

Table C7. Consumption and gross energy intensity by census division (part 1) 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)		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	277	949	1,374	3,749	12,202	17,561	73.9	77.8	78.2
Number of floors									
1	91	234	587	1,099	3,379	7,787	82.8	69.2	75.4
2	62	204	314	894	3,107	4,592	69.1	65.8	68.5
3	51	141	164	809	1,599	2,303	62.7	88.0	71.1
4 to 9	58	210	216	785	2,528	1,906	73.4	83.1	113.5
10 or more	16	160	93	162	1,589	973	98.5	100.9	95.1
Elevators and escalators (more than one may apply)									
Any elevators	129	554	573	1,655	6,547	6,663	78.0	84.7	86.0
1 elevator	51	159	203	790	2,318	2,931	64.8	68.5	69.1
2 to 5 elevators	49	207	185	606	2,402	2,191	81.2	86.1	84.5
6 or more elevators	29	189	186	258	1,827	1,540	111.3	103.3	120.5
Any escalators	Q	72	48	Q	826	502	Q	87.1	95.5
Number of workers (main shift)									
Fewer than 5	49	112	219	928	2,131	4,234	53.3	52.6	51.6
5 to 9	27	53	131	498	824	1,884	55.0	63.9	69.6
10 to 19	25	77	174	343	1,128	2,171	72.0	68.6	80.3
20 to 49	54	132	250	650	1,647	2,747	82.7	80.2	91.1
50 to 99	51	159	174	518	1,829	2,280	98.9	86.8	76.2
100 to 249	40	180	204	509	2,143	2,307	77.9	83.8	88.6
250 or more	31	237	222	303	2,500	1,937	102.1	94.6	114.5
Weekly operating hours									
Fewer than 40	Q	59	100	Q	1,184	2,121	Q	49.6	47.3
40 to 48	36	93	176	720	1,599	3,307	49.9	57.9	53.1
49 to 60	41	176	253	899	3,163	3,837	45.9	55.8	66.0
61 to 84	59	176	215	550	2,196	2,685	107.3	80.0	80.2
85 to 167	47	126	217	448	1,374	2,120	105.6	91.5	102.1
Open continuously	84	320	413	926	2,685	3,491	90.5	119.0	118.3
Ownership and occupancy									
Nongovernment owned	225	740	1,084	3,059	9,636	13,857	73.4	76.8	78.2
Owner occupied	150	424	684	2,175	5,529	8,483	69.1	76.7	80.6
Leased to tenant or tenants	74	313	400	876	3,948	5,219	84.8	79.3	76.5
Unoccupied	Q	Q	Q	Q	Q	Q	Q	Q	Q
Government owned	52	209	290	690	2,566	3,704	75.9	81.4	78.2
Federal	Q	Q	29	Q	Q	272	Q	Q	107.3
State	Q	72	83	Q	775	984	Q	92.8	84.5
Local	33	118	177	462	1,586	2,448	72.2	74.2	72.5
Party responsible for operation of energy systems									
Building owner	227	797	1,147	3,259	10,189	14,724	69.5	78.2	77.9
Business owner or tenant	38	122	175	358	1,676	2,065	107.0	73.0	84.6
Property management	Q	Q	Q	Q	Q	Q	Q	Q	Q
Other	Q	Q	31	Q	Q	473	Q	Q	65.7

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	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	277	949	1,374	3,749	12,202	17,561	73.9	77.8	78.2
Cooling energy sources (more than one may apply)									
Electricity	241	875	1,246	3,052	11,002	15,064	78.8	79.6	82.7
Natural gas	Q	Q	Q	Q	Q	Q	Q	Q	Q
District chilled water	Q	48	97	Q	365	656	Q	130.4	148.1
Water-heating energy sources (more than one may apply)									
Electricity	130	444	535	1,809	5,855	6,941	71.9	75.8	77.0
Natural gas	108	493	923	1,124	5,854	10,193	96.4	84.2	90.6
Fuel oil	40	49	Q	498	657	Q	79.4	74.5	Q
District heat	21	140	108	203	1,177	817	101.7	119.4	132.1
Propane	25	Q	Q	444	Q	Q	56.9	Q	Q
Cooking energy sources (more than one may apply)									
Electricity	122	358	644	1,438	3,761	6,398	84.7	95.3	100.7
Natural gas	94	442	612	819	4,396	5,337	114.7	100.5	114.6
Propane	42	Q	Q	503	Q	Q	83.8	Q	Q
Energy end uses (more than one may apply)									
Buildings with space heating	274	925	1,358	3,603	11,862	16,450	76.1	78.0	82.6
Buildings with cooling	251	927	1,302	3,162	11,395	15,447	79.4	81.3	84.3
Buildings with water heating	271	929	1,350	3,475	11,526	16,281	78.0	80.6	82.9
Buildings with cooking	179	565	841	2,050	6,020	8,315	87.2	93.9	101.2
Buildings with manufacturing	Q	57	120	Q	789	1,489	Q	71.9	80.7
Buildings with electricity generation	148	468	545	1,692	5,106	5,232	87.4	91.7	104.2
Buildings with lighting	277	948	1,371	3,737	12,023	17,100	74.1	78.9	80.2
Percentage of floorspace heated									
Not heated	Q	24	16	Q	340	1,111	Q	70.5	14.0
1% to 50%	Q	28	65	Q	770	1,210	Q	36.9	53.6
51% to 99%	77	219	293	911	2,301	2,999	84.2	95.0	97.7
100%	185	678	1,001	2,368	8,790	12,241	78.1	77.1	81.7
Percentage of floorspace cooled									
Not cooled	26	22	72	587	807	2,114	44.4	27.6	34.1
1% to 50%	39	161	195	862	2,762	3,696	45.6	58.3	52.8
51% to 99%	122	368	422	1,227	4,016	4,724	99.2	91.7	89.2
100%	90	397	685	1,073	4,618	7,027	83.8	86.0	97.5
Percentage lit when open									
0%	N	N	Q	N	N	Q	N	N	Q
1% to 50%	34	80	165	637	1,382	3,097	53.3	57.9	53.4
51% to 99%	137	406	641	1,736	4,714	7,250	78.9	86.1	88.5
100%	106	458	558	1,355	5,760	6,458	78.3	79.5	86.4
Building never open or electricity not used	Q	5	8	Q	346	523	Q	14.8	15.7

