

Table E7. Natural gas consumption and intensities (in British thermal units [Btu]) by end use, 2018

	Total natural gas consumption (trillion Btu)					Natural gas energy intensity ^a (thousand Btu/square foot in buildings using natural gas for the end use)				
	Total	Space heating	Water heating	Cooking	Other	Total	Space heating	Water heating	Cooking	Other
All buildings	2,300	1,578	230	394	99	34.0	27.2	4.9	14.2	9.1
Building floorspace (square feet)										
1,001 to 5,000	183	106	17	56	3	55.7	37.5	9.3	90.9	13.9
5,001 to 10,000	209	128	14	58	9	40.1	28.5	4.1	52.3	18.2
10,001 to 25,000	320	253	26	36	5	33.6	28.9	4.3	15.5	6.7
25,001 to 50,000	365	275	41	37	13	34.9	30.3	5.7	11.4	8.3
50,001 to 100,000	385	267	48	48	23	32.2	26.2	5.3	10.5	10.3
100,001 to 200,000	321	221	31	52	17	30.5	23.8	3.9	9.2	8.0
200,001 to 500,000	320	221	29	55	15	33.1	27.0	4.2	9.9	7.9
Over 500,000	197	107	24	52	15	27.9	20.4	5.4	11.3	8.9
Principal building activity										
Education	328	259	29	23	16	32.0	28.5	3.4	3.3	7.3
Food sales	48	25	Q	19	Q	71.9	42.6	Q	43.4	Q
Food service	151	27	14	109	Q	153.2	38.4	19.0	121.4	Q
Health care	207	132	28	34	12	61.3	48.4	9.8	17.1	16.1
Inpatient	170	101	25	33	11	80.9	60.5	14.0	17.6	20.7
Outpatient	36	31	3	1	1	28.8	29.2	3.1	9.5	4.6
Lodging	224	66	83	62	13	38.4	17.1	16.9	17.4	12.4
Mercantile	334	192	36	92	13	37.1	22.2	5.6	19.7	10.0
Retail (other than mall)	87	67	Q	14	Q	24.2	19.7	Q	10.5	Q
Enclosed and strip malls	247	125	34	79	10	45.7	23.8	7.3	23.1	9.5
Office	250	219	8	12	11	22.2	23.6	1.1	4.2	6.1
Public assembly	216	182	4	18	12	41.3	42.6	1.0	6.9	16.7
Public order and safety	47	33	10	3	Q	36.8	29.5	9.8	4.9	Q
Religious worship	94	74	3	16	Q	23.0	20.4	1.1	7.7	Q
Service	145	136	Q	Q	Q	43.5	42.5	Q	Q	Q
Warehouse and storage	199	184	5	Q	10	19.3	19.9	0.9	Q	6.2
Other	48	41	1	Q	Q	30.3	33.1	1.1	Q	8.1
Vacant	10	10	Q	Q	Q	19.9	20.9	Q	Q	Q
Year constructed										
Before 1920	81	64	5	10	3	33.1	29.1	3.2	13.8	7.0
1920 to 1945	124	95	8	20	1	32.1	28.9	3.2	11.3	Q
1946 to 1959	173	131	14	22	5	34.4	29.2	4.4	10.5	7.5
1960 to 1969	289	206	31	38	14	37.0	30.9	5.5	11.7	11.8
1970 to 1979	303	212	30	50	10	33.3	27.1	5.0	15.8	6.9
1980 to 1989	312	187	43	70	13	35.6	25.7	6.9	18.6	12.6
1990 to 1999	312	218	29	48	16	30.0	24.3	4.2	11.3	10.5
2000 to 2009	476	313	46	94	23	37.1	27.6	4.8	16.0	9.5
2010 to 2018	232	152	24	41	15	30.9	25.4	4.6	14.8	8.7

