

**Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018**

	Sum of major fuels consumption (trillion British thermal units [Btu])					Total floorspace of buildings (million square feet)					Energy intensity for sum of major fuels (thousand Btu/square foot)				
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	541	1,971	1,911	1,626	738	7,044	26,768	25,096	25,085	12,429	76.7	73.6	76.2	64.8	59.4
<b>Building floorspace (square feet)</b>															
1,001 to 5,000	50	168	128	145	84	768	2,451	1,581	2,027	1,198	65.4	68.7	80.8	71.6	70.1
5,001 to 10,000	44	187	126	167	73	813	3,111	1,844	3,039	1,397	54.3	60.1	68.2	54.9	52.5
10,001 to 25,000	126	274	189	230	102	1,619	4,273	3,180	4,553	2,213	77.7	64.2	59.4	50.6	45.9
25,001 to 50,000	81	340	236	225	79	1,036	4,770	3,051	3,579	1,521	78.0	71.2	77.3	62.8	51.7
50,001 to 100,000	81	294	293	293	113	984	3,950	3,893	4,352	2,123	82.1	74.5	75.3	67.4	53.3
100,001 to 200,000	63	264	297	233	101	870	3,162	4,045	3,320	1,605	72.8	83.6	73.4	70.2	62.9
200,001 to 500,000	71	278	326	232	97	701	3,254	3,640	2,863	1,319	102.0	85.4	89.5	81.0	73.8
Over 500,000	Q	165	317	101	89	Q	1,797	3,863	1,351	1,054	Q	92.0	82.2	74.5	84.3
<b>Principal building activity</b>															
Education	77	252	286	163	76	1,279	3,748	3,931	2,947	1,718	60.1	67.2	72.8	55.4	44.2
Food sales	Q	66	Q	36	Q	Q	291	Q	202	Q	Q	226.6	Q	180.5	Q
Food service	24	100	91	102	48	131	337	318	402	197	180.8	295.5	286.8	253.2	245.3
Health care	38	182	161	139	62	246	1,200	1,173	961	438	152.6	152.1	136.8	144.3	140.6
Inpatient	Q	144	115	98	53	Q	725	647	494	268	Q	198.3	178.0	198.9	198.9
Outpatient	Q	39	45	40	8	Q	475	526	467	170	Q	81.4	86.3	86.5	48.6
Lodging	39	173	174	147	65	416	1,944	1,860	1,879	877	94.5	88.8	93.6	78.4	73.6
Mercantile	58	282	182	288	143	742	2,884	2,050	3,295	1,810	77.5	97.9	88.8	87.4	79.2
Retail (other than mall)	30	93	68	83	59	505	1,424	1,017	1,354	892	60.3	65.3	66.7	61.2	65.6
Enclosed and strip malls	Q	189	114	205	85	Q	1,459	1,033	1,941	918	Q	129.6	110.4	105.6	92.4
Office	82	304	372	223	113	1,252	4,442	5,307	3,648	2,013	65.4	68.5	70.1	61.1	55.9
Public assembly	42	176	153	136	77	435	2,046	1,695	1,829	1,187	97.1	85.9	90.0	74.3	64.6
Public order and safety	Q	31	49	39	Q	Q	354	547	421	Q	Q	86.6	89.8	92.0	Q
Religious worship	Q	50	52	52	23	Q	1,453	1,070	1,797	814	Q	34.6	48.7	29.1	28.2
Service	32	117	61	87	20	586	2,762	953	1,418	522	55.2	42.4	63.8	61.4	39.1
Warehouse and storage	40	139	157	138	54	1,219	3,896	4,829	5,314	2,226	33.2	35.6	32.5	25.9	24.3
Other	Q	89	125	73	Q	Q	853	769	637	Q	Q	103.8	162.7	114.3	Q
Vacant	Q	11	8	4	4	Q	558	423	335	262	Q	20.4	17.8	10.9	15.8
<b>Year constructed</b>															
Before 1920	21	101	84	22	Q	419	1,560	1,162	407	Q	51.1	65.0	72.4	53.8	Q
1920 to 1945	21	142	154	65	18	376	1,972	1,966	1,043	289	54.7	72.1	78.5	62.4	63.4
1946 to 1959	36	131	134	108	35	676	1,688	2,017	1,853	702	53.0	77.5	66.4	58.5	50.4
1960 to 1969	56	220	196	221	71	810	2,890	2,485	3,192	983	68.6	76.2	78.9	69.3	72.2
1970 to 1979	75	301	227	219	83	998	4,116	2,842	3,545	1,560	75.4	73.1	79.8	61.9	53.2
1980 to 1989	68	231	309	224	131	844	2,925	3,553	3,840	2,303	80.5	79.0	86.9	58.2	56.9
1990 to 1999	77	272	257	237	116	1,012	4,222	4,062	3,917	2,322	75.6	64.4	63.2	60.5	49.8
2000 to 2009	141	347	363	368	174	1,312	4,380	4,436	4,667	2,706	107.8	79.1	81.7	78.8	64.2
2010 to 2018	46	226	188	162	106	598	3,016	2,572	2,622	1,511	77.1	75.1	73.1	61.7	69.9

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	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	541	1,971	1,911	1,626	738	7,044	26,768	25,096	25,085	12,429	76.7	73.6	76.2	64.8	59.4
<b>Census region and division</b>															
Northeast	68	509	650	N	N	1,099	6,984	7,868	N	N	61.5	72.8	82.6	N	N
New England	53	198	Q	N	N	884	2,554	Q	N	N	60.4	77.4	83.1	N	N
Middle Atlantic	Q	311	624	N	N	Q	4,430	7,556	N	N	66.0	70.2	82.6	N	N
Midwest	385	1,110	435	N	N	4,814	15,176	5,942	N	N	80.0	73.1	73.1	N	N
East North Central	147	958	269	N	N	2,239	11,962	3,360	N	N	65.7	80.0	80.1	N	N
West North Central	238	153	165	N	N	2,576	3,214	2,582	N	N	92.4	47.5	64.1	N	N
South	N	N	577	1,186	585	N	N	7,660	17,361	9,886	N	N	75.3	68.3	59.2
South Atlantic	N	N	392	626	213	N	N	5,125	9,043	3,755	N	N	76.5	69.2	56.7
East South Central	N	N	Q	298	Q	N	N	Q	4,484	Q	N	N	61.3	66.4	Q
West South Central	N	N	Q	262	366	N	N	Q	3,834	6,080	N	N	79.0	68.3	60.2
West	88	353	250	440	153	1,131	4,608	3,626	7,725	2,543	77.7	76.5	69.0	57.0	60.1
Mountain	Q	251	Q	Q	111	Q	3,269	Q	Q	1,614	86.1	76.8	84.6	46.7	68.6
Pacific	Q	102	Q	404	Q	Q	1,339	2,346	6,958	Q	61.3	75.9	60.4	58.1	45.3
<b>Number of floors</b>															
1	256	780	596	830	391	3,109	11,169	8,450	13,741	7,108	82.3	69.9	70.6	60.4	55.0
2	143	436	399	328	131	2,242	6,704	6,184	5,552	2,618	63.7	65.1	64.5	59.2	50.2
3	68	257	225	154	46	1,006	3,641	2,845	2,321	703	67.7	70.5	79.1	66.2	64.9
4 to 9	56	347	409	251	120	515	3,695	4,779	2,629	1,413	108.9	94.0	85.7	95.4	84.9
10 or more	18	150	282	64	50	173	1,559	2,839	843	586	103.5	96.5	99.3	75.4	84.7
<b>Elevators and escalators (more than one may apply)</b>															
Any elevators	174	862	1,068	578	283	2,095	10,359	12,849	7,125	4,074	83.2	83.2	83.1	81.2	69.4
1 elevator	76	299	304	176	75	1,080	4,278	4,523	2,747	1587.0	70.4	70.0	67.3	64.0	47.2
2 to 5 elevators	59	336	359	255	104	687	4,050	4,323	2,938	1,317	86.5	83.0	83.1	86.8	79.2
6 or more elevators	39	226	404	148	103	327	2,030	4,003	1,440	1,170	118.7	111.5	100.9	102.5	88.4
Any escalators	Q	64	164	35	52	Q	732	1,769	439	709	Q	87.6	92.6	80.4	73.8
<b>Number of workers (main shift)</b>															
Fewer than 5	76	296	191	235	91	1,606	6,460	4,173	6,366	2,461	47.4	45.8	45.8	37.0	36.8
5 to 9	90	155	185	167	67	1,099	2,549	2,622	2,900	1,152	82.3	60.6	70.5	57.7	58.4
10 to 19	89	252	169	188	80	1,065	3,775	2,000	2,887	1,621	83.4	66.9	84.3	65.0	49.6
20 to 49	108	402	293	309	122	1,293	4,518	3,796	4,604	1,921	83.4	89.0	77.1	67.1	63.3
50 to 99	68	278	280	277	110	897	3,237	3,628	3,276	1,922	76.3	85.8	77.2	84.5	57.3
100 to 249	58	294	336	229	115	594	3,329	4,159	2,821	1,540	97.2	88.4	80.9	81.3	74.5
250 or more	51	294	458	221	153	490	2,900	4,717	2,232	1,813	104.7	101.4	97.1	98.9	84.4
<b>Weekly operating hours</b>															
Fewer than 40	34	134	96	113	37	747	3,283	2,267	3,211	1,258	45.6	40.9	42.3	35.3	29.0
40 to 48	112	272	201	252	110	1,503	4,960	3,709	6,076	2,578	74.5	54.8	54.1	41.5	42.6
49 to 60	103	365	374	289	135	1,814	6,187	6,437	5,363	3,043	56.8	59.0	58.1	53.8	44.3
61 to 84	84	357	355	263	123	1,022	4,354	4,235	3,194	1,932	82.0	82.1	83.8	82.5	63.8
85 to 167	74	302	243	244	112	761	2,910	2,608	2,401	1,358	97.6	103.8	93.3	101.7	82.5
Open continuously	133	541	643	465	221	1,198	5,073	5,841	4,841	2,259	111.4	106.6	110.0	96.0	98.0