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	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	277	949	1,374	3,749	12,202	17,561	73.9	77.8	78.2
Percentage lit during off hours									
0%	47	64	122	760	1,471	2,969	61.9	43.8	41.2
1% to 50%	190	699	1,040	2,575	9,034	12,944	73.9	77.3	80.4
51% to 100%	38	132	159	395	1,085	1,092	97.2	121.8	145.6
Building always open with no off hours	Q	54	52	Q	485	369	Q	111.2	141.8
Electricity not used	N	N	N	Q	Q	Q	N	N	N
Heating equipment (more than one may apply)									
Packaged heating units	122	420	754	1,324	5,244	8,430	91.8	80.1	89.5
Furnaces	29	145	339	465	2,097	4,662	61.5	69.2	72.8
Individual space heaters	62	228	343	789	3,005	4,504	78.6	76.0	76.2
Boilers	128	453	538	1,725	5,661	5,899	74.5	80.1	91.2
Heat pumps	35	167	187	512	1,990	1,956	68.9	84.1	95.7
District heat	40	159	140	394	1,385	1,128	102.0	114.8	124.2
Duct reheat	Q	72	120	Q	841	1,209	Q	85.1	99.1
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q
Cooling equipment (more than one may apply)									
Packaged air-conditioning units	178	602	858	2,051	7,314	9,518	86.6	82.3	90.2
Residential-type central air conditioners	72	167	332	799	1,991	4,404	90.5	83.7	75.5
Individual air conditioners	82	229	226	936	2,721	2,382	87.9	84.2	95.1
Central chillers	47	299	319	534	3,187	3,484	87.3	93.9	91.5
Heat pumps	47	133	97	550	1,844	1,149	85.1	72.0	84.6
District chilled water	Q	48	97	Q	365	656	Q	130.4	148.1
Swamp coolers	Q	Q	Q	Q	Q	Q	Q	Q	Q
Other	N	Q	N	N	Q	N	N	Q	N
HVAC features (more than one may apply)									
Economizer cycle	124	498	673	1,376	5,572	7,119	90.2	89.4	94.5
Variable air volume (VAV) system	85	394	526	960	4,234	5,726	88.8	92.9	91.8
Dedicated outside air system (DOAS)	43	137	143	449	1,294	1,367	96.4	105.9	104.9
Demand controlled ventilation (DCV)	55	187	136	607	2,156	1,808	90.0	86.9	75.0
Regular HVAC maintenance	250	862	1,208	3,109	10,287	13,610	80.5	83.8	88.8
Building automation system (BAS) controls heating or cooling	153	556	690	1,702	5,963	7,180	89.9	93.3	96.1
Internet-connected or smart thermostat	Q	36	59	Q	479	835	Q	75.8	70.3
Programmable thermostat	57	190	290	763	2,970	4,022	74.2	64.0	72.2
Main equipment replaced since 2000 (more than one may apply)									
Heating	125	360	468	1,450	4,563	6,292	86.5	79.0	74.4
Cooling	85	327	336	1,167	4,141	4,534	72.7	78.9	74.0

