

Table E2. Major fuels consumption intensities by end use, 2018

Major fuels energy intensity^a
(thousand Btu/square foot in buildings using any major fuel for the end use)

	Total	Space heating	Cooling	Ventilation	Water heating	Lighting	Cooking	Refrigeration	Office equipment	Computing	Other
All buildings	71.6	25.0	7.0	8.0	4.0	7.5	11.4	4.8	0.5	3.1	11.4
Building floorspace (square feet)											
1,001 to 5,000	77.0	27.0	9.9	6.3	5.2	7.1	37.7	13.6	1.1	2.2	11.8
5,001 to 10,000	61.9	22.8	7.8	5.1	3.3	6.2	26.5	8.5	0.6	1.5	9.0
10,001 to 25,000	59.5	23.6	6.2	5.0	2.8	6.1	10.1	4.2	0.6	3.1	10.4
25,001 to 50,000	68.9	25.6	7.1	6.7	4.3	7.8	7.8	4.7	0.4	1.9	10.8
50,001 to 100,000	70.4	24.9	6.7	7.7	4.5	7.6	8.2	4.2	0.4	2.3	10.7
100,001 to 200,000	73.9	23.8	6.5	9.4	3.7	8.4	8.2	3.6	0.6	3.6	11.6
200,001 to 500,000	85.4	28.1	7.1	11.1	4.1	8.6	9.2	2.9	0.5	5.8	14.4
Over 500,000	83.7	24.8	6.0	13.4	4.4	8.6	10.7	2.3	0.4	4.2	13.3
Principal building activity											
Education	62.7	27.6	7.3	4.8	3.7	5.5	3.3	1.8	0.5	2.4	8.8
Food sales	232.0	36.6	7.1	13.1	Q	13.1	32.1	87.1	0.7	Q	Q
Food service	263.3	35.6	19.1	16.6	19.4	10.8	109.7	40.6	1.2	0.9	20.6
Health care	144.5	44.8	9.8	24.4	9.2	12.2	17.0	3.1	1.1	5.8	25.5
Inpatient	193.3	62.6	13.8	28.6	14.6	11.9	18.8	4.0	1.2	7.2	33.9
Outpatient	82.0	21.8	4.9	19.1	2.2	12.5	5.4	1.9	1.0	3.9	14.6
Lodging	85.7	15.7	6.0	12.5	16.5	7.2	14.1	4.2	0.4	1.2	12.4
Mercantile	88.4	22.8	6.7	10.8	6.0	13.1	16.8	7.5	0.7	2.0	11.7
Retail (other than mall)	64.1	16.5	6.4	11.7	0.9	12.0	9.7	3.7	0.4	1.2	10.3
Enclosed and strip malls	111.0	28.5	7.1	10.1	10.2	14.1	19.6	10.5	0.9	2.7	12.9
Office	65.6	20.1	5.1	12.9	1.0	7.8	2.6	1.6	0.8	5.2	11.4
Public assembly	81.1	41.4	15.8	4.0	0.8	5.1	5.6	3.0	0.4	1.0	12.3
Public order and safety	86.3	30.2	9.2	6.1	10.7	11.5	4.5	2.0	0.6	2.7	11.7
Religious worship	35.3	17.8	4.0	2.9	0.8	3.4	4.8	1.1	0.3	0.3	3.4
Service	51.2	33.7	5.0	3.0	Q	7.9	1.9	1.1	0.4	0.8	7.4
Warehouse and storage	32.3	15.8	3.9	1.7	0.5	5.1	0.5	3.3	0.1	0.6	6.8
Other	136.4	39.5	13.7	7.3	0.8	12.7	6.0	2.3	0.5	33.2	36.2
Vacant	21.7	17.6	5.4	1.2	Q	2.6	Q	0.5	Q	0.6	5.9
Year constructed											
Before 1920	65.2	31.0	4.8	6.0	2.5	5.8	10.4	2.8	0.5	Q	9.1
1920 to 1945	71.8	30.2	7.0	8.8	2.7	6.8	8.6	3.9	0.5	4.5	9.1
1946 to 1959	65.2	28.7	6.0	5.3	3.8	6.1	7.8	3.3	0.5	1.9	9.2
1960 to 1969	74.5	29.1	7.2	7.2	4.8	7.4	10.0	4.5	0.6	2.0	11.1
1970 to 1979	70.2	25.5	6.9	7.9	4.0	7.9	12.1	5.0	0.5	2.6	10.7
1980 to 1989	72.4	21.1	6.4	8.9	4.8	7.6	13.4	4.7	0.6	4.6	12.0
1990 to 1999	63.6	21.6	6.8	7.9	3.3	7.4	9.3	4.4	0.5	2.1	10.4
2000 to 2009	80.7	25.9	8.0	8.9	4.0	8.4	13.5	5.7	0.5	3.5	13.5
2010 to 2018	72.1	21.2	7.2	8.2	4.1	7.7	12.9	5.6	0.6	3.2	13.3