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	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	541	1,971	1,911	1,626	738	7,044	26,768	25,096	25,085	12,429	76.7	73.6	76.2	64.8	59.4
<b>Ownership and occupancy</b>															
Nongovernment owned	419	1,535	1,458	1,234	572	5,422	21,279	19,123	19,442	9,462	77.3	72.2	76.2	63.5	60.5
Owner occupied	301	928	899	750	312	3,703	13,668	11,102	11,694	5,187	81.2	67.9	80.9	64.1	60.1
Leased to tenant or tenants	118	603	556	483	259	1,713	7,273	7,768	7,489	4,139	69.1	82.9	71.6	64.5	62.5
Unoccupied	Q	Q	Q	Q	Q	Q	Q	Q	258	Q	Q	Q	Q	Q	Q
Government owned	122	436	454	392	166	1,622	5,490	5,973	5,644	2,967	74.9	79.4	76.0	69.5	55.8
Federal	Q	44	62	27	Q	Q	451	715	495	Q	Q	96.6	86.4	54.3	Q
State	33	132	165	194	55	362	1,387	1,920	2,275	946	90.7	94.9	85.8	85.1	58.2
Local	76	261	227	172	97	1,124	3,652	3,338	2,875	1,872	67.5	71.4	68.0	59.7	51.7
<b>Party responsible for operation of energy systems</b>															
Building owner	471	1,635	1,600	1,305	552	6,101	22,841	20,773	20,140	9,426	77.2	71.6	77.0	64.8	58.5
Business owner or tenant	55	248	240	238	134	734	2,740	3,335	3,764	2,269	75.3	90.4	72.1	63.3	59.2
Property management	Q	37	31	43	23	Q	531	459	534	323	Q	70.1	68.2	80.3	70.6
Other	Q	52	40	40	29	Q	656	529	648	411	Q	79.1	75.3	61.5	70.0
<b>Provider of direct input on energy-related equipment purchases</b>															
Building owner	481	1,699	1,645	1,361	601	6,262	23,703	21,456	21,087	10,354	76.8	71.7	76.7	64.6	58.1
Business owner or tenant	37	145	159	157	91	400	1,510	2,025	2,362	1,288	91.3	95.8	78.4	66.4	70.3
Property management	Q	Q	25	Q	Q	Q	Q	365	Q	Q	Q	Q	68.0	Q	Q
Other	17	105	83	84	39	304	1,283	1,250	1,371	697	55.1	81.6	66.1	61.6	55.4
<b>Number of establishments</b>															
1	393	1,308	1,225	1,078	465	5,103	18,515	16,144	17,250	8,378	77.0	70.6	75.9	62.5	55.5
2 to 5	94	333	353	295	130	1,274	4,120	4,598	4,434	2,005	73.7	80.9	76.8	66.5	64.9
6 to 10	Q	123	139	108	40	Q	1,619	1,691	1,348	631	Q	76.0	82.0	80.4	63.8
11 to 20	Q	110	89	87	39	Q	1,086	1,109	1,031	484	Q	101.5	80.0	84.4	81.5
More than 20	Q	90	101	56	61	Q	1,018	1,234	746	791	Q	88.8	81.7	75.2	77.4
Currently unoccupied	Q	6	5	2	Q	Q	409	321	276	Q	Q	15.1	16.6	Q	Q
<b>Predominant exterior wall material</b>															
Brick, stone, or stucco	198	1,015	1,090	910	381	2,571	11,711	13,008	12,843	6,001	76.9	86.7	83.8	70.9	63.4
Concrete (block or poured)	140	433	381	312	169	1,714	5,459	4,886	4,403	2,896	82.0	79.4	77.9	70.9	58.2
Concrete panels	28	131	148	171	56	319	1,957	2,265	2,569	1,220	87.1	66.9	65.5	66.6	45.7
Siding or shingles	93	149	71	52	19	856	2,619	1,135	1,008	375	108.5	57.0	62.9	52.0	49.9
Metal panels	56	151	111	118	62	1,225	3,844	2,547	3,307	1,274	45.6	39.3	43.7	35.6	49.0
Window glass	Q	48	60	38	28	Q	550	679	485	375	Q	87.4	88.5	79.2	73.4
Other	Q	44	50	24	24	Q	629	576	470	288	Q	69.5	86.7	51.1	83.8
<b>Predominant roof material</b>															
Metal surfacing	130	221	239	280	135	1,924	5,164	4,387	6,363	3,098	67.6	42.8	54.6	44.0	43.7
Synthetic or rubber	198	879	751	519	239	2,285	9,983	9,477	6,574	3,244	86.5	88.1	79.3	79.0	73.8
Built-up	110	397	496	398	143	1,254	4,602	5,656	5,527	2,269	87.8	86.3	87.7	72.0	63.0
Slate or tile shingles	Q	82	60	88	41	Q	1,010	946	1,256	740	Q	81.1	63.3	69.9	55.2
Wooden materials (including shingles)	Q	30	Q	23	25	Q	540	Q	446	335	Q	55.8	Q	52.2	75.3
Asphalt, fiberglass, or other shingles	76	293	245	220	82	1,193	4,733	3,109	3,568	1,454	63.4	61.9	78.7	61.6	56.5
Concrete	Q	34	50	39	36	Q	271	613	527	496	Q	126.3	81.4	73.7	72.7
Other	Q	35	62	59	36	Q	465	785	824	792	Q	74.5	78.8	71.8	45.0

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<b>All buildings</b>	541	1,971	1,911	1,626	738	7,044	26,768	25,096	25,085	12,429	76.7	73.6	76.2	64.8	59.4
<b>Roof tilt</b>															
Flat	305	1,246	1,344	1,012	490	3,417	14,113	15,870	13,253	7,600	89.4	88.3	84.7	76.4	64.5
Shallow pitch	110	499	352	417	178	2,012	8,175	5,997	8,029	3,397	54.8	61.0	58.7	52.0	52.3
Steeper pitch	125	227	216	197	70	1,616	4,480	3,230	3,803	1,432	77.5	50.6	66.8	51.7	49.0
<b>Cool roof characteristics (more than one may apply)</b>															
White or reflective coating or paint	156	597	720	669	347	1,559	7,253	9,056	9,492	5,438	100.3	82.3	79.5	70.5	63.8
White or reflective tiles or shingles	Q	44	56	79	24	Q	558	654	925	341	Q	79.1	86.2	85.3	71.4
Aluminum coating	35	77	69	110	53	469	1,411	1,075	2,200	995	74.9	54.4	63.8	50.2	53.3
Ballasted roof system	60	199	195	64	30	747	2,260	2,085	902	283	80.4	88.1	93.3	71.5	106.4
Other cool roof property	Q	44	42	Q	Q	Q	522	583	Q	Q	Q	84.6	71.5	Q	Q
<b>Renovations since 2000 (more than one may apply)</b>															
Any type of renovation	254	1,079	1,061	735	346	3,355	13,300	12,545	10,516	5,449	75.7	81.1	84.6	69.9	63.5
Addition or annex	101	295	265	172	101	1,330	3,345	2,821	1,937	1,421	76.2	88.3	94.0	88.6	70.9
Reduction in floorspace	Q	52	66	26	Q	Q	505	677	425	Q	Q	102.2	98.0	60.2	Q
Roof replacement	108	521	523	323	144	1,363	6,353	6,020	4,632	2,495	79.1	82.0	86.8	69.8	57.9
Interior wall reconfiguration	127	510	576	307	150	1,564	6,274	6,875	4,448	2,121	81.1	81.3	83.8	69.0	70.6
Window replacement	72	303	321	113	55	862	3,690	3,529	1,890	1,005	83.9	82.1	90.9	59.8	55.2
HVAC equipment upgrade	158	674	725	432	213	1,916	8,035	7,911	6,425	3,288	82.2	83.9	91.6	67.3	64.9
Lighting upgrade	168	780	733	452	203	2,109	9,260	8,356	6,309	3,064	79.7	84.3	87.7	71.6	66.3
Electrical upgrade	77	461	460	231	116	806	5,266	5,099	3,059	1,530	94.9	87.5	90.1	75.7	76.0
Plumbing system upgrade	80	422	460	229	100	894	5,019	4,857	3,343	1,424	90.0	84.2	94.8	68.4	70.1
Insulation upgrade	49	225	242	96	51	572	2,672	2,555	1,375	806	86.0	84.3	94.6	70.0	63.1
Fire, safety, or security upgrade	125	532	557	286	157	1,358	6,148	6,126	4,006	2,347	92.3	86.6	90.9	71.5	66.8
Structural upgrade	Q	139	149	75	13	Q	1,569	1,433	823	229	Q	88.3	103.9	91.5	57.7
Other	Q	20	33	34	12	Q	326	315	363	151	Q	61.7	105.0	93.7	81.7
No renovations	252	716	744	788	311	3,271	11,149	10,836	12,629	5,947	77.2	64.2	68.7	62.4	52.3
Buildings constructed 2013 or later	34	177	106	103	81	419	2,320	1,715	1,940	1,033	81.6	76.1	61.9	53.3	78.3
<b>Energy sources (more than one may apply)</b>															
Electricity	541	1,971	1,911	1,626	738	6,934	26,339	24,731	24,605	12,235	78.0	74.8	77.3	66.1	60.3
Natural gas	416	1,685	1,563	1,315	464	4,971	20,476	18,756	17,686	5,833	83.6	82.3	83.3	74.4	79.5
Fuel oil	195	540	713	323	188	1,624	5,783	7,834	3,526	2,418	119.8	93.3	91.1	91.5	77.7
District heat	38	217	320	171	39	372	1,677	2,747	1,588	360	103.4	129.4	116.5	107.9	107.8
District chilled water	Q	128	152	137	49	Q	838	1,273	1,344	731	Q	153.1	119.1	101.6	67.3
Propane	113	134	185	86	80	1,339	2,725	2,853	1,867	1,374	84.6	49.0	64.9	46.2	58.2
Solar	Q	59	123	65	37	Q	698	1,614	753	578	Q	85.2	76.4	85.9	64.1
Wood, coal, and other	Q	56	23	34	Q	Q	781	406	459	Q	Q	71.2	57.0	73.9	Q
<b>Space-heating energy sources (more than one may apply)</b>															
Electricity	229	859	878	893	445	2,549	10,464	11,548	13,629	7,412	89.7	82.1	76.0	65.5	60.0
Natural gas	384	1,505	1,251	1,085	324	4,639	18,890	15,512	14,864	4,139	82.9	79.7	80.6	73.0	78.3
Fuel oil	54	144	105	15	Q	721	1,648	1,423	300	Q	74.7	87.4	73.7	51.3	Q
District heat	38	192	317	171	34	372	1,561	2,730	1,579	305	103.4	123.1	116.2	108.2	111.0
Propane	33	25	Q	32	14	738	1,075	1,254	600	228	44.7	23.7	62.5	53.1	60.5
Other sources <sup>b</sup>	Q	18	Q	Q	N	Q	412	Q	Q	N	Q	43.2	Q	Q	N

**Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018**

	Sum of major fuels consumption (trillion British thermal units [Btu])				Total floorspace of buildings (million square feet)						Energy intensity for sum of major fuels (thousand Btu/square foot)				
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	541	1,971	1,911	1,626	738	7,044	26,768	25,096	25,085	12,429	76.7	73.6	76.2	64.8	59.4
<b>Primary space-heating energy source</b>															
Electricity	105	346	382	561	350	1,060	5,143	5,914	9,204	6,297	99.1	67.3	64.7	61.0	55.5
Natural gas	355	1,334	1,124	844	239	4,422	16,654	14,053	11,979	2,952	80.4	80.1	80.0	70.5	80.9
Fuel oil	22	61	46	Q	Q	351	912	728	Q	Q	63.2	67.0	63.7	Q	Q
District heat	33	188	301	151	34	317	1,536	2,587	1,345	305	102.9	122.6	116.5	112.4	111.0
Propane	Q	16	Q	Q	Q	406	800	735	Q	Q	43.7	20.1	32.3	Q	Q
Other sources <sup>b</sup>	Q	Q	Q	Q	N	Q	Q	Q	Q	N	Q	Q	Q	Q	N
<b>Cooling energy sources (more than one may apply)</b>															
Electricity	451	1,765	1,776	1,510	699	5,656	22,505	22,669	22,393	11,303	79.7	78.4	78.3	67.4	61.8
Natural gas	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
District chilled water	Q	128	152	137	49	Q	838	1,273	1,344	731	Q	153.1	119.1	101.6	67.3
<b>Water-heating energy sources (more than one may apply)</b>															
Electricity	228	861	853	828	415	3,072	11,466	12,272	13,163	7,152	74.2	75.1	69.5	62.9	58.1
Natural gas	309	1,217	1,111	968	378	3,338	14,125	12,641	12,131	4,417	92.6	86.1	87.9	79.8	85.6
Fuel oil	31	58	55	Q	Q	317	662	670	Q	Q	97.9	87.9	82.8	Q	Q
District heat	Q	154	215	75	Q	Q	1,183	1,862	724	Q	Q	130.4	115.3	104.3	Q
Propane	Q	14	32	Q	29	Q	381	542	Q	462	Q	36.2	58.4	Q	63.0
<b>Cooking energy sources (more than one may apply)</b>															
Electricity	243	887	782	554	298	2,528	9,718	8,049	6,117	4,097	96.3	91.3	97.2	90.6	72.8
Natural gas	194	888	811	637	312	1,928	8,124	7,959	6,573	3,121	100.6	109.3	101.9	96.8	99.8
Propane	42	51	60	23	52	396	677	756	387	885	105.4	75.1	79.4	59.8	58.6
<b>Energy end uses (more than one may apply)</b>															
Buildings with space heating	535	1,949	1,879	1,579	626	6,641	25,143	24,088	23,099	9,690	80.5	77.5	78.0	68.3	64.6
Buildings with cooling	458	1,855	1,881	1,589	731	5,725	23,165	23,604	23,176	11,837	80.0	80.1	79.7	68.6	61.7
Buildings with water heating	531	1,921	1,888	1,564	687	6,499	24,430	23,820	22,553	10,415	81.6	78.6	79.3	69.3	66.0
Buildings with cooking	321	1,210	1,129	836	456	3,354	13,086	11,957	9,485	5,698	95.8	92.4	94.5	88.2	80.1
Buildings with manufacturing	93	160	107	84	40	876	2,007	1,420	1,684	884	105.6	79.8	75.0	50.0	45.4
Buildings with electricity generation	212	826	897	527	257	1,791	8,415	9,839	6,079	3,334	118.3	98.1	91.2	86.7	77.1
Buildings with lighting	540	1,969	1,909	1,618	738	6,884	26,134	24,577	24,307	12,202	78.4	75.3	77.7	66.6	60.4
<b>Percentage of floorspace heated</b>															
Not heated	6	22	32	47	112	403	1,626	1,008	1,986	2,739	15.1	13.7	32.2	23.8	40.8
1% to 50%	24	92	68	148	108	632	1,669	2,031	4,219	2,069	38.3	55.4	33.7	35.1	52.3
51% to 99%	93	438	441	456	169	1,105	5,072	5,211	6,383	2,403	84.1	86.3	84.6	71.5	70.4
100%	417	1,419	1,370	974	349	4,903	18,402	16,846	12,498	5,218	85.1	77.1	81.3	78.0	66.8
<b>Percentage of floorspace cooled</b>															
Not cooled	83	116	30	37	Q	1,320	3,604	1,492	1,909	592	62.6	32.1	20.1	19.3	11.7
1% to 50%	99	284	253	152	71	1,822	5,554	5,088	5,026	2,231	54.1	51.1	49.7	30.3	31.7
51% to 99%	140	641	672	518	227	1,488	7,350	7,569	6,684	3,187	94.2	87.3	88.8	77.5	71.2
100%	219	930	956	919	433	2,415	10,260	10,947	11,466	6,419	90.9	90.7	87.3	80.2	67.5

**Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018**

	Sum of major fuels consumption (trillion British thermal units [Btu])				Total floorspace of buildings (million square feet)				Energy intensity for sum of major fuels (thousand Btu/square foot)						
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	541	1,971	1,911	1,626	738	7,044	26,768	25,096	25,085	12,429	76.7	73.6	76.2	64.8	59.4
<b>Percentage lit when open</b>															
0%	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
1% to 50%	68	199	147	121	65	1,352	4,248	2,949	3,789	1,834	50.5	46.9	49.9	31.9	35.6
51% to 99%	293	933	823	748	319	3,126	11,162	9,915	9,784	4,860	93.6	83.6	83.0	76.5	65.7
100%	178	822	933	746	350	2,385	10,183	11,360	10,602	5,346	74.7	80.8	82.1	70.3	65.5
Building never open or electricity not used	Q	16	8	4	Q	Q	1,027	781	664	388	Q	15.4	10.4	5.5	Q
<b>Percentage lit during off hours</b>															
0%	58	183	147	197	74	1,272	4,419	3,119	5,011	1,757	45.4	41.4	47.0	39.2	42.3
1% to 50%	418	1,492	1,443	1,160	537	5,208	19,526	18,918	16,945	9,203	80.3	76.4	76.3	68.5	58.4
51% to 100%	57	248	229	198	93	403	1,925	1,988	1,922	1,004	141.9	128.8	115.2	103.1	92.8
Building always open with no off hours	Q	49	93	71	33	Q	468	705	728	271	Q	104.3	131.7	97.8	122.6
Electricity not used	N	N	N	N	N	Q	430	Q	480	Q	N	N	N	N	N
<b>Heating equipment (more than one may apply)</b>															
Packaged heating units	256	1,057	937	996	422	2,789	12,408	11,945	14,469	6,452	91.6	85.2	78.4	68.8	65.4
Furnaces	108	468	252	263	95	1,782	6,991	3,561	3,706	1,232	60.4	66.9	70.8	71.0	77.4
Individual space heaters	147	480	446	345	103	2,096	6,458	5,855	5,354	1,359	70.1	74.3	76.2	64.5	75.9
Boilers	256	831	754	425	181	2,841	9,879	8,892	5,040	2,179	90.3	84.1	84.8	84.4	82.9
Heat pumps	69	305	364	332	88	780	3,663	4,421	4,766	1,479	89.0	83.4	82.4	69.6	59.6
District heat	38	192	317	171	34	372	1,561	2,730	1,579	305	103.4	123.1	116.2	108.2	111.0
Duct reheat	Q	195	184	137	99	Q	1,941	2,347	1,558	1,402	Q	100.6	78.6	87.8	70.8
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
<b>Cooling equipment (more than one may apply)</b>															
Packaged air-conditioning units	309	1,226	1,163	1,129	488	3,472	14,245	14,769	16,089	7,714	89.1	86.0	78.8	70.2	63.2
Residential-type central air conditioners	116	451	368	279	112	1,723	6,057	4,709	4,000	1,781	67.2	74.4	78.1	69.7	63.1
Individual air conditioners	79	347	334	221	86	991	3,881	4,178	3,336	1,232	79.8	89.3	79.8	66.1	69.4
Central chillers	119	430	597	363	169	1,270	4,657	6,203	3,778	2,017	93.9	92.3	96.3	96.0	83.8
Heat pumps	54	225	283	196	62	519	2,966	3,690	2,879	1,044	103.9	75.8	76.6	68.0	59.6
District chilled water	Q	128	152	137	49	Q	838	1,273	1,344	731	Q	153.1	119.1	101.6	67.3
Swamp coolers	Q	42	57	38	Q	Q	498	566	673	Q	Q	83.8	100.9	56.9	Q
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
<b>HVAC features (more than one may apply)</b>															
Economizer cycle	257	931	1,011	599	217	2,788	10,127	11,271	7,061	2,839	92.3	91.9	89.7	84.9	76.6
Variable air volume (VAV) system	169	705	889	497	263	1,977	7,712	9,977	5,664	3,938	85.2	91.4	89.1	87.7	66.7
Dedicated outside air system (DOAS)	114	193	299	205	70	894	1,999	3,165	1,985	984	127.9	96.7	94.5	103.2	71.2
Demand controlled ventilation (DCV)	71	219	318	169	73	671	2,662	3,591	2,397	1,152	105.9	82.2	88.7	70.5	63.5
Regular HVAC maintenance	444	1,721	1,772	1,433	654	5,611	20,391	21,878	19,936	10,199	79.2	84.4	81.0	71.9	64.2
Building automation system (BAS) controls heating or cooling	281	1,012	1,192	719	374	2,651	10,817	13,056	8,737	5,201	106.0	93.5	91.3	82.3	71.8
Internet-connected or smart thermostat	Q	85	91	122	57	Q	1,171	1,376	1,927	1,112	Q	72.4	66.1	63.5	51.2
Programmable thermostat	109	416	299	346	127	1,504	6,346	4,892	5,638	2,502	72.2	65.6	61.2	61.4	50.8

**Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018**

	Sum of major fuels consumption (trillion British thermal units [Btu])				Total floorspace of buildings (million square feet)				Energy intensity for sum of major fuels (thousand Btu/square foot)						
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	541	1,971	1,911	1,626	738	7,044	26,768	25,096	25,085	12,429	76.7	73.6	76.2	64.8	59.4
<b>Main equipment replaced since 2000 (more than one may apply)</b>															
Heating	172	728	578	503	209	2,448	10,206	7,805	8,479	3,512	70.4	71.3	74.1	59.4	59.6
Cooling	130	497	537	295	175	1,889	6,812	6,772	4,723	2,816	68.7	72.9	79.2	62.5	62.3
<b>Water-heating equipment</b>															
Centralized system	406	1,335	1,275	1,012	390	5,168	17,527	15,889	14,838	5,859	78.5	76.2	80.3	68.2	66.5
Distributed system	67	281	287	243	159	685	3,389	3,797	3,767	2,669	98.0	82.9	75.6	64.5	59.7
Combination of centralized and distributed systems	58	305	325	308	138	646	3,514	4,134	3,948	1,886	89.7	86.7	78.7	78.1	73.2
<b>Generation technologies (more than one may apply)</b>															
Reciprocating engine generators	201	710	797	440	223	1,594	7,230	8,523	5,042	2,774	125.8	98.2	93.5	87.3	80.4
Solar panels	Q	58	119	64	36	Q	694	1,586	741	555	Q	83.5	75.0	85.7	65.5
Other generation technology	Q	92	58	37	Q	Q	822	543	421	Q	Q	112.3	106.9	87.1	Q
<b>Lighting equipment types (more than one may apply)</b>															
Incandescent	121	564	555	430	167	1,561	6,329	5,959	4,882	2,349	77.5	89.2	93.1	88.2	71.3
Standard fluorescent	399	1,521	1,549	1,274	578	5,268	19,321	20,105	18,510	9,709	75.8	78.7	77.1	68.8	59.6
Compact fluorescent	229	851	886	646	304	2,526	9,402	9,579	7,702	4,482	90.6	90.5	92.5	83.9	67.7
High-intensity discharge (HID)	54	306	306	218	106	600	3,260	3,407	2,644	1,445	89.9	94.0	89.7	82.3	73.5
Halogen	82	367	438	303	175	848	3,609	4,310	3,740	2,505	96.8	101.6	101.5	81.0	69.8
LED	391	1,487	1,389	1,150	493	4,406	18,286	16,306	15,653	7,199	88.8	81.3	85.2	73.5	68.5
Other	Q	Q	Q	N	Q	Q	Q	Q	N	Q	Q	Q	Q	N	Q
<b>Refrigeration equipment (more than one may apply)</b>															
Any refrigeration	477	1,720	1,730	1,433	659	5,567	21,218	21,171	19,741	9,892	85.8	81.0	81.7	72.6	66.7
Walk-in units	252	964	937	662	371	2,138	8,523	8,628	6,162	3,933	117.7	113.2	108.6	107.5	94.3
Cases or cabinets	223	848	841	660	327	2,055	8,017	8,345	6,713	3,386	108.7	105.8	100.8	98.3	96.4
Large cold storage areas	Q	87	141	94	62	313	641	1,036	895	707	Q	136.4	136.1	105.6	87.2
Commercial ice makers	214	946	984	805	404	2,223	8,776	10,082	8,685	4,907	96.4	107.8	97.6	92.7	82.4
Residential-type or compact units	344	1,375	1,417	1,140	513	4,571	17,938	17,835	16,301	8,090	75.3	76.7	79.4	70.0	63.4
Vending machines	246	993	1,058	849	405	2,725	11,216	12,494	10,402	5,234	90.3	88.5	84.7	81.6	77.3
No refrigeration	63	252	182	193	78	1,477	5,550	3,925	5,345	2,537	42.8	45.3	46.2	36.1	30.9
<b>Office equipment (more than one may apply)</b>															
Desktop computers	475	1,773	1,780	1,470	684	5,601	22,212	22,354	20,947	10,897	84.9	79.8	79.6	70.2	62.8
With multiple monitors	288	1,103	1,250	955	421	3,674	13,454	15,082	12,516	6,118	78.4	82.0	82.9	76.3	68.7
Laptop computers	386	1,544	1,545	1,181	560	4,839	19,621	19,223	17,086	8,606	79.8	78.7	80.4	69.1	65.0
Dedicated servers	313	1,179	1,285	894	447	3,717	14,203	15,283	11,947	6,446	84.2	83.0	84.1	74.8	69.4
Tablets charged in building	296	1,167	1,151	945	436	3,645	13,511	13,319	12,072	6,231	81.2	86.4	86.4	78.3	69.9
Large floor-standing office devices <sup>c</sup>	264	1,184	1,324	977	417	3,419	14,662	16,048	13,228	6,732	77.3	80.8	82.5	73.8	62.0
Smaller desktop office devices <sup>c</sup>	427	1,620	1,631	1,312	607	5,270	20,321	20,338	19,003	9,534	81.0	79.7	80.2	69.0	63.7
Interactive whiteboards	91	368	465	239	127	1,234	4,771	5,578	3,412	1,944	73.8	77.1	83.3	70.0	65.1
Televisions or video displays	370	1,433	1,492	1,203	560	4,302	17,059	17,956	15,866	8,436	86.0	84.0	83.1	75.8	66.4
Point-of-sale devices or cash registers	254	980	907	716	381	2,655	9,928	9,246	7,405	4,372	95.5	98.8	98.1	96.7	87.2

**Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018**

	Sum of major fuels consumption (trillion British thermal units [Btu])				Total floorspace of buildings (million square feet)					Energy intensity for sum of major fuels (thousand Btu/square foot)					
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	541	1,971	1,911	1,626	738	7,044	26,768	25,096	25,085	12,429	76.7	73.6	76.2	64.8	59.4
<b>Food preparation or serving areas in non-food service buildings (more than one may apply)</b>															
Snack bar, concession stand, or coffee shop	81	314	302	190	116	873	3,101	2,904	2,096	1,387	92.8	101.1	104.0	90.8	83.8
Fast food or small restaurant	45	349	316	192	121	475	3,035	2,897	1,951	1,401	94.9	114.9	109.2	98.2	86.7
Cafeteria or large restaurant	87	364	462	226	130	1,198	4,245	4,782	2,564	1,741	72.6	85.8	96.7	88.1	74.9
Commercial kitchen or food preparation area	118	539	499	347	237	1,133	5,251	4,874	3,695	2,745	104.5	102.7	102.4	93.9	86.4
Small kitchen area	124	481	451	283	168	1,598	6,536	5,550	4,245	2,589	77.9	73.5	81.2	66.6	65.1
<b>Separate computer areas (more than one may apply)</b>															
Server closet	282	1,103	1,134	846	410	3,560	12,941	14,239	11,581	6,401	79.3	85.2	79.7	73.1	64.0
Data center	60	292	415	196	99	576	3,036	4,448	2,041	1,283	103.6	96.2	93.3	95.9	76.9
Computer-based training room	108	415	469	248	160	1,332	4,318	5,297	3,287	2,321	81.4	96.1	88.5	75.3	69.1
Student or public computer center	60	307	339	196	105	818	3,499	4,050	2,704	1,457	73.3	87.8	83.6	72.6	72.0
<b>Window and interior lighting features (more than one may apply)</b>															
Multipaned windows	483	1,683	1,595	1,239	539	5,850	21,677	19,634	17,628	7,905	82.6	77.6	81.2	70.3	68.2
Tinted window glass	191	923	1,036	947	422	2,216	10,227	12,476	12,869	6,576	86.2	90.3	83.0	73.6	64.2
Reflective window glass	124	437	470	338	183	1,206	4,776	4,827	4,530	2,590	103.2	91.6	97.4	74.7	70.5
External overhangs or awnings	164	672	600	666	265	1,695	7,420	6,893	9,005	3,705	96.7	90.6	87.0	73.9	71.5
Skylights or atriums	113	430	494	289	160	1,364	5,023	6,131	4,605	2,692	82.8	85.7	80.5	62.7	59.4
Light scheduling	223	863	841	644	342	2,374	9,406	9,557	7,411	4,804	93.9	91.7	88.0	87.0	71.1
Occupancy sensors	269	1,053	1,130	737	336	3,174	12,882	13,547	9,850	4,850	84.6	81.7	83.4	74.9	69.2
Multilevel lighting or dimming	102	440	393	257	149	1,028	4,482	4,056	2,868	1,990	99.2	98.2	96.8	89.7	75.0
Daylight harvesting	36	211	187	116	92	307	1,978	2,273	1,505	1,181	118.6	106.8	82.3	77.2	78.2
Plug-load control	Q	72	54	23	20	Q	519	615	353	354	Q	138.8	87.6	64.1	57.3
Demand responsive lighting	Q	57	62	Q	13	Q	583	915	Q	212	Q	98.2	68.2	Q	60.3
Building automation system (BAS) for lighting	121	416	406	313	206	1,202	4,241	4,595	3,754	2,852	100.4	98.1	88.4	83.3	72.4
<b>Electric vehicle (EV) charging</b>															
Charging stations associated with the building	43	182	260	151	99	486	2,501	3,252	2,433	1,493	88.7	72.6	80.0	61.9	66.4

Data source: U.S. Energy Information Administration, Forms EIA-871A, C, D, E, and F 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/>.

Data are sample survey estimates with relative standard errors published in a tab on the Excel worksheet for this table.

Estimates in the *energy end uses* category represent total consumption in buildings that have the end use but not the consumption specifically for that end use.

HVAC = Heating, ventilation, and air conditioning.

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

<sup>b</sup>Other sources includes wood, coal, solar, and all other energy sources.

<sup>c</sup>Office devices refers to any combination of printers, copiers, scanners, or FAX machines.

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.

**Relative standard errors (RSEs) for Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018**

	RSEs for sum of major fuels consumption				RSEs for total floorspace of buildings					RSEs for energy intensity for sum of major fuels					
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	15.8	8.3	10.8	10.8	12.1	17.0	8.3	10.5	10.0	14.1	7.1	2.6	3.4	3.6	5.6
<b>Building floorspace (square feet)</b>															
1,001 to 5,000	25.9	13.8	16.8	13.7	20.9	22.0	14.6	17.5	13.2	19.9	14.5	7.8	8.2	8.8	13.1
5,001 to 10,000	29.4	13.7	18.4	18.0	20.5	21.9	17.4	20.5	14.2	21.8	17.2	14.3	10.1	10.4	11.2
10,001 to 25,000	35.6	13.8	18.1	13.8	20.9	20.9	10.9	17.2	12.6	24.5	25.8	8.9	10.7	5.8	21.0
25,001 to 50,000	28.5	12.7	16.2	11.5	19.1	31.6	12.5	14.2	11.8	20.4	17.2	5.4	7.4	8.5	11.3
50,001 to 100,000	21.6	12.7	16.5	18.6	14.3	16.2	14.5	14.9	14.8	15.0	12.6	6.4	6.1	9.1	5.6
100,001 to 200,000	25.5	12.7	12.3	16.0	15.3	24.8	10.8	12.5	16.1	16.1	10.2	6.3	4.8	6.2	10.6
200,001 to 500,000	27.7	14.9	14.4	13.9	18.0	26.2	13.7	10.5	10.3	14.2	14.5	7.6	7.3	8.2	8.2
Over 500,000	36.7	11.6	18.6	19.6	14.6	35.2	15.9	16.0	20.8	14.5	18.0	9.0	8.2	14.2	11.0
<b>Principal building activity</b>															
Education	22.2	12.0	17.1	15.4	17.5	20.9	13.2	15.4	13.0	18.0	7.3	3.8	4.2	7.1	6.5
Food sales	63.4	26.3	29.4	35.2	42.3	52.5	25.3	31.5	36.1	36.4	38.5	7.4	10.3	12.3	21.5
Food service	25.3	20.9	23.3	18.5	25.3	26.0	19.5	23.9	18.2	23.8	9.0	10.0	9.9	9.4	6.0
Health care	16.5	17.2	16.3	12.5	16.8	18.0	13.9	16.6	12.6	12.5	8.3	6.7	5.4	5.2	7.5
Inpatient	21.6	20.0	18.3	15.0	19.1	22.3	18.0	20.1	14.6	19.1	5.9	4.9	6.1	3.4	5.1
Outpatient	37.7	18.7	16.9	16.7	17.3	38.0	17.1	18.0	16.0	13.0	4.6	8.6	6.4	7.6	11.3
Lodging	19.5	17.2	26.7	20.8	18.1	20.6	15.8	21.9	18.9	19.2	7.3	6.9	8.8	5.2	8.8
Mercantile	28.2	15.3	18.4	14.9	17.9	24.7	13.1	16.0	14.5	17.2	15.3	7.7	9.0	4.2	6.6
Retail (other than mall)	29.9	18.1	19.8	21.5	18.7	28.4	18.2	20.3	20.0	20.7	11.2	11.8	8.8	7.1	12.6
Enclosed and strip malls	45.6	18.2	25.1	16.7	24.2	34.3	15.8	22.7	16.3	23.5	21.9	5.6	9.3	3.5	4.5
Office	17.3	14.1	12.7	12.3	14.7	17.2	13.3	13.6	11.4	14.8	6.5	3.9	3.3	3.8	5.3
Public assembly	26.8	12.7	18.9	21.4	16.9	23.7	12.9	15.6	17.3	15.4	11.5	8.9	7.0	9.3	8.7
Public order and safety	60.5	30.6	39.4	39.8	39.9	54.4	23.5	35.0	32.3	33.3	33.2	12.4	11.4	14.3	22.1
Religious worship	32.5	24.1	17.0	21.5	18.3	35.3	22.7	15.1	19.7	18.8	11.0	11.8	12.4	7.9	12.1
Service	37.4	14.2	20.8	24.8	32.0	31.3	13.5	21.0	22.9	22.3	16.9	8.3	9.9	21.0	18.1
Warehouse and storage	25.8	16.0	19.1	17.4	27.5	30.9	14.5	13.6	15.0	30.4	18.5	5.5	9.8	8.9	16.3
Other	51.7	27.0	26.1	33.2	67.1	37.1	29.4	22.4	30.0	59.4	25.2	19.9	15.3	18.4	22.4
Vacant	111.3	27.6	23.9	31.4	43.1	67.8	28.0	25.2	24.6	35.4	145.5	17.6	24.7	37.7	25.7
<b>Year constructed</b>															
Before 1920	35.3	19.6	23.0	24.1	74.9	31.1	16.8	20.3	25.6	72.5	19.3	13.1	11.1	14.6	23.7
1920 to 1945	37.6	15.8	18.3	20.5	25.2	38.9	15.9	18.5	19.7	30.0	11.0	7.3	8.6	11.4	22.6
1946 to 1959	27.3	16.6	16.8	24.4	31.3	27.2	18.1	16.7	18.1	25.5	15.7	11.0	7.8	11.7	25.2
1960 to 1969	19.4	13.8	14.0	16.3	23.1	21.2	14.9	11.8	10.6	19.9	12.8	8.6	8.1	12.3	15.3
1970 to 1979	20.1	14.6	13.9	14.9	21.3	20.6	12.9	12.2	15.9	19.1	15.2	4.9	6.1	13.7	13.0
1980 to 1989	25.3	13.4	19.7	12.4	13.6	17.3	14.4	15.5	13.2	13.3	11.5	7.0	8.5	9.6	8.3
1990 to 1999	25.6	12.3	15.1	13.1	17.5	21.7	16.6	14.8	13.8	22.2	9.4	10.0	7.1	3.9	10.7
2000 to 2009	31.2	11.7	14.1	16.7	17.3	27.8	11.4	13.4	16.6	18.4	23.6	7.7	5.6	7.0	7.1
2010 to 2018	25.4	16.0	20.4	16.0	17.1	22.5	15.6	19.0	15.8	21.0	6.6	10.7	10.6	10.3	11.4

