Preliminary release date: September 2022
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Table C4. Sum of major fuels consumption and expenditure gross energy intensities, 2018

	Sum of major fuels consumption						Sum of major fuels expenditures		
				Distribution of building-level intensities (thousand Btu per square foot)					
	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	25th per-centile	Median	75th per-centile	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	1,147	70.4	79.1	22.6	45.0	80.6	$23.9	$1.46	$20.81
Building floorspace (square feet)									
1,001 to 5,000	203	71.7	59.2	20.8	45.1	87.3	$5.0	$1.77	$24.73
5,001 to 10,000	440	58.5	65.8	17.9	37.9	65.8	$10.0	$1.33	$22.77
10,001 to 25,000	938	58.1	75.2	23.0	43.4	74.8	$20.9	$1.29	$22.26
25,001 to 50,000	2,485	68.7	89.3	31.5	56.0	91.9	$52.4	$1.45	$21.08
50,001 to 100,000	4,938	70.2	83.7	37.4	58.2	88.2	$96.4	$1.37	$19.52
100,001 to 200,000	10,337	73.8	83.9	42.6	64.3	98.0	$201.4	$1.44	$19.49
200,001 to 500,000	25,062	85.3	95.6	42.3	68.9	109.5	$489.7	$1.67	$19.54
Over 500,000	79,315	83.7	75.5	38.8	59.6	113.3	$1,526.5	$1.61	$19.25
Principal building activity									
Education	1,952	62.7	82.3	31.1	48.6	74.4	$36.3	$1.17	$18.59
Food sales	1,433	232.0	254.5	150.5	215.2	311.2	$34.9	$5.66	$24.38
Food service	1,273	263.3	126.4	141.0	232.9	381.5	$24.8	$5.14	$19.51
Health care	4,237	144.5	87.3	40.7	61.1	98.8	$79.2	$2.70	$18.68
Inpatient	51,180	193.3	121.4	140.4	208.6	252.9	$842.1	$3.18	$16.45
Outpatient	1,123	82.0	47.2	39.2	60.6	89.0	$28.6	$2.09	$25.43
Lodging	2,888	85.7	216.3	53.3	86.1	120.3	$55.6	$1.65	$19.26
Mercantile	1,843	88.4	107.3	33.1	62.8	108.1	$36.4	$1.75	$19.74
Retail (other than mall)	950	64.1	102.3	25.8	40.8	63.5	$21.5	$1.45	$22.59
Enclosed and strip malls	3,723	111.0	110.1	78.0	113.5	140.1	$67.8	$2.02	$18.22
Office	1,127	65.6	33.3	36.3	53.5	77.2	$28.0	$1.63	$24.88
Public assembly	1,194	81.1	174.7	26.8	53.2	90.0	$22.2	$1.51	$18.59
Public order and safety	1,635	86.3	83.7	54.6	75.0	99.9	$31.6	$1.67	$19.30
Religious worship	440	35.3	99.1	17.8	32.9	48.5	$9.0	$0.72	$20.42
Service	367	50.9	67.1	19.9	37.3	66.7	$7.6	$1.05	$20.66
Warehouse and storage	526	30.2	74.6	2.2	14.0	35.2	$11.7	$0.67	$22.24
Other	2,899	134.8	205.4	25.0	54.2	106.5	$70.1	$3.26	$24.17
Vacant	130	16.8	Q	0.0	1.9	20.4	$2.8	$0.36	$21.52
Year constructed									
Before 1920	706	64.7	85.2	27.7	53.7	80.3	$14.5	$1.32	$20.46
1920 to 1945	1,056	71.0	75.5	25.2	50.4	87.3	$23.0	$1.55	$21.80
1946 to 1959	859	64.1	81.0	24.1	48.2	78.0	$16.3	$1.22	$18.97
1960 to 1969	1,115	73.7	90.1	26.3	48.6	95.3	$22.0	$1.45	$19.71
1970 to 1979	1,090	69.3	83.6	22.5	40.9	77.2	$22.8	$1.45	$20.96
1980 to 1989	1,212	71.5	65.2	21.5	45.7	77.0	$27.3	$1.61	$22.49
1990 to 1999	1,040	61.6	70.9	18.7	35.7	63.4	$22.3	$1.32	$21.42
2000 to 2009	1,507	79.5	88.7	23.3	46.9	92.9	$30.8	$1.62	$20.43
2010 to 2018	1,354	70.5	80.7	19.1	46.3	95.0	$27.3	$1.42	$20.18

Table C4. Sum of major fuels consumption and expenditure gross energy intensities, 2018

	Sum of major fuels consumption						Sum of major fuels expenditures		
				Distribution of building-level intensities (thousand Btu per square foot)					
	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	25th per-centile	Median	75th per-centile	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	1,147	70.4	79.1	22.6	45.0	80.6	$23.9	$1.46	$20.81
Census region and division									
Northeast	1,547	76.9	80.9	26.1	48.9	90.2	$34.6	$1.72	$22.37
New England	1,008	73.9	76.6	21.4	43.7	82.7	$29.8	$2.19	$29.59
Middle Atlantic	1,834	77.8	82.3	31.7	52.9	91.8	$37.2	$1.58	$20.26
Midwest	1,122	74.4	96.9	24.3	44.6	82.3	$20.6	$1.37	$18.40
East North Central	1,238	78.2	98.5	26.3	51.9	95.7	$22.4	$1.42	$18.12
West North Central	912	66.4	93.1	17.3	33.5	63.4	$17.4	$1.27	$19.08
South	1,096	67.3	76.2	21.2	44.7	78.9	$22.0	$1.35	$20.10
South Atlantic	1,191	68.7	75.0	20.7	44.8	77.4	$25.6	$1.48	$21.47
East South Central	1,028	66.0	91.0	21.5	47.5	87.4	$21.1	$1.36	$20.54
West South Central	997	65.6	72.5	21.5	41.3	78.8	$17.6	$1.16	$17.68
West	1,016	65.4	64.5	23.0	43.1	78.2	$24.6	$1.58	$24.23
Mountain	1,179	74.3	70.2	23.4	49.0	87.3	$20.2	$1.27	$17.11
Pacific	915	59.7	60.5	21.6	38.1	71.1	$27.4	$1.79	$29.93
Climate zone[a]									
Cold or very cold	1,004	76.7	99.3	22.8	46.1	77.9	$19.4	$1.48	$19.35
Cool	1,141	73.6	87.7	23.7	44.0	81.0	$21.5	$1.39	$18.85
Mixed mild	1,572	76.2	81.5	24.8	50.8	88.3	$32.6	$1.58	$20.74
Warm	1,013	64.8	76.3	20.7	44.7	77.2	$23.3	$1.49	$23.00
Hot or very hot	888	59.4	56.2	20.7	40.2	73.0	$19.9	$1.33	$22.46
Number of floors									
1	695	65.5	83.8	18.6	40.9	80.1	$14.8	$1.40	$21.33
2	1,118	61.7	78.7	26.9	48.9	78.9	$23.5	$1.30	$21.03
3	2,027	71.2	90.1	35.9	54.7	85.5	$40.9	$1.44	$20.17
4 to 9	8,362	90.8	77.4	41.9	63.9	106.0	$162.5	$1.76	$19.43
10 or more	35,664	93.9	57.0	58.4	74.2	98.9	$761.7	$2.01	$21.36
Elevators and escalators (more than one may apply)									
Any elevators	5,895	81.2	73.2	40.2	57.6	86.2	$119.1	$1.64	$20.21
1 elevator	2,545	65.4	79.7	37.5	54.6	76.6	$51.5	$1.33	$20.25
2 to 5 elevators	9,211	83.7	72.0	51.5	73.1	102.0	$190.4	$1.73	$20.67
6 or more elevators	55,992	102.6	68.8	52.6	77.6	132.0	$1,097.6	$2.01	$19.60
Any escalators	23,998	86.4	74.6	68.6	94.7	194.7	$471.6	$1.70	$19.65
Number of workers (main shift)									
Fewer than 5	272	42.2	155.3	13.3	32.2	62.7	$6.4	$0.99	$23.46
5 to 9	595	64.4	91.0	32.3	51.4	89.0	$13.0	$1.41	$21.87
10 to 19	1,091	68.6	85.9	37.4	60.1	100.2	$22.1	$1.39	$20.24
20 to 49	2,509	76.4	86.9	42.2	68.9	119.0	$51.6	$1.57	$20.57
50 to 99	5,044	78.2	79.2	40.3	64.9	98.4	$101.7	$1.58	$20.16
100 to 249	11,451	83.0	78.3	51.5	73.2	110.3	$223.6	$1.62	$19.53
250 or more	31,948	96.8	50.0	52.7	74.8	109.6	$655.5	$1.99	$20.52

