

Table C17. Electricity consumption and conditional energy intensity by census division (part 1), 2018

	Total electricity consumption (billion kilowatthours [kWh])			Total floorspace of buildings using electricity (million square feet)			Electricity energy intensity (kWh/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	43	146	203	3,737	12,074	17,374	11.6	12.1	11.7
Number of floors									
1	14	38	84	1,087	3,281	7,650	13.2	11.6	11.0
2	9	29	49	894	3,081	4,549	10.5	9.6	10.7
3	8	24	26	809	1,599	2,296	10.1	15.1	11.1
4 to 9	9	29	30	785	2,525	1,906	11.1	11.6	15.7
10 or more	3	25	15	162	1,589	973	16.7	15.9	15.8
Elevators and escalators (more than one may apply)									
Any elevators	20	85	86	1,655	6,543	6,663	12.0	13.0	13.0
1 elevator	8	24	29	790	2,318	2,931	9.5	10.4	9.8
2 to 5 elevators	8	33	28	606	2,398	2,191	12.6	13.7	12.9
6 or more elevators	5	28	29	258	1,827	1,540	18.0	15.3	19.1
Any escalators	Q	11	8	Q	826	502	Q	13.0	15.8
Number of workers (main shift)									
Fewer than 5	7	16	34	916	2,050	4,048	7.7	7.6	8.4
5 to 9	4	7	18	498	786	1,884	8.8	9.3	9.5
10 to 19	3	13	23	343	1,128	2,171	8.1	11.1	10.5
20 to 49	9	21	39	650	1,647	2,747	14.5	12.6	14.2
50 to 99	9	25	25	518	1,829	2,280	16.5	13.5	11.0
100 to 249	6	28	29	509	2,134	2,307	11.3	13.0	12.4
250 or more	5	37	36	303	2,500	1,937	18.1	15.0	18.5
Weekly operating hours									
Fewer than 40	Q	6	15	Q	1,137	2,005	Q	5.6	7.7
40 to 48	5	12	22	720	1,599	3,307	7.3	7.7	6.8
49 to 60	7	27	33	887	3,092	3,837	7.8	8.7	8.5
61 to 84	8	27	31	550	2,196	2,685	15.3	12.3	11.4
85 to 167	8	19	34	448	1,374	2,082	18.1	13.5	16.3
Open continuously	14	55	68	926	2,676	3,458	14.8	20.5	19.8
Ownership and occupancy									
Nongovernment owned	37	122	167	3,047	9,509	13,686	12.2	12.8	12.2
Owner occupied	25	67	103	2,162	5,476	8,371	11.5	12.2	12.3
Leased to tenant or tenants	12	55	64	876	3,904	5,219	14.1	14.1	12.2
Unoccupied	Q	Q	Q	Q	Q	Q	Q	Q	Q
Government owned	6	24	37	690	2,566	3,688	9.0	9.4	9.9
Federal	Q	Q	4	Q	Q	272	Q	Q	14.6
State	Q	8	9	Q	775	968	Q	10.4	9.8
Local	3	13	23	462	1,586	2,448	7.3	8.3	9.4
Party responsible for operation of energy systems									
Building owner	35	120	171	3,247	10,099	14,542	10.8	11.9	11.8
Business owner or tenant	6	20	22	358	1,638	2,060	18.2	12.3	10.7
Property management	Q	Q	Q	Q	Q	Q	Q	Q	Q
Other	Q	Q	6	Q	Q	473	Q	Q	12.2

