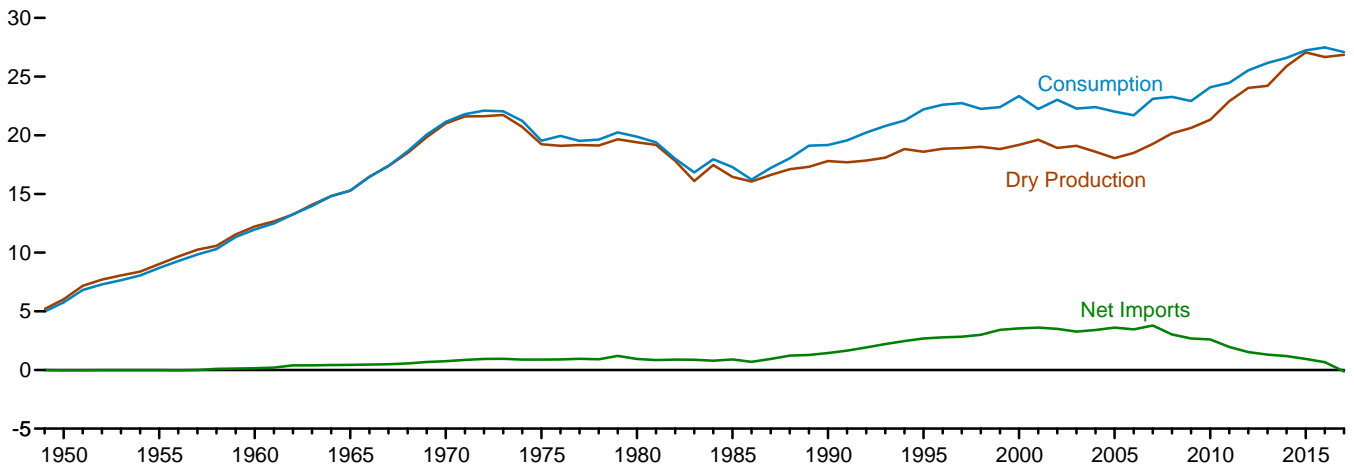


## 4. Natural Gas

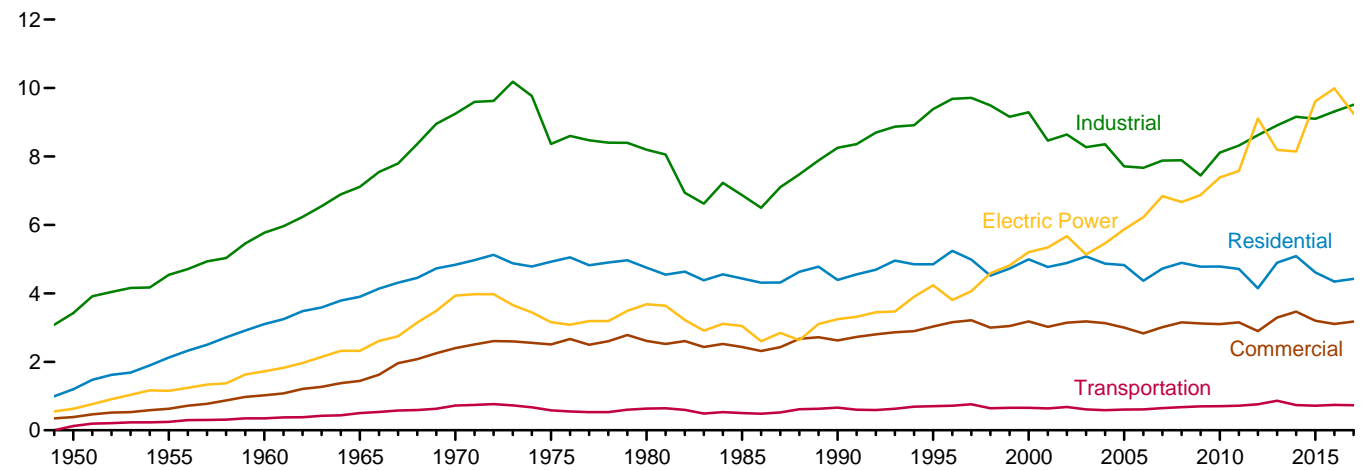
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**Figure 4.1 Natural Gas**  
(Trillion Cubic Feet)

