9	296.3	5.9	1,151.3
May	205.7	27.1	494.9	729.5	95.5	23.0	80.0	8.0	4.5	2.6	65.1	137.1	297.2	5.9	1,152.7
June	202.9	26.9	496.1	727.8	94.8	23.0	80.0	8.0	4.5	2.6	66.3	137.5	298.8	6.5	1,152.4
July	202.9	26.9	497.2	728.9	94.8	23.0	80.0	8.0	4.4	2.6	66.9	137.6	299.4	6.8	1,154.5
August	202.0	26.9	497.2	728.0	94.8	23.0	80.0	8.0	4.4	2.7	67.6	137.6	300.2	7.3	1,154.8
September	201.2	26.9	497.0	727.0	94.8	23.0	80.0	8.0	4.4	2.7	68.3	137.6	300.9	7.8	1,155.1
October	201.2	26.9	497.0	727.0	94.8	23.0	80.0	8.0	4.4	2.7	68.9	137.6	301.4	8.5	1,156.3
November	201.2	26.9	497.2	727.2	94.8	23.0	80.0	8.0	4.4	2.7	69.7	139.3	304.0	8.6	1,159.1
December	198.3	26.8	497.0	723.9	94.8	23.0	80.0	8.0	4.4	2.7	72.1	140.9	308.1	8.8	1,160.2
2023 January	195.6	26.8	498.4	722.6	94.8	23.1	80.0	8.0	4.3	2.7	73.7	141.7	310.5	8.9	1,161.4
February	195.5	26.8	499.8	724.1	94.8	23.1	80.1	8.0	4.3	2.7	74.5	142.3	311.8	9.1	1,164.4
March	194.6	27.7	499.7	723.8	94.8	23.2	80.1	8.0	4.3	2.6	75.2	142.6	312.8	9.4	1,165.5
April	192.4	28.6	501.1	723.8	94.8	23.2	80.1	8.0	4.3	2.7	76.1	143.3	314.4	9.6	1,167.1
May	186.3	29.0	504.7	721.6	94.8	23.2	80.1	7.9	4.3	2.7	77.0	144.4	316.3	9.7	1,167.0
June	184.1	29.1	507.9	722.8	94.8	23.2	80.1	7.8	4.3	2.7	78.7	144.4	317.9	10.8	1,170.8
July	183.4	29.7	507.2	722.0	95.8	23.2	80.1	7.8	4.3	2.7	80.8	144.6	320.2	12.3	1,174.9

^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 Includes other gases (blast furnace gas, other manufactured and waste gases derived from fossil fuels, and, through 2010, propane gas), which are not separately shown.

^e Through 1988, hydroelectric pumped storage is included in "Conventional Hydroelectric Power."

^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 Electric net summer capacity from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic capacity.

ⁱ Includes chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, flywheels, and, beginning in 2001, non-renewable waste (municipal

solid waste from non-biogenic sources, and tire-derived fuels), which are not separately shown.

^j Through 1984, waste is included in "Wood."

^k Through 1988, solar is included in "Wind."

^l Through 1988, all 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 0.05 million kilowatts.

Notes: • Data are at end of period. • For plants that use multiple sources of energy, capacity is assigned to the energy source reported as the predominant one.

• Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See "Net summer capacity" 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/#electricity> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: Tables 7.7b–7.7d.

Table 7.7b Electric Net Summer Capacity: Electric Power Sector
(Subset of Table 7.7a; Million Kilowatts)

	Fossil Fuels				Nuclear Electric Power	Hydro-electric Pumped Storage	Renewable Energy							Battery Storage	Total ⁱ
	Coal ^a	Petroleum ^b	Natural Gas ^c	Total ^d			Conventional Hydro-electric Power ^e	Biomass		Geo-thermal	Solar ^h	Wind	Total		
								Wood ^f	Waste ^g						
1950 Year	NA	NA	NA	50.0	0.0	(e)	19.2	(s)	(j)	NA	NA	NA	19.2	NA	69.2
1955 Year	NA	NA	NA	86.8	.0	(e)	27.4	(s)	(j)	NA	NA	NA	27.4	NA	114.2
1960 Year	NA	NA	NA	130.8	.4	(e)	35.8	.1	(j)	(s)	NA	NA	35.9	NA	167.1
1965 Year	NA	NA	NA	182.9	.8	(e)	51.0	.1	(j)	(s)	NA	NA	51.1	NA	234.8
1970 Year	NA	NA	NA	265.4	7.0	(e)	63.8	.1	(j)	.1	NA	NA	64.0	NA	336.4
1975 Year	NA	NA	NA	375.1	37.3	(e)	78.4	.1	(j)	.5	NA	NA	79.0	NA	491.3
1980 Year	NA	NA	NA	444.1	51.8	(e)	81.7	.1	(j)	.9	NA	NA	82.7	NA	578.6
1985 Year	NA	NA	NA	485.0	79.4	(e)	88.9	.2	(j)	1.6	(k)	(s)	90.8	NA	655.2
1990 Year ⁱ	302.3	76.8	129.9	509.3	99.6	19.5	73.3	1.2	2.1	2.7	.3	1.8	81.4	NA	709.9
1995 Year	306.0	65.4	161.9	533.7	99.5	21.4	77.4	1.8	3.0	3.0	.3	1.7	87.3	NA	741.8
2000 Year	310.2	60.7	204.7	575.9	97.9	19.5	78.2	1.7	3.3	2.8	.4	2.4	88.8	NA	782.1
2005 Year	309.0	57.4	367.5	734.3	100.0	21.3	76.9	1.6	3.0	2.3	.4	8.7	92.9	NA	948.6
2006 Year	309.2	56.8	372.0	738.4	100.3	21.5	77.1	1.7	3.1	2.3	.4	11.3	95.9	NA	956.2
2007 Year	309.1	54.8	377.1	741.5	100.3	21.9	77.5	1.7	3.5	2.2	.5	16.5	102.0	NA	965.7
2008 Year	309.6	56.4	381.8	748.1	100.8	21.9	77.6	1.8	3.6	2.2	.5	24.7	110.5	NA	981.3
2009 Year	310.5	55.7	385.4	751.8	101.0	22.2	78.2	1.9	3.7	2.4	.6	34.3	121.1	NA	996.2
2010 Year	312.9	54.6	389.8	757.5	101.2	22.2	78.5	2.1	3.7	2.4	.9	39.1	126.6	(s)	1,009.2
2011 Year	313.7	50.4	399.7	763.8	101.4	22.3	78.3	2.0	3.8	2.4	1.5	45.6	133.6	.1	1,021.3
2012 Year	305.9	45.7	406.6	758.2	101.9	22.4	78.1	2.3	4.0	2.6	3.1	59.0	149.0	.1	1,032.0
2013 Year	299.9	42.4	409.2	751.7	99.2	22.4	78.5	2.9	4.1	2.6	6.4	59.9	154.5	.1	1,029.0
2014 Year	295.9	40.1	415.6	751.7	98.6	22.5	79.4	2.9	4.2	2.5	10.1	64.2	163.3	.2	1,037.6
2015 Year	277.0	35.7	423.0	736.0	98.7	22.6	79.4	3.1	4.2	2.5	13.4	72.5	175.0	.3	1,032.9
2016 Year	264.3	33.2	430.4	728.2	99.6	22.8	79.6	3.2	4.2	2.5	21.6	81.2	192.3	.6	1,043.6
2017 Year	254.4	32.1	439.5	726.3	99.6	22.8	79.4	3.0	4.2	2.5	26.6	87.5	203.3	.7	1,053.6
2018 Year	240.7	30.8	453.7	725.6	99.4	22.8	79.6	2.9	4.2	2.4	31.5	94.3	214.8	.8	1,063.7
2019 Year	226.8	30.0	459.5	716.7	98.1	22.8	79.5	2.7	3.9	2.5	37.0	103.5	229.1	1.0	1,068.0
2020 Year	214.0	26.2	468.2	708.7	96.5	23.0	79.6	2.7	3.8	2.5	47.6	118.0	254.3	1.5	1,084.2
2021 January	213.1	27.4	468.1	709.0	96.6	23.0	79.5	2.6	3.7	2.5	48.2	118.9	255.4	1.6	1,085.9
February	213.1	27.4	468.1	709.0	96.6	23.0	79.5	2.6	3.7	2.5	48.9	119.8	257.1	1.6	1,087.5
March	212.6	27.4	468.3	708.5	96.6	23.0	79.5	2.4	3.7	2.5	50.5	121.0	259.7	1.7	1,089.8
April	212.2	27.4	468.6	708.5	95.5	23.0	79.5	2.4	3.7	2.5	51.0	121.7	261.0	1.9	1,090.2
May	211.7	27.4	468.5	707.9	95.5	23.0	79.6	2.4	3.7	2.5	51.7	123.1	263.0	2.5	1,092.2
June	210.7	26.8	469.1	707.0	95.5	23.0	79.6	2.4	3.7	2.5	52.4	124.7	265.4	2.7	1,093.9
July	210.7	26.8	470.0	707.8	95.5	23.0	79.6	2.4	3.7	2.5	53.2	126.0	267.4	3.0	1,097.1
August	210.7	26.8	470.7	708.5	95.5	23.0	79.6	2.4	3.7	2.5	54.7	126.3	269.2	3.1	1,099.7
September	210.7	26.8	470.5	708.4	95.5	23.0	79.6	2.4	3.6	2.5	55.7	126.7	270.6	3.3	1,101.0
October	209.8	26.8	471.8	708.7	95.5	23.0	79.6	2.4	3.7	2.5	56.4	128.1	272.8	3.7	1,104.0
November	209.8	26.8	471.8	708.7	95.5	23.0	79.6	2.4	3.7	2.5	57.5	129.2	274.9	4.4	1,106.8
December	208.3	26.8	473.5	708.9	95.5	23.0	79.6	2.4	3.7	2.5	61.0	132.6	281.9	4.7	1,114.3
2022 January	207.4	26.6	473.6	707.9	95.5	23.0	79.7	2.5	3.6	2.5	62.1	133.7	284.1	4.8	1,115.7
February	207.3	26.6	473.6	707.9	95.5	23.0	79.7	2.5	3.6	2.5	62.4	133.7	284.4	4.9	1,116.0
March	206.1	26.6	473.5	706.6	95.5	23.0	79.7	2.5	3.6	2.5	63.4	134.8	286.5	5.1	1,117.0
April	205.7	26.4	473.6	706.1	95.5	23.0	79.7	2.5	3.6	2.5	63.8	136.8	288.9	5.9	1,119.7
May	204.2	25.6	476.4	706.6	95.5	23.0	79.7	2.4	3.6	2.5	64.5	137.0	289.8	5.9	1,121.1
June	201.4	25.5	477.7	704.9	94.8	23.0	79.7	2.4	3.6	2.5	65.7	137.4	291.4	6.4	1,120.8
July	201.4	25.5	478.7	706.0	94.8	23.0	79.7	2.4	3.6	2.6	66.3	137.4	292.0	6.8	1,122.9
August	200.5	25.5	478.8	705.1	94.8	23.0	79.7	2.4	3.6	2.6	67.0	137.4	292.7	7.3	1,123.2
September	199.7	25.5	478.6	704.1	94.8	23.0	79.7	2.4	3.6	2.6	67.8	137.4	293.5	7.8	1,123.5
October	199.7	25.5	478.6	704.1	94.8	23.0	79.7	2.4	3.6	2.6	68.3	137.4	294.0	8.4	1,124.7
November	199.7	25.4	478.8	704.3	94.8	23.0	79.7	2.4	3.6	2.6	69.1	139.1	296.5	8.5	1,127.4
December	196.8	25.4	478.5	701.0	94.8	23.0	79.7	2.4	3.6	2.6	71.5	140.8	300.6	8.8	1,128.5
2023 January	194.1	25.4	479.7	699.5	94.8	23.1	79.7	2.5	3.4	2.6	73.1	141.6	303.0	8.8	1,129.5
February	194.0	25.4	481.1	700.9	94.8	23.1	79.8	2.5	3.4	2.6	73.9	142.1	304.3	9.1	1,132.4
March	193.1	26.3	481.0	700.7	94.8	23.2	79.8	2.4	3.4	2.6	74.6	142.5	305.2	9.3	1,133.5
April	190.9	27.1	482.5	700.8	94.8	23.2	79.8	2.4	3.4	2.6	75.4	143.2	306.8	9.5	1,135.2
May	184.8	27.5	486.0	698.6	94.8	23.2	79.8	2.4	3.4	2.6	76.4	144.3	308.8	9.6	1,135.2
June	182.6	27.6	489.1	699.7	94.8	23.2	79.8	2.4	3.1	2.6	78.1	144.2	310.3	10.7	1,138.8
July	182.0	28.2	488.3	698.9	95.8	23.2	79.8	2.4	2.9	2.7	80.2	144.5	312.4	12.2	1,142.7

^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 Includes other gases (blast furnace gas, other manufactured and waste gases derived from fossil fuels, and, through 2010, propane gas), which are not separately shown.

^e Through 1988, hydroelectric pumped storage is included in "Conventional Hydroelectric Power."

^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 Electric net summer capacity from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic capacity.

ⁱ Includes chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, flywheels, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels), which are not

separately shown.

^j Through 1984, waste is included in "Wood."

^k Through 1988, solar is included in "Wind."

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

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

Notes: • Data are at end of period. • For plants that use multiple sources of energy, capacity is assigned to the energy source reported as the predominant one.

• Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See "Net summer capacity" in Glossary. • 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 7.7c Electric Net Summer Capacity: Commercial Sector
(Subset of Table 7.7a; Million Kilowatts)

	Fossil Fuels				Nuclear Electric Power	Hydro-electric Pumped Storage	Renewable Energy							Battery Storage	Total ^h
	Coal ^a	Petro-leum ^b	Natural Gas ^c	Total ^d			Conven-tional Hydro-electric Power	Biomass		Geo-thermal	Solar ^g	Wind	Total		
								Wood ^e	Waste ^f						
1990 Year	0.3	0.2	0.7	1.2	—	—	(s)	(s)	0.2	—	—	—	0.2	—	1.4
1995 Year .....	.3	.2	1.2	1.8	—	—	(s)	(s)	.3	—	—	—	.3	—	2.1
2000 Year .....	.3	.3	1.2	1.8	—	—	(s)	(s)	.4	—	—	—	.4	—	2.2
2005 Year .....	.4	.3	1.0	1.8	—	—	(s)	(s)	.4	—	—	—	.5	—	2.2
2006 Year .....	.4	.3	1.0	1.8	—	—	(s)	(s)	.4	—	—	—	.5	—	2.3
2007 Year .....	.4	.3	1.1	1.8	—	—	(s)	(s)	.4	—	—	—	.5	—	2.3
2008 Year .....	.4	.4	1.1	1.8	—	—	(s)	(s)	.4	—	—	—	.5	—	2.3
2009 Year .....	.4	.3	1.1	1.9	—	—	(s)	(s)	.5	—	—	(s)	.5	—	2.4
2010 Year .....	.4	.4	1.2	1.9	—	—	(s)	(s)	.5	—	(s)	(s)	.5	—	2.5
2011 Year .....	.4	.4	1.3	2.1	—	—	(s)	(s)	.6	—	.1	(s)	.7	—	2.8
2012 Year .....	.4	.4	1.5	2.4	—	—	(s)	(s)	.6	—	.1	(s)	.8	—	3.2
2013 Year .....	.3	.5	1.8	2.6	—	—	(s)	(s)	.7	—	.2	(s)	1.0	—	3.6
2014 Year .....	.3	.5	1.8	2.6	—	—	(s)	.1	.7	—	.2	.1	1.1	—	3.7
2015 Year .....	.2	.5	1.9	2.6	—	—	(s)	.1	.7	—	.3	.1	1.2	(s)	3.8
2016 Year .....	.2	.5	2.0	2.7	—	—	.1	.1	.7	—	.3	.1	1.2	(s)	3.9
2017 Year .....	.2	.6	2.0	2.8	—	—	.1	.1	.7	—	.3	.1	1.2	(s)	4.1
2018 Year .....	.1	.8	2.2	3.1	—	—	.1	.1	.7	(s)	.3	.1	1.3	(s)	4.5
2019 Year .....	.1	.9	2.2	3.2	—	—	.1	.1	.7	(s)	.4	.1	1.3	(s)	4.6
2020 Year .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	(s)	.4	.1	1.3	(s)	4.6
2021 January .....	.1	.9	2.2	3.2	—	—	.1	.1	.7	(s)	.4	.1	1.4	(s)	4.7
February .....	.1	.9	2.2	3.2	—	—	.1	.1	.7	(s)	.4	.1	1.4	(s)	4.7
March .....	.1	.9	2.2	3.2	—	—	.1	.1	.7	(s)	.4	.1	1.4	(s)	4.7
April .....	.1	.9	2.2	3.2	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.7
May .....	.1	.9	2.2	3.2	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.7
June .....	.1	.9	2.2	3.2	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.7
July .....	.1	.9	2.2	3.2	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.7
August .....	.1	.9	2.2	3.2	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.7
September .....	.1	.9	2.3	3.2	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
October .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
November .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
December .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
2022 January .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
February .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
March .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
April .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
May .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
June .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
July .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
August .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
September .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
October .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.8
November .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.9
December .....	.1	.9	2.3	3.3	—	—	.1	.1	.7	.1	.4	.1	1.5	(s)	4.9
2023 January .....	.1	.9	2.3	3.3	—	—	.1	.1	.8	.1	.4	.1	1.6	(s)	5.0
February .....	.1	.9	2.4	3.4	—	—	.1	.1	.8	.1	.4	.1	1.6	(s)	5.0
March .....	.1	.9	2.3	3.4	—	—	.1	.1	.8	.1	.4	.1	1.6	(s)	5.0
April	(s)	.9	2.4	3.4	—	—	.1	.1	.8	.1	.4	.1	1.6	(s)	5.0
May	(s)	1.0	2.4	3.4	—	—	.1	.1	.8	.1	.4	.1	1.6	(s)	5.0
June	(s)	1.0	2.4	3.4	—	—	.1	.1	1.0	.1	.4	.1	1.8	(s)	5.3
July	(s)	1.0	2.4	3.4	—	—	.1	.1	1.3	.0	.4	.1	2.0	(s)	5.5

^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 Includes other gases (blast furnace gas, other manufactured and waste gases derived from fossil fuels, and, through 2010, propane gas), which are not separately shown.

^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 Electric net summer capacity from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic capacity.

^h Includes chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, flywheels, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels), which are not

separately shown.

—=No data reported. (s)=Less than 0.05 million kilowatts.

Notes: • Data are at end of period. • For plants that use multiple sources of energy, capacity is assigned to the energy source reported as the predominant one. • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See "Net summer capacity" in Glossary. • 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 1989 and monthly data beginning in 2008.

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." • **2001–2007:** EIA, Form EIA-860, "Annual Electric Generator Report." • **2008 forward:** EIA, Form EIA-860, "Annual Electric Generator Report," and Form EIA-860M, "Monthly Update to the Annual Electric Generator Report."

Table 7.7d Electric Net Summer Capacity: Industrial Sector
(Subset of Table 7.7a; Million Kilowatts)

	Fossil Fuels				Nuclear Electric Power	Hydro- electric Pumped Storage	Renewable Energy							Battery Storage	Total ^h
	Coal ^a	Petro- leum ^b	Natural Gas ^c	Total ^d			Conven- tional Hydro- electric Power	Biomass		Geo- thermal	Solar ^g	Wind	Total		
								Wood ^e	Waste ^f						
1990 Year	4.8	0.9	10.3	17.3	—	—	0.6	4.3	0.2	—	—	—	5.1	—	22.9
1995 Year	5.0	1.0	11.3	18.7	—	—	1.1	4.9	.2	—	—	—	6.3	—	25.5
2000 Year	4.6	.8	13.7	21.2	—	—	1.1	4.4	.2	—	—	—	5.7	—	27.3
2005 Year	4.0	.8	14.5	21.0	—	—	.7	4.5	.2	—	—	—	5.4	—	27.2
2006 Year	3.3	1.0	15.3	21.4	—	—	.7	4.7	.2	—	—	—	5.6	—	27.8
2007 Year	3.2	.9	14.7	20.6	—	—	.3	5.0	.2	—	(s)	—	5.5	—	26.8
2008 Year	3.2	.7	14.3	20.0	—	—	.3	5.0	.1	—	(s)	—	5.4	—	26.6
2009 Year	3.4	.7	14.4	20.2	—	—	.3	5.0	.1	—	(s)	—	5.5	—	26.8
2010 Year	4.0	.7	14.2	20.8	—	—	.3	4.9	.2	—	(s)	(s)	5.5	—	27.4
2011 Year	3.5	.7	14.3	20.4	—	—	.3	5.0	.2	—	(s)	(s)	5.6	—	27.1
2012 Year	3.3	1.0	14.3	20.5	—	—	.6	5.2	.2	—	(s)	(s)	6.1	—	27.8
2013 Year	3.0	.7	14.4	20.0	—	—	.7	5.5	.2	—	(s)	(s)	6.4	—	27.5
2014 Year	2.9	.6	14.7	20.0	—	—	.3	5.4	.2	—	(s)	(s)	5.9	—	27.2
2015 Year	2.5	.7	14.5	19.8	—	—	.3	5.8	.2	—	(s)	(s)	6.4	—	27.4
2016 Year	2.1	.7	14.5	19.4	—	—	.3	5.7	.2	—	(s)	(s)	6.2	—	26.8
2017 Year	2.0	.6	14.5	19.1	—	—	.3	5.7	.2	—	(s)	(s)	6.3	(s)	26.7
2018 Year	2.0	.6	14.4	19.1	—	—	.2	5.8	.1	—	(s)	(s)	6.2	(s)	26.6
2019 Year	1.7	.5	14.8	19.2	—	—	.2	5.6	.1	—	.1	(s)	6.0	(s)	26.5
2020 Year	1.5	.5	15.3	19.3	—	—	.2	5.6	.1	—	.1	(s)	6.3	(s)	26.8
2021 January	1.4	.5	15.9	19.4	—	—	.2	5.4	.1	—	.1	(s)	5.8	(s)	26.6
February	1.4	.5	15.9	19.4	—	—	.2	5.4	.1	—	.1	(s)	5.8	(s)	26.6
March	1.4	.5	15.9	19.4	—	—	.2	5.4	.1	—	.1	(s)	5.8	(s)	26.6
April	1.4	.5	15.9	19.4	—	—	.2	5.4	.1	—	.1	(s)	5.8	(s)	26.5
May	1.4	.5	15.9	19.4	—	—	.2	5.4	.1	—	.1	(s)	5.8	(s)	26.5
June	1.4	.5	16.0	19.4	—	—	.2	5.4	.1	—	.1	.1	5.8	(s)	26.6
July	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.1	.1	5.8	(s)	26.7
August	1.4	.5	16.1	19.5	—	—	.2	5.4	.1	—	.1	.1	5.9	(s)	26.7
September	1.4	.5	16.1	19.5	—	—	.2	5.4	.1	—	.1	.1	5.9	(s)	26.7
October	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.1	.1	5.9	(s)	26.8
November	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.1	.1	5.9	(s)	26.8
December	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.1	.1	5.9	(s)	26.8
2022 January	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.1	.1	5.9	(s)	26.8
February	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.1	.1	5.9	(s)	26.8
March	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.1	.1	6.0	(s)	26.8
April	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.1	.1	6.0	(s)	26.8
May	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.1	.1	6.0	(s)	26.8
June	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.2	.1	6.0	(s)	26.8
July	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.2	.1	6.0	(s)	26.8
August	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.2	.1	6.0	(s)	26.8
September	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.2	.1	6.0	(s)	26.8
October	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.2	.1	6.0	(s)	26.8
November	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.2	.1	6.0	(s)	26.8
December	1.4	.5	16.1	19.6	—	—	.2	5.4	.1	—	.2	.1	6.0	(s)	26.8
2023 January	1.4	.5	16.3	19.8	—	—	.2	5.4	.1	—	.2	.1	6.0	(s)	27.0
February	1.4	.5	16.4	19.8	—	—	.2	5.4	.1	—	.2	.1	6.0	(s)	27.0
March	1.4	.5	16.4	19.7	—	—	.2	5.5	.1	—	.2	.1	6.0	(s)	27.0
April	1.4	.5	16.3	19.6	—	—	.2	5.4	.1	—	.2	.1	6.0	(s)	26.9
May	1.4	.5	16.3	19.6	—	—	.2	5.3	.1	—	.2	.1	5.9	(s)	26.8
June	1.4	.5	16.4	19.7	—	—	.2	5.2	.1	—	.2	.1	5.8	(s)	26.8
July	1.4	.5	16.4	19.7	—	—	.2	5.2	.1	—	.2	.1	5.8	(s)	26.8

^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 Includes other gases (blast furnace gas, other manufactured and waste gases derived from fossil fuels, and, through 2010, propane gas), which are not separately shown.

^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 Electric net summer capacity from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic capacity.

^h Includes chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, flywheels, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels), which are not

separately shown.

—=No data reported. (s)=Less than 0.05 million kilowatts.

Notes: • Data are at end of period. • For plants that use multiple sources of energy, capacity is assigned to the energy source reported as the predominant one. • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • See "Net summer capacity" in Glossary. • 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 1989 and monthly data beginning in 2008.

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." • **2001–2007:** EIA, Form EIA-860, "Annual Electric Generator Report." • **2008 forward:** EIA, Form EIA-860, "Annual Electric Generator Report," and Form EIA-860M, "Monthly Update to the Annual Electric Generator Report."

Table 7.8a Capacity Factors and Usage Factors at Electric Generators: Total (All Sectors)
(Percent)

	Capacity Factors ^a												Usage Factors ^b	
	Coal ^{c,d}	Petro- leum ^{c,e}	Natural Gas ^f			Nuclear Electric Power ^g	Conven- tional Hydro- electric Power	Bio- mass ^{c,h}	Geo- thermal	Solar			Hydro- electric Pumped Storage	Battery Storage
			Combi- ned Cycle	Gas Turbine	Steam Turbine					Photo- voltaic ⁱ	Thermal	Wind ^j		
2008 Year	72.4	9.7	40.3	7.6	12.1	91.1	37.1	64.0	74.3	19.2	19.5	31.7	—	—
2009 Year	64.2	9.3	43.9	6.8	10.9	90.3	39.6	62.9	73.0	20.0	23.6	28.1	—	—
2010 Year	67.1	8.4	44.3	7.8	11.1	91.1	37.5	62.5	71.6	20.2	24.5	29.7	—	—
2011 Year	62.8	7.4	44.3	7.9	11.7	89.1	45.8	61.4	71.5	19.0	23.9	32.1	—	—
2012 Year	56.0	7.5	52.1	8.9	12.7	86.1	39.5	60.1	68.1	20.4	23.6	31.8	—	—
2013 Year	59.4	6.6	48.8	8.3	11.2	90.8	38.8	60.3	71.8	24.5	17.4	32.4	9.8	.7
2014 Year	60.5	6.7	48.6	8.3	10.3	91.7	37.2	61.0	72.0	25.6	18.3	34.0	10.2	1.7
2015 Year	54.3	6.7	55.8	9.8	11.3	92.3	35.7	60.5	71.9	25.5	21.7	32.2	10.2	3.6
2016 Year	52.8	5.9	55.4	11.0	12.3	92.3	38.2	59.9	71.6	25.0	22.1	34.5	11.2	3.8
2017 Year	53.1	6.3	51.2	9.6	10.7	92.3	43.0	60.8	73.2	25.6	21.8	34.6	11.4	6.8
2018 Year	53.6	6.6	55.1	11.9	12.6	92.5	41.9	61.1	76.0	25.1	23.6	34.6	10.8	5.2
2019 Year	47.5	5.7	56.8	11.8	14.3	93.5	39.1	60.3	74.4	24.5	21.2	34.8	10.4	4.0
2020 Year	40.2	5.8	56.6	11.6	14.3	92.5	41.5	60.2	74.3	24.9	20.5	35.4	10.5	3.4
2021 January	51.7	5.9	54.5	8.0	8.2	99.9	43.4	62.8	71.1	16.2	6.3	34.1	8.1	3.2
February	61.4	7.8	50.9	10.8	12.4	97.0	40.2	61.7	75.4	19.7	11.4	33.1	9.0	4.8
March	39.9	5.5	44.6	8.3	7.9	88.7	36.3	62.2	64.6	25.1	19.8	44.0	7.4	4.6
April	35.9	3.8	44.8	10.7	10.3	82.2	33.4	57.4	68.6	29.4	26.7	40.9	7.2	4.3
May	41.1	4.6	47.0	9.6	10.9	89.2	38.3	59.7	70.2	31.9	30.2	36.4	8.7	5.3
June	58.5	4.9	60.9	15.5	18.9	96.1	41.8	62.7	75.2	31.3	25.8	29.4	12.4	5.7
July	65.7	6.8	66.9	17.4	20.6	96.9	37.1	61.6	71.8	30.2	22.3	22.9	15.2	5.0
August	65.9	7.7	67.4	18.6	22.1	97.8	35.3	62.4	70.1	28.9	29.6	28.5	15.9	5.4
September	53.1	6.2	58.0	11.7	14.8	93.8	31.2	61.1	72.2	27.6	26.8	31.4	12.7	4.7
October	40.9	6.4	52.7	12.6	13.0	80.2	30.2	58.5	67.3	21.9	19.9	34.1	9.7	4.1
November	39.1	6.2	51.4	11.7	10.0	91.3	35.5	58.1	71.4	19.0	17.9	38.7	7.7	4.2
December	39.5	5.0	53.0	9.9	8.5	99.5	43.1	62.8	74.6	14.1	8.5	41.6	8.6	4.2
Average	49.3	5.9	54.4	12.1	13.1	92.7	37.1	60.9	71.0	24.6	20.5	34.6	10.2	4.6
2022 January	57.2	7.0	56.3	11.5	11.2	99.3	44.1	60.8	80.4	17.6	11.3	38.3	9.5	3.9
February	51.7	6.0	53.0	10.0	9.2	96.4	42.6	62.6	74.4	22.0	15.9	42.2	8.9	4.9
March	40.0	4.0	46.6	8.7	7.4	88.9	42.6	58.8	70.6	25.0	23.1	43.0	9.1	4.3
April	37.6	4.2	44.3	10.2	9.0	80.4	34.0	56.5	70.2	28.8	30.1	46.6	7.3	4.7
May	41.7	5.9	49.9	13.1	12.8	89.2	38.8	58.5	70.6	31.2	33.5	40.8	10.9	4.9
June	52.0	6.1	61.6	17.6	17.7	96.3	46.7	62.7	72.0	33.4	34.9	33.7	14.8	5.7
July	59.3	5.6	70.5	22.4	25.2	97.7	40.7	64.0	73.2	31.4	26.3	28.6	15.9	5.4
August	58.4	6.1	72.2	20.3	20.7	97.7	36.5	62.0	73.0	28.5	25.3	23.8	16.4	5.0
September	46.1	6.2	63.7	14.6	15.7	93.4	29.2	57.4	73.5	27.1	26.7	27.1	13.2	4.8
October	37.9	5.5	52.9	10.7	11.8	83.6	24.6	54.4	67.6	23.6	26.4	31.8	8.4	5.4
November	40.3	6.3	52.0	11.8	11.1	90.9	32.6	59.9	76.3	16.8	14.1	41.7	9.2	5.4
December	50.9	9.7	57.0	13.6	10.6	98.0	36.8	60.8	78.6	13.1	9.0	37.5	9.6	5.3
Average	47.8	6.0	56.7	13.7	13.6	92.6	37.4	59.8	73.4	24.8	23.1	36.1	11.1	5.0
2023 January	42.8	3.6	57.1	9.4	7.7	100.5	38.6	60.4	70.0	14.9	7.7	37.1	9.2	5.7
February	36.4	4.0	57.4	9.1	8.5	95.5	35.9	58.7	72.3	18.7	11.0	43.9	9.6	5.3
March	35.3	3.8	53.4	10.2	9.5	89.1	34.6	55.1	68.8	21.8	14.0	41.4	9.1	5.9
April	30.1	4.3	48.0	12.3	12.5	82.8	31.1	50.4	71.0	27.0	27.9	41.5	8.6	5.7
May	32.2	3.8	52.6	13.9	15.6	87.2	47.0	56.5	68.3	29.5	27.5	29.8	10.8	5.2
June	44.0	4.7	62.5	17.3	21.4	95.2	34.1	56.4	65.5	31.2	34.6	26.4	13.7	5.2
July	57.8	6.4	72.6	23.1	31.2	99.1	36.1	57.0	66.7	31.4	35.0	25.7	15.8	5.5

^a Capacity factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (net generation) to the maximum possible output over that same time period (using time-adjusted capacity).

^b Usage factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (gross generation) to the maximum possible output over that same time period (using time-adjusted capacity).

^c Steam turbine, gas turbine, internal combustion engine, combined-cycle, and other plants.

^d Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.

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

^f Natural gas, plus a small amount of supplemental gaseous fuels. Capacity factors for natural gas internal combustion engine, energy storage, fuel cell, and other plants are not displayed.

^g See Table 8.1 for nuclear capacity factors for 1957–2007.

^h Wood and wood-derived fuels, 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 Solar photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic generators.

^j Onshore wind plants, and, beginning in 2017, offshore wind plants.

— = No data reported.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • Monthly factors are based on a time-adjusted total net summer capacity of generators in operation for the entire month. Annual factors are based on a time-weighted average of the monthly time-adjusted capacity. • For plants that use multiple energy sources or technologies, capacity is assigned to the reported combination of predominant energy source and technology. • See EIA's *Electric Power Annual*, "Technical notes," for further information. • See "Capacity factor" in Glossary. • 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 2008.

Sources: U.S. Energy Information Administration (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."

Table 7.8b Capacity Factors and Usage Factors at Electric Generators: Electric Power Sector (Percent)

	Capacity Factors ^a												Usage Factors ^b	
	Coal ^{c,d}	Petro-leum ^{c,e}	Natural Gas ^f			Nuclear Electric Power ^g	Conven-tional Hydro-electric Power	Bio-mass ^{c,h}	Geo-thermal	Solar		Wind ⁱ	Hydro-electric Pumped Storage	Battery Storage
			Combined Cycle	Gas Turbine	Steam Turbine					Photo-voltaic ^j	Thermal			
2008 Year	72.6	9.4	39.5	5.2	11.6	91.1	37.0	65.5	74.3	19.7	19.5	31.7	—	—
2009 Year	64.4	9.1	43.5	4.4	10.4	90.3	39.5	64.6	73.0	20.3	23.6	28.1	—	—
2010 Year	67.3	8.1	43.5	5.2	10.6	91.1	37.5	63.4	71.6	20.3	24.5	29.8	—	—
2011 Year	62.9	7.1	43.6	5.1	11.2	89.1	45.7	62.5	71.5	19.0	23.9	32.1	—	—
2012 Year	56.2	7.0	51.6	6.0	12.1	86.0	39.4	61.2	68.1	20.4	23.6	31.8	—	—
2013 Year	59.5	6.3	48.0	5.0	10.4	90.8	38.6	60.0	71.8	24.7	17.4	32.4	9.8	.7
2014 Year	60.7	6.4	48.0	5.2	9.5	91.7	37.1	61.5	72.0	25.8	18.3	34.0	10.2	1.7
2015 Year	54.3	6.3	55.5	6.8	10.8	92.3	35.6	59.5	71.9	25.7	21.7	32.2	10.2	3.6
2016 Year	52.9	5.6	54.9	8.2	11.6	92.3	38.1	59.2	71.6	25.1	22.1	34.5	11.2	3.8
2017 Year	53.2	6.1	50.6	6.6	10.1	92.3	43.0	60.2	73.2	25.7	21.8	34.6	11.4	6.9
2018 Year	53.7	6.4	54.6	9.0	11.9	92.5	41.8	60.2	76.0	25.2	23.6	34.6	10.8	5.3
2019 Year	47.5	5.3	57.0	8.3	13.2	93.4	41.1	59.5	68.9	24.4	21.2	34.4	10.4	5.5
2020 Year	40.5	5.0	56.8	8.3	13.3	92.4	40.7	58.9	68.4	24.3	20.6	35.3	10.5	5.2
2021 January	51.6	5.6	54.3	4.6	6.4	99.9	41.3	63.9	68.8	15.5	6.3	33.6	8.1	4.3
February	61.3	6.0	51.1	7.0	10.9	97.0	37.5	64.0	73.0	19.3	11.5	32.8	9.0	5.8
March	39.5	5.1	45.1	4.8	6.4	88.7	35.6	62.2	64.6	25.0	19.9	43.0	7.4	5.6
April	35.7	3.6	45.3	7.3	8.9	82.1	33.7	57.5	68.2	29.5	26.7	40.7	7.2	5.2
May	40.9	4.4	47.2	6.6	9.1	89.2	39.2	60.4	67.8	31.9	30.2	36.5	8.7	6.3
June	58.2	4.3	61.8	11.5	17.1	96.0	40.8	64.6	67.7	31.9	25.8	29.5	12.4	6.5
July	65.6	6.0	67.9	13.0	19.1	96.8	37.1	64.3	69.5	30.6	22.3	23.1	15.2	6.6
August	65.8	6.8	68.5	13.6	20.4	97.7	34.2	64.1	68.6	29.1	29.6	28.8	15.9	7.5
September	52.9	5.9	58.5	7.7	13.4	93.8	29.5	61.5	71.1	27.6	26.8	31.7	12.8	7.2
October	40.7	6.0	53.0	9.2	11.6	82.2	28.8	57.4	67.1	21.7	19.9	33.8	9.7	6.1
November	39.1	5.8	51.1	8.3	7.7	91.2	33.6	58.3	72.1	18.5	17.9	38.2	7.7	6.3
December	39.6	5.0	53.2	6.3	6.1	99.5	39.6	63.5	75.4	13.4	8.5	40.8	8.6	5.9
Average	49.2	5.4	54.8	8.3	11.4	92.8	35.9	61.8	69.5	24.4	20.5	34.4	10.2	6.2
2022 January	57.3	7.0	55.9	8.0	9.9	99.3	44.0	60.0	79.7	17.6	11.3	38.3	9.5	4.0
February	51.7	5.8	52.7	6.3	7.9	96.4	42.6	64.3	73.8	22.0	15.9	42.2	8.9	4.9
March	40.0	3.9	46.1	5.2	6.2	88.9	42.6	59.4	70.2	25.0	23.1	43.0	9.1	4.4
April	37.6	4.0	44.0	7.1	7.9	80.4	34.0	55.8	69.6	28.8	30.1	46.6	7.3	4.7
May	41.7	5.8	49.6	10.1	11.9	89.2	38.7	60.0	70.2	31.3	33.5	40.8	10.9	4.9
June	52.1	6.0	61.6	14.7	16.8	96.3	46.7	65.5	72.1	33.5	34.9	33.8	14.8	5.7
July	59.5	5.5	70.7	19.6	24.4	97.7	40.7	68.0	73.4	31.5	26.3	28.6	15.9	5.4
August	58.5	6.0	72.4	17.3	19.8	97.7	36.5	65.3	73.0	28.5	25.3	23.8	16.4	5.0
September	46.1	6.1	63.7	11.5	14.6	93.4	29.2	62.2	73.5	27.2	26.7	27.2	13.2	4.8
October	37.9	5.5	52.7	7.7	10.8	83.6	24.6	57.9	67.9	23.7	26.4	31.8	8.4	5.4
November	40.3	6.2	51.5	8.6	10.0	90.9	32.6	61.2	75.5	16.8	14.1	41.7	9.2	5.4
December	50.9	9.8	56.8	10.5	9.4	98.0	36.7	62.8	77.8	13.2	9.0	37.5	9.6	5.3
Average	47.8	6.0	56.5	10.6	12.5	92.6	37.4	61.9	73.1	24.9	23.1	36.2	11.1	5.1
2023 January	42.9	3.5	57.0	6.0	6.4	100.5	38.5	61.9	69.0	14.9	7.7	37.1	9.2	5.8
February	36.4	4.0	57.2	5.5	7.3	95.5	35.9	58.7	71.6	18.7	11.0	43.9	9.6	5.3
March	35.4	3.6	53.2	6.9	8.4	89.1	34.6	55.0	68.1	21.9	14.0	41.4	9.1	6.0
April	30.0	4.1	47.9	9.5	11.3	82.8	31.0	47.5	70.4	27.1	27.9	41.5	8.6	5.8
May	32.2	3.5	52.5	11.0	14.8	87.2	47.0	57.2	67.9	29.6	27.5	29.8	10.8	5.2
June	44.0	4.6	62.4	14.1	20.6	95.2	34.1	57.4	65.4	31.2	34.6	26.4	13.7	5.2
July	57.9	6.3	72.8	20.3	30.6	99.1	36.1	58.2	66.7	31.4	35.0	25.7	15.8	5.5

^a Capacity factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (net generation) to the maximum possible output over that same time period (using time-adjusted capacity).