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(thousand Btu/square foot in buildings using any major fuel for the end use)

	Total	Space heating	Cooling	Ventilation	Water heating	Lighting	Cooking	Refrigeration	Office equipment	Computing	Other
All buildings	71.6	25.0	7.0	8.0	4.0	7.5	11.4	4.8	0.5	3.1	11.4
Census region and division											
Northeast	77.5	32.8	4.4	8.4	3.7	8.1	8.1	3.8	0.5	3.5	11.8
New England	74.1	33.7	3.2	7.9	4.2	7.3	9.0	5.4	0.5	2.1	12.7
Middle Atlantic	78.6	32.6	4.7	8.6	3.6	8.3	7.9	3.3	0.5	3.9	11.6
Midwest	75.7	34.4	4.6	7.6	3.4	7.1	9.8	4.7	0.5	3.1	11.1
East North Central	79.1	36.0	4.8	7.9	3.8	7.2	11.3	5.5	0.5	2.7	10.7
West North Central	68.5	30.9	4.2	7.0	2.4	6.8	6.5	3.2	0.5	4.0	11.9
South	68.3	17.6	10.8	7.9	4.0	7.7	11.4	4.6	0.6	2.7	11.6
South Atlantic	69.4	17.4	10.9	8.4	4.1	8.0	11.8	4.6	0.6	2.6	12.3
East South Central	67.7	21.4	8.9	7.2	3.2	7.7	12.0	4.5	0.6	2.5	10.6
West South Central	66.9	16.1	11.6	7.5	4.1	7.4	10.7	4.8	0.6	2.8	11.2
West	66.9	18.7	4.9	8.1	5.0	7.3	16.9	5.9	0.6	3.7	11.0
Mountain	77.0	24.4	5.1	8.5	5.2	7.5	18.9	6.1	0.5	4.4	9.8
Pacific	60.5	14.7	4.7	7.8	4.9	7.2	15.2	5.7	0.7	3.2	11.7
Climate zone^b											
Cold or very cold	78.0	36.1	2.3	7.4	2.8	6.6	8.5	6.2	0.5	4.6	13.7
Cool	74.8	33.3	3.6	7.7	3.7	7.4	10.8	4.6	0.5	3.0	10.8
Mixed mild	77.3	29.3	6.2	8.7	4.1	7.9	9.6	3.9	0.5	3.5	11.8
Warm	66.1	16.5	8.6	7.8	4.4	7.6	14.5	5.2	0.6	2.6	11.2
Hot or very hot	60.3	6.3	14.2	7.6	3.8	7.5	12.8	5.3	0.6	2.9	11.0
Number of floors											
1	67.6	23.8	7.8	6.1	3.5	7.6	16.7	7.0	0.5	2.4	10.5
2	62.1	23.1	6.1	6.3	3.3	7.1	8.1	3.8	0.5	2.1	9.4
3	71.5	27.0	6.5	7.9	3.5	7.3	6.8	3.5	0.5	3.4	11.2
4 to 9	90.9	30.3	6.9	12.1	6.1	8.1	8.5	2.6	0.6	5.0	16.4
10 or more	93.9	24.5	6.0	17.6	5.6	7.7	11.8	2.2	0.7	7.0	14.5
Elevators and escalators (more than one may apply)											
Any elevators	81.3	26.9	6.8	11.1	4.5	7.7	8.0	2.6	0.6	4.6	13.5
1 elevator	65.5	26.3	6.1	7.1	3.0	6.6	5.0	2.8	0.5	2.6	9.9
2 to 5 elevators	83.7	25.6	7.3	11.5	5.2	8.3	7.2	2.6	0.6	6.0	14.8
6 or more elevators	102.6	29.7	7.3	17.0	5.9	8.6	11.9	2.4	0.7	5.6	17.2
Any escalators	86.4	24.4	6.5	13.3	4.8	8.5	11.3	2.7	0.5	4.8	12.8
Number of workers (main shift)											
Fewer than 5	45.5	21.6	7.3	3.2	2.4	4.6	6.9	5.3	0.4	1.8	8.4
5 to 9	64.6	23.0	6.9	5.3	3.7	6.6	14.8	5.7	0.5	1.3	11.5
10 to 19	68.6	25.2	6.2	6.3	5.1	6.8	17.7	6.0	0.5	1.6	8.3
20 to 49	76.4	24.3	6.8	7.2	4.2	8.2	15.3	5.7	0.5	4.6	10.4
50 to 99	78.2	26.9	7.1	8.2	4.1	8.4	8.7	4.9	0.5	2.5	13.3
100 to 249	83.0	26.1	7.2	10.9	3.9	10.0	10.1	3.9	0.6	2.7	12.5
250 or more	96.8	28.3	7.0	16.0	4.5	9.1	9.8	2.2	0.8	6.5	17.2
Weekly operating hours											
Fewer than 40	40.6	20.4	5.9	1.7	1.3	3.4	6.3	3.1	0.5	1.8	7.9
40 to 48	50.5	20.4	5.8	4.3	1.8	5.4	5.4	2.2	0.5	2.2	9.7
49 to 60	55.6	22.1	5.6	5.8	2.2	6.5	6.2	2.6	0.5	3.2	8.1
61 to 84	80.9	28.8	7.0	7.9	3.6	9.3	15.5	5.7	0.6	2.5	11.8
85 to 167	99.6	31.2	8.7	9.8	4.0	11.4	21.7	12.1	0.5	1.5	13.7
Open continuously	106.8	28.8	9.1	16.5	9.7	9.7	13.2	5.4	0.5	5.9	17.5