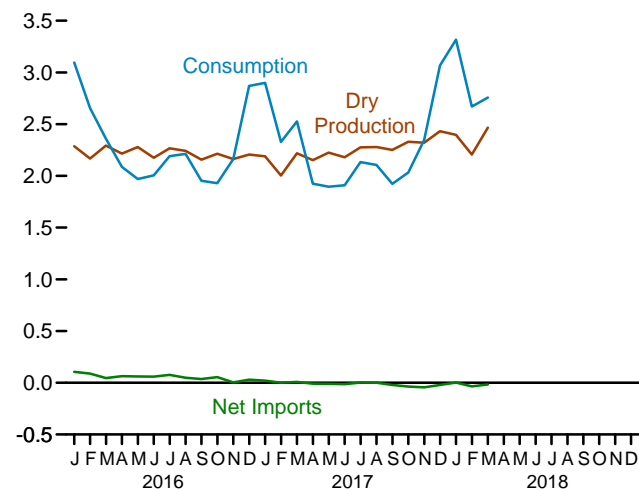
Overview, 1949–2017



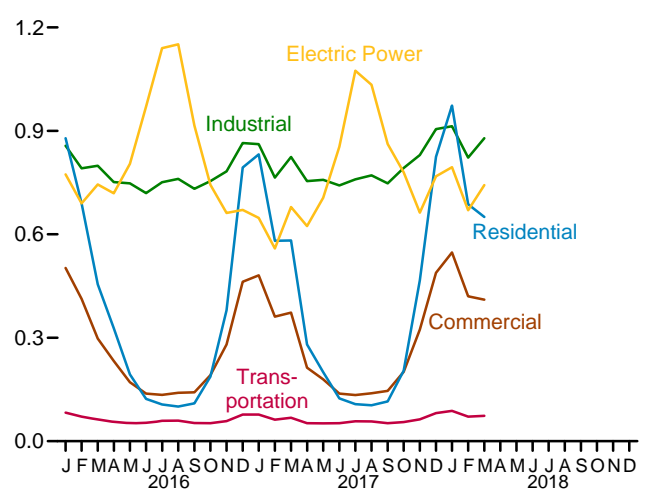
Consumption by Sector, 1949–2017



Overview, Monthly



Consumption by Sector, Monthly



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

**Table 4.1 Natural Gas Overview**  
(Billion Cubic Feet)

	Gross Withdrawals <sup>a</sup>	Marketed Production (Wet) <sup>b</sup>	NGPL Production <sup>c</sup>	Dry Gas Production <sup>d</sup>	Supplemental Gaseous Fuels <sup>e</sup>	Trade			Net Storage Withdrawals <sup>f</sup>	Balancing Item <sup>g</sup>	Consumption <sup>h</sup>
						Imports	Exports	Net Imports			
1950 Total	8,480	6,282	260	6,022	NA	0	26	-26	-54	-175	5,767
1955 Total	11,720	9,405	377	9,029	NA	11	31	-20	-68	-247	8,694
1960 Total	15,088	12,771	543	12,228	NA	156	11	144	-132	-274	11,967
1965 Total	17,963	16,040	753	15,286	NA	456	26	430	-118	-319	15,280
1970 Total	23,786	21,921	906	21,014	NA	821	70	751	-398	-228	21,139
1975 Total	21,104	20,109	872	19,236	NA	953	73	880	-344	-235	19,538
1980 Total	21,870	20,180	777	19,403	155	985	49	936	23	-640	19,877
1985 Total	19,607	17,270	816	16,454	126	950	55	894	235	-428	17,281
1990 Total	21,523	18,594	784	17,810	123	1,532	86	1,447	-513	307	19,174
1995 Total	23,744	19,506	908	18,599	110	2,841	154	2,687	415	396	22,207
2000 Total	24,174	20,198	1,016	19,182	90	3,782	244	3,538	829	-306	23,333
2001 Total	24,501	20,570	954	19,616	86	3,977	373	3,604	-1,166	99	22,239
2002 Total	23,941	19,885	957	18,928	68	4,015	516	3,499	467	65	23,027
2003 Total	24,119	19,974	876	19,099	68	3,944	680	3,264	-197	44	22,277
2004 Total	23,970	19,517	927	18,591	60	4,259	854	3,404	-114	461	22,403
2005 Total	23,457	18,927	876	18,051	64	4,341	729	3,612	52	236	22,014
2006 Total	23,535	19,410	906	18,504	66	4,186	724	3,462	-436	103	21,699
2007 Total	24,664	20,196	930	19,266	63	4,608	822	3,785	192	-203	23,104
2008 Total	25,636	21,112	953	20,159	61	3,984	963	3,021	34	2	23,277
2009 Total	26,057	21,648	1,024	20,624	65	3,751	1,072	2,679	-355	-103	22,910
2010 Total	26,816	22,382	1,066	21,316	65	3,741	1,137	2,604	-13	115	24,087
2011 Total	28,479	24,036	1,134	22,902	60	3,469	1,506	1,963	-354	-94	24,477
2012 Total	29,542	25,283	1,250	24,033	61	3,138	1,619	1,519	-9	-66	25,538
2013 Total	29,523	25,562	1,357	24,206	55	2,883	1,572	1,311	546	38	26,155
2014 Total	31,405	27,498	1,608	25,890	60	2,695	1,514	1,181	-254	-283	26,593
2015 Total	32,915	28,772	1,707	27,065	59	2,718	1,784	935	-547	-268	27,244
2016 January	2,828	2,443	156	2,287	5	274	169	105	741	-43	3,095
February	2,656	2,315	148	2,167	5	252	163	89	411	-17	2,655
March	2,828	2,449	156	2,293	5	241	195	46	53	-37	2,359
April	2,681	2,366	151	2,215	5	241	178	63	-171	-26	2,087
May	2,787	2,433	155	2,278	5	248	188	60	-337	-36	1,970
June	2,636	2,323	148	2,175	5	242	183	59	-229	-5	2,004
July	2,730	2,421	154	2,266	5	265	189	76	-139	-17	2,191