^b Usage factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (gross generation) to the maximum possible output over that same time period (using time-adjusted capacity).

^c Steam turbine, gas turbine, internal combustion engine, combined-cycle, and other plants.

^d Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.

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

^f Natural gas, plus a small amount of supplemental gaseous fuels. Capacity factors for natural gas internal combustion engine, energy storage, fuel cell, and other plants are not displayed.

^g See Table 8.1 for nuclear capacity factors for 1957–2007.

^h Wood and wood-derived fuels, 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 Solar photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic generators.

^j Onshore wind plants, and, beginning in 2017, offshore wind plants.

— = No data reported.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • Monthly factors are based on a time-adjusted total net summer capacity of generators in operation for the entire month. Annual factors are based on a time-weighted average of the monthly time-adjusted capacity. • For plants that use multiple energy sources or technologies, capacity is assigned to the reported combination of predominant energy source and technology. • See EIA's *Electric Power Annual*, "Technical notes," for further information. • See "Capacity factor" in Glossary. • 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. • 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 2008.

Sources: U.S. Energy Information Administration (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."

Table 7.8c Capacity Factors and Usage Factors at Electric Generators: Commercial Sector
(Percent)

	Capacity Factors ^a											Usage Factors ^b		
	Coal ^{c,d}	Petro- leum ^{c,e}	Natural Gas ^f			Nuclear Electric Power	Conven- tional Hydro- electric Power	Bio- mass ^{c,g}	Geo- thermal	Solar		Wind ⁱ	Hydro- electric Pumped Storage	Battery Storage
			Combi- ned Cycle	Gas Turbine	Steam Turbine					Photo- voltaic ^h	Thermal			
2008 Year	36.5	3.6	52.2	43.9	36.8	—	31.6	56.2	—	9.9	—	—	—	—
2009 Year	28.1	3.6	53.6	43.1	33.6	—	38.0	57.3	—	4.8	—	2.0	—	—
2010 Year	34.5	3.2	54.6	53.8	32.2	—	42.7	55.7	—	11.1	—	17.6	—	—
2011 Year	32.1	2.3	50.9	58.8	33.4	—	17.0	60.1	—	18.7	—	24.2	—	—
2012 Year	31.6	1.9	54.5	52.1	26.7	—	17.0	59.1	—	19.5	—	21.1	—	—
2013 Year	31.7	1.9	52.8	51.9	33.7	—	28.2	60.3	—	20.6	—	22.4	—	—
2014 Year	30.2	2.4	48.6	55.1	31.5	—	20.5	57.4	—	19.9	—	25.5	—	—
2015 Year	35.0	2.6	51.7	53.2	28.6	—	18.6	56.0	—	18.7	—	24.4	—	—
2016 Year	29.4	1.5	53.3	49.7	32.1	—	33.3	52.5	—	20.5	—	26.3	—	4.8
2017 Year	29.8	1.3	53.4	54.0	29.5	—	36.5	52.2	—	19.5	—	26.8	—	5.4
2018 Year	31.4	.7	51.5	56.2	32.0	—	34.7	50.1	—	18.7	—	27.5	—	5.2
2019 Year	30.2	.7	51.0	52.6	35.1	—	28.7	52.3	102.1	18.2	—	27.8	—	1.0
2020 Year	27.4	.4	43.3	50.1	32.2	—	32.8	52.0	103.5	17.4	—	28.3	—	4.4
2021 January	39.1	.4	38.1	60.0	26.2	—	38.2	51.1	119.6	10.3	—	27.3	—	(s)
February	40.0	.6	38.8	57.1	28.1	—	37.0	47.9	118.7	11.6	—	27.6	—	.5
March	32.1	.4	35.8	49.5	24.6	—	34.8	47.4	46.7	17.9	—	38.2	—	.5
April	29.0	.4	32.4	43.9	21.6	—	34.2	50.0	69.8	21.5	—	33.4	—	(s)
May	16.8	.3	32.9	42.7	21.7	—	35.5	46.9	92.4	22.5	—	27.7	—	(s)
June	28.5	.3	42.6	59.0	23.8	—	38.1	48.7	75.4	22.5	—	23.5	—	1.3
July	28.7	.4	49.6	61.8	26.2	—	34.9	51.4	71.3	21.5	—	16.3	—	1.2
August	32.5	.4	50.3	65.6	28.4	—	33.8	51.5	75.1	20.2	—	23.1	—	1.4
September	34.0	.3	47.1	56.1	27.2	—	30.3	50.7	80.1	18.8	—	27.3	—	.8
October	32.5	.3	39.6	51.2	26.7	—	27.5	45.8	87.4	14.8	—	29.0	—	.6
November	29.6	.4	41.3	51.3	24.9	—	29.7	49.8	82.3	12.8	—	34.0	—	(s)
December	27.4	.5	40.0	52.1	27.0	—	35.3	50.5	102.7	9.5	—	31.6	—	.4
Average	30.8	.4	40.7	54.2	25.5	—	34.1	49.3	84.6	17.0	—	28.3	—	.7
2022 January	32.4	.7	41.5	56.0	30.2	—	45.7	49.6	102.4	13.9	—	34.1	—	.3
February	24.4	.6	40.7	53.9	26.5	—	43.2	46.7	96.5	17.0	—	38.1	—	.4
March	16.3	.4	38.9	50.1	26.5	—	39.6	47.8	83.7	18.6	—	37.1	—	.5
April	10.4	.3	37.6	46.7	24.1	—	32.3	49.2	91.8	21.7	—	38.7	—	.7
May	16.0	.3	41.6	47.6	18.6	—	42.8	48.1	84.2	22.1	—	31.9	—	.6
June	21.1	.6	46.2	51.4	25.0	—	49.2	50.0	66.7	24.5	—	26.1	—	.8
July	21.0	.6	50.1	57.9	27.6	—	47.7	47.5	65.8	23.1	—	19.1	—	1.6
August	22.2	.6	49.0	61.5	28.5	—	40.2	48.5	70.9	21.8	—	15.2	—	1.1
September	22.7	.4	47.0	56.2	24.7	—	29.4	43.7	75.7	22.1	—	19.2	—	.7
October	24.2	.3	38.4	46.9	20.0	—	24.5	45.0	57.5	19.1	—	24.4	—	.4
November	34.4	.4	36.2	52.4	22.5	—	32.5	47.2	103.1	12.8	—	36.0	—	.4
December	34.2	.5	37.0	56.8	30.0	—	34.9	45.9	104.2	10.3	—	29.2	—	.3
Average	23.3	.5	42.1	53.1	25.4	—	38.5	47.4	83.4	18.9	—	29.0	—	.7
2023 January	23.8	.4	36.6	54.3	25.6	—	37.5	49.0	105.8	11.8	—	31.9	—	.4
February	20.8	.4	39.5	53.9	26.9	—	34.7	48.1	96.9	13.8	—	37.7	—	.4
March	23.8	.8	39.3	51.0	22.0	—	30.8	44.9	93.8	17.6	—	36.8	—	.3
April	35.8	.9	36.5	46.9	62.0	—	27.7	47.7	92.8	19.6	—	34.0	—	.4
May	34.2	.5	37.0	48.1	20.7	—	49.2	47.7	82.4	21.2	—	25.7	—	.5
June	18.4	.7	47.6	55.9	21.6	—	34.0	53.8	69.5	21.7	—	19.1	—	.9
July	31.0	1.0	50.6	58.7	26.6	—	32.9	60.2	NA	23.1	—	12.5	—	1.3

^a Capacity factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (net generation) to the maximum possible output over that same time period (using time-adjusted capacity).

^b Usage factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (gross generation) to the maximum possible output over that same time period (using time-adjusted capacity).

^c Steam turbine, gas turbine, internal combustion engine, combined-cycle, and other plants.

^d Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.

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

^f Natural gas, plus a small amount of supplemental gaseous fuels. Capacity factors for natural gas internal combustion engine, energy storage, fuel cell, and other plants are not displayed.

^g Wood and wood-derived fuels, 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 Solar photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic generators.

ⁱ Onshore wind plants, and, beginning in 2017, offshore wind plants.

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

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • Monthly factors are based on a time-adjusted total net summer capacity of generators in operation for the entire month. Annual factors are based on a time-weighted average of the monthly time-adjusted capacity. • For plants that use multiple energy sources or technologies, capacity is assigned to the reported combination of predominant energy source and technology. • See EIA's *Electric Power Annual*, "Technical notes," for further information. • See "Capacity factor" in Glossary. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," 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/#electricity> (Excel and CSV files) for all available annual and monthly data beginning in 2008.

Sources: U.S. Energy Information Administration (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."

Table 7.8d Capacity Factors and Usage Factors at Electric Generators: Industrial Sector
(Percent)

	Capacity Factors ^a												Usage Factors ^b	
	Coal ^{c,d}	Petro- leum ^{c,e}	Natural Gas ^f			Nuclear Electric Power	Conven- tional Hydro- electric Power	Bio- mass ^{c,g}	Geo- thermal	Solar			Hydro- electric Pumped Storage	Battery Storage
			Combi- ned Cycle	Gas Turbine	Steam Turbine					Photo- voltaic ^h	Thermal	Wind ⁱ		
2008 Year	51.8	32.6	55.2	53.1	45.2	—	54.9	63.1	—	—	—	—	—	—
2009 Year	46.6	33.4	52.9	54.3	46.9	—	61.6	61.7	—	—	—	—	—	—
2010 Year	54.3	33.9	62.4	69.6	54.3	—	55.9	62.2	—	19.3	—	—	—	—
2011 Year	50.6	29.5	61.1	69.7	56.8	—	61.0	60.2	—	30.3	—	11.6	—	—
2012 Year	45.7	34.4	64.1	69.6	56.7	—	42.3	59.0	—	25.2	—	15.3	—	—
2013 Year	49.8	30.0	70.7	75.1	50.2	—	61.1	60.7	—	25.6	—	25.6	—	—
2014 Year	49.9	27.5	67.5	71.0	48.8	—	52.4	60.9	—	24.3	—	26.4	—	—
2015 Year	48.2	28.1	66.1	72.7	41.2	—	57.6	62.2	—	20.6	—	25.1	—	—
2016 Year	46.3	25.2	69.7	73.0	40.3	—	51.4	61.7	—	16.7	—	25.3	—	—
2017 Year	46.7	24.4	68.9	74.9	37.7	—	55.9	62.7	—	14.8	—	27.0	—	.9
2018 Year	45.6	26.2	71.8	75.3	40.8	—	62.8	63.6	—	12.1	—	25.8	—	.8
2019 Year	41.6	26.3	73.4	75.9	44.2	—	55.0	62.2	—	17.2	—	25.3	—	15.3
2020 Year	41.9	23.2	67.0	74.5	44.0	—	53.2	61.2	—	16.3	—	39.7	—	2.4
2021 January	39.8	20.9	73.1	75.7	46.0	—	54.2	65.7	—	9.9	—	21.5	—	(s)
February	39.4	22.0	57.9	71.6	40.1	—	43.0	62.1	—	12.1	—	27.2	—	.4
March	38.2	21.1	52.6	67.6	43.5	—	64.6	64.2	—	17.6	—	32.2	—	.4
April	39.1	20.8	54.8	70.3	41.7	—	57.8	62.4	—	21.1	—	26.6	—	(s)
May	43.2	22.7	60.3	67.8	42.0	—	53.0	60.5	—	22.0	—	20.7	—	(s)
June	46.2	18.9	64.1	81.1	44.2	—	39.0	61.6	—	22.2	—	22.0	—	.4
July	44.4	18.6	71.1	81.3	46.7	—	47.9	61.5	—	20.4	—	14.3	—	.4
August	42.5	19.0	68.1	81.3	48.5	—	43.8	62.4	—	20.1	—	12.7	—	.4
September	44.1	16.7	59.3	76.4	46.5	—	48.9	61.7	—	19.9	—	23.3	—	.5
October	39.8	17.4	63.7	71.9	46.2	—	47.9	58.2	—	14.5	—	20.5	—	.4
November	44.4	20.4	69.0	72.5	46.8	—	53.8	61.3	—	12.4	—	27.5	—	(s)
December	42.8	17.3	70.1	71.4	48.4	—	44.2	63.2	—	8.6	—	30.5	—	.7
Average	42.0	19.6	63.8	74.1	45.1	—	49.9	62.1	—	16.3	—	23.2	—	.4
2022 January	43.2	21.1	71.0	78.4	49.5	—	52.1	63.2	—	15.2	—	27.1	—	.0
February	42.6	24.5	65.4	79.0	46.2	—	52.5	63.0	—	19.0	—	30.6	—	.0
March	42.1	18.4	63.5	74.2	44.0	—	54.3	59.8	—	21.3	—	30.5	—	.0
April	39.1	19.6	59.2	69.0	41.1	—	50.0	58.4	—	24.7	—	31.8	—	.0
May	44.0	21.8	61.4	69.7	41.5	—	49.0	58.5	—	26.1	—	27.5	—	.0
June	45.0	19.0	62.9	73.0	44.3	—	49.9	61.5	—	28.5	—	21.7	—	.0
July	45.0	19.1	67.2	75.7	48.2	—	40.3	62.1	—	27.0	—	21.4	—	.0
August	44.4	20.4	67.7	76.6	50.6	—	46.4	60.4	—	24.7	—	17.0	—	.0
September	40.4	19.5	62.9	72.2	47.7	—	41.3	54.3	—	24.4	—	17.8	—	.0
October	37.4	18.9	64.5	69.1	44.2	—	37.6	52.0	—	21.4	—	23.6	—	.0
November	38.8	23.1	69.5	73.5	45.0	—	44.7	60.3	—	14.5	—	30.4	—	.0
December	41.8	19.4	66.6	72.4	45.5	—	52.5	60.7	—	11.5	—	27.7	—	.0
Average	42.0	20.4	65.2	73.5	45.7	—	47.5	59.5	—	21.5	—	25.6	—	.0
2023 January	39.5	15.3	65.6	75.1	45.2	—	56.2	60.7	—	13.3	—	25.4	—	.0
February	38.7	13.4	67.5	76.5	45.2	—	52.9	60.5	—	16.4	—	32.6	—	.0
March	34.6	19.4	62.9	74.2	43.8	—	52.6	56.9	—	19.8	—	31.1	—	.0
April	35.5	22.5	51.8	66.4	42.5	—	45.0	54.0	—	23.2	—	28.1	—	.0
May	35.7	20.3	56.8	70.5	42.5	—	48.5	57.3	—	25.5	—	21.1	—	.0
June	39.3	19.5	66.1	77.9	49.5	—	36.2	56.0	—	26.8	—	17.9	—	.0
July	39.2	20.1	67.9	75.6	50.8	—	43.8	54.9	—	27.6	—	14.8	—	.0

^a Capacity factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (net generation) to the maximum possible output over that same time period (using time-adjusted capacity).

^b Usage factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (gross generation) to the maximum possible output over that same time period (using time-adjusted capacity).

^c Steam turbine, gas turbine, internal combustion engine, combined-cycle, and other plants.

^d Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.

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

^f Natural gas, plus a small amount of supplemental gaseous fuels. Capacity factors for natural gas internal combustion engine, energy storage, fuel cell, and other plants are not displayed.

^g Wood and wood-derived fuels, 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 Solar photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic generators.

ⁱ Onshore wind plants, and, beginning in 2017, offshore wind plants.

— = No data reported. (s) = Less than 0.5 percent.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. • Monthly factors are based on a time-adjusted total net summer capacity of generators in operation for the entire month. Annual factors are based on a time-weighted average of the monthly time-adjusted capacity. • For plants that use multiple energy sources or technologies, capacity is assigned to the reported combination of predominant energy source and technology. • See EIA's *Electric Power Annual*, "Technical notes," for further information. • See "Capacity factor" in Glossary. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors," 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/#electricity> (Excel and CSV files) for all available annual and monthly data beginning in 2008.

Sources: U.S. Energy Information Administration (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."

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 small-scale facilities—those with a combined generator nameplate capacity of less than 1 megawatt. For data on small-scale 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

Sales to Ultimate Customers, 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)* September 2023, Table 5.1.

Sales to Ultimate Customers, 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, September 2023, Table 5.1.

Sales to Ultimate Customers, 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 September 2023, 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."

2001–2020: EIA, *Electric Power Annual 2022*, October 2022, Table 2.2.

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 2021, the 2020 annual share is used.

Table 7.7b Sources

Net Summer Capacity, Nuclear Power

1949 forward: Table 8.1.

All Other Data

1949–1984: U.S. Energy Information Administration (EIA) estimates.

1985–1988: EIA, Form EIA-860, "Annual Electric Generator Report."

1989–1997: EIA, Form EIA-860, "Annual Electric Generator Report," and Form EIA-867, "Annual Nonutility Power Producer Report."

1998–2000: EIA, Form EIA-860A, "Annual Electric Generator Report—Utility," and Form EIA-860B, "Annual Electric Generator Report—Nonutility."

2001–2007: EIA, Form EIA-860, "Annual Electric Generator Report."

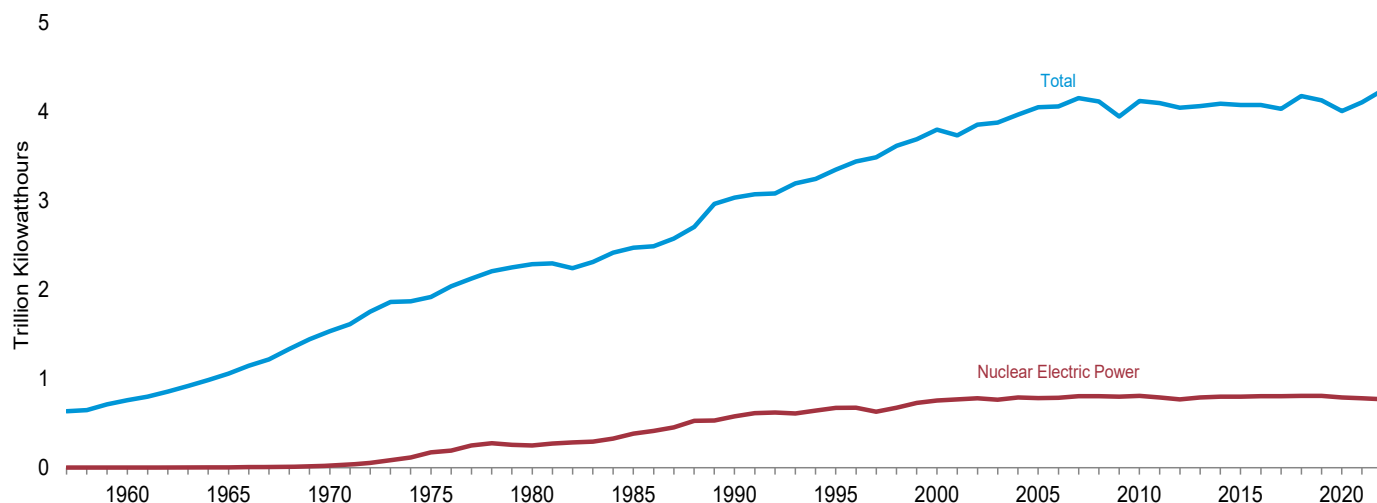
2008 forward: EIA, Form EIA-860, "Annual Electric Generator Report," and Form EIA-860M, "Monthly Update to the Annual Electric Generator Report."

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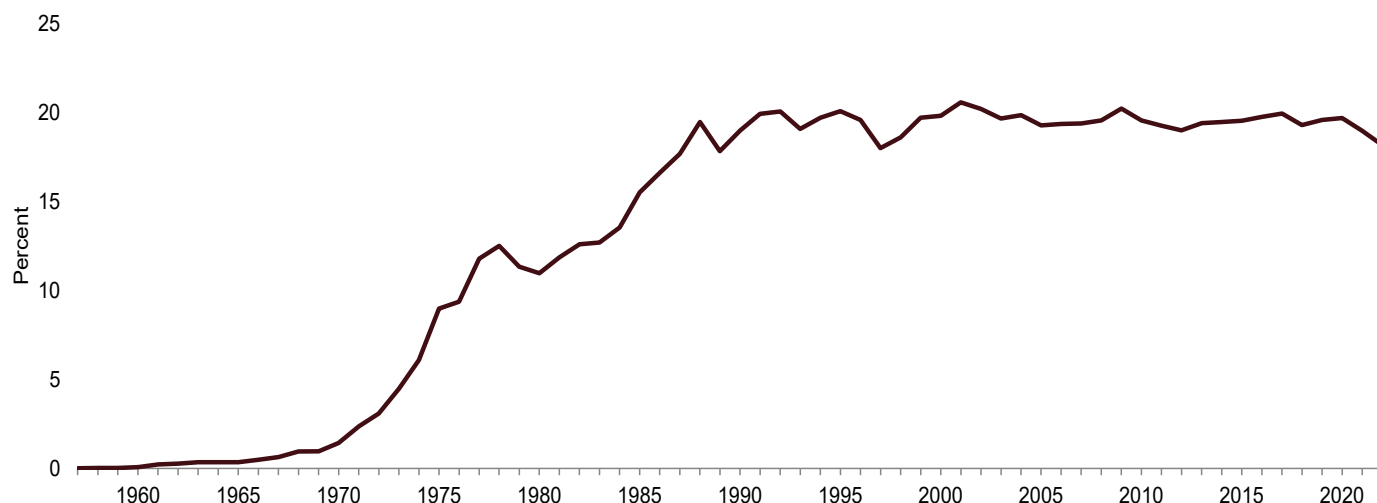
8. Nuclear Energy

Figure 8.1 Nuclear Energy Overview

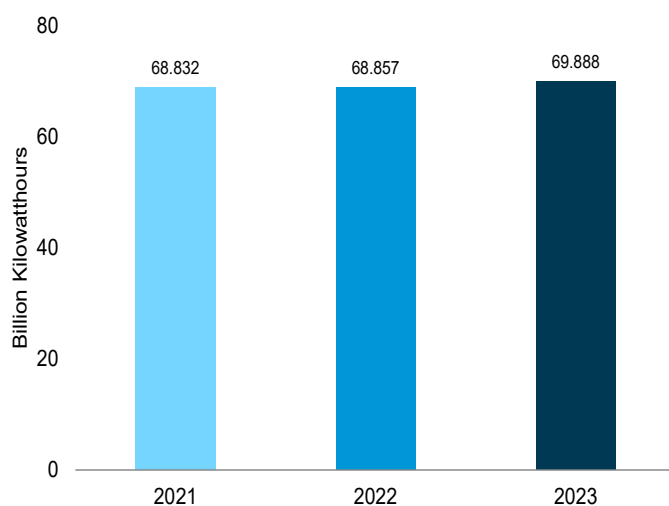
Electricity Net Generation, 1957–2022



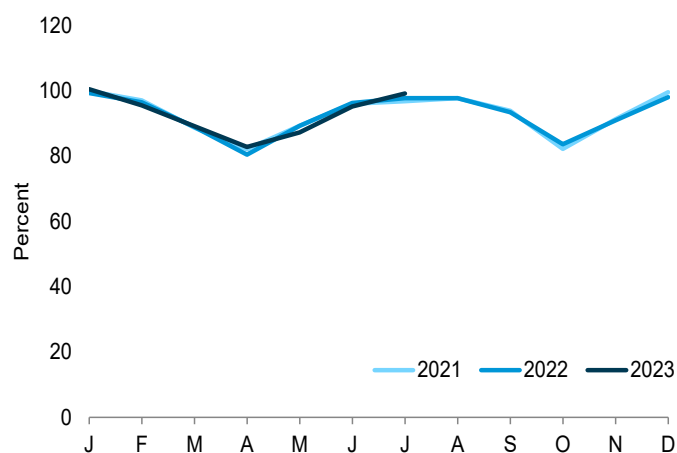
Nuclear Share of Electricity Net Generation, 1957–2022



Nuclear Electricity Net Generation—July



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	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	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	90.8
2014 Total	99	98.569	797,166	19.5	91.7
2015 Total	99	98.672	797,178	19.5	92.3
2016 Total	99	99.565	805,694	19.8	92.3
2017 Total	99	99.629	804,950	19.9	92.3
2018 Total	98	99.433	807,084	19.3	92.5
2019 Total	96	98.119	809,409	19.6	93.4
2020 Total	94	96.501	789,879	19.7	92.4
2021 January	94	96.586	71,732	20.5	99.9
February	94	96.586	62,954	19.4	97.0
March	94	96.586	63,708	20.5	88.7
April	93	95.546	57,092	19.5	82.1
May	93	95.546	63,394	19.8	89.2
June	93	95.546	66,070	17.7	96.0
July	93	95.546	68,832	17.0	96.8
August	93	95.546	69,471	16.8	97.7
September	93	95.546	64,520	18.6	93.8
October	93	95.546	58,401	18.2	82.2
November	93	95.546	62,749	20.0	91.2
December	93	95.546	70,720	21.0	99.5
Total	93	95.546	779,645	19.0	92.8
2022 January	93	E 95.512	70,577	18.7	E 99.3
February	93	E 95.512	61,852	18.9	E 96.4
March	93	E 95.512	63,154	19.4	E 88.9
April	93	E 95.512	55,290	18.2	E 80.4
May	93	E 95.533	63,382	18.5	E 89.2
June	92	E 94.765	65,715	17.3	E 96.3
July	92	E 94.765	68,857	16.2	E 97.7
August	92	E 94.765	68,897	16.7	E 97.7
September	92	E 94.765	63,733	18.2	E 93.4
October	92	E 94.765	58,945	18.8	E 83.6
November	92	E 94.765	62,041	19.2	E 90.9
December	92	E 94.765	69,094	19.0	E 98.0
Total	92	E 94.765	771,537	18.2	E 92.6
2023 January	92	E 94.768	70,870	20.4	E 100.5
February	92	E 94.768	60,807	19.6	E 95.5
March	92	E 94.768	62,820	19.0	E 89.1
April	92	E 94.767	56,501	18.8	E 82.8
May	92	E 94.767	61,473	18.7	E 87.2
June	92	E 94.767	64,965	18.2	E 95.2
July	92	E 94.659	69,888	16.4	E 99.1
7-Month Total	92	E 94.659	447,324	18.7	E 92.8
2022 7-Month Total	92	E 94.765	448,826	18.1	E 92.6
2021 7-Month Total	93	95.546	453,783	19.1	92.8

^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%.

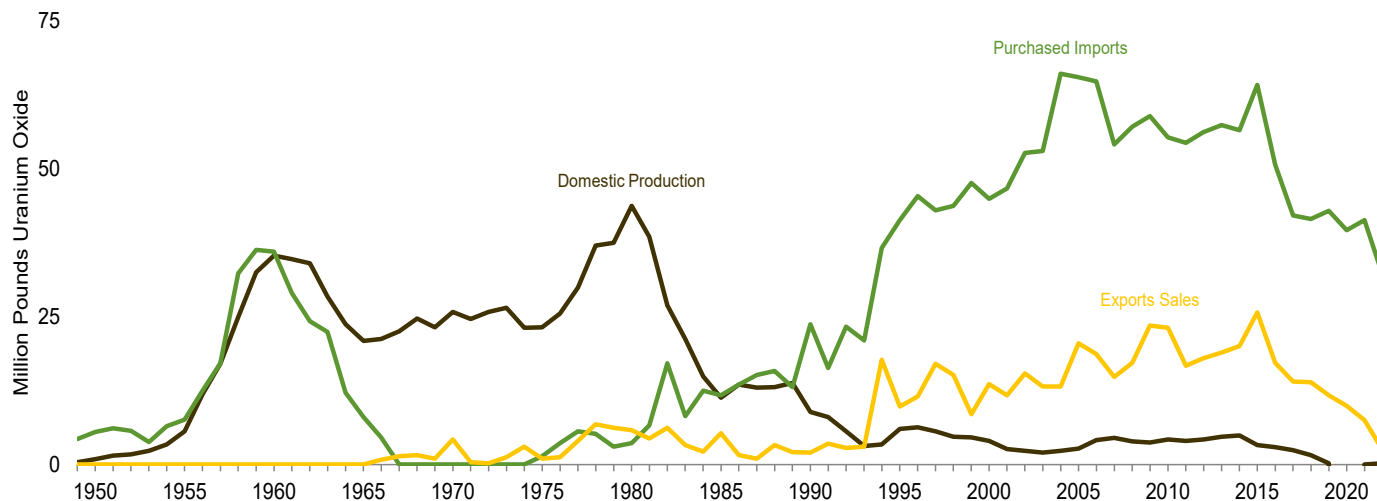
Notes: • For a discussion of nuclear reactor unit coverage, see Note 1, "Operable Nuclear Reactors," at end of section. • Nuclear electricity net generation totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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.

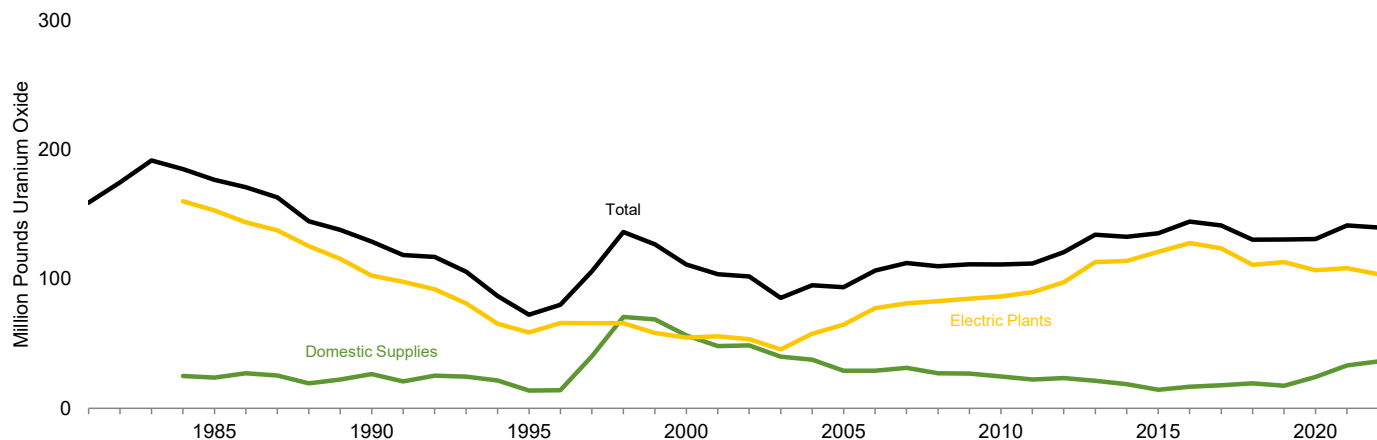
Sources: See end of section.

Figure 8.2 Uranium Overview

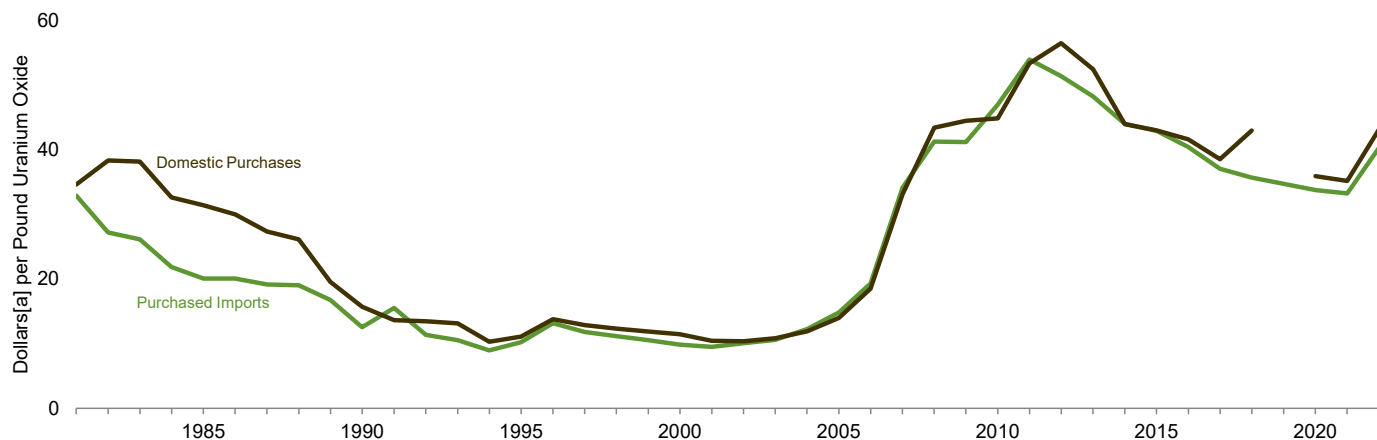
Production and Trade, 1949–2022



Inventories, End of Year 1981–2022



Average Prices, 1981–2022



[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	48.6	24.2	106.9	131.0	33.79	35.92
2021 .....	.02	41.3	7.5	8.2	44.4	33.2	108.5	141.7	33.26	35.18
2022 .....	.20	32.1	2.5	4.4	P 44.4	P 36.2	P 103.8	P 140.0	40.31	43.15

^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. • **2003–2020:** EIA, "Domestic Uranium Production Report," annual reports; and EIA, "Uranium Marketing Annual Report," annual reports. • **2021 forward:** EIA, "2022 Domestic Uranium Production Report" (May 2023), Table 3; and EIA, "2022 Uranium Marketing Annual Report" (June 2023), 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 Annual*, Appendix technical notes on “Capacity Factors and Usage 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

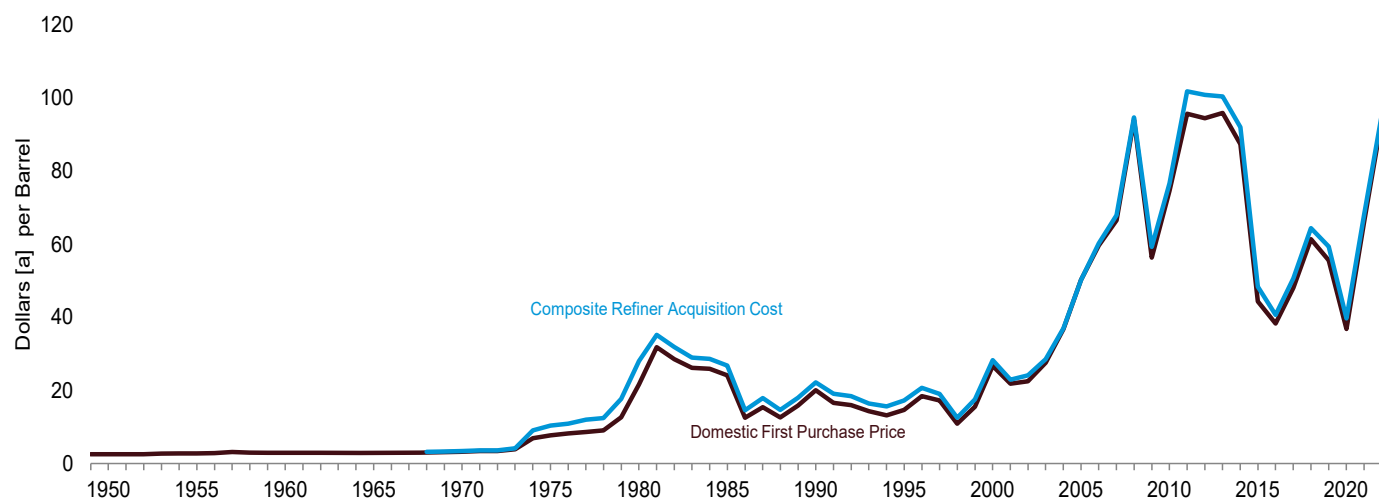
1973–2007: Calculated by EIA using the method described above in Note 2.

2008 forward: Table 7.8a.

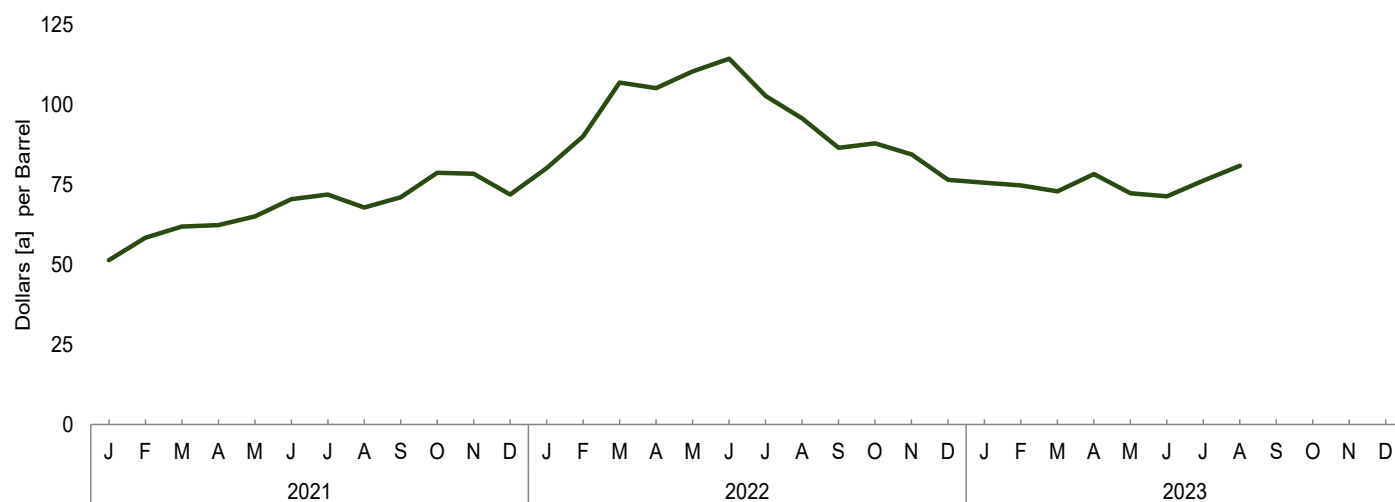
9. Energy Prices

Figure 9.1 Petroleum Prices

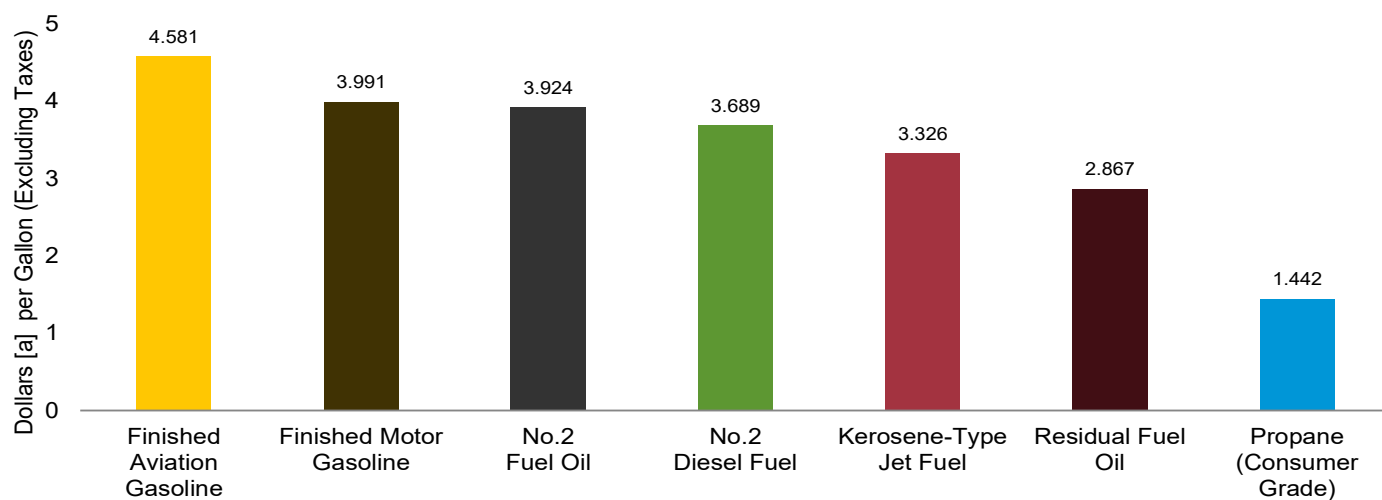
Crude Oil Prices, 1949–2022



Composite Refiner Acquisition Cost, Monthly



Refiner Prices to End Users: Select Products, March 2022



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

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

Sources: Tables 9.1, 9.5, and 9.7.

“Refiner Prices to End Users” has not been updated due to the delay of Petroleum Marketing Monthly.