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	Total	Space heating	Cooling	Ventilation	Water heating	Lighting	Cooking	Refrigeration	Office equipment	Computing	Other
All buildings	71.6	25.0	7.0	8.0	4.0	7.5	11.4	4.8	0.5	3.1	11.4
Ownership and occupancy											
Nongovernment owned	71.3	23.6	6.5	8.3	4.1	7.9	13.8	5.4	0.5	3.1	11.3
Owner occupied	71.5	24.8	6.9	8.4	4.1	7.3	11.9	5.3	0.5	2.8	11.5
Leased to tenant or tenants	72.3	21.7	6.0	8.4	4.1	9.0	17.7	5.5	0.6	3.6	11.1
Unoccupied	15.8	21.0	6.0	0.0	Q	Q	Q	Q	Q	Q	4.1
Government owned	72.5	29.5	8.4	6.7	3.5	6.4	5.5	2.9	0.5	3.0	11.8
Federal	81.6	31.1	6.6	12.0	1.9	9.6	7.7	1.5	0.5	4.4	13.8
State	84.3	32.8	10.1	7.5	5.0	6.6	7.9	3.6	0.6	3.0	15.6
Local	64.8	27.5	7.9	5.5	2.9	5.9	4.2	2.7	0.5	2.9	9.5
Party responsible for operation of energy systems											
Building owner	71.2	25.5	7.0	8.1	3.8	7.2	10.0	4.4	0.5	3.1	11.6
Business owner or tenant	72.9	24.2	6.3	6.4	4.1	8.8	24.4	7.2	0.5	2.9	9.8
Property management	73.9	17.2	7.3	10.1	5.8	9.0	10.9	5.6	0.7	2.9	12.1
Other	73.7	19.3	7.4	8.5	5.4	9.2	9.5	3.8	0.7	4.2	12.5
Provider of direct input on energy-related equipment purchases											
Building owner	71.0	25.3	7.0	8.1	3.8	7.3	10.2	4.5	0.5	3.1	11.5
Business owner or tenant	79.6	24.3	6.5	6.6	4.5	9.5	26.1	7.9	0.5	3.6	10.8
Property management	81.4	21.1	6.1	9.4	7.3	10.3	14.0	7.7	0.7	2.5	12.5
Other	67.1	21.5	6.6	7.9	4.4	7.9	12.0	4.1	0.6	3.2	10.8
Number of establishments											
1	69.5	25.5	7.2	7.0	4.1	6.9	11.0	4.7	0.5	3.0	11.5
2 to 5	73.7	24.6	6.9	8.8	3.4	8.1	12.2	5.0	0.5	2.8	11.3
6 to 10	79.2	24.4	5.4	10.2	4.2	9.7	12.8	5.7	0.7	3.9	11.0
11 to 20	87.6	24.7	6.5	12.0	4.8	11.0	15.2	5.3	0.8	3.5	12.7
More than 20	80.0	21.3	5.6	13.0	3.7	10.4	8.9	3.1	0.9	5.3	11.0
Currently unoccupied	18.9	21.8	5.6	Q	Q	Q	Q	Q	Q	Q	5.8
Predominant exterior wall material											
Brick, stone, or stucco	78.6	26.7	7.6	8.6	4.7	7.4	12.4	4.6	0.6	3.0	11.5
Concrete (block or poured)	74.9	24.5	7.3	8.5	3.7	8.5	11.2	6.2	0.5	3.3	11.2
Concrete panels	64.1	22.6	5.2	7.1	2.6	7.7	8.2	3.2	0.5	4.8	10.8
Siding or shingles	66.2	23.1	5.5	6.1	6.0	7.3	9.6	6.3	0.6	1.9	15.0
Metal panels	43.5	21.5	5.7	3.9	1.3	6.2	5.7	3.6	0.3	1.0	9.1
Window glass	85.0	25.9	7.0	12.7	2.5	7.7	10.4	2.5	0.7	6.4	15.2
Other	71.5	20.0	5.1	11.4	3.0	7.6	12.0	5.4	0.5	6.0	11.0
Predominant roof material											
Metal surfacing	50.8	21.3	7.1	4.2	2.0	6.3	10.9	4.9	0.4	1.3	9.8
Synthetic or rubber	82.2	27.2	6.6	9.9	3.9	8.5	11.6	5.4	0.6	3.6	12.4
Built-up	80.1	27.3	7.5	9.4	4.6	7.9	12.0	4.4	0.6	4.1	11.2
Slate or tile shingles	68.4	21.6	7.8	6.4	5.2	6.2	16.1	5.1	0.6	1.8	10.2
Wooden materials (including shingles)	62.7	19.0	7.2	6.9	6.9	6.5	21.9	6.1	0.6	1.2	8.8
Asphalt, fiberglass, or other shingles	66.2	24.2	6.2	6.7	5.1	6.9	8.5	3.4	0.6	2.2	10.6
Concrete	84.0	21.6	8.9	10.3	5.5	8.0	9.5	3.3	0.8	Q	17.7
Other	67.9	19.3	6.9	7.0	2.9	7.1	11.1	5.0	0.6	2.7	14.7