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	Total	Space heating	Water heating	Cooking	Other	Total	Space heating	Water heating	Cooking	Other
All buildings	2,300	1,578	230	394	99	34.0	27.2	4.9	14.2	9.1
Census region and division										
Northeast	425	325	29	51	20	37.5	32.5	4.1	9.9	8.6
New England	78	56	7	13	3	42.0	33.9	6.0	15.7	6.7
Middle Atlantic	346	268	22	39	18	36.6	32.2	3.7	8.8	9.0
Midwest	816	640	54	94	27	40.0	34.0	3.8	12.3	8.0
East North Central	603	466	43	75	19	41.6	34.8	4.2	14.1	6.4
West North Central	214	174	12	19	9	36.1	32.0	2.9	8.3	18.3
South	616	360	83	133	39	28.1	20.6	5.6	14.5	10.7
South Atlantic	295	162	42	71	20	28.7	20.6	6.1	15.0	10.3
East South Central	126	87	10	21	8	30.7	23.7	3.9	15.6	14.2
West South Central	194	111	31	41	11	25.9	18.8	5.7	13.2	9.8
West	444	253	64	115	12	31.5	21.5	6.0	20.4	8.5
Mountain	232	145	27	56	4	38.9	27.6	5.9	22.0	6.6
Pacific	212	108	38	59	8	26.1	16.6	6.0	19.1	10.2
Climate zone^b										
Cold or very cold	208	174	10	18	5	41.8	37.5	3.1	9.4	7.7
Cool	821	623	56	114	28	40.1	33.0	4.0	14.0	7.2
Mixed mild	654	467	67	91	30	34.9	30.1	5.3	11.4	9.9
Warm	479	271	70	114	25	27.1	18.2	5.8	17.3	9.7
Hot or very hot	138	43	26	58	11	23.7	10.4	5.9	18.6	15.5
Number of floors										
1	1,012	702	80	200	30	37.0	27.9	4.5	21.5	8.0
2	529	387	52	66	24	30.8	25.6	4.2	10.8	9.1
3	270	202	26	31	11	33.1	28.6	4.5	8.4	7.7
4 to 9	353	224	50	52	26	33.8	29.5	6.5	9.7	12.1
10 or more	136	63	22	44	7	29.9	20.2	8.0	14.3	9.5
Number of workers (main shift)										
Fewer than 5	296	237	23	27	9	30.1	27.8	4.0	11.7	15.0
5 to 9	223	157	24	31	11	32.4	27.3	5.5	23.6	13.6
10 to 19	312	208	39	58	7	39.1	29.4	6.8	29.2	7.9
20 to 49	438	290	42	88	18	34.7	26.0	4.8	19.2	7.9
50 to 99	349	244	35	52	19	34.8	27.7	4.5	10.7	9.5
100 to 249	367	250	32	69	17	33.8	25.9	3.8	10.8	7.2
250 or more	316	192	37	69	18	33.1	26.9	5.7	11.0	9.4
Weekly operating hours										
Fewer than 40	162	133	7	18	4	26.9	25.2	1.9	9.8	10.3
40 to 48	327	267	21	27	13	26.4	24.3	2.6	7.2	7.0
49 to 60	440	359	27	42	13	27.4	24.6	2.5	8.4	5.2
61 to 84	411	274	29	92	17	36.7	27.8	3.6	18.3	9.3
85 to 167	339	213	23	85	17	45.9	33.7	4.5	24.7	11.8
Open continuously	620	332	123	131	35	42.3	30.2	11.2	15.0	12.2