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	74.19	76.50	78.01	75.86	76.69
2011 Average	95.73	101.66	102.92	100.71	102.63	101.87
2012 Average	94.52	99.78	101.00	100.72	101.09	100.93
2013 Average	95.99	96.56	96.99	102.91	98.11	100.49
2014 Average	87.39	85.65	88.16	94.05	89.56	92.02
2015 Average	44.39	41.91	45.38	49.94	46.38	48.39
2016 Average	38.29	36.37	38.56	42.41	38.75	40.66
2017 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 Average	55.59	54.27	56.60	60.31	57.94	59.38
2020 Average	36.86	33.66	36.42	41.23	37.41	39.75
2021 January	49.47	46.77	49.38	52.44	49.60	51.39
February	56.44	53.08	55.53	60.14	55.71	58.41
March	60.43	57.48	59.12	63.22	59.84	61.97
April	59.87	57.83	60.75	63.25	60.88	62.40
May	62.80	61.76	63.93	65.94	63.81	65.15
June	68.58	64.97	67.54	71.61	68.86	70.55
July	70.12	65.73	68.11	73.28	69.91	71.98
August	65.68	63.00	65.85	69.26	65.72	67.89
September	69.09	66.36	68.79	72.38	69.27	71.10
October	78.51	73.38	75.58	80.84	75.94	78.83
November	76.45	71.48	74.83	79.60	76.61	78.47
December	70.56	65.07	68.25	74.46	68.22	71.98
Average	65.84	62.04	65.05	69.07	65.85	67.83
2022 January	80.33	72.91	76.36	82.52	76.92	80.26
February	89.41	86.22	87.71	91.85	87.73	90.21
March	107.07	99.71	101.61	108.62	104.39	106.98
April	103.34	98.86	101.52	106.74	102.70	105.22
May	108.29	103.80	105.62	111.45	108.71	110.43
June	113.77	106.95	109.42	115.90	112.06	114.44
July	100.84	92.18	96.10	104.82	99.67	102.82
August	93.76	83.06	88.55	98.11	92.21	95.80
September	84.62	76.17	82.01	88.51	83.30	86.57
October	86.61	75.10	78.87	90.25	84.26	88.02
November	84.43	68.85	75.02	87.92	79.31	84.57
December	76.45	64.87	69.23	80.20	70.89	76.56
Average	93.97	85.98	89.62	97.45	91.83	95.29
2023 January	75.71	62.81	67.22	79.18	70.23	75.63
February	74.32	60.58	65.40	78.33	69.52	74.80
March	72.09	62.79	66.32	75.82	68.45	72.96
April	77.22	68.95	71.15	80.51	74.83	78.38
May	70.14	63.60	^R 68.56	74.18	69.51	72.35
June	68.58	^R 63.34	^R 68.79	^R 72.52	^R 69.63	^R 71.43
July	^R 74.05	^R 67.99	^R 70.90	^E 77.34	^E 74.70	^E 76.33
August	NA	NA	NA	^E 82.77	^E 78.02	^E 80.97

^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 Average	66.97	60.61	56.72	67.21	63.48	65.20	48.57	61.43	62.11	52.36
2020 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	70.06	W	—	70.06	71.60	64.02
July	W	W	68.52	W	W	—	—	W	73.71	64.65
August	W	W	63.71	W	73.37	—	—	70.48	71.50	61.62
September	W	W	66.81	W	W	—	—	W	76.73	64.89
October	W	W	74.81	—	W	W	—	W	78.24	72.84
November	—	W	75.08	W	W	—	—	76.78	79.24	70.10
December	W	W	67.18	—	W	W	—	75.56	75.09	64.14
Average	75.02	66.15	64.42	73.83	68.43	W	—	66.72	69.18	60.93
2022 January	—	W	75.35	W	93.17	—	—	88.59	88.47	70.67
February	W	93.28	86.36	W	W	—	—	96.33	98.86	84.37
March	W	W	100.84	W	W	—	—	106.35	111.95	98.36
April	W	105.21	99.50	W	W	—	—	104.95	109.49	97.13
May	W	108.83	104.49	W	W	—	—	W	115.18	102.14
June	W	—	109.97	W	W	—	—	102.09	113.76	105.86
July	W	100.17	94.65	W	W	—	—	95.97	103.06	90.27
August	W	W	86.09	W	W	—	—	W	102.01	79.67
September	W	W	80.31	W	W	—	—	W	91.38	73.26
October	—	W	79.36	W	W	—	—	W	90.66	72.59
November	—	W	78.10	W	W	—	—	W	86.10	66.81
December	—	76.45	68.84	W	W	—	—	W	84.75	61.61
Average	W	93.57	89.32	W	95.58	—	—	92.34	99.69	83.86
2023 January	—	W	67.10	W	W	—	—	W	81.57	60.48
February	—	W	66.16	W	W	—	—	75.45	78.39	59.29
March	W	W	62.28	W	W	—	—	W	85.82	60.25
April	W	W	68.75	W	W	—	—	78.68	81.50	66.52
May	—	W	64.26	W	W	—	—	W	77.42	62.00
June	—	W	64.72	W	W	—	W	W	^R 77.34	^R 61.44
July	W	W	70.41	—	—	—	W	W	W	67.67

^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 Average	68.58	51.10	62.83	57.96	68.78	64.86	66.65	52.36	63.27	63.41	54.65
2020 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	W	51.58	60.79	57.08	W	62.72	66.55	—	60.95	62.53	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	60.50	66.44	63.05	72.44	70.61	W	—	69.15	70.09	62.59
June	W	64.53	69.84	68.09	W	70.17	74.58	—	70.85	72.30	66.68
July	W	65.10	71.74	69.12	67.47	71.81	76.48	—	72.05	72.12	67.55
August	W	62.29	67.43	64.40	W	75.14	W	—	72.86	73.48	64.47
September	W	64.91	71.23	67.62	W	75.58	W	—	74.11	75.48	67.54
October	W	72.78	80.14	75.96	—	76.25	84.79	—	76.63	77.40	75.23
November	—	71.47	75.86	76.03	W	80.81	—	—	79.32	80.48	73.73
December	W	63.39	75.61	68.04	W	84.92	80.80	—	80.24	80.01	66.42
Average	75.50	61.30	69.25	65.48	73.90	72.69	74.71	—	71.39	71.90	63.87
2022 January	—	70.59	80.05	76.61	W	99.72	—	—	91.69	90.76	73.48
February	W	83.74	88.88	87.58	W	98.89	—	—	95.19	97.10	86.08
March	W	98.64	102.26	101.01	W	107.60	W	—	107.26	110.00	100.34
April	W	98.21	105.22	101.10	W	109.85	W	—	107.88	109.80	99.76
May	W	102.21	109.15	105.75	W	109.86	W	—	108.01	111.88	104.18
June	W	106.00	113.95	111.36	W	104.51	W	—	105.87	110.42	109.22
July	W	92.01	102.16	96.88	W	96.55	W	—	96.23	100.78	95.27
August	W	82.09	93.50	88.76	W	93.83	W	—	92.18	98.00	86.80
September	W	74.65	90.55	82.61	W	88.98	W	—	86.85	90.30	79.86
October	—	74.03	88.05	81.63	W	84.41	W	—	83.27	88.60	76.95
November	—	68.22	84.35	81.36	—	84.85	W	—	81.95	86.48	73.31
December	—	61.24	78.09	71.93	94.36	81.96	88.83	—	79.36	85.37	66.64
Average	112.44	84.39	95.19	91.18	108.45	97.51	105.28	—	95.41	98.71	87.89
2023 January	—	60.07	74.96	69.16	90.66	81.36	W	W	76.16	79.79	64.48
February	W	59.79	74.04	68.25	88.51	83.08	—	W	77.46	77.91	63.14
March	W	61.72	70.27	66.03	W	83.45	W	W	77.48	78.84	64.32
April	W	67.10	74.63	71.17	W	80.52	W	63.32	78.48	78.09	69.71
May	W	65.42	71.70	66.38	W	79.74	76.76	W	76.13	74.85	67.19
June	W	65.75	71.73	66.81	W	79.00	—	59.14	75.83	75.67	67.55
July	W	67.62	74.69	71.60	—	W	W	—	78.14	76.82	70.13

^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*, October 2023, Table 22, and EIA, Petroleum Data Tables.

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 Average	--	2.636	3.212	2.698	2.501	2.827	2.604	3.056
2020 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
November	--	3.482	4.148	3.576	3.275	3.659	3.395	3.727
December	--	3.408	4.100	3.505	3.168	3.608	3.307	3.490
Average	--	3.051	3.692	3.133	2.908	3.224	3.008	3.287
2022 January	--	3.413	4.102	3.500	3.187	3.595	3.315	3.724
February	--	3.592	4.244	3.675	3.400	3.773	3.517	4.032
March	--	4.312	5.015	4.401	4.078	4.535	4.222	5.105
April	--	4.271	5.037	4.369	3.960	4.435	4.109	5.120
May	--	4.604	5.318	4.695	4.272	4.818	4.444	5.571
June	--	5.058	5.774	5.149	4.764	5.291	4.929	5.754
July	--	4.667	5.459	4.768	4.413	4.879	4.559	5.486
August	--	4.101	4.916	4.205	3.822	4.307	3.975	5.013
September	--	3.881	4.732	3.990	3.563	3.998	3.700	4.993
October	--	4.016	4.914	4.130	3.637	4.197	3.815	5.211
November	--	3.853	4.679	3.958	3.530	4.021	3.685	5.255
December	--	3.356	4.167	3.459	3.084	3.486	3.210	4.714
Average	--	4.094	4.863	4.192	3.803	4.274	3.951	4.989
2023 January	--	3.452	4.192	3.555	3.254	3.523	3.339	4.576
February	--	3.514	4.287	3.622	3.304	3.573	3.389	4.413
March	--	3.551	4.339	3.660	3.316	3.655	3.422	4.211
April	--	3.735	4.485	3.839	3.493	3.843	3.603	4.099
May	--	3.685	4.468	3.794	3.432	3.824	3.555	3.915
June	--	3.712	4.497	3.821	3.446	3.844	3.571	3.802
July	--	3.732	4.526	3.842	3.477	3.860	3.597	3.882
August	--	3.955	4.740	4.064	3.727	4.086	3.840	4.370
September	--	--	--	--	3.690	4.155	3.836	4.563

^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."

-- Data not available.

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 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
September	1.913	W	1.768	1.748	1.845	1.950
October	2.124	W	1.964	1.876	2.069	2.091
November	2.065	W	1.834	1.827	1.927	2.141
December	1.940	2.282	1.766	1.726	1.861	2.090
Average	1.849	W	1.669	1.650	1.770	1.864
2022 January	2.210	2.342	1.966	1.871	2.085	2.160
February	2.415	NA	2.085	2.106	2.274	2.432
March	2.932	NA	2.423	2.478	2.689	2.867

^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*, July 2022, Table 16.

This table has not been updated due to the data are not available in Petroleum Marketing Monthly.

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 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	2.337	3.337	1.946	1.940	1.931	2.182	1.075
August	2.302	3.299	1.922	1.899	1.885	2.146	1.110
September	2.310	3.248	2.008	2.109	2.041	2.240	1.280
October	2.494	3.367	2.281	2.434	2.356	2.504	1.460
November	2.484	3.410	2.283	2.405	2.267	2.454	1.329
December	2.304	3.154	2.145	2.272	2.111	2.273	1.140
Average	2.193	3.133	1.914	2.069	1.876	2.116	1.087
2022 January	2.423	3.373	2.422	2.655	2.438	2.550	1.249
February	2.639	3.684	2.655	2.916	2.742	2.830	1.376
March	3.232	4.088	3.285	3.612	3.479	3.582	1.483

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.^b See Note 5, "Motor Gasoline Prices," at end of section.

Notes: • Sales for resale are those made to purchasers other than ultimate consumers. Sales to end users are shown in Table 9.7; they are sales made directly to ultimate consumers, including bulk consumers (such as agriculture, industry, and electric utilities) and residential and commercial consumers. • Values for the current month are preliminary. • Through 1982, prices are U.S. Energy Information Administration (EIA) estimates. See Note 6, "Historical Petroleum

Prices," at end of section. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: • **1978–2007:** EIA, *Petroleum Marketing Annual 2007*, Table 4.
• **2008 forward:** EIA, *Petroleum Marketing Monthly*, July 2022, Table 4.

This table has not been updated due to the data are not available in Petroleum Marketing Monthly.

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 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	3.105	W	1.981	2.860	2.505	2.282	1.096
August	3.146	W	1.965	W	2.395	2.266	1.122
September	3.143	W	2.032	2.817	2.387	2.323	1.296
October	3.201	3.783	2.303	3.425	2.678	2.561	1.459
November	3.318	3.778	2.309	3.799	2.651	2.542	1.292
December	3.283	W	2.168	3.279	2.760	2.374	1.098
Average	2.569	3.469	1.954	W	2.413	2.203	1.088
2022 January	3.145	3.689	2.451	3.822	3.169	2.648	1.225
February	3.313	W	2.653	4.042	3.269	2.900	1.365
March	3.991	4.581	3.326	4.689	3.924	3.689	1.442

^a Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.^b See Note 5, "Motor Gasoline Prices," at end of section.

W=Value withheld to avoid disclosure of individual company data.

Notes: • Sales to end users are those made directly to ultimate consumers, including bulk consumers (such as agriculture, industry, and electric utilities) and residential and commercial consumers. Sales for resale are shown in Table 9.6; they are sales made to purchasers other than ultimate consumers. • Values for the current month are preliminary. • Through 1982, prices are U.S. Energy

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

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

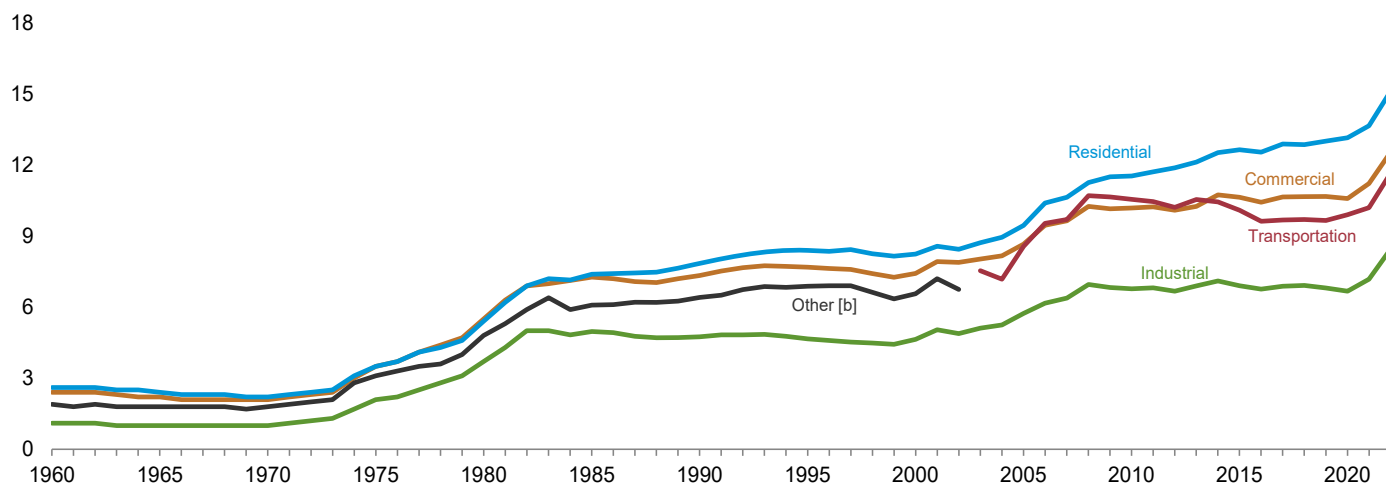
Sources: • **1978–2007:** EIA, *Petroleum Marketing Annual 2007*, Table 2.
• **2008 forward:** EIA, *Petroleum Marketing Monthly*, July 2022, Table 2.

This table has not been updated due to the data are not available in Petroleum Marketing Monthly.

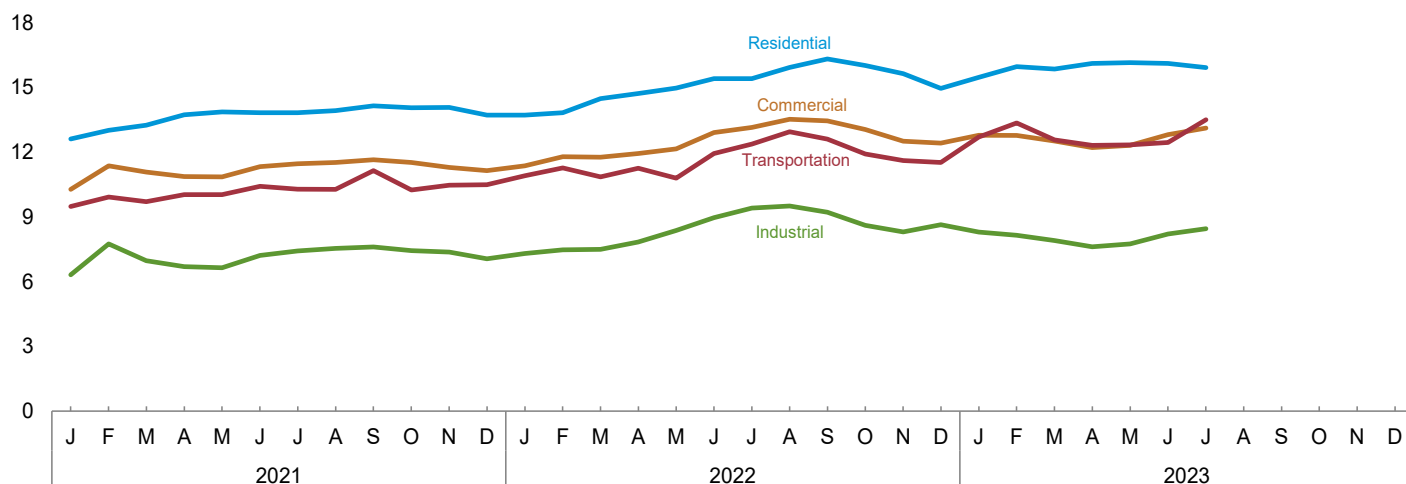
Figure 9.2 Average Prices of Electricity to Ultimate Customers

(Cents [a] per Kilowatthour)

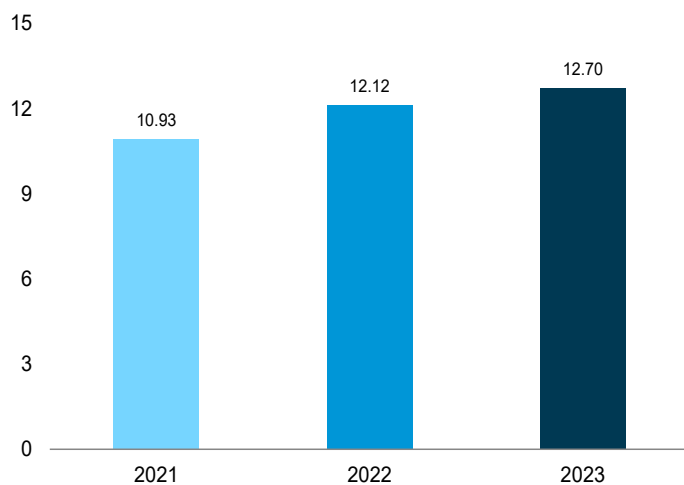
By Sector, 1960–2022



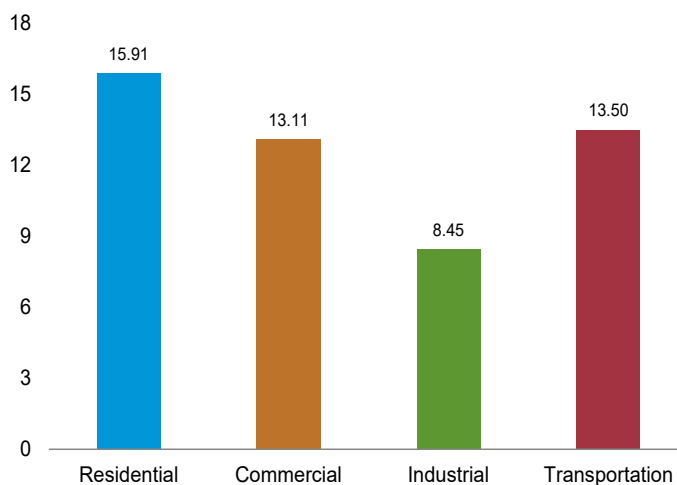
By Sector, Monthly



Total, January–July



By Sector, July 2023



[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 Prices of Electricity to Ultimate Customers
(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 Average	13.01	10.68	6.81	9.66	--	10.54
2020 Average	13.15	10.59	6.67	9.90	--	10.59
2021 January	12.62	10.27	6.32	9.48	--	10.29
February	13.01	11.36	7.75	9.92	--	11.16
March	13.24	11.08	6.98	9.70	--	10.84
April	13.73	10.87	6.70	10.03	--	10.63
May	13.86	10.86	6.65	10.03	--	10.69
June	13.83	11.33	7.22	10.42	--	11.25
July	13.83	11.46	7.42	10.29	--	11.45
August	13.92	11.52	7.54	10.27	--	11.55
September	14.14	11.65	7.61	11.15	--	11.59
October	14.06	11.52	7.44	10.25	--	11.24
November	14.07	11.29	7.37	10.47	--	11.14
December	13.72	11.15	7.06	10.49	--	11.03
Average	13.66	11.22	7.18	10.20	--	11.10
2022 January	13.72	11.36	7.30	10.91	--	11.34
February	13.83	11.79	7.47	11.27	--	11.56
March	14.48	11.77	7.50	10.85	--	11.60
April	14.71	11.93	7.84	11.26	--	11.72
May	14.97	12.15	8.37	10.80	--	12.12
June	15.40	12.90	8.96	11.94	--	12.89
July	15.41	13.15	9.41	12.37	--	13.25
August	15.93	13.53	9.51	12.94	--	13.58
September	16.31	13.45	9.22	12.60	--	13.49
October	16.01	13.05	8.61	11.91	--	12.79
November	15.64	12.50	8.31	11.61	--	12.46
December	14.96	12.42	8.63	11.52	--	12.52
Average	15.12	12.55	8.45	11.66	--	12.49
2023 January	15.47	12.79	8.30	12.70	--	12.78
February	15.96	12.77	8.15	13.35	--	12.81
March	15.85	12.52	7.91	12.56	--	12.49
April	16.11	12.22	7.62	12.31	--	12.27
May	16.14	12.31	7.75	12.34	--	12.32
June	16.11	12.81	8.21	12.45	--	12.85
July	15.91	13.11	8.45	13.50	--	13.19
7-Month Average	15.92	12.67	8.06	12.77	--	12.70
2022 7-Month Average	14.67	12.19	8.15	11.34	--	12.12
2021 7-Month Average	13.43	11.05	7.01	9.97	--	10.93

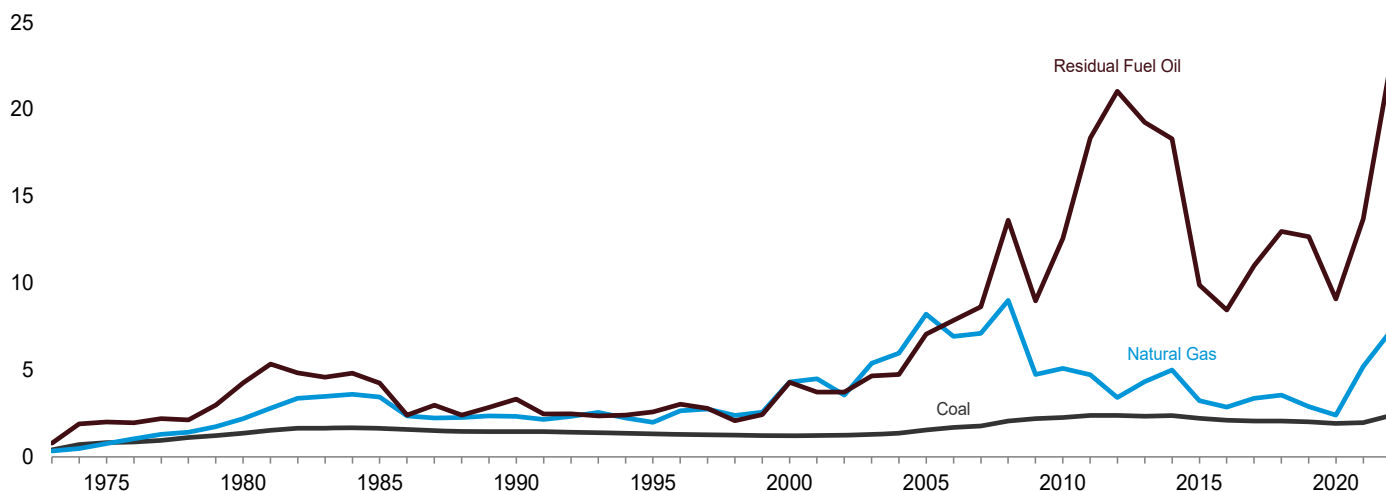
^a Prices are not adjusted for inflation. See "Nominal Price" in Glossary.
^b Commercial sector. For 1960–2002, prices exclude public street and highway lighting, interdepartmental sales, and other sales to public authorities.
^c Industrial sector. For 1960–2002, prices exclude agriculture and irrigation.
^d Prices for public railroads and railway systems only.
^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 Prices to Ultimate Customers," 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*, September 2023, Table 5.3.

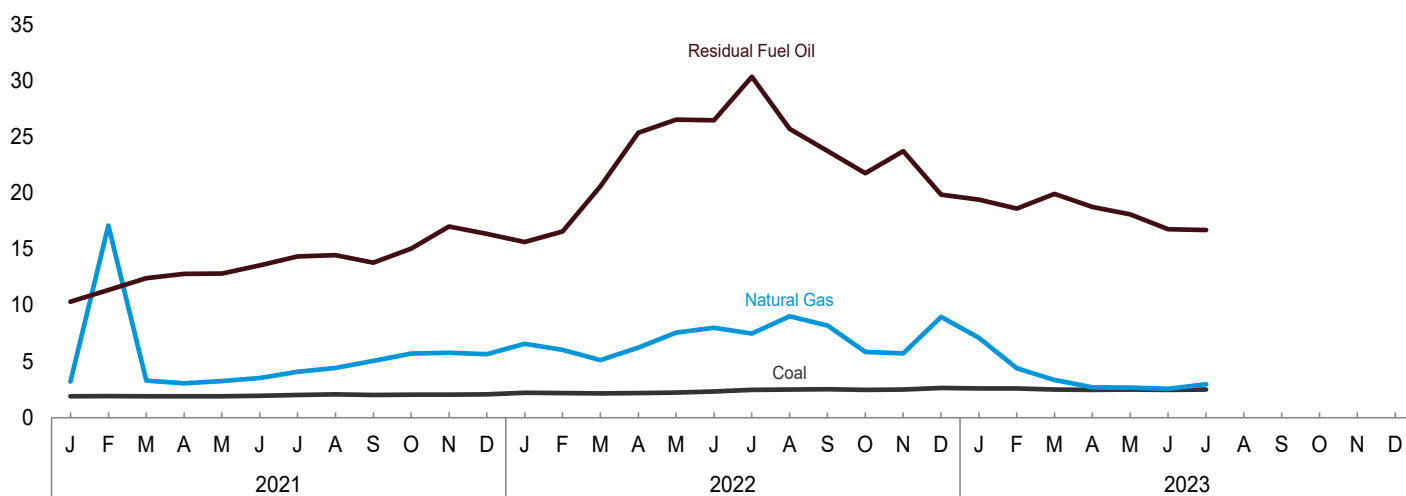
Figure 9.3 Cost of Fossil-Fuel Receipts at Electric Generating Plants

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

Costs, 1973–2022

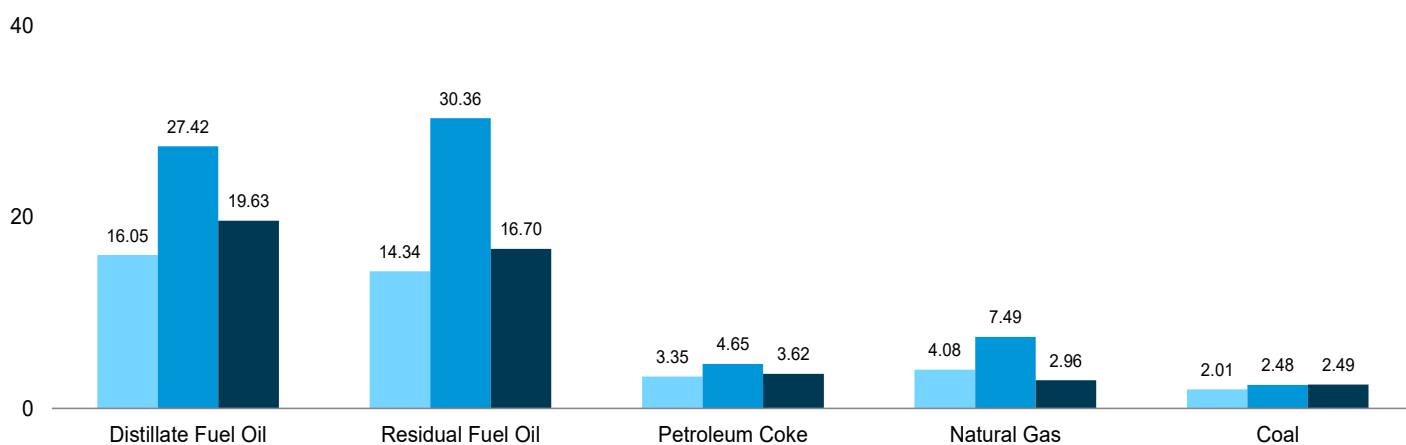


Costs, Monthly



By Fuel Type

■ July 2021 ■ July 2022 ■ July 2023



[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 Average	2.02	12.66	15.19	1.91	9.07	2.89	2.50
2020 Average	1.92	9.09	10.73	1.70	5.98	2.40	2.22
2021 January	1.90	10.33	12.39	2.59	7.76	3.20	2.65
February	1.93	11.38	13.05	2.33	9.02	17.12	10.44
March	1.89	12.41	14.72	2.56	8.10	3.29	2.67
April	1.90	12.81	15.14	2.88	8.65	3.06	2.56
May	1.89	12.82	15.55	2.73	9.39	3.26	2.67
June	1.95	13.56	16.26	3.34	10.33	3.53	2.91
July	2.01	14.34	16.05	3.35	9.56	4.08	3.28
August	2.06	14.47	16.04	3.21	10.84	4.42	3.51
September	2.01	13.80	16.78	3.62	10.70	5.04	3.76
October	2.03	15.05	18.10	3.03	11.45	5.69	4.13
November	2.04	17.02	18.46	4.34	12.11	5.77	4.11
December	2.07	16.35	17.87	3.89	12.85	5.64	4.09
Average	1.98	13.70	15.89	3.16	10.08	5.20	3.82
2022 January	2.20	15.63	19.99	4.32	13.49	6.57	4.68
February	2.18	16.59	20.74	4.24	14.03	6.03	4.29
March	2.16	20.61	25.69	4.84	14.31	5.11	3.72
April	2.19	25.37	28.38	4.80	15.82	6.23	4.35
May	2.24	26.55	30.19	4.97	16.02	7.56	5.16
June	2.32	26.50	33.00	4.50	19.57	8.01	5.74
July	2.48	30.36	27.42	4.65	18.99	7.49	5.64
August	2.51	25.72	26.98	5.02	16.43	9.02	6.41
September	2.52	23.76	25.83	2.32	16.96	8.20	5.74
October	2.47	21.76	27.77	3.37	16.61	5.84	4.34
November	2.49	23.74	29.23	3.84	16.37	5.72	4.34
December	2.65	19.86	23.12	4.19	16.33	8.98	6.31
Average	2.37	22.60	25.64	4.35	16.18	7.22	5.13
2023 January	2.59	19.41	24.15	4.54	17.16	7.10	5.21
February	2.60	18.61	22.91	4.80	15.76	4.39	3.71
March	2.51	19.92	21.40	4.66	14.12	3.35	3.05
April	2.48	18.77	20.77	4.70	13.39	2.69	2.69
May	2.51	18.11	71.23	3.14	30.59	2.66	2.77
June	2.47	16.78	19.08	3.48	14.80	2.58	2.60
July	2.49	16.70	19.63	3.62	14.03	2.96	2.86
7-Month Average	2.52	18.31	28.07	4.34	16.79	3.62	3.26
2022 7-Month Average	2.25	22.55	25.34	4.65	15.94	6.84	4.86
2021 7-Month Average	1.93	12.44	14.63	2.84	8.96	5.16	3.76

^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.

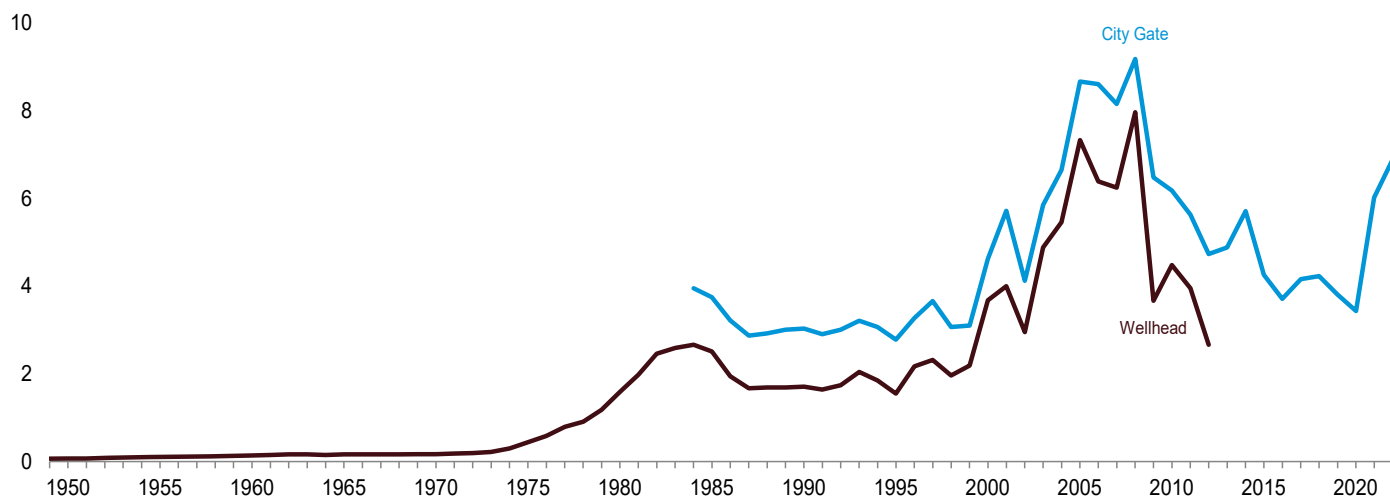
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

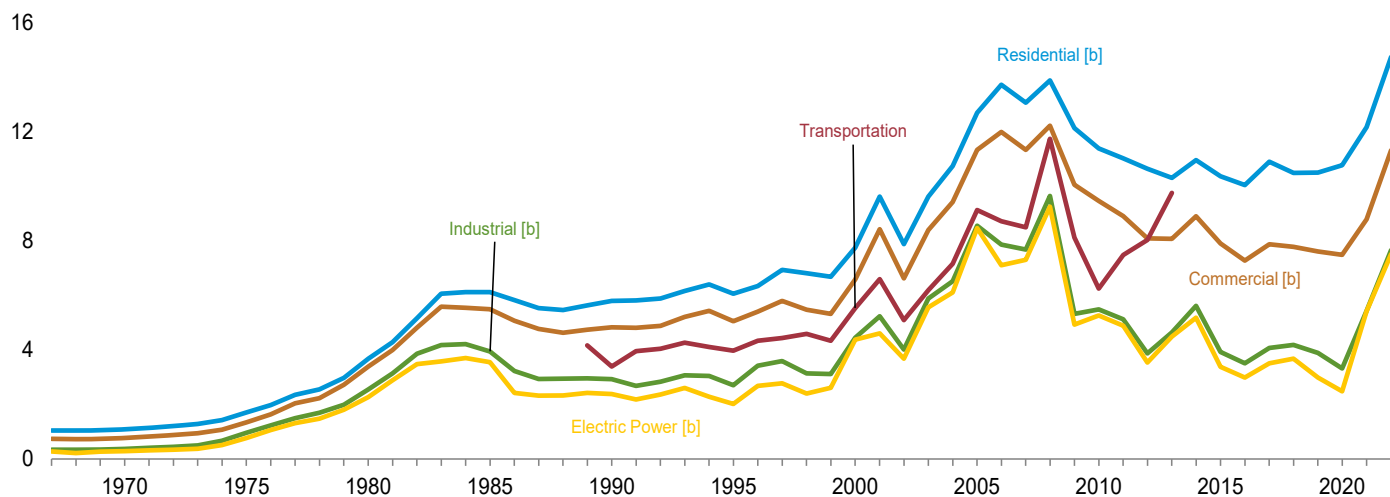
Figure 9.4 Natural Gas Prices

(Dollars [a] per Thousand Cubic Feet)

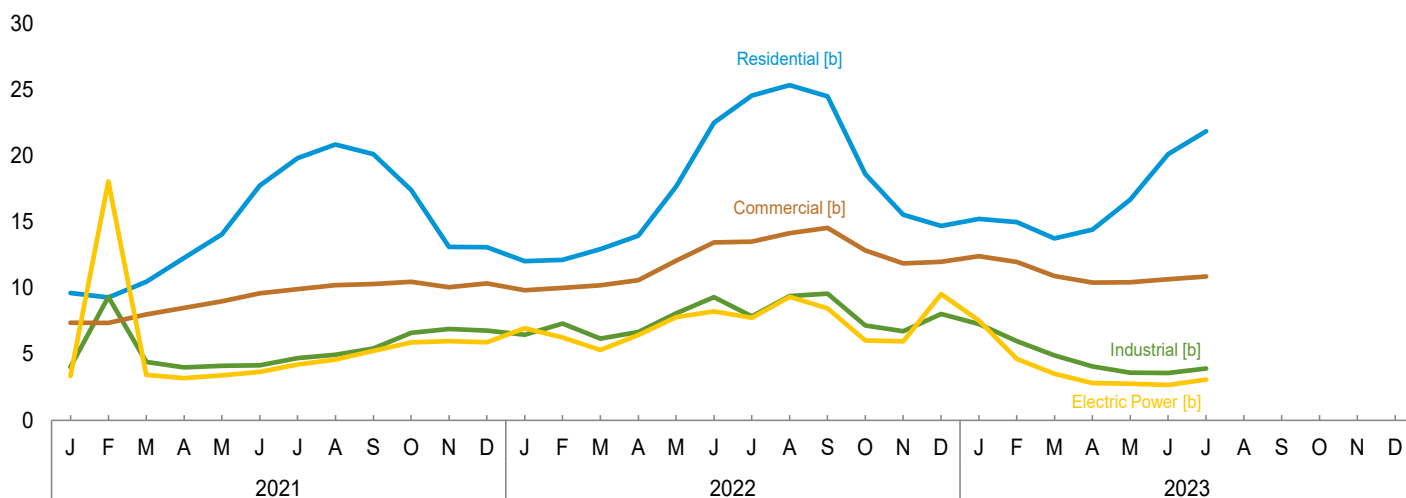
Wellhead and Citygate, 1949–2022



Consuming Sectors, 1967–2022



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								Price ^h	Percentage of Sector ⁱ
			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		
1950 Average	0.07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1955 Average	.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1960 Average	.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1965 Average	.16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1970 Average	.17	NA	1.09	NA	.77	NA	.37	NA	NA	.29	NA	NA
1975 Average	.44	NA	1.71	NA	1.35	NA	.96	NA	NA	.77	96.1	NA
1980 Average	1.59	NA	3.68	NA	3.39	NA	2.56	NA	NA	2.27	96.9	NA
1985 Average	2.51	3.75	6.12	NA	5.50	NA	3.95	68.8	NA	3.55	94.0	NA
1990 Average	1.71	3.03	5.80	99.2	4.83	86.6	2.93	35.2	3.39	2.38	76.8	NA
1995 Average	1.55	2.78	6.06	99.0	5.05	76.7	2.71	24.5	3.98	2.02	71.4	NA
2000 Average	3.68	4.62	7.76	92.6	6.59	63.9	4.45	19.8	5.54	4.38	50.5	NA
2005 Average	7.33	8.67	12.70	98.1	11.34	82.1	8.56	24.0	9.14	8.47	91.3	NA
2006 Average	6.39	8.61	13.73	98.1	12.00	80.8	7.87	23.4	8.72	7.11	93.4	NA
2007 Average	6.25	8.16	13.08	98.0	11.34	80.4	7.68	22.2	8.50	7.31	92.2	NA
2008 Average	7.97	9.18	13.89	97.5	12.23	79.7	9.65	20.4	11.75	9.26	101.1	NA
2009 Average	3.67	6.48	12.14	97.4	10.06	77.8	5.33	18.8	8.13	4.93	101.1	NA
2010 Average	4.48	6.18	11.39	97.4	9.47	77.5	5.49	18.0	6.25	5.27	100.8	NA
2011 Average	3.95	5.63	11.03	96.3	8.91	67.3	5.13	16.3	7.48	4.89	101.2	NA
2012 Average	E 2.66	4.73	10.65	95.8	8.10	65.2	3.88	16.2	8.04	3.54	95.5	NA
2013 Average	NA	4.88	10.32	95.7	8.08	65.8	4.64	16.6	9.76	4.49	94.9	NA
2014 Average	NA	5.71	10.97	95.5	8.90	65.8	5.62	15.9	NA	5.19	94.6	NA
2015 Average	NA	4.26	10.38	95.6	7.91	65.7	3.93	14.8	NA	3.38	94.6	NA
2016 Average	NA	3.71	10.05	95.8	7.28	64.8	3.51	14.9	NA	2.99	95.6	NA
2017 Average	NA	4.16	10.91	95.9	7.88	65.4	4.08	14.8	NA	3.51	95.4	NA
2018 Average	NA	4.23	10.50	96.0	7.79	65.8	4.19	14.5	NA	3.68	95.4	NA
2019 Average	NA	3.81	10.51	96.2	7.61	65.5	3.90	13.0	NA	2.99	96.5	NA
2020 Average	NA	3.43	10.78	96.3	R 7.48	64.6	3.32	13.2	NA	2.49	96.2	NA
2021 January	NA	3.27	R 9.62	96.7	R 7.38	R 70.5	R 4.04	R 13.5	NA	3.35	96.4	NA
February	NA	12.10	R 9.28	96.7	R 7.35	R 70.3	R 9.32	R 12.3	NA	18.06	95.5	NA
March	NA	4.09	R 10.47	96.4	R 8.01	R 67.9	R 4.41	R 13.8	NA	3.44	95.9	NA
April	NA	3.92	R 12.27	96.3	R 8.49	R 64.7	R 4.00	R 13.6	NA	3.19	96.0	NA
May	NA	4.34	R 14.07	96.1	R 8.99	R 60.3	R 4.11	R 13.3	NA	3.39	96.5	NA
June	NA	5.05	R 17.74	R 96.2	R 9.59	57.2	R 4.16	R 13.0	NA	3.66	96.9	NA
July	NA	5.58	R 19.81	96.6	R 9.92	55.2	R 4.69	R 13.0	NA	4.23	95.6	NA
August	NA	5.72	R 20.86	96.5	R 10.23	R 55.0	R 4.95	R 13.1	NA	4.59	95.9	NA
September	NA	5.95	R 20.13	96.6	R 10.31	R 56.7	R 5.42	R 13.5	NA	5.23	95.8	NA
October	NA	6.43	R 17.40	97.1	R 10.48	R 59.8	R 6.61	R 13.4	NA	5.88	96.4	NA
November	NA	6.04	R 13.11	97.0	R 10.06	R 65.7	R 6.90	R 13.6	NA	5.98	95.6	NA
December	NA	5.87	13.08	96.7	R 10.34	R 68.5	R 6.77	R 13.9	NA	5.91	96.9	NA
Average	NA	6.02	12.18	96.6	8.79	65.1	R 5.44	R 13.4	NA	5.43	96.1	NA
2022 January	NA	R 5.48	R 12.04	96.9	R 9.82	R 71.4	R 6.47	R 13.3	NA	6.97	88.9	NA
February	NA	R 5.77	R 12.14	96.7	R 10.02	R 69.9	R 7.32	R 13.8	NA	6.26	88.6	NA
March	NA	R 5.55	R 12.94	R 96.5	R 10.21	R 68.4	R 6.18	R 14.1	NA	5.32	90.0	NA
April	NA	R 6.53	R 13.97	R 96.2	R 10.60	R 65.4	R 6.68	R 13.9	NA	6.45	89.2	NA
May	NA	R 8.51	R 17.67	R 96.0	R 12.07	R 60.7	R 8.08	R 13.4	NA	7.79	89.4	NA
June	NA	R 9.77	R 22.50	R 96.2	R 13.45	R 57.5	R 9.30	R 13.3	NA	8.23	87.6	NA
July	NA	R 8.72	R 24.55	R 96.6	R 13.50	R 55.7	R 7.85	R 13.3	NA	7.76	86.3	NA
August	NA	R 10.31	R 25.34	96.8	R 14.14	R 55.0	R 9.40	R 13.0	NA	9.33	86.8	NA
September	NA	R 9.69	R 24.50	96.8	R 14.54	R 55.6	R 9.58	R 12.9	NA	8.46	88.5	NA
October	NA	R 6.79	R 18.61	R 96.9	12.84	R 60.1	R 7.16	R 13.1	NA	6.03	89.2	NA
November	NA	R 6.72	R 15.55	97.2	R 11.87	66.6	R 6.74	R 13.3	NA	5.96	88.5	NA
December	NA	R 8.12	R 14.68	R 97.1	R 11.99	R 70.2	R 8.04	R 13.5	NA	9.53	89.3	NA
Average	NA	R 6.89	R 14.75	R 96.7	R 11.32	R 65.8	R 7.66	R 13.4	NA	7.51	88.3	NA
2023 January	NA	7.15	R 15.22	96.8	R 12.41	R 70.2	R 7.27	R 13.6	NA	7.55	89.3	NA
February	NA	R 6.55	R 14.98	96.9	R 11.97	R 69.6	R 5.98	R 13.7	NA	4.64	89.1	NA
March	NA	R 5.28	R 13.75	96.9	R 10.91	R 68.7	R 4.91	R 13.7	NA	3.51	88.7	NA
April	NA	R 4.33	R 14.41	96.5	R 10.41	R 65.1	R 4.08	R 12.9	NA	2.81	88.1	NA
May	NA	R 4.17	R 16.69	96.2	R 10.44	R 60.7	R 3.59	R 13.0	NA	2.77	88.5	NA
June	NA	R 4.67	R 20.13	96.6	R 10.67	R 57.4	R 3.57	R 12.6	NA	2.66	87.5	NA
July	NA	5.04	21.85	96.8	10.87	55.5	3.90	12.4	NA	3.07	85.7	NA
7-Month Average	NA	5.79	15.32	96.8	11.38	66.2	4.85	13.1	NA	3.78	87.9	NA
2022 7-Month Average	NA	6.30	13.72	96.6	10.65	66.7	7.34	13.6	NA	7.11	88.3	NA
2021 7-Month Average	NA	6.04	11.03	96.5	8.04	66.3	4.91	13.2	NA	5.41	96.1	NA

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

^b See Note 8, "Natural Gas Prices," at end of section.