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	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	277	949	1,374	3,749	12,202	17,561	73.9	77.8	78.2
Water-heating equipment									
Centralized system	186	584	964	2,457	7,424	11,791	75.7	78.7	81.8
Distributed system	42	202	181	566	2,320	2,132	73.8	87.3	84.8
Combination of centralized and distributed systems	43	142	205	452	1,782	2,359	96.1	79.9	87.1
Generation technologies (more than one may apply)									
Reciprocating engine generators	129	408	474	1,427	4,344	4,571	90.4	93.9	103.7
Solar panels	16	68	40	264	947	414	60.5	71.6	97.6
Other generation technology	Q	46	59	Q	342	533	Q	135.1	110.0
Lighting equipment types (more than one may apply)									
Incandescent	67	301	376	803	3,333	4,176	83.8	90.4	90.0
Standard fluorescent	221	762	1,055	2,764	9,592	13,242	80.1	79.4	79.7
Compact fluorescent	124	440	612	1,370	4,948	6,470	90.9	88.8	94.6
High-intensity discharge (HID)	34	144	222	355	1,740	2,164	95.0	82.5	102.8
Halogen	57	204	245	491	2,091	2,276	116.8	97.5	107.8
LED	203	762	1,007	2,679	8,962	11,498	75.6	85.0	87.5
Other	N	N	Q	N	N	Q	N	N	Q
Refrigeration equipment (more than one may apply)									
Any refrigeration	234	827	1,220	2,935	10,027	14,289	79.6	82.5	85.4
Walk-in units	139	446	668	1,268	4,225	5,494	109.5	105.5	121.7
Cases or cabinets	105	422	616	1,012	4,312	5,366	103.6	97.9	114.8
Large cold storage areas	Q	65	62	Q	461	416	Q	141.9	149.6
Commercial ice makers	101	406	691	979	4,177	5,896	102.7	97.3	117.1
Residential-type or compact units	189	681	969	2,451	8,308	12,017	77.2	82.0	80.6
Vending machines	126	487	723	1,490	5,677	8,067	84.7	85.7	89.6
No refrigeration	43	122	154	814	2,175	3,272	53.4	55.9	47.0
Office equipment (more than one may apply)									
Desktop computers	247	867	1,244	3,103	10,795	14,842	79.7	80.3	83.8
With multiple monitors	142	610	750	1,864	7,065	8,908	76.0	86.3	84.1
Laptop computers	212	773	1,068	2,722	9,277	13,173	78.1	83.3	81.1
Dedicated servers	165	643	828	1,993	7,482	9,701	83.0	85.9	85.4
Tablets charged in building	156	572	793	1,969	6,478	8,917	79.4	88.3	88.9
Large floor-standing office devices ^c	161	690	818	1,978	7,875	10,012	81.4	87.6	81.7
Smaller desktop office devices ^c	237	811	1,113	2,976	10,169	13,342	79.7	79.7	83.4
Interactive whiteboards	53	242	265	727	2,815	3,364	73.6	85.9	78.7
Televisions or video displays	202	748	1,001	2,413	8,910	11,140	83.8	83.9	89.8
Point-of-sale devices or cash registers	147	434	687	1,529	4,598	6,407	96.3	94.4	107.3

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	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	277	949	1,374	3,749	12,202	17,561	73.9	77.8	78.2
Food preparation or serving areas in non-food service buildings (more than one may apply)									
Snack bar, concession stand, or coffee shop	34	142	203	329	1,285	1,998	102.6	110.3	101.5
Fast food or small restaurant	39	148	250	329	1,328	2,042	119.1	111.5	122.7
Cafeteria or large restaurant	63	228	282	725	2,436	3,041	86.5	93.5	92.7
Commercial kitchen or food preparation area	82	267	374	767	2,521	3,324	106.3	105.8	112.6
Small kitchen area	65	237	349	1,005	2,780	4,278	64.3	85.3	81.6
Separate computer areas (more than one may apply)									
Server closet	151	580	788	1,755	7,024	8,989	85.9	82.6	87.7
Data center	46	192	212	455	2,114	2,303	100.4	90.9	92.0
Computer-based training room	40	217	285	461	2,484	3,089	86.9	87.3	92.2
Student or public computer center	31	167	190	389	1,884	2,158	80.3	88.9	88.2
Window and interior lighting features (more than one may apply)									
Multipaned windows	232	799	1,149	2,909	9,903	13,899	79.8	80.7	82.6
Tinted window glass	104	454	693	1,140	5,134	7,350	91.0	88.4	94.3
Reflective window glass	47	203	347	591	2,027	3,855	79.4	100.0	90.1
External overhangs or awnings	82	254	461	772	2,673	4,775	105.7	95.0	96.5
Skylights or atriums	60	200	339	777	2,415	3,783	76.9	82.8	89.6
Light scheduling	122	446	558	1,339	4,965	5,961	91.2	89.9	93.6
Occupancy sensors	161	600	742	1,953	7,056	8,713	82.7	85.0	85.1
Multilevel lighting or dimming	59	161	354	560	1,629	3,367	105.9	98.8	105.0
Daylight harvesting	25	89	132	265	1,085	1,120	95.1	82.0	118.1
Plug-load control	Q	Q	46	Q	Q	456	Q	Q	101.7
Demand responsive lighting	Q	23	45	Q	288	570	Q	78.7	79.8
Building automation system (BAS) for lighting	64	170	271	669	2,043	2,566	96.0	83.1	105.8
Electric vehicle (EV) charging									
Charging stations associated with the building	20	91	137	355	1,303	1,740	56.9	69.8	78.8

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.

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

^bOther sources includes wood, coal, solar, and all other energy sources.