August	2,726	2,395	153	2,242	5	262	214	48	-130	48	2,213
September	2,630	2,304	147	2,157	5	238	202	37	-270	24	1,952
October	2,718	2,365	151	2,214	5	231	176	55	-317	-28	1,929
November	2,673	2,310	147	2,162	5	231	228	3	39	-46	2,163
December	2,742	2,356	150	2,206	5	281	251	30	688	-59	2,869
Total	32,636	28,479	1,817	26,663	57	3,006	2,335	671	339	-242	27,487
2017 January	E 2,727	E 2,339	150	E 2,189	5	292	272	20	675	10	2,899
February	E 2,504	E 2,148	145	E 2,003	5	255	255	(s)	285	36	2,328
March	E 2,778	E 2,381	163	E 2,219	5	281	272	9	275	18	2,526
April	E 2,682	E 2,308	157	E 2,151	5	238	247	-9	-230	7	1,924
May	E 2,770	E 2,391	166	E 2,225	3	244	254	-10	-341	18	1,896
June	E 2,682	E 2,341	162	E 2,179	4	240	253	-14	-281	21	1,910
July	E 2,750	E 2,443	168	E 2,276	5	251	248	2	-150	(s)	2,133
August	E 2,764	E 2,444	164	E 2,279	5	248	247	1	-196	16	2,105
September	E 2,757	E 2,408	158	E 2,250	5	229	250	-21	-317	5	1,923
October	E 2,888	E 2,507	177	E 2,329	4	244	281	-37	-247	-16	2,032
November	E 2,875	E 2,497	176	E 2,321	6	R 244	288	-45	85	R -21	2,347
December	E 3,001	E 2,607	175	E 2,432	5	R 278	299	R -22	694	R -42	3,068
Total	E 33,178	E 28,814	1,960	E 26,854	56	R 3,042	3,168	R -126	253	R 52	R 27,090
2018 January	E 2,958	E 2,566	170	E 2,396	5	304	301	3	896	17	3,317
February	RE 2,725	RE 2,368	161	RE 2,206	5	241	276	-36	467	R 28	R 2,671
March	E 3,048	E 2,653	186	E 2,467	5	270	287	-17	285	17	2,756
3-Month Total	E 8,731	E 7,586	517	E 7,069	16	814	865	-50	1,648	62	8,744
2017 3-Month Total	E 8,008	E 6,868	457	E 6,411	14	827	799	28	1,235	64	7,753
2016 3-Month Total	8,313	7,206	460	6,747	14	766	526	240	1,205	-97	8,109

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

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

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

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

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

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

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

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

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

<sup>j</sup> For 1989–1992, a small amount of consumption at independent power producers may be counted in both "Other Industrial" and "Electric Power Sector" on

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

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

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

Sources: • Imports and Exports: Table 4.2. • Consumption: Table 4.3. • Balancing Item: Calculated as consumption minus dry gas production, supplemental gaseous fuels, net imports, and net storage withdrawals. • All Other Data: 1949–2014—U.S. Energy Information Administration (EIA), *Natural Gas Annual*, annual reports. 2015 forward—EIA, *Natural Gas Monthly*, May 2018, Table 1.