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

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

^e The electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Through 2001, data are for electric utilities only; beginning in 2002, data also include independent power producers.

^f See "Natural Gas Wellhead Price" in Glossary.

^g See "Citygate" in Glossary.

^h Includes taxes.

ⁱ The percentage of the sector's consumption in Table 4.3 for which price data are available. For details on how the percentages are derived, see Table 9.10 sources at end of section.

^j Much of the natural gas delivered for vehicle fuel represents deliveries to fueling stations that are used primarily or exclusively by fleet vehicles. Thus, the prices are often those associated with the cost of gas in the operation of fleet vehicles.

^k Percentages exceed 100% when reported natural gas receipts are greater than reported natural gas consumption—this can occur when combined-heat-and-power plants report fuel receipts related to non-electric generating activities.

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

Notes: • Prices are for natural gas, plus a small amount of supplemental gaseous fuels. • Prices are intended to include all taxes. See Note 8, "Natural Gas Prices," at end of section. • Wellhead annual and year-to-date prices are simple averages of the monthly prices; all other annual and year-to-date prices are volume-weighted averages of the monthly prices. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#prices> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1976.

Sources: See end of section.

Note 1. Crude Oil Refinery Acquisition Costs. Beginning with January 1981, refiner acquisition costs of crude oil are from data collected on U.S. Energy Information Administration (EIA) Form EIA-14, "Refiners' Monthly Cost Report." Those costs were previously published from data collected on Economic Regulatory Administration (ERA) Form ERA-49, "Domestic Crude Oil Entitlements Program Refiners Monthly Report." Form ERA-49 was discontinued with the decontrol of crude oil on January 28, 1981. Crude oil purchases and costs are defined for Form EIA-14 in accordance with conventions used for Form ERA-49. The respondents for the two forms are also essentially the same. However, due to possible different interpretations of the filing requirements and a different method for handling prior period adjustments, care must be taken when comparing the data collected on the two forms.

The refiner acquisition cost of crude oil is the average price paid by refiners for crude oil booked into their refineries in accordance with accounting procedures generally accepted and consistently and historically applied by the refiners concerned. Domestic crude oil is that oil produced in the United States or from the outer continental shelf as defined in 43 USC Section 1331. Imported crude oil is either that oil reported on Form ERA-51, "Transfer Pricing Report," or any crude oil that is not domestic oil. The composite cost is the weighted average of domestic and imported crude oil costs.

Crude oil costs and volumes reported on Form ERA-49 excluded unfinished oils but included the Strategic Petroleum Reserve (SPR). Crude oil costs and volumes reported on Federal Energy Administration (FEA) Form FEA-P110-M-1, "Refiners' Monthly Cost Allocation Report," included unfinished oils but excluded SPR. Imported averages derived from Form ERA-49 exclude oil purchased for SPR, whereas the composite averages derived from Form ERA-49 include SPR. None of the prices derived from Form EIA-14 include either unfinished oils or SPR.

Note 2. Crude Oil Domestic First Purchase Prices. The average domestic first purchase price represents the average price at which all domestic crude oil is purchased. Crude oil domestic first purchase prices were derived as follows: for 1949–1973, weighted average domestic first purchase values as reported by state agencies and calculated by the Bureau of Mines; for 1974 and 1975, weighted averages of a sample survey of major first purchasers' purchases; for 1976 forward, weighted averages of all first purchasers' purchases. The data series was previously called "Actual Domestic Wellhead Price."

Note 3. Crude Oil F.O.B. Costs. F.O.B. literally means "Free on Board." It denotes a transaction whereby the seller makes the product available with an agreement on a given port at a given price; it is the responsibility of the buyer to arrange for the transportation and insurance.

Note 4. Crude Oil Landed Costs. The landed cost of imported crude oil from selected countries does not represent the total cost of all imported crude. Prior to April 1975, imported crude costs to U.S. company-owned refineries in the Caribbean were not included in the landed cost, and costs of crude oil from countries that export only small amounts to the United States were also excluded. Beginning in April 1975, however, coverage was expanded to include U.S. company-owned refineries in the Caribbean. Landed costs do not include supplemental fees.

Note 5. Motor Gasoline Prices. Several different series of motor gasoline prices are published in this section. U.S. city average retail prices of motor gasoline by grade are calculated monthly by the Bureau of Labor Statistics during the development of the Consumer Price Index (CPI). These prices include all federal, state, and local taxes paid at the time of sale. Prior to 1977, prices were collected in 56 urban areas. From 1978 forward, prices are collected from a new sample of service stations in 85 urban areas selected to represent all urban consumers—about 80 percent of the total U.S. population. The service stations are selected initially, and on a replacement basis, in such a way that they represent the purchasing habits of the CPI population. Service stations in the current sample include those providing all types of service (i.e., full-, mini-, and self-serve).

Regular motor gasoline prices by area type are determined by EIA in a weekly survey of retail motor gasoline outlets (Form EIA-878, "Motor Gasoline Price Survey"). Prices include all federal, state, and local taxes paid at the time of sale. A representative sample of outlets by geographic area and size is randomly selected from a sampling frame of approximately 115,000 retail motor gasoline outlets. Monthly and annual prices are simple averages of weighted

weekly estimates from "Weekly U.S. Retail Gasoline Prices, Regular Grade." For more information on the survey methodology, see EIA, *Weekly Petroleum Status Report*, Appendix B, "Weekly Petroleum Price Surveys" section.

Refiner prices of finished motor gasoline for resale and to end users are determined by EIA in a monthly survey of refiners and gas plant operators (Form EIA-782A). The prices do not include any federal, state, or local taxes paid at the time of sale. Estimates of prices prior to January 1983 are based on Form FEA-P302-M-1/EIA-460, "Petroleum Industry Monthly Report for Product Prices," and also exclude all federal, state, or local taxes paid at the time of sale. Sales for resale are those made to purchasers who are other-than-ultimate consumers. Sales to end users are sales made directly to the consumer of the product, including bulk consumers (such as agriculture, industry, and utilities) and residential and commercial consumers.

Note 6. Historical Petroleum Prices. Starting in January 1983, Form EIA-782, "Monthly Petroleum Product Sales Report," replaced 10 previous surveys. Every attempt was made to continue the most important price series. However, prices published through December 1982 and those published since January 1983 do not necessarily form continuous data series due to changes in survey forms, definitions, instructions, populations, samples, processing systems, and statistical procedures. To provide historical data, continuous series were generated for annual data 1978–1982 and for monthly data 1981 and 1982 by estimating the prices that would have been published had Form EIA-782 survey and system been in operation at that time. This form of estimation was performed after detailed adjustment was made for product and sales type matching and for discontinuity due to other factors. An important difference between the previous and present prices is the distinction between wholesale and resale and between retail and end user. The resale category continues to include sales among resellers. However, sales to bulk consumers, such as utility, industrial, and commercial accounts previously included in the wholesale category, are now counted as made to end users. The end-user category continues to include retail sales through company-owned and operated outlets but also includes sales to the bulk consumers such as agriculture, industry, and electric utilities. Additional information may be found in "Estimated Historic Time Series for the EIA-782," a feature article by Paula Weir, printed in the December 1983 [3] *Petroleum Marketing Monthly*, published by EIA.

Note 7. Electricity Prices to Ultimate Customers. Average annual prices of electricity to ultimate customers 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 prices of electricity to ultimate customers 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 2023, Table 1, and EIA, Petroleum Data Tables.

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 2023, Table 1, and EIA, Petroleum Data Tables.

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 2023, Table 1, and EIA, Petroleum Data Tables.

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 2023, Table 21, and EIA, Petroleum Data Tables

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*, August 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*, September 2023, 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), September 2023, 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, September 2023, 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.

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).

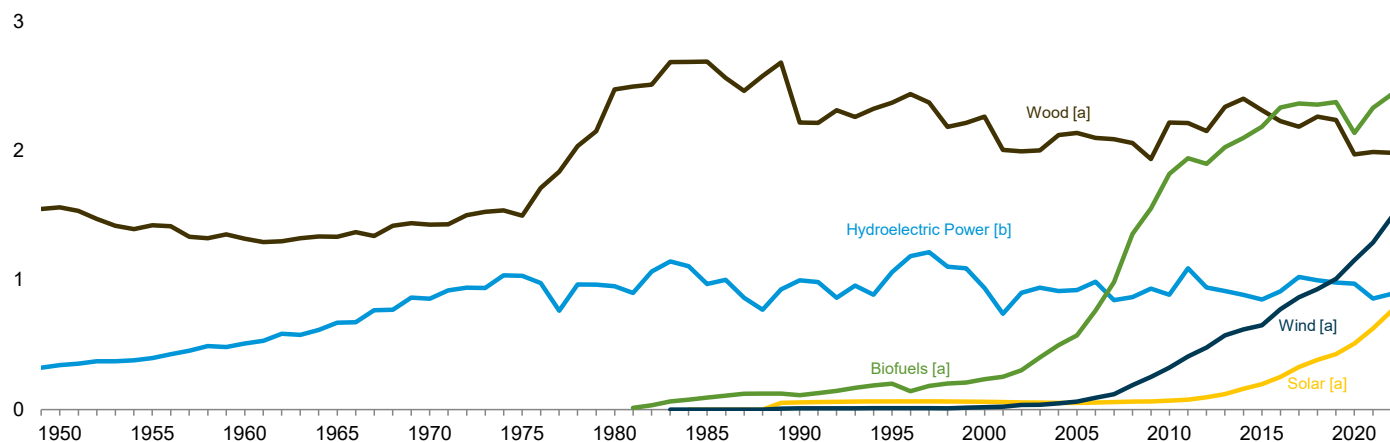
2008 forward: Calculated by EIA as the quantity of natural gas receipts by electric utilities and independent power producers reported on Form EIA-923, "Power Plant Operations Report," divided by the quantity of natural gas consumed by the electric power sector (see MER, Table 7.4b).

10. Renewable Energy

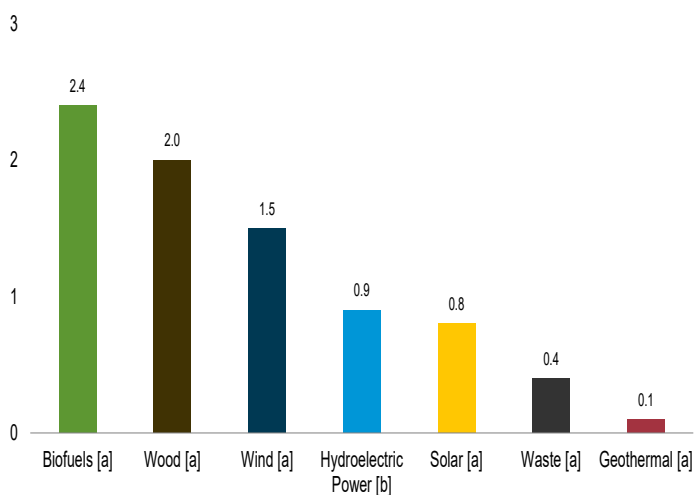
Figure 10.1 Renewable Energy Consumption

(Quadrillion Btu)

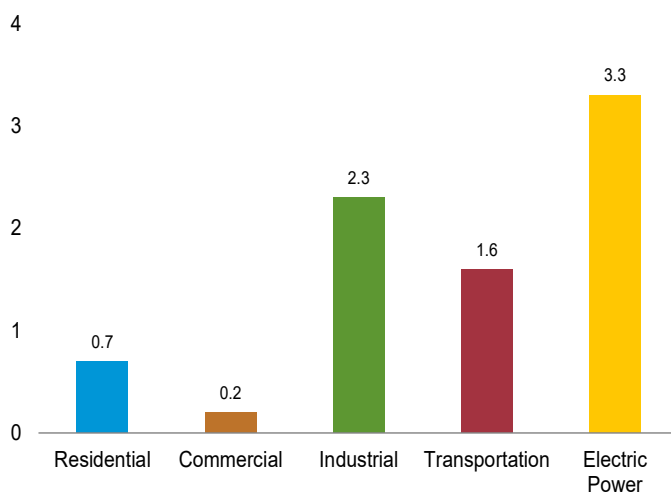
Major Sources, 1949–2022



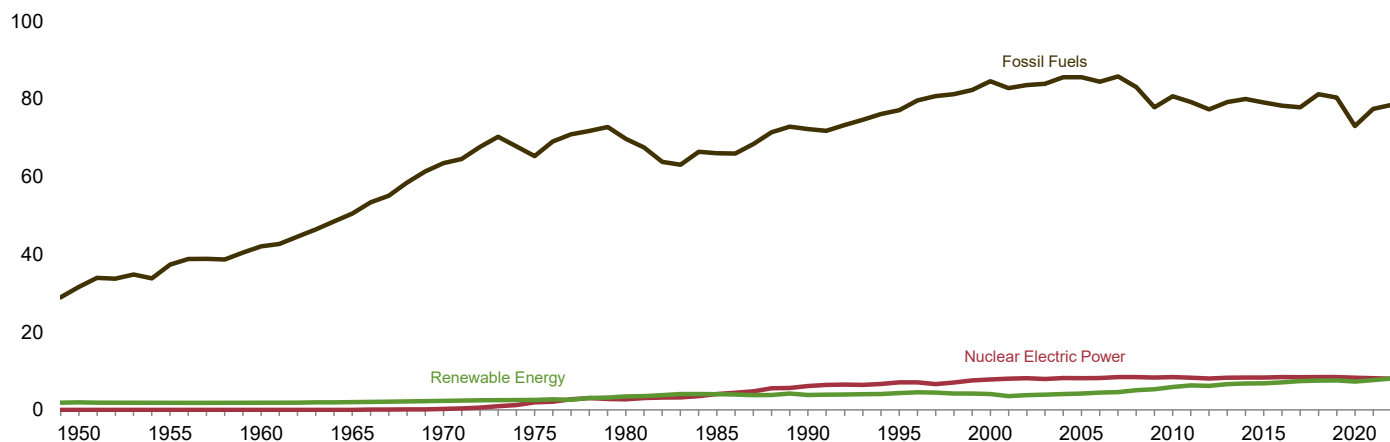
By Source, 2022



By Sector, 2022



Compared With Other Resources, 1949–2022



[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	1,907	344	NA	NA	NA	1,562	NA	NA	1,562	1,907
1955 Total	1,424	NA	1,424	1,821	397	NA	NA	NA	1,424	NA	NA	1,424	1,821
1960 Total	1,320	NA	1,320	1,830	510	(s)	NA	NA	1,320	NA	NA	1,320	1,830
1965 Total	1,335	NA	1,335	2,008	672	1	NA	NA	1,335	NA	NA	1,335	2,008
1970 Total	1,429	NA	1,431	2,289	856	2	NA	NA	1,429	2	NA	1,431	2,289
1975 Total	1,497	NA	1,499	2,544	1,034	11	NA	NA	1,497	2	NA	1,499	2,544
1980 Total	2,474	NA	2,475	3,445	953	17	NA	NA	2,474	2	NA	2,475	3,445
1985 Total	2,687	93	3,016	4,018	970	32	(s)	(s)	2,687	236	93	3,016	4,018
1990 Total	2,216	111	2,735	3,863	999	63	56	10	2,216	408	111	2,735	3,863
1995 Total	2,370	198	3,099	4,295	1,061	60	64	11	2,370	531	200	3,101	4,297
2000 Total	2,262	233	3,006	4,093	940	69	59	19	2,262	511	236	3,008	4,096
2005 Total	2,137	561	3,101	4,220	922	84	52	61	2,137	403	574	3,114	4,233
2006 Total	2,099	716	3,212	4,430	987	86	54	91	2,099	397	766	3,262	4,480
2007 Total	2,089	970	3,472	4,582	845	91	57	118	2,089	413	983	3,485	4,595
2008 Total	2,059	1,374	3,868	5,085	869	97	61	189	2,059	435	1,357	3,851	5,068
2009 Total	1,935	1,570	3,957	5,309	933	105	63	252	1,935	452	1,553	3,940	5,293
2010 Total	2,217	1,868	4,553	5,943	888	111	68	323	2,217	468	1,821	4,506	5,896
2011 Total	2,213	2,037	4,712	6,404	1,090	116	76	410	2,213	462	1,941	4,616	6,308
2012 Total	2,151	1,936	4,554	6,187	943	117	94	480	2,151	467	1,899	4,517	6,150
2013 Total	2,338	2,000	4,835	6,561	916	117	120	573	2,338	496	2,026	4,861	6,587
2014 Total	2,401	2,135	5,052	6,836	885	118	161	620	2,401	516	2,099	5,016	6,799
2015 Total	2,312	2,201	5,031	6,846	850	118	196	651	2,312	518	2,185	5,015	6,829
2016 Total	2,299	2,329	5,132	7,188	914	117	251	774	2,227	503	2,333	5,063	7,120
2017 Total	2,264	2,407	5,166	7,505	1,025	118	329	868	2,185	495	2,364	5,045	7,383
2018 Total	2,356	2,471	5,314	7,744	998	118	384	930	2,262	487	2,355	5,105	7,535
2019 Total	2,341	2,432	5,215	7,753	982	116	430	1,010	2,237	442	2,376	5,056	7,594
2020 Total	2,076	2,194	4,710	7,465	973	118	511	1,153	1,970	440	2,136	4,545	7,301
2021 January	180	191	409	637	84	10	32	103	172	38	169	379	607
February	162	152	348	553	69	9	36	91	154	34	154	342	547
March	179	194	411	678	72	10	51	134	167	38	194	399	667
April	171	187	393	651	66	10	59	123	162	36	186	383	642
May	176	206	418	690	80	10	67	115	168	36	207	410	682
June	175	201	410	657	80	10	66	91	164	34	200	398	645
July	181	209	426	651	75	10	66	74	173	36	204	413	639
August	182	195	413	649	69	10	64	92	172	35	200	407	643
September	175	185	395	621	58	10	59	99	164	34	186	385	611
October	172	214	422	650	58	10	50	110	164	35	214	413	641
November	173	216	424	664	66	10	42	122	161	35	207	403	643
December	183	224	445	707	80	10	35	136	171	38	209	418	680
Total	2,109	2,374	4,914	7,807	858	118	627	1,290	1,989	430	2,331	4,751	7,644
2022 January	181	214	431	704	89	11	43	130	171	37	193	400	673
February	170	190	393	658	78	9	48	130	158	33	177	369	634
March	178	212	427	733	87	10	63	147	165	37	207	409	715
April	169	198	401	705	67	10	70	157	159	34	195	388	692
May	181	214	429	739	79	10	79	142	169	35	208	411	721
June	182	214	429	727	92	10	82	114	168	33	213	414	711
July	184	218	436	710	83	10	82	100	174	34	206	414	688
August	183	211	427	671	74	10	76	83	173	33	213	419	663
September	172	193	396	626	57	10	70	92	158	32	192	382	611
October	171	217	422	658	50	10	63	112	160	34	216	409	645
November	172	219	426	689	64	10	46	143	162	34	209	405	668
December	180	211	426	685	75	11	40	134	167	35	205	407	666
Total	2,122	2,511	5,044	8,304	894	122	761	1,484	1,984	411	2,433	4,827	8,088
2023 January	179	220	435	702	78	10	45	133	171	36	210	418	685
February	159	198	389	659	66	9	51	143	151	32	190	373	643
March	178	222	434	734	70	10	68	151	163	34	220	418	718
April	157	212	401	699	61	10	80	146	149	32	207	388	686
May	172	229	435	740	95	10	91	109	161	34	234	429	735
June	R 165	230	R 427	R 690	67	10	93	94	153	32	232	416	679
July	170	232	435	711	73	10	98	95	160	33	223	416	692
7-Month Total	1,180	1,543	2,956	4,935	512	69	526	872	1,109	233	1,517	2,859	4,838
2022 7-Month Total	1,244	1,460	2,946	4,976	574	70	466	920	1,165	243	1,398	2,805	4,835
2021 7-Month Total	1,224	1,339	2,815	4,517	526	68	377	731	1,159	252	1,314	2,725	4,427

^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, also includes production of renewable diesel fuel. Beginning in 2014, also 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 heat content of electricity in Table A6).

^g Geothermal electricity net generation (converted to Btu by multiplying by the heat content of electricity 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 heat content of electricity in Table A6), and solar thermal direct use energy.

ⁱ Wind electricity net generation (converted to Btu by multiplying by the heat content of electricity 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.

Due to a revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September 2023 *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

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						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	(s)	3	(s)	—	66	28	(s)	94	97
1995 Total	7	63	520	589	(s)	5	(s)	—	72	40	(s)	113	118
2000 Total	9	57	420	486	(s)	8	(s)	—	71	47	(s)	119	127
2005 Total	16	49	430	495	(s)	14	1	—	70	34	1	105	120
2006 Total	18	51	380	450	(s)	14	1	—	65	36	1	103	118
2007 Total	22	53	420	495	(s)	14	1	—	70	31	2	103	119
2008 Total	26	56	470	552	(s)	15	2	—	73	34	2	109	126
2009 Total	33	56	504	593	(s)	17	3	(s)	73	36	3	112	131
2010 Total	37	59	541	636	(s)	19	4	(s)	72	36	3	111	134
2011 Total	40	62	524	626	(s)	20	7	(s)	69	43	3	115	141
2012 Total	40	66	438	544	(s)	20	11	(s)	61	45	3	108	139
2013 Total	40	72	572	683	(s)	20	15	(s)	70	47	3	120	155
2014 Total	40	79	579	697	(s)	20	19	(s)	76	47	4	127	166
2015 Total	40	87	513	639	(s)	20	21	(s)	79	47	^k 26	152	193
2016 Total	40	100	445	584	1	20	23	(s)	84	48	26	158	201
2017 Total	40	113	430	582	1	20	28	(s)	84	48	25	156	205
2018 Total	40	123	525	688	1	20	35	1	84	47	25	156	213
2019 Total	40	136	546	721	1	21	40	1	84	39	26	149	211
2020 Total	40	151	345	536	1	21	46	1	83	38	26	147	215
2021 January	3	9	29	42	(s)	2	3	(s)	7	3	2	12	17
February	3	10	26	39	(s)	2	3	(s)	6	3	2	11	16
March	3	14	29	47	(s)	2	5	(s)	7	3	2	13	19
April	3	16	28	47	(s)	2	5	(s)	7	3	2	12	19
May	3	17	29	50	(s)	2	5	(s)	7	3	2	12	20
June	3	18	28	49	(s)	2	6	(s)	7	3	2	12	20
July	3	18	29	50	(s)	2	6	(s)	7	4	2	13	21
August	3	17	29	49	(s)	2	5	(s)	7	3	2	13	20
September	3	15	28	46	(s)	2	5	(s)	7	3	2	12	19
October	3	13	29	46	(s)	2	4	(s)	7	3	2	13	19
November	3	11	28	43	(s)	2	3	(s)	7	3	2	12	18
December	3	10	29	43	(s)	2	3	(s)	7	3	2	13	18
Total	40	169	344	553	1	21	54	1	83	39	27	149	225
2022 January	3	11	36	50	(s)	2	3	(s)	7	3	2	12	18
February	3	12	32	47	(s)	2	4	(s)	6	3	2	11	17
March	3	16	36	55	NM	2	5	(s)	7	3	2	13	20
April	3	18	35	56	NM	2	6	(s)	7	3	2	12	19
May	3	19	36	59	NM	2	6	(s)	7	3	2	12	21
June	3	19	35	57	NM	2	6	(s)	7	3	2	12	21
July	3	20	36	59	(s)	2	6	(s)	7	3	2	13	21
August	3	19	36	59	NM	2	6	(s)	7	3	2	13	21
September	3	17	35	55	(s)	2	6	(s)	7	3	2	12	19
October	3	16	36	55	NM	2	5	(s)	7	3	2	12	19
November	3	13	35	51	(s)	2	4	(s)	7	3	2	12	18
December	3	12	36	51	(s)	2	3	(s)	7	3	2	12	18
Total	40	192	422	654	1	22	61	1	83	37	27	147	231
2023 January	3	13	38	54	(s)	2	4	(s)	7	4	2	13	19
February	3	14	35	52	(s)	2	4	(s)	6	3	2	11	17
March	3	19	38	61	NM	2	6	(s)	7	3	2	13	21
April	3	22	37	62	NM	2	7	(s)	7	3	2	12	21
May	3	24	38	66	NM	2	7	(s)	7	3	2	13	22
June	3	24	37	64	NM	2	7	(s)	7	5	2	14	23
July	3	25	38	66	NM	2	7	(s)	7	6	2	16	25
7-Month Total	23	140	262	425	1	12	42	(s)	47	28	16	91	146
2022 7-Month Total	23	115	245	383	1	13	37	(s)	48	22	15	85	136
2021 7-Month Total	23	102	200	325	1	12	33	(s)	48	23	15	86	132

^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 Small-scale solar photovoltaic (PV) electricity generation in the residential sector (converted to Btu by multiplying by the heat content of electricity in Table A6) and small-scale 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 heat content of electricity 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 heat content of electricity in Table A6).

^g Solar photovoltaic (PV) electricity net generation in the commercial sector (converted to Btu by multiplying by the heat content of electricity in Table A6), both utility-scale and small-scale. See Table 10.5.

^h Wind electricity net generation (converted to Btu by multiplying by the heat content of electricity 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.

Due to a revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September 2023 *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Table 10.2b Renewable Energy Consumption: Industrial Sector
(Trillion Btu)

	Industrial Sector ^a									
	Hydro- electric Power ^b	Geo- thermal ^c	Solar ^d	Wind ^e	Biomass					Total
					Wood ^f	Waste ^g	Fuel Ethanol ^{h,i}	Losses and Co- products ^j	Total	
1950 Total	17	NA	NA	NA	532	NA	NA	NA	532	549
1955 Total	11	NA	NA	NA	631	NA	NA	NA	631	642
1960 Total	12	NA	NA	NA	680	NA	NA	NA	680	692
1965 Total	11	NA	NA	NA	855	NA	NA	NA	855	866
1970 Total	11	NA	NA	NA	1,019	NA	NA	NA	1,019	1,030
1975 Total	11	NA	NA	NA	1,063	NA	NA	NA	1,063	1,074
1980 Total	11	NA	NA	NA	1,600	NA	NA	NA	1,600	1,611
1985 Total	11	NA	NA	NA	1,645	230	1	42	1,918	1,928
1990 Total	10	2	(s)	—	1,442	192	1	49	1,684	1,696
1995 Total	18	3	(s)	—	1,652	195	2	86	1,934	1,955
2000 Total	14	4	(s)	—	1,636	145	1	99	1,881	1,900
2005 Total	11	4	(s)	—	1,452	148	7	227	1,834	1,849
2006 Total	10	4	(s)	—	1,472	130	10	280	1,892	1,906
2007 Total	5	5	(s)	—	1,413	145	10	369	1,937	1,947
2008 Total	6	5	(s)	—	1,339	143	12	519	2,012	2,023
2009 Total	6	4	1	—	1,178	154	13	603	1,948	1,959
2010 Total	6	4	1	—	1,409	168	17	727	2,320	2,331
2011 Total	6	4	1	(s)	1,438	165	17	756	2,375	2,387
2012 Total	8	4	2	(s)	1,462	159	17	711	2,349	2,363
2013 Total	12	4	3	(s)	1,489	187	18	714	2,407	2,427
2014 Total	4	4	4	(s)	1,495	190	14	766	2,466	2,478
2015 Total	5	4	5	(s)	1,476	190	18	791	2,474	2,489
2016 Total	4	4	7	(s)	1,474	174	18	821	2,487	2,503
2017 Total	5	4	8	(s)	1,442	168	18	847	2,475	2,493
2018 Total	4	4	9	(s)	1,432	165	19	855	2,471	2,489
2019 Total	4	4	11	(s)	1,407	156	19	835	2,416	2,435
2020 Total	3	4	12	2	1,356	160	19	735	2,270	2,292
2021 January	(s)	(s)	1	(s)	117	15	1	64	197	198
February	(s)	(s)	1	(s)	104	13	1	51	168	170
March	(s)	(s)	1	(s)	115	14	2	65	195	197
April	(s)	(s)	1	(s)	113	13	1	62	191	192
May	(s)	(s)	1	(s)	117	14	2	69	201	203
June	(s)	(s)	1	(s)	112	12	2	68	194	196
July	(s)	(s)	1	(s)	118	13	2	69	202	204
August	(s)	(s)	1	(s)	116	13	2	64	195	197
September	(s)	(s)	1	(s)	113	13	2	62	189	191
October	(s)	(s)	1	(s)	113	14	2	71	200	202
November	(s)	(s)	1	(s)	110	14	2	71	197	199
December	(s)	(s)	1	(s)	117	15	2	73	207	208
Total	3	4	14	(s)	1,366	161	19	789	2,336	2,357
2022 January	(s)	(s)	1	(s)	111	14	1	71	198	200
February	(s)	(s)	1	(s)	102	13	1	62	178	180
March	(s)	(s)	1	(s)	106	15	2	70	192	194
April	(s)	(s)	1	(s)	105	14	2	64	184	186
May	(s)	(s)	2	(s)	110	14	2	69	195	197
June	(s)	(s)	2	(s)	108	12	2	69	191	193
July	(s)	(s)	2	(s)	112	13	2	70	196	198
August	(s)	(s)	2	(s)	111	13	2	68	192	195
September	(s)	(s)	1	(s)	100	12	2	60	173	175
October	(s)	(s)	1	(s)	102	14	2	70	187	189
November	(s)	(s)	1	(s)	105	14	2	70	190	192
December	(s)	(s)	1	(s)	107	15	2	66	190	191
Total	3	4	15	(s)	1,278	161	19	808	2,266	2,288
2023 January	(s)	(s)	1	(s)	110	15	2	69	195	196
February	(s)	(s)	1	(s)	96	13	1	62	173	174
March	(s)	(s)	1	(s)	103	14	2	68	187	189
April	(s)	(s)	2	(s)	95	14	2	65	175	177
May	(s)	(s)	2	(s)	102	14	2	69	186	188
June	(s)	(s)	2	(s)	95	12	2	69	178	180
July	(s)	(s)	2	(s)	99	13	2	71	184	186
7-Month Total	2	2	10	(s)	700	95	11	471	1,277	1,291
2022 7-Month Total	2	2	9	(s)	754	94	11	475	1,334	1,348
2021 7-Month Total	2	2	8	(s)	796	94	11	447	1,348	1,360

^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 heat content of electricity 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 heat content of electricity in Table A6), both utility-scale and small-scale. See Table 10.5.

^e Wind electricity net generation (converted to Btu by multiplying by the heat content of electricity 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.

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. • 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.

Due to a revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September 2023 *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Table 10.2c Renewable Energy Consumption: Transportation and Electric Power Sectors
(Trillion Btu)

	Transportation Sector					Electric Power Sector ^a							
	Biomass					Hydro- electric Power ^g	Geo- thermal ^h	Solar ⁱ	Wind ^j	Biomass			Total
	Fuel Ethanol ^{b,c}	Bio- diesel ^d	Renewable Diesel Fuel ^e	Other Biofuels ^f	Total					Wood ^k	Waste ^l	Total	
1950 Total	NA	NA	NA	NA	NA	327	NA	NA	NA	5	NA	5	333
1955 Total	NA	NA	NA	NA	NA	385	NA	NA	NA	3	NA	3	389
1960 Total	NA	NA	NA	NA	NA	498	(s)	NA	NA	2	NA	2	499
1965 Total	NA	NA	NA	NA	NA	661	1	NA	NA	3	NA	3	665
1970 Total	NA	NA	NA	NA	NA	845	2	NA	NA	1	2	4	851
1975 Total	NA	NA	NA	NA	NA	1,024	11	NA	NA	(s)	2	2	1,037
1980 Total	NA	NA	NA	NA	NA	942	17	NA	NA	3	2	4	964
1985 Total	50	NA	NA	NA	50	959	32	(s)	(s)	8	7	14	1,006
1990 Total	60	NA	NA	NA	60	989	53	1	10	129	188	317	1,369
1995 Total	112	NA	NA	NA	112	1,042	46	2	11	125	296	422	1,522
2000 Total	135	NA	NA	NA	135	926	48	2	19	134	318	453	1,447
2005 Total	327	12	NA	NA	339	911	50	2	61	185	221	406	1,430
2006 Total	442	33	NA	NA	475	977	50	2	91	182	231	412	1,531
2007 Total	557	45	NA	NA	602	839	50	2	118	186	237	423	1,432
2008 Total	786	39	NA	NA	825	864	51	3	189	177	258	435	1,541
2009 Total	894	41	NA	NA	935	926	51	3	252	180	261	441	1,674
2010 Total	1,041	33	NA	NA	1,075	882	52	4	323	196	264	459	1,720
2011 Total	1,045	113	8	NA	1,166	1,083	52	6	410	182	255	437	1,988
2012 Total	1,045	115	10	NA	1,169	934	53	14	480	190	262	453	1,935
2013 Total	1,072	182	39	NA	1,292	904	54	30	572	207	262	470	2,030
2014 Total	1,093	181	38	2	1,314	880	54	59	619	251	279	530	2,143
2015 Total	^c 1,110	191	48	2	1,351	845	54	83	650	244	281	525	2,158
2016 Total	1,143	266	57	2	1,469	909	54	121	774	224	281	505	2,363
2017 Total	1,156	253	62	3	1,474	1,019	54	180	867	229	280	510	2,630
2018 Total	1,152	243	57	3	1,456	993	54	216	929	221	275	496	2,689
2019 Total	1,162	231	99	4	1,497	978	51	243	1,009	201	248	448	2,729
2020 Total	1,004	239	107	4	1,355	969	53	302	1,150	185	242	428	2,902
2021 January	78	13	10	(s)	102	83	4	19	102	18	20	38	247
February	74	17	10	1	101	68	4	21	91	17	18	35	220
March	93	19	12	1	125	72	4	32	134	16	20	37	278
April	88	19	13	1	120	66	4	37	123	13	19	32	263
May	99	20	14	1	134	79	4	42	115	15	20	34	275
June	97	17	13	1	128	80	4	41	91	17	19	36	252
July	100	19	11	1	131	75	4	41	74	19	19	38	233
August	97	19	15	1	132	69	4	41	92	19	19	38	244
September	92	18	11	1	120	58	4	38	99	16	19	35	234
October	101	19	17	1	139	58	4	31	110	14	18	33	236
November	96	18	16	1	132	66	5	26	122	15	18	34	252
December	95	19	16	1	132	80	5	21	136	17	20	37	278
Total	1,110	218	158	10	1,496	854	53	391	1,289	197	229	426	3,014
2022 January	87	14	16	1	118	89	5	28	130	17	19	35	287
February	81	15	14	1	112	78	4	32	130	18	17	35	279
March	96	18	18	1	133	86	5	40	147	16	19	35	313
April	90	19	17	2	128	66	4	46	157	13	17	30	303
May	97	17	18	2	135	78	5	52	142	16	18	34	310
June	97	19	22	2	140	91	5	54	114	18	18	36	300
July	94	18	18	2	132	82	5	53	100	20	18	38	278
August	100	18	21	3	141	74	5	49	83	19	18	37	247
September	90	17	19	2	129	57	5	46	92	17	17	34	233
October	98	19	22	3	142	50	4	42	112	15	17	32	240
November	95	20	18	2	135	64	5	29	143	15	17	33	273
December	93	17	22	3	135	74	5	24	134	17	17	34	272
Total	1,117	212	225	25	1,579	890	56	493	1,483	200	213	413	3,335
2023 January	92	18	25	3	138	78	5	28	133	16	18	34	278
February	83	17	24	2	125	66	4	32	143	14	16	30	275
March	97	20	28	3	149	70	4	42	151	15	17	32	299
April	91	18	28	2	139	61	5	51	146	10	15	26	288
May	98	23	38	3	162	95	5	58	109	14	16	31	297
June	98	23	35	3	159	67	4	60	94	15	15	29	254
July	95	21	29	3	149	73	5	64	95	16	14	30	266
7-Month Total	653	139	206	20	1,019	509	31	334	871	100	111	211	1,957
2022 7-Month Total	642	120	123	12	897	571	32	305	919	117	126	243	2,071
2021 7-Month Total	629	124	83	5	841	524	30	234	731	115	135	251	1,769

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

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

^d "Biodiesel" is primarily fatty acid methyl esters (FAME). See "Biodiesel" in Glossary. Although there is use of biodiesel in other sectors, all consumption is assigned to the transportation sector.