^cOffice 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 C7. Consumption and gross energy intensity by census division (part 1) 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		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	12.0	6.6	8.7	10.8	8.8	10.4	4.6	4.7	4.4
Number of floors									
1	15.7	10.4	10.6	14.9	12.0	13.1	7.0	13.4	5.4
2	24.2	11.7	15.6	23.4	10.2	13.6	13.1	7.8	5.9
3	28.0	20.3	16.6	20.7	23.2	19.3	14.9	8.1	5.9
4 to 9	20.5	13.1	15.3	17.9	13.1	13.1	8.8	5.2	7.4
10 or more	23.2	10.5	23.7	23.3	13.2	31.5	15.7	6.9	10.8
Elevators and escalators (more than one may apply)									
Any elevators	11.8	8.2	9.7	14.6	9.3	9.9	12.3	3.3	4.0
1 elevator	16.3	12.0	13.4	24.3	11.7	12.7	25.9	5.4	4.8
2 to 5 elevators	18.0	12.5	18.3	20.1	13.3	14.7	9.0	6.3	7.3
6 or more elevators	17.4	11.3	16.0	27.4	14.1	18.0	19.6	6.4	10.8
Any escalators	46.0	20.1	24.5	50.8	18.4	26.2	8.6	8.9	7.0
Number of workers (main shift)									
Fewer than 5	22.3	22.8	14.8	21.7	20.6	15.9	7.8	7.7	10.9
5 to 9	20.7	22.3	18.9	27.5	18.1	24.8	16.2	13.1	12.4
10 to 19	41.3	11.3	19.5	34.7	16.9	23.4	11.5	12.8	8.1
20 to 49	21.9	9.6	10.9	15.2	8.9	10.8	14.3	9.2	5.7
50 to 99	27.3	16.8	13.3	17.2	15.3	12.6	13.6	12.4	6.7
100 to 249	30.9	13.5	14.4	24.8	16.0	12.1	10.6	8.5	7.7
250 or more	14.9	10.0	13.3	19.6	11.5	15.0	13.8	5.0	8.2
Weekly operating hours									
Fewer than 40	36.4	20.4	22.5	33.5	21.8	16.2	22.2	5.9	17.2
40 to 48	17.9	18.2	15.0	22.7	16.4	15.0	7.8	7.3	4.7
49 to 60	20.7	9.7	18.0	17.0	10.6	16.9	9.0	3.4	7.4
61 to 84	17.9	12.8	13.1	16.0	15.3	12.6	11.5	10.4	7.7
85 to 167	38.1	11.1	13.7	31.2	12.1	14.5	16.6	6.8	7.9
Open continuously	16.5	8.5	11.3	15.8	10.9	12.8	5.5	7.8	6.3
Ownership and occupancy									
Nongovernment owned	12.9	8.7	9.1	12.1	10.1	11.3	4.9	5.8	4.6
Owner occupied	17.1	12.2	8.1	14.1	13.3	9.5	7.6	4.5	5.7
Leased to tenant or tenants	11.6	12.6	15.1	13.1	11.8	15.8	7.9	10.1	3.0
Unoccupied	63.4	66.9	78.2	64.0	47.7	69.1	0.6	37.8	114.6
Government owned	19.6	12.1	13.8	19.7	13.2	14.1	7.9	3.5	6.5
Federal	46.1	32.8	41.3	47.2	40.4	33.1	31.8	16.9	19.5
State	39.2	29.2	26.3	43.3	29.2	29.1	7.0	5.6	16.2
Local	17.8	11.9	11.2	15.6	13.2	11.0	12.0	4.4	4.4
Party responsible for operation of energy systems									
Building owner	15.2	7.2	9.3	12.3	9.1	11.3	7.0	4.3	4.9
Business owner or tenant	17.6	23.0	17.0	14.1	19.4	19.9	12.4	13.6	7.8
Property management	40.4	33.1	43.4	29.7	30.2	41.9	19.1	13.1	22.3
Other	62.3	45.9	22.8	35.7	39.8	18.4	34.7	18.9	9.9