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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	43	146	203	3,737	12,074	17,374	11.6	12.1	11.7
Renovations since 2000 (more than one may apply)									
Any type of renovation	25	80	111	1,791	6,616	8,893	14.1	12.1	12.5
Addition or annex	6	16	34	468	1,422	2,744	12.7	11.0	12.5
Reduction in floorspace	Q	7	7	Q	420	478	Q	15.6	14.7
Roof replacement	12	40	55	880	3,501	4,273	13.4	11.5	12.9
Interior wall reconfiguration	14	44	57	744	3,465	4,627	18.2	12.6	12.4
Window replacement	7	23	34	646	2,012	2,374	11.1	11.3	14.1
HVAC equipment upgrade	20	58	68	1,277	4,603	5,235	15.7	12.7	13.0
Lighting upgrade	19	57	80	1,326	4,619	5,984	14.0	12.2	13.3
Electrical upgrade	14	39	43	898	2,964	3,325	15.6	13.2	13.0
Plumbing system upgrade	13	37	40	839	2,911	2,924	15.5	12.6	13.7
Insulation upgrade	7	24	21	391	1,865	1,569	16.6	12.8	13.7
Fire, safety, or security upgrade	15	44	57	976	3,413	4,018	15.5	12.9	14.1
Structural upgrade	Q	11	13	223	822	915	Q	13.7	14.3
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q
No renovations	17	58	74	1,834	4,701	7,102	9.2	12.4	10.4
Buildings constructed 2013 or later	Q	8	18	Q	758	1,379	Q	10.1	13.1
Energy sources (more than one may apply)									
Electricity	43	146	203	3,737	12,074	17,374	11.6	12.1	11.7
Natural gas	24	115	169	1,861	9,470	14,491	13.0	12.1	11.6
Fuel oil	24	59	47	1,639	4,291	2,913	14.4	13.8	16.3
District heat	5	23	21	394	1,430	1,204	12.0	15.8	17.5
District chilled water	Q	6	14	Q	365	656	Q	17.2	21.3
Propane	12	13	12	1,154	1,311	1,293	10.0	9.6	9.5
Solar	3	11	4	268	947	425	10.3	11.5	10.5
Wood, coal, and other	Q	Q	4	Q	Q	412	Q	Q	10.1
Space-heating energy sources									
Electricity	20	69	99	1,264	5,112	6,113	15.7	13.4	16.2
Electricity main	9	30	51	633	2,016	2,730	13.5	14.8	18.6
Electricity secondary	11	39	48	630	3,095	3,383	17.8	12.6	14.2
Other excluding electricity	23	70	100	2,340	6,750	10,337	9.7	10.4	9.7
Buildings without heating	Q	Q	5	Q	Q	924	Q	Q	4.9
Primary space-heating energy source									
Electricity	9	30	51	633	2,016	2,730	13.5	14.8	18.6
Natural gas	18	82	128	1,430	7,463	12,096	12.6	11.0	10.6
Fuel oil	6	6	Q	642	990	Q	8.7	6.3	Q
District heat	5	21	16	388	1,307	1,107	12.0	15.7	14.6
Propane	Q	Q	2	453	Q	380	12.2	Q	5.9
Other sources ^b	Q	Q	Q	Q	Q	Q	Q	Q	Q
Cooling energy sources									
Electricity	38	137	182	3,052	11,002	15,064	12.5	12.4	12.1
Other excluding electricity	Q	6	Q	Q	393	383	Q	15.9	25.4
Buildings without cooling	4	3	12	575	679	1,927	6.5	4.3	6.1

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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	43	146	203	3,737	12,074	17,374	11.6	12.1	11.7
Heating equipment (more than one may apply)									
Packaged heating units	21	70	113	1,324	5,244	8,430	15.8	13.3	13.4
Furnaces	4	19	49	465	2,097	4,662	9.0	9.0	10.5
Individual space heaters	11	36	53	789	3,005	4,504	13.7	12.1	11.9
Boilers	18	61	76	1,725	5,661	5,899	10.5	10.7	12.9
Heat pumps	6	29	30	512	1,990	1,956	12.3	14.6	15.6
District heat	5	22	16	394	1,385	1,128	12.0	16.0	14.5
Duct reheat	Q	12	21	Q	841	1,209	Q	14.2	17.4
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q
Cooling equipment (more than one may apply)									
Packaged air-conditioning units	29	95	122	2,051	7,314	9,518	14.2	12.9	12.9
Residential-type central air conditioners	11	21	46	799	1,991	4,404	13.6	10.7	10.5
Individual air conditioners	11	31	32	936	2,721	2,382	12.3	11.6	13.4
Central chillers	8	44	48	534	3,187	3,484	14.9	13.7	13.8
Heat pumps	10	22	15	550	1,844	1,149	18.0	12.2	12.7
District chilled water	Q	6	14	Q	365	656	Q	17.2	21.3
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	21	74	102	1,376	5,572	7,119	15.5	13.3	14.3
Variable air volume (VAV) system	14	65	76	960	4,234	5,726	14.4	15.2	13.3
Dedicated outside air system (DOAS)	7	18	21	449	1,294	1,367	16.6	13.9	15.5
Demand controlled ventilation (DCV)	8	30	17	607	2,156	1,808	12.7	13.8	9.4
Regular HVAC maintenance	39	134	179	3,109	10,287	13,610	12.5	13.0	13.1
Building automation system (BAS) controls heating or cooling	24	90	103	1,702	5,963	7,180	14.2	15.0	14.3
Internet-connected or smart thermostat	Q	5	9	Q	479	835	Q	10.5	11.3
Programmable thermostat	9	26	41	763	2,970	4,022	11.3	8.7	10.2
Main equipment replaced since 2000 (more than one may apply)									
Heating	19	57	68	1,450	4,563	6,292	13.0	12.5	10.8
Cooling	12	44	48	1,167	4,141	4,534	10.5	10.6	10.5
Water-heating equipment									
Centralized system	28	82	143	2,457	7,424	11,791	11.3	11.1	12.1
Distributed system	6	37	26	566	2,315	2,132	11.0	15.9	12.2
Combination of centralized and distributed systems	8	23	29	452	1,782	2,359	17.8	12.8	12.4