^e "Renewable diesel fuel," which is commonly called "non-ester renewable diesel" and "green diesel," is chemically similar to petroleum diesel fuel. Although there is use of renewable diesel fuel in other sectors, all consumption is assigned to the transportation sector.

^f Renewable heating oil, renewable jet fuel (sustainable aviation fuel), renewable naphtha and gasoline, biobutanol, and other biofuels and biointermediates. Although there is use of these biofuels in other sectors, all consumption is assigned to the transportation sector.

^g Conventional hydroelectricity net generation (converted to Btu by multiplying

by the heat content of electricity in Table A6).

^h Geothermal electricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6).

ⁱ Solar photovoltaic (PV) and solar thermal electricity net generation in the electric power sector (converted to Btu by multiplying by the heat content of electricity in Table A6). See Table 10.5.

^j Wind electricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6).

^k Wood and wood-derived fuels.

^l 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).

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

Notes: • Transportation sector data are estimates, except for biodiesel beginning in 2012, and renewable diesel fuel and other biofuels beginning in 2021. • 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.

Due to a revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September 2023 *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Table 10.3 Fuel Ethanol Overview

	Feed-stock ^b	Losses and Co-products ^c	Denaturant ^d	Production ^a			Trade ^a	Stocks ^{a,f}	Stock Change ^{a,g}	Consumption ^a			Consumption Minus Denaturant ^h
							Net Imports ^e						
	TBtu	TBtu	Mbbl	Mbbl	MMgal	TBtu	Mbbl	Mbbl	Mbbl	Mbbl	MMgal	TBtu	TBtu
1981 Total	13	6	40	1,978	83	7	NA	NA	NA	1,978	83	7	7
1985 Total	93	42	294	14,693	617	52	NA	NA	NA	14,693	617	52	51
1990 Total	111	49	356	17,802	748	63	NA	NA	NA	17,802	748	63	62
1995 Total	198	86	647	32,325	1,358	115	387	2,186	-207	32,919	1,383	117	114
2000 Total	233	99	773	38,627	1,622	138	116	3,400	-624	39,367	1,653	140	137
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	1,809	711	6,181	316,493	13,293	1,127	-5,761	16,424	-3,926	314,658	13,216	1,120	1,092
2014 Total	1,947	764	6,476	340,781	14,313	1,213	-18,371	18,739	2,315	320,095	13,444	1,139	1,111
2015 Total	2,013	788	6,636	352,553	14,807	1,254	-17,632	21,596	2,857	332,064	13,947	1,181	1,153
2016 Total	2,092	818	6,920	366,981	15,413	1,306	-27,002	19,758	-1,838	341,817	14,356	1,216	1,187
2017 Total	2,164	844	6,657	379,435	15,936	1,349	-31,268	23,043	3,285	344,882	14,485	1,226	1,199
2018 Total	2,187	852	5,819	383,127	16,091	1,361	-39,410	23,418	375	343,342	14,420	1,220	1,197
2019 Total	2,140	832	6,089	375,678	15,778	1,336	-30,276	22,352	-1,066	346,468	14,552	1,232	1,206
2020 Total	1,886	732	5,892	331,928	13,941	1,181	-27,692	24,663	2,311	301,925	12,681	1,074	1,050
2021 January	164	63	491	28,809	1,210	102	-3,875	26,117	1,454	23,480	986	83	82
February	130	50	391	22,895	962	81	-2,227	24,712	-1,405	22,073	927	78	77
March	166	65	507	29,327	1,232	104	-3,409	22,869	-1,843	27,761	1,166	99	97
April	160	62	475	28,213	1,185	100	-2,508	22,368	-500	26,205	1,101	93	91
May	177	69	535	31,224	1,311	111	-1,897	22,057	-312	29,639	1,245	105	103
June	174	67	528	30,641	1,287	109	-1,668	21,980	-77	29,049	1,220	103	101
July	179	69	542	31,449	1,321	112	-883	22,656	676	29,890	1,255	106	104
August	165	64	471	29,087	1,222	103	-1,643	21,135	-1,521	28,965	1,217	103	101
September	160	62	466	28,080	1,179	100	-1,603	20,235	-900	27,377	1,150	97	95
October	183	71	529	32,276	1,356	115	-2,207	20,067	-169	30,237	1,270	107	105
November	184	71	548	32,383	1,360	115	-3,190	20,503	436	28,757	1,208	102	100
December	188	73	613	33,132	1,392	118	-3,023	22,036	1,533	28,576	1,200	102	99
Total	2,030	786	6,094	357,517	15,016	1,271	-28,135	22,036	-2,627	332,010	13,944	1,180	1,155
2022 January	183	71	600	32,191	1,352	114	-2,311	25,874	3,838	26,042	1,094	93	90
February	161	62	488	28,304	1,189	101	-3,420	26,521	647	24,237	1,018	86	84
March	179	70	520	31,581	1,326	112	-2,694	26,700	179	28,708	1,206	102	100
April	165	64	435	28,956	1,216	103	-4,628	24,284	-2,416	26,744	1,123	95	93
May	178	69	467	31,256	1,313	111	-3,064	23,426	-858	29,049	1,220	103	101
June	178	69	485	31,288	1,314	111	-2,360	23,384	-41	28,969	1,217	103	101
July	179	69	470	31,498	1,323	112	-2,615	24,197	813	28,070	1,179	100	98
August	174	67	460	30,520	1,282	108	-1,469	23,509	-688	29,740	1,249	106	104
September	154	60	400	27,072	1,137	96	-2,144	21,540	-1,969	26,896	1,130	96	94
October	179	69	493	31,440	1,321	112	-1,843	21,708	168	29,430	1,236	105	103
November	179	69	539	31,580	1,326	112	-1,414	23,575	1,867	28,299	1,189	101	98
December	171	66	512	30,046	1,262	107	-1,668	24,245	670	27,708	1,164	98	96
Total	2,079	805	5,869	365,731	15,361	1,299	-29,631	24,245	2,209	333,891	14,023	1,186	1,163
2023 January	177	69	541	31,189	1,310	111	-2,812	25,383	ⁱ 957	27,421	1,152	97	95
February	160	62	477	28,089	1,180	100	-2,483	26,299	917	24,690	1,037	88	86
March	175	68	514	30,753	1,292	109	-3,158	24,951	-1,349	28,944	1,216	103	101
April	166	64	500	29,236	1,228	104	-3,000	24,085	-865	27,102	1,138	96	94
May	176	68	515	31,016	1,303	110	-2,704	23,110	-975	29,287	1,230	104	102
June	177	69	519	31,146	1,308	111	-2,675	22,299	-812	29,283	1,230	104	102
July	182	70	527	32,024	1,345	114	-2,664	23,101	802	28,558	1,199	101	99
7-Month Total ...	1,212	470	3,594	213,455	8,965	758	-19,495	23,101	-1,325	195,285	8,202	694	679
2022 7-Month Total ...	1,222	474	3,465	215,073	9,033	764	-21,092	24,197	2,161	191,819	8,056	682	668
2021 7-Month Total ...	1,150	446	3,468	202,559	8,507	720	-16,469	22,656	-2,007	188,098	7,900	669	654

^a Includes denaturant.

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

^c 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.

^d The amount of denaturant in fuel ethanol produced.

^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 2022 stocks value (24,426 thousand barrels), not the final 2022 value (24,245 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	Mbbl	MMgal	TBtu	Mbbl	Mbbl	Mbbl	Mbbl	Mbbl	Mbbl	MMgal	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 Total	223	3	41,060	1,725	220	4,078	2,730	1,348	3,907	-756	43,163	1,813	231
2020 Total	235	3	43,207	1,815	232	4,684	3,458	1,226	3,665	-241	44,675	1,876	239
2021 January	18	(s)	3,352	141	18	228	166	62	4,580	915	2,499	105	13
February	14	(s)	2,578	108	14	263	122	141	4,189	-391	3,110	131	17
March	19	(s)	3,585	151	19	361	267	94	4,284	94	3,585	151	19
April	19	(s)	3,430	144	18	500	494	6	4,183	-101	3,536	149	19
May	19	(s)	3,537	149	19	316	564	-248	3,805	-379	3,668	154	20
June	19	(s)	3,415	143	18	446	658	-212	3,748	-57	3,260	137	17
July	19	(s)	3,552	149	19	357	489	-132	3,697	-51	3,470	146	19
August	19	(s)	3,560	150	19	287	549	-262	3,369	-328	3,626	152	19
September	17	(s)	3,185	134	17	418	474	-56	3,230	-139	3,268	137	18
October	19	(s)	3,473	146	19	473	213	260	3,340	110	3,623	152	19
November	18	(s)	3,360	141	18	660	166	494	3,747	407	3,447	145	18
December	20	(s)	3,661	154	20	696	291	405	4,187	441	3,626	152	19
Total	221	3	40,686	1,709	218	5,005	4,452	553	4,187	522	40,717	1,710	218
2022 January	16	(s)	2,857	120	15	388	209	179	4,544	356	2,680	113	14
February	15	(s)	2,707	114	15	121	124	-3	4,457	-86	2,790	117	15
March	17	(s)	3,161	133	17	636	171	465	4,692	234	3,391	142	18
April	16	(s)	3,018	127	16	672	632	40	4,212	-479	3,537	149	19
May	18	(s)	3,242	136	17	315	699	-384	3,839	-373	3,230	136	17
June	18	(s)	3,265	137	17	346	589	-243	3,404	-435	3,458	145	19
July	19	(s)	3,490	147	19	284	625	-341	3,240	-164	3,313	139	18
August	19	(s)	3,519	148	19	371	831	-460	2,894	-347	3,405	143	18
September	18	(s)	3,350	141	18	405	641	-236	2,826	-67	3,182	134	17
October	19	(s)	3,464	145	19	658	468	190	2,903	77	3,577	150	19
November	18	(s)	3,384	142	18	903	221	682	3,232	329	3,737	157	20
December	17	(s)	3,164	133	17	851	462	389	3,608	376	3,178	133	17
Total	210	3	38,620	1,622	207	5,950	5,671	279	3,608	-580	39,478	1,658	212
2023 January	18	(s)	3,242	136	17	930	92	838	4,297	ⁱ 698	3,383	142	18
February	15	(s)	2,840	119	15	952	132	820	4,861	564	3,096	130	17
March	18	(s)	3,325	140	18	916	261	655	5,055	194	3,787	159	20
April	17	(s)	3,164	133	17	1,000	1,044	-44	4,847	-209	3,328	140	18
May	20	(s)	3,722	156	20	832	757	75	4,413	-433	4,230	178	23
June	20	(s)	3,636	153	19	1,016	839	177	3,978	-435	4,249	178	23
July	20	(s)	3,612	152	19	725	691	34	3,719	-259	3,905	164	21
7-Month Total	128	2	23,541	989	126	6,371	3,815	2,556	3,719	119	25,977	1,091	139
2022 7-Month Total	118	2	21,739	913	117	2,762	3,049	-287	3,240	-947	22,400	941	120
2021 7-Month Total	127	2	23,448	985	126	2,471	2,760	-289	3,697	32	23,127	971	124

^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 2022 stocks value (3,599 thousand barrels), not the final 2022 value (3,608 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	Mbbl	Mbbl	MMgal	TBtu
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 Total	NA	NA	11,715	492	64	6,143	1,491	-236	18,094	760	99
2020 Total	NA	NA	12,702	533	70	6,658	1,287	-204	19,564	822	107
2021 January	NA	NA	^e 1,415	^e 59	^e 8	771	1,713	426	1,760	74	10
February	NA	NA	1,268	53	7	741	1,979	266	1,744	73	10
March	NA	NA	1,356	57	7	893	1,967	-11	2,261	95	12
April	NA	NA	1,264	53	7	1,013	1,922	-46	2,323	98	13
May	NA	NA	1,574	66	9	870	1,960	-162	2,605	109	14
June	NA	NA	1,470	62	8	1,092	1,920	160	2,402	101	13
July	NA	NA	1,889	79	10	549	2,283	363	2,075	87	11
August	NA	NA	1,800	76	10	597	2,037	-246	2,643	111	15
September	NA	NA	1,463	61	8	636	2,174	137	1,962	82	11
October	NA	NA	2,027	85	11	795	1,883	-291	3,114	131	17
November	NA	NA	2,255	95	12	890	2,107	223	2,921	123	16
December	NA	NA	2,720	114	15	493	2,353	246	2,967	125	16
Total	NA	NA	20,503	861	113	9,340	2,353	1,066	28,777	1,209	158
2022 January	NA	NA	2,632	111	14	632	2,710	357	2,907	122	16
February	NA	NA	2,300	97	13	359	2,748	38	2,620	110	14
March	NA	NA	2,596	109	14	555	2,705	-43	3,194	134	18
April	NA	NA	2,837	119	16	392	2,872	167	3,062	129	17
May	NA	NA	3,008	126	17	649	3,273	401	3,256	137	18
June	NA	NA	2,948	124	16	536	2,742	-532	4,016	169	22
July	NA	NA	3,086	130	17	593	3,148	407	3,272	137	18
August	NA	NA	2,832	119	16	421	2,554	-594	3,847	162	21
September	NA	NA	3,289	138	18	304	2,698	144	3,450	145	19
October	NA	NA	3,079	129	17	451	2,235	-463	3,993	168	22
November	NA	NA	3,465	146	19	692	3,087	852	3,305	139	18
December	NA	NA	3,619	152	20	670	3,405	318	3,971	167	22
Total	NA	NA	35,692	1,499	196	6,254	3,405	1,053	40,893	1,718	225
2023 January	NA	NA	3,994	168	22	633	3,557	152	4,475	188	25
February	NA	NA	3,752	158	21	546	3,565	8	4,290	180	24
March	NA	NA	4,740	199	26	786	3,919	354	5,173	217	28
April	NA	NA	4,789	201	26	420	4,034	115	5,093	214	28
May	NA	NA	5,377	226	30	1,149	3,638	-397	6,923	291	38
June	NA	NA	5,482	230	30	681	3,421	-217	6,379	268	35
July	NA	NA	5,086	214	28	783	4,038	618	5,251	221	29
7-Month Total	NA	NA	33,219	1,395	183	4,998	4,038	633	37,584	1,579	206
2022 7-Month Total	NA	NA	19,407	815	107	3,716	3,148	796	22,328	938	123
2021 7-Month Total	NA	NA	10,237	430	56	5,929	2,283	996	15,170	637	83

^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	396	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 Total	NA	NA	791	33	4	—	50	-4	795	33	4
2020 Total	NA	NA	761	32	4	—	27	-23	784	33	4
2021 January ⁱ	NA	NA	^e 179	^e 8	^e 1	—	136	109	70	3	(s)
February	NA	NA	172	7	1	—	151	16	156	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	-4	144	6	1
September	NA	NA	98	4	1	—	71	-13	112	5	1
October	NA	NA	191	8	1	—	90	18	173	7	1
November	NA	NA	227	10	1	—	69	-21	248	10	1
December	NA	NA	261	11	1	—	83	14	247	10	1
Total	NA	NA	1,914	80	10	27	83	56	1,885	79	10
2022 January	NA	NA	308	13	2	—	211	129	179	8	1
February	NA	NA	306	13	2	—	290	79	227	10	1
March	NA	NA	279	12	1	—	292	2	277	12	1
April	NA	NA	327	14	2	50	258	-34	411	17	2
May	NA	NA	335	14	2	—	217	-41	377	16	2
June	NA	NA	365	15	2	—	191	-26	391	16	2
July	NA	NA	437	18	2	—	190	-1	438	18	2
August	NA	NA	447	19	2	12	179	-11	470	20	3
September	NA	NA	448	19	2	—	176	-3	450	19	2
October	NA	NA	478	20	3	—	178	1	477	20	3
November	NA	NA	504	21	3	—	244	66	437	18	2
December	NA	NA	607	26	3	52	282	38	621	26	3
Total	NA	NA	4,841	203	26	114	282	200	4,756	200	25
2023 January	NA	NA	562	24	3	—	229	-54	616	26	3
February	NA	NA	504	21	3	—	359	130	375	16	2
March	NA	NA	570	24	3	—	343	-15	585	25	3
April	NA	NA	444	19	2	—	331	-12	456	19	2
May	NA	NA	565	24	3	—	304	-27	592	25	3
June	NA	NA	616	26	3	5	370	66	555	23	3
July	NA	NA	478	20	3	52	285	-85	615	26	3
7-Month Total	NA	NA	3,739	157	20	57	285	3	3,793	159	20
2022 7-Month Total	NA	NA	2,357	99	13	50	190	107	2,300	97	12
2021 7-Month Total	NA	NA	998	42	5	27	89	62	963	40	5

^a Data are for renewable heating oil, renewable jet fuel (sustainable aviation fuel), renewable naphtha and gasoline, biobutanol, and other biofuels and biointermediates.

^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."

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)

	Small-Scale ^a Solar Energy ^b						Utility-Scale ^c Solar Energy ^b				Total ^k
	Heat ^f	Electricity ^d				Total ^g	Electricity ^e				
		Residential Sector	Commercial Sector	Industrial Sector	Total		Commercial Sector ^h	Industrial Sector ⁱ	Electric Power Sector ^j	Total	
1985 Total	NA	NA	NA	NA	NA	NA	NA	NA	(s)	(s)	(s)
1990 Total	55	(s)	(s)	(s)	(s)	55	—	—	1	1	56
1995 Total	63	(s)	(s)	(s)	(s)	63	—	—	2	2	64
2000 Total	57	(s)	(s)	(s)	(s)	58	—	—	2	2	59
2005 Total	49	(s)	1	(s)	1	50	—	—	2	2	52
2006 Total	51	1	1	(s)	2	52	—	—	2	2	54
2007 Total	53	1	1	(s)	2	55	—	—	2	2	57
2008 Total	54	1	2	(s)	4	58	(s)	—	3	3	61
2009 Total	55	2	3	1	5	59	(s)	—	3	3	63
2010 Total	56	3	4	1	8	64	(s)	(s)	4	4	68
2011 Total	58	5	6	1	12	70	(s)	(s)	6	6	76
2012 Total	59	7	10	2	20	79	1	(s)	14	15	94
2013 Total	61	11	14	3	28	89	1	(s)	30	31	120
2014 Total	62	17	18	4	38	101	1	(s)	59	60	161
2015 Total	63	24	19	5	48	111	1	(s)	83	85	196
2016 Total	64	36	21	7	64	128	2	(s)	121	123	251
2017 Total	65	48	26	8	82	147	2	(s)	180	182	329
2018 Total	65	58	33	9	101	166	2	(s)	216	218	384
2019 Total	65	71	38	10	119	184	2	(s)	243	245	430
2020 Total	65	86	44	12	142	207	2	(s)	302	304	511
2021 January	4	6	3	1	9	13	(s)	(s)	19	19	32
February	4	6	3	1	10	14	(s)	(s)	21	22	36
March	6	9	4	1	14	20	(s)	(s)	32	32	51
April	6	10	5	1	16	22	(s)	(s)	37	37	59
May	7	11	5	1	17	24	(s)	(s)	42	43	67
June	7	11	5	1	17	24	(s)	(s)	41	42	66
July	7	11	5	1	18	25	(s)	(s)	41	42	66
August	7	10	5	1	17	23	(s)	(s)	41	41	64
September	6	9	5	1	15	21	(s)	(s)	38	38	59
October	5	8	4	1	13	18	(s)	(s)	31	32	50
November	4	7	3	1	11	15	(s)	(s)	26	27	42
December	4	6	3	1	10	14	(s)	(s)	21	21	35
Total	66	103	52	13	168	234	2	(s)	391	393	627
2022 January	4	7	3	1	11	15	(s)	(s)	28	28	43
February	4	8	4	1	12	16	(s)	(s)	32	32	48
March	5	11	5	1	17	22	(s)	(s)	40	41	63
April	6	12	5	1	18	24	(s)	(s)	46	46	70
May	7	13	6	1	20	27	(s)	(s)	52	52	79
June	7	13	6	1	20	27	(s)	(s)	54	55	82
July	7	13	6	1	21	28	(s)	(s)	53	54	82
August	7	13	6	1	20	27	(s)	(s)	49	49	76
September	6	11	5	1	18	24	(s)	(s)	46	46	70
October	5	11	5	1	16	22	(s)	(s)	42	42	63
November	4	9	4	1	13	17	(s)	(s)	29	29	46
December	4	8	3	1	12	16	(s)	(s)	24	24	40
Total	65	127	58	14	200	264	2	1	493	497	761
2023 January	4	9	4	1	14	17	(s)	(s)	28	28	45
February	4	10	4	1	15	19	(s)	(s)	32	32	51
March	5	14	6	1	21	26	(s)	(s)	42	42	68
April	6	16	6	1	23	29	(s)	(s)	51	51	80
May	7	17	7	2	26	33	(s)	(s)	58	58	91
June	7	17	7	2	25	32	(s)	(s)	60	61	93
July	7	18	7	2	27	33	(s)	(s)	64	65	98
7-Month Total	39	101	41	9	151	190	1	1	334	336	526
2022 7-Month Total	39	76	36	8	120	159	1	1	305	307	466
2021 7-Month Total	40	62	31	8	102	142	1	(s)	234	235	377

^a Data are estimates for 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 small-scale facilities connected to the electric power grid (converted to Btu by multiplying by the heat content of electricity in Table A6).

^e Solar photovoltaic (PV) and solar thermal electricity net generation at utility-scale facilities (converted to Btu by multiplying by the heat content of electricity 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 "Small-Scale Solar Energy Heat" and "Small-Scale 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 NA/CS 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 "Small-Scale Solar Energy Total" and "Utility-Scale Solar Energy Total."

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

Notes: • 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.

Due to a revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September 2023 *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Table 10.6 Solar Electricity Net Generation
(Million Kilowatthours)

	Small-Scale ^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	16	4	32	—	—	367	367	399
1995 Total	20	28	6	54	—	—	497	497	551
2000 Total	39	53	12	104	—	—	493	493	598
2005 Total	121	166	37	324	—	—	550	550	875
2006 Total	177	243	54	473	—	—	508	508	981
2007 Total	250	343	76	668	—	—	612	612	1,280
2008 Total	401	551	122	1,073	(s)	—	864	864	1,938
2009 Total	539	740	164	1,443	(s)	—	891	891	2,334
2010 Total	899	1,130	250	2,280	5	2	1,206	1,212	3,492
2011 Total	1,358	1,845	409	3,612	84	7	1,727	1,818	5,429
2012 Total	2,058	3,061	678	5,797	148	14	4,164	4,327	10,123
2013 Total	3,217	4,106	909	8,232	294	17	8,724	9,036	17,268
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 Total	20,914	11,002	3,041	34,957	587	85	71,265	71,937	106,894
2020 Total	25,179	12,859	3,484	41,522	586	101	88,511	89,199	130,721
2021 January	1,669	865	216	2,750	30	6	5,523	5,559	8,309
February	1,774	935	230	2,939	31	7	6,293	6,330	9,270
March	2,549	1,280	330	4,158	53	11	9,233	9,296	13,454
April	2,837	1,416	357	4,610	61	12	10,818	10,892	15,502
May	3,135	1,534	394	5,063	66	14	12,377	12,457	17,520
June	3,161	1,551	396	5,107	64	13	12,119	12,197	17,304
July	3,188	1,599	405	5,192	65	13	12,114	12,192	17,384
August	2,994	1,538	392	4,924	61	15	11,890	11,967	16,891
September	2,642	1,373	354	4,370	55	15	11,144	11,214	15,584
October	2,308	1,194	319	3,821	45	12	9,211	9,268	13,089
November	2,068	945	246	3,259	38	11	7,746	7,795	11,054
December	1,857	895	219	2,970	29	8	6,054	6,091	9,061
Total	30,182	15,124	3,858	49,164	598	137	114,523	115,258	164,422
2022 January	2,041	976	231	3,247	43	15	8,113	8,171	11,418
February	2,255	1,076	245	3,577	47	17	9,269	9,333	12,910
March	3,083	1,469	349	4,900	58	22	11,818	11,898	16,798
April	3,426	1,605	378	5,409	66	25	13,385	13,476	18,885
May	3,779	1,752	415	5,946	71	27	15,101	15,198	21,145
June	3,773	1,753	415	5,941	76	32	15,950	16,058	21,998
July	3,905	1,825	427	6,157	74	31	15,645	15,749	21,907
August	3,760	1,737	413	5,910	70	28	14,344	14,442	20,352
September	3,361	1,550	371	5,282	68	27	13,409	13,504	18,786
October	3,120	1,335	336	4,790	61	25	12,166	12,252	17,042
November	2,545	1,048	258	3,852	40	16	8,428	8,484	12,336
December	2,304	967	230	3,501	33	13	6,986	7,033	10,534
Total	37,351	17,093	4,067	58,512	706	277	144,615	145,598	204,110
2023 January	2,683	1,094	244	4,020	38	17	8,083	8,137	12,157
February	2,940	1,214	259	4,412	40	19	9,323	9,381	13,794
March	4,064	1,666	375	6,104	56	25	12,193	12,274	18,379
April	4,582	1,860	413	6,855	62	28	14,883	14,973	21,828
May	5,113	2,024	452	7,588	69	32	16,899	17,000	24,588
June	5,001	2,013	451	7,465	70	33	17,673	17,775	25,240
July	5,238	2,095	465	7,797	77	36	18,875	18,988	26,785
7-Month Total	29,620	11,965	2,658	44,242	412	189	97,928	98,529	142,771
2022 7-Month Total	22,261	10,457	2,459	35,177	435	167	89,281	89,883	125,060
2021 7-Month Total	18,313	9,179	2,328	29,820	370	76	68,477	68,923	98,743

^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: • 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: • **Small-Scale Solar Generation: 1989–2013**—Calculated as small-scale solar energy consumption (see Table 10.5) divided by the heat content of electricity (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 small-scale 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 electricity heat content factor in Table A6); geothermal electricity net generation (converted to Btu by multiplying by the electricity heat content factor 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 electricity heat content factor in Table A6), and solar thermal direct use energy; wind electricity net generation (converted to Btu by multiplying by the electricity heat content factor 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 wood and biofuels; plus wood production (which is the sum of wood consumption and densified biomass exports); plus biofuels production (which comprises fuel ethanol feedstock, biodiesel feedstock, renewable diesel fuel production, and other biofuels production).

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 "Small-Scale Solar Energy Consumption: Heat" (which includes solar thermal direct use energy in the residential, commercial, and industrial sectors) from Table 10.5 and "Small-Scale 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 electricity heat content factor 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 electricity heat content factor 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 "Small-Scale 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 electricity heat content factor 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 electricity heat content factor 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 "Small-Scale 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 electricity heat content factor 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.

Table 10.2c Sources

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

Transportation Sector, Renewable Diesel Fuel

2011 forward: Transportation sector renewable diesel fuel consumption is assumed to equal total renewable diesel fuel consumption from Table 10.4b.

Transportation Sector, Other Biofuels

2014 forward: Transportation sector other biofuels consumption is assumed to equal total 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.

2001–2010: Transportation sector total renewable energy consumption is the sum of the transportation sector consumption values for fuel ethanol (minus denaturant) and biodiesel.

2011–2013: Transportation sector total renewable energy consumption is the sum of the transportation sector consumption values for fuel ethanol (minus denaturant), biodiesel, and renewable diesel fuel.

2014 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.

Electric Power Sector, Hydroelectric Power

1949 forward: Electric power sector conventional hydroelectricity net generation data from Table 7.2b are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electric Power Sector, Geothermal

1960 forward: Electric power sector geothermal electricity net generation data from Table 7.2b are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electric Power Sector, Solar

1984 forward: Electric power sector solar electricity net generation data from Table 7.2b are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electric Power Sector, Wind

1983 forward: Electric power sector wind electricity net generation data from Table 7.2b are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electric Power Sector, Wood

1949 forward: Table 7.4b.

Electric Power Sector, Biomass Waste

1970 forward: Table 7.4b.

Electric Power Sector, Total Biomass

1949–1969: Electric power sector total biomass consumption is equal to electric power sector wood consumption.

1970 forward: Electric power sector total biomass consumption is the sum of the electric power sector consumption values for wood and biomass waste.

Electric Power Sector, Total Renewable Energy

1949–1959: Electric power sector total renewable energy consumption is the sum of the electric power sector consumption values for hydroelectric power and total biomass.

1960–1982: Electric power sector total renewable energy consumption is the sum of the electric power sector consumption values for hydroelectric power, geothermal, and total biomass.

1983: Electric power sector total renewable energy consumption is the sum of the electric power sector consumption values for hydroelectric power, geothermal, wind, and total biomass.

1984 forward: Electric power sector total renewable energy consumption is the sum of the electric power sector consumption values for hydroelectric power, geothermal, solar, wind, and total biomass.

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 and 2022: EIA, PSA, annual report, Table 1. Data in thousand barrels for net production of natural gasoline at biofuels 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 biofuels 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.

2023: EIA, *Petroleum Supply Monthly* (PSM), monthly reports, Table 1. Data in thousand barrels for net production of natural gasoline at biofuels 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 biofuels 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 and 2022: EIA, PSA, annual report, Table 1, data for net production of fuel ethanol at biofuels plants.

2023: EIA, PSM, monthly reports, Table 1, data for net production of fuel ethanol at biofuels plants.

Trade, Stocks, and Stock Change

1992–2022: EIA, PSA, annual reports, Table 1.

2023: 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).

2009–2022: EIA, PSA, annual reports, Table 1. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments.

2023: 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 and 2022: EIA, PSA, annual report, Table 1, data for biodiesel.

2023: EIA, *Petroleum Supply Monthly* (PSM), monthly reports, Table 1, 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."

2019–2020: EIA, PSA, annual reports, Tables 25 and 31, data for biodiesel.

2021 and 2022: EIA, PSA, annual report, Table 1, data for biodiesel.

2023: EIA, PSM, monthly reports, Table 1, 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–December 2020: 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.

2021 and 2022: EIA, PSA, annual report, Table 1, data for biodiesel.

2023: EIA, PSM, monthly reports, Table 1, 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 and 2022: EIA, PSA, annual report, Table 1, data for renewable diesel fuel.

2023: EIA, PSM, monthly reports, Table 1, 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 and 2022: EIA, PSA, annual report, Table 1, data for renewable diesel fuel.

2023: EIA, PSM, monthly reports, Table 1, data for 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 and 2022: EIA, PSA, annual report, Table 1, data for renewable diesel fuel.

2023: EIA, PSM, monthly reports, Table 1, 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 and 2022: EIA, PSA, annual report, Table 1, data for other biofuels.

2023: EIA, PSM, monthly reports, Table 1, data for other biofuels.

Other Biofuels Trade (Imports)

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

2021 and 2022: EIA, PSA, annual report, Table 1, data for other biofuels.

2023: EIA, PSM, monthly reports, Table 1, data for other biofuels.

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 and 2022: EIA, PSA, annual report, Table 1, data for other biofuels.

2023: EIA, PSM, monthly reports, Table 1, data for other biofuels.

Other Biofuels Consumption

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

Table 10.5 Sources

Small-Scale 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 “Small-Scale 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 “Small-Scale 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.

Small-Scale Solar Energy Consumption: Electricity, Residential Sector

Beginning in 2014, monthly and annual data for residential sector 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 electricity heat content factor in MER Table A6.

Backcasts for earlier periods are developed as follows:

Annual Data

1989–2003: Annual growth rates are calculated based on 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 "Small-Scale Solar Energy Consumption: Heat, Monthly Data."

Small-Scale Solar Energy Consumption: Electricity, Commercial Sector

Beginning in 2014, monthly and annual data for commercial sector 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 electricity heat content factor 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 "Small-Scale 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 "Small-Scale Solar Energy Consumption: Heat, Monthly Data."

Small-Scale Solar Energy Consumption: Electricity, Industrial Sector

Beginning in 2014, monthly and annual data for industrial sector 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 electricity heat content factor 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 "Small-Scale 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 "Small-Scale Solar Energy Consumption: Heat, Monthly Data."

Small-Scale Solar Energy Consumption: Electricity, Total

1989 forward: Small-scale solar energy consumption for total electricity is the sum of the small-scale solar energy consumption (for electricity) values for the residential, commercial, and industrial sectors.

Small-Scale Solar Energy Consumption: Total

1989 forward: Small-scale solar energy consumption total is the sum of small-scale 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 electricity heat content factor 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 electricity heat content factor 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 electricity heat content factor 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

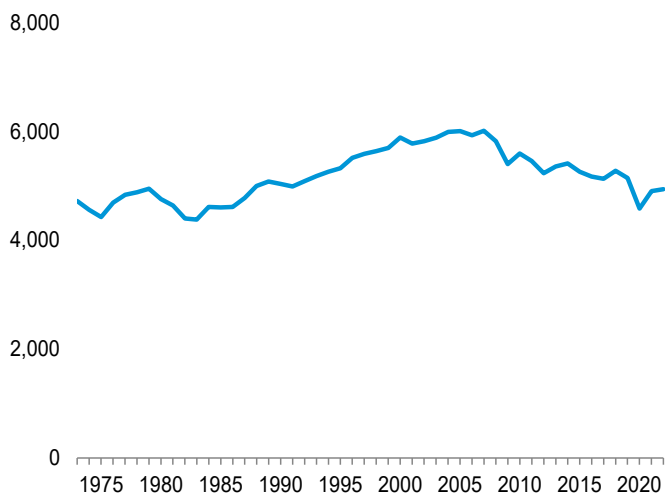
1984 forward: Total solar energy consumption is the sum of the values for total small-scale solar energy consumption and total utility-scale solar energy consumption.

11. Environment

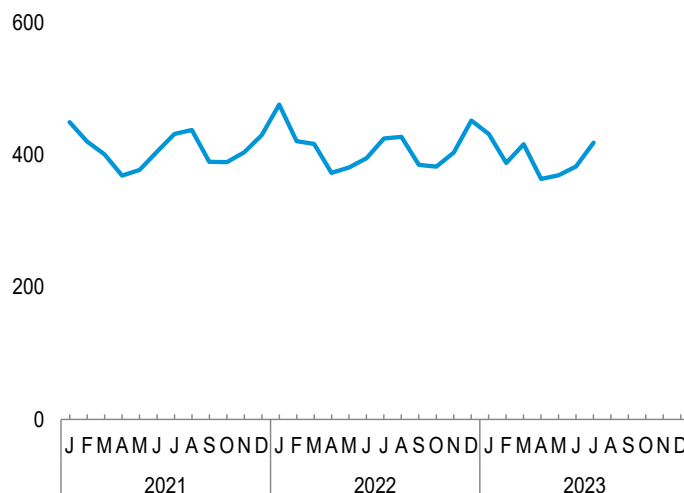
Figure 11.1 Carbon Dioxide Emissions From Energy Consumption by Source

(Million Metric Tons of Carbon Dioxide)

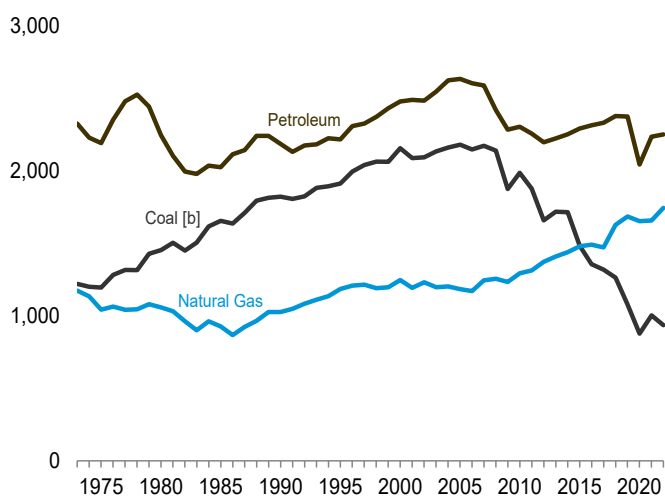
Total [a], 1973–2022



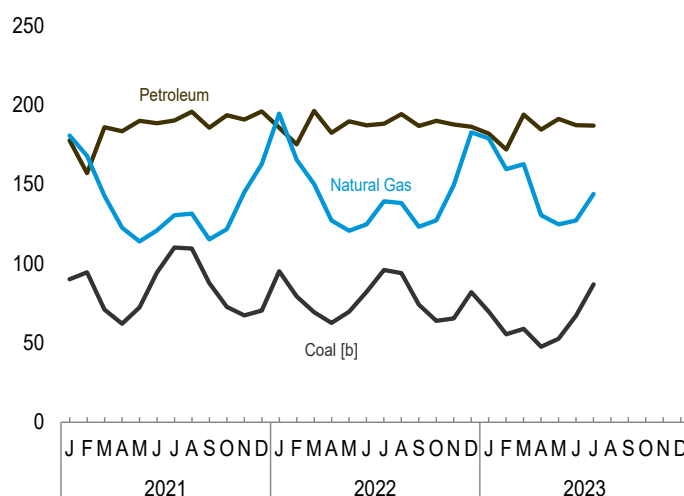
Total [a], Monthly



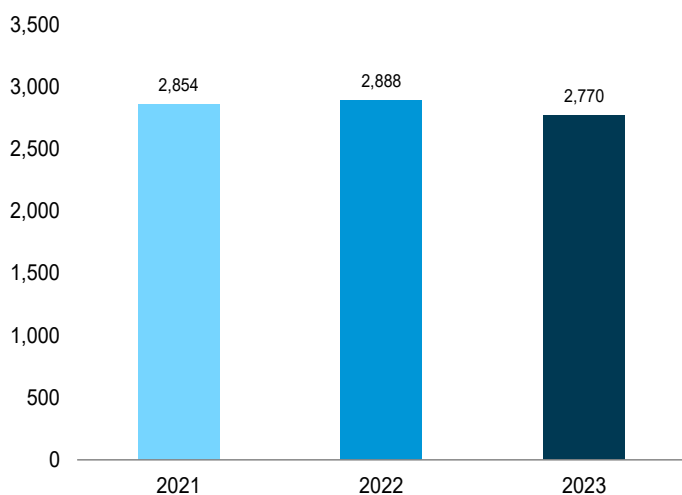
By Major Source, 1973–2022



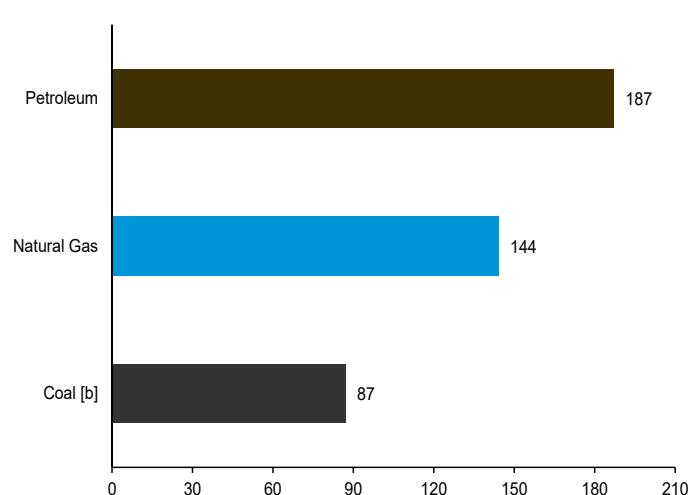
By Major Source, Monthly



Total [a], January–July



By Major Source, July 2023



[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	2,186	5,038
1995 Total	1,912	1,185	3	504	90	222	8	13	1,042	78	147	111	2,216	5,324
2000 Total	2,155	1,246	3	592	106	259	10	14	1,141	85	157	111	2,477	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	2,588	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	2,284	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	76	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	2,252	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	2,312	5,169
2017 Total	1,318	1,471	1	591	86	251	1	10	1,131	71	59	130	2,332	5,132
2018 Total	1,263	1,627	2	626	98	255	1	10	1,131	73	55	127	2,377	5,278
2019 Total	1,078	1,685	2	621	107	261	1	9	1,128	67	47	131	2,374	5,147
2020 Total	876	R 1,653	1	572	105	161	1	8	977	58	36	123	2,044	R 4,584
2021 January	90	181	(s)	52	13	14	(s)	1	80	5	4	9	178	450
February	95	168	(s)	47	10	12	(s)	1	73	3	3	8	157	R 420
March	71	143	(s)	53	10	15	(s)	1	88	5	4	11	186	401
April	62	123	(s)	51	8	16	(s)	1	88	4	2	13	183	369
May	72	114	(s)	51	8	16	(s)	1	93	7	4	10	190	377
June	94	121	(s)	50	8	18	(s)	1	93	6	5	9	189	405
July	110	R 131	(s)	48	8	19	(s)	1	95	4	5	10	190	432
August	110	132	(s)	52	8	20	(s)	1	94	6	5	9	196	438
September	88	115	(s)	51	8	18	(s)	1	89	5	5	9	186	390
October	73	122	(s)	52	9	19	(s)	1	92	5	5	11	194	389
November	67	145	(s)	53	10	19	(s)	1	89	5	6	8	191	404
December	70	R 163	(s)	52	12	19	(s)	1	91	6	6	9	196	430
Total	1,003	R 1,656	1	611	111	205	1	9	1,067	60	54	116	2,235	R 4,905
2022 January	95	R 195	(s)	54	12	18	(s)	1	83	5	4	9	186	476
February	79	166	(s)	52	10	16	(s)	1	80	4	4	8	175	421
March	69	150	(s)	55	9	19	(s)	1	93	5	5	9	196	417
April	63	R 127	(s)	50	7	19	(s)	1	88	4	4	9	182	373
May	70	121	(s)	51	6	20	(s)	1	94	4	5	10	190	381
June	82	125	(s)	51	6	21	(s)	1	90	4	5	9	187	395
July	96	139	(s)	49	7	20	(s)	(s)	91	7	5	10	188	425
August	94	138	(s)	51	6	21	(s)	1	93	5	6	10	194	427
September	74	123	(s)	52	6	19	(s)	1	88	5	7	9	187	385
October	64	R 127	(s)	54	7	20	(s)	1	90	4	4	9	190	R 382
November	65	R 149	(s)	51	9	19	(s)	1	88	6	5	9	188	404
December	82	183	(s)	50	10	20	(s)	1	88	4	4	9	186	R 452
Total	935	R 1,744	2	619	96	233	1	9	1,065	57	57	111	2,250	R 4,939
2023 January	70	179	(s)	51	10	19	(s)	1	85	2	4	9	182	432
February	56	160	(s)	47	9	17	(s)	1	81	4	5	8	172	388
March	59	163	(s)	54	9	20	(s)	(s)	92	6	4	9	194	417
April	R 48	R 130	(s)	49	7	20	(s)	1	90	6	2	9	184	R 363
May	53	125	(s)	51	7	21	(s)	1	93	4	3	10	191	R 369
June	R 67	127	(s)	50	7	21	(s)	1	92	3	4	9	187	R 383
July	87	144	(s)	48	7	22	(s)	1	93	3	4	10	187	419
7-Month Total	439	1,027	1	350	55	142	1	4	626	28	26	65	1,298	2,770
2022 7-Month Total	555	1,023	1	361	57	134	1	5	618	33	32	64	1,304	2,888
2021 7-Month Total	595	980	1	351	65	110	1	5	610	33	27	70	1,273	2,854

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

^b Includes coal coke net imports.