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

	Imports									Exports <sup>a</sup>				
	Algeria <sup>b</sup>	Canada <sup>c</sup>	Egypt <sup>b</sup>	Mexico <sup>c</sup>	Nigeria <sup>b</sup>	Qatar <sup>b</sup>	Trinidad and Tobago <sup>b</sup>	Other <sup>b,d</sup>	Total	Canada <sup>c</sup>	Japan <sup>b</sup>	Mexico <sup>c</sup>	Other <sup>b,e</sup>	Total
1950 Total	0	0	0	0	0	0	0	0	0	3	0	23	0	26
1955 Total	0	11	0	(s)	0	0	0	0	11	11	0	20	0	31
1960 Total	0	109	0	47	0	0	0	0	156	6	0	6	0	11
1965 Total	0	405	0	52	0	0	0	0	456	18	0	8	0	26
1970 Total	1	779	0	(s)	0	0	0	0	821	11	44	15	0	70
1975 Total	5	948	0	0	0	0	0	0	953	10	53	9	0	73
1980 Total	86	797	0	102	0	0	0	0	985	(s)	45	4	0	49
1985 Total	24	926	0	0	0	0	0	0	950	(s)	53	2	0	55
1990 Total	84	1,448	0	0	0	0	0	0	1,532	17	53	16	0	86
1995 Total	18	2,816	0	7	0	0	0	0	2,841	28	65	61	0	154
2000 Total	47	3,544	0	12	13	46	99	21	3,782	73	66	106	0	244
2001 Total	65	3,729	0	10	38	23	98	14	3,977	167	66	141	0	373
2002 Total	27	3,785	0	2	8	35	151	8	4,015	189	63	263	0	516
2003 Total	53	3,437	0	0	50	14	378	11	3,944	271	66	343	0	680
2004 Total	120	3,607	0	0	12	12	462	46	4,259	395	62	397	0	854
2005 Total	97	3,700	73	9	8	3	439	11	4,341	358	65	305	0	729
2006 Total	17	3,590	120	13	57	0	389	0	4,186	341	61	322	0	724
2007 Total	77	3,783	115	54	95	18	448	18	4,608	482	47	292	2	822
2008 Total	0	3,589	55	43	12	3	267	15	3,984	559	39	365	0	963
2009 Total	0	3,271	160	28	13	13	236	29	3,751	701	31	338	3	1,072
2010 Total	0	3,280	73	30	42	46	190	81	3,741	739	33	333	32	1,137
2011 Total	0	3,117	35	3	2	91	129	92	3,469	937	18	499	52	1,506
2012 Total	0	2,963	3	(s)	0	34	112	26	3,138	971	14	620	14	1,619
2013 Total	0	2,786	0	1	3	7	70	17	2,883	911	0	661	0	1,572
2014 Total	0	2,635	0	1	0	0	43	16	2,695	770	13	729	3	1,514
2015 Total	0	2,626	0	1	0	0	71	20	2,718	701	8	1,054	20	1,784
2016 January	0	262	0	(s)	0	0	12	0	274	70	0	99	0	169
February	0	242	0	(s)	0	0	10	0	252	62	0	97	3	163
March	0	232	0	(s)	0	0	9	0	241	81	0	103	10	195
April	0	237	0	(s)	0	0	5	0	241	63	0	105	10	178
May	0	243	0	(s)	0	0	5	0	248	63	0	116	10	188
June	0	234	0	(s)	0	0	8	0	242	51	0	116	16	183
July	0	259	0	(s)	0	0	6	0	265	50	0	123	16	189
August	0	254	0	(s)	0	0	8	0	262	55	0	136	23	214
September	0	236	0	(s)	0	0	3	0	238	61	0	127	13	202
October	0	226	0	(s)	0	0	6	0	231	43	0	130	3	176
November	0	222	0	(s)	0	0	6	3	231	75	0	134	20	228
December	0	272	0	(s)	0	0	9	0	281	97	11	119	23	251
Total	0	2,918	0	1	0	0	84	3	3,006	771	11	1,405	148	2,335
2017 January	0	279	0	(s)	3	0	10	0	292	99	11	136	27	272
February	0	246	0	(s)	0	0	8	0	255	88	4	130	34	255
March	0	276	0	(s)	0	0	5	0	281	100	0	140	33	272
April	0	233	0	(s)	0	0	5	0	238	81	7	130	29	247
May	0	239	0	(s)	0	0	5	0	244	64	4	139	47	254
June	0	234	0	(s)	0	0	5	0	240	67	4	159	24	253
July	0	245	0	(s)	0	0	5	0	251	60	0	150	39	248
August	0	240	0	(s)	0	0	8	0	248	66	4	142	35	247
September	0	227	0	(s)	0	0	2	0	229	70	0	136	44	250
October	0	242	0	(s)	0	0	2	0	244	68	7	140	66	281
November	0	237	0	(s)	0	0	6	0	244	74	0	145	69	288
December	0	R 266	0	1	3	0	8	0	R 278	81	14	139	65	299
Total	0	R 2,964	0	1	6	0	70	0	R 3,042	917	53	1,684	513	3,168
2018 January	0	287	0	(s)	0	0	14	3	304	92	4	147	58	301
February	0	233	0	1	0	0	7	0	241	77	7	141	52	276
March	0	264	0	(s)	0	0	4	3	270	67	0	158	63	287
3-Month Total	0	784	0	1	0	0	24	6	814	236	11	446	173	865
2017 3-Month Total	0	800	0	0	3	0	24	0	827	286	14	405	93	799
2016 3-Month Total	0	736	0	0	0	0	30	0	766	213	0	300	13	526

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

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

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

<sup>d</sup> Australia in 1997–2001 and 2004; Brunei in 2002; Equatorial Guinea in 2007; Indonesia in 1986 and 2000; Malaysia in 1999 and 2002–2005; Norway in 2008–2016; Oman in 2000–2005; Peru in 2010 and 2011; United Arab Emirates in 1996–2000; United Kingdom in 2018; Yemen in 2010–2015; and Other (unassigned) in 2004–2015.