Table C4. Sum of major fuels consumption and expenditure gross energy intensities, 2018

	Sum of major fuels consumption						Sum of major fuels expenditures		
				Distribution of building-level intensities (thousand Btu per square foot)					
	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	25th per-centile	Median	75th per-centile	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	1,147	70.4	79.1	22.6	45.0	80.6	$23.9	$1.46	$20.81
Weekly operating hours									
Fewer than 40	302	38.4	70.2	12.2	28.6	50.5	$6.6	$0.84	$21.91
40 to 48	638	50.3	56.6	25.2	43.8	66.2	$14.0	$1.10	$21.91
49 to 60	1,012	55.4	51.4	26.8	47.1	77.5	$21.7	$1.19	$21.43
61 to 84	1,832	80.2	80.7	37.7	71.4	147.1	$37.9	$1.66	$20.70
85 to 167	2,101	97.2	127.5	33.1	106.2	241.0	$42.5	$1.97	$20.23
Open continuously	2,841	104.3	123.3	23.6	61.3	115.0	$56.9	$2.09	$20.02
Ownership and occupancy									
Nongovernment owned	1,048	69.8	78.4	20.8	43.1	81.5	$22.3	$1.49	$21.28
Owner occupied	982	70.3	85.9	21.5	41.6	78.9	$20.5	$1.47	$20.85
Leased to tenant or tenants	1,277	71.1	68.6	24.6	50.2	93.2	$28.0	$1.56	$21.95
Unoccupied	67	10.3	(*)	0.0	0.8	9.1	$1.5	$0.23	$22.29
Government owned	1,675	72.3	81.6	29.7	52.4	78.1	$32.3	$1.39	$19.26
Federal	2,264	81.6	61.1	25.8	58.1	92.8	$46.8	$1.69	$20.69
State	2,256	83.9	100.6	31.2	50.4	77.5	$40.1	$1.49	$17.77
Local	1,363	64.7	76.4	28.3	52.6	78.1	$27.3	$1.30	$20.02
Party responsible for operation of energy systems									
Building owner	1,142	70.2	79.0	21.7	43.8	77.7	$23.6	$1.45	$20.67
Business owner or tenant	1,102	71.3	86.1	25.0	50.8	99.7	$23.5	$1.52	$21.31
Property management	1,493	72.3	62.3	23.5	50.1	85.3	$33.3	$1.61	$22.30
Other	1,390	71.4	68.2	29.4	55.4	112.8	$29.9	$1.53	$21.49
Provider of direct input on energy-related equipment purchases									
Building owner	1,129	69.8	79.0	22.5	44.0	78.0	$23.3	$1.44	$20.64
Business owner or tenant	1,216	77.4	92.1	25.7	53.5	120.1	$25.8	$1.64	$21.24
Property management	1,743	79.3	72.6	10.9	54.5	98.7	$38.0	$1.73	$21.80
Other	1,257	66.7	65.3	29.2	53.9	111.5	$28.6	$1.52	$22.74
Number of establishments									
1	947	68.3	88.6	22.6	44.3	80.2	$19.8	$1.43	$20.91
2 to 5	1,486	73.4	75.6	29.5	50.4	83.2	$29.9	$1.48	$20.15
6 to 10	3,238	79.1	60.8	41.2	71.8	113.5	$68.3	$1.67	$21.10
11 to 20	5,399	87.6	59.3	50.9	80.2	106.7	$113.2	$1.84	$20.97
More than 20	16,522	79.8	49.1	41.0	59.4	95.1	$353.4	$1.71	$21.39
Currently unoccupied	89	13.0	(*)	0.0	0.8	14.0	$1.8	$0.27	$20.60
Predominant exterior wall material									
Brick, stone, or stucco	1,443	77.9	82.3	30.3	54.9	96.1	$28.5	$1.54	$19.78
Concrete (block or poured)	1,535	74.1	95.7	25.8	47.3	95.4	$32.1	$1.55	$20.91
Concrete panels	3,886	64.1	66.6	24.3	47.5	78.9	$84.5	$1.39	$21.74
Siding or shingles	406	64.2	73.7	19.2	42.2	80.7	$9.8	$1.54	$24.06
Metal panels	399	40.9	75.7	7.6	26.6	49.2	$8.9	$0.92	$22.41
Window glass	9,633	84.9	41.1	57.5	70.2	122.6	$225.5	$1.99	$23.41
Other	1,121	70.2	56.0	21.5	41.1	77.0	$27.2	$1.70	$24.22

Table C4. Sum of major fuels consumption and expenditure gross energy intensities, 2018

	Sum of major fuels consumption						Sum of major fuels expenditures		
				Distribution of building-level intensities (thousand Btu per square foot)					
	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	25th per-centile	Median	75th per-centile	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	1,147	70.4	79.1	22.6	45.0	80.6	$23.9	$1.46	$20.81
Predominant roof material									
Metal surfacing	458	48.0	77.8	11.9	29.5	59.4	$10.0	$1.05	$21.75
Synthetic or rubber	2,751	82.0	81.4	35.7	62.0	109.6	$55.2	$1.65	$20.08
Built-up	2,180	80.0	79.3	31.2	54.8	95.3	$44.3	$1.63	$20.34
Slate or tile shingles	726	68.3	72.8	31.8	56.9	92.8	$16.2	$1.53	$22.37
Wooden materials (including shingles)	561	59.3	62.2	32.6	45.0	105.6	$13.5	$1.42	$24.02
Asphalt, fiberglass, or other shingles	698	65.1	79.5	26.0	46.6	80.7	$14.9	$1.39	$21.33
Concrete	1,983	83.9	85.5	34.2	55.9	94.3	$42.6	$1.80	$21.47
Other	1,497	67.4	69.7	16.4	45.7	85.2	$33.7	$1.52	$22.52
Roof tilt									
Flat	2,297	81.0	78.9	30.0	54.8	103.2	$46.8	$1.65	$20.36
Shallow pitch	673	56.4	79.3	15.4	37.1	73.8	$14.5	$1.21	$21.50
Steeper pitch	493	57.3	79.7	22.2	42.2	73.1	$10.8	$1.26	$21.90
Cool roof characteristics (more than one may apply)									
White or reflective coating or paint	1,938	75.9	78.2	24.7	47.9	88.3	$39.8	$1.56	$20.56
White or reflective tiles or shingles	1,572	81.3	86.3	28.3	45.1	87.8	$33.7	$1.74	$21.45
Aluminum coating	651	55.9	76.9	16.9	36.9	68.8	$14.2	$1.22	$21.75
Ballasted roof system	4,826	87.4	79.8	44.7	53.9	113.6	$89.6	$1.62	$18.56
Other cool roof property	3,609	79.6	54.1	65.8	70.2	125.1	$75.9	$1.68	$21.04
Renovations since 2000 (more than one may apply)									
Any type of renovation	1,710	76.9	77.3	28.5	51.6	90.0	$34.7	$1.56	$20.27
Addition or annex	2,852	86.1	98.0	30.5	56.5	101.6	$53.7	$1.62	$18.82
Reduction in floorspace	4,404	86.2	64.9	29.2	48.8	119.0	$88.8	$1.74	$20.16
Roof replacement	1,911	77.6	79.4	27.6	51.4	87.1	$38.0	$1.54	$19.86
Interior wall reconfiguration	2,354	78.4	64.9	30.9	52.1	86.4	$47.8	$1.59	$20.29
Window replacement	1,787	78.8	75.9	30.9	56.3	100.2	$35.0	$1.54	$19.57
HVAC equipment upgrade	2,189	79.9	76.9	28.5	57.2	94.8	$44.4	$1.62	$20.28
Lighting upgrade	2,308	80.3	76.8	30.3	55.3	97.4	$46.9	$1.63	$20.33
Electrical upgrade	2,382	85.3	78.8	30.9	58.8	101.1	$47.3	$1.69	$19.86
Plumbing system upgrade	2,211	83.1	75.6	30.5	60.9	94.4	$44.4	$1.67	$20.10
Insulation upgrade	2,160	83.1	78.4	30.9	55.0	86.4	$41.5	$1.60	$19.20
Fire, safety, or security upgrade	2,906	82.9	79.4	35.5	63.4	101.6	$58.2	$1.66	$20.02
Structural upgrade	2,668	93.4	77.9	40.7	71.0	105.7	$51.6	$1.81	$19.33
Other	2,366	86.8	98.7	28.8	46.2	71.0	$48.7	$1.78	$20.57
No renovations	797	64.1	81.3	18.5	41.1	76.1	$17.3	$1.39	$21.69
Buildings constructed 2013 or later	1,405	67.5	80.0	17.9	40.9	88.6	$27.5	$1.32	$19.61