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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	43	146	203	3,737	12,074	17,374	11.6	12.1	11.7
Generation technologies (more than one may apply)									
Reciprocating engine generators	21	63	69	1,427	4,344	4,571	14.8	14.6	15.1
Solar panels	3	11	4	264	947	414	9.9	11.5	10.7
Other generation technology	Q	8	10	Q	342	533	Q	23.8	19.1
Lighting equipment types (more than one may apply)									
Incandescent	9	44	56	803	3,333	4,176	11.7	13.2	13.4
Standard fluorescent	36	115	154	2,764	9,592	13,242	12.9	12.0	11.7
Compact fluorescent	18	65	89	1,370	4,948	6,470	13.3	13.1	13.7
High-intensity discharge (HID)	5	19	33	355	1,740	2,164	13.2	11.2	15.3
Halogen	8	30	33	491	2,091	2,276	15.4	14.4	14.7
LED	31	117	151	2,679	8,962	11,498	11.5	13.0	13.1
Other	N	N	Q	N	N	Q	N	N	Q
Refrigeration equipment (more than one may apply)									
Any refrigeration	36	124	176	2,935	10,027	14,289	12.4	12.4	12.3
Walk-in units	22	65	101	1,268	4,225	5,494	17.6	15.5	18.3
Cases or cabinets	18	63	92	1,012	4,312	5,366	17.5	14.5	17.2
Large cold storage areas	Q	12	10	Q	461	416	Q	27.0	23.1
Commercial ice makers	15	60	101	979	4,177	5,896	15.1	14.4	17.2
Residential-type or compact units	29	104	137	2,451	8,308	12,017	11.9	12.5	11.4
Vending machines	18	72	107	1,490	5,677	8,067	12.3	12.7	13.2
No refrigeration	7	22	27	802	2,048	3,085	8.9	10.7	8.8
Office equipment (more than one may apply)									
Desktop computers	38	133	181	3,103	10,795	14,842	12.3	12.3	12.2
With multiple monitors	24	97	111	1,864	7,065	8,908	12.9	13.8	12.5
Laptop computers	33	118	157	2,722	9,277	13,173	12.1	12.8	12.0
Dedicated servers	27	104	123	1,993	7,482	9,701	13.7	13.9	12.7
Tablets charged in building	25	90	117	1,969	6,478	8,917	12.8	14.0	13.1
Large floor-standing office devices ^c	26	106	119	1,978	7,875	10,012	12.9	13.4	11.8
Smaller desktop office devices ^c	37	124	164	2,976	10,169	13,342	12.3	12.2	12.3
Interactive whiteboards	8	35	39	727	2,815	3,364	10.3	12.5	11.5
Televisions or video displays	32	116	149	2,413	8,910	11,140	13.4	13.0	13.4
Point-of-sale devices or cash registers	24	64	105	1,529	4,598	6,407	15.8	13.9	16.3
Food preparation or serving areas in non-food service buildings (more than one may apply)									
Snack bar, concession stand, or coffee shop	5	19	28	329	1,285	1,998	16.0	14.8	13.8
Fast food or small restaurant	6	22	39	329	1,328	2,042	17.3	16.9	19.3
Cafeteria or large restaurant	9	32	38	725	2,436	3,041	12.6	13.1	12.4
Commercial kitchen or food preparation area	13	35	55	767	2,521	3,324	17.5	14.0	16.4
Small kitchen area	10	33	50	1,005	2,780	4,278	9.6	11.8	11.7

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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	43	146	203	3,737	12,074	17,374	11.6	12.1	11.7
Separate computer areas (more than one may apply)									
Server closet	26	86	119	1,755	7,024	8,989	14.8	12.3	13.2
Data center	7	33	32	455	2,114	2,303	16.3	15.5	14.1
Computer-based training room	6	29	39	461	2,484	3,089	14.0	11.8	12.7
Student or public computer center	4	21	24	389	1,884	2,158	9.7	11.0	11.1
Window and interior lighting features (more than one may apply)									
Multipaned windows	37	124	169	2,909	9,858	13,867	12.6	12.6	12.2
Tinted window glass	16	71	105	1,140	5,105	7,345	13.9	13.9	14.3
Reflective window glass	7	37	55	591	2,017	3,855	12.5	18.2	14.1
External overhangs or awnings	14	37	68	772	2,673	4,775	18.4	13.9	14.2
Skylights or atriums	9	30	50	777	2,415	3,776	11.6	12.5	13.1
Light scheduling	19	73	86	1,339	4,965	5,961	13.9	14.8	14.4
Occupancy sensors	27	96	108	1,953	7,056	8,713	13.7	13.6	12.4
Multilevel lighting or dimming	9	25	50	560	1,629	3,367	16.7	15.2	14.9
Daylight harvesting	4	15	21	265	1,085	1,120	15.0	14.2	18.8
Plug-load control	Q	Q	Q	Q	Q	456	Q	Q	Q
Demand responsive lighting	Q	3	5	Q	288	570	Q	10.0	9.4
Building automation system (BAS) for lighting	10	27	41	669	2,043	2,566	15.6	13.4	16.2
Electric vehicle (EV) charging									
Charging stations associated with the building	4	15	21	355	1,303	1,740	10.7	11.1	12.3
Annual consumption (kilowatthours)									
10,000 or less	Q	Q	1	Q	Q	827	Q	Q	1.3
10,001 to 50,000	3	6	10	575	1,384	2,518	5.2	4.1	4.0
50,001 to 100,000	4	5	12	523	705	1,637	8.2	7.6	7.3
100,001 to 500,000	10	22	45	964	2,590	3,824	10.3	8.7	11.7
500,001 to 1,000,000	5	14	39	415	1,458	2,872	10.9	9.8	13.5
1,000,001 to 5,000,000	16	54	59	831	3,724	3,756	19.0	14.6	15.6
Over 5,000,000	6	44	38	274	2,049	1,940	20.3	21.3	19.6