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	Total	Space heating	Cooling	Ventilation	Water heating	Lighting	Cooking	Refrigeration	Office equipment	Computing	Other
All buildings	71.6	25.0	7.0	8.0	4.0	7.5	11.4	4.8	0.5	3.1	11.4
Roof tilt											
Flat	81.8	26.6	7.3	9.9	4.4	8.4	12.4	4.8	0.6	3.9	12.6
Shallow pitch	58.4	22.4	6.5	5.3	3.2	6.8	10.5	4.8	0.5	2.3	9.6
Steeper pitch	57.9	22.9	6.3	5.2	3.7	5.6	8.5	4.5	0.5	1.3	10.2
Cool roof characteristics (more than one may apply)											
White or reflective coating or paint	76.8	24.1	7.4	9.2	3.9	8.3	13.5	5.0	0.6	3.1	12.8
White or reflective tiles or shingles	81.9	24.5	8.7	8.6	4.6	7.5	10.1	6.1	0.5	Q	13.6
Aluminum coating	58.1	19.3	7.4	5.8	3.4	7.2	15.5	6.3	0.4	1.7	9.3
Ballasted roof system	87.4	29.5	6.7	10.3	4.3	7.3	13.2	3.1	0.5	5.3	14.4
Other cool roof property	79.6	22.5	7.3	11.5	4.1	8.7	8.3	4.4	0.5	4.6	11.7
Renovations since 2000 (more than one may apply)											
Any type of renovation	77.3	27.3	6.7	9.2	4.2	7.7	10.5	4.3	0.6	3.3	11.4
Addition or annex	86.1	33.2	7.2	9.8	4.6	7.6	10.4	4.4	0.5	2.7	12.0
Reduction in floorspace	86.2	31.0	7.1	11.8	3.8	8.9	8.6	4.3	0.6	3.6	11.7
Roof replacement	78.0	27.2	6.6	9.1	4.6	7.5	11.2	4.2	0.6	3.3	11.6
Interior wall reconfiguration	78.6	27.9	6.3	10.3	3.5	7.8	9.8	3.3	0.6	3.9	11.8
Window replacement	78.9	29.5	5.8	9.2	4.3	7.5	10.9	3.9	0.5	2.9	10.6
HVAC equipment upgrade	80.1	27.8	6.7	9.8	4.3	7.7	10.3	4.1	0.6	3.6	11.9
Lighting upgrade	80.5	27.8	6.4	10.0	4.2	7.8	10.6	4.4	0.6	3.8	11.9
Electrical upgrade	85.6	29.5	6.9	10.3	4.4	7.8	12.5	4.2	0.6	4.2	12.6
Plumbing system upgrade	83.7	29.2	6.8	10.5	4.6	7.6	10.7	3.9	0.6	3.7	12.2
Insulation upgrade	83.1	29.6	6.6	10.1	4.2	7.7	11.6	3.7	0.5	3.6	12.7
Fire, safety, or security upgrade	83.0	28.8	6.7	10.1	4.7	7.8	10.5	3.8	0.6	3.8	12.4
Structural upgrade	93.6	31.6	5.9	11.1	6.1	8.0	13.2	4.3	0.6	5.2	14.7
Other	88.8	23.4	9.0	17.0	1.7	11.5	12.0	3.2	0.5	2.3	13.5
No renovations	65.9	23.1	7.2	6.6	3.8	7.4	12.3	5.1	0.5	3.0	11.2
Buildings constructed 2013 or later	69.2	21.2	7.1	7.8	3.8	7.2	14.3	6.0	0.5	2.2	12.7
Energy sources (more than one may apply)											
Electricity	71.6	25.0	7.0	8.0	4.0	7.5	11.4	4.8	0.5	3.1	11.4
Natural gas	80.4	28.2	6.4	8.5	4.5	7.9	12.8	4.8	0.5	2.9	11.4
Fuel oil	92.4	28.7	7.4	11.6	4.7	8.3	10.1	4.1	0.6	6.9	16.4
District heat	116.5	43.5	7.2	14.3	7.4	8.4	10.9	2.9	0.8	5.5	24.3
District chilled water	111.3	40.5	3.2	12.2	6.7	8.3	11.8	3.3	0.8	6.5	27.4
Propane	58.9	18.9	5.5	5.8	3.8	6.7	11.7	6.3	0.4	1.8	11.5
Solar	77.6	26.0	6.2	9.5	3.9	8.1	11.8	5.0	0.5	2.7	10.3
Wood, coal, and other	68.9	23.2	6.5	6.0	3.5	7.8	22.0	5.3	0.5	3.1	9.8
Space-heating energy sources (more than one may apply)											
Electricity	72.4	17.3	7.3	8.2	5.0	8.3	13.1	5.4	0.6	3.3	12.0
Natural gas	78.4	29.6	6.1	8.2	3.8	7.9	11.4	4.7	0.5	2.6	10.1
Fuel oil	77.7	34.7	4.5	8.0	3.2	7.0	6.0	3.8	0.5	2.5	12.5
District heat	114.9	43.8	7.1	13.9	7.0	8.3	10.7	2.8	0.7	5.5	23.1
Propane	46.8	11.6	4.9	5.7	4.3	5.5	Q	6.4	0.4	1.5	8.2
Other sources ^c	36.7	18.9	4.1	3.5	0.4	5.9	Q	2.3	0.4	1.2	7.0