<sup>e</sup> Argentina in 2016, 2017 and 2018; Barbados in 2016, 2017 and 2018; Brazil in 2010–2012, and 2014–2017; Chile in 2011, 2016, 2017 and 2018; China in 2011, 2016, 2017 and 2018; Dominican Republic in 2016 and 2017; Egypt in 2015–2018; India in 2010–2012, 2016, 2017 and 2018; Italy in 2016 and 2017; Jordan in 2016 and 2017; Kuwait in 2016 and 2017; Lithuania in 2017; Malta in 2017; Netherlands in 2017; Pakistan in 2017 and 2018; Poland in 2017; Portugal in 2012, 2016, 2017 and 2018; Russia in 2007; South Korea in 2009–2011, 2016, 2017 and 2018; Spain

in 2010–2011, 2016, and 2017; Taiwan in 2015 and 2017; Thailand in 2017; Turkey in 2015–2018; United Arab Emirates in 2016 and 2017; and United Kingdom in 2010 and 2011 and 2017.

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

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

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

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

Sources: • 1949–1954: U.S. Energy Information Administration (EIA) estimates based on Bureau of Mines, Minerals Yearbook, "Natural Gas" chapter. • 1955–1971: Federal Power Commission data. • 1972–1987: EIA, Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas." • 1988–2014: EIA, *Natural Gas Annual*, annual reports. • 2015 forward: EIA, *Natural Gas Monthly*, May 2018, Tables 4 and 5; and U.S. Department of Energy, Office of Fossil Energy, "Natural Gas Imports and Exports."

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

	End-Use Sectors										Electric Power Sector <sup>f,g</sup>	Total
	Residential	Commercial <sup>a</sup>	Lease and Plant Fuel	Industrial			Transportation					
				Other Industrial			Pipelines <sup>d</sup> and Distribution <sup>e</sup>	Vehicle Fuel	Total			
				CHP <sup>b</sup>	Non-CHP <sup>c</sup>	Total				Total		
1950 Total	1,198	388	928	(h)	2,498	2,498	3,426	126	NA	126	629	5,767
1955 Total	2,124	629	1,131	(h)	3,411	3,411	4,542	245	NA	245	1,153	8,694
1960 Total	3,103	1,020	1,237	(h)	4,535	4,535	5,771	347	NA	347	1,725	11,967
1965 Total	3,903	1,444	1,156	(h)	5,955	5,955	7,112	501	NA	501	2,321	15,280
1970 Total	4,837	2,399	1,399	(h)	7,851	7,851	9,249	722	NA	722	3,932	21,139
1975 Total	4,924	2,508	1,396	(h)	6,968	6,968	8,365	583	NA	583	3,158	19,538
1980 Total	4,752	2,611	1,026	(h)	7,172	7,172	8,198	635	NA	635	3,682	19,877
1985 Total	4,433	2,432	966	(h)	5,901	5,901	6,867	504	NA	504	3,044	17,281
1990 Total	4,391	2,623	1,236	1,055	5,963	7,018	8,255	660	(s)	660	3,245	19,174
1995 Total	4,850	3,031	1,220	1,258	6,906	8,164	9,384	700	5	705	4,237	22,207
2000 Total	4,996	3,182	1,151	1,386	6,757	8,142	9,293	642	13	655	5,206	23,333
2001 Total	4,771	3,023	1,119	1,310	6,035	7,344	8,463	625	15	640	5,342	22,239
2002 Total	4,889	3,144	1,113	1,240	6,287	7,527	8,640	667	15	682	5,672	23,027
2003 Total	5,079	3,179	1,122	1,144	6,007	7,150	8,273	591	18	610	5,135	22,277
2004 Total	4,869	3,129	1,098	1,191	6,066	7,256	8,354	566	21	587	5,464	22,403
2005 Total	4,827	2,999	1,112	1,084	5,518	6,601	7,713	584	23	607	5,869	22,014
2006 Total	4,368	2,832	1,142	1,115	5,412	6,527	7,669	584	24	608	6,222	21,699
2007 Total	4,722	3,013	1,226	1,050	5,604	6,655	7,881	621	25	646	6,841	23,104
2008 Total	4,892	3,153	1,220	955	5,715	6,670	7,890	648	26	674	6,668	23,277
2009 Total	4,779	3,119	1,275	990	5,178	6,167	7,443	670	27	697	6,873	22,910
2010 Total	4,782	3,103	1,286	1,029	5,797	6,826	8,112	674	29	703	7,387	24,087
2011 Total	4,714	3,155	1,323	1,063	5,931	6,994	8,317	688	30	718	7,574	24,477
2012 Total	4,150	2,895	1,396	1,149	6,077	7,226	8,622	731	30	761	9,111	25,538
2013 Total	4,897	3,295	1,483	1,170	6,255	7,425	8,909	833	30	863	8,191	26,155
2014 Total	5,087	3,466	1,512	1,145	6,501	7,646	9,158	700	35	735	8,146	26,593
2015 Total	4,613	3,202	1,576	1,222	6,300	7,522	9,098	678	39	718	9,613	27,244
2016 January	879	503	136	103	617	720	857	80	3	83	774	3,095
February	690	413	129	95	567	662	791	68	3	71	690	2,655
March	455	298	137	99	563	662	799	60	3	63	745	2,359
April	328	233	132	95	525	620	752	53	3	56	719	2,087
May	194	171	136	98	515	612	748	49	3	53	804	1,970
June	123	138	130	101	489	590	720	51	3	54	970	2,004
July	106	134	135	107	509	616	751	55	4	59	1,140	2,191
August	100	140	134	108	519	627	761	56	4	60	1,151	2,213
September	110	142	129	101	502	604	732	49	4	53	914	1,915
October	187	191	132	99	523	622	754	48	4	52	744	1,929
November	380	280	129	99	555	654	782	55	4	58	662	2,163
December	794	462	132	104	629	733	865	74	4	77	671	2,869
Total	4,345	3,105	1,590	1,209	6,513	7,722	9,312	697	42	739	9,985	27,487
2017 January	832	481	E 131	107	624	731	861	E 74	E 4	E 77	647	2,899
February	581	361	E 120	97	548	645	765	E 69	E 3	E 62	559	2,328
March	582	373	E 133	103	588	691	824	E 64	E 4	E 68	679	2,526
April	281	213	E 129	98	527	625	754	E 49	E 4	E 52	624	1,924
May	200	179	E 133	99	526	625	758	E 48	E 4	E 52	706	1,896
June	124	138	E 131	100	511	611	742	E 48	E 4	E 52	854	1,910
July	107	134	E 136	107	516	623	759	E 54	E 4	E 58	1,074	2,133
August	104	139	E 136	103	532	635	771	E 53	E 4	E 57	1,034	2,105
September	115	146	E 134	98	515	613	748	E 49	E 4	E 52	862	1,923
October	204	201	E 140	100	552	652	792	E 52	E 4	E 55	780	2,032
November	467	324	E 139	102	589	691	830	E 60	E 4	E 63	663	2,347
December	825	488	E 146	113	646	759	905	E 78	E 4	E 82	768	3,068
Total	4,423	3,177	E 1,609	1,226	6,675	R 7,901	9,510	E 687	E 43	E 731	9,250	R 27,090
2018 January	973	547	E 143	112	658	770	914	E 84	E 4	E 88	795	3,317
February	687	420	E 132	99	591	690	822	E 68	E 3	E 71	670	R 2,671
March	650	411	E 148	104	627	731	879	E 70	E 4	E 74	743	2,756
3-Month Total	2,311	1,378	E 424	316	1,876	2,191	2,615	E 222	E 11	E 233	2,207	8,744
2017 3-Month Total	1,995	1,215	E 383	306	1,761	2,067	2,450	E 197	E 11	E 207	1,885	7,753
2016 3-Month Total	2,023	1,213	402	297	1,747	2,045	2,447	207	10	217	2,209	8,109