Relative standard errors (RSEs) for Table C7. Consumption and gross energy intensity by census division (part 1) 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		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	12.0	6.6	8.7	10.8	8.8	10.4	4.6	4.7	4.4
Provider of direct input on energy-related equipment purchases									
Building owner	15.1	7.4	9.8	12.2	9.3	11.4	6.3	4.5	4.6
Business owner or tenant	40.9	25.1	17.0	24.0	17.9	17.4	22.0	14.3	10.3
Property management	50.6	38.8	52.5	53.8	33.9	48.5	46.1	15.3	16.0
Other	24.6	29.4	23.4	22.6	28.3	24.7	16.0	16.9	16.8
Number of establishments									
1	14.8	6.9	8.7	11.5	9.6	11.2	7.5	5.2	5.2
2 to 5	22.7	16.2	12.9	17.1	18.1	10.8	14.5	7.2	6.8
6 to 10	31.1	20.2	26.1	24.8	21.6	28.8	18.4	9.2	9.5
11 to 20	57.3	28.9	19.7	44.5	24.1	15.5	22.9	11.8	8.4
More than 20	46.9	23.7	41.6	48.8	18.5	38.8	8.0	9.2	8.7
Currently unoccupied	63.4	55.9	47.1	64.0	44.0	42.5	0.6	26.1	57.1
Predominant exterior wall material									
Brick, stone, or stucco	17.6	7.9	10.1	15.9	9.6	10.1	7.1	4.3	5.6
Concrete (block or poured)	21.8	10.5	15.5	23.1	13.1	18.9	7.6	13.3	10.4
Concrete panels	43.1	21.4	23.1	22.3	27.2	25.6	30.9	18.5	10.5
Siding or shingles	29.7	25.9	23.5	30.3	28.5	16.7	26.0	12.2	11.7
Metal panels	33.5	24.2	17.1	25.8	25.5	19.7	29.1	14.6	14.7
Window glass	50.5	29.3	23.6	44.2	27.3	23.5	42.8	9.2	14.3
Other	60.7	41.4	42.9	56.1	39.6	44.8	17.9	22.3	11.5
Predominant roof material									
Metal surfacing	18.5	13.8	13.8	17.8	10.4	18.2	16.7	7.2	12.6
Synthetic or rubber	16.8	9.2	10.3	15.9	10.9	9.9	8.1	6.0	4.6
Built-up	28.8	10.4	15.2	29.7	11.8	16.5	11.6	4.1	4.8
Slate or tile shingles	34.4	31.0	28.6	37.9	21.3	33.9	21.8	16.0	19.6
Wooden materials (including shingles)	69.2	60.1	46.2	66.9	59.1	50.8	18.9	12.4	28.3
Asphalt, fiberglass, or other shingles	29.4	13.2	17.5	23.9	16.8	16.3	7.2	12.6	6.2
Concrete	74.5	26.0	42.0	71.1	27.9	36.2	32.6	17.9	24.8
Other	57.9	39.9	17.3	58.1	20.4	19.4	0.3	36.3	20.4
Roof tilt									
Flat	16.7	7.1	10.0	16.6	8.7	9.5	4.7	5.7	4.3
Shallow pitch	31.1	13.3	13.3	24.5	13.3	16.2	14.7	11.9	4.8
Steeper pitch	13.5	17.5	13.5	13.1	20.2	15.0	5.6	7.5	9.5
Cool roof characteristics (more than one may apply)									
White or reflective coating or paint	31.6	10.5	10.8	24.1	12.2	11.5	12.9	6.1	5.1
White or reflective tiles or shingles	50.2	26.4	24.8	45.1	24.8	26.4	28.8	21.5	14.9
Aluminum coating	29.0	20.0	25.8	26.5	22.3	31.2	30.4	15.5	18.7
Ballasted roof system	23.0	12.3	21.1	22.5	13.4	24.0	21.4	4.5	7.0
Other cool roof property	21.1	41.9	27.3	36.5	39.0	34.1	22.9	16.4	13.5

Relative standard errors (RSEs) for Table C7. Consumption and gross energy intensity by census division (part 1) 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		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	12.0	6.6	8.7	10.8	8.8	10.4	4.6	4.7	4.4
Renovations since 2000 (more than one may apply)									
Any type of renovation	19.2	8.1	7.4	13.9	8.2	11.4	8.3	4.0	6.5
Addition or annex	30.7	12.6	12.5	29.7	12.9	17.5	10.8	8.5	8.8
Reduction in floorspace	85.3	32.3	32.2	74.3	26.2	28.3	68.5	18.7	12.9
Roof replacement	20.9	11.3	8.3	13.0	11.9	11.2	12.3	4.6	5.8
Interior wall reconfiguration	25.7	11.5	7.7	19.6	11.7	9.9	11.7	5.8	6.8
Window replacement	24.7	12.8	10.0	15.5	11.8	16.0	15.5	4.1	8.6
HVAC equipment upgrade	22.8	10.3	8.1	16.0	11.5	9.6	11.9	4.4	6.2
Lighting upgrade	16.8	11.4	7.9	14.7	9.8	11.2	9.1	4.2	5.7
Electrical upgrade	16.7	11.1	9.7	13.2	11.6	12.2	7.4	4.6	7.2
Plumbing system upgrade	22.4	11.7	12.3	16.2	13.1	16.0	12.6	3.9	8.6
Insulation upgrade	27.3	17.2	12.8	8.3	17.6	19.7	24.3	6.3	11.3
Fire, safety, or security upgrade	20.9	12.1	8.6	13.4	11.8	10.7	12.4	4.1	6.0
Structural upgrade	60.7	18.8	14.8	40.2	16.4	23.3	42.4	9.8	14.2
Other	61.3	33.5	61.9	60.9	31.5	59.7	4.5	10.3	19.2
No renovations	16.3	8.9	12.7	15.4	12.5	12.6	8.9	8.3	5.9
Buildings constructed 2013 or later	35.6	23.1	25.5	30.5	22.6	20.4	19.2	13.8	17.8
Energy sources (more than one may apply)									
Electricity	12.0	6.6	8.7	10.8	8.8	10.3	4.5	4.7	4.2
Natural gas	9.6	7.2	8.8	11.8	9.6	9.3	5.5	5.4	2.9
Fuel oil	21.9	10.4	13.0	16.7	12.6	13.2	8.7	7.3	6.9
District heat	24.9	9.7	23.3	29.5	9.4	24.2	11.7	6.0	13.3
District chilled water	30.8	20.2	27.5	40.2	20.0	27.3	17.6	8.0	11.0
Propane	19.4	17.7	20.9	16.2	21.5	18.7	9.7	10.3	8.0
Solar	25.5	29.3	24.4	24.0	30.9	22.2	16.4	8.1	13.3
Wood, coal, and other	63.0	46.8	34.7	48.6	45.1	32.5	37.9	16.6	22.6
Space-heating energy sources (more than one may apply)									
Electricity	14.5	11.0	11.8	15.8	10.7	13.0	8.3	4.6	6.2
Natural gas	9.5	7.5	9.7	11.6	10.1	10.0	7.8	6.1	2.5
Fuel oil	35.2	22.4	34.3	26.5	20.9	26.1	15.5	7.2	13.1
District heat	24.9	11.4	18.4	29.5	10.4	23.6	11.7	6.2	11.5
Propane	36.7	24.3	45.7	22.3	31.6	30.8	25.1	18.3	30.0
Other sources ^b	82.5	53.7	31.8	49.2	49.5	33.9	60.8	10.7	23.6
Primary space-heating energy source									
Electricity	17.7	19.7	14.5	17.8	15.4	15.9	13.1	8.2	11.5
Natural gas	11.3	7.5	10.7	10.4	9.9	11.0	7.2	6.4	3.0
Fuel oil	35.1	29.1	40.2	26.8	25.7	30.9	14.0	13.5	26.0
District heat	25.2	13.4	19.0	29.9	12.8	24.6	11.9	6.6	12.1
Propane	56.5	45.4	25.6	24.5	12.5	32.4	43.2	55.0	19.8
Other sources ^b	49.9	51.8	41.6	58.3	53.4	42.4	13.6	3.4	28.5