Data source: U.S. Energy Information Administration, Forms EIA-871A and E 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 C17. Electricity consumption and conditional energy intensity by census division (part 1), 2018

	RSEs for total electricity consumption			RSEs for total floorspace of buildings using electricity			RSEs for electricity energy intensity		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	13.3	8.4	9.5	10.8	8.8	10.3	6.5	6.4	4.1
Number of floors									
1	23.8	13.8	12.3	14.9	12.1	13.0	14.6	19.3	4.9
2	23.3	12.6	14.8	23.4	10.3	13.5	12.5	7.8	6.9
3	28.3	29.3	17.1	20.7	23.2	19.4	15.5	17.0	8.0
4 to 9	22.0	14.0	20.6	17.9	13.1	13.1	9.7	8.2	14.7
10 or more	25.3	10.8	24.4	23.3	13.2	31.5	9.0	8.0	11.9
Elevators and escalators (more than one may apply)									
Any elevators	13.0	10.7	10.9	14.6	9.3	9.9	8.7	6.5	6.4
1 elevator	18.9	17.5	13.5	24.3	11.7	12.7	15.4	9.0	7.7
2 to 5 elevators	19.7	16.0	17.6	20.1	13.3	14.7	8.2	12.8	8.7
6 or more elevators	23.3	10.9	23.4	27.4	14.1	18.0	10.6	7.6	13.9
Any escalators	61.9	21.8	30.1	50.8	18.4	26.2	20.3	9.8	8.5
Number of workers (main shift)									
Fewer than 5	22.6	26.5	16.6	21.6	20.0	15.6	10.8	13.5	8.7
5 to 9	24.4	26.5	18.2	27.5	18.2	24.8	30.1	11.6	15.3
10 to 19	32.1	10.9	21.1	34.7	16.9	23.4	11.4	14.6	14.4
20 to 49	33.5	16.6	12.9	15.2	8.9	10.8	27.5	16.0	10.0
50 to 99	31.7	21.7	10.8	17.2	15.3	12.6	23.4	18.1	7.1
100 to 249	28.6	16.2	15.7	24.8	15.9	12.1	8.4	9.3	9.3
250 or more	17.8	10.5	18.3	19.6	11.5	15.0	6.7	4.8	11.3
Weekly operating hours									
Fewer than 40	35.3	18.7	28.8	33.5	22.6	15.9	17.8	14.1	22.5
40 to 48	15.5	21.8	17.6	22.7	16.4	15.0	16.1	13.7	9.8
49 to 60	20.9	11.5	17.0	17.0	11.2	16.9	11.8	6.0	6.3
61 to 84	24.9	12.2	16.4	16.0	15.3	12.6	23.4	11.7	12.7
85 to 167	44.7	13.7	14.3	31.2	12.1	14.6	26.8	8.0	8.4
Open continuously	17.3	11.9	12.9	15.8	11.0	12.5	5.6	11.7	6.0
Ownership and occupancy									
Nongovernment owned	14.6	10.1	9.8	12.1	10.1	11.1	7.3	7.8	4.7
Owner occupied	19.5	14.0	9.3	14.1	13.0	9.3	9.9	6.1	7.8
Leased to tenant or tenants	14.0	15.8	17.3	13.1	11.9	15.8	11.2	13.1	6.2
Unoccupied	60.1	38.6	87.6	64.0	55.0	70.6	4.8	53.5	148.4
Government owned	21.3	15.9	15.9	19.7	13.2	14.2	5.5	4.8	5.1
Federal	47.3	36.2	40.8	47.2	40.4	33.1	30.8	22.3	19.9
State	48.5	33.0	26.9	43.3	29.2	29.7	17.4	8.2	13.9
Local	18.1	12.4	13.6	15.6	13.2	11.0	6.4	4.4	6.7
Party responsible for operation of energy systems									
Building owner	16.6	8.8	10.9	12.4	9.1	11.1	7.2	5.7	5.1
Business owner or tenant	23.0	25.6	14.8	14.1	19.7	20.0	20.8	18.8	15.0
Property management	38.1	31.4	48.8	29.7	30.2	41.9	14.0	13.8	28.9
Other	46.3	65.0	30.5	35.7	39.8	18.4	18.6	47.1	18.3

Relative standard errors (RSEs) for Table C17. Electricity consumption and conditional energy intensity by census division (part 1), 2018