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Major fuels energy intensity^a
(thousand Btu/square foot in buildings using any major fuel for the end use)

	Total	Space heating	Cooling	Ventilation	Water heating	Lighting	Cooking	Refrigeration	Office equipment	Computing	Other
All buildings	71.6	25.0	7.0	8.0	4.0	7.5	11.4	4.8	0.5	3.1	11.4
Primary space-heating energy source											
Electricity	63.2	8.1	8.3	7.7	5.2	7.9	13.6	5.5	0.6	3.8	12.4
Natural gas	77.8	31.9	6.0	8.0	3.1	7.7	10.8	4.4	0.5	2.3	9.6
Fuel oil	62.2	33.7	3.4	3.9	2.4	5.7	2.5	3.5	0.4	1.4	8.7
District heat	116.1	44.5	7.2	13.9	7.0	8.4	10.2	2.8	0.8	5.7	23.7
Propane	31.8	4.8	5.2	4.2	2.0	5.3	4.9	7.1	0.4	1.1	7.3
Other sources ^c	22.1	Q	Q	2.5	Q	4.4	Q	Q	0.4	0.7	6.3
Cooling energy sources (more than one may apply)											
Electricity	73.4	24.3	6.9	8.2	4.0	7.9	11.5	4.9	0.6	3.3	10.2
Natural gas	106.6	34.6	13.1	12.6	6.1	8.8	9.8	3.3	0.4	2.0	17.6
District chilled water	111.3	40.5	3.2	12.2	6.7	8.3	11.8	3.3	0.8	6.5	27.4
Water-heating energy sources (more than one may apply)											
Electricity	67.6	20.2	6.9	7.5	2.8	8.0	11.4	4.9	0.6	3.4	11.4
Natural gas	85.4	29.3	6.9	9.0	5.5	8.1	13.0	5.5	0.6	3.1	11.0
Fuel oil	87.5	40.7	5.3	10.2	3.5	7.3	6.2	3.1	0.5	3.5	11.8
District heat	117.1	45.0	7.3	15.5	7.5	8.3	9.2	2.6	0.8	3.6	24.5
Propane	72.3	17.1	9.0	6.4	4.9	7.0	8.3	10.2	0.6	1.6	Q
Cooking energy sources (more than one may apply)											
Electricity	90.6	28.0	6.9	10.1	5.6	8.4	10.6	6.5	0.6	2.7	12.9
Natural gas	102.5	30.3	7.8	11.2	6.2	8.9	16.0	7.0	0.6	2.8	12.3
Propane	73.4	23.8	7.8	6.6	5.6	8.4	10.3	8.8	0.5	1.9	10.3
Energy end uses (more than one may apply)											
Buildings with space heating	74.1	25.0	6.7	8.1	4.0	7.7	11.3	4.7	0.5	2.9	11.4
Buildings with cooling	74.5	24.8	7.0	8.3	4.1	7.9	11.4	4.9	0.6	3.2	10.9
Buildings with water heating	75.1	25.5	6.9	8.2	4.0	7.7	11.4	4.8	0.6	3.2	11.5
Buildings with cooking	90.7	27.9	7.4	10.0	5.7	8.2	11.4	6.4	0.6	2.6	12.4
Buildings with manufacturing	70.4	26.9	4.5	6.7	1.7	7.6	10.5	6.6	0.4	1.6	15.9
Buildings with electricity generation	92.4	28.2	7.5	11.2	5.0	8.6	10.2	4.5	0.6	5.7	16.8
Buildings with lighting	72.0	25.0	6.9	8.0	4.0	7.5	11.4	4.8	0.5	3.1	11.4
Percentage of floorspace heated											
Not heated	35.6	N	14.1	4.5	3.2	5.3	15.3	7.6	0.4	7.7	12.0
1% to 50%	41.6	9.1	5.1	4.4	1.9	5.9	13.0	5.1	0.3	2.9	7.1
51% to 99%	79.2	24.0	6.7	9.5	4.8	8.2	13.3	5.7	0.6	2.6	11.6
100%	78.3	28.2	7.0	8.2	4.1	7.8	10.4	4.2	0.6	3.1	12.0
Percentage of floorspace cooled											
Not cooled	37.1	29.0	N	0.7	1.2	3.4	7.3	2.1	0.1	0.3	17.3
1% to 50%	43.5	20.8	3.1	3.3	1.7	5.8	6.2	2.7	0.3	0.9	6.2
51% to 99%	83.7	27.3	7.0	9.9	4.5	8.2	11.0	5.6	0.6	4.1	11.9
100%	83.3	25.1	8.8	9.6	4.9	8.6	12.9	5.3	0.7	3.7	12.5