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	Total	Space heating	Water heating	Cooking	Other	Total	Space heating	Water heating	Cooking	Other
All buildings	2,300	1,578	230	394	99	34.0	27.2	4.9	14.2	9.1
Ownership and occupancy										
Nongovernment owned	1,784	1,181	188	347	68	34.5	26.5	5.5	18.4	9.0
Owner occupied	1,089	737	120	189	43	34.5	27.4	5.6	15.4	9.1
Leased to tenant or tenants	691	439	68	158	25	34.7	25.1	5.5	24.2	8.9
Unoccupied	Q	Q	Q	Q	N	Q	Q	Q	Q	N
Government owned	516	397	42	47	31	32.3	29.5	3.3	5.3	9.4
Federal	39	28	2	6	3	29.3	26.0	1.6	9.1	21.4
State	161	114	15	18	14	32.6	30.0	4.0	6.9	12.4
Local	317	254	25	24	14	32.6	29.7	3.1	4.2	6.8
Party responsible for operation of energy systems										
Building owner	1,856	1,304	183	284	86	33.5	27.6	4.7	12.1	9.6
Business owner or tenant	353	226	30	90	7	38.2	26.8	5.0	32.3	5.7
Property management	40	17	8	12	2	27.5	17.7	8.7	16.7	7.0
Other	52	31	8	9	4	31.8	22.5	7.4	11.0	11.8
Provider of direct input on energy- related equipment purchases										
Building owner	1,948	1,366	191	302	89	33.6	27.5	4.8	12.6	9.6
Business owner or tenant	224	134	20	64	5	40.4	26.0	5.6	34.5	6.3
Property management	24	11	5	7	Q	29.5	18.3	9.2	16.7	Q
Other	104	67	13	21	3	31.0	24.7	5.3	15.3	5.8
Number of establishments										
1	1,524	1,065	159	236	64	34.2	28.2	5.1	13.7	8.7
2 to 5	420	290	37	71	21	34.3	26.5	4.7	15.1	12.2
6 to 10	155	104	14	32	4	34.7	25.6	4.6	16.9	8.3
11 to 20	116	69	11	29	6	37.4	25.2	5.5	20.3	10.9
More than 20	79	43	8	25	3	25.7	18.9	3.7	10.6	4.9
Currently unoccupied	7	7	Q	Q	Q	21.8	24.6	Q	Q	Q
Predominant exterior wall material										
Brick, stone, or stucco	1,291	851	141	248	52	37.0	28.3	5.4	14.9	9.5
Concrete (block or poured)	480	330	45	84	21	33.7	26.8	4.6	13.7	8.5
Concrete panels	174	135	13	18	8	26.7	24.2	3.1	10.3	6.4
Siding or shingles	105	63	18	16	8	38.6	27.6	9.5	18.9	15.1
Metal panels	170	150	6	9	4	27.7	27.1	2.1	9.5	6.5
Window glass	41	24	3	10	4	24.7	21.7	3.1	10.7	17.7
Other	40	25	4	10	Q	26.1	20.4	3.8	19.0	5.4

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	Total	Space heating	Water heating	Cooking	Other	Total	Space heating	Water heating	Cooking	Other
All buildings	2,300	1,578	230	394	99	34.0	27.2	4.9	14.2	9.1
Predominant roof material										
Metal surfacing	315	249	17	39	9	30.1	27.4	2.9	16.6	8.7
Synthetic or rubber	916	640	78	162	36	36.0	28.5	4.5	13.6	8.3
Built-up	511	340	58	92	21	33.2	26.4	5.1	13.3	7.4
Slate or tile shingles	98	49	14	27	Q	37.2	24.6	7.1	22.2	17.4
Wooden materials (including shingles)	36	19	6	10	Q	41.7	26.6	8.1	34.5	Q
Asphalt, fiberglass, or other shingles	330	225	46	47	13	34.6	26.7	6.6	13.4	10.0
Concrete	36	17	5	7	7	28.9	23.6	6.3	11.7	14.5
Other	59	38	5	11	4	27.3	22.0	3.8	12.0	14.8
Roof tilt										
Flat	1,468	976	150	274	68	35.6	27.9	5.1	14.2	8.9
Shallow pitch	547	401	51	74	22	30.7	25.5	4.3	15.4	9.7
Steeper pitch	286	201	30	46	9	32.9	27.2	5.1	12.8	10.0
Cool roof characteristics (more than one may apply)										
White or reflective coating or paint	829	556	79	162	31	34.0	26.4	4.6	15.8	7.9
White or reflective tiles or shingles	62	40	6	12	4	31.4	25.1	4.6	10.2	11.8
Aluminum coating	107	65	9	27	6	32.4	24.8	4.3	20.5	10.0
Ballasted roof system	202	132	21	40	10	38.2	29.2	5.6	14.2	10.3
Other cool roof property	32	18	4	8	Q	23.2	17.0	4.8	9.1	Q
Renovations since 2000 (more than one may apply)										
Any type of renovation	1,204	830	118	208	49	35.7	28.8	5.0	13.0	8.7
Addition or annex	364	253	35	64	13	42.3	34.2	5.6	11.2	8.7
Reduction in floorspace	46	32	3	9	2	34.8	30.2	3.7	11.1	4.6
Roof replacement	573	382	59	109	24	37.2	29.4	5.4	14.0	8.7
Interior wall reconfiguration	550	389	44	93	23	34.4	28.5	4.1	12.7	8.9
Window replacement	316	214	30	60	12	37.0	29.3	4.9	13.5	6.6
HVAC equipment upgrade	754	512	78	129	35	35.4	28.7	5.2	12.4	8.8
Lighting upgrade	800	542	79	143	36	35.1	28.2	5.0	12.7	8.8
Electrical upgrade	472	305	44	99	24	38.0	29.3	5.1	15.0	9.0
Plumbing system upgrade	443	294	46	85	18	37.4	29.8	5.4	13.0	7.9
Insulation upgrade	239	158	24	46	12	38.9	29.6	5.6	13.9	8.9
Fire, safety, or security upgrade	583	386	61	108	29	37.3	29.4	5.4	12.7	9.2
Structural upgrade	144	90	18	30	6	42.6	30.6	7.5	15.6	7.5
Other	32	22	1	8	Q	32.9	23.9	1.7	12.3	Q
No renovations	932	637	96	158	41	32.5	25.5	4.9	15.8	9.9
Buildings constructed 2013 or later	164	111	16	28	10	30.8	25.8	4.3	16.3	8.5