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

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

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

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

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

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

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

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

<sup>i</sup> For 1989–1992, a small amount of consumption at independent power producers may be counted in both "Other Industrial" and "Electric Power Sector." See Note 7, "Natural Gas Consumption, 1989–1992," at end of section.

<sup>j</sup> R=Revised. E=Estimate. NA=Not available. (s)=Less than 500 million cubic feet.

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

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

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

Sources: • **Residential, Commercial, Lease and Plant Fuel, Other Industrial Total and Pipelines and Distribution: 1949–2014**—U.S. Energy Information Administration (EIA), *Natural Gas Annual (NGA)*, annual reports and unpublished revisions. **2015 forward**—EIA, *Natural Gas Monthly (NGM)*, May 2018, Table 2. • **Other Industrial CHP:** Table 7.4c. • **Other Industrial Non-CHP:** Calculated as other industrial total minus other industrial CHP. • **Industrial Total:** Calculated as lease and plant fuel plus other industrial total. • **Vehicle Fuel: 1990 and 1991**—EIA, NGA 2000, (November 2001), Table 95. **1992–1998**—EIA, "Alternatives to Traditional Transportation Fuels 1999" (October 1999), Table 10, and "Alternatives to Traditional Transportation Fuels 2003" (February 2004), Table 10. Data for compressed natural gas and liquefied natural gas in gasoline-equivalent gallons were converted to cubic feet by multiplying by the motor gasoline conversion factor (see Table A3) and dividing by the natural gas end-use sectors conversion factor (see Table A4). **1999–2014**—EIA, NGA, annual reports. **2015 forward**—EIA, NGM, May 2018, Table 2. • **Transportation Total:** Calculated as pipelines and distribution plus vehicle fuel. • **Electric Power Sector:** Table 7.4b. • **Total Consumption:** Calculated as the sum of residential, commercial, industrial total, transportation total, and electric power sector.