Table C4. Sum of major fuels consumption and expenditure gross energy intensities, 2018

	Sum of major fuels consumption						Sum of major fuels expenditures		
				Distribution of building-level intensities (thousand Btu per square foot)					
	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	25th per-centile	Median	75th per-centile	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	1,147	70.4	79.1	22.6	45.0	80.6	$23.9	$1.46	$20.81
Energy sources (more than one may apply)									
Electricity	1,209	71.6	79.2	25.7	47.5	83.4	$25.2	$1.49	$20.81
Natural gas	1,830	80.4	89.9	39.0	62.2	105.4	$35.1	$1.54	$19.16
Fuel oil	3,359	92.4	81.2	33.5	53.7	101.1	$70.4	$1.94	$20.95
District heat	9,095	116.5	106.3	60.9	94.5	114.3	$176.6	$2.26	$19.42
District chilled water	8,628	111.3	104.7	37.1	73.1	109.2	$161.0	$2.08	$18.66
Propane	886	58.9	86.2	14.0	29.7	57.8	$20.4	$1.36	$23.08
Solar	2,981	77.2	76.7	35.9	58.5	85.3	$67.5	$1.75	$22.65
Wood, coal, and other	810	68.9	83.6	18.0	32.7	53.8	$16.1	$1.37	$19.86
Space-heating energy sources (more than one may apply)									
Electricity	1,289	72.4	72.3	26.8	48.6	92.1	$28.0	$1.57	$21.69
Natural gas	1,758	78.4	90.0	39.6	60.9	98.8	$33.1	$1.48	$18.84
Fuel oil	1,209	77.7	86.6	27.6	46.6	97.4	$24.3	$1.56	$20.10
District heat	9,117	114.9	105.5	60.9	96.3	114.3	$179.5	$2.26	$19.69
Propane	423	46.8	66.7	12.0	25.2	43.8	$10.5	$1.16	$24.83
Other sources[b]	268	36.7	56.5	12.2	24.4	40.0	$6.2	$0.86	$23.33
Primary space-heating energy source									
Electricity	940	63.2	60.0	24.7	45.0	82.7	$22.8	$1.53	$24.30
Natural gas	1,662	77.8	91.1	38.7	60.8	97.1	$30.6	$1.43	$18.38
Fuel oil	623	62.2	83.7	32.7	53.7	101.1	$15.0	$1.50	$24.12
District heat	9,064	116.1	105.7	60.9	98.4	114.3	$179.7	$2.30	$19.82
Propane	216	31.8	43.1	10.6	22.7	34.4	$7.4	$1.10	$34.45
Other sources[b]	134	22.1	36.8	7.2	18.4	37.1	$4.0	$0.67	$30.24
Cooling energy sources (more than one may apply)									
Electricity	1,353	73.4	77.7	30.2	52.6	92.1	$28.1	$1.52	$20.77
Natural gas	9,693	106.6	138.8	46.2	87.6	365.8	$167.4	$1.84	$17.27
District chilled water	8,628	111.3	104.7	37.1	73.1	109.2	$161.0	$2.08	$18.66
Water-heating energy sources (more than one may apply)									
Electricity	1,144	67.6	68.7	26.0	48.0	84.7	$25.3	$1.49	$22.09
Natural gas	2,114	85.4	94.5	42.9	69.2	116.1	$39.6	$1.60	$18.73
Fuel oil	2,195	87.5	83.7	41.5	66.0	138.4	$46.4	$1.85	$21.13
District heat	12,835	117.1	100.2	60.6	94.5	116.6	$254.7	$2.32	$19.85
Propane	967	72.2	75.7	17.6	33.6	71.8	$26.1	$1.95	$26.99
Cooking energy sources (more than one may apply)									
Electricity	2,275	90.6	93.8	33.5	61.2	123.3	$44.5	$1.77	$19.58
Natural gas	3,908	102.5	108.8	58.8	114.7	198.0	$71.1	$1.87	$18.20
Propane	1,433	73.4	93.7	23.5	50.8	101.1	$34.9	$1.79	$24.35

Table C4. Sum of major fuels consumption and expenditure gross energy intensities, 2018

	Sum of major fuels consumption						Sum of major fuels expenditures		
				Distribution of building-level intensities (thousand Btu per square foot)					
	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	25th per-centile	Median	75th per-centile	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	1,147	70.4	79.1	22.6	45.0	80.6	$23.9	$1.46	$20.81
Energy end uses (more than one may apply)									
Buildings with space heating	1,340	74.1	80.0	28.7	51.5	88.6	$27.4	$1.51	$20.42
Buildings with cooling	1,407	74.5	78.7	30.3	52.6	92.5	$29.1	$1.54	$20.67
Buildings with water heating	1,434	75.1	80.1	30.3	54.5	94.5	$29.5	$1.55	$20.58
Buildings with cooking	2,275	90.7	95.4	36.0	68.5	135.7	$44.2	$1.76	$19.44
Buildings with manufacturing	1,503	70.4	96.0	20.4	42.9	81.1	$32.4	$1.52	$21.59
Buildings with electricity generation	3,852	92.3	83.9	36.6	62.3	113.4	$77.7	$1.86	$20.18
Buildings with lighting	1,231	72.0	79.1	26.4	48.6	85.2	$25.6	$1.50	$20.80
Percentage of floorspace heated									
Not heated	216	28.3	59.1	0.0	7.6	32.6	$7.0	$0.92	$32.32
1% to 50%	637	41.6	69.0	16.5	29.0	51.1	$15.4	$1.00	$24.16
51% to 99%	1,765	79.2	79.6	31.4	53.7	94.6	$35.8	$1.61	$20.28
100%	1,371	78.3	81.4	32.9	56.8	96.2	$27.6	$1.57	$20.11
Percentage of floorspace cooled									
Not cooled	211	30.5	91.9	0.8	13.0	36.6	$5.1	$0.74	$24.09
1% to 50%	773	43.5	80.0	19.3	35.7	62.7	$15.9	$0.90	$20.60
51% to 99%	2,203	83.7	83.2	35.5	56.3	99.9	$44.8	$1.70	$20.35
100%	1,371	83.3	75.7	34.8	59.8	103.2	$28.6	$1.74	$20.89
Percentage lit when open									
0%	Q	Q	Q	Q	Q	Q	Q	Q	Q
1% to 50%	469	42.4	92.8	18.4	34.4	57.6	$10.4	$0.94	$22.13
51% to 99%	1,746	80.2	82.1	31.9	55.5	100.8	$35.0	$1.61	$20.06
100%	1,333	76.0	73.6	30.3	55.5	95.0	$28.4	$1.62	$21.30
Building never open or electricity not used	62	10.6	173.8	0.0	0.0	17.4	$1.3	$0.23	$21.70
Percentage lit during off hours									
0%	319	42.3	63.6	16.7	34.5	62.3	$7.8	$1.04	$24.50
1% to 50%	1,556	72.3	75.0	31.4	55.0	96.1	$31.8	$1.48	$20.43
51% to 100%	3,441	114.0	131.4	28.8	66.3	134.7	$70.5	$2.34	$20.50
Building always open with no off hours	3,941	114.0	143.0	57.7	122.6	231.9	$77.8	$2.25	$19.75
Electricity not used	N	N	N	N	N	N	N	N	N
Heating equipment (more than one may apply)									
Packaged heating units	1,676	76.3	82.6	34.5	59.7	106.1	$34.3	$1.56	$20.44
Furnaces	732	68.7	88.0	26.2	47.3	79.1	$14.1	$1.32	$19.24
Individual space heaters	1,221	72.0	88.5	24.4	45.2	78.5	$24.1	$1.42	$19.73
Boilers	3,480	84.9	86.6	42.9	67.7	115.0	$64.5	$1.57	$18.52
Heat pumps	1,722	76.7	78.9	29.3	47.5	81.5	$35.8	$1.60	$20.81
District heat	9,117	114.9	105.5	60.9	96.3	114.3	$179.5	$2.26	$19.69
Duct reheat	4,687	85.0	64.0	32.1	60.3	106.2	$98.0	$1.78	$20.91
Other	8,466	173.9	211.9	60.9	150.2	231.9	$172.3	$3.54	$20.35