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	Total	Space heating	Water heating	Cooking	Other	Total	Space heating	Water heating	Cooking	Other
All buildings	2,300	1,578	230	394	99	34.0	27.2	4.9	14.2	9.1
Energy sources (more than one may apply)										
Electricity	2,300	1,578	230	394	99	34.0	27.2	4.9	14.2	9.1
Natural gas	2,300	1,578	230	394	99	34.0	27.2	4.9	14.2	9.1
Fuel oil	541	355	66	100	20	36.2	30.2	6.2	11.5	11.2
District heat	91	16	16	31	28	21.1	11.0	8.4	13.7	16.1
District chilled water	64	22	11	20	12	21.9	18.4	6.3	14.7	14.5
Propane	155	92	20	38	6	33.9	23.4	6.6	21.2	9.6
Solar	97	58	9	26	4	29.1	20.3	3.9	11.9	9.2
Wood, coal, and other	56	32	4	18	Q	44.0	28.4	4.4	25.3	Q
Space-heating energy sources										
Natural gas	2,086	1,578	166	296	46	35.9	27.2	4.0	12.8	5.6
Natural gas main	1,903	1,527	120	231	25	38.0	30.5	3.3	11.7	3.7
Natural gas secondary	184	51	46	65	21	23.0	6.4	9.0	19.2	15.1
Other excluding natural gas	200	N	59	89	52	22.1	N	12.1	20.5	20.0
Buildings without heating	14	N	4	8	Q	22.7	N	8.1	48.6	Q
Primary space-heating energy source										
Electricity	306	44	90	126	45	23.8	6.5	11.1	22.7	18.6
Natural gas	1,903	1,527	120	231	25	38.0	30.5	3.3	11.7	3.7
Fuel oil	Q	Q	Q	1	Q	13.7	Q	Q	6.0	Q
District heat	71	4	15	26	26	18.7	4.1	8.5	13.1	17.8
Propane	Q	Q	Q	Q	N	Q	Q	Q	Q	N
Other sources ^c	Q	Q	Q	N	Q	Q	Q	Q	N	Q
Cooling energy sources										
Natural gas	22	12	2	3	5	56.3	32.1	6.2	9.3	12.3
Other excluding natural gas	2,201	1,493	226	388	93	34.0	27.0	5.0	14.3	9.1
Buildings without cooling	77	72	2	Q	Q	30.7	30.6	1.1	Q	Q
Water-heating energy sources										
Natural gas	1,773	1,175	230	312	56	38.0	28.5	4.9	13.9	7.7
Other excluding natural gas	495	376	N	81	38	25.3	24.2	N	15.5	11.9
Buildings without water heating	32	27	N	Q	Q	21.1	21.0	N	Q	Q
Cooking energy sources										
Natural gas	1,234	668	130	394	43	44.5	28.8	5.8	14.2	9.3
Other excluding natural gas	250	196	41	N	13	29.5	26.7	7.2	N	7.5
Buildings without cooking	817	714	59	N	43	25.9	25.9	3.2	N	9.6