Relative standard errors (RSEs) for Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018

	RSEs for sum of major fuels consumption				RSEs for total floorspace of buildings					RSEs for energy intensity for sum of major fuels						
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	
<b>All buildings</b>	15.8	8.3	10.8	10.8	12.1	17.0	8.3	10.5	10.0	14.1	7.1	2.6	3.4	3.6	5.6	
<b>Census region and division</b>																
Northeast	17.0	14.6	9.8	0.0	0.0	16.8	13.7	12.3	0.0	0.0	9.8	3.6	6.7	0.0	0.0	
New England	14.8	18.2	70.5	0.0	0.0	14.0	18.1	70.5	0.0	0.0	12.2	6.5	1.0	0.0	0.0	
Middle Atlantic	57.4	21.1	9.8	0.0	0.0	62.2	19.1	12.5	0.0	0.0	10.8	4.6	6.9	0.0	0.0	
Midwest	19.3	11.9	25.4	0.0	0.0	22.1	12.4	23.0	0.0	0.0	10.3	3.6	7.1	0.0	0.0	
East North Central	47.1	13.5	39.7	0.0	0.0	46.0	14.8	39.4	0.0	0.0	10.5	4.3	10.7	0.0	0.0	
West North Central	8.7	20.0	17.5	0.0	0.0	8.6	19.3	13.5	0.0	0.0	15.5	1.9	8.7	0.0	0.0	
South	0.0	0.0	22.5	14.3	13.2	0.0	0.0	20.8	13.8	15.1	0.0	0.0	4.2	4.2	6.7	
South Atlantic	0.0	0.0	11.9	16.6	16.8	0.0	0.0	8.9	12.6	18.6	0.0	0.0	5.3	6.5	7.6	
East South Central	0.0	0.0	56.1	27.4	71.4	0.0	0.0	54.2	31.5	70.7	0.0	0.0	6.8	9.6	2.8	
West South Central	0.0	0.0	89.4	40.5	18.8	0.0	0.0	87.9	40.6	21.8	0.0	0.0	7.2	2.3	10.2	
West	45.3	17.3	45.1	10.9	27.0	44.5	16.5	39.9	10.7	33.9	6.6	7.1	15.3	6.7	11.3	
Mountain	57.8	17.9	80.5	69.0	15.4	59.5	15.6	72.2	69.1	16.6	5.2	9.8	28.6	0.7	7.6	
Pacific	56.7	40.0	50.5	10.3	86.9	57.7	41.1	47.6	9.2	86.9	18.6	5.7	14.4	7.2	3.5	
<b>Number of floors</b>																
1	17.0	11.1	14.6	12.4	17.2	15.8	11.1	14.9	11.6	18.5	12.5	3.8	6.3	3.4	7.7	
2	23.2	12.3	12.8	11.1	11.5	21.6	10.4	12.3	10.9	14.9	7.7	5.5	5.5	7.6	9.8	
3	28.0	14.0	14.6	21.9	31.1	26.6	13.6	15.9	18.0	27.9	9.1	6.6	7.2	8.9	12.6	
4 to 9	18.9	13.2	15.2	21.9	13.5	23.3	12.0	14.5	19.1	11.8	9.5	4.9	6.8	7.4	9.4	
10 or more	31.1	18.2	20.5	17.0	31.0	20.9	22.1	19.8	17.4	21.3	13.8	11.1	7.1	3.7	14.0	
<b>Elevators and escalators (more than one may apply)</b>																
Any elevators	18.6	8.7	12.3	15.4	12.4	19.9	9.1	11.4	12.7	11.0	5.1	3.3	3.9	5.2	5.9	
1 elevator	25.3	11.5	14.8	24.3	16.4	24.6	11.9	12.2	18.9	17.2	6.9	5.7	6.0	8.3	8.9	
2 to 5 elevators	19.0	11.0	14.4	17.5	14.6	21.4	11.3	13.9	13.5	12.7	5.2	5.3	5.8	8.0	5.4	
6 or more elevators	22.3	14.4	17.2	13.1	20.0	20.3	15.3	17.2	13.7	15.4	9.5	9.4	6.6	6.5	10.7	
Any escalators	22.4	20.3	31.3	19.3	19.2	25.0	21.0	26.9	21.5	15.6	3.5	5.8	9.6	9.1	15.2	
<b>Number of workers (main shift)</b>																
Fewer than 5	26.1	12.8	17.4	14.8	20.0	22.9	14.5	15.5	14.4	22.1	7.7	8.2	8.6	7.1	10.9	
5 to 9	42.5	15.1	15.0	16.7	25.1	30.6	15.6	15.8	14.8	20.2	41.2	6.8	7.3	7.0	11.5	
10 to 19	25.4	13.8	16.0	14.5	20.5	21.8	16.7	20.5	13.0	24.8	8.9	10.2	9.8	5.0	15.3	
20 to 49	22.8	12.5	17.0	14.1	15.6	19.1	12.5	15.9	13.5	18.8	13.2	6.4	5.1	5.7	12.8	
50 to 99	21.9	12.2	17.0	16.9	18.7	20.1	12.8	14.2	14.1	18.1	9.9	6.0	8.9	7.4	5.1	
100 to 249	27.9	14.3	10.6	14.9	17.0	27.2	12.6	11.3	13.0	14.4	8.4	4.7	5.4	6.4	4.5	
250 or more	21.2	12.2	14.8	13.3	15.4	19.7	12.6	14.2	12.7	12.4	10.0	6.3	6.2	7.0	8.0	
<b>Weekly operating hours</b>																
Fewer than 40	27.8	18.3	19.1	16.2	23.0	24.8	12.2	17.3	16.7	23.8	8.6	13.2	6.5	8.4	15.5	
40 to 48	39.6	12.3	14.7	12.3	16.9	18.9	13.0	13.9	12.0	21.4	30.9	4.9	4.9	4.7	12.7	
49 to 60	25.2	13.9	11.5	11.4	15.9	23.9	11.1	11.8	11.5	16.5	9.4	5.7	3.4	5.2	7.7	
61 to 84	19.5	12.2	17.2	16.3	15.3	18.7	11.0	14.3	11.7	17.1	13.0	4.9	6.8	8.5	10.8	
85 to 167	30.2	12.6	14.3	14.6	18.0	27.8	12.1	15.6	14.4	18.2	13.3	6.7	10.6	11.4	10.9	
Open continuously	16.7	11.2	13.0	14.7	14.5	18.4	11.3	12.6	14.1	15.9	11.1	4.4	5.9	5.6	7.6	

Relative standard errors (RSEs) for Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018