^c Natural gas, excluding supplemental gaseous fuels.

^d Distillate fuel oil, excluding biodiesel.

^e Hydrocarbon gas liquids.

^f Finished motor gasoline, excluding fuel ethanol.

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

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

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

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

Notes: • Data are estimates for carbon dioxide emissions from energy consumption, plus the relatively small amount of emissions from the non-combustion use of fossil fuels. See "Section 11 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 11.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

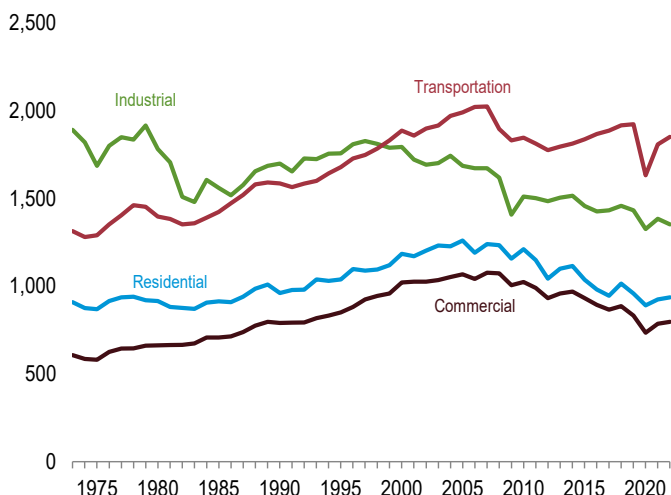
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#environment> (Excel and CSV files) for all available annual and monthly data beginning in 1973.

Sources: See end of section.

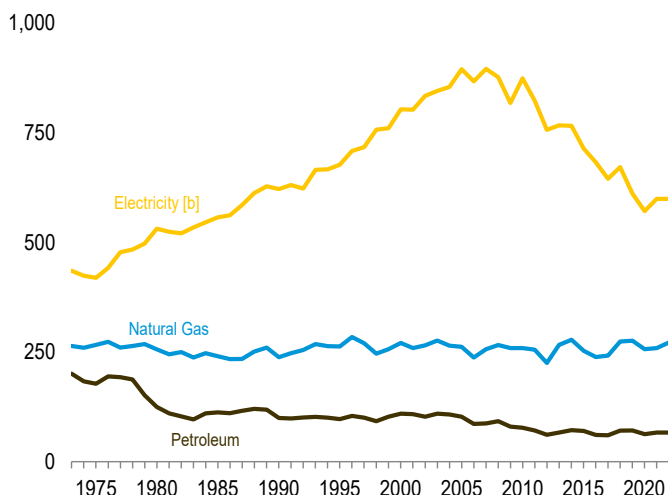
Figure 11.2 Carbon Dioxide Emissions From Energy Consumption by Sector

(Million Metric Tons of Carbon Dioxide)

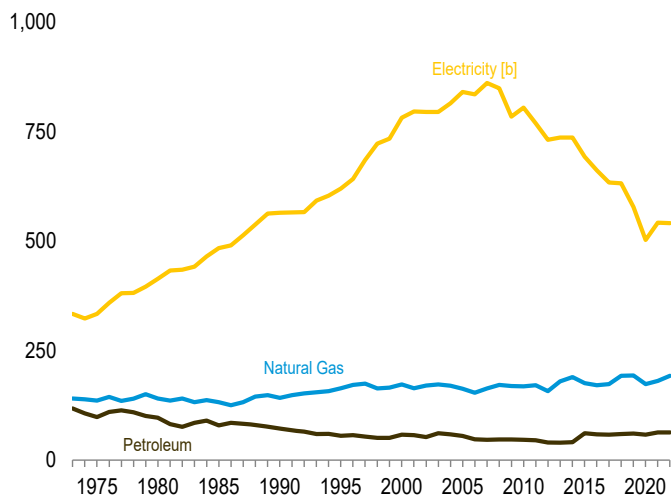
Total [a] by End-Use Sector [b], 1973–2022



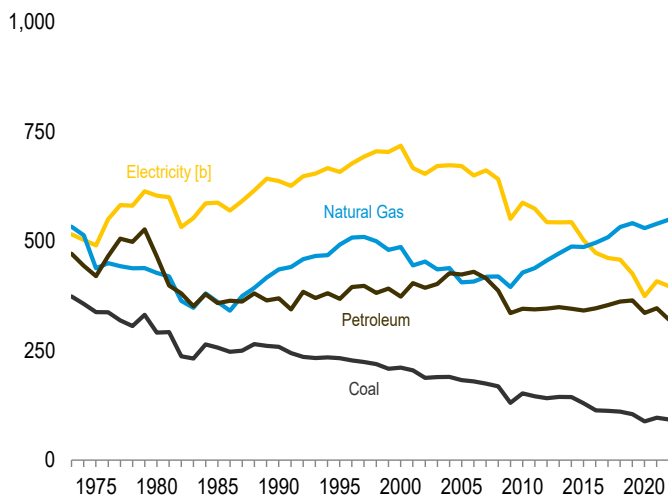
Residential Sector by Major Source, 1973–2022



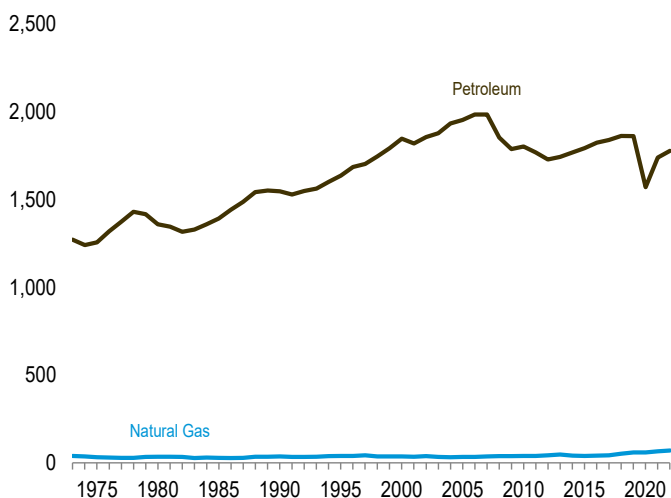
Commercial Sector by Major Source, 1973–2022



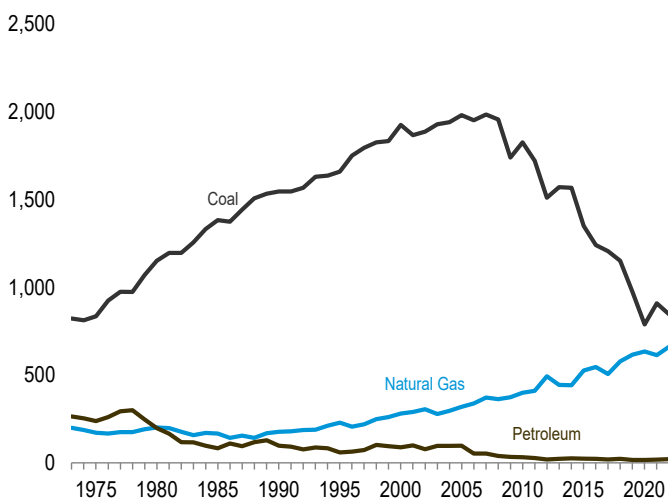
Industrial Sector by Major Source, 1973–2022



Transportation Sector by Major Source, 1973–2022



Electric Power Sector by Major Source, 1973–2022



[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 sales to ultimate customers.

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				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	672	1,015
2019 Total	NA	276	35	35	1	71	611	958
2020 Total	NA	256	30	31	1	62	571	890
2021 January	NA	49	5	5	(s)	10	56	115
February	NA	48	5	5	(s)	10	56	114
March	NA	31	4	3	(s)	7	41	80
April	NA	19	3	2	(s)	5	34	58
May	NA	12	2	2	(s)	4	39	55
June	NA	7	2	1	(s)	3	58	68
July	NA	6	1	1	(s)	2	71	80
August	NA	6	1	1	(s)	2	72	80
September	NA	6	2	1	(s)	3	53	63
October	NA	11	3	2	(s)	5	41	56
November	NA	26	3	3	(s)	7	38	71
December	NA	37	4	4	(s)	8	43	88
Total	NA	259	35	30	1	66	599	924
2022 January	NA	53	5	5	(s)	10	60	123
February	NA	^R 43	6	4	(s)	10	49	102
March	NA	32	4	3	(s)	7	39	79
April	NA	21	3	2	(s)	5	34	60
May	NA	11	2	1	(s)	4	42	57
June	NA	7	2	1	(s)	3	56	65
July	NA	6	1	1	(s)	2	72	80
August	NA	6	1	1	(s)	2	68	76
September	NA	6	2	1	(s)	3	50	60
October	NA	13	3	2	(s)	5	38	56
November	NA	28	3	3	(s)	6	39	74
December	NA	46	4	5	(s)	9	55	109
Total	NA	^R 272	35	31	1	66	599	^R 937
2023 January	NA	44	5	4	(s)	10	48	101
February	NA	37	6	4	(s)	9	38	85
March	NA	35	4	4	(s)	8	38	80
April	NA	^R 19	3	2	(s)	5	31	55
May	NA	11	2	2	(s)	4	35	50
June	NA	7	2	1	(s)	3	47	57
July	NA	6	1	1	(s)	2	68	76
7-Month Total	NA	158	22	18	1	41	306	505
2022 7-Month Total	NA	173	22	19	(s)	41	352	566
2021 7-Month Total	NA	173	22	19	(s)	41	355	569

^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 sales to ultimate customers. See Tables 7.6 and 11.6.

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

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

Notes: • Data are estimates for carbon dioxide emissions from energy consumption. See "Section 11 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 11.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

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

	Coal	Natural Gas ^b	Petroleum							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	632	885
2019 Total	2	193	24	11	(s)	24	(s)	(s)	60	578	832
2020 Total	1	R 173	20	13	(s)	24	(s)	(s)	58	502	735
2021											
January	(s)	27	3	2	(s)	2	0	(s)	7	43	77
February	(s)	27	3	2	(s)	2	0	(s)	7	44	78
March	(s)	20	3	1	(s)	2	(s)	(s)	6	37	63
April	(s)	14	2	1	(s)	2	0	(s)	5	35	54
May	(s)	10	2	1	(s)	2	0	(s)	5	40	55
June	(s)	8	1	1	(s)	2	0	(s)	4	52	64
July	(s)	8	1	1	(s)	2	0	(s)	4	59	71
August	(s)	8	1	1	(s)	2	0	(s)	4	60	71
September	(s)	8	1	1	(s)	2	0	(s)	4	48	61
October	(s)	11	2	1	(s)	2	0	(s)	5	44	60
November	(s)	R 18	2	1	(s)	2	(s)	(s)	6	39	64
December	(s)	22	3	2	(s)	2	(s)	(s)	7	39	68
Total	1	R 180	24	14	(s)	25	(s)	(s)	63	541	R 786
2022											
January	(s)	30	3	2	(s)	2	(s)	(s)	7	48	86
February	(s)	R 25	4	2	(s)	2	(s)	(s)	7	40	R 72
March	(s)	21	3	1	(s)	2	(s)	(s)	6	38	65
April	(s)	15	2	1	(s)	2	(s)	(s)	5	36	56
May	(s)	10	2	1	(s)	2	(s)	(s)	5	42	R 56
June	(s)	8	1	1	(s)	2	(s)	(s)	4	48	61
July	(s)	8	1	1	(s)	2	(s)	(s)	4	57	69
August	(s)	8	1	1	(s)	2	0	(s)	4	57	68
September	(s)	8	1	1	(s)	2	(s)	(s)	4	47	60
October	(s)	12	2	1	(s)	2	0	(s)	5	41	59
November	(s)	R 19	2	1	(s)	2	(s)	(s)	5	40	65
December	(s)	27	3	2	(s)	2	(s)	(s)	7	46	80
Total	1	R 192	24	14	(s)	25	(s)	(s)	63	541	R 797
2023											
January	(s)	26	3	2	(s)	2	(s)	(s)	7	40	73
February	(s)	23	4	1	(s)	2	(s)	(s)	7	34	65
March	(s)	22	3	1	(s)	2	(s)	(s)	6	38	67
April	(s)	14	2	1	(s)	2	0	(s)	5	33	52
May	(s)	10	2	1	(s)	2	0	(s)	5	38	53
June	(s)	8	1	1	(s)	2	0	(s)	4	46	58
July	(s)	8	1	1	(s)	2	0	(s)	4	56	68
7-Month Total	1	111	15	8	(s)	14	(s)	(s)	38	285	435
2022 7-Month Total	1	118	15	8	(s)	14	(s)	(s)	38	309	465
2021 7-Month Total	1	113	15	8	(s)	14	(s)	(s)	38	310	462

^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 sales to ultimate customers. See Tables 7.6 and 11.6.

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

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

Notes: • Data are estimates for carbon dioxide emissions from energy consumption. See "Section 11 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 11.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

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

	Coal	Coal Coke Net Imports	Natural Gas ^b	Petroleum									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	1,687
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	49	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	1,673
2008 Total	168	5	419	99	41	(s)	6	17	79	15	130	387	641	1,619
2009 Total	131	-3	395	79	41	(s)	5	16	73	10	111	336	550	1,409
2010 Total	152	-1	428	85	42	1	5	17	67	9	119	345	587	1,512
2011 Total	146	1	438	91	39	(s)	5	17	64	10	118	344	574	1,503
2012 Total	142	(s)	455	94	42	(s)	4	17	69	5	114	346	543	1,486
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 Total	105	-2	540	89	60	(s)	4	18	60	3	131	364	425	1,432
2020 Total	88	-1	^R 530	79	60	(s)	4	18	49	2	123	336	374	^R 1,326
2021 January	8	(s)	50	9	6	(s)	(s)	1	4	(s)	9	30	33	121
February	8	(s)	43	6	3	(s)	(s)	1	2	(s)	8	21	33	104
March	8	(s)	^R 46	9	5	(s)	(s)	1	4	(s)	11	30	28	112
April	8	(s)	44	8	5	(s)	(s)	1	3	(s)	13	31	29	111
May	8	(s)	43	7	6	(s)	(s)	2	6	(s)	10	30	32	^R 114
June	8	-1	42	6	6	(s)	(s)	2	5	(s)	9	29	38	116
July	8	(s)	44	5	6	(s)	(s)	2	3	(s)	10	26	42	120
August	8	-1	44	7	6	(s)	(s)	2	6	(s)	9	31	42	124
September	8	-1	42	8	6	(s)	(s)	1	4	(s)	9	29	35	^R 114
October	8	(s)	^R 45	7	6	(s)	(s)	2	4	(s)	11	30	33	116
November	8	-1	47	9	5	(s)	(s)	1	4	(s)	8	29	31	115
December	8	-1	^R 50	7	6	(s)	(s)	1	6	(s)	9	30	30	117
Total	97	-6	^R 539	88	67	(s)	4	17	51	3	116	347	408	^R 1,385
2022 January	8	-1	52	9	5	(s)	(s)	1	4	(s)	9	28	36	123
February	8	(s)	46	8	4	(s)	(s)	1	3	(s)	8	25	30	108
March	8	-1	48	9	4	(s)	(s)	2	4	(s)	9	29	29	114
April	8	-1	45	7	4	(s)	(s)	1	4	(s)	9	26	28	106
May	8	-1	^R 44	6	4	(s)	(s)	2	3	(s)	10	25	32	108
June	8	(s)	43	7	4	(s)	(s)	1	4	(s)	9	26	36	112
July	8	-1	44	5	5	(s)	(s)	1	6	(s)	10	28	39	^R 117
August	8	(s)	44	7	4	(s)	(s)	2	5	(s)	10	28	39	118
September	7	-1	43	8	5	(s)	(s)	1	4	(s)	9	28	33	111
October	8	(s)	45	8	4	(s)	(s)	1	3	(s)	9	27	31	111
November	8	(s)	47	8	4	(s)	(s)	1	5	(s)	9	28	30	112
December	8	-1	49	5	4	(s)	(s)	1	3	(s)	9	23	33	111
Total	93	-6	^R 549	87	51	(s)	4	17	48	1	111	321	397	^R 1,352
2023 January	8	(s)	^R 49	8	4	(s)	(s)	1	2	(s)	9	25	29	110
February	7	(s)	45	6	3	(s)	(s)	1	3	(s)	8	22	26	100
March	8	(s)	^R 48	8	4	(s)	(s)	2	5	(s)	9	28	28	112
April	^R 7	(s)	46	7	4	(s)	(s)	1	5	(s)	9	27	26	^R 105
May	^R 7	(s)	45	7	4	(s)	(s)	2	4	(s)	10	27	29	^R 107
June	^R 7	(s)	43	6	5	(s)	(s)	1	3	(s)	9	25	33	^R 108
July	7	(s)	44	4	5	(s)	(s)	2	2	(s)	10	23	38	113
7-Month Total	51	-2	320	46	29	(s)	2	10	25	1	65	177	208	755
2022 7-Month Total	55	-4	321	51	30	(s)	2	10	28	1	64	187	228	787
2021 7-Month Total	56	-3	312	49	37	(s)	3	10	28	2	70	198	234	797

^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 sales to ultimate customers. See Tables 7.6 and 11.6.

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

^R=Revised. (s)=Less than 0.5 million metric tons and greater than -0.5 million metric tons.

Notes: • Data are estimates for carbon dioxide emissions from energy consumption, plus the relatively small amount of emissions from the non-combustion use of fossil fuels. See "Section 11 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 11.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

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

		Coal	Natural Gas ^b	Petroleum							Elec- tricity ^f	Total ^g
				Aviation Gasoline	Distillate Fuel Oil ^c	HGL ^d	Jet Fuel	Lubri- cants	Motor Gasoline ^e	Residual Fuel Oil		
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	1	231	6	1,073	35	1,794	4	1,837
2016 Total	(h)	40	1	437	1	242	6	1,092	47	1,825	4	1,869
2017 Total	(h)	42	1	442	1	251	5	1,090	50	1,841	4	1,887
2018 Total	(h)	51	2	466	1	255	5	1,090	45	1,864	4	1,918
2019 Total	(h)	59	2	468	1	261	5	1,086	40	1,862	3	1,924
2020 Total	(h)	59	1	439	1	161	4	935	29	1,572	3	1,633
2021 January	(h)	7	(s)	35	(s)	14	(s)	77	3	129	(s)	137
February	(h)	7	(s)	32	(s)	12	(s)	70	3	117	(s)	124
March	(h)	6	(s)	38	(s)	15	(s)	84	4	141	(s)	146
April	(h)	5	(s)	38	(s)	16	(s)	85	2	141	(s)	146
May	(h)	4	(s)	40	(s)	16	(s)	89	3	150	(s)	154
June	(h)	5	(s)	40	(s)	18	(s)	89	4	152	(s)	157
July	(h)	5	(s)	41	(s)	19	(s)	92	4	156	(s)	162
August	(h)	5	(s)	42	(s)	20	(s)	91	4	158	(s)	163
September	(h)	5	(s)	39	(s)	18	(s)	85	4	148	(s)	152
October	(h)	5	(s)	40	(s)	19	(s)	89	5	152	(s)	157
November	(h)	6	(s)	38	(s)	19	(s)	86	5	148	(s)	154
December	(h)	6	(s)	37	(s)	19	(s)	88	6	150	(s)	157
Total	(h)	65	1	459	1	205	4	1,025	46	1,741	3	1,809
2022 January	(h)	8	(s)	36	(s)	18	(s)	80	3	137	(s)	145
February	(h)	R 7	(s)	34	(s)	16	(s)	77	4	132	(s)	R 139
March	(h)	6	(s)	39	(s)	19	(s)	89	5	152	(s)	159
April	(h)	5	(s)	38	(s)	19	(s)	84	3	145	(s)	151
May	(h)	5	(s)	40	(s)	20	(s)	90	4	155	(s)	160
June	(h)	5	(s)	41	(s)	21	(s)	86	4	152	(s)	158
July	(h)	R 6	(s)	41	(s)	20	(s)	87	4	153	(s)	R 159
August	(h)	R 6	(s)	42	(s)	21	(s)	90	5	159	(s)	165
September	(h)	5	(s)	40	(s)	19	(s)	85	6	150	(s)	155
October	(h)	5	(s)	41	(s)	20	(s)	87	4	152	(s)	157
November	(h)	6	(s)	38	(s)	19	(s)	84	5	147	(s)	153
December	(h)	7	(s)	36	(s)	20	(s)	85	3	145	(s)	152
Total	(h)	R 70	2	467	1	233	5	1,023	50	1,779	3	R 1,852
2023 January	(h)	7	(s)	35	(s)	19	(s)	82	4	140	(s)	147
February	(h)	6	(s)	32	(s)	17	(s)	78	4	132	(s)	138
March	(h)	6	(s)	38	(s)	20	(s)	89	3	151	(s)	158
April	(h)	5	(s)	38	(s)	20	(s)	86	2	147	(s)	152
May	(h)	5	(s)	40	(s)	21	(s)	90	3	155	(s)	160
June	(h)	5	(s)	40	(s)	21	(s)	88	3	154	(s)	159
July	(h)	6	(s)	41	(s)	22	(s)	89	3	156	(s)	162
7-Month Total	(h)	41	1	264	(s)	142	2	602	22	1,034	1	1,076
2022 7-Month Total	(h)	41	1	269	(s)	134	3	593	28	1,027	1	1,070
2021 7-Month Total	(h)	39	1	263	(s)	110	3	586	23	986	2	1,026

^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 sales to ultimate customers. See Tables 7.6 and 11.6.

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

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

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

Notes: • Data are estimates for carbon dioxide emissions from energy consumption, plus the relatively small amount of emissions from the non-combustion use of fossil fuels. See "Section 11 Methodology and Sources" at end of section. • See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 11.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

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

	Coal	Natural Gas ^b	Petroleum				Geo-thermal	Non-Biomass Waste ^d	Total ^e
			Distillate Fuel Oil ^c	Petroleum Coke	Residual Fuel Oil	Total			
1973 Total	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	578	6	10	6	22	(s)	11	1,764
2019 Total	974	617	4	8	4	16	(s)	11	1,618
2020 Total	788	635	3	9	4	16	(s)	11	1,450
2021 January	82	47	(s)	1	(s)	2	(s)	1	132
February	87	43	1	1	(s)	2	(s)	1	133
March	63	40	(s)	1	(s)	1	(s)	1	105
April	55	42	(s)	1	(s)	1	(s)	1	98
May	65	44	(s)	1	(s)	1	(s)	1	111
June	87	59	(s)	1	(s)	1	(s)	1	149
July	102	68	(s)	1	(s)	1	(s)	1	172
August	102	69	(s)	1	1	2	(s)	1	174
September	81	54	(s)	1	(s)	1	(s)	1	137
October	65	51	(s)	1	(s)	1	(s)	1	118
November	60	47	(s)	1	(s)	2	(s)	1	109
December	63	48	(s)	1	(s)	1	(s)	1	113
Total	910	613	4	9	4	18	(s)	11	1,551
2022 January	88	52	1	1	1	3	(s)	1	144
February	72	44	(s)	1	(s)	1	(s)	1	118
March	62	42	(s)	1	(s)	1	(s)	1	106
April	55	41	(s)	1	(s)	1	(s)	1	98
May	63	50	(s)	1	(s)	1	(s)	1	116
June	75	R 62	(s)	1	(s)	1	(s)	1	140
July	89	76	(s)	1	(s)	1	(s)	1	168
August	87	75	(s)	1	(s)	1	(s)	1	164
September	67	61	(s)	1	(s)	1	(s)	1	131
October	57	52	(s)	1	(s)	1	(s)	1	111
November	58	49	(s)	1	(s)	1	(s)	1	110
December	75	54	2	1	1	4	(s)	1	134
Total	847	661	6	8	5	20	(s)	11	1,539
2023 January	62	53	(s)	(s)	(s)	1	(s)	1	117
February	48	48	(s)	(s)	1	1	(s)	1	98
March	51	51	(s)	(s)	(s)	1	(s)	1	104
April	41	47	(s)	(s)	(s)	1	(s)	1	90
May	46	54	(s)	(s)	(s)	1	(s)	1	102
June	60	64	(s)	(s)	(s)	1	(s)	1	126
July	80	80	(s)	1	(s)	1	(s)	1	162
7-Month Total	389	397	2	3	3	8	(s)	6	800
2022 7-Month Total	503	369	3	5	3	11	(s)	6	890
2021 7-Month Total	540	343	3	5	2	10	(s)	6	900

^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.

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

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

consumption. See "Section 11 Methodology and Sources" at end of section.

• See "Carbon Dioxide" in Glossary. • See Note 1, "Emissions of Carbon Dioxide and Other Greenhouse Gases," at end of section. • Data exclude emissions from biomass energy consumption. See Table 11.7 and Note 2, "Accounting for Carbon Dioxide Emissions From Biomass Energy Combustion," at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

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

Sources: See end of section.

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

	By Source					By Sector					
	Wood ^b	Biomass Waste ^c	Fuel Ethanol ^d	Bio-diesel	Total	Residential	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 Total	210	40	83	17	350	51	13	147	97	41	350
2020 Total	185	40	72	18	314	32	13	143	86	39	314
2021 January	16	3	6	1	26	3	1	12	6	4	26
February	14	3	5	1	24	2	1	11	6	3	24
March	16	3	7	1	27	3	1	12	8	3	27
April	15	3	6	1	26	3	1	12	7	3	26
May	16	3	7	1	28	3	1	12	8	3	28
June	15	3	7	1	27	3	1	12	8	3	27
July	16	3	7	1	28	3	1	12	8	4	28
August	16	3	7	1	28	3	1	12	8	3	28
September	15	3	7	1	26	3	1	12	8	3	26
October	15	3	7	1	27	3	1	12	8	3	27
November	15	3	7	1	26	3	1	12	8	3	26
December	16	3	7	1	28	3	1	12	8	3	28
Total	187	39	79	16	321	32	13	144	92	39	321
2022 January	16	3	6	1	27	3	1	12	7	3	27
February	15	3	6	1	25	3	1	11	7	3	25
March	15	3	7	1	27	3	1	11	8	3	27
April	15	3	6	1	26	3	1	11	8	3	26
May	16	3	7	1	27	3	1	12	8	3	27
June	16	3	7	1	27	3	1	11	8	3	27
July	16	3	7	1	27	3	1	12	8	4	27
August	16	3	7	1	28	3	1	12	8	3	28
September	15	3	6	1	25	3	1	11	7	3	25
October	15	3	7	1	27	3	1	11	8	3	27
November	15	3	7	1	27	3	1	11	8	3	27
December	16	3	7	1	27	3	1	11	8	3	27
Total	186	37	80	16	319	40	13	136	92	38	319
2023 January	16	3	7	1	27	4	1	12	8	3	27
February	14	3	6	1	24	3	1	10	7	3	24
March	15	3	7	1	27	4	1	11	8	3	27
April	14	3	6	1	25	3	1	10	8	2	25
May	15	3	7	2	27	4	1	11	8	3	27
June	14	3	7	2	26	3	1	10	8	3	26
July	15	3	7	2	26	4	1	11	8	3	26
7-Month Total	104	21	47	10	182	25	8	75	55	19	182
2022 7-Month Total	109	22	46	9	186	23	8	80	53	22	186
2021 7-Month Total	109	23	45	9	185	19	8	84	52	23	185

^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-1990-2020>.

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 [through 2021]) 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 [through 2021], 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 1.12a and 1.12b 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 1.12b 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-22, A-34, and A-230. 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-1990-2021>.

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
	Crude Oil ^a	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	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	5.690	3.585	6.067	5.222	5.508	5.905	5.725	5.222	4.861	5.161
2022	5.684	3.575	6.085	5.222	5.519	5.928	5.721	5.222	4.866	5.187
2023	^E 5.684	^E 3.575	^E 6.085	^E 5.222	^E 5.519	^E 5.928	^E 5.721	^E 5.222	^E 4.866	^E 5.187

^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 ⁱ	Hydrocarbon Gas Liquids Consumption ^g	Motor Gasoline (Finished) Consumption ^h	Petroleum Coke Consumption ^j	Fuel Ethanol ^k	Fuel Ethanol Feedstock Factor ^k
	Residential	Commercial ^b	Industrial ^b	Transportation ^{b,c}	Electric Power ^{d,e}	Total ^{b,c}						
1950	5.473	5.817	5.927	5.461	6.254	5.642	5.825	3.810	5.253	6.024	NA	NA
1955	5.470	5.781	5.847	5.407	6.254	5.581	5.825	3.810	5.253	6.024	NA	NA
1960	5.418	5.781	5.772	5.387	6.267	5.542	5.825	3.810	5.253	6.024	NA	NA
1965	5.365	5.761	5.695	5.386	6.267	5.517	5.825	3.810	5.253	6.024	NA	NA
1970	5.262	5.709	5.579	5.393	6.252	5.499	5.825	3.731	5.253	6.024	NA	NA
1975	5.255	5.649	5.490	5.392	6.250	5.489	5.825	3.671	5.253	6.024	NA	NA
1980	5.322	5.752	5.340	5.441	6.254	5.472	5.825	3.669	5.253	6.024	3.564	6.586
1981	5.284	5.693	5.268	5.433	6.258	5.440	5.825	3.632	5.253	6.024	3.564	6.562
1982	5.267	5.699	5.211	5.423	6.258	5.406	5.825	3.588	5.253	6.024	3.564	6.539
1983	5.141	5.592	5.214	5.416	6.255	5.396	5.825	3.535	5.253	6.024	3.564	6.515
1984	5.308	5.658	5.167	5.418	6.251	5.385	5.825	3.580	5.253	6.024	3.564	6.492
1985	5.264	5.598	5.159	5.423	6.247	5.377	5.825	3.584	5.253	6.024	3.564	6.469
1986	5.269	5.632	5.237	5.426	6.257	5.410	5.825	3.631	5.253	6.024	3.564	6.446
1987	5.241	5.594	5.203	5.429	6.249	5.395	5.825	3.663	5.253	6.024	3.564	6.423
1988	5.259	5.598	5.196	5.433	6.250	5.402	5.825	3.643	5.253	6.024	3.564	6.400
1989	5.195	5.549	5.190	5.438	6.240	5.403	5.825	3.679	5.253	6.024	3.564	6.377
1990	5.146	5.554	5.219	5.442	6.244	5.403	5.825	3.630	5.253	6.024	3.564	6.355
1991	5.096	5.529	5.130	5.441	6.246	5.375	5.825	3.626	5.253	6.024	3.564	6.332
1992	5.126	5.514	5.133	5.443	6.238	5.369	5.825	3.643	5.253	6.024	3.564	6.309
1993	5.103	5.505	5.140	5.413	6.230	5.354	5.825	3.628	5.217	6.024	3.564	6.287
1994	5.097	5.513	5.115	5.413	6.213	5.344	5.820	3.657	5.214	6.024	3.564	6.264
1995	5.062	5.476	5.084	5.409	6.187	5.326	5.820	3.641	5.204	6.024	3.564	6.242
1996	4.997	5.431	5.076	5.416	6.194	5.323	5.820	3.629	5.211	6.024	3.564	6.220
1997	4.988	5.389	5.083	5.410	6.198	5.322	5.820	3.627	5.205	6.024	3.564	6.198
1998	4.974	5.363	5.101	5.406	6.210	5.335	5.819	3.619	5.203	6.024	3.564	6.176
1999	4.902	5.289	5.052	5.406	6.204	5.313	5.819	3.628	5.202	6.024	3.564	6.167
2000	4.908	5.313	5.015	5.415	6.188	5.311	5.819	3.610	5.201	6.024	3.564	6.159
2001	4.936	5.323	5.104	5.405	6.199	5.331	5.819	3.604	5.201	6.024	3.564	6.151
2002	4.885	5.291	5.053	5.404	6.172	5.309	5.819	3.588	5.199	6.024	3.564	6.143
2003	4.920	5.313	5.108	5.400	6.182	5.326	5.819	3.610	5.197	6.024	3.564	6.106
2004	4.952	5.324	5.106	5.407	6.134	5.330	5.818	3.591	5.196	5.982	3.564	6.069
2005	4.915	5.360	5.143	5.408	6.126	5.342	5.818	3.589	5.192	5.982	3.564	6.032
2006	4.886	5.296	5.120	5.405	6.038	5.323	5.803	3.551	5.185	5.987	3.564	5.995
2007	4.833	5.270	5.079	5.376	6.064	5.293	5.784	3.544	5.142	5.996	3.564	5.959
2008	4.772	5.156	5.103	5.342	6.013	5.268	5.780	3.549	5.106	5.992	3.564	5.922
2009	4.664	5.217	4.959	5.320	5.987	5.218	5.781	3.487	5.090	6.017	3.564	5.901
2010	4.664	5.195	4.920	5.316	5.956	5.204	5.778	3.489	5.067	6.059	3.562	5.880
2011	4.657	5.176	4.887	5.315	5.900	5.193	5.776	3.423	5.063	6.077	3.561	5.859
2012	4.714	5.126	4.843	5.306	5.925	5.176	5.774	3.440	5.062	6.084	3.560	5.838
2013	4.648	5.053	4.801	5.302	5.892	5.157	5.774	3.468	5.060	6.089	3.560	5.831
2014	4.664	5.016	4.804	5.300	5.906	5.161	5.773	3.439	5.059	6.100	3.559	5.825
2015	4.721	5.050	4.767	5.302	5.915	5.154	5.773	3.461	5.057	6.085	3.558	5.818
2016	4.631	5.022	4.799	5.303	5.885	5.161	5.773	3.424	5.055	6.104	3.558	5.811
2017	4.623	5.006	4.769	5.305	5.893	5.153	5.772	3.400	5.053	6.132	3.556	5.804
2018	4.620	4.971	4.664	5.309	5.896	5.122	5.772	3.381	5.054	6.122	3.553	5.797
2019	4.540	4.962	4.646	5.307	5.900	5.111	5.771	3.401	5.052	6.132	3.555	5.790
2020	4.536	4.889	4.534	5.301	5.883	5.054	5.770	3.349	5.052	6.130	3.557	5.784
2021	4.611	4.909	4.524	5.306	5.883	5.067	5.770	3.369	5.050	6.135	3.555	5.777
2022	RE 4.604	RE 4.906	RE 4.434	E 5.315	P 5.897	5.058	5.770	3.229	5.049	6.164	3.553	5.777
2023	RE 4.604	RE 4.906	RE 4.434	E 5.315	E 5.897	5.058	E 5.770	E 3.229	E 5.049	E 6.164	E 3.553	5.777

^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.

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

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

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

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

Table A4. Approximate Heat Content of Natural Gas
(Btu per Cubic Foot)

	Production		Consumption ^a			Imports	Exports
	Marketed	Dry	End-Use Sectors ^b	Electric Power Sector ^c	Total		
1950	1,119	1,035	1,035	1,035	1,035	--	1,035
1955	1,120	1,035	1,035	1,035	1,035	1,035	1,035
1960	1,107	1,035	1,035	1,035	1,035	1,035	1,035
1965	1,101	1,032	1,032	1,032	1,032	1,032	1,032
1970	1,102	1,031	1,031	1,031	1,031	1,031	1,031
1975	1,095	1,021	1,020	1,026	1,021	1,026	1,014
1980	1,098	1,026	1,024	1,035	1,026	1,022	1,013
1981	1,103	1,027	1,025	1,035	1,027	1,014	1,011
1982	1,107	1,028	1,026	1,036	1,028	1,018	1,011
1983	1,115	1,031	1,031	1,030	1,031	1,024	1,010
1984	1,109	1,031	1,030	1,035	1,031	1,005	1,010
1985	1,112	1,032	1,031	1,038	1,032	1,002	1,011
1986	1,110	1,030	1,029	1,034	1,030	997	1,008
1987	1,112	1,031	1,031	1,032	1,031	999	1,011
1988	1,109	1,029	1,029	1,028	1,029	1,002	1,018
1989	1,107	1,031	1,032	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	1,034	1,037	1,025	1,009
2021	1,146	1,037	1,039	1,034	1,037	1,025	1,009
2022	^R 1,149	1,036	1,038	^P 1,033	1,036	1,025	1,009
2023	^{RE} 1,149	^E 1,036	^E 1,038	^E 1,033	^E 1,036	^E 1,025	^E 1,009

^a Consumption factors are for natural gas, plus a small amount of supplemental gaseous fuels.

^b Residential, commercial, industrial, and transportation sectors.