Table C4. Sum of major fuels consumption and expenditure gross energy intensities, 2018

	Sum of major fuels consumption						Sum of major fuels expenditures		
				Distribution of building-level intensities (thousand Btu per square foot)					
	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	25th per-centile	Median	75th per-centile	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	1,147	70.4	79.1	22.6	45.0	80.6	$23.9	$1.46	$20.81
Cooling equipment (more than one may apply)									
Packaged air-conditioning units	1,682	76.6	80.9	34.1	60.2	107.7	$34.9	$1.59	$20.75
Residential-type central air conditioners	1,012	72.5	80.9	29.4	51.2	80.4	$20.2	$1.45	$19.94
Individual air conditioners	1,449	78.2	106.1	25.7	47.1	87.3	$28.6	$1.55	$19.77
Central chillers	8,317	93.6	77.3	49.3	73.4	115.4	$165.3	$1.86	$19.87
Heat pumps	1,665	73.9	70.4	26.8	45.5	76.5	$35.7	$1.58	$21.45
District chilled water	8,628	111.3	104.7	37.1	73.1	109.2	$161.0	$2.08	$18.66
Swamp coolers	1,929	78.8	77.6	25.7	51.5	109.6	$38.2	$1.56	$19.82
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q
HVAC features (more than one may apply)									
Economizer cycle	4,037	88.5	81.2	38.7	65.8	114.6	$80.6	$1.77	$19.96
Variable air volume (VAV) system	3,615	86.1	72.6	38.0	62.3	99.8	$73.0	$1.74	$20.20
Dedicated outside air system (DOAS)	3,547	97.7	93.3	41.0	62.3	115.7	$68.5	$1.89	$19.30
Demand controlled ventilation (DCV)	2,438	81.2	86.6	34.4	55.4	95.7	$49.0	$1.63	$20.10
Regular HVAC maintenance	1,695	77.2	80.0	33.5	57.3	97.8	$34.8	$1.59	$20.54
Building automation system (BAS) controls heating or cooling	3,832	88.4	80.6	40.1	62.6	106.6	$77.3	$1.78	$20.18
Internet-connected or smart thermostat	1,167	63.6	79.4	33.6	52.1	83.3	$24.6	$1.34	$21.05
Programmable thermostat	840	62.1	74.7	29.3	51.8	90.1	$17.7	$1.31	$21.10
Main equipment replaced since 2000 (more than one may apply)									
Heating	1,131	67.5	74.1	27.1	48.2	82.3	$23.8	$1.42	$21.01
Cooling	1,287	71.0	74.8	26.6	48.7	80.4	$26.2	$1.44	$20.32
Water-heating equipment									
Centralized system	1,249	74.5	83.8	30.2	53.7	91.2	$25.6	$1.53	$20.48
Distributed system	1,326	72.5	73.5	29.4	55.7	97.0	$28.1	$1.53	$21.16
Combination of centralized and distributed systems	4,135	80.3	73.8	32.4	64.4	113.7	$84.5	$1.64	$20.43
Generation technologies (more than one may apply)									
Reciprocating engine generators	4,090	94.2	84.2	36.3	62.7	114.5	$81.4	$1.88	$19.91
Solar panels	3,056	76.6	76.0	40.2	59.7	85.3	$69.1	$1.73	$22.61
Other generation technology	4,776	99.5	92.4	41.9	66.1	122.2	$99.4	$2.07	$20.82

Table C4. Sum of major fuels consumption and expenditure gross energy intensities, 2018

	Sum of major fuels consumption						Sum of major fuels expenditures		
				Distribution of building-level intensities (thousand Btu per square foot)					
	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	25th per-centile	Median	75th per-centile	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	1,147	70.4	79.1	22.6	45.0	80.6	$23.9	$1.46	$20.81
Lighting equipment types (more than one may apply)									
Incandescent	1,671	87.2	91.5	28.3	53.7	97.4	$33.4	$1.74	$19.97
Standard fluorescent	1,327	73.0	79.1	26.1	48.9	82.7	$27.3	$1.50	$20.58
Compact fluorescent	2,579	86.5	83.6	37.9	61.4	105.3	$51.8	$1.74	$20.08
High-intensity discharge (HID)	4,151	87.1	103.8	25.3	45.9	76.3	$78.8	$1.65	$18.99
Halogen	2,471	90.9	90.9	29.3	59.3	107.1	$48.4	$1.78	$19.60
LED	1,893	79.4	80.3	32.4	56.9	99.9	$38.8	$1.63	$20.51
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q
Refrigeration equipment (more than one may apply)									
Any refrigeration	1,563	77.6	82.1	31.1	55.0	98.7	$31.9	$1.58	$20.39
Walk-in units	4,516	108.4	106.8	77.0	140.7	260.1	$87.5	$2.10	$19.37
Cases or cabinets	3,465	101.7	98.2	62.0	108.5	198.4	$67.8	$1.99	$19.57
Large cold storage areas	6,399	122.9	160.3	90.2	169.0	334.0	$130.5	$2.51	$20.39
Commercial ice makers	3,845	96.7	96.1	51.6	99.3	180.8	$73.9	$1.86	$19.21
Residential-type or compact units	1,442	74.0	77.0	29.3	50.9	88.0	$29.3	$1.51	$20.34
Vending machines	4,439	84.4	84.0	43.1	67.9	119.0	$86.3	$1.64	$19.44
No refrigeration	371	40.8	61.6	5.5	26.7	53.5	$8.9	$0.98	$24.08
Office equipment (more than one may apply)									
Desktop computers	1,626	75.4	78.6	31.2	53.9	91.8	$33.4	$1.55	$20.56
With multiple monitors	2,670	79.0	71.3	34.7	56.9	90.0	$54.3	$1.61	$20.34
Laptop computers	1,872	75.2	74.5	31.1	52.3	87.0	$38.2	$1.54	$20.43
Dedicated servers	2,941	79.8	72.8	39.1	61.1	99.3	$60.5	$1.64	$20.56
Tablets charged in building	2,567	81.9	77.5	35.9	59.7	103.6	$51.5	$1.64	$20.06
Large floor-standing office devices[c]	2,862	77.0	71.6	36.3	58.9	90.4	$57.9	$1.56	$20.24
Smaller desktop office devices[c]	1,572	75.2	78.4	31.1	53.6	91.1	$32.4	$1.55	$20.59
Interactive whiteboards	4,923	76.1	69.9	38.1	59.9	82.4	$95.7	$1.48	$19.44
Televisions or video displays	2,064	79.5	79.3	34.1	59.4	103.8	$41.8	$1.61	$20.25
Point-of-sale devices or cash registers	2,281	96.4	90.0	44.3	85.0	160.9	$45.2	$1.91	$19.80
Food preparation or serving areas in non-food service buildings (more than one may apply)									
Snack bar, concession stand, or coffee shop	6,944	96.8	94.9	50.2	94.6	159.3	$128.8	$1.80	$18.54
Fast food or small restaurant	6,380	104.8	94.5	65.4	131.8	178.9	$120.0	$1.97	$18.81
Cafeteria or large restaurant	9,824	87.4	83.8	38.0	60.1	86.8	$181.1	$1.61	$18.44
Commercial kitchen or food preparation area	6,130	98.4	115.4	40.3	72.8	123.7	$114.2	$1.83	$18.63
Small kitchen area	1,481	73.4	81.0	28.6	50.8	81.6	$29.1	$1.44	$19.63

Table C4. Sum of major fuels consumption and expenditure gross energy intensities, 2018