	RSEs for sum of major fuels consumption				RSEs for total floorspace of buildings					RSEs for energy intensity for sum of major fuels					
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	15.8	8.3	10.8	10.8	12.1	17.0	8.3	10.5	10.0	14.1	7.1	2.6	3.4	3.6	5.6
<b>Ownership and occupancy</b>															
Nongovernment owned	16.1	8.6	10.9	10.2	11.7	17.7	8.5	10.3	10.6	13.3	10.8	2.7	4.3	3.4	6.3
Owner occupied	16.6	9.2	13.4	10.5	12.6	18.8	8.9	12.1	11.6	14.9	14.9	3.2	5.0	4.1	7.2
Leased to tenant or tenants	20.7	11.0	11.4	11.9	15.3	22.6	11.3	10.5	10.6	15.6	11.0	4.2	5.8	4.9	8.8
Unoccupied	0.0	52.4	33.8	61.6	74.3	71.7	35.6	33.2	32.5	55.5	0.0	43.6	32.0	70.2	49.3
Government owned	19.0	10.7	14.7	24.5	17.9	19.7	11.5	13.7	18.4	19.0	7.6	4.8	3.6	9.7	5.6
Federal	50.5	29.0	33.3	30.7	49.7	39.1	23.4	32.8	30.9	45.6	17.7	15.8	8.4	13.3	18.0
State	31.3	19.3	23.6	39.7	28.4	25.7	17.5	21.4	28.9	31.2	16.2	7.0	7.1	15.2	7.9
Local	19.9	11.7	15.7	15.2	16.0	21.8	13.6	15.8	15.9	17.6	9.2	4.9	2.8	6.2	7.0
<b>Party responsible for operation of energy systems</b>															
Building owner	16.2	8.4	11.3	11.8	13.7	17.5	8.6	10.7	10.7	15.9	8.5	2.7	3.4	4.4	5.6
Business owner or tenant	25.5	14.7	17.4	13.7	19.0	23.8	15.8	15.2	12.3	21.0	18.9	7.6	7.8	7.1	10.4
Property management	40.3	28.8	25.5	27.7	27.8	29.3	28.1	22.1	21.1	28.8	13.8	16.6	16.3	14.5	17.5
Other	40.2	22.8	24.1	29.9	12.6	34.3	20.0	28.6	22.6	23.2	35.5	11.8	8.8	14.9	22.2
<b>Provider of direct input on energy-related equipment purchases</b>															
Building owner	16.0	8.5	11.7	11.9	12.8	17.3	8.4	11.2	10.6	15.1	8.2	2.6	3.4	4.6	6.0
Business owner or tenant	33.9	18.0	18.1	14.5	25.9	23.5	16.2	16.1	15.6	29.0	19.8	7.9	9.1	10.7	10.3
Property management	75.6	40.3	17.1	40.5	47.9	72.9	33.6	24.6	30.5	52.3	1.8	19.3	15.1	14.8	42.7
Other	26.8	17.2	17.9	18.2	18.7	46.0	17.2	16.2	14.9	14.3	41.9	12.1	9.6	10.2	15.3
<b>Number of establishments</b>															
1	14.7	9.0	12.2	12.9	14.5	16.7	9.1	12.0	11.0	17.0	9.6	3.3	4.0	5.2	7.0
2 to 5	24.1	10.8	18.5	14.6	16.5	22.3	10.0	15.7	13.1	14.1	6.8	5.4	7.5	5.3	8.6
6 to 10	29.9	19.4	14.7	16.9	26.3	24.1	19.2	15.2	16.0	20.6	19.6	6.7	5.7	8.0	14.3
11 to 20	40.2	19.4	23.0	17.2	28.3	47.9	19.3	17.6	14.6	25.6	20.6	7.5	12.0	6.4	9.7
More than 20	37.2	31.1	17.4	22.6	18.6	36.2	27.7	18.0	20.1	16.5	20.8	7.8	9.3	8.9	11.4
Currently unoccupied	0.0	39.9	29.3	44.9	73.4	83.4	31.0	26.1	30.4	54.2	0.0	30.9	25.7	54.0	48.8
<b>Predominant exterior wall material</b>															
Brick, stone, or stucco	16.4	10.9	11.9	14.3	15.3	17.0	10.2	11.7	11.5	17.0	4.0	4.1	3.5	6.3	6.0
Concrete (block or poured)	22.4	11.0	13.8	13.7	12.5	19.1	11.8	14.5	12.9	12.1	12.7	6.2	9.4	5.2	9.1
Concrete panels	21.4	19.2	17.7	17.2	23.7	22.6	21.0	16.9	14.2	25.1	14.0	7.8	10.3	13.4	14.3
Siding or shingles	38.6	17.7	21.8	19.5	36.4	18.8	18.0	19.3	31.3	34.9	35.5	9.0	13.4	28.1	20.5
Metal panels	35.2	13.5	21.9	17.8	22.7	30.3	14.3	18.0	14.4	23.7	11.2	9.3	12.8	10.2	14.0
Window glass	29.9	20.4	20.5	25.2	27.8	27.5	22.4	18.9	23.9	27.7	17.3	10.8	8.7	9.6	9.7
Other	48.7	33.0	24.2	19.4	37.3	41.7	33.2	22.7	18.3	33.3	11.7	9.8	18.8	14.4	21.5
<b>Predominant roof material</b>															
Metal surfacing	31.2	12.7	19.1	16.8	20.2	26.1	11.5	17.7	14.6	23.8	31.1	7.0	7.1	6.4	8.4
Synthetic or rubber	16.5	9.0	10.3	13.6	13.6	15.7	8.9	10.6	12.4	13.7	4.9	3.5	4.4	5.5	5.0
Built-up	27.3	13.8	16.1	11.0	17.5	22.4	14.3	12.9	10.3	15.6	12.8	4.7	5.7	6.2	11.1
Slate or tile shingles	57.2	23.8	15.6	24.7	26.3	40.4	22.9	21.3	22.3	21.3	30.9	10.8	15.9	7.1	20.2
Wooden materials (including shingles)	41.5	36.3	39.3	22.3	25.0	45.7	36.9	38.4	28.5	32.1	32.7	23.2	28.3	20.4	19.4
Asphalt, fiberglass, or other shingles	22.6	15.7	14.0	14.3	17.8	20.3	14.6	14.0	14.6	18.6	9.0	5.7	9.2	8.8	9.7
Concrete	63.3	43.2	17.6	29.9	28.0	51.9	28.1	18.6	27.8	24.0	29.9	30.8	8.6	22.7	15.2
Other	36.5	15.8	29.3	19.6	27.5	29.9	16.8	19.0	20.9	28.4	14.5	14.3	26.6	14.2	16.2

Relative standard errors (RSEs) for Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018

	RSEs for sum of major fuels consumption				RSEs for total floorspace of buildings					RSEs for energy intensity for sum of major fuels					
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	15.8	8.3	10.8	10.8	12.1	17.0	8.3	10.5	10.0	14.1	7.1	2.6	3.4	3.6	5.6
<b>Roof tilt</b>															
Flat	15.2	8.8	10.5	10.4	12.3	14.4	8.5	9.9	8.6	14.2	5.9	3.6	3.9	4.6	6.2
Shallow pitch	27.2	12.0	15.9	13.6	14.9	26.8	10.4	14.7	13.6	16.7	15.0	5.4	6.8	5.7	8.0
Steeper pitch	31.1	11.3	16.9	15.0	21.9	19.0	13.4	17.5	15.0	23.9	29.6	6.6	7.1	4.9	13.9
<b>Cool roof characteristics (more than one may apply)</b>															
White or reflective coating or paint	30.7	11.3	15.3	10.2	12.7	21.0	10.3	12.6	10.2	14.4	20.3	3.8	5.3	3.9	5.0
White or reflective tiles or shingles	53.8	22.1	27.7	27.9	30.7	40.9	23.4	21.5	21.6	28.5	22.9	14.0	18.7	10.3	11.2
Aluminum coating	34.3	18.0	23.9	24.3	22.3	39.3	21.6	19.4	19.2	22.1	17.4	14.2	12.7	16.2	13.4
Ballasted roof system	29.2	16.0	23.6	17.0	35.7	27.3	16.9	19.4	17.7	26.4	4.9	5.8	11.1	10.1	30.8
Other cool roof property	44.2	23.3	40.1	34.0	56.9	26.2	28.0	38.7	35.1	49.9	27.6	9.6	15.2	12.7	29.2
<b>Renovations since 2000 (more than one may apply)</b>															
Any type of renovation	18.8	8.9	11.3	11.8	13.3	20.3	8.7	10.5	12.3	13.6	8.1	3.6	3.3	3.9	6.7
Addition or annex	23.3	11.2	14.6	15.6	15.4	25.7	11.4	14.8	15.6	16.4	9.5	6.6	5.2	11.8	11.6
Reduction in floorspace	61.0	26.5	22.5	30.6	40.9	60.4	27.6	18.9	27.4	41.5	4.5	10.8	14.0	13.5	19.5
Roof replacement	19.9	10.2	13.6	13.0	17.8	19.0	9.8	11.5	13.5	21.1	5.7	4.0	5.8	5.9	10.0
Interior wall reconfiguration	21.4	10.0	15.3	13.5	15.4	22.2	10.4	12.7	12.3	12.9	5.9	4.7	4.8	4.9	8.2
Window replacement	24.0	12.0	16.5	22.6	22.1	24.2	11.9	13.3	19.5	23.7	9.6	7.0	6.4	6.2	13.1
HVAC equipment upgrade	19.3	9.7	12.1	13.0	14.6	20.2	10.5	10.6	13.2	15.4	10.4	4.8	3.8	5.3	8.8
Lighting upgrade	20.9	10.0	12.2	13.0	14.3	23.3	9.1	10.2	12.4	12.6	8.0	4.2	3.9	4.3	7.8
Electrical upgrade	25.7	10.6	12.7	17.8	15.8	25.7	11.9	10.2	19.3	14.3	9.1	5.5	5.4	6.5	12.0
Plumbing system upgrade	20.7	11.5	13.8	15.3	20.3	22.2	12.2	11.6	15.2	15.5	9.8	5.5	4.8	4.9	10.9
Insulation upgrade	23.2	13.3	19.9	17.8	21.5	20.7	14.9	17.2	20.1	22.8	21.6	7.9	7.2	7.9	12.3
Fire, safety, or security upgrade	22.0	10.9	13.1	13.3	15.8	22.5	10.9	11.1	14.2	14.2	5.6	5.4	4.3	5.6	10.3
Structural upgrade	35.4	16.2	27.8	19.2	30.2	33.0	16.0	22.8	22.9	28.9	13.9	10.9	9.0	11.8	12.4
Other	99.4	30.8	27.5	28.3	29.1	95.2	35.6	26.1	27.5	38.1	29.2	20.9	5.0	12.9	10.4
No renovations	16.5	10.1	10.9	11.9	14.8	16.1	9.0	11.1	10.1	18.3	12.6	4.2	4.9	4.6	6.8
Buildings constructed 2013 or later	27.4	18.5	20.7	17.2	18.9	25.4	17.1	20.8	17.1	21.6	10.7	12.5	11.4	10.7	11.6
<b>Energy sources (more than one may apply)</b>															
Electricity	15.8	8.3	10.8	10.8	12.1	17.3	8.2	10.6	10.0	13.6	7.5	2.4	3.3	3.6	5.6
Natural gas	21.2	8.7	11.3	11.1	13.5	23.3	8.9	10.8	11.1	13.3	5.2	2.5	3.5	3.9	4.3
Fuel oil	22.9	11.8	12.8	10.6	13.7	16.4	11.1	12.4	11.1	13.6	10.4	5.1	5.1	5.5	7.0
District heat	24.9	19.7	19.6	34.4	27.2	24.8	20.6	17.9	31.8	25.5	7.0	10.8	4.4	6.4	5.8
District chilled water	42.2	23.2	34.9	35.5	19.0	44.4	21.4	31.8	31.2	17.0	11.8	10.9	6.4	8.2	10.5
Propane	31.9	14.7	25.3	17.7	17.4	15.8	14.2	21.5	17.3	15.5	30.3	8.5	14.1	8.3	12.3
Solar	43.6	22.6	26.4	15.0	30.5	42.5	21.4	23.3	12.7	27.5	8.9	12.3	10.4	10.7	10.7
Wood, coal, and other	30.2	28.3	38.7	34.4	42.0	43.2	26.3	35.6	21.6	39.4	45.2	17.7	30.1	36.9	19.1
<b>Space-heating energy sources (more than one may apply)</b>															
Electricity	24.1	10.2	10.6	10.5	13.8	21.0	9.6	10.6	9.8	15.6	11.1	3.8	5.0	3.0	5.9
Natural gas	21.1	8.8	11.5	10.7	14.2	23.4	9.0	11.1	11.2	13.1	5.8	2.6	3.8	3.6	5.2
Fuel oil	14.3	24.7	20.1	27.2	54.8	19.8	20.9	21.2	32.4	69.1	11.7	12.4	5.0	21.7	27.6
District heat	24.9	17.0	19.7	34.5	23.0	24.8	20.5	18.0	32.0	25.0	7.0	9.9	4.4	6.6	9.1
Propane	31.5	22.5	51.9	32.6	32.6	21.5	24.7	33.3	23.1	33.2	22.1	9.2	34.2	17.7	23.0
Other sources <sup>b</sup>	40.2	31.1	50.1	64.8	0.0	48.5	29.7	38.9	55.5	0.0	41.6	13.4	39.2	29.0	0.0

Relative standard errors (RSEs) for Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018