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

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

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

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

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

Table A5. Approximate Heat Content of Coal and Coal Coke
(Million Btu per Short Ton)

	Coal									Coal Coke
	Production ^a	Waste Coal Supplied ^b	Consumption					Imports	Exports	Imports and Exports
			Residential and Commercial Sectors ^c	Industrial Sector		Electric Power Sector ^{e,f}	Total			
				Coke Plants	Other ^d					
1950	25.090	NA	24.461	26.798	24.820	23.937	24.989	25.020	26.788	24.800
1955	25.201	NA	24.373	26.794	24.821	24.056	24.982	25.000	26.907	24.800
1960	24.906	NA	24.226	26.791	24.609	23.927	24.713	25.003	26.939	24.800
1965	24.775	NA	24.028	26.787	24.385	23.780	24.537	25.000	26.973	24.800
1970	23.842	NA	23.203	26.784	22.983	22.573	23.440	25.000	26.982	24.800
1975	22.897	NA	22.261	26.782	22.436	21.642	22.506	25.000	26.562	24.800
1980	22.415	NA	22.543	26.790	22.690	21.295	21.947	25.000	26.384	24.800
1981	22.308	NA	22.474	26.794	22.585	21.085	21.713	25.000	26.160	24.800
1982	22.239	NA	22.695	26.797	22.712	21.194	21.674	25.000	26.223	24.800
1983	22.052	NA	22.775	26.798	22.691	21.133	21.576	25.000	26.291	24.800
1984	22.010	NA	22.844	26.799	22.543	21.101	21.573	25.000	26.402	24.800
1985	21.870	NA	22.646	26.798	22.020	20.959	21.366	25.000	26.307	24.800
1986	21.913	NA	22.947	26.798	22.198	21.084	21.462	25.000	26.292	24.800
1987	21.922	NA	23.404	26.799	22.381	21.136	21.517	25.000	26.291	24.800
1988	21.823	NA	23.571	26.799	22.360	20.900	21.328	25.000	26.299	24.800
1989	21.765	^b 10.391	23.650	26.800	22.347	^e 20.898	21.307	25.000	26.160	24.800
1990	21.822	9.303	23.137	26.799	22.457	20.779	21.197	25.000	26.202	24.800
1991	21.681	10.758	23.114	26.799	22.460	20.730	21.120	25.000	26.188	24.800
1992	21.682	10.396	23.105	26.799	22.250	20.709	21.068	25.000	26.161	24.800
1993	21.418	10.638	22.994	26.800	22.123	20.677	21.010	25.000	26.335	24.800
1994	21.394	11.097	23.112	26.800	22.068	20.589	20.929	25.000	26.329	24.800
1995	21.326	11.722	23.118	26.800	21.950	20.543	20.880	25.000	26.180	24.800
1996	21.322	12.147	23.011	26.800	22.105	20.547	20.870	25.000	26.174	24.800
1997	21.296	12.158	22.494	26.800	22.172	20.518	20.830	25.000	26.251	24.800
1998	21.418	12.639	21.620	27.426	23.164	20.516	20.881	25.000	26.800	24.800
1999	21.070	12.552	23.880	27.426	22.489	20.490	20.818	25.000	26.081	24.800
2000	21.072	12.360	25.020	27.426	22.433	20.511	20.828	25.000	26.117	24.800
2001	^a 20.772	12.169	24.909	27.426	22.622	20.337	20.671	25.000	25.998	24.800
2002	20.673	12.165	22.962	27.426	22.562	20.238	20.541	25.000	26.062	24.800
2003	20.499	12.360	22.242	27.425	22.468	20.082	20.387	25.000	25.972	24.800
2004	20.424	12.266	22.324	27.426	22.473	19.980	20.290	25.000	26.108	24.800
2005	20.348	12.093	22.342	26.279	22.178	19.988	20.246	25.000	25.494	24.800
2006	20.310	12.080	22.066	26.271	22.050	19.931	20.181	25.000	25.453	24.800
2007	20.340	12.090	22.069	26.329	22.371	19.909	20.168	25.000	25.466	24.800
2008	20.208	12.121	^c 23.035	26.281	22.304	19.713	19.979	25.000	25.399	24.800
2009	19.963	12.076	22.852	26.334	21.823	19.521	19.741	25.000	25.633	24.800
2010	20.173	11.960	22.611	26.295	21.846	19.623	19.870	25.000	25.713	24.800
2011	20.142	11.604	22.099	26.299	21.568	19.341	19.600	25.000	25.645	24.800
2012	20.215	11.539	21.300	28.636	21.449	19.211	19.544	23.128	24.551	24.800
2013	20.182	11.103	21.233	28.705	21.600	19.174	19.513	22.379	24.605	24.800
2014	20.146	11.474	21.307	28.458	21.525	19.290	19.611	22.187	25.032	24.800
2015	19.880	11.527	20.699	28.526	21.258	19.146	19.482	22.633	25.048	24.800
2016	19.977	11.496	20.078	28.608	21.055	19.153	19.459	22.327	25.655	24.800
2017	20.025	11.438	19.467	28.673	20.802	18.981	19.303	21.489	24.628	24.800
2018	20.160	11.419	19.269	28.608	20.739	18.915	19.258	20.415	24.294	24.800
2019	20.053	11.513	19.084	28.629	20.721	18.903	19.292	20.558	24.584	24.800
2020	19.845	11.268	18.297	28.717	20.425	18.882	19.260	20.347	24.969	24.800
2021	19.933	11.268	18.399	28.666	20.578	18.941	19.331	20.295	24.216	24.800
2022	^P 20.119	^P 11.268	^P 18.083	^P 28.669	^P 20.388	^P 18.820	^P 19.206	^P 21.447	^P 24.419	^P 24.800
2023	^E 20.119	^E 11.268	^E 18.083	^E 28.669	^E 20.388	^E 18.820	^E 19.206	^E 21.447	^E 24.419	^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					Thermal Conversion Factor for Noncombustible Renewable Energy ^{l,k}	Heat Content ^j of Electricity ^k
	Fossil Fuels ^b				Nuclear ^h		
	Coal ^c	Petroleum ^d	Natural Gas ^e	Total Fossil Fuels ^{f,g}			
1950	NA	NA	NA	14,030	--	3,412	3,412
1955	NA	NA	NA	11,699	--	3,412	3,412
1960	NA	NA	NA	10,760	11,629	3,412	3,412
1965	NA	NA	NA	10,453	11,804	3,412	3,412
1970	NA	NA	NA	10,494	10,977	3,412	3,412
1975	NA	NA	NA	10,406	11,013	3,412	3,412
1980	NA	NA	NA	10,388	10,908	3,412	3,412
1981	NA	NA	NA	10,453	11,030	3,412	3,412
1982	NA	NA	NA	10,454	11,073	3,412	3,412
1983	NA	NA	NA	10,520	10,905	3,412	3,412
1984	NA	NA	NA	10,440	10,843	3,412	3,412
1985	NA	NA	NA	10,447	10,622	3,412	3,412
1986	NA	NA	NA	10,446	10,579	3,412	3,412
1987	NA	NA	NA	10,419	10,442	3,412	3,412
1988	NA	NA	NA	10,324	10,602	3,412	3,412
1989	NA	NA	NA	10,432	10,583	3,412	3,412
1990	NA	NA	NA	10,402	10,582	3,412	3,412
1991	NA	NA	NA	10,436	10,484	3,412	3,412
1992	NA	NA	NA	10,342	10,471	3,412	3,412
1993	NA	NA	NA	10,309	10,504	3,412	3,412
1994	NA	NA	NA	10,316	10,452	3,412	3,412
1995	NA	NA	NA	10,312	10,507	3,412	3,412
1996	NA	NA	NA	10,340	10,503	3,412	3,412
1997	NA	NA	NA	10,213	10,494	3,412	3,412
1998	NA	NA	NA	10,197	10,491	3,412	3,412
1999	NA	NA	NA	10,226	10,450	3,412	3,412
2000	NA	NA	NA	10,201	10,429	3,412	3,412
2001	10,378	10,742	10,051	^b 10,333	10,443	3,412	3,412
2002	10,314	10,641	9,533	10,173	10,442	3,412	3,412
2003	10,297	10,610	9,207	10,125	10,422	3,412	3,412
2004	10,331	10,571	8,647	10,016	10,428	3,412	3,412
2005	10,373	10,631	8,551	9,999	10,436	3,412	3,412
2006	10,351	10,809	8,471	9,919	10,435	3,412	3,412
2007	10,375	10,794	8,403	9,884	10,489	3,412	3,412
2008	10,378	11,015	8,305	9,854	10,452	3,412	3,412
2009	10,414	10,923	8,160	9,760	10,459	3,412	3,412
2010	10,415	10,984	8,185	9,756	10,452	3,412	3,412
2011	10,444	10,829	8,152	9,716	10,464	3,412	3,412
2012	10,498	10,991	8,039	9,516	10,479	3,412	3,412
2013	10,459	10,713	7,948	9,541	10,449	3,412	3,412
2014	10,428	10,814	7,907	9,509	10,459	3,412	3,412
2015	10,495	10,687	7,869	9,314	10,458	3,412	3,412
2016	10,493	10,811	7,863	9,228	10,459	3,412	3,412
2017	10,465	10,834	7,803	9,208	10,459	3,412	3,412
2018	10,481	11,095	7,811	9,098	10,455	3,412	3,412
2019	10,551	11,205	7,725	8,899	10,442	3,412	3,412
2020	10,655	11,259	7,725	8,767	10,446	3,412	3,412
2021	10,583	11,224	7,689	8,844	10,429	3,412	3,412
2022	^E 10,583	^E 11,224	^E 7,689	^E 8,844	^E 10,429	3,412	3,412
2023	^E 10,583	^E 11,224	^E 7,689	^E 8,844	^E 10,429	3,412	3,412

^a The values in columns 1–5 of this table are for net heat rates. See "Heat Rate" in Glossary.
^b Through 2000, heat rates are for fossil-fueled steam-electric plants at electric utilities. Beginning in 2001, heat rates are for all fossil-fueled plants at electric utilities and electricity-only independent power producers.
^c Includes anthracite, bituminous coal, subbituminous coal, lignite, and, beginning in 2002, waste coal and coal synfuel.
^d Includes distillate fuel oil, residual fuel oil, jet fuel, kerosene, petroleum coke, and waste oil.
^e Includes natural gas and supplemental gaseous fuels.
^f Includes coal, petroleum, natural gas, and, beginning in 2001, other gases (blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels).
^g Through 2000, 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, which is the heat content of electricity, is a constant. It is used as the thermal conversion factor for electricity net generation from noncombustible renewable energy (hydro, geothermal, solar thermal, photovoltaic, and wind), electricity sales to ultimate customers, and electricity imports and exports.
^l 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.

Due to a revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September 2023 *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

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 Technologies Model” (GREET), version GREET1_2022, October 2022.

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 Technologies Model” (GREET), version GREET1_2022, October 2022.

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 Technologies Model” (GREET), version GREET1_2022, October 2022.

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 Technologies Model” (GREET), version GREET1_2022, October 2022.

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 Technologies Model” (GREET), version GREET1_2022, October 2022—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 Technologies Model” (GREET), version GREET1_2022, October 2022.

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 Technologies Model” (GREET), version GREET1_2022, October 2022.

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 Technologies Model” (GREET), version GREET1_2022, October 2022) 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 Technologies Model” (GREET), version GREET1_2022, October 2022.

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.

Table A6 Sources

Approximate Heat Rates for 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.

Approximate Heat Rates for 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.

Approximate Heat Rates for 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.

Approximate Heat Rates for 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).

Approximate Heat Rates for 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.

Thermal Conversion Factor for 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 uses the heat content of electricity, 3,412 Btu per kilowatthour. See Appendix E for more information.

Heat Content of Electricity. The value of 3,412 Btu per kilowatthour, which is the heat content of electricity, is a constant. It is used as the thermal conversion factor for electricity net generation from noncombustible renewable energy (hydro, geothermal, solar thermal, photovoltaic, and wind), electricity sales to ultimate customers, and electricity imports and exports.

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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 (2017) Dollars ^e	Implicit Price Deflator ^c (2017 = 1.00000)	Billion Nominal Dollars ^d
	Million People		Percent				
1950	152.3	2,557.6	6.0	299.8	R 2,458.5	R 0.12195	577.8
1955	165.9	2,782.1	6.0	425.5	R 3,083.0	R .13801	802.6
1960	180.7	3,043.0	5.9	542.4	R 3,500.3	R .15495	1,006.0
1965	194.3	3,350.8	5.8	742.3	R 4,478.6	R .16574	1,356.0
1970	205.1	3,713.5	5.5	1,073.3	R 5,316.4	R .20189	1,903.0
1975	216.0	4,089.4	5.3	1,684.9	R 6,060.9	R .27800	3,055.3
1980	227.2	4,446.0	5.1	2,857.3	R 7,257.3	R .39371	5,462.0
1981	229.5	4,527.4	5.1	3,207.0	R 7,441.5	R .43097	6,033.5
1982	231.7	4,610.6	5.0	3,343.8	R 7,307.3	R .45759	6,175.0
1983	233.8	4,694.9	5.0	3,634.0	R 7,642.3	R .47552	6,631.0
1984	235.8	4,777.1	4.9	4,037.6	R 8,195.3	R .49267	7,313.8
1985	237.9	4,862.3	4.9	4,339.0	R 8,537.0	R .50826	7,775.7
1986	240.1	4,950.0	4.9	4,579.6	R 8,832.6	R .51849	8,031.0
1987	242.3	5,040.3	4.8	4,855.2	R 9,137.7	R .53134	8,707.5
1988	244.5	5,131.6	4.8	5,236.4	R 9,519.4	R .55008	9,434.2
1989	246.8	5,222.7	4.7	5,641.6	R 9,869.0	R .57165	10,069.8
1990	249.6	5,315.5	4.7	5,963.1	R 10,055.1	R .59305	10,624.6
1991	253.0	5,403.3	4.7	6,158.1	R 10,044.2	R .61310	10,808.0
1992	256.5	5,490.5	4.7	6,520.3	R 10,398.0	R .62707	11,381.0
1993	259.9	5,568.2	4.7	6,858.6	R 10,684.2	R .64194	12,024.4
1994	263.1	5,650.2	4.7	7,287.2	R 11,114.6	R .65564	12,826.8
1995	266.3	5,733.2	4.6	7,639.7	R 11,413.0	R .66939	13,653.2
1996	269.4	5,815.3	4.6	8,073.1	R 11,843.6	R .68164	14,463.4
1997	272.6	5,895.8	4.6	8,577.6	R 12,370.3	R .69340	15,393.3
1998	275.9	5,975.2	4.6	9,062.8	R 12,924.9	R .70119	16,216.8
1999	279.0	6,054.0	4.6	9,631.2	R 13,543.8	R .71111	17,270.7
2000	282.2	6,132.5	4.6	10,251.0	R 14,096.0	R .72722	18,625.2
2001	285.0	6,211.3	4.6	10,581.9	R 14,230.7	R .74360	18,881.2
2002	287.6	6,290.3	4.6	10,929.1	R 14,472.7	R .75515	19,170.8
2003	290.1	6,369.2	4.6	11,456.5	R 14,877.3	R .77006	20,138.0
2004	292.8	6,448.3	4.5	12,217.2	R 15,449.8	R .79077	21,688.9
2005	295.5	6,527.1	4.5	13,039.2	R 15,988.0	R .81556	23,514.7
2006	298.4	6,607.4	4.5	13,815.6	R 16,433.1	R .84071	24,924.7
2007	301.2	6,689.4	4.5	14,474.2	R 16,762.4	R .86349	26,245.0
2008	304.1	6,773.3	4.5	14,769.9	R 16,781.5	R .88013	27,023.5
2009	306.8	6,857.2	4.5	14,478.1	R 16,349.1	R .88556	24,954.6
2010	309.3	6,939.8	4.5	15,049.0	R 16,789.8	R .89632	26,475.7
2011	311.6	7,022.1	4.4	15,599.7	R 17,052.4	R .91481	28,045.9
2012	313.8	7,105.0	4.4	16,254.0	R 17,442.8	R .93185	29,222.8
2013	316.0	7,188.5	4.4	R 16,880.7	R 17,812.2	R .94771	30,350.1
2014	318.3	7,271.6	4.4	R 17,608.1	R 18,261.7	R .96421	31,756.4
2015	320.6	7,353.5	4.4	R 18,295.0	R 18,799.6	R .97316	32,183.1
2016	322.9	7,435.2	4.3	R 18,804.9	R 19,141.7	R .98241	32,855.1
2017	325.0	7,516.8	4.3	R 19,612.1	R 19,612.1	R 1.00000	R 34,468.1
2018	326.7	7,597.1	4.3	R 20,656.5	R 20,193.9	R 1.02291	R 36,504.5
2019	328.2	7,676.7	4.3	R 21,521.4	R 20,692.1	R 1.04008	R 37,676.5
2020	331.5	7,756.9	4.3	R 21,323.0	R 20,234.1	R 1.05381	R 36,681.0
2021	332.0	7,831.7	4.2	R 23,594.0	R 21,407.7	R 1.10213	R 41,665.3
2022	333.3	7,905.3	4.2	R 25,744.1	R 21,822.0	R 1.17973	R 46,083.3

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

^b Resident population of the 50 states and the District of Columbia estimated for July 1 of each year.

^c The gross domestic product implicit price deflator is used to convert nominal dollars to chained (2012) dollars.

^d See "Nominal Dollars" in Glossary.

^e See "Chained Dollars" in Glossary.

R=Revised.

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" (January 2023). • **World Population: 1950 forward**—DOC, U.S. Census Bureau, International Database (December 2022). • **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 (September 2023), Tables 1.1.5, 1.1.6, and 1.1.9. • **U.S. Gross Output: 1949–2016**—DOC, BEA, GDP by industry (Historical) data (Fall 2023). **1997 forward**—DOC, BEA, GDP by Industry data (September 2023).

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	0.001	2.515	2.516	--	6.991
1895	4.950	.147	.168	5.265	.003	2.306	2.309	--	7.574
1900	6.841	.252	.229	7.322	.010	2.015	2.025	--	9.347
1905	10.001	.372	.610	10.983	.017	1.843	1.860	--	12.843
1910	12.714	.540	1.007	14.261	.029	1.765	1.794	--	16.055
1915	13.294	.673	1.418	15.385	.045	1.688	1.733	0.002	17.120
1920	15.504	.813	2.676	18.993	.064	1.610	1.674	.003	20.670
1925	14.706	1.191	4.280	20.177	.087	1.533	1.620	.004	21.801
1930	13.639	1.932	5.897	21.468	.122	1.455	1.577	.005	23.050
1935	10.634	1.919	5.675	18.228	.146	1.397	1.543	.005	19.776
1940	12.535	2.665	7.760	22.960	.171	1.358	1.529	.007	24.496
1945	15.972	3.871	10.110	29.953	.289	^a 1.261	1.550	.009	31.512

^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 I. Data are converted to Btu by multiplying by 3,412 Btu per kilowatthour. • **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).

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

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 Measures for the Energy Content of Noncombustible Renewables

Alternative Measures for the Energy Content of Noncombustible Renewables

Energy sources are measured in different physical units: liquid fuels in barrels or gallons, gases in cubic feet, coal in short tons, and electricity in kilowatthours. EIA converts each source into common British thermal units (Btu) to allow comparison among different types of energy and to calculate total energy concepts.

Noncombustible renewables (hydroelectric, geothermal, solar, and wind energy) are resources from which energy is extracted without burning or combusting fuel. When noncombustible renewables generate electricity, there is no fuel combustion and, therefore, no set Btu conversion factors for the energy sources.¹

There are three broadly accepted ways to convert electricity generated from noncombustible renewables into Btu of primary energy—the captured energy, fossil fuel equivalency, and incident energy approaches. Each of these methods are described in detail below.

Captured Energy Approach

The captured energy approach converts primary energy consumption of noncombustible renewables from kilowatthours (kWh) to Btu using the constant conversion factor representing the heat content of electricity—3,412 Btu per kWh. Captured energy reflects the primary energy captured for economic use and does not include losses. In other words, it represents the net energy available for direct consumption after the transformation of a noncombustible renewable source of energy into electricity, where 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 portion of the energy transformation associated with renewable energy sources. 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 This approach is preferred by the *UN International Recommendations for Energy Statistics* (IRES) because the detailed data needed to estimate quantities of incident energy are not available now and are not likely to develop soon. This approach is also more closely tied to a physical market commodity, that is, electricity net generation, than the conceptual measure derived using the fossil fuel equivalency approach.

Fossil Fuel Equivalency Approach

The fossil fuel equivalency approach converts the consumption of noncombustible renewable electricity (in kWh) to Btu by applying a fossil fuel equivalency factor, based on the fossil-fuels heat rate (Table A6). The fossil-fuels heat rate is equal to the average thermal efficiency across fossil-fueled fired generating plants based on fuel consumption and net generation data reported to EIA. The fossil fuel equivalent consumption represents the energy consumed as if the electricity were generated by fossil fuels and is useful for analysis when considering the amount of primary fossil fuel energy displaced by renewable energy sources.

However, unlike the captured energy approach, the fossil fuel equivalency approach is not as directly tied to any real market or physical quantity. The fossil fuel equivalency approach measures neither primary energy consumption nor fossil fuels actually displaced. Additionally, its use becomes increasingly problematic as noncombustible renewables begin to displace other renewables instead of fossil fuels.

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 converts noncombustible renewable electricity to Btu by accounting for the “losses” that result from an inability to convert 100% of incident energy to a useful form of energy. EIA has not published total primary energy consumption statistics based on this approach because it is difficult to obtain accurate estimates of input energy without creating undue burden on survey respondents and possible concern about the quality of the resulting data. 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

EIA now using the captured energy approach

Starting with the September 2023 *Monthly Energy Review* (MER), EIA began converting electricity generation from noncombustible renewables into Btu using the captured energy approach rather than the fossil fuel equivalency approach in its main data tables (reflected in MER Sections 1, 2, and 10). The Btu values of hydroelectric, geothermal, solar, and wind energy consumption and, consequently, total primary energy consumption and total energy production are lower for all time periods because of the new conversion factor (the heat content of electricity from Table A6).

After a thorough review of the alternative approaches, EIA made the change for two primary reasons. First, adopting the captured energy approach promotes international comparability in energy statistics by adopting the standards provided in IRES. Second, as renewable energy continues to represent an increasingly larger portion of U.S. energy consumption over time, the fossil fuel equivalent values of generation from renewable sources become less relevant to our data users than the electrical energy provided by renewable sources.

Some analysts may still prefer to use the measures based on the fossil fuel equivalency approach, which was previously used by EIA. MER Tables E1–E4 present noncombustible renewable energy statistics using the fossil fuel equivalency approach.

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 E1. Primary Energy Overview, Fossil Fuel Equivalency Approach
(Quadrillion Btu)

	Production				Trade			Stock Change and Other ^d	Consumption			
	Fossil Fuels ^a	Nuclear Electric Power	Renewable Energy ^b	Total	Imports	Exports	Net Imports ^c		Fossil Fuels ^e	Nuclear Electric Power	Renewable Energy ^b	Total ^f
1950 Total	32.553	0.000	2.978	35.531	1.913	1.465	0.448	-1.380	31.615	0.000	2.978	34.599
1955 Total	37.347	.000	2.784	40.131	2.790	2.286	.504	-.457	37.380	.000	2.784	40.178
1960 Total	39.855	.006	2.928	42.789	4.188	1.477	2.710	-.458	42.091	.006	2.928	45.041
1965 Total	47.205	.043	3.396	50.644	5.892	1.829	4.063	-.754	50.515	.043	3.396	53.953
1970 Total	59.152	.239	4.070	63.462	8.342	2.632	5.709	-1.354	63.501	.239	4.070	67.817
1975 Total	54.697	1.900	4.687	61.284	14.032	2.323	11.709	-1.062	65.323	1.900	4.687	71.931
1980 Total	58.979	2.739	5.428	67.147	15.796	3.695	12.101	-1.227	69.782	2.739	5.428	78.021
1985 Total	57.502	4.076	6.084	67.661	11.781	4.196	7.584	1.088	66.035	4.076	6.084	76.334
1990 Total	58.523	6.104	6.040	70.668	18.817	4.752	14.065	-.299	72.281	6.104	6.040	84.433
1995 Total	57.496	7.075	6.557	71.129	22.180	4.496	17.684	2.118	77.162	7.075	6.559	90.931
2000 Total	57.307	7.862	6.102	71.271	28.865	3.962	24.904	2.528	84.620	7.862	6.104	98.702
2005 Total	54.995	8.161	6.221	69.377	34.659	4.462	30.197	.527	85.623	8.161	6.233	100.101
2006 Total	55.877	8.215	6.586	70.677	34.649	4.727	29.921	-1.207	84.477	8.215	6.637	99.391
2007 Total	56.369	8.459	6.510	71.338	34.679	5.338	29.341	.215	85.805	8.459	6.523	100.893
2008 Total	57.527	8.426	7.191	73.144	32.970	6.949	26.021	-.412	83.041	8.426	7.174	98.753
2009 Total	56.612	8.355	7.624	72.591	29.690	6.920	22.770	-1.420	77.862	8.355	7.607	93.941
2010 Total	58.159	8.434	8.312	74.906	29.866	8.176	21.690	.916	80.723	8.434	8.266	97.512
2011 Total	60.529	8.269	9.306	78.104	28.748	10.373	18.375	.389	79.263	8.269	9.210	96.868
2012 Total	62.298	8.062	8.890	79.249	27.068	11.267	15.801	-.670	77.304	8.062	8.853	94.380
2013 Total	64.180	8.244	9.438	81.862	24.623	11.788	12.835	2.433	79.224	8.244	9.464	97.130
2014 Total	69.619	8.338	9.798	87.754	23.241	12.270	10.971	-.428	80.017	8.338	9.761	98.297
2015 Total	70.186	8.337	9.766	88.289	23.794	12.902	10.892	-1.776	79.090	8.337	9.749	97.404
2016 Total	65.435	8.427	10.477	84.339	25.378	14.119	11.259	1.784	78.319	8.427	10.409	97.381
2017 Total	68.448	8.419	11.259	88.127	25.458	17.946	7.512	2.017	77.907	8.419	11.138	97.657
2018 Total	75.780	8.438	11.580	95.798	24.833	21.224	3.610	1.832	81.281	8.438	11.370	101.240
2019 Total	81.399	8.452	11.627	101.478	22.865	23.476	-.610	-.390	80.425	8.452	11.468	100.478
2020 Total	R 76.145	8.251	11.588	95.654	19.988	23.464	-3.476	R .467	R 73.139	8.251	11.423	92.912
2021 January	R 6.497	.748	.987	R 8.232	1.772	2.083	-.311	R 1.008	7.210	.748	.956	8.929
February	R 5.318	.657	.865	R 6.840	1.566	1.667	-.101	R 1.400	R 6.614	.657	.858	R 8.138
March	R 6.603	.664	1.086	R 8.353	1.788	2.067	-.279	R .037	R 6.359	.664	1.075	R 8.111
April	R 6.362	.595	1.044	R 8.001	1.703	2.104	-.402	R -.082	R 5.876	.595	1.035	R 7.517
May	R 6.624	.661	1.102	R 8.387	1.799	2.131	-.332	R -.332	R 5.955	.661	1.094	R 7.723
June	R 6.433	.689	1.030	R 8.152	1.890	2.204	-.314	R .205	R 6.320	.689	1.018	R 8.042
July	R 6.642	.718	.991	R 8.350	1.878	2.085	-.208	R .267	R 6.699	.718	.978	R 8.410
August	R 6.671	.725	1.005	R 8.401	1.846	2.183	-.337	R .456	6.784	.725	.999	8.519
September	R 6.439	.673	.963	R 8.075	1.829	1.925	-.096	R -.261	R 6.083	.673	.952	R 7.717
October	R 6.783	.609	.996	R 8.388	1.752	2.063	-.311	R -.312	R 6.159	.609	.988	R 7.765
November	R 6.671	.654	1.031	R 8.356	1.774	2.172	-.397	R .182	R 6.472	.654	1.010	R 8.141
December	R 6.862	.738	1.108	R 8.708	1.859	2.386	-.527	R .571	R 6.924	.738	1.081	R 8.751
Total	R 77.903	8.131	12.208	R 98.242	21.455	25.071	-3.616	R 3.138	R 77.454	8.131	12.045	R 97.764
2022 January	R 6.737	.736	1.124	R 8.597	1.841	2.171	-.330	R 1.204	R 7.632	.736	1.093	R 9.471
February	R 6.099	.645	1.066	R 7.810	1.687	2.017	-.330	R .935	R 6.722	.645	1.042	R 8.415
March	R 6.920	.659	1.203	R 8.781	1.848	2.306	-.458	R .188	R 6.661	.659	1.185	R 8.511
April	R 6.638	.577	1.171	R 8.385	1.747	2.303	-.556	R -.136	R 5.950	.577	1.158	R 7.693
May	R 6.918	.661	1.213	R 8.792	1.795	2.336	-.541	R -.358	R 6.028	.661	1.195	R 7.894
June	R 6.731	.685	1.182	R 8.598	1.805	2.297	-.492	R -.016	R 6.224	.685	1.166	R 8.091
July	R 6.996	.718	1.127	R 8.841	1.913	2.294	-.381	R .048	6.666	.718	1.106	R 8.508
August	R 7.111	.719	1.039	R 8.869	1.826	2.331	-.506	R .104	6.698	.719	1.031	R 8.468
September	R 6.988	.665	.974	R 8.627	1.705	2.266	-.562	R -.346	R 6.083	.665	.959	R 7.720
October	R 7.189	.615	1.015	R 8.819	1.771	2.295	-.523	R -.559	R 6.109	.615	1.003	R 7.736
November	R 6.936	.647	1.093	R 8.676	1.767	2.315	-.548	R .076	R 6.475	.647	1.072	R 8.203
December	R 6.906	.721	1.083	R 8.710	1.802	2.407	-.606	R .931	R 7.236	.721	1.064	R 9.035
Total	R 82.169	8.046	13.290	R 103.505	21.507	27.339	-5.832	R 2.071	R 78.483	8.046	13.074	R 99.744
2023 January	R 7.173	.739	1.112	R 9.025	1.855	2.309	-.454	R .264	R 6.989	.739	1.095	R 8.835
February	R 6.480	.634	1.075	R 8.189	1.746	2.213	-.466	R .261	R 6.285	.634	1.058	R 7.984
March	R 7.300	.655	1.195	R 9.149	1.795	2.737	-.942	R .349	R 6.715	.655	1.178	R 8.557
April	R 6.985	.589	1.155	R 8.729	1.756	2.354	-.598	R -.510	R 5.883	.589	1.142	R 7.621
May	R 7.247	.641	1.207	R 9.095	1.818	R 2.431	R -.612	R -.667	R 5.964	.641	1.202	R 7.816
June	R 7.059	.678	R 1.090	R 8.826	1.828	R 2.389	R -.561	R -.386	R 6.116	.678	1.079	R 8.718
July	R 7.335	.729	1.131	9.195	1.811	2.445	-.634	-.047	6.659	.729	1.112	8.514
7-Month Total	49.578	4.665	7.965	62.208	12.610	16.877	-4.268	-7.36	44.611	4.665	7.867	57.205
2022 7-Month Total	47.039	4.681	8.086	59.805	12.636	15.724	-3.088	1.866	45.883	4.681	7.945	58.583
2021 7-Month Total	44.478	4.733	7.105	56.315	12.395	14.342	-1.947	2.502	45.032	4.733	7.014	56.870

a Coal, natural gas (dry), crude oil, and natural gas plant liquids.
b See Table E4 for notes on series components and estimation.
c Net imports equal imports minus exports.
d Includes petroleum stock change and adjustments; natural gas net storage withdrawals and balancing item; coal stock change, losses, and unaccounted for; fuel ethanol stock change; and biodiesel stock change and balancing item.
e Coal, coal coke net imports, natural gas, and petroleum.
f Also includes electricity net imports.
R=Revised.
Notes: • See "Primary Energy," "Primary Energy Production," and "Primary

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

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

Sources: • **Production:** Table E2. • **Trade:** Tables 1.4a and 1.4b. • **Stock Change and Other:** Calculated as consumption minus production and net imports.
• **Consumption:** Table E3.

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Table E2. Primary Energy Production by Source, Fossil Fuel Equivalency Approach
(Quadrillion Btu)

	Fossil Fuels					Nuclear Electric Power	Renewable Energy ^a						Total
	Coal ^b	Natural Gas (Dry)	Crude Oil ^c	NGPL ^d	Total		Hydro-electric Power ^e	Geo-thermal	Solar	Wind	Bio-mass	Total	
1950 Total	14.060	6.233	11.447	0.813	32.553	0.000	1.415	NA	NA	NA	1.562	2.978	35.531
1955 Total	12.370	9.345	14.410	1.223	37.347	.000	1.360	NA	NA	NA	1.424	2.784	40.131
1960 Total	10.817	12.656	14.935	1.447	39.855	.006	1.608	(s)	NA	NA	1.320	2.928	42.789
1965 Total	13.055	15.775	16.521	1.853	47.205	.043	2.059	.002	NA	NA	1.335	3.396	50.644
1970 Total	14.607	21.666	20.401	2.478	59.152	.239	2.634	.006	NA	NA	1.431	4.070	63.462
1975 Total	14.989	19.640	17.729	2.338	54.697	1.900	3.155	.034	NA	NA	1.499	4.687	61.284
1980 Total	18.598	19.908	18.249	2.225	58.979	2.739	2.900	.053	NA	NA	2.475	5.428	67.147
1985 Total	19.325	16.980	18.992	2.204	57.502	4.076	2.970	.097	(s)	(s)	3.016	6.084	67.661
1990 Total	22.488	18.326	15.571	2.138	58.523	6.104	3.046	.171	.059	.029	2.735	6.040	70.668
1995 Total	22.130	19.082	13.887	2.398	57.496	7.075	3.205	.152	.068	.033	3.099	6.557	71.129
2000 Total	22.735	19.662	12.358	2.551	57.307	7.862	2.811	.164	.063	.057	3.006	6.102	71.271
2005 Total	23.185	18.556	10.974	2.280	54.995	8.161	2.703	.181	.058	.178	3.101	6.221	69.377
2006 Total	23.790	19.022	10.767	2.299	55.877	8.215	2.869	.181	.060	.264	3.212	6.586	70.677
2007 Total	23.493	19.786	10.741	2.349	56.369	8.459	2.446	.186	.065	.341	3.472	6.510	71.338
2008 Total	23.851	20.703	10.613	2.359	57.527	8.426	2.511	.192	.074	.546	3.868	7.191	73.144
2009 Total	21.624	21.139	11.340	2.508	56.612	8.355	2.669	.200	.077	.721	3.957	7.624	72.591
2010 Total	22.038	21.806	11.610	2.705	58.159	8.434	2.539	.208	.090	.923	4.553	8.312	74.906
2011 Total	22.221	23.406	12.012	2.890	60.529	8.269	3.103	.212	.110	1.168	4.712	9.306	78.104
2012 Total	20.677	24.610	13.849	3.162	62.298	8.062	2.629	.212	.156	1.340	4.554	8.890	79.249
2013 Total	20.001	24.859	15.868	3.451	64.180	8.244	2.562	.214	.225	1.601	4.835	9.438	81.862
2014 Total	20.286	26.718	18.610	4.005	69.619	8.338	2.466	.214	.337	1.727	5.052	9.798	87.754
2015 Total	17.946	28.067	19.697	4.476	70.186	8.337	2.320	.212	.427	1.776	5.031	9.766	88.289
2016 Total	14.667	27.576	18.527	4.665	65.435	8.427	2.471	.210	.570	2.095	5.132	10.477	84.339
2017 Total	15.625	28.289	19.547	4.987	68.448	8.419	2.765	.210	.777	2.342	5.166	11.259	88.127
2018 Total	15.363	31.882	22.808	5.727	75.780	8.438	2.661	.209	.915	2.481	5.314	11.580	95.798
2019 Total	14.256	35.187	25.604	6.352	81.399	8.452	2.562	.201	1.016	2.633	5.215	11.627	101.478
2020 Total	10.703	R 35.062	23.575	6.805	R 76.145	8.251	2.501	.203	1.211	2.963	4.710	11.588	95.654
2021 January	.974	R 2.978	1.965	.580	R 6.497	.748	.217	.017	.077	.266	.409	.987	R 8.232
February	.821	R 2.491	1.580	.426	R 5.318	.657	.178	.016	.086	.236	.348	.865	R 6.840
March	1.021	R 3.007	2.002	.572	R 6.603	.664	.188	.016	.125	.347	.411	1.086	R 8.353
April	.907	R 2.933	1.932	.589	R 6.362	.595	.171	.017	.143	.320	.393	1.044	R 8.001
May	.975	R 3.029	2.009	.611	R 6.624	.661	.206	.017	.162	.299	.418	1.102	R 8.387
June	.979	R 2.920	1.940	.593	R 6.433	.689	.207	.017	.160	.236	.410	1.030	R 8.152
July	.974	R 3.046	2.010	.611	R 6.642	.718	.195	.017	.161	.192	.426	.991	R 8.350
August	1.005	R 3.055	1.989	.622	R 6.671	.725	.180	.017	.156	.239	.413	1.005	R 8.401
September	.999	R 2.977	1.864	.599	R 6.439	.673	.151	.017	.144	.256	.395	.963	R 8.075
October	.982	R 3.125	2.040	.636	R 6.783	.609	.152	.017	.121	.285	.422	.996	R 8.388
November	.980	R 3.058	2.011	.621	R 6.671	.654	.171	.017	.102	.316	.424	1.031	R 8.356
December	.977	R 3.187	2.060	.638	R 6.862	.738	.208	.019	.084	.352	.445	1.108	R 8.708
Total	11.596	R 35.807	23.401	7.099	R 77.903	8.131	2.225	.205	1.520	3.345	4.914	12.208	R 98.242
2022 January	R 1.013	RE 3.090	2.023	.610	R 6.737	.736	.232	.019	.105	.337	.431	1.124	R 8.597
February	R .971	RE 2.784	1.792	.552	R 6.099	.645	.203	.016	.118	.336	.393	1.066	R 7.810
March	R 1.045	RE 3.135	2.080	.660	R 6.920	.659	.224	.018	.154	.380	.427	1.203	R 8.781
April	R .941	RE 3.056	2.007	.635	R 6.638	.577	.173	.017	.173	.406	.401	1.171	R 8.385
May	R 1.007	RE 3.183	2.068	.661	R 6.918	.661	.204	.018	.194	.369	.429	1.213	R 8.792
June	R .987	RE 3.087	2.012	.644	R 6.731	.685	.238	.017	.201	.296	.429	1.182	R 8.598
July	R 1.001	RE 3.224	2.085	.686	R 6.996	.718	.214	.018	.201	.259	.436	1.127	R 8.841
August	R 1.088	RE 3.240	2.112	.672	R 7.111	.719	.192	.018	.187	.215	.427	1.039	R 8.869
September	R 1.045	RE 3.181	2.102	.660	R 6.988	.665	.149	.018	.172	.239	.396	.974	R 8.627
October	R 1.041	RE 3.284	2.181	.684	R 7.189	.615	.129	.017	.156	.290	.422	1.015	R 8.819
November	R .989	RE 3.178	2.110	.658	R 6.936	.647	.166	.018	.113	.370	.426	1.093	R 8.676
December	R .927	RE 3.219	2.139	.621	R 6.906	.721	.193	.019	.097	.347	.426	1.083	R 8.710
Total	R 12.054	RE 37.662	24.710	7.742	R 82.169	8.046	2.317	.214	1.870	3.845	5.044	13.290	R 103.505
2023 January	1.031	RE 3.279	E 2.215	.648	R 7.173	.739	.203	.018	.111	.346	.435	1.112	R 9.025
February	.926	RE 2.963	E 1.995	.597	R 6.480	.634	.171	.017	.126	.372	.389	1.075	R 8.189
March	1.052	RE 3.309	E 2.250	.688	R 7.300	.655	.182	.018	.168	.392	.434	1.195	R 9.149
April	R .950	RE 3.194	E 2.157	.684	R 6.985	.589	.158	.017	.199	.379	.401	1.155	R 8.729
May	R .975	RE 3.328	RE 2.237	.707	R 7.247	.641	.247	.017	.224	.283	.435	1.207	R 9.095
June	R .954	RE 3.205	RE 2.200	.700	R 7.059	.678	.174	.016	.230	.243	R 4.27	R 1.090	R 8.826
July	.994	3.338	2.289	.714	7.335	.729	.190	.017	.244	.245	.435	1.131	9.195
7-Month Total	6.882	E 22.617	E 15.342	4.738	49.578	4.665	1.326	.120	1.302	2.260	2.956	7.965	62.208
2022 7-Month Total	6.965	E 21.560	14.067	4.448	47.039	4.681	1.488	.123	1.145	2.383	2.946	8.086	59.805
2021 7-Month Total	6.653	20.405	13.437	3.983	44.478	4.733	1.363	.118	.913	1.895	2.815	7.105	56.315

^a Most data are estimates. See Table E4 for notes on series components and estimation.

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

^c Includes lease condensate.

^d Natural gas 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).

^e Conventional hydroelectric power.

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

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

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

Sources: • Fossil Fuels and Nuclear Electric Power: Table 1.2. • Renewable Energy: Table E4. • Total: Calculated as the sum of Fossil Fuels, Nuclear Electric Power, and Renewable Energy.