	Sum of major fuels consumption						Sum of major fuels expenditures		
				Distribution of building-level intensities (thousand Btu per square foot)					
	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	25th per-centile	Median	75th per-centile	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	1,147	70.4	79.1	22.6	45.0	80.6	$23.9	$1.46	$20.81
Separate computer areas (more than one may apply)									
Server closet	3,051	77.5	72.7	38.7	62.3	95.0	$61.7	$1.57	$20.23
Data center	9,162	93.2	73.8	41.9	60.7	93.8	$184.3	$1.88	$20.12
Computer-based training room	6,146	84.6	82.0	39.2	60.1	91.1	$116.8	$1.61	$19.01
Student or public computer center	4,266	80.4	103.5	39.1	63.5	93.5	$75.5	$1.42	$17.70
Window and interior lighting features (more than one may apply)									
Multipaned windows	1,571	76.2	80.5	29.7	53.2	91.4	$31.8	$1.54	$20.25
Tinted window glass	2,096	79.3	75.0	30.3	57.3	98.7	$42.7	$1.62	$20.36
Reflective window glass	3,126	86.6	74.4	31.9	62.2	108.9	$63.1	$1.75	$20.20
External overhangs or awnings	1,565	82.4	88.8	33.1	58.7	100.3	$31.2	$1.64	$19.93
Skylights or atriums	2,917	75.0	81.8	23.0	42.7	75.3	$58.2	$1.50	$19.96
Light scheduling	3,200	86.8	79.8	36.5	69.5	115.7	$64.8	$1.76	$20.25
Occupancy sensors	3,439	79.6	75.6	36.0	60.0	96.2	$70.7	$1.63	$20.54
Multilevel lighting or dimming	4,034	93.0	85.1	33.8	57.8	104.9	$76.8	$1.77	$19.04
Daylight harvesting	4,673	88.8	67.2	40.2	67.7	100.9	$93.1	$1.77	$19.92
Plug-load control	3,111	91.3	84.0	47.2	66.2	128.8	$64.9	$1.90	$20.85
Demand responsive lighting	1,628	78.1	79.8	38.1	66.1	81.1	$34.1	$1.64	$20.95
Building automation system (BAS) for lighting	4,609	87.8	78.4	45.5	72.5	115.4	$92.8	$1.77	$20.13
Electric vehicle (EV) charging									
Charging stations associated with the building	5,568	72.3	65.5	36.3	50.4	81.5	$115.8	$1.50	$20.79

Data source: U.S. Energy Information Administration, Form 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 and expenditures in buildings that have the end use but not the consumption and expenditures specifically for that end use.

HVAC = Heating, ventilation, and air conditioning.

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

[b] *Other sources* includes wood, coal, solar, and all other energy sources.

[c] *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.

(*) = Value rounds to zero in the units displayed.

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Relative standard errors (RSEs) for Table C4. Sum of major fuel consumption and expenditure gross energy intensities, 2018

	RSEs for sum of major fuels consumption						RSEs for sum of major fuels expenditures		
				RSEs not available for percentiles					
	Per building	Per square foot	Per worker	25th per-centile	Median	75th per-centile	Per building	Per square foot	Per million Btu
All buildings	3.5	1.8	2.1	—	—	—	3.4	1.9	1.1
Building floorspace (square feet)									
1,001 to 5,000	4.0	4.2	4.8	—	—	—	4.1	4.3	2.4
5,001 to 10,000	6.0	5.8	5.1	—	—	—	6.0	5.9	2.4
10,001 to 25,000	5.5	5.5	6.9	—	—	—	5.7	5.7	2.4
25,001 to 50,000	3.6	3.6	6.2	—	—	—	4.5	4.5	2.5
50,001 to 100,000	3.6	3.6	4.8	—	—	—	3.3	3.2	1.9
100,001 to 200,000	3.0	3.2	6.0	—	—	—	3.1	3.1	1.6
200,001 to 500,000	4.1	4.0	5.2	—	—	—	4.5	4.4	2.3
Over 500,000	6.4	4.9	8.1	—	—	—	5.3	4.7	4.0
Principal building activity									
Education	8.0	2.7	3.7	—	—	—	7.5	2.4	1.9
Food sales	17.8	10.5	16.7	—	—	—	17.3	8.3	5.3
Food service	7.1	4.9	5.5	—	—	—	6.5	4.6	2.2
Health care	10.1	3.1	4.3	—	—	—	9.8	3.1	2.8
Inpatient	18.5	2.7	4.4	—	—	—	17.8	3.5	3.1
Outpatient	9.2	3.8	6.4	—	—	—	9.7	4.8	3.2
Lodging	11.1	3.7	6.0	—	—	—	9.4	3.5	3.7
Mercantile	8.3	3.2	3.4	—	—	—	8.1	3.3	1.5
Retail (other than mall)	9.7	4.7	5.9	—	—	—	9.7	5.4	2.6
Enclosed and strip malls	9.2	3.1	4.8	—	—	—	8.7	3.2	2.3
Office	7.1	1.8	2.9	—	—	—	7.4	2.3	1.6
Public assembly	8.2	4.3	7.2	—	—	—	7.8	4.0	2.2
Public order and safety	21.4	6.7	12.4	—	—	—	19.7	7.0	7.0
Religious worship	8.5	5.4	9.4	—	—	—	7.1	4.7	2.8
Service	9.1	7.0	8.5	—	—	—	7.9	6.4	3.9
Warehouse and storage	9.1	4.9	6.4	—	—	—	8.7	4.9	3.1
Other	19.0	10.0	17.4	—	—	—	19.0	12.3	6.3
Vacant	18.5	12.5	117.2	—	—	—	17.0	13.1	7.9
Year constructed									
Before 1920	14.0	7.3	10.5	—	—	—	13.8	7.8	3.2
1920 to 1945	10.4	4.7	5.6	—	—	—	10.6	6.2	3.2
1946 to 1959	8.2	5.0	7.3	—	—	—	7.4	5.0	2.4
1960 to 1969	8.5	5.4	5.8	—	—	—	7.7	5.1	2.3
1970 to 1979	6.5	4.8	5.5	—	—	—	6.8	5.1	2.2
1980 to 1989	8.9	4.5	5.9	—	—	—	8.1	4.6	3.4
1990 to 1999	6.2	3.8	5.1	—	—	—	6.0	4.0	2.2
2000 to 2009	7.1	4.0	5.4	—	—	—	6.9	4.0	1.9
2010 to 2018	10.5	5.1	7.0	—	—	—	10.4	5.2	2.7

Relative standard errors (RSEs) for Table C4. Sum of major fuel consumption and expenditure gross energy intensities, 2018

	RSEs for sum of major fuels consumption						RSEs for sum of major fuels expenditures		
				RSEs not available for percentiles					
	Per building	Per square foot	Per worker	25th per-centile	Median	75th per-centile	Per building	Per square foot	Per million Btu
All buildings	3.5	1.8	2.1	—	—	—	3.4	1.9	1.1
Census region and division									
Northeast	7.2	3.7	4.8	—	—	—	7.8	4.9	2.2
New England	11.0	4.6	10.8	—	—	—	10.7	6.8	3.8
Middle Atlantic	8.9	4.7	5.4	—	—	—	10.2	5.7	2.2
Midwest	9.1	3.6	4.9	—	—	—	8.9	3.6	2.0
East North Central	9.4	4.4	6.5	—	—	—	8.1	4.0	2.6
West North Central	21.9	6.5	6.1	—	—	—	22.9	7.6	3.0
South	5.6	3.1	3.3	—	—	—	4.9	2.9	1.8
South Atlantic	8.6	4.0	3.5	—	—	—	7.7	3.6	2.6
East South Central	7.4	7.7	6.4	—	—	—	5.9	5.6	2.8
West South Central	12.7	6.2	7.4	—	—	—	10.5	5.8	3.9
West	8.8	5.0	4.0	—	—	—	7.9	4.6	3.8
Mountain	17.0	7.7	7.5	—	—	—	15.1	5.0	5.3
Pacific	7.9	5.8	3.9	—	—	—	8.6	6.5	2.5
Climate zone[a]									
Cold or very cold	17.8	7.1	6.5	—	—	—	17.9	8.6	4.3
Cool	8.7	2.6	4.5	—	—	—	8.6	2.9	2.0
Mixed mild	9.1	3.4	4.4	—	—	—	9.1	3.7	2.6
Warm	5.6	3.6	3.3	—	—	—	6.1	4.1	2.8
Hot or very hot	10.6	5.6	5.6	—	—	—	9.3	5.0	3.7
Number of floors									
1	3.7	2.5	3.1	—	—	—	3.6	2.7	1.6
2	4.7	3.1	4.2	—	—	—	5.0	3.2	1.7
3	8.0	3.4	5.8	—	—	—	8.4	4.3	2.5
4 to 9	8.2	3.4	5.6	—	—	—	8.2	3.4	2.4
10 or more	9.5	4.8	8.6	—	—	—	7.8	4.8	4.8
Elevators and escalators (more than one may apply)									
Any elevators	5.2	2.1	3.4	—	—	—	5.2	2.3	1.8
1 elevator	6.0	3.2	5.2	—	—	—	5.8	2.9	1.9
2 to 5 elevators	4.9	3.1	5.4	—	—	—	5.1	3.5	2.2
6 or more elevators	5.8	4.0	6.2	—	—	—	4.8	3.8	3.6
Any escalators	36.3	6.2	14.6	—	—	—	35.8	6.7	8.0
Number of workers (main shift)									
Fewer than 5	5.0	4.2	5.6	—	—	—	5.1	4.4	2.0
5 to 9	7.0	6.2	7.1	—	—	—	6.6	6.3	2.7
10 to 19	5.4	4.5	5.0	—	—	—	5.0	5.2	2.7
20 to 49	5.0	3.3	4.6	—	—	—	5.1	3.7	1.9
50 to 99	5.4	3.7	5.2	—	—	—	5.3	4.4	2.6
100 to 249	4.2	2.8	4.4	—	—	—	4.1	2.9	2.0
250 or more	6.2	3.4	5.0	—	—	—	5.8	3.2	2.9