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All buildings	2,300	1,578	230	394	99	34.0	27.2	4.9	14.2	9.1
HVAC features (more than one may apply)										
Economizer cycle	1,026	698	104	174	51	36.8	29.3	4.9	11.3	8.1
Variable air volume (VAV) system	786	536	76	136	38	34.1	28.6	4.5	11.3	8.3
Dedicated outside air system (DOAS)	287	176	35	63	14	39.4	28.8	6.0	14.5	9.7
Demand controlled ventilation (DCV)	293	214	22	44	13	34.4	28.5	3.6	9.5	8.7
Regular HVAC maintenance	2,038	1,380	212	354	93	34.6	27.5	5.1	13.8	9.2
Building automation system (BAS) controls heating or cooling										
Internet-connected or smart thermostat	123	79	14	22	7	27.4	21.2	4.5	16.4	6.8
Programmable thermostat	521	382	43	82	14	34.6	28.4	4.6	22.0	7.9
Main equipment replaced since 2000 (more than one may apply)										
Heating	857	623	85	127	22	34.4	27.7	4.9	13.1	6.4
Cooling	621	449	70	84	19	36.9	30.9	5.8	10.9	7.6
Water-heating equipment										
Centralized system	1,558	1,084	164	251	60	35.1	28.6	5.1	14.5	9.2
Distributed system	335	212	34	73	16	33.0	23.9	5.6	22.2	8.9
Combination of centralized and distributed systems	375	255	32	70	19	32.2	25.7	3.8	9.8	8.5
Generation technologies (more than one may apply)										
Reciprocating engine generators	778	489	85	128	76	38.0	30.0	5.7	11.3	8.8
Solar panels	95	57	9	25	4	28.9	20.4	3.9	11.5	9.2
Other generation technology	66	40	7	10	9	41.5	31.4	6.1	12.3	10.0
Food preparation or serving areas in non-food service buildings (more than one may apply)										
Snack bar, concession stand, or coffee shop	375	220	40	98	17	40.8	29.1	5.7	12.6	9.7
Fast food or small restaurant	367	201	38	115	13	42.1	27.0	5.5	15.0	8.3
Cafeteria or large restaurant	482	307	56	98	21	38.6	29.6	5.6	8.7	8.1
Commercial kitchen or food preparation area	665	383	84	168	30	41.6	28.2	6.7	11.8	10.1
Small kitchen area	574	373	67	110	23	34.8	27.0	5.6	10.5	8.5

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	Total	Space heating	Water heating	Cooking	Other	Total	Space heating	Water heating	Cooking	Other
All buildings	2,300	1,578	230	394	99	34.0	27.2	4.9	14.2	9.1
Annual consumption (hundred cubic feet)										
1,000 or less	50	39	6	2	2	8.2	9.2	1.7	4.2	3.2
1,001 to 5,000	299	236	20	36	8	23.6	21.1	2.7	13.4	6.3
5,001 to 10,000	305	212	28	50	15	30.0	24.0	4.3	17.2	10.5
10,001 to 25,000	475	304	64	88	19	34.1	26.6	6.6	16.3	8.6
25,001 to 50,000	367	257	35	62	13	38.7	30.9	5.1	12.0	8.2
50,001 to 100,000	309	208	25	60	16	45.1	32.6	4.6	12.7	9.9
Over 100,000	496	323	51	96	26	57.6	41.8	7.2	15.2	12.6

Data source: U.S. Energy Information Administration, Forms EIA-871A and C of the *2018 Commercial Buildings Energy Consumption Survey*

Notes: Because of rounding, data may not sum to totals. The *Guide to the 2018 CBECS Tables* and *CBECS Terminology* contain definitions of terms used in these tables and comparisons between previous CBECS tables. You can access both references from <http://www.eia.gov/consumption/commercial/data/2018/>.

Estimates for types of equipment represent consumption in buildings that have the equipment, not the consumption by the specific piece of equipment.

HVAC = Heating, ventilation, and air conditioning.

^aThe natural gas intensity calculation is conditional on the presence of the end use, and therefore the intensities for each end use will not sum to the total natural gas intensity. In this table, each column is calculated as natural gas consumption for the end use divided by the floorspace in buildings that use natural gas for the particular end use.

^b*Climate zones* are based on ASHRAE Standard 169-2021; see <https://www.eia.gov/consumption/commercial/maps.php#defined>.

^c*Other sources* includes wood, coal, solar, and all other energy sources.

Q = Data withheld either because the relative standard error was greater than 50% or the reporting sample had fewer than 20 buildings.

N = No buildings in reporting sample.