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

	Natural Gas in Underground Storage, End of Period			Change in Working Gas From Same Period Previous Year		Storage Activity		
	Base Gas	Working Gas	Total <sup>a</sup>	Volume	Percent	Withdrawals	Injections	Net <sup>b,c</sup>
1950 Total	NA	NA	NA	NA	NA	175	230	-54
1955 Total	863	505	1,368	40	8.7	437	505	-68
1960 Total	NA	NA	2,184	NA	NA	713	844	-132
1965 Total	1,848	1,242	3,090	83	7.2	960	1,078	-118
1970 Total	2,326	1,678	4,004	257	18.1	1,459	1,857	-398
1975 Total	3,162	2,212	5,374	162	7.9	1,760	2,104	-344
1980 Total	3,642	2,655	6,297	-99	-3.6	1,910	1,896	14
1985 Total	3,842	2,607	6,448	-270	-9.4	2,359	2,128	231
1990 Total	3,868	3,068	6,936	555	22.1	1,934	2,433	-499
1995 Total	4,349	2,153	6,503	-453	-17.4	2,974	2,566	408
2000 Total	4,352	1,719	6,071	-806	-31.9	3,498	2,684	814
2001 Total	4,301	2,904	7,204	1,185	68.9	2,309	3,464	-1,156
2002 Total	4,340	2,375	6,715	-528	-18.2	3,138	2,670	468
2003 Total	4,303	2,563	6,866	187	7.9	3,099	3,292	-193
2004 Total	4,201	2,696	6,897	133	5.2	3,037	3,150	-113
2005 Total	4,200	2,635	6,835	-61	-2.3	3,057	3,002	55
2006 Total	4,211	3,070	7,281	435	16.5	2,493	2,924	-431
2007 Total	4,234	2,879	7,113	-191	-6.2	3,325	3,133	192
2008 Total	4,232	2,840	7,073	-39	-1.4	3,374	3,340	34
2009 Total	4,277	3,130	7,407	290	10.2	2,966	3,315	-349
2010 Total	4,301	3,111	7,412	-19	-6	3,274	3,291	-17
2011 Total	4,302	3,462	7,764	351	11.3	3,074	3,422	-348
2012 Total	4,372	3,413	7,785	-49	-1.4	2,818	2,825	-7
2013 Total	4,365	2,890	7,255	-523	-15.3	3,702	3,156	546
2014 Total	4,365	3,141	7,506	251	8.7	3,586	3,839	-253
2015 Total	4,372	3,667	8,038	525	16.7	3,100	3,638	-539
2016 January	4,369	2,938	7,307	531	22.1	795	66	729
February	4,369	2,534	6,904	869	52.2	515	111	403
March	4,360	2,486	6,847	1,015	69.0	264	215	49
April	4,364	2,646	7,009	852	47.5	130	294	-164
May	4,366	2,966	7,332	679	29.7	74	402	-329
June	4,369	3,186	7,555	539	20.4	94	316	-222
July	4,369	3,318	7,687	394	13.5	150	283	-133
August	4,369	3,441	7,811	200	6.2	162	285	-124
September	4,369	3,705	8,074	91	2.5	88	351	-262
October	4,371	4,013	8,384	70	1.8	78	387	-308
November	4,372	3,977	8,349	50	1.3	213	178	35
December	4,380	3,297	7,677	-370	-10.1	762	87	676
Total	4,380	3,297	7,677	-370	-10.1	3,325	2,977	348
2017 January	4,378	2,622	7,000	-316	-10.8	776	101	675
February	4,377	2,337	6,715	-197	-7.8	416	131	285
March	4,378	2,063	R 6,440	R -424	-17.0	443	167	275
April	4,379	R 2,291	R 6,670	-354	-13.4	111	341	-230
May	4,385	2,627	R 7,011	R -340	R -11.5	82	423	-341
June	4,354	2,907	7,261	-279	R -8.8	106	387	-281
July	4,356	R 3,054	7,410	-264	R -8.0	160	310	-150
August	4,355	3,250	7,605	R -191	-5.6	160	355	-196
September	4,355	3,567	7,923	-138	-3.7	107	423	-317
October	4,354	3,816	8,170	-196	-4.9	138	385	-247
November	4,353	3,709	8,062	-267	-6.7	288	203	85
December	4,360	3,032	7,392	-265	-8.0	774	80	694
Total	4,360	3,032	7,392	-265	-8.0	3,561	3,307	253
2018 January	4,359	2,138	R 6,497	R -484	-18.5	1,041	145	896
February	4,359	1,670	6,029	-667	R -28.5	610	143	467
March	4,358	1,389	5,747	-673	-32.6	465	180	285
3-Month Total	--	--	--	--	--	2,116	469	1,648
2017 3-Month Total	--	--	--	--	--	1,635	400	1,235
2016 3-Month Total	--	--	--	--	--	1,573	393	1,180

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

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

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

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

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

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

beginning in 1973.