Table E2. Major fuels consumption intensities by end use, 2018

Major fuels energy intensity^a
(thousand Btu/square foot in buildings using any major fuel for the end use)

	Total	Space heating	Cooling	Ventilation	Water heating	Lighting	Cooking	Refrigeration	Office equipment	Computing	Other
All buildings	71.6	25.0	7.0	8.0	4.0	7.5	11.4	4.8	0.5	3.1	11.4
Percentage lit when open											
0%	Q	Q	Q	Q	Q	N	N	Q	Q	Q	Q
1% to 50%	42.4	19.6	6.1	3.9	2.2	3.0	6.2	2.8	0.3	2.2	7.2
51% to 99%	80.2	26.4	6.8	9.1	4.6	8.0	11.9	5.0	0.6	3.3	12.3
100%	76.0	25.4	7.4	8.4	3.9	8.8	12.0	5.1	0.6	3.2	12.2
Building never open or electricity not used	22.4	20.3	5.6	0.1	Q	3.5	Q	Q	Q	Q	6.0
Percentage lit during off hours											
0%	42.3	20.0	6.5	3.2	1.8	4.0	9.9	3.6	0.4	1.2	8.6
1% to 50%	72.3	25.2	6.8	8.1	3.6	7.5	11.0	4.5	0.6	2.9	11.0
51% to 100%	114.0	30.5	8.8	14.2	9.0	13.0	13.1	7.0	0.6	8.5	19.7
Building always open with no off hours	114.0	27.5	8.8	13.5	11.0	14.6	18.8	10.0	0.5	4.6	16.4
Electricity not used	N	N	N	N	N	N	N	N	N	N	N
Heating equipment (more than one may apply)											
Packaged heating units	76.3	22.6	7.1	8.4	4.3	8.3	14.5	6.0	0.6	2.4	11.0
Furnaces	68.7	27.1	5.1	6.1	4.3	7.6	13.4	5.7	0.6	2.0	8.3
Individual space heaters	72.0	24.6	5.6	6.8	4.8	7.8	12.5	4.5	0.5	3.5	10.0
Boilers	84.9	32.0	6.7	9.5	4.4	7.6	9.3	3.3	0.5	3.1	12.8
Heat pumps	76.7	18.1	7.3	9.1	6.0	8.8	12.3	4.5	0.7	4.1	11.3
District heat	114.9	43.8	7.1	13.9	7.0	8.3	10.7	2.8	0.7	5.5	23.1
Duct reheat	85.0	21.2	6.9	11.7	4.6	9.4	11.7	4.8	0.7	4.8	14.5
Other	173.9	31.7	5.8	10.8	7.6	15.0	27.1	31.0	0.7	1.0	Q
Cooling equipment (more than one may apply)											
Packaged air-conditioning units	76.6	24.5	6.9	8.5	4.1	8.4	13.2	5.7	0.6	3.2	10.5
Residential-type central air conditioners	72.5	28.2	5.9	7.1	4.3	7.4	10.4	4.7	0.6	2.9	9.2
Individual air conditioners	78.2	26.8	6.3	7.7	7.4	8.3	11.3	4.5	0.5	2.7	10.4
Central chillers	93.6	30.4	9.0	12.8	4.2	8.3	8.8	3.1	0.6	6.0	14.0
Heat pumps	73.9	19.5	6.4	9.2	5.2	7.9	11.3	3.7	0.6	4.5	11.4
District chilled water	111.3	40.5	3.2	12.2	6.7	8.3	11.8	3.3	0.8	6.5	27.4
Swamp coolers	78.8	23.6	6.5	7.4	5.2	8.0	19.2	8.6	0.5	2.4	9.2
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
HVAC features (more than one may apply)											
Economizer cycle	88.5	29.5	6.9	11.0	4.6	8.1	10.2	4.5	0.6	4.8	13.5
Variable air volume (VAV) system	86.1	29.0	7.8	10.5	4.0	7.9	10.3	3.3	0.6	4.7	14.7
Dedicated outside air system (DOAS)	97.7	29.5	7.3	11.3	5.7	8.0	13.4	6.0	0.7	4.1	18.0
Demand controlled ventilation (DCV)	81.2	30.2	7.0	8.4	3.3	8.0	8.7	3.8	0.5	5.6	11.7
Regular HVAC maintenance	77.2	25.6	7.2	8.7	4.2	7.9	11.4	4.9	0.6	3.4	11.8
Building automation system (BAS) controls heating or cooling	88.4	28.0	7.6	10.8	4.4	8.2	10.3	4.4	0.6	5.0	14.8
Internet-connected or smart thermostat	63.6	19.2	7.2	6.7	3.5	7.3	11.6	6.2	0.5	1.5	9.3
Programmable thermostat	62.1	23.7	6.0	5.9	3.3	7.2	14.4	4.4	0.5	1.6	7.8