	RSEs for total electricity consumption			RSEs for total floorspace of buildings using electricity			RSEs for electricity energy intensity		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	13.3	8.4	9.5	10.8	8.8	10.3	6.5	6.4	4.1
Provider of direct input on energy-related equipment purchases									
Building owner	16.0	8.7	11.0	12.3	9.2	11.2	6.5	5.9	4.4
Business owner or tenant	46.7	32.7	18.6	24.0	18.2	17.5	29.1	21.4	13.0
Property management	48.4	37.3	55.8	53.8	33.9	48.5	30.9	14.1	29.1
Other	15.2	31.8	26.3	22.6	28.3	24.7	18.9	23.0	18.2
Number of establishments									
1	15.9	9.6	9.9	11.5	9.4	11.1	9.0	8.1	5.1
2 to 5	19.9	15.1	14.1	17.1	18.1	10.8	8.6	9.2	8.9
6 to 10	25.5	21.7	24.7	24.8	21.6	28.8	12.4	8.6	14.9
11 to 20	50.3	27.9	18.0	44.5	24.1	15.5	12.1	13.0	9.5
More than 20	52.1	23.8	44.1	48.8	18.8	38.8	12.7	10.1	8.7
Currently unoccupied	60.1	37.4	69.3	64.0	49.8	40.6	4.8	44.3	68.3
Predominant exterior wall material									
Brick, stone, or stucco	15.3	10.2	10.9	15.9	9.8	9.9	11.4	7.0	5.9
Concrete (block or poured)	23.4	13.0	17.8	23.1	13.0	18.9	6.5	16.7	16.7
Concrete panels	42.0	25.0	23.2	22.3	27.2	25.6	27.5	23.7	15.7
Siding or shingles	35.8	24.6	30.1	30.3	29.1	18.2	27.9	18.6	18.5
Metal panels	48.2	22.9	19.8	24.7	25.5	18.6	45.6	14.2	12.2
Window glass	40.7	31.8	22.6	44.2	27.3	23.5	23.7	8.3	11.3
Other	63.5	38.4	47.6	56.1	40.0	44.8	46.2	5.6	24.0
Predominant roof material									
Metal surfacing	14.8	13.7	14.6	17.0	11.5	17.7	6.8	8.6	11.5
Synthetic or rubber	19.0	11.9	12.7	15.9	10.9	9.9	12.2	7.6	5.5
Built-up	27.5	13.3	15.1	29.7	11.8	16.5	19.2	5.3	6.8
Slate or tile shingles	34.1	24.7	23.0	37.9	21.3	33.9	18.9	9.6	19.8
Wooden materials (including shingles)	66.1	67.6	46.6	66.9	59.1	50.8	14.2	38.5	38.5
Asphalt, fiberglass, or other shingles	39.7	19.5	21.9	23.9	17.4	16.9	20.8	18.6	10.2
Concrete	70.8	25.0	39.7	71.1	27.9	36.2	44.9	11.4	20.5
Other	60.6	57.3	20.4	58.1	20.7	19.4	3.5	57.0	21.9
Roof tilt									
Flat	18.7	8.9	11.4	16.6	8.8	9.5	8.3	7.0	5.3
Shallow pitch	37.8	21.2	15.1	24.5	12.7	15.9	25.2	20.2	5.8
Steeper pitch	18.6	14.6	14.6	13.1	20.2	15.2	13.8	10.8	9.1
Cool roof characteristics (more than one may apply)									
White or reflective coating or paint	36.1	12.4	12.5	24.1	12.2	11.5	20.6	6.0	6.7
White or reflective tiles or shingles	56.1	48.5	24.6	45.1	24.8	26.4	20.9	49.6	19.4
Aluminum coating	34.0	21.0	25.5	26.5	22.4	30.0	25.8	17.0	24.2
Ballasted roof system	25.5	14.7	22.4	22.5	13.4	24.0	18.9	8.3	7.4
Other cool roof property	27.7	42.1	33.9	36.5	39.0	34.1	11.7	12.1	23.1

Relative standard errors (RSEs) for Table C17. Electricity consumption and conditional energy intensity by census division (part 1), 2018