Sources: • **Storage Activity: 1949–1975**—U.S. Energy Information Administration (EIA), *Natural Gas Annual 1994, Volume 2*, Table 9. **1976–1979**—EIA, *Natural Gas Production and Consumption 1979*, Table 1. **1980–1995**—EIA, *Historical Natural Gas Annual 1930 Through 2000*, Table 11. **1996–2014**—EIA, *Natural Gas Monthly (NGM)*, monthly issues. **2015 forward**—EIA, NGM, May 2018, Table 8. • **All Other Data: 1954–1974**—American Gas Association, *Gas Facts*, annual issues. **1975 and 1976**—Federal Energy Administration (FEA), Form FEA-G318-M-0, "Underground Gas Storage Report," and Federal Power Commission (FPC), Form FPC-8, "Underground Gas Storage Report." **1977 and 1978**—EIA, Form FEA-G318-M-0, "Underground Gas Storage Report," and Federal Energy Regulatory Commission (FERC), Form FERC-8, "Underground Gas Storage Report." **1979–1995**—EIA, Form EIA-191, "Underground Gas Storage Report," and FERC, Form FERC-8, "Underground Gas Storage Report." **1996–2014**—EIA, NGA, annual reports. **2015 forward**—EIA, NGM, May 2018, Table 8.

## Natural Gas

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1975	...	6,280	1990	...	7,794	2005	...	8,268
1976	...	6,544	1991	...	7,993	2006	...	8,330
1977	...	6,678	1992	...	7,932	2007	...	8,402
1978	...	6,890	1993	...	7,989	2008	...	8,499
1979	...	6,929	1994	...	8,043	2009	...	8,656
1980	...	7,434	1995	...	7,953	2010	...	8,764
1981	...	7,805	1996	...	7,980	2011	...	8,849
1982	...	7,915	1997	...	8,332	2012	...	8,991
1983	...	7,985	1998	...	8,179	2013	...	9,173
1984	...	8,043	1999	...	8,229	2014	...	9,233
1985	...	8,087	2000	...	8,241	2015	...	9,231
1986	...	8,145	2001	...	8,182	2016	...	9,239
1987	...	8,124	2002	...	8,207	2017	...	<sup>P</sup> 9,264
1988	...	8,124	2003	...	8,206			
1989	...	8,120	2004	...	8,255			

P=Preliminary

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

The final monthly and annual storage and withdrawal data for 1980–2016 include both underground and liquefied natural gas (LNG) storage. Annual data on LNG additions and withdrawals are from Form EIA-176. Monthly data are estimated by computing the ratio of each month's underground storage additions and withdrawals to annual underground storage additions and withdrawals and applying the ratio to the annual LNG data.

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

**Note 6. Natural Gas Consumption.** Natural gas consumption statistics include data for the following: "Residential Sector": residential deliveries; "Commercial Sector": commercial deliveries, including to commercial combined-heat-and-power (CHP) and commercial electricity-only plants; "Industrial Sector": lease and plant fuel use, and other industrial deliveries, including to industrial CHP and industrial electricity-only plants also includes the relatively small amount of natural gas consumption for non-combustion use (see Tables 1.11a and 1.11b); "Transportation Sector": pipelines and distribution use, and vehicle fuel use; and "Electric Power Sector": electric utility and independent power producer use.

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

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

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

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

**Note 9. Natural Gas Imports and Exports.** The United States imports natural gas via pipeline from Canada and Mexico; and imports liquefied natural gas (LNG) via tanker from Algeria, Australia, Brunei, Egypt, Equatorial Guinea, Indonesia, Malaysia, Nigeria, Norway, Oman, Peru, Qatar, Trinidad and Tobago, the United Arab Emirates, and Yemen. In addition, small amounts of LNG arrived from Canada in 1973 (667 million cubic feet), 1977 (572 million cubic feet), 1981 (6 million cubic feet), 2013 (555 million cubic feet), 2014 (132 million cubic feet), 2015 (437 million cubic feet), 2016 (924 million cubic feet), 2017 (1,569 million cubic feet), and 2018 (85 million cubic feet). Also, small amounts of compressed natural gas (CNG) were imported from Canada in 2014 forward. The United States exports natural gas via pipeline to Canada and Mexico; and exports LNG via tanker to Argentina, Barbados, Brazil, Chile, China, Dominican Republic, Egypt, India, Italy, Japan, Jordan, Kuwait, Malta, Pakistan, Portugal, Russia, South Korea, Spain, Taiwan, Thailand, Turkey, United Arab Emirates, and United Kingdom. Also, small amounts of LNG have gone to Mexico since 1998 and to Canada in 2007 and 2012 forward. Small amounts of CNG have been exported to Canada since 2013.

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

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