Relative standard errors (RSEs) for Table C4. Sum of major fuel consumption and expenditure gross energy intensities, 2018

	RSEs for sum of major fuels consumption						RSEs for sum of major fuels expenditures		
				RSEs not available for percentiles					
	Per building	Per square foot	Per worker	25th per-centile	Median	75th per-centile	Per building	Per square foot	Per million Btu
All buildings	3.5	1.8	2.1	—	—	—	3.4	1.9	1.1
Weekly operating hours									
Fewer than 40	7.9	5.7	7.7	—	—	—	7.5	5.6	2.1
40 to 48	6.7	4.7	5.4	—	—	—	6.7	4.8	2.0
49 to 60	4.8	2.7	3.5	—	—	—	4.4	2.4	1.8
61 to 84	6.8	3.4	4.2	—	—	—	6.9	3.7	2.4
85 to 167	8.8	4.7	4.7	—	—	—	8.5	5.0	2.4
Open continuously	8.5	3.0	4.4	—	—	—	8.3	3.3	2.1
Ownership and occupancy									
Nongovernment owned	3.8	2.0	2.4	—	—	—	3.6	2.1	1.2
Owner occupied	4.7	2.6	3.0	—	—	—	4.6	2.6	1.5
Leased to tenant or tenants	4.9	2.7	3.9	—	—	—	5.0	3.1	1.6
Unoccupied	29.6	23.2	0.0	—	—	—	24.8	20.6	16.1
Government owned	7.0	2.9	4.4	—	—	—	6.8	2.8	2.0
Federal	30.9	7.2	12.6	—	—	—	31.7	9.4	6.0
State	12.9	5.6	7.1	—	—	—	11.6	4.4	3.3
Local	8.8	2.5	5.1	—	—	—	8.3	2.9	2.4
Party responsible for operation of energy systems									
Building owner	4.1	2.0	2.3	—	—	—	4.0	2.2	1.2
Business owner or tenant	6.1	3.8	5.5	—	—	—	6.0	4.3	2.8
Property management	22.2	7.4	10.7	—	—	—	21.6	7.3	4.0
Other	16.2	6.7	12.9	—	—	—	15.5	6.5	3.7
Provider of direct input on energy-related equipment purchases									
Building owner	4.0	2.0	2.3	—	—	—	3.8	2.1	1.2
Business owner or tenant	8.6	4.8	6.2	—	—	—	8.8	5.4	3.1
Property management	29.1	9.0	12.6	—	—	—	27.9	8.7	4.5
Other	9.7	5.8	8.1	—	—	—	9.6	6.4	3.3
Number of establishments									
1	4.0	2.3	3.0	—	—	—	3.9	2.4	1.2
2 to 5	6.8	3.1	5.0	—	—	—	6.2	3.0	2.4
6 to 10	9.6	3.9	7.1	—	—	—	8.9	4.8	3.7
11 to 20	15.8	4.5	6.9	—	—	—	16.5	4.3	2.8
More than 20	13.6	5.3	8.9	—	—	—	14.7	5.0	3.1
Currently unoccupied	24.6	18.2	0.0	—	—	—	22.0	17.4	12.0
Predominant exterior wall material									
Brick, stone, or stucco	4.9	2.4	2.7	—	—	—	4.6	2.2	1.3
Concrete (block or poured)	5.5	3.7	3.9	—	—	—	5.7	4.4	1.9
Concrete panels	12.1	5.9	7.7	—	—	—	11.8	6.2	3.5
Siding or shingles	11.7	10.4	12.3	—	—	—	11.9	10.6	3.3
Metal panels	8.0	5.1	7.2	—	—	—	8.1	5.6	3.5
Window glass	20.1	4.5	8.3	—	—	—	21.2	6.6	5.2
Other	14.1	7.3	11.0	—	—	—	12.9	7.9	4.7

Relative standard errors (RSEs) for Table C4. Sum of major fuel consumption and expenditure gross energy intensities, 2018

	RSEs for sum of major fuels consumption						RSEs for sum of major fuels expenditures		
				RSEs not available for percentiles					
	Per building	Per square foot	Per worker	25th per-centile	Median	75th per-centile	Per building	Per square foot	Per million Btu
All buildings	3.5	1.8	2.1	—	—	—	3.4	1.9	1.1
Predominant roof material									
Metal surfacing	6.2	4.8	5.6	—	—	—	5.8	4.7	2.1
Synthetic or rubber	5.1	2.2	3.3	—	—	—	5.0	2.7	1.6
Built-up	8.4	3.4	4.1	—	—	—	7.8	3.3	2.5
Slate or tile shingles	9.0	5.8	10.1	—	—	—	8.8	5.7	3.5
Wooden materials (including shingles)	13.0	10.7	10.9	—	—	—	14.1	9.3	6.3
Asphalt, fiberglass, or other shingles	5.4	3.9	5.4	—	—	—	5.6	4.5	2.2
Concrete	20.1	9.9	14.7	—	—	—	18.4	8.1	4.2
Other	13.8	10.4	13.2	—	—	—	15.7	15.0	6.9
Roof tilt									
Flat	5.0	2.3	2.6	—	—	—	4.8	2.2	1.4
Shallow pitch	4.5	2.8	3.5	—	—	—	5.0	3.6	1.9
Steeper pitch	7.7	5.3	7.5	—	—	—	7.3	5.1	1.6
Cool roof characteristics (more than one may apply)									
White or reflective coating or paint	6.2	2.8	3.5	—	—	—	5.6	2.4	1.9
White or reflective tiles or shingles	14.9	6.7	9.2	—	—	—	14.8	9.0	5.1
Aluminum coating	9.8	7.1	7.2	—	—	—	8.4	6.1	3.7
Ballasted roof system	16.2	5.2	9.0	—	—	—	14.4	3.6	4.0
Other cool roof property	29.3	6.9	15.5	—	—	—	27.1	8.3	5.7
Renovations since 2000 (more than one may apply)									
Any type of renovation	4.6	2.1	2.7	—	—	—	4.4	2.4	1.4
Addition or annex	8.2	3.8	5.0	—	—	—	7.5	3.7	1.8
Reduction in floorspace	23.0	7.8	12.0	—	—	—	21.8	7.7	3.9
Roof replacement	6.6	2.8	4.0	—	—	—	5.8	2.7	2.1
Interior wall reconfiguration	5.9	2.8	3.9	—	—	—	5.7	3.1	2.1
Window replacement	10.1	3.8	6.2	—	—	—	9.4	3.6	2.6
HVAC equipment upgrade	6.4	2.7	3.1	—	—	—	6.3	3.3	1.8
Lighting upgrade	5.3	2.3	3.3	—	—	—	5.2	2.6	1.6
Electrical upgrade	7.2	3.3	4.4	—	—	—	6.9	3.8	2.4
Plumbing system upgrade	7.9	3.0	4.3	—	—	—	7.1	3.2	2.3
Insulation upgrade	10.7	4.6	7.4	—	—	—	10.1	5.0	3.9
Fire, safety, or security upgrade	6.1	2.7	4.0	—	—	—	5.7	3.1	2.1
Structural upgrade	15.7	6.0	10.3	—	—	—	13.6	7.3	6.2
Other	32.0	7.7	9.6	—	—	—	32.1	9.0	4.9
No renovations	4.2	2.6	3.2	—	—	—	4.2	2.8	1.3
Buildings constructed 2013 or later	11.8	5.8	7.2	—	—	—	11.3	5.4	2.7