	RSEs for sum of major fuels consumption				RSEs for total floorspace of buildings					RSEs for energy intensity for sum of major fuels					
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	15.8	8.3	10.8	10.8	12.1	17.0	8.3	10.5	10.0	14.1	7.1	2.6	3.4	3.6	5.6
<b>Primary space-heating energy source</b>															
Electricity	48.1	15.5	11.5	12.6	16.2	42.7	15.3	12.7	11.2	17.1	13.6	7.0	6.9	3.9	6.3
Natural gas	21.4	8.8	11.9	11.4	14.7	23.6	9.0	11.3	12.2	14.3	4.7	2.7	4.1	4.2	5.8
Fuel oil	19.5	35.7	19.5	47.9	83.3	28.2	29.0	21.8	48.4	83.3	18.9	16.7	8.7	10.4	0.1
District heat	25.7	17.0	20.8	37.8	23.0	25.7	20.7	19.1	35.1	25.0	7.7	10.0	4.6	6.0	9.1
Propane	60.6	26.3	52.7	53.5	67.3	30.6	29.9	38.5	45.8	45.7	48.3	10.2	32.7	34.8	45.2
Other sources <sup>b</sup>	53.1	28.6	49.9	97.8	0.0	47.2	32.5	70.5	72.3	0.0	42.9	17.7	19.3	73.1	0.0
<b>Cooling energy sources (more than one may apply)</b>															
Electricity	17.0	8.2	10.1	10.9	12.3	16.9	8.5	10.0	10.4	13.2	5.0	2.5	3.3	3.3	5.0
Natural gas	69.6	36.2	32.2	53.0	50.3	69.6	52.1	30.4	53.2	50.3	0.0	16.9	14.9	12.1	0.0
District chilled water	42.2	23.2	34.9	35.5	19.0	44.4	21.4	31.8	31.2	17.0	11.8	10.9	6.4	8.2	10.5
<b>Water-heating energy sources (more than one may apply)</b>															
Electricity	22.7	10.7	8.9	11.2	12.7	18.0	10.2	9.9	10.8	13.8	13.5	3.7	4.6	3.5	7.5
Natural gas	21.9	8.6	12.6	11.0	14.1	23.0	9.2	12.1	10.7	14.4	5.0	2.9	3.5	3.3	4.4
Fuel oil	24.8	31.2	25.8	36.7	84.4	18.8	29.8	29.1	38.6	70.7	15.3	13.6	9.5	29.1	16.2
District heat	29.2	25.5	20.6	34.6	27.3	28.3	27.2	19.6	33.4	22.1	7.2	14.1	5.0	8.2	10.3
Propane	82.3	34.6	41.1	50.4	24.3	35.0	27.0	36.4	47.8	25.3	68.1	35.4	10.2	44.7	18.4
<b>Cooking energy sources (more than one may apply)</b>															
Electricity	24.2	10.0	12.4	13.1	14.2	19.3	9.7	12.0	11.9	13.5	12.4	3.6	3.6	3.3	6.5
Natural gas	20.2	8.8	11.8	11.3	12.8	21.6	8.7	10.7	11.7	11.7	5.5	3.4	3.9	3.4	4.6
Propane	24.9	23.3	30.9	23.6	24.4	24.2	21.8	30.9	20.2	24.0	8.5	15.0	15.8	15.7	15.2
<b>Energy end uses (more than one may apply)</b>															
Buildings with space heating	15.9	8.3	10.9	11.0	12.9	16.9	8.4	10.6	10.3	14.1	7.1	2.5	3.5	3.5	5.5
Buildings with cooling	17.4	8.2	10.9	10.9	12.0	17.3	8.4	10.4	10.3	13.0	4.9	2.5	3.1	3.6	5.0
Buildings with water heating	16.1	8.3	10.8	10.9	12.0	17.1	8.4	10.4	10.1	13.1	7.3	2.5	3.4	3.3	4.9
Buildings with cooking	19.3	8.6	11.0	11.6	11.9	16.8	8.7	10.2	11.4	11.6	8.5	2.9	3.2	2.7	5.2
Buildings with manufacturing	44.1	13.7	19.1	18.8	24.6	29.1	13.8	18.7	13.3	24.5	42.6	9.0	12.6	12.0	18.3
Buildings with electricity generation	22.9	10.1	11.8	10.9	12.3	19.2	9.6	11.8	10.3	13.2	10.8	3.9	5.0	5.3	5.9
Buildings with lighting	15.8	8.3	10.8	10.8	12.1	17.1	8.1	10.6	9.9	13.5	7.2	2.3	3.4	3.5	5.5
<b>Percentage of floorspace heated</b>															
Not heated	48.3	21.5	36.7	20.0	20.0	31.6	22.1	24.4	15.7	22.4	29.4	19.4	36.8	23.7	12.4
1% to 50%	29.6	17.7	19.8	12.6	18.0	32.9	16.8	17.1	11.9	20.8	27.3	16.5	12.1	6.6	11.6
51% to 99%	26.6	11.2	11.6	13.8	17.1	28.4	10.1	11.5	12.5	18.7	13.4	5.1	4.0	6.4	6.6
100%	16.6	9.0	12.1	10.8	13.7	17.2	8.8	11.6	10.6	14.0	8.0	2.8	4.1	4.0	5.8
<b>Percentage of floorspace cooled</b>															
Not cooled	46.7	17.4	28.0	21.2	50.3	25.1	12.2	22.7	16.0	42.8	42.4	13.1	16.8	28.2	29.0
1% to 50%	20.2	10.6	15.4	11.6	17.9	21.0	10.8	12.5	11.4	24.0	9.5	5.2	9.7	4.9	11.3
51% to 99%	23.4	10.7	10.4	16.3	13.5	21.3	10.8	10.1	14.2	13.4	7.8	5.1	4.7	6.1	6.2
100%	18.0	9.3	14.1	9.9	13.5	21.0	9.1	13.8	10.1	13.6	9.1	4.1	3.8	3.4	5.0

Relative standard errors (RSEs) for Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018

	RSEs for sum of major fuels consumption					RSEs for total floorspace of buildings					RSEs for energy intensity for sum of major fuels				
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	15.8	8.3	10.8	10.8	12.1	17.0	8.3	10.5	10.0	14.1	7.1	2.6	3.4	3.6	5.6
<b>Percentage lit when open</b>															
0%	50.4	70.9	48.8	100.4	49.2	50.4	71.5	50.5	60.6	49.2	0.0	1.9	31.5	83.6	0.0
1% to 50%	27.9	13.1	17.8	14.4	21.5	25.9	13.2	16.0	14.3	23.0	8.8	6.6	9.2	7.3	12.1
51% to 99%	19.6	9.6	12.6	11.6	12.9	18.3	9.2	11.5	10.4	13.3	12.1	3.2	5.2	4.6	7.3
100%	17.6	9.1	11.1	12.0	13.2	15.1	9.2	10.8	11.4	14.1	6.5	4.1	3.8	4.5	7.1
Building never open or electricity not used	41.3	23.7	23.6	40.1	50.2	32.6	22.9	23.5	25.2	41.2	42.5	17.5	25.6	37.8	54.6
<b>Percentage lit during off hours</b>															
0%	25.5	14.2	17.9	14.5	32.4	25.3	12.1	17.1	15.5	27.6	13.8	9.3	5.3	6.2	12.7
1% to 50%	16.7	8.8	11.4	11.0	11.5	17.5	8.7	10.3	10.1	12.5	8.5	2.6	4.2	3.4	5.5
51% to 100%	27.8	16.5	15.4	14.3	19.0	25.9	15.5	15.1	13.1	20.9	25.3	8.8	8.2	9.8	10.6
Building always open with no off hours	35.9	21.7	21.2	24.4	24.8	28.9	20.2	24.9	21.1	28.4	27.2	7.0	10.0	12.8	23.4
Electricity not used	0.0	0.0	0.0	0.0	0.0	40.3	38.8	44.3	25.7	61.2	0.0	0.0	0.0	0.0	0.0
<b>Heating equipment (more than one may apply)</b>															
Packaged heating units	18.8	8.9	11.5	10.9	15.2	18.0	8.3	11.8	11.2	14.2	5.0	3.7	5.1	3.6	6.4
Furnaces	27.3	11.8	16.7	15.2	21.6	26.0	10.5	16.6	14.1	25.4	10.3	4.6	5.5	6.4	9.6
Individual space heaters	19.3	11.5	13.6	14.4	14.7	21.1	10.0	11.1	12.0	17.9	12.3	5.3	6.4	6.2	10.7
Boilers	18.0	8.9	11.7	11.6	15.4	16.4	8.3	11.1	10.8	14.9	11.0	3.6	3.8	4.7	8.8
Heat pumps	27.2	15.2	14.9	12.6	21.9	32.8	15.8	13.0	9.5	24.1	30.4	6.3	6.6	7.6	11.0
District heat	24.9	17.0	19.7	34.5	23.0	24.8	20.5	18.0	32.0	25.0	7.0	9.9	4.4	6.6	9.1
Duct reheat	54.3	15.5	14.5	18.5	17.2	49.7	16.0	14.5	18.2	17.3	10.5	7.7	5.6	6.2	8.6
Other	77.7	34.4	46.5	42.7	71.6	56.8	36.8	45.4	42.5	70.7	54.7	15.8	12.6	7.2	9.0
<b>Cooling equipment (more than one may apply)</b>															
Packaged air-conditioning units	18.9	8.0	8.8	10.6	14.1	17.1	7.9	9.0	10.7	14.2	6.7	3.0	3.8	3.9	6.2
Residential-type central air conditioners	21.7	10.4	14.4	19.3	17.5	23.8	10.4	14.6	16.2	18.4	11.3	3.8	4.8	8.8	11.3
Individual air conditioners	21.2	13.1	12.1	16.3	20.4	22.7	10.7	11.8	14.7	18.6	5.8	6.3	6.1	5.4	11.0
Central chillers	19.5	12.7	10.9	15.7	14.3	20.3	12.8	11.6	13.3	12.0	4.7	5.2	3.9	5.0	6.0
Heat pumps	30.1	17.0	18.5	14.8	27.2	32.4	17.9	15.2	9.5	34.4	24.3	7.6	8.3	9.0	19.5
District chilled water	42.2	23.2	34.9	35.5	19.0	44.4	21.4	31.8	31.2	17.0	11.8	10.9	6.4	8.2	10.5
Swamp coolers	35.6	23.9	39.2	27.2	53.6	57.1	17.2	34.3	23.8	29.5	78.6	14.6	17.6	8.7	31.5
Other	99.9	75.0	64.9	56.6	102.1	99.9	70.1	59.7	57.7	91.2	0.0	3.0	21.9	47.5	57.9
<b>HVAC features (more than one may apply)</b>															
Economizer cycle	18.4	9.0	11.9	11.0	12.4	18.2	8.8	11.8	10.2	12.9	5.6	3.0	3.8	4.4	7.4
Variable air volume (VAV) system	17.4	8.8	12.6	17.5	15.5	18.2	9.7	11.6	13.3	16.9	3.7	4.3	5.4	7.0	7.2
Dedicated outside air system (DOAS)	32.3	17.8	18.7	24.2	18.3	19.9	15.3	15.9	22.6	19.2	34.6	9.9	6.0	5.9	12.5
Demand controlled ventilation (DCV)	19.3	13.1	10.9	14.2	18.7	24.8	14.0	11.4	14.5	19.2	10.9	7.9	6.7	8.1	8.5
Regular HVAC maintenance	16.9	8.5	10.9	11.6	11.6	16.4	8.4	10.6	10.6	13.3	5.1	2.5	3.3	4.3	5.5
Building automation system (BAS) controls heating or cooling	20.7	8.3	12.3	9.0	12.5	16.1	8.0	12.0	8.3	12.8	11.5	3.1	3.9	3.3	4.8
Internet-connected or smart thermostat	43.7	25.7	18.1	20.7	35.0	42.7	23.9	16.3	18.5	36.6	22.6	13.0	9.0	12.5	11.7
Programmable thermostat	27.5	12.0	14.5	15.5	15.3	26.6	11.1	13.4	14.8	20.0	5.7	4.9	4.8	6.4	11.6
<b>Main equipment replaced since 2000 (more than one may apply)</b>															
Heating	20.6	9.6	10.1	11.7	18.0	22.1	10.1	10.4	11.4	17.7	4.3	3.4	5.6	5.8	8.7
Cooling	21.3	11.2	14.1	13.4	13.9	19.8	11.0	12.7	11.8	12.1	6.2	2.6	4.7	5.6	9.4