	RSEs for total electricity consumption			RSEs for total floorspace of buildings using electricity			RSEs for electricity energy intensity		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	13.3	8.4	9.5	10.8	8.8	10.3	6.5	6.4	4.1
Renovations since 2000 (more than one may apply)									
Any type of renovation	22.3	10.2	8.9	13.9	8.3	11.3	13.4	5.8	7.1
Addition or annex	32.6	12.9	12.8	29.7	12.9	17.5	9.5	6.3	9.2
Reduction in floorspace	92.4	34.3	33.9	74.3	26.2	28.3	94.3	20.7	10.9
Roof replacement	24.5	12.3	11.4	13.0	12.0	11.2	16.7	5.8	7.1
Interior wall reconfiguration	27.5	10.8	9.2	19.6	11.7	9.6	15.8	6.6	7.2
Window replacement	22.6	15.6	13.6	15.5	12.0	16.0	14.5	7.8	11.0
HVAC equipment upgrade	25.5	11.3	10.2	16.0	11.6	9.6	17.5	4.7	8.0
Lighting upgrade	18.7	14.6	9.5	14.7	9.9	11.2	13.9	7.4	7.4
Electrical upgrade	21.0	13.0	9.1	13.2	11.6	12.2	13.0	6.1	8.6
Plumbing system upgrade	26.8	12.4	13.7	16.2	13.2	16.0	16.5	5.5	7.6
Insulation upgrade	34.0	18.6	16.4	8.3	17.6	19.7	29.8	7.6	10.4
Fire, safety, or security upgrade	24.8	14.9	8.8	13.4	11.9	10.7	16.7	7.2	8.8
Structural upgrade	67.8	21.1	18.2	40.2	16.4	23.3	54.5	14.7	11.9
Other	63.8	40.3	68.2	60.9	31.5	59.7	15.3	19.2	38.2
No renovations	16.9	12.0	13.0	15.4	12.4	12.3	10.2	12.3	5.5
Buildings constructed 2013 or later	35.5	23.0	33.6	31.5	23.5	20.4	19.3	15.5	29.2
Energy sources (more than one may apply)									
Electricity	13.3	8.4	9.5	10.8	8.8	10.3	6.5	6.4	4.1
Natural gas	11.0	9.1	9.4	11.8	9.6	9.3	12.5	7.4	3.8
Fuel oil	23.4	11.8	14.1	16.7	12.6	13.2	13.0	12.1	10.1
District heat	25.4	9.0	31.9	29.5	9.4	24.2	7.7	8.2	22.6
District chilled water	35.2	20.8	40.0	40.2	20.0	27.3	10.6	7.8	26.9
Propane	27.3	15.6	21.6	16.2	21.7	18.7	20.7	15.7	8.0
Solar	35.4	29.2	22.7	24.0	30.9	22.2	15.8	10.1	13.9
Wood, coal, and other	59.2	51.8	33.4	48.6	45.1	32.5	23.2	25.5	26.5
Space-heating energy sources									
Electricity	19.4	13.1	12.1	15.8	10.7	13.0	14.3	6.9	8.6
Electricity main	16.4	20.7	15.8	17.8	15.4	15.9	8.4	9.9	11.1
Electricity secondary	29.4	11.3	14.1	16.8	10.6	13.2	25.1	6.2	9.3
Other excluding electricity	14.4	7.9	10.6	10.9	9.2	10.2	6.9	10.5	4.8
Buildings without heating	33.3	46.3	37.9	33.1	34.8	32.3	20.9	45.4	18.7
Primary space-heating energy source									
Electricity	16.4	20.7	15.8	17.8	15.4	15.9	8.4	9.9	11.1
Natural gas	14.3	8.7	11.8	10.4	9.9	11.0	14.8	8.2	4.3
Fuel oil	29.6	23.4	50.8	26.8	25.7	30.9	6.5	15.0	36.5
District heat	25.6	11.0	19.1	29.9	12.8	24.6	7.8	8.6	10.6
Propane	55.5	45.5	25.6	24.5	12.5	32.4	42.1	55.0	19.8
Other sources ^b	46.2	51.9	44.9	58.3	53.4	42.4	16.9	3.2	28.1
Cooling energy sources									
Electricity	14.4	8.8	8.9	11.1	9.4	9.4	7.8	6.7	4.4
Other excluding electricity	69.3	20.5	55.1	64.1	16.8	33.8	19.2	8.6	37.6
Buildings without cooling	34.6	26.0	36.0	29.9	19.8	22.1	9.5	13.9	22.3

Relative standard errors (RSEs) for Table C17. Electricity consumption and conditional energy intensity by census division (part 1), 2018