Relative standard errors (RSEs) for Table C4. Sum of major fuel consumption and expenditure gross energy intensities, 2018

	RSEs for sum of major fuels consumption						RSEs for sum of major fuels expenditures		
				RSEs not available for percentiles					
	Per building	Per square foot	Per worker	25th per-centile	Median	75th per-centile	Per building	Per square foot	Per million Btu
All buildings	3.5	1.8	2.1	—	—	—	3.4	1.9	1.1
Energy sources (more than one may apply)									
Electricity	3.4	1.8	2.1	—	—	—	3.4	1.9	1.1
Natural gas	4.0	1.7	2.3	—	—	—	4.0	1.9	1.1
Fuel oil	9.7	3.1	4.3	—	—	—	9.8	4.0	2.2
District heat	13.2	3.4	6.4	—	—	—	13.1	3.9	3.0
District chilled water	17.8	4.6	9.2	—	—	—	17.7	4.7	4.0
Propane	13.1	7.6	8.7	—	—	—	11.3	6.7	4.9
Solar	14.2	4.9	7.2	—	—	—	14.1	5.4	4.2
Wood, coal, and other	17.8	11.6	11.5	—	—	—	17.5	12.4	8.7
Space-heating energy sources (more than one may apply)									
Electricity	4.3	2.2	3.1	—	—	—	4.0	2.3	1.5
Natural gas	4.1	1.8	2.4	—	—	—	4.1	2.0	1.1
Fuel oil	13.1	6.5	9.8	—	—	—	12.1	6.8	4.2
District heat	13.8	3.1	6.7	—	—	—	13.7	4.0	2.9
Propane	24.6	16.6	18.5	—	—	—	16.8	10.0	14.6
Other sources[b]	22.0	14.8	16.5	—	—	—	22.4	16.2	6.0
Primary space-heating energy source									
Electricity	5.1	3.1	5.0	—	—	—	4.9	2.8	1.5
Natural gas	4.3	1.9	2.8	—	—	—	4.3	2.3	1.3
Fuel oil	15.7	8.9	12.0	—	—	—	13.9	9.5	4.4
District heat	14.6	3.2	6.9	—	—	—	14.3	4.1	3.1
Propane	23.1	16.5	17.7	—	—	—	23.7	18.1	6.5
Other sources[b]	25.1	14.2	21.8	—	—	—	21.2	12.5	6.2
Cooling energy sources (more than one may apply)									
Electricity	3.2	1.6	2.2	—	—	—	3.2	1.9	1.2
Natural gas	43.8	10.4	13.6	—	—	—	42.2	12.8	9.0
District chilled water	17.8	4.6	9.2	—	—	—	17.7	4.7	4.0
Water-heating energy sources (more than one may apply)									
Electricity	4.1	2.3	3.3	—	—	—	3.9	2.5	1.3
Natural gas	4.2	1.7	2.4	—	—	—	4.3	2.0	1.2
Fuel oil	21.1	6.6	16.5	—	—	—	19.8	7.7	5.0
District heat	13.7	4.6	7.1	—	—	—	14.1	4.6	3.5
Propane	31.4	26.2	31.3	—	—	—	27.4	21.6	9.5
Cooking energy sources (more than one may apply)									
Electricity	4.8	2.2	3.4	—	—	—	4.7	2.4	1.6
Natural gas	4.7	1.9	2.8	—	—	—	4.7	2.2	1.3
Propane	14.3	7.0	10.2	—	—	—	13.2	8.2	6.1

Relative standard errors (RSEs) for Table C4. Sum of major fuel consumption and expenditure gross energy intensities, 2018

	RSEs for sum of major fuels consumption						RSEs for sum of major fuels expenditures		
				RSEs not available for percentiles					
	Per building	Per square foot	Per worker	25th per-centile	Median	75th per-centile	Per building	Per square foot	Per million Btu
All buildings	3.5	1.8	2.1	—	—	—	3.4	1.9	1.1
Energy end uses (more than one may apply)									
Buildings with space heating	3.5	1.8	2.1	—	—	—	3.4	1.8	1.1
Buildings with cooling	3.2	1.7	2.1	—	—	—	3.2	1.8	1.1
Buildings with water heating	3.3	1.7	2.1	—	—	—	3.2	1.9	1.1
Buildings with cooking	4.0	1.7	2.4	—	—	—	3.9	1.9	1.3
Buildings with manufacturing	13.6	9.0	10.1	—	—	—	13.8	9.7	3.7
Buildings with electricity generation	7.5	2.6	3.8	—	—	—	7.8	3.1	1.8
Buildings with lighting	3.5	1.7	2.1	—	—	—	3.5	1.9	1.1
Percentage of floorspace heated									
Not heated	10.0	9.5	10.6	—	—	—	10.9	11.1	4.4
1% to 50%	9.1	5.0	6.9	—	—	—	8.8	5.3	3.0
51% to 99%	6.3	2.8	4.1	—	—	—	6.0	3.0	1.9
100%	3.8	2.0	2.8	—	—	—	3.7	2.2	1.2
Percentage of floorspace cooled									
Not cooled	16.1	14.6	17.0	—	—	—	16.1	14.7	5.1
1% to 50%	6.2	4.0	4.7	—	—	—	6.1	4.7	2.5
51% to 99%	5.8	2.7	3.5	—	—	—	5.7	3.2	1.7
100%	3.9	2.1	3.0	—	—	—	3.6	2.0	1.4
Percentage lit when open									
0%	87.9	76.7	95.3	—	—	—	76.9	63.8	42.2
1% to 50%	6.1	4.3	7.2	—	—	—	6.0	4.5	2.3
51% to 99%	4.9	2.4	3.1	—	—	—	4.8	2.6	1.4
100%	4.6	2.2	2.9	—	—	—	4.5	2.4	1.5
Building never open or electricity not used	15.2	13.1	23.4	—	—	—	15.3	13.7	7.9
Percentage lit during off hours									
0%	4.9	3.9	5.2	—	—	—	5.4	4.5	2.5
1% to 50%	3.7	2.0	2.4	—	—	—	3.4	2.0	1.2
51% to 100%	11.8	4.7	6.2	—	—	—	11.7	5.4	3.3
Building always open with no off hours	13.5	5.8	11.5	—	—	—	13.1	6.5	4.2
Electricity not used	0.0	0.0	0.0	—	—	—	0.0	0.0	0.0
Heating equipment (more than one may apply)									
Packaged heating units	4.0	2.2	2.9	—	—	—	3.5	2.1	1.4
Furnaces	5.7	3.0	3.9	—	—	—	5.4	3.2	1.6
Individual space heaters	5.9	3.3	4.2	—	—	—	5.8	3.7	2.5
Boilers	5.8	2.4	3.3	—	—	—	5.6	2.5	1.6
Heat pumps	7.9	3.8	4.7	—	—	—	7.1	3.2	2.5
District heat	13.8	3.1	6.7	—	—	—	13.7	4.0	2.9
Duct reheat	12.2	3.6	6.2	—	—	—	12.0	3.9	2.8
Other	46.1	19.7	28.3	—	—	—	34.4	21.6	10.0

Relative standard errors (RSEs) for Table C4. Sum of major fuel consumption and expenditure gross energy intensities, 2018