Table E2. Major fuels consumption intensities by end use, 2018

Major fuels energy intensity^a
(thousand Btu/square foot in buildings using any major fuel for the end use)

	Total	Space heating	Cooling	Ventilation	Water heating	Lighting	Cooking	Refrigeration	Office equipment	Computing	Other
All buildings	71.6	25.0	7.0	8.0	4.0	7.5	11.4	4.8	0.5	3.1	11.4
Main equipment replaced since 2000 (more than one may apply)											
Heating	67.5	23.6	6.1	7.4	3.8	7.4	10.1	4.4	0.6	2.4	9.3
Cooling	71.0	27.7	6.6	7.9	4.4	7.1	8.8	3.5	0.5	3.1	9.0
Water-heating equipment											
Centralized system	74.5	26.4	6.8	7.8	4.0	7.3	11.2	4.9	0.5	2.9	11.4
Distributed system	72.5	22.2	6.9	7.3	4.3	8.2	17.0	5.3	0.5	3.7	11.3
Combination of centralized and distributed systems	80.3	24.7	7.3	10.9	3.5	8.8	8.8	4.2	0.6	3.8	12.2
Generation technologies (more than one may apply)											
Reciprocating engine generators	94.2	28.7	7.7	11.4	4.9	8.4	10.0	4.3	0.6	6.3	17.6
Solar panels	76.9	25.5	6.2	9.5	3.8	8.1	11.2	5.0	0.5	2.7	10.4
Other generation technology	99.5	29.9	5.8	12.8	6.1	10.7	10.0	3.8	0.8	Q	19.5
Lighting equipment types (more than one may apply)											
Incandescent	87.2	28.9	6.8	9.0	5.3	10.9	13.9	4.9	0.7	3.5	12.4
Standard fluorescent	73.0	25.5	6.9	8.2	4.1	7.5	11.1	4.5	0.6	3.3	11.3
Compact fluorescent	86.5	28.6	7.1	10.2	5.3	9.0	11.6	4.4	0.6	4.2	12.8
High-intensity discharge (HID)	87.1	30.3	7.3	10.0	4.0	9.8	10.3	3.1	0.5	5.1	13.7
Halogen	90.9	28.5	7.7	9.4	5.9	10.9	14.8	5.5	0.7	3.7	11.9
LED	79.4	25.9	7.0	9.1	4.5	7.9	11.8	5.0	0.6	3.7	12.3
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
Refrigeration equipment (more than one may apply)											
Any refrigeration	77.6	25.8	6.9	8.5	4.3	7.9	11.5	4.8	0.6	3.0	11.8
Walk-in units	108.4	30.6	8.4	12.3	6.5	9.5	15.5	9.4	0.6	3.0	15.8
Cases or cabinets	101.7	29.5	7.7	11.4	5.8	9.3	15.1	8.9	0.6	3.7	14.1
Large cold storage areas	122.9	26.7	7.3	10.4	7.3	9.5	19.6	21.0	0.6	2.8	26.1
Commercial ice makers	96.7	28.8	8.2	11.2	6.2	8.8	14.3	7.0	0.6	3.0	13.4
Residential-type or compact units	74.0	25.8	6.7	8.2	4.1	7.7	10.0	3.6	0.6	3.0	11.3
Vending machines	84.4	27.5	7.2	10.3	4.8	8.8	10.1	4.3	0.6	3.4	13.1
No refrigeration	44.5	20.5	7.3	4.8	2.1	5.8	2.3	N	0.5	4.0	9.4
Office equipment (more than one may apply)											
Desktop computers	75.4	25.4	6.8	8.4	4.0	7.9	11.4	4.7	0.6	3.1	11.6
With multiple monitors	79.0	26.6	6.7	9.7	3.8	8.3	9.9	3.7	0.6	4.0	12.7
Laptop computers	75.2	25.6	6.7	8.7	4.0	8.0	9.7	4.0	0.6	3.5	11.4
Dedicated servers	79.8	25.8	6.7	9.4	4.1	8.4	10.0	4.2	0.6	4.7	11.9
Tablets charged in building	81.9	26.4	6.8	9.7	4.3	8.6	11.3	4.4	0.6	4.0	12.4
Large floor-standing office devices ^d	77.0	26.5	6.6	9.1	4.0	8.1	8.7	3.4	0.6	3.7	12.0
Smaller desktop office devices ^d	75.2	25.3	6.8	8.5	4.0	8.0	11.0	4.6	0.6	3.0	11.7
Interactive whiteboards	76.1	26.8	6.7	8.9	4.0	7.1	6.6	2.4	0.6	4.0	12.0
Televisions or video displays	79.5	25.8	7.0	9.3	4.6	8.3	11.0	4.6	0.6	3.5	11.9
Point-of-sale devices or cash registers	96.4	28.8	7.8	10.9	5.2	9.3	16.2	7.9	0.7	3.1	13.6