	RSEs for total electricity consumption			RSEs for total floorspace of buildings using electricity			RSEs for electricity energy intensity		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	13.3	8.4	9.5	10.8	8.8	10.3	6.5	6.4	4.1
Heating equipment (more than one may apply)									
Packaged heating units	17.7	10.6	11.1	17.0	8.7	10.4	14.3	9.3	5.1
Furnaces	46.8	14.3	14.0	40.2	16.1	13.6	28.9	11.2	8.9
Individual space heaters	36.8	13.4	17.4	20.3	12.3	13.5	25.0	5.8	12.9
Boilers	10.1	10.4	13.7	9.1	11.8	10.1	5.3	4.9	7.1
Heat pumps	16.6	13.6	13.5	15.3	15.2	14.0	7.4	7.4	8.8
District heat	25.4	9.8	18.5	29.5	10.4	23.6	7.7	8.4	10.0
Duct reheat	58.6	19.7	20.3	32.0	20.3	21.2	50.6	6.8	4.5
Other	95.7	74.1	43.8	86.7	79.8	45.1	31.4	25.8	12.7
Cooling equipment (more than one may apply)									
Packaged air-conditioning units	15.8	8.5	10.0	12.7	9.5	10.7	10.9	8.8	4.4
Residential-type central air conditioners	16.8	13.2	9.2	19.5	14.2	10.7	22.3	7.4	6.7
Individual air conditioners	20.3	14.7	17.3	15.7	14.9	15.1	6.8	7.1	10.7
Central chillers	23.0	9.4	13.2	18.1	10.5	13.1	8.8	6.0	6.3
Heat pumps	31.5	17.8	13.4	24.9	19.6	12.8	19.2	11.0	9.8
District chilled water	35.2	20.8	40.0	40.2	20.0	27.3	10.6	7.8	26.9
Swamp coolers	60.7	71.1	31.1	65.3	76.9	37.3	34.9	24.1	18.3
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	18.0	8.9	10.4	12.7	9.8	7.9	15.2	7.2	4.9
Variable air volume (VAV) system	14.8	12.5	9.5	15.9	11.9	7.9	23.1	12.1	7.2
Dedicated outside air system (DOAS)	39.5	12.1	28.7	25.1	11.8	20.3	21.5	7.4	19.8
Demand controlled ventilation (DCV)	23.0	13.8	14.7	25.6	13.9	13.8	15.1	9.8	10.6
Regular HVAC maintenance	12.9	8.9	9.4	9.6	10.1	9.7	7.8	6.9	3.7
Building automation system (BAS) controls heating or cooling	18.0	9.0	8.1	12.6	8.4	6.2	12.1	9.2	4.6
Internet-connected or smart thermostat	38.5	20.4	32.5	30.1	21.6	36.6	32.5	14.0	23.1
Programmable thermostat	32.8	13.1	14.8	26.8	13.3	13.8	12.8	9.4	8.1
Main equipment replaced since 2000 (more than one may apply)									
Heating	16.6	15.7	9.4	17.7	12.2	11.7	11.8	10.5	7.0
Cooling	17.9	16.2	15.3	13.9	14.7	11.4	7.7	6.1	8.2
Water-heating equipment									
Centralized system	20.6	8.9	9.9	14.5	8.1	10.4	8.1	5.9	5.0
Distributed system	31.7	18.9	24.5	28.6	13.0	19.3	11.2	19.4	14.7
Combination of centralized and distributed systems	32.8	16.3	12.7	14.0	15.3	10.5	25.1	7.8	5.8

Relative standard errors (RSEs) for Table C17. Electricity consumption and conditional energy intensity by census division (part 1), 2018

	RSEs for total electricity consumption			RSEs for total floorspace of buildings using electricity			RSEs for electricity energy intensity		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	13.3	8.4	9.5	10.8	8.8	10.3	6.5	6.4	4.1
Generation technologies (more than one may apply)									
Reciprocating engine generators	23.2	10.0	10.9	18.9	10.6	10.3	12.3	10.8	7.7
Solar panels	36.9	29.2	23.1	24.3	30.9	22.6	17.0	10.1	14.1
Other generation technology	57.9	44.3	47.1	55.4	26.8	32.3	20.1	35.1	32.6
Lighting equipment types (more than one may apply)									
Incandescent	16.1	12.8	13.5	13.5	12.8	11.2	6.9	6.9	9.6
Standard fluorescent	15.3	9.0	11.2	15.1	10.2	11.3	8.9	7.7	5.3
Compact fluorescent	17.9	9.7	12.5	20.3	9.6	12.2	5.1	5.8	5.9
High-intensity discharge (HID)	22.0	12.7	23.1	22.0	12.1	16.7	13.6	7.1	11.3
Halogen	23.5	12.6	13.7	18.0	11.9	13.3	8.1	7.6	7.4
LED	10.2	7.3	8.5	9.4	9.2	8.7	7.1	7.0	4.8
Other	0.0	0.0	30.1	0.0	0.0	26.9	0.0	0.0	5.9
Refrigeration equipment (more than one may apply)									
Any refrigeration	12.4	7.6	9.1	10.1	9.7	9.5	7.3	6.9	5.1
Walk-in units	18.5	7.5	8.3	14.8	6.4	8.1	13.8	8.0	5.4
Cases or cabinets	23.7	8.5	10.8	20.0	7.4	9.1	14.3	8.2	7.3
Large cold storage areas	36.7	37.1	25.1	49.3	17.8	25.6	73.3	32.5	12.0
Commercial ice makers	13.4	9.4	9.3	13.4	8.1	9.0	3.9	5.7	4.9
Residential-type or compact units	8.0	8.4	10.1	8.9	10.4	9.9	7.5	8.7	6.1
Vending machines	13.5	9.6	9.0	11.8	9.4	8.4	3.5	8.0	6.2
No refrigeration	24.4	17.3	18.8	17.4	8.6	17.3	10.7	16.6	12.2
Office equipment (more than one may apply)									
Desktop computers	13.1	8.0	9.0	10.4	8.7	9.3	6.9	6.8	4.0
With multiple monitors	12.2	9.3	9.9	10.1	9.4	8.8	9.2	8.6	6.5
Laptop computers	9.0	10.1	9.2	8.5	9.5	9.0	6.5	7.6	4.2
Dedicated servers	16.4	9.3	9.6	12.6	10.8	8.8	7.2	7.7	5.2
Tablets charged in building	8.8	10.6	10.7	11.0	9.3	9.4	7.9	8.2	5.1
Large floor-standing office devices ^c	16.2	8.9	8.5	12.8	9.0	8.1	9.1	6.8	6.0
Smaller desktop office devices ^c	12.4	8.2	10.2	8.8	8.7	10.3	8.2	7.4	4.8
Interactive whiteboards	12.8	13.3	17.3	18.8	8.9	9.6	15.6	11.6	13.3
Televisions or video displays	13.7	9.0	9.7	10.8	9.7	9.2	10.2	7.6	5.6
Point-of-sale devices or cash registers	17.2	9.4	11.0	14.4	9.1	9.8	13.9	9.3	6.0
Food preparation or serving areas in non-food service buildings (more than one may apply)									
Snack bar, concession stand, or coffee shop	23.0	17.0	16.8	18.8	15.3	17.8	14.3	9.9	6.8
Fast food or small restaurant	34.8	15.1	11.6	33.6	11.9	13.8	8.3	8.9	5.6
Cafeteria or large restaurant	15.5	9.6	11.8	14.0	7.9	9.0	11.2	5.8	5.2
Commercial kitchen or food preparation area	30.5	11.3	13.7	18.7	12.8	13.7	19.4	6.2	7.4
Small kitchen area	22.1	11.5	15.2	17.4	10.4	14.4	8.3	5.4	8.0