	RSEs for sum of major fuels consumption						RSEs for sum of major fuels expenditures		
				RSEs not available for percentiles					
	Per building	Per square foot	Per worker	25th per-centile	Median	75th per-centile	Per building	Per square foot	Per million Btu
All buildings	3.5	1.8	2.1	—	—	—	3.4	1.9	1.1
Cooling equipment (more than one may apply)									
Packaged air-conditioning units	4.2	1.9	2.7	—	—	—	4.0	2.2	1.3
Residential-type central air conditioners	5.2	3.0	3.9	—	—	—	5.7	3.6	1.8
Individual air conditioners	6.4	3.2	4.0	—	—	—	6.0	3.4	1.7
Central chillers	8.7	2.3	4.0	—	—	—	9.2	2.7	1.8
Heat pumps	11.1	4.7	6.2	—	—	—	10.5	4.5	3.6
District chilled water	17.8	4.6	9.2	—	—	—	17.7	4.7	4.0
Swamp coolers	10.2	6.9	12.0	—	—	—	11.0	6.3	5.3
Other	69.7	38.9	48.4	—	—	—	75.0	45.4	8.1
HVAC features (more than one may apply)									
Economizer cycle	5.8	2.1	3.5	—	—	—	5.7	2.3	1.7
Variable air volume (VAV) system	8.3	2.9	4.4	—	—	—	8.3	3.2	2.0
Dedicated outside air system (DOAS)	11.7	5.3	8.3	—	—	—	11.3	6.2	3.7
Demand controlled ventilation (DCV)	8.3	3.9	5.4	—	—	—	8.5	4.8	2.4
Regular HVAC maintenance	3.5	1.8	2.4	—	—	—	3.3	1.9	1.2
Building automation system (BAS) controls heating or cooling	5.8	2.2	3.5	—	—	—	5.9	2.6	1.6
Internet-connected or smart thermostat	10.3	6.0	9.1	—	—	—	10.3	6.2	3.1
Programmable thermostat	4.8	3.0	3.9	—	—	—	4.6	3.2	1.9
Main equipment replaced since 2000 (more than one may apply)									
Heating	4.5	2.5	3.2	—	—	—	4.6	3.0	1.4
Cooling	4.9	2.4	3.9	—	—	—	4.3	2.5	2.0
Water-heating equipment									
Centralized system	3.8	2.0	2.5	—	—	—	3.7	2.3	1.4
Distributed system	8.2	4.1	5.7	—	—	—	8.4	5.0	2.4
Combination of centralized and distributed systems	7.4	3.0	4.7	—	—	—	7.2	3.3	2.0
Generation technologies (more than one may apply)									
Reciprocating engine generators	9.0	2.9	4.2	—	—	—	9.4	3.4	2.0
Solar panels	14.0	4.6	7.3	—	—	—	14.1	5.5	4.1
Other generation technology	20.1	9.1	13.3	—	—	—	21.5	12.0	6.8
Lighting equipment types (more than one may apply)									
Incandescent	8.0	3.0	4.2	—	—	—	7.7	3.0	1.8
Standard fluorescent	3.6	2.0	2.4	—	—	—	3.6	2.1	1.2
Compact fluorescent	4.8	2.0	3.0	—	—	—	4.7	2.2	1.6
High-intensity discharge (HID)	11.0	4.4	6.1	—	—	—	10.2	4.0	3.2
Halogen	9.4	3.6	4.6	—	—	—	8.9	3.5	2.3
LED	3.8	1.9	2.6	—	—	—	3.7	2.2	1.3
Other	71.2	10.7	19.1	—	—	—	73.0	3.1	11.9

Relative standard errors (RSEs) for Table C4. Sum of major fuel consumption and expenditure gross energy intensities, 2018

	RSEs for sum of major fuels consumption						RSEs for sum of major fuels expenditures		
				RSEs not available for percentiles					
	Per building	Per square foot	Per worker	25th per-centile	Median	75th per-centile	Per building	Per square foot	Per million Btu
All buildings	3.5	1.8	2.1	—	—	—	3.4	1.9	1.1
Refrigeration equipment (more than one may apply)									
Any refrigeration	3.5	1.9	2.1	—	—	—	3.5	2.0	1.1
Walk-in units	4.5	2.2	2.6	—	—	—	4.6	2.5	1.4
Cases or cabinets	4.6	2.3	3.0	—	—	—	4.5	2.7	1.6
Large cold storage areas	16.5	8.3	11.7	—	—	—	16.0	10.5	5.8
Commercial ice makers	5.1	2.1	2.6	—	—	—	4.8	2.0	1.5
Residential-type or compact units	3.9	2.1	2.6	—	—	—	3.8	2.2	1.3
Vending machines	5.6	2.1	2.8	—	—	—	5.5	2.2	1.5
No refrigeration	6.1	4.5	6.9	—	—	—	6.7	5.3	2.4
Office equipment (more than one may apply)									
Desktop computers	3.4	1.9	2.2	—	—	—	3.4	1.9	1.1
With multiple monitors	4.5	2.1	2.4	—	—	—	4.4	2.2	1.4
Laptop computers	3.6	2.0	2.4	—	—	—	3.6	2.0	1.3
Dedicated servers	4.7	2.0	2.7	—	—	—	4.7	2.3	1.4
Tablets charged in building	4.5	2.1	2.7	—	—	—	4.3	2.2	1.4
Large floor-standing office devices[c]	4.3	2.0	2.5	—	—	—	4.4	2.2	1.4
Smaller desktop office devices[c]	3.5	1.9	2.3	—	—	—	3.5	2.1	1.2
Interactive whiteboards	9.0	3.2	4.5	—	—	—	8.6	3.6	2.6
Televisions or video displays	3.9	2.0	2.6	—	—	—	3.8	2.2	1.3
Point-of-sale devices or cash registers	5.0	2.0	3.0	—	—	—	4.8	2.4	1.5
Food preparation or serving areas in non-food service buildings (more than one may apply)									
Snack bar, concession stand, or coffee shop	11.3	3.1	6.5	—	—	—	10.7	3.4	2.8
Fast food or small restaurant	9.8	3.0	6.3	—	—	—	8.9	3.3	2.7
Cafeteria or large restaurant	8.4	2.8	4.8	—	—	—	8.2	2.5	2.5
Commercial kitchen or food preparation area	7.7	2.2	3.4	—	—	—	7.6	2.8	2.1
Small kitchen area	6.6	2.7	4.6	—	—	—	5.8	2.4	2.0
Separate computer areas (more than one may apply)									
Server closet	4.6	1.7	2.6	—	—	—	4.3	1.8	1.4
Data center	14.4	4.5	6.0	—	—	—	14.1	5.3	3.2
Computer-based training room	8.5	2.6	4.2	—	—	—	8.1	2.6	2.4
Student or public computer center	9.6	3.1	4.6	—	—	—	8.1	2.4	2.5

Relative standard errors (RSEs) for Table C4. Sum of major fuel consumption and expenditure gross energy intensities, 2018

	RSEs for sum of major fuels consumption						RSEs for sum of major fuels expenditures		
				RSEs not available for percentiles					
	Per building	Per square foot	Per worker	25th per-centile	Median	75th per-centile	Per building	Per square foot	Per million Btu
All buildings	3.5	1.8	2.1	—	—	—	3.4	1.9	1.1
Window and interior lighting features (more than one may apply)									
Multipaned windows	3.8	1.9	2.5	—	—	—	3.8	2.0	1.2
Tinted window glass	4.3	2.2	2.8	—	—	—	4.2	2.3	1.5
Reflective window glass	6.9	3.1	4.3	—	—	—	6.5	3.2	2.2
External overhangs or awnings	4.6	2.5	2.7	—	—	—	4.4	2.6	1.7
Skylights or atriums	8.1	2.8	5.2	—	—	—	7.4	2.4	2.3
Light scheduling	5.2	2.4	3.4	—	—	—	4.9	2.4	1.6
Occupancy sensors	5.9	2.2	2.9	—	—	—	5.9	2.4	1.7
Multilevel lighting or dimming	9.3	3.6	5.1	—	—	—	8.9	3.4	2.6
Daylight harvesting	12.0	4.6	6.5	—	—	—	11.9	4.0	2.5
Plug-load control	24.0	11.7	12.2	—	—	—	22.0	10.5	6.0
Demand responsive lighting	27.1	6.8	11.8	—	—	—	28.6	7.8	4.8
Building automation system (BAS) for lighting	8.7	3.1	5.6	—	—	—	8.2	3.2	2.4
Electric vehicle (EV) charging									
Charging stations associated with the building	12.5	4.4	7.7	—	—	—	11.6	4.2	3.8

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.

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

[b] *Other sources* includes wood, coal, solar, and all other energy sources.

[c] *Office devices* refers to any combination of printers, copiers, scanners, or FAX machines.