Relative standard errors (RSEs) for Table C7. Consumption and gross energy intensity by census division (part 1) 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		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	12.0	6.6	8.7	10.8	8.8	10.4	4.6	4.7	4.4
Cooling energy sources (more than one may apply)									
Electricity	11.6	6.9	8.3	11.1	9.4	9.4	4.4	4.9	3.4
Natural gas	33.6	38.2	44.6	45.6	36.2	54.0	46.4	14.5	14.5
District chilled water	30.8	20.2	27.5	40.2	20.0	27.3	17.6	8.0	11.0
Water-heating energy sources (more than one may apply)									
Electricity	13.7	9.8	11.2	17.3	10.9	12.9	6.5	7.7	5.9
Natural gas	14.4	7.8	9.9	15.5	9.9	10.4	7.4	5.0	3.6
Fuel oil	19.9	33.8	31.3	18.8	32.8	29.9	12.8	6.4	34.5
District heat	30.4	11.5	32.9	34.8	11.7	36.0	11.5	7.3	21.4
Propane	46.8	76.7	92.1	29.3	57.1	57.4	29.5	72.1	67.7
Cooking energy sources (more than one may apply)									
Electricity	12.6	8.3	8.7	11.3	8.5	9.8	8.7	5.2	3.8
Natural gas	18.5	8.8	9.1	17.8	9.6	8.5	4.9	5.9	3.0
Propane	25.6	33.6	27.4	25.7	35.3	28.5	8.5	25.1	21.5
Energy end uses (more than one may apply)									
Buildings with space heating	12.3	6.5	8.5	11.2	8.8	9.5	3.6	4.8	3.3
Buildings with cooling	12.1	6.7	8.1	11.3	9.1	9.2	4.7	4.8	3.4
Buildings with water heating	12.4	6.2	8.6	11.5	8.8	9.7	3.6	5.0	3.6
Buildings with cooking	12.3	6.7	8.6	11.4	7.7	9.6	2.9	5.1	3.0
Buildings with manufacturing	43.2	25.6	17.6	32.7	27.3	19.8	17.4	16.1	11.1
Buildings with electricity generation	18.4	7.3	7.9	18.1	10.3	8.0	9.2	7.1	4.2
Buildings with lighting	12.0	6.6	8.7	10.8	8.7	10.2	4.5	4.7	3.9
Percentage of floorspace heated									
Not heated	33.3	46.7	37.9	33.4	30.0	33.4	17.6	44.3	21.8
1% to 50%	31.3	26.6	16.9	25.2	25.9	20.8	18.8	14.0	17.0
51% to 99%	31.2	9.2	12.6	22.4	12.8	12.9	13.4	5.8	6.9
100%	13.3	7.2	9.6	12.8	8.6	9.9	7.3	5.4	3.7
Percentage of floorspace cooled									
Not cooled	35.4	21.9	26.3	30.5	18.7	22.2	8.8	12.6	17.2
1% to 50%	19.5	13.2	12.1	13.5	15.0	11.9	15.2	14.0	7.1
51% to 99%	17.2	8.9	12.8	15.2	10.4	13.2	10.4	6.8	5.0
100%	15.1	9.8	8.2	18.8	12.3	10.3	8.3	4.9	7.1
Percentage lit when open									
0%	0.0	0.0	62.0	0.0	0.0	52.6	0.0	0.0	20.1
1% to 50%	17.0	20.5	16.5	27.3	19.9	18.4	21.0	9.8	9.2
51% to 99%	13.2	8.2	9.7	11.4	9.0	9.7	7.3	7.5	3.4
100%	15.5	9.2	11.8	11.1	9.0	14.0	7.6	5.4	4.8
Building never open or electricity not used	63.4	41.0	25.7	49.1	31.2	30.6	44.5	31.0	22.8