Relative standard errors (RSEs) for Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018

	RSEs for sum of major fuels consumption				RSEs for total floorspace of buildings					RSEs for energy intensity for sum of major fuels					
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	15.8	8.3	10.8	10.8	12.1	17.0	8.3	10.5	10.0	14.1	7.1	2.6	3.4	3.6	5.6
<b>Water-heating equipment</b>															
Centralized system	15.7	9.0	12.0	13.0	13.9	16.3	8.9	11.5	11.3	13.9	8.6	2.9	3.9	4.5	6.2
Distributed system	21.6	16.8	12.8	12.5	22.9	23.7	14.4	11.3	12.0	25.5	14.8	8.1	10.0	5.9	7.6
Combination of centralized and distributed systems	28.6	11.8	14.0	14.9	15.5	27.0	9.7	12.6	14.7	14.6	8.5	5.3	6.3	5.7	8.2
<b>Generation technologies (more than one may apply)</b>															
Reciprocating engine generators	23.2	10.2	12.2	11.9	12.6	18.6	10.0	12.3	11.5	13.8	10.8	4.4	5.5	6.3	6.3
Solar panels	44.5	23.0	24.7	15.5	31.0	43.2	21.5	23.1	13.0	28.9	9.1	12.3	8.6	11.0	11.5
Other generation technology	59.1	29.6	31.5	25.9	26.2	46.6	26.6	27.9	27.5	36.0	18.9	12.9	20.0	13.0	36.9
<b>Lighting equipment types (more than one may apply)</b>															
Incandescent	18.1	11.2	13.2	12.3	17.4	18.7	10.6	12.3	11.9	14.8	8.3	5.7	5.9	4.5	8.6
Standard fluorescent	17.1	8.7	10.1	11.5	11.8	17.7	8.8	10.1	10.7	13.6	7.4	2.6	4.1	4.0	5.8
Compact fluorescent	18.0	11.0	12.3	12.3	12.8	18.0	10.6	11.8	11.7	12.7	5.0	3.5	3.7	3.4	6.8
High-intensity discharge (HID)	18.5	14.6	17.9	16.6	12.6	21.5	12.4	14.7	20.6	13.2	14.3	7.0	6.7	11.8	8.8
Halogen	21.1	11.8	13.8	13.5	16.3	17.5	11.8	12.1	13.0	14.0	9.3	8.0	6.1	6.1	8.8
LED	16.8	8.7	10.4	11.1	13.0	15.6	8.6	10.4	9.4	13.0	9.5	3.0	3.6	4.0	5.1
Other	51.8	33.5	70.9	0.0	70.9	51.8	26.0	70.9	0.0	70.9	0.0	15.4	0.0	0.0	0.0
<b>Refrigeration equipment (more than one may apply)</b>															
Any refrigeration	16.8	8.3	11.2	11.2	11.8	17.2	8.8	10.9	10.4	13.0	7.3	2.9	3.5	4.0	5.6
Walk-in units	21.8	9.0	11.5	11.3	12.5	18.3	9.1	10.7	10.9	11.4	10.9	3.9	4.1	3.2	4.9
Cases or cabinets	19.0	8.0	11.2	12.1	14.0	18.7	8.8	10.4	11.8	11.5	5.0	4.6	5.0	3.8	6.1
Large cold storage areas	68.2	17.7	32.4	18.5	26.4	35.7	16.8	30.8	15.1	25.0	53.6	8.9	12.0	7.8	12.0
Commercial ice makers	18.0	8.9	11.8	13.5	11.9	17.6	8.7	10.7	12.1	11.2	3.4	4.0	4.2	4.4	6.0
Residential-type or compact units	17.0	9.0	11.3	11.2	12.9	17.1	9.2	11.2	10.3	14.8	3.8	3.1	4.0	4.8	7.0
Vending machines	18.0	8.4	12.2	13.4	12.1	19.6	9.4	11.1	12.1	12.0	4.4	3.3	4.3	5.6	4.4
No refrigeration	18.6	11.9	12.3	14.8	19.9	19.6	10.3	11.6	12.3	22.0	11.0	7.9	8.4	10.1	8.5
<b>Office equipment (more than one may apply)</b>															
Desktop computers	16.2	8.5	10.8	11.0	12.2	16.6	8.5	10.5	9.8	13.1	7.0	2.6	3.4	4.2	5.4
With multiple monitors	14.3	8.9	11.6	12.5	11.3	15.1	8.8	11.3	10.7	10.0	3.7	3.4	3.9	5.1	4.8
Laptop computers	17.3	9.1	11.3	11.3	11.6	17.9	9.3	10.8	9.8	11.5	4.2	2.9	3.7	5.3	5.1
Dedicated servers	16.6	8.7	11.2	10.2	11.3	16.7	8.8	11.2	10.1	12.4	6.9	2.9	4.1	4.5	4.7
Tablets charged in building	18.2	9.0	12.6	12.5	11.4	17.3	9.0	12.0	10.4	10.6	5.0	3.5	4.0	4.6	5.0
Large floor-standing office devices <sup>c</sup>	16.7	8.9	11.2	11.4	11.9	16.1	9.1	10.9	9.6	11.2	3.8	2.7	3.7	5.3	5.6
Smaller desktop office devices <sup>c</sup>	14.8	8.3	11.0	11.1	12.4	16.5	8.4	10.8	10.1	12.7	9.0	2.7	3.8	3.6	5.2
Interactive whiteboards	21.7	11.2	16.1	13.1	12.6	22.4	10.8	13.6	11.0	12.4	7.0	5.9	5.7	6.1	5.9
Televisions or video displays	16.8	8.9	11.0	11.4	11.0	16.5	8.7	10.8	10.1	12.1	4.6	3.5	3.8	4.2	6.1
Point-of-sale devices or cash registers	18.5	8.3	11.8	12.2	13.1	19.5	8.1	10.6	11.7	11.4	6.0	4.1	4.4	2.9	5.4

Relative standard errors (RSEs) for Table C10. Consumption and gross energy intensity by climate zone<sup>a</sup> for sum of major fuels, 2018

	RSEs for sum of major fuels consumption				RSEs for total floorspace of buildings					RSEs for energy intensity for sum of major fuels					
	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot	Cold or very cold	Cool	Mixed mild	Warm	Hot or very hot
<b>All buildings</b>	15.8	8.3	10.8	10.8	12.1	17.0	8.3	10.5	10.0	14.1	7.1	2.6	3.4	3.6	5.6
<b>Food preparation or serving areas in non-food service buildings (more than one may apply)</b>															
Snack bar, concession stand, or coffee shop	20.9	12.6	19.2	14.6	11.9	21.1	13.9	17.6	14.7	10.9	7.4	5.3	7.2	4.6	8.6
Fast food or small restaurant	22.8	11.3	16.3	15.6	14.4	25.4	11.5	14.0	14.6	13.0	16.9	4.4	6.9	4.6	7.7
Cafeteria or large restaurant	24.0	8.6	14.9	11.4	18.6	23.3	9.5	12.9	11.7	14.4	6.6	4.8	5.1	4.3	8.2
Commercial kitchen or food preparation area	20.6	10.7	12.9	12.3	13.1	19.6	11.6	11.3	11.5	13.4	6.0	4.4	3.9	3.0	7.5
Small kitchen area	23.6	11.4	14.1	14.9	15.2	22.2	10.4	11.9	14.2	14.3	5.7	4.3	5.1	5.9	9.4
<b>Separate computer areas (more than one may apply)</b>															
Server closet	16.4	8.7	12.2	10.0	11.2	17.1	8.9	11.5	9.9	11.4	4.2	2.5	3.4	4.5	4.1
Data center	21.0	12.9	16.1	15.8	14.0	22.8	12.2	14.8	17.2	15.0	6.8	6.4	9.0	7.0	9.8
Computer-based training room	13.8	9.6	17.0	11.6	11.6	13.2	8.6	14.8	11.4	11.5	5.0	4.2	5.0	5.1	5.7
Student or public computer center	20.6	10.7	17.5	14.5	21.6	20.1	10.4	14.5	12.6	16.8	7.6	3.3	7.1	5.6	9.3
<b>Window and interior lighting features (more than one may apply)</b>															
Multipaned windows	16.3	8.3	11.2	11.6	12.6	16.7	8.2	11.1	11.1	13.8	7.7	2.8	3.7	3.9	5.2
Tinted window glass	18.6	9.9	11.4	10.8	11.5	16.8	9.6	10.7	10.1	13.2	5.1	4.0	3.8	4.4	5.7
Reflective window glass	24.6	12.6	18.5	10.9	15.8	25.3	12.0	16.5	9.6	16.7	10.6	4.8	6.9	4.7	7.1
External overhangs or awnings	20.1	8.9	14.5	12.3	16.5	20.5	10.2	14.0	12.7	15.2	4.9	5.5	5.5	3.5	5.2
Skylights or atriums	15.6	11.4	14.1	11.1	12.3	15.5	12.1	12.1	9.7	14.0	6.5	5.9	5.2	5.7	8.1
Light scheduling	20.6	9.3	13.2	13.5	12.8	21.9	8.3	11.9	10.6	12.6	9.7	4.0	4.8	5.0	4.4
Occupancy sensors	19.4	9.7	12.0	12.4	11.7	20.3	9.4	11.2	9.7	11.3	5.1	3.6	4.2	5.2	4.8
Multilevel lighting or dimming	19.9	10.7	17.8	26.5	13.0	19.5	11.1	15.5	18.8	12.7	7.3	6.5	5.6	10.1	9.7
Daylight harvesting	27.1	16.8	14.5	15.3	16.2	23.2	14.1	12.9	13.0	15.7	15.8	9.8	7.4	8.9	10.4
Plug-load control	40.5	38.3	24.5	31.3	25.8	53.6	32.4	22.7	29.8	31.3	56.4	22.4	6.7	27.8	16.1
Demand responsive lighting	42.8	24.6	21.7	40.3	32.0	43.8	27.5	25.5	36.8	28.5	5.9	10.7	11.1	18.7	20.3
Building automation system (BAS) for lighting	20.8	9.9	16.5	11.4	13.6	19.5	10.0	15.2	9.8	13.1	8.7	4.1	7.5	5.8	6.4
<b>Electric vehicle (EV) charging</b>															
Charging stations associated with the building	25.4	17.2	21.7	11.8	12.1	25.5	17.3	17.5	10.7	12.8	12.8	9.4	8.3	5.8	6.6

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

Note: RSE is a measure of the reliability or precision of a survey statistic. Variability occurs in survey statistics because the different samples that could be drawn would each produce different values for the survey statistics. *Estimation of Standard Errors* and *What is a Relative Standard Error (RSE)?* contain more information on how RSEs are estimated and used. Both references can be accessed from <https://www.eia.gov/consumption/commercial/survey-background-technical-information.php>.

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

<sup>b</sup>Other sources includes wood, coal, solar, and all other energy sources.

<sup>c</sup>Office devices refers to any combination of printers, copiers, scanners, or FAX machines.