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Table E3. Primary Energy Consumption by Source, Fossil Fuel Equivalency Approach
(Quadrillion Btu)

	Fossil Fuels ^a				Nuclear Electric Power	Renewable Energy ^b						Total ^g
	Coal	Natural Gas ^c	Petroleum ^d	Total ^e		Hydroelectric Power ^f	Geothermal	Solar	Wind	Bio-mass	Total	
1950 Total	12.347	5.968	13.298	31.615	0.000	1.415	NA	NA	NA	1.562	2.978	34.599
1955 Total	11.167	8.998	17.225	37.380	.000	1.360	NA	NA	NA	1.424	2.784	40.178
1960 Total	9.838	12.385	19.874	42.091	.006	1.608	(s)	NA	NA	1.320	2.928	45.041
1965 Total	11.581	15.769	23.184	50.515	.043	2.059	.002	NA	NA	1.335	3.396	53.953
1970 Total	12.265	21.795	29.499	63.501	.239	2.634	.006	NA	NA	1.431	4.070	67.817
1975 Total	12.663	19.948	32.699	65.323	1.900	3.155	.034	NA	NA	1.499	4.687	71.931
1980 Total	15.423	20.235	34.159	69.782	2.739	2.900	.053	NA	NA	2.475	5.428	78.021
1985 Total	17.478	17.703	30.866	66.035	4.076	2.970	.097	(s)	(s)	3.016	6.084	76.334
1990 Total	19.173	19.603	33.500	72.281	6.104	3.046	.171	.059	.029	2.735	6.040	84.433
1995 Total	20.089	22.671	34.341	77.162	7.075	3.205	.152	.068	.033	3.101	6.559	90.931
2000 Total	22.580	23.824	38.152	84.620	7.862	2.811	.164	.063	.057	3.008	6.104	98.702
2005 Total	22.797	22.565	40.217	85.623	8.161	2.703	.181	.058	.178	3.114	6.233	100.101
2006 Total	22.447	22.239	39.731	84.477	8.215	2.869	.181	.060	.264	3.262	6.637	99.391
2007 Total	22.749	23.663	39.368	85.805	8.459	2.446	.186	.065	.341	3.485	6.523	100.893
2008 Total	22.387	23.843	36.769	83.041	8.426	2.511	.192	.074	.546	3.851	7.174	98.753
2009 Total	19.691	23.416	34.779	77.862	8.355	2.669	.200	.077	.721	3.940	7.607	93.941
2010 Total	20.834	24.575	35.321	80.723	8.434	2.539	.208	.090	.923	4.506	8.266	97.512
2011 Total	19.658	24.955	34.639	79.263	8.269	3.103	.212	.110	1.168	4.616	9.210	96.868
2012 Total	17.378	26.089	33.833	77.304	8.062	2.629	.212	.156	1.340	4.517	8.853	94.380
2013 Total	18.039	26.805	34.398	79.224	8.244	2.562	.214	.225	1.601	4.861	9.464	97.130
2014 Total	17.998	27.383	34.658	80.017	8.338	2.466	.214	.337	1.727	5.016	9.761	98.297
2015 Total	15.549	28.191	35.368	79.090	8.337	2.320	.212	.427	1.776	5.015	9.749	97.404
2016 Total	14.226	28.400	35.712	78.319	8.427	2.471	.210	.570	2.095	5.063	10.409	97.381
2017 Total	13.837	28.055	36.043	77.907	8.419	2.765	.210	.777	2.342	5.045	11.138	97.657
2018 Total	13.252	31.163	36.892	81.281	8.438	2.661	.209	.915	2.481	5.105	11.370	101.240
2019 Total	11.316	32.264	36.866	80.425	8.452	2.562	.201	1.016	2.633	5.056	11.468	100.478
2020 Total	9.181	R 31.640	32.331	R 73.139	8.251	2.501	.203	1.211	2.963	4.545	11.423	92.912
2021 January	.947	3.453	2.813	7.210	.748	.217	.017	.077	.266	.379	.956	8.929
February	.996	R 3.205	2.415	R 6.614	.657	.178	.016	.086	.236	.342	.858	R 8.138
March	.741	R 2.732	2.886	R 6.359	.664	.188	.016	.125	.347	.399	1.075	R 8.111
April	.650	R 2.350	2.880	R 5.876	.595	.171	.017	.143	.320	.383	1.035	R 7.517
May	.759	R 2.189	3.010	R 5.955	.661	.206	.017	.162	.299	.410	1.094	R 7.723
June	.997	R 2.319	3.009	R 6.320	.689	.207	.017	.160	.236	.398	1.018	R 8.042
July	1.160	R 2.501	3.040	R 6.699	.718	.195	.017	.161	.192	.413	.978	R 8.410
August	1.158	R 2.521	3.111	R 6.784	.725	.180	.017	.156	.239	.407	.999	8.519
September	.927	R 2.212	2.950	R 6.083	.673	.151	.017	.144	.256	.385	.952	R 7.717
October	.762	R 2.337	3.063	R 6.159	.609	.152	.017	.121	.285	.413	.988	R 7.765
November	.708	R 2.778	2.991	R 6.472	.654	.171	.017	.102	.316	.403	1.010	R 8.141
December	.742	R 3.113	3.076	R 6.924	.738	.208	.019	.084	.352	.418	1.081	R 8.751
Total	10.549	R 31.711	35.243	R 78.454	8.131	2.225	.205	1.520	3.345	4.751	12.045	R 97.764
2022 January	1.006	R 3.716	2.915	R 7.632	.736	.232	.019	.105	.337	.400	1.093	R 9.471
February	.834	R 3.164	2.726	R 6.722	.645	.203	.016	.118	.336	.369	1.042	R 8.415
March	.729	R 2.874	3.063	R 6.661	.659	.224	.018	.154	.380	.409	1.185	R 8.511
April	.658	R 2.439	2.858	R 5.950	.577	.173	.017	.173	.406	.388	1.158	R 7.693
May	.739	R 2.316	2.982	R 6.028	.661	.204	.018	.194	.369	.411	1.195	R 7.894
June	.867	R 2.394	2.967	R 6.224	.685	.238	.017	.201	.296	.414	1.166	R 8.091
July	1.015	R 2.669	2.986	R 6.666	.718	.214	.018	.201	.259	.414	1.106	R 8.508
August	.993	R 2.645	3.064	R 6.698	.719	.192	.018	.187	.215	.419	1.031	8.468
September	.780	R 2.364	2.943	R 6.083	.665	.149	.018	.172	.239	.382	.959	R 7.720
October	.671	R 2.442	2.999	R 6.109	.615	.129	.017	.156	.290	.409	1.003	R 7.736
November	.687	R 2.860	2.931	R 6.475	.647	.166	.018	.113	.370	.405	1.072	R 8.203
December	R .867	R 3.491	2.884	R 7.236	.721	.193	.019	.097	.347	.407	1.064	R 9.035
Total	9.846	R 33.375	35.319	R 78.483	8.046	2.317	.214	1.870	3.845	4.827	13.074	R 99.744
2023 January	.732	R 3.418	2.842	R 6.989	.739	.203	.018	.111	.346	.418	1.095	R 8.835
February	.579	R 3.049	2.658	R 6.285	.634	.171	.017	.126	.372	.373	1.058	R 7.984
March	.615	R 3.111	2.991	R 6.715	.655	.182	.018	.168	.392	.418	1.178	R 8.557
April	R .495	R 2.501	2.888	R 5.883	.589	.158	.017	.199	.379	.388	1.142	R 7.621
May	R .549	R 2.392	3.026	R 5.964	.641	.247	.017	.224	.283	.429	1.202	R 7.816
June	R .704	R 2.436	2.978	R 6.116	.678	.174	.016	.230	.243	.416	1.079	R 7.878
July	.915	R 2.754	2.993	R 6.659	.729	.190	.017	.244	.245	.416	1.112	8.514
7-Month Total	4.590	19.662	20.376	44.611	4.665	1.326	.120	1.302	2.260	2.859	7.867	57.205
2022 7-Month Total	5.848	19.573	20.497	45.883	4.681	1.488	.123	1.145	2.383	2.805	7.945	58.583
2021 7-Month Total	6.251	18.750	20.053	45.032	4.733	1.363	.118	.913	1.895	2.725	7.014	56.870

^a Includes non-combustion use of fossil fuels.
^b Most data are estimates. See Table E4 for notes on series components and estimation.
^c Natural gas only; excludes supplemental gaseous fuels. See Note 3, "Supplemental Gaseous Fuels," at end of Section 4.
^d Petroleum products supplied; excludes biofuels. Biofuels are included in "Biomass."
^e Includes coal coke net imports. See Tables 1.4c.
^f Conventional hydroelectric power.
^g Includes coal coke net imports and electricity net imports, which are not separately displayed. See Tables 1.4c.
R=Revised. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • See "Primary Energy Consumption" in Glossary.
• See Table D1 for estimated energy consumption for 1635–1945. • Totals may not equal sum of components due to independent rounding.
• Geographic coverage is the 50 states and the District of Columbia.
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#appendices> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.
Sources: • **Fossil Fuels** and **Nuclear Electric Power:** Table 1.3. • **Renewable Energy:** Table E4. • **Total:** Calculated as the sum of Fossil Fuels, Nuclear Electric Power, Renewable Energy, and Electricity Net Imports (see Table 1.4c).

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See "Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables" for more information.

Table E4. Renewable Energy Production and Consumption by Source, Fossil Fuel Equivalency Approach (Trillion Btu)

	Production ^a				Consumption								
	Biomass			Total Renewable Energy ^e	Noncombustible (Fossil Fuel Equivalent)				Biomass				Total Renewable Energy
	Wood ^b	Bio-fuels ^c	Total ^d		Hydro-electric Power ^f	Geo-thermal ^g	Solar ^h	Wind ⁱ	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	6,233
2006 Total	2,099	716	3,212	6,586	2,869	181	60	264	2,099	397	766	3,262	6,637
2007 Total	2,089	970	3,472	6,510	2,446	186	65	341	2,089	413	983	3,485	6,523
2008 Total	2,059	1,374	3,868	7,191	2,511	192	74	546	2,059	435	1,357	3,851	7,174
2009 Total	1,935	1,570	3,957	7,624	2,669	200	77	721	1,935	452	1,553	3,940	7,607
2010 Total	2,217	1,868	4,553	8,312	2,539	208	90	923	2,217	468	1,821	4,506	8,266
2011 Total	2,213	2,037	4,712	9,306	3,103	212	110	1,168	2,213	462	1,941	4,616	9,210
2012 Total	2,151	1,936	4,554	8,890	2,629	212	156	1,340	2,151	467	1,899	4,517	8,853
2013 Total	2,338	2,000	4,835	9,438	2,562	214	225	1,601	2,338	496	2,026	4,861	9,464
2014 Total	2,401	2,135	5,052	9,798	2,466	214	337	1,727	2,401	516	2,099	5,016	9,761
2015 Total	2,312	2,201	5,031	9,766	2,320	212	427	1,776	2,312	518	2,185	5,015	9,749
2016 Total	2,299	2,329	5,132	10,477	2,471	210	570	2,095	2,227	503	2,333	5,063	10,409
2017 Total	2,264	2,407	5,166	11,259	2,765	210	777	2,342	2,185	495	2,364	5,045	11,138
2018 Total	2,356	2,471	5,314	11,580	2,661	209	915	2,481	2,262	487	2,355	5,105	11,370
2019 Total	2,341	2,432	5,215	11,627	2,562	201	1,016	2,633	2,237	442	2,376	5,056	11,468
2020 Total	2,076	2,194	4,710	11,588	2,501	203	1,211	2,963	1,970	440	2,136	4,545	11,423
2021 January	180	191	409	987	217	17	77	266	172	38	169	379	956
February	162	152	348	865	178	16	86	236	154	34	154	342	858
March	179	194	411	1,086	188	16	125	347	167	38	194	399	1,075
April	171	187	393	1,044	171	17	143	320	162	36	186	383	1,035
May	176	206	418	1,102	206	17	162	299	168	36	207	410	1,094
June	175	201	410	1,030	207	17	160	236	164	34	200	398	1,018
July	181	209	426	991	195	17	161	192	173	36	204	413	978
August	182	195	413	1,005	180	17	156	239	172	35	200	407	999
September	175	185	395	963	151	17	144	256	164	34	186	385	952
October	172	214	422	996	152	17	121	285	164	35	214	413	988
November	173	216	424	1,031	171	17	102	316	161	35	207	403	1,010
December	183	224	445	1,108	208	19	84	352	171	38	209	418	1,081
Total	2,109	2,374	4,914	12,208	2,225	205	1,520	3,345	1,989	430	2,331	4,751	12,045
2022 January	181	214	431	1,124	232	19	105	337	171	37	193	400	1,093
February	170	190	393	1,066	203	16	118	336	158	33	177	369	1,042
March	178	212	427	1,203	224	18	154	380	165	37	207	409	1,185
April	169	198	401	1,171	173	17	173	406	159	34	195	388	1,158
May	181	214	429	1,213	204	18	194	369	169	35	208	411	1,195
June	182	214	429	1,182	238	17	201	296	168	33	213	414	1,166
July	184	218	436	1,127	214	18	201	259	174	34	206	414	1,106
August	183	211	427	1,039	192	18	187	215	173	33	213	419	1,031
September	172	193	396	974	149	18	172	239	158	32	192	382	959
October	171	217	422	1,015	129	17	156	290	160	34	216	409	1,003
November	172	219	426	1,093	166	18	113	370	162	34	209	405	1,072
December	180	211	426	1,083	193	19	97	347	167	35	205	407	1,064
Total	2,122	2,511	5,044	13,290	2,317	214	1,870	3,845	1,984	411	2,433	4,827	13,074
2023 January	179	220	435	1,112	203	18	111	346	171	36	210	418	1,095
February	159	198	389	1,075	171	17	126	372	151	32	190	373	1,058
March	178	222	434	1,195	182	18	168	392	163	34	220	418	1,178
April	157	212	401	1,155	158	17	199	379	149	32	207	388	1,142
May	172	229	435	1,207	247	17	224	283	161	34	234	429	1,202
June	R 165	230	R 427	R 1,090	174	16	230	243	153	32	232	416	1,079
July	170	232	435	1,131	190	17	244	245	160	33	223	416	1,112
7-Month Total	1,180	1,543	2,956	7,965	1,326	120	1,302	2,260	1,109	233	1,517	2,859	7,867
2022 7-Month Total	1,244	1,460	2,946	8,086	1,488	123	1,145	2,383	1,165	243	1,398	2,805	7,945
2021 7-Month Total	1,224	1,339	2,815	7,105	1,363	118	913	1,895	1,159	252	1,314	2,725	7,014

^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, also includes production of renewable diesel fuel. Beginning in 2014, also 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. • 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 and monthly data beginning in 1973.

Sources: • **Biomass:** Table 10.1. • **Hydroelectric Power and Wind:** Calculated as electricity net generation (see Table 7.2a) multiplied by the total fossil fuels heat rate factors (see Table A6). • **Geothermal:** Calculated as geothermal electricity net generation (see Table 7.2a) multiplied by the total fossil fuels heat rate factors (see Table A6); plus geothermal heat pump and direct use energy in the residential, commercial, and industrial sectors (see Tables 10.2a and 10.2b). • **Solar:** Calculated as solar electricity net generation (see Table 7.2a) multiplied by the total fossil fuels heat rate factors (see Table A6); plus solar thermal direct use energy (see Table 10.5). • **Total Production:** Calculated as the sum of biomass production and noncombustible consumption. • **Total Consumption:** Calculated as the sum of biomass consumption and noncombustible consumption.

Due to revised methodology, historical data for calculating the heat content of electricity net generation from hydroelectric power, geothermal, solar, and wind energy were revised in the September *Monthly Energy Review*. See “Appendix E Alternative Measures for the Energy Content of Noncombustible Renewables” for more information.

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Appendix F

Electric Vehicle Charging Infrastructure

Table F1. Electric Vehicle Charging Infrastructure
(Number)

	Locations ^a							Ports						
	With Public Ports Only	With Private Ports Only	With Public and Private Ports	With Net-Worked Ports Only ^b	With Non-Net-Worked Ports Only ^c	With Net-Worked and Non-Net-Worked Ports	Total	DC ^d Fast-Charging Ports	Level 2 Charging Ports	Level 1 Charging Ports	Legacy Charging Ports	Total	DC ^d Fast-Charging Ports per Location ^e	Level 2 Charging Ports per Location ^f
2015 Year	R 12,189	R 1,217	R 1,426	R 9,513	R 4,483	R 836	R 14,832	R 6,802	R 43,657	4,168	597	R 55,224	R 3.23	R 3.23
2016 Year	R 15,990	R 1,716	R 1,472	R 12,671	R 4,988	R 1,519	R 19,178	R 10,606	R 58,501	4,042	362	R 73,511	R 3.57	R 3.40
2017 Year	R 19,619	R 1,779	R 1,384	R 15,553	R 5,183	R 2,046	R 22,782	R 12,271	R 72,635	3,721	453	R 89,080	R 3.77	R 3.52
2018 Year	R 21,791	R 1,841	R 1,362	R 17,024	R 5,349	R 2,621	R 24,994	R 11,429	R 80,454	2,857	108	R 94,848	R 3.94	R 3.49
2019 Year	R 24,169	R 2,136	R 1,224	R 19,006	R 5,917	R 2,606	R 27,529	R 14,531	R 88,600	2,982	92	R 106,205	3.97	R 3.54
2020 Year	R 28,159	R 1,837	R 1,140	R 22,313	R 6,199	R 2,624	R 31,136	R 18,870	R 100,375	2,708	61	R 122,014	R 4.20	R 3.59
2021 January	R 38,358	R 2,270	R 1,139	R 32,444	R 6,684	R 2,639	R 41,767	R 18,497	R 104,300	3,415	58	R 126,270	R 3.67	R 2.77
February	R 38,936	R 2,286	R 1,139	R 32,926	R 6,796	R 2,639	R 42,361	R 19,079	R 105,338	3,413	58	R 127,888	R 3.71	R 2.76
March	R 39,369	R 2,255	R 1,141	R 33,282	R 6,843	R 2,640	R 42,765	R 19,490	R 106,022	3,406	58	R 128,976	R 3.74	R 2.75
April	R 40,058	R 2,246	R 1,145	R 33,964	R 6,846	R 2,639	R 43,449	R 19,899	R 107,645	3,389	58	R 130,991	R 3.76	R 2.75
May	R 40,842	R 2,263	R 1,156	R 34,755	R 6,864	R 2,642	R 44,261	R 20,657	R 109,541	3,389	58	R 133,645	R 3.83	R 2.75
June	R 41,330	R 2,248	R 1,152	R 35,251	R 6,839	R 2,640	R 44,730	R 20,903	R 110,440	3,329	58	R 134,730	R 3.83	R 2.74
July	R 41,881	R 2,253	R 1,156	R 35,804	R 6,846	R 2,640	R 45,290	R 21,395	R 111,696	3,328	57	R 136,476	R 3.85	R 2.74
August	R 42,321	R 2,250	R 1,161	R 36,242	R 6,848	R 2,642	R 45,732	R 21,723	R 112,872	3,288	57	R 137,940	3.86	R 2.74
September	R 42,776	R 2,365	R 1,156	R 36,656	R 6,999	R 2,642	R 46,297	R 22,189	R 112,440	3,536	57	R 138,222	3.88	R 2.71
October	R 43,628	R 2,360	R 1,157	R 37,348	R 7,148	R 2,649	R 47,145	R 24,381	R 114,656	3,533	57	R 142,627	4.17	R 2.72
November	R 44,210	R 2,345	R 1,154	R 37,910	R 7,153	R 2,646	R 47,709	R 23,451	R 115,335	3,526	56	R 142,368	3.98	R 2.70
December	R 45,139	R 2,344	R 1,156	R 38,839	R 7,157	R 2,643	R 48,639	R 23,982	R 117,316	3,521	56	R 144,875	R 3.99	R 2.70
2022 January	R 45,226	2,342	R 1,149	R 41,289	R 7,216	R 212	R 48,717	R 24,222	R 117,445	3,384	53	R 145,104	R 4.00	R 2.70
February	R 44,788	R 2,346	R 1,149	R 40,779	R 7,304	R 200	R 48,283	R 24,704	R 116,401	3,380	51	R 144,536	4.03	R 2.70
March	R 45,160	R 2,348	R 1,153	R 41,116	R 7,343	R 202	R 48,661	R 25,240	R 117,513	3,285	51	R 146,089	4.06	R 2.71
April	R 45,936	R 2,365	R 1,163	R 41,871	R 7,390	R 203	R 49,464	R 25,736	R 119,698	3,155	51	R 148,640	4.07	R 2.71
May	R 46,899	R 2,367	R 1,172	R 42,578	R 7,655	R 205	R 50,438	R 26,432	R 121,988	3,157	51	R 151,628	4.11	R 2.71
June	R 47,661	R 2,355	R 1,180	R 43,294	R 7,694	R 208	R 51,196	R 27,005	R 123,667	3,154	51	R 153,877	R 4.17	R 2.70
July	R 48,407	R 2,357	R 1,184	R 44,013	R 7,714	R 221	R 51,948	R 27,551	R 125,058	3,122	46	R 155,777	4.18	R 2.70
August	R 49,318	R 2,361	R 1,189	R 44,814	R 7,820	R 234	R 52,868	R 28,018	R 126,710	R 3,088	46	R 157,862	R 4.18	R 2.68
September	R 49,406	R 2,445	R 1,192	R 44,941	R 7,872	R 230	R 53,043	R 26,817	R 128,377	R 3,034	45	R 158,273	3.97	R 2.71
October	R 49,877	R 2,474	R 1,187	R 45,360	R 7,947	R 231	R 53,538	R 27,429	R 128,836	R 3,028	45	R 159,338	3.99	R 2.70
November	R 50,323	R 2,482	R 1,184	R 45,805	R 7,964	R 220	R 53,989	R 27,801	R 129,982	R 3,027	45	R 160,855	4.01	R 2.70
December	R 51,306	R 2,533	R 1,176	R 46,823	R 7,980	R 212	R 55,015	R 29,023	R 131,850	R 3,135	45	R 164,053	4.09	R 2.69
2023 January	R 51,563	R 2,498	R 1,163	R 47,154	R 7,870	R 200	R 55,224	R 29,446	R 130,507	R 3,095	39	R 163,087	4.08	R 2.66
February	R 52,401	R 2,452	R 924	R 47,760	R 7,824	R 193	R 55,777	R 29,959	R 130,328	R 3,043	36	R 163,366	R 4.08	R 2.64
March	R 53,204	R 2,475	R 923	R 48,499	R 7,920	R 183	R 56,602	R 30,964	R 131,919	R 3,040	35	R 165,958	R 4.13	R 2.63
April	R 53,790	R 2,518	R 912	R 49,103	R 7,939	R 178	R 57,220	R 31,455	R 133,090	R 3,033	34	R 167,612	R 4.11	R 2.63
May	R 54,440	R 2,519	R 913	R 49,746	R 7,951	R 175	R 57,872	R 32,075	R 134,703	R 3,040	33	R 169,851	R 4.11	R 2.64
June	R 55,133	R 2,530	R 903	R 50,432	R 7,973	R 161	R 58,566	R 33,081	R 134,945	R 3,022	30	R 171,078	R 4.15	R 2.61
July	R 55,633	R 2,525	R 899	R 50,942	R 7,957	R 158	R 59,057	R 33,809	R 135,520	R 3,134	29	R 172,492	R 4.16	R 2.61
August	R 56,094	R 2,516	R 891	R 51,487	R 7,904	R 110	R 59,501	R 34,340	R 136,449	R 3,129	29	R 173,947	R 4.17	R 2.61
September	55,665	2,513	891	51,058	7,903	108	59,069	34,874	129,764	3,129	29	167,796	4.19	2.51

^a Includes all of the electric vehicle charging ports located at a single location regardless of who is able to access the ports, what charging network they belong to, or the level of charging. Ports are determined to be at the same location based on latitude, longitude, and AFDC equipment ID number. Does not include data on charging infrastructure at single-family residential locations.

^b Networked ports are connected to the internet, can communicate with their EV service provider, have a dedicated platform that allows users to find the chargers, and pay to charge. The service provider can manage who can access the port and the cost of charging. The charging infrastructure may also be able to communicate directly with drivers, other charging infrastructure, and utilities.

^c Non-networked ports are not connected to the internet and provide only basic charging capabilities.

^d Direct current.

^e Calculated as the total number of DC fast charging ports divided by the total

number of locations with DC fast charging ports (available in the microdata file). Includes only locations with DC fast charging ports.

^f Calculated as the total number of Level 2 charging ports divided by the total number of locations with Level 2 charging ports (available in the microdata file). Includes only locations with Level 2 charging ports.

R=Revised.

Notes: • See "Appendix F Methodology and Sources" and end of section. • See "Electric Vehicle" in Glossary. • Data are at end of period. • 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 national and state annual and monthly data beginning in June 2015 and monthly microdata file.

Sources: See end of section.

Appendix F Methodology and Sources

Data Source

The U.S. Energy Information Administration (EIA) receives administrative electric vehicle (EV) charging infrastructure data from the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy Alternative Fuels Data Center (AFDC)¹. AFDC collects and publishes location-level charging infrastructure data that allows alternative fuel vehicle owners to find fueling and charging stations near them or along a route. AFDC receives daily updates from many of the networked providers². Networked providers that do not provide daily updates provide regular updates. AFDC contacts non-networked³ providers every two years to determine if the stations are still in service⁴.

Historical (June 2015 – December 2021)

The National Renewable Energy Laboratory (NREL), which manages the AFDC, provided the historical data to EIA. The data began in June 2015 and went through December 2021, however not all months were available. The table below shows the months of data EIA received. For the months that are blacked out, EIA did not receive any data.

2015	2016	2017	2018	2019	2020	2021
			January	January	January	January
	February	February	February	February	February	February
	March	March	March	March	March	March
	April	April	April	April	April	April
		May		May	May	
June	June	June	June	June	June	June
	July		July	July	July	July
August		August	August	August	August	August
September	September	September	September	September	September	September
		October	October	October	October	October
November	November	November	November	November		November
		December	December	December	December	December

Monthly updates (January 2022 – present)

Beginning in January 2022, EIA began pulling the data through the AFDC API⁵ on the last business day of every month.

Data

EIA uses multiple variables from the AFDC database to develop the MER PDF, excel, CSV, microdata and monthly state data output files. AFDC variables of interest include:

- ... Location information – station name, ID, fuel type code, open date, access code, status code, facility type, EV renewable source, EV pricing
- ... Physical location information – latitude, longitude, street address, city, state, zip, intersection/directions
- ... Charging port information – EV network, EV connector types, EV DC fast num, EV level 1 EVSE num, EV level 2 EVSE num, EV other EVSE

Historical data series included variables with different names but with the same data. The charging port information was structured differently in historical datasets. Work was completed to convert the data in the historical datasets into the same format as the current datasets.

Data quality

The EV charging infrastructure data are administrative data and do not have the same level of statistical accuracy as data published from many of EIA's surveys.

Coverage

The data do not represent the entire population or a statistically representative subset of the population of EV charging infrastructure. Instead, the data represent the known to NREL EV charging infrastructure at the time of the data pull. NREL works with EV charging network providers to receive daily updates⁶. The accuracy and timeliness of the networked providers charging infrastructure will continue to improve as additional networked providers convert to providing daily updates to NREL. There are also non-networked public and private EV chargers, and it is harder to track when these ports become available for use or are decommissioned. These challenges result in less EV charging infrastructure reported than exists, but it is unknown how many additional EV charger locations and ports exist. It is likely that the networked EV charging infrastructure are more accurately represented than the non-networked charging infrastructure. It is also likely that the public charging infrastructure is more accurately represented than the private charging infrastructure due to a lack of incentive for the owners of private charging infrastructure to make the existence of their ports known to the public.

Data Cleaning

EIA has not verified the accuracy of the administrative data and only conducted minimal cleaning of the data. The cleaning EIA did complete included:

- ... Fixing latitudes and longitudes if they equaled 0, 0 or 1, -1, to facility creation of location ID
- ... Normalizing the naming convention of several variables including the electric network providers and the facility type
- ... Removing charging infrastructure outside of the United States, that had not opened yet, and non-EV locations

Breaks in series

There was a break in series in the number of charging locations between December 2020 and January 2021 because of a definitional change to align with the international standard – Open Charge Point Interface (OCPI)⁷.

Duplicate observations

It is likely that duplicate observations exist. Duplicate observations may be introduced multiple ways:

- ... Multiple people adding the same charging port
- ... Updates to the networked providers database creating the appearance of a new charging port
- ... Changes in the underlying data structure of the historical data series creating the appearance of new ports
- ... EIA's imputation of number of charging ports to the date the charging port opened, not the date it first appeared

Because EIA cannot verify if these are duplicates, the details of the possibly duplicated charging infrastructure remain in the database.

Creation of the location and port id

In most historical datasets, the AFDC data included an equipment ID variable that is helpful to identify EV charging locations. However, this variable was inadequate to track EV charging location overtime for a couple reasons:

1. Between February 2017 and January 2018, 10 monthly datasets are missing equipment IDs
2. Ports located at the same location could have different equipment IDs for various reasons:

- a. Co-located public and private ports have different equipment IDs
- b. Co-located networked and non-networked ports have different equipment IDs
- c. Ports that either came online or were added to the AFDC database at different times have different equipment IDs
- d. Changes in underlying systems could cause an already established port to receive a new equipment ID

For these reasons, EIA created a new ID variable called the “Location ID” using latitude and longitude pairings and equipment ID. It is common for a location ID to be associated with multiple latitudes and longitudes pairings as well as multiple equipment IDs due to responses to these variables changing in the historical datasets.

To allow for variation across ports at a location, EIA created a “Port ID” variable using access group (public versus private access), network provider, port level (DC fast charger, Level 2, Level 1, or Legacy), and equipment ID. Every unique combination of the previously mentioned variables received a different Port ID.

Imputation

EIA imputes all missing and incomplete data. Historical datasets had missing subsets of data, so EIA had to fill in the missing data. The missing subsets varied from large (all private charging ports) to small (ports missing for one month and then reappearing during the next month). EIA filled in the missing month with the port count data from the following month.

EIA also imputed data in months that we did not receive any data from NREL. EIA imputed the data using data from the first month following the missing month if the location open date was during the missing month or prior. We did not extend the life of any ports if the last month they appeared in was the month prior to the missing month. We assumed the last month in service was the last month the port appeared, not during the missing month.

In addition, we imputed to remove errors that only appear in one month. For each historical month, EIA compared the previous and following months. If those months were equal but the middle month was different, then EIA updated the middle month to match the other months. New EV ports require a long time lag to install, so it is unlikely that the number of ports would change for a single month then return to their original number.

It is common for EV infrastructure to be added to the AFDC website months or years after the location came online. Because of this, EIA also backfilled EV charging port data to cover all months since the port was available, not only when it appeared in the AFDC database. The MER conducts this backfill imputation twice per year, in the May and October MERs, to correspond with the release of data in the State Energy Data System (SEDS)⁸.

Available data

In addition to the monthly and annual national data, monthly state level data and a microdata file are also available at <http://www.eia.gov/totalenergy/data/monthly/#appendices>.

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1. Alternative Fuels Data Center: <https://afdc.energy.gov/stations/#/find/nearest>
 2. Networked ports are connected to the internet, can communicate with their EV service provider, have a dedicated platform that allows users to find the chargers and pay to charge. The service provider can manage who can access the station and the cost of charging. The charging infrastructure may also be able to communicate directly with drivers, other charging infrastructure, and utilities.
 3. Non-networked ports are not connected to the internet and provide only basic charging capabilities.
 4. Details on the EV charging infrastructure data received by AFDC:
https://afdc.energy.gov/stations/#/find/nearest?show_about=true
 5. AFDC API details: <https://developer.nrel.gov/docs/transportation/alt-fuel-stations-v1/all/>
 6. For more details of the networked providers NREL is currently receiving daily updates from see:
https://afdc.energy.gov/stations/#/find/nearest?show_about=true
 7. For more details on the OCIP see https://afdc.energy.gov/stations/#/find/nearest?show_about=true
 8. For more information on SEDS see <https://www.eia.gov/state/seds/>

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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, reformat, 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.

Battery electric vehicle (BEV): An all-electric vehicle that receives power by plugging into an electric power source and storing the power in a battery pack. BEVs do not use any petroleum-based or other liquid- or gas-based fuel during operation and do not produce tailpipe emissions.

Biodiesel: Renewable fuel consisting of mono alkyl esters (long chain fatty acids) that are produced through the conversion of animal fats, vegetable oils, and recycled grease feedstocks (transesterification). Biodiesel is typically blended with **petroleum-based diesel fuel** in concentrations of 2% to 20% biodiesel, or B2 to B20.

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**.

Biogas: A mixture of methane and other gases produced by decomposing matter in an oxygen-free (anaerobic) environment with the assistance of microbes. Biogas is typically produced at landfills and anaerobic digesters.

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 synfuel**.

Coal coke: A solid carbonaceous residue derived from low-ash, low-sulfur **bituminous coal** from which the volatile constituents are driven off by baking in an oven at temperatures as high as 2,000 degrees Fahrenheit so that the fixed carbon and residual ash are fused together. Coke is used as a fuel and as a reducing agent in smelting iron ore in a blast furnace. Coke from coal is grey, hard, and porous and has a heating value of 24.8 million Btu per ton.

Coal stocks: Coal quantities that are held in storage for future use and disposition. **Note:** When coal data are collected for a particular reporting period (month, quarter, or year), coal stocks are commonly measured as of the last day of the period.

Coal synfuel: Coal-based solid fuel that has been processed by a **coal synfuel plant**; and coal-based fuels such as briquettes, pellets, or extrusions, which are formed from fresh or recycled coal and binding materials.

Coal synfuel plant: A plant engaged in the chemical transformation of **coal** into **coal synfuel**.

Coke: See **Coal coke** and **Petroleum coke**.

Coking coal: Bituminous coal suitable for making coke. See **Coal coke**.

Combined cycle: An electric generating technology in which electricity is produced from otherwise lost waste heat exiting from one or more gas (combustion) turbines. The exiting heat is routed to a conventional boiler or to a heat recovery steam generator for utilization by a steam turbine in the production of electricity. This process increases the efficiency of the electric generating unit.

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 fuel ethanol: Fuel ethanol produced by fermenting cornstarch. Fuel ethanol is typically blended with motor gasoline as an oxygenate or octane enhancer in concentrations of 10% ethanol, but it can be blended up to a 15% concentration in some markets for vehicle models manufactured to use E15. In higher concentrations of 51%–83% fuel ethanol, it is used in alternative or flex-fuel vehicles.

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**.

Direct-use energy: Energy, usually in the form of heat, used by an onsite application.

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 **combined-heat-and-power (CHP) plant**, **electricity-only plant**, **electric utility**, and **independent power producer**. The electric power sector consumes **primary energy** to generate electricity and heat (forms of secondary energy). Electricity is sold to the four **end-use sectors** (residential, commercial, industrial, and transportation), stored for future use, and exported to other countries.

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**.

Electric vehicle (EV): A general term for any on-road licensed vehicle that can plug into an electric power source and uses electric power to move. EVs plug into a source of electricity and store power in a battery pack for all or part of their power needs. Includes **Battery electric vehicles (BEVs)** and **Plug-in hybrid vehicles (PHEVs)**. Can also be referred to as Plug-in Electric Vehicles (PEV).

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 sales to ultimate customers: Electricity sales that are consumed by the customer and not available for resale. Includes electric sales to end users by third-party owners of behind-the-meter PV solar systems.

End-use energy consumption: End-use sector (residential, commercial, industrial, and transportation) consumption of primary energy plus electricity sales to ultimate customers. The energy associated with electrical system energy losses is not included.

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-consuming sectors: The **residential, commercial, industrial, transportation, and electric power** sectors of the economy.

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 cell electric vehicle (FCEV): An electric vehicle that generates on-board electricity with a fuel cell powered by hydrogen rather than relying on electricity from a high capacity battery.

Fuel ethanol: Ethyl alcohol for fuel use that is produced by the fermentation of sugars. Fuel ethanol is denatured with petroleum products (for example, natural gasoline) to render it unfit for human consumption.

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 turbine plant: A plant in which the prime mover is a gas turbine. A gas turbine consists typically of an axial-flow air compressor and one or more combustion chambers where liquid or gaseous fuel is burned and the hot gases are passed to the turbine and where the hot gases expand drive the generator and are then used to run the compressor.

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.

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.

Internal combustion engine (ICE): Generates mechanical power by burning a liquid, such as gasoline, diesel, or biofuels, or a gaseous fuel, such as compressed natural gas.

Internal combustion plant: A plant in which the prime mover is an **internal combustion engine**. An **internal combustion engine** has one or more cylinders in which the process of combustion takes place, converting energy released from the rapid burning of a fuel-air mixture into mechanical energy. Diesel or gas-fired engines are the principal types used in electric plants. The plant is usually operated during periods of high demand for electricity.

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. Sometimes used synonymously with "nonfuel use (of energy)."

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**.

Oil from algae: Oil processed from unicellular and multicellular algae harvested specifically to produce biofuel.

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 fuel alcohol: Alcohols intended for fuel use that are not elsewhere specified.

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.

Plug-in hybrid electric vehicle (PHEV): A vehicle that can both (1) plug into an electric power source and store power in a battery pack and (2) use petroleum-based or other liquid- or gas-based fuel to power an internal combustion engine (ICE).

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**. EIA includes the following in U.S. primary energy consumption: coal; coal coke net imports; **petroleum consumption** (equal to **petroleum products supplied**, excluding **biofuels**); **dry natural gas**—excluding **supplemental gaseous fuels**; **nuclear electricity net generation** (converted to Btu using the average annual **heat rate** of nuclear plants); **conventional hydroelectricity** net generation (converted to Btu using the heat content of electricity); **geothermal** electricity net generation (converted to Btu using the heat content of electricity), geothermal heat pump energy, and geothermal direct-use thermal energy; **solar thermal** and **photovoltaic** electricity net generation (converted to Btu using the heat content of electricity), and solar thermal direct-use energy; **wind** electricity net generation (converted to Btu using the heat content of electricity); **wood and wood-derived fuels**; **biomass waste**; biofuels (**fuel ethanol**, **biodiesel**, **renewable diesel**, and **other biofuels**); losses and co-products from the production of biofuels; electricity net imports (converted to Btu using the electricity heat content of 3,412 Btu per kilowatthour). Primary energy consumption includes all **non-combustion use of fossil fuels**. Primary energy consumption also includes **other energy losses** throughout the energy system. See **Total energy consumption**. Energy sources produced from other energy sources—e.g. coal coke from coal—are included in primary energy consumption only if their energy content has not already been included as part of the original energy source. As a result, U.S. primary energy consumption does include net imports of coal coke, but it does not include the coal coke produced from domestic coal.

Primary energy production: Production of **primary energy**. The U.S. Energy Information Administration includes the following in U.S. primary energy production: **coal** production, **waste coal** supplied, and coal refuse recovery; **crude oil** and **lease condensate** production; **natural gas plant liquids** production; **dry natural gas**—excluding **supplemental gaseous fuels**—production; **nuclear electricity net generation** (converted to Btu using the nuclear plants **heat rate**); **conventional hydroelectricity** net generation (converted to Btu using the heat content of electricity); **geothermal** electricity net generation (converted to Btu using the heat content of electricity), and geothermal heat pump energy and geothermal direct-use energy; **solar thermal** and **photovoltaic** electricity net generation (converted to Btu using the heat content of electricity), and solar thermal direct-use energy; **wind** electricity net generation (converted to Btu using the heat content of electricity); **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: Renewable fuel consisting of hydrocarbon molecules, produced through the hydrotreating of animal fats, vegetable oils, and recycled grease feedstocks. It is considered a drop-in replacement to **petroleum-based diesel fuel** (for example, it can be used in diesel engines without modification). Renewable diesel fuel reported on the EIA-819 is produced at dedicated biorefineries or co-processed at petroleum refineries

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 direct-use energy: Heat from the sun used by an onsite application, such as a solar thermal water heating system.

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 sales to ultimate customers** 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.

Watthour (Wh): The electrical energy unit of measure equal to one watt of power supplied to, or taken from, an electric circuit steadily for one hour.

Wax: A solid or semi-solid material consisting of a mixture of **hydrocarbons** obtained or derived from **petroleum** fractions, or through a Fischer-Tropsch type process, in which the straight-chained paraffin series predominates. This includes all marketable wax, whether crude or refined, with a congealing point (ASTM D 938) between 100 and 200 degrees Fahrenheit and a maximum oil content (ASTM D 3235) of 50 weight percent.

Wellhead price: The value of **crude oil** or **natural gas** at the mouth of the well.

Wind energy: Kinetic energy present in wind motion that can be converted to mechanical energy for driving pumps, mills, and electric power generators.

Wood and wood-derived fuels: Wood and products derived from wood that are used as fuel, including round wood (cord wood), limb wood, wood chips, bark, sawdust, forest residues, charcoal, paper pellets, railroad ties, utility poles, **black liquor**, red liquor, sludge wood, spent sulfite liquor, **densified biomass** (including wood pellets), and other wood- based solids and liquids.

Working gas: The quantity of **natural gas** in the reservoir that is in addition to the cushion or **base gas**. It may or may not be completely withdrawn during any particular withdrawal season. Conditions permitting, the total working capacity could be used more than once during any season. Volumes of working gas are reported in thousand cubic feet at standard temperature and pressure.