Relative standard errors (RSEs) for Table C7. Consumption and gross energy intensity by census division (part 1) 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		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	12.0	6.6	8.7	10.8	8.8	10.4	4.6	4.7	4.4
Percentage lit during off hours									
0%	23.3	21.1	20.1	22.6	18.5	16.4	19.7	7.6	9.3
1% to 50%	16.0	7.7	9.2	12.4	9.1	10.7	5.9	5.5	4.2
51% to 100%	18.2	19.9	19.4	24.9	20.4	15.9	12.1	10.0	7.9
Building always open with no off hours	79.1	22.8	28.4	65.6	24.6	31.1	63.6	9.2	9.2
Electricity not used	0.0	0.0	0.0	70.9	58.9	49.3	0.0	0.0	0.0
Heating equipment (more than one may apply)									
Packaged heating units	17.0	9.7	10.4	17.0	8.7	10.4	6.1	9.1	4.0
Furnaces	45.1	14.2	12.1	40.2	16.1	13.6	23.2	7.0	7.3
Individual space heaters	31.0	10.7	14.5	20.3	12.3	13.5	16.7	5.6	6.8
Boilers	10.4	8.5	11.3	9.1	11.8	10.1	6.7	4.8	4.0
Heat pumps	18.6	12.5	14.1	15.3	15.2	14.0	12.6	8.1	8.6
District heat	24.9	11.4	18.4	29.5	10.4	23.6	11.7	6.2	11.5
Duct reheat	51.1	22.6	19.1	32.0	20.3	21.2	45.5	10.8	8.2
Other	89.4	78.9	43.9	86.7	79.8	45.1	9.5	14.1	9.2
Cooling equipment (more than one may apply)									
Packaged air-conditioning units	13.8	6.6	8.8	12.7	9.5	10.7	9.6	6.5	3.9
Residential-type central air conditioners	18.3	12.3	8.4	19.5	14.2	10.7	14.4	6.0	6.0
Individual air conditioners	22.3	13.3	14.0	15.7	14.9	15.1	10.5	6.8	5.1
Central chillers	24.2	7.4	13.1	18.1	10.5	13.1	12.6	5.0	4.3
Heat pumps	28.7	16.9	16.9	24.9	19.6	12.8	17.9	8.6	9.8
District chilled water	30.8	20.2	27.5	40.2	20.0	27.3	17.6	8.0	11.0
Swamp coolers	61.5	66.5	34.6	65.3	76.9	37.3	34.5	45.8	9.2
Other	0.0	70.2	0.0	0.0	70.2	0.0	0.0	0.0	0.0
HVAC features (more than one may apply)									
Economizer cycle	15.2	6.5	8.9	12.7	9.8	7.9	9.9	5.4	3.8
Variable air volume (VAV) system	10.9	10.0	7.8	15.9	11.9	7.9	19.8	8.7	4.2
Dedicated outside air system (DOAS)	27.6	11.8	22.2	25.1	11.8	20.3	17.2	6.5	10.6
Demand controlled ventilation (DCV)	29.2	11.6	11.8	25.6	13.9	13.8	16.1	6.5	8.8
Regular HVAC maintenance	11.6	6.6	8.9	9.6	10.1	9.7	5.2	5.5	3.0
Building automation system (BAS) controls heating or cooling	14.4	5.7	6.8	12.6	8.4	6.2	9.4	6.7	3.6
Internet-connected or smart thermostat	33.5	20.3	33.7	30.1	21.6	36.6	34.3	12.5	12.3
Programmable thermostat	25.1	13.2	14.7	26.8	13.3	13.8	8.4	8.1	5.0
Main equipment replaced since 2000 (more than one may apply)									
Heating	16.7	12.4	8.9	17.7	12.2	11.7	5.2	7.6	5.2
Cooling	17.0	14.1	12.0	13.9	14.7	11.4	6.3	3.1	4.4