Relative standard errors (RSEs) for Table C17. Electricity consumption and conditional energy intensity by census division (part 1), 2018

	RSEs for total electricity consumption			RSEs for total floorspace of buildings using electricity			RSEs for electricity energy intensity		
	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central	New England	Middle Atlantic	East North Central
All buildings	13.3	8.4	9.5	10.8	8.8	10.3	6.5	6.4	4.1
Separate computer areas (more than one may apply)									
Server closet	15.9	9.0	10.3	13.7	9.8	10.0	9.2	4.2	4.6
Data center	16.7	13.8	17.7	19.8	17.4	13.9	7.5	19.4	14.9
Computer-based training room	22.3	9.1	12.4	21.6	9.0	10.2	5.4	6.3	7.4
Student or public computer center	19.3	9.7	10.5	27.5	10.4	8.0	20.6	4.0	6.4
Window and interior lighting features (more than one may apply)									
Multipaned windows	16.5	8.2	9.1	11.8	8.4	9.7	8.5	7.0	3.9
Tinted window glass	14.1	11.7	11.6	18.6	9.4	8.7	16.1	6.0	5.4
Reflective window glass	13.7	16.7	14.6	16.0	12.1	13.5	11.8	13.4	8.9
External overhangs or awnings	26.8	13.7	12.5	24.3	13.5	12.6	15.3	10.7	8.5
Skylights or atriums	18.6	15.1	14.4	17.6	15.1	10.2	7.0	3.8	10.7
Light scheduling	19.3	12.9	12.3	14.4	11.8	11.6	12.8	7.3	6.7
Occupancy sensors	14.6	9.2	10.7	12.1	9.3	9.4	11.7	8.3	5.9
Multilevel lighting or dimming	17.4	14.4	13.9	18.7	14.7	11.0	23.9	7.5	9.7
Daylight harvesting	42.3	18.5	26.7	40.2	14.8	19.5	11.8	10.1	18.4
Plug-load control	47.3	33.8	65.0	45.5	29.9	31.0	14.4	16.2	51.5
Demand responsive lighting	56.9	29.9	29.6	51.2	32.6	43.2	20.5	21.0	20.2
Building automation system (BAS) for lighting	30.7	14.7	11.9	22.5	16.0	11.3	21.7	8.0	6.9
Electric vehicle (EV) charging									
Charging stations associated with the building	25.3	23.9	25.2	21.4	21.3	18.7	11.9	11.5	20.5
Annual consumption (kilowatthours)									
10,000 or less	39.8	28.2	20.3	39.3	29.6	23.5	7.4	24.9	7.8
10,001 to 50,000	16.8	17.4	19.4	12.2	20.3	17.8	7.7	8.6	11.0
50,001 to 100,000	35.4	28.1	20.7	43.0	27.1	19.4	24.2	17.1	14.3
100,001 to 500,000	21.0	9.9	14.1	19.9	11.1	15.7	5.9	7.3	5.0
500,001 to 1,000,000	27.8	23.1	16.3	17.1	17.1	15.0	16.1	15.7	5.4
1,000,001 to 5,000,000	21.7	14.7	13.1	14.5	13.7	10.1	17.4	6.8	7.9
Over 5,000,000	27.9	14.4	19.9	33.4	9.8	18.1	21.8	13.7	11.4

Data source: U.S. Energy Information Administration, Forms EIA-871A and E 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.