Relative standard errors (RSEs) for Table C7. Consumption and gross energy intensity by census division (part 1) 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		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	12.0	6.6	8.7	10.8	8.8	10.4	4.6	4.7	4.4
Water-heating equipment									
Centralized system	17.1	7.3	9.9	14.5	8.1	10.4	5.1	4.5	4.6
Distributed system	34.8	13.3	20.7	28.6	13.0	19.3	15.1	13.7	10.3
Combination of centralized and distributed systems	26.9	15.8	10.9	14.0	15.3	10.5	18.2	7.2	5.0
Generation technologies (more than one may apply)									
Reciprocating engine generators	18.5	7.0	10.2	18.9	10.6	10.3	9.1	8.1	5.0
Solar panels	26.3	29.3	24.5	24.3	30.9	22.6	15.3	8.1	13.2
Other generation technology	53.9	35.6	39.0	55.4	26.8	32.3	42.9	21.0	19.9
Lighting equipment types (more than one may apply)									
Incandescent	20.7	11.6	10.9	13.5	12.8	11.2	14.4	5.8	5.6
Standard fluorescent	14.8	7.1	9.5	15.1	10.2	11.3	6.2	6.1	4.3
Compact fluorescent	19.8	9.0	11.4	20.3	9.6	12.2	8.6	5.6	4.4
High-intensity discharge (HID)	24.2	10.8	18.4	22.0	12.1	16.7	24.1	6.4	5.6
Halogen	25.2	11.3	12.4	18.0	11.9	13.3	11.1	6.8	7.9
LED	8.9	6.8	8.0	9.4	9.2	8.7	5.3	5.1	4.4
Other	0.0	0.0	33.9	0.0	0.0	26.9	0.0	0.0	14.6
Refrigeration equipment (more than one may apply)									
Any refrigeration	10.6	6.3	8.4	10.1	9.7	9.5	4.6	5.7	4.1
Walk-in units	15.3	6.2	7.8	14.8	6.4	8.1	7.8	6.9	3.9
Cases or cabinets	19.1	8.1	9.0	20.0	7.4	9.1	10.6	6.8	4.6
Large cold storage areas	42.9	27.5	25.1	49.3	17.8	25.6	84.5	24.5	6.1
Commercial ice makers	14.2	7.8	9.1	13.4	8.1	9.0	4.7	5.3	4.4
Residential-type or compact units	7.3	6.6	8.9	8.9	10.4	9.9	6.1	6.9	4.3
Vending machines	14.5	6.7	7.4	11.8	9.4	8.4	5.0	6.3	4.2
No refrigeration	23.9	13.1	15.3	17.5	8.5	17.8	10.0	11.0	8.7
Office equipment (more than one may apply)									
Desktop computers	11.3	6.4	8.3	10.4	8.7	9.3	2.9	5.4	3.3
With multiple monitors	10.9	7.4	7.8	10.1	9.4	8.8	7.0	6.4	4.1
Laptop computers	9.2	7.5	8.4	8.5	9.5	9.0	6.0	5.6	3.1
Dedicated servers	15.0	7.1	8.1	12.6	10.8	8.8	5.3	5.9	3.8
Tablets charged in building	9.5	8.0	9.5	11.0	9.3	9.4	4.5	5.6	4.0
Large floor-standing office devices ^c	14.4	6.9	7.2	12.8	9.0	8.1	5.0	5.5	3.2
Smaller desktop office devices ^c	10.0	6.3	9.4	8.8	8.7	10.3	4.4	5.8	3.7
Interactive whiteboards	13.9	10.3	12.1	18.8	8.9	9.6	23.1	7.4	7.3
Televisions or video displays	11.9	7.4	8.7	10.8	9.7	9.2	4.9	6.1	3.6
Point-of-sale devices or cash registers	14.9	8.2	9.9	14.4	9.1	9.8	8.1	7.2	4.5

Relative standard errors (RSEs) for Table C7. Consumption and gross energy intensity by census division (part 1) 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		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	12.0	6.6	8.7	10.8	8.8	10.4	4.6	4.7	4.4
Food preparation or serving areas in non-food service buildings (more than one may apply)									
Snack bar, concession stand, or coffee shop	24.7	15.7	15.1	18.8	15.3	17.8	17.8	7.6	6.5
Fast food or small restaurant	36.9	14.8	11.2	33.6	11.9	13.8	6.5	7.8	6.3
Cafeteria or large restaurant	14.3	8.0	10.2	14.0	7.9	9.0	13.0	5.2	5.2
Commercial kitchen or food preparation area	19.1	11.3	11.4	18.7	12.8	13.7	10.1	6.0	5.0
Small kitchen area	22.7	9.5	13.8	17.4	10.4	14.4	9.2	4.1	5.3
Separate computer areas (more than one may apply)									
Server closet	15.4	7.4	9.4	13.7	9.8	10.0	6.1	4.4	2.4
Data center	19.7	12.1	12.6	19.8	17.4	13.9	20.0	15.8	8.7
Computer-based training room	17.4	6.5	11.1	21.6	9.0	10.2	8.8	6.4	6.4
Student or public computer center	29.1	9.1	10.9	27.5	10.4	8.0	5.8	2.5	4.4
Window and interior lighting features (more than one may apply)									
Multipaned windows	13.8	6.4	8.5	11.8	8.4	9.6	7.5	5.4	3.5
Tinted window glass	18.5	9.6	10.1	18.6	9.3	8.6	10.4	4.8	3.6
Reflective window glass	18.7	13.7	13.7	16.0	11.9	13.5	15.6	10.8	5.1
External overhangs or awnings	21.1	11.8	9.5	24.3	13.5	12.6	9.1	10.2	7.5
Skylights or atriums	17.8	13.2	10.7	17.6	15.1	10.2	3.8	3.9	6.6
Light scheduling	16.7	11.2	11.5	14.4	11.8	11.6	6.7	6.4	5.7
Occupancy sensors	14.5	7.3	9.8	12.1	9.3	9.4	8.2	6.5	3.8
Multilevel lighting or dimming	12.4	15.4	10.7	18.7	14.7	11.0	19.0	6.7	6.9
Daylight harvesting	46.3	17.4	19.6	40.2	14.8	19.5	14.8	11.4	10.2
Plug-load control	50.8	27.4	48.7	45.5	29.9	31.0	21.7	14.9	32.0
Demand responsive lighting	64.0	32.7	34.9	51.2	32.6	43.2	42.6	8.2	18.8
Building automation system (BAS) for lighting	28.8	12.2	11.1	22.5	16.0	11.3	11.9	8.6	5.6
Electric vehicle (EV) charging									
Charging stations associated with the building	19.0	22.9	18.7	21.4	21.3	18.7	13.6	12.3	12.2

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>.

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

^bOther sources includes wood, coal, solar, and all other energy sources.

^cOffice devices refers to any combination of printers, copiers, scanners, or FAX machines.