Table E2. Major fuels consumption intensities by end use, 2018

Major fuels energy intensity^a
(thousand Btu/square foot in buildings using any major fuel for the end use)

	Total	Space heating	Cooling	Ventilation	Water heating	Lighting	Cooking	Refrigeration	Office equipment	Computing	Other
All buildings	71.6	25.0	7.0	8.0	4.0	7.5	11.4	4.8	0.5	3.1	11.4
Food preparation or serving areas in non-food service buildings (more than one may apply)											
Snack bar, concession stand, or coffee shop	96.8	31.0	7.3	11.5	5.5	8.3	11.3	6.1	0.6	3.4	13.1
Fast food or small restaurant	104.8	29.7	6.6	14.5	5.8	10.9	13.5	7.4	0.7	3.0	14.0
Cafeteria or large restaurant	87.4	30.4	7.5	10.8	5.3	7.8	8.3	3.0	0.6	3.4	11.9
Commercial kitchen or food preparation area	98.4	29.2	8.0	12.1	6.7	9.2	11.2	6.2	0.6	2.7	13.7
Small kitchen area	73.4	25.5	5.9	8.3	4.8	7.1	6.9	3.7	0.5	2.8	9.8
Separate computer areas (more than one may apply)											
Server closet	77.5	25.8	6.5	9.3	4.2	8.3	9.9	4.2	0.6	3.1	11.7
Data center	93.2	29.3	6.4	13.2	4.5	8.7	9.5	3.3	0.7	5.5	16.4
Computer-based training room	84.6	28.9	7.0	10.1	5.0	8.3	8.9	3.3	0.6	3.8	12.6
Student or public computer center	80.4	28.9	7.5	7.4	5.3	7.0	9.0	3.2	0.6	3.0	11.7
Window and interior lighting features (more than one may apply)											
Multipaned windows	76.4	25.8	6.8	8.5	4.2	7.7	11.6	4.9	0.6	3.4	11.8
Tinted window glass	79.5	25.4	7.5	9.1	4.2	8.2	12.6	4.9	0.6	3.7	12.0
Reflective window glass	86.6	25.9	6.4	10.6	5.1	8.9	13.2	4.7	0.7	5.0	14.1
External overhangs or awnings	82.5	25.4	7.2	8.6	4.9	8.3	15.7	6.3	0.7	3.0	11.9
Skylights or atriums	75.0	24.9	6.4	9.5	3.7	7.7	10.0	3.9	0.5	3.4	11.8
Light scheduling	86.8	25.8	7.0	10.9	4.8	8.4	12.8	5.4	0.6	5.0	13.5
Occupancy sensors	79.6	26.4	6.5	9.8	4.2	7.6	10.0	4.3	0.6	3.9	13.0
Multilevel lighting or dimming	93.0	29.6	7.4	11.6	4.8	7.6	14.3	4.9	0.6	3.8	14.5
Daylight harvesting	88.8	24.5	6.7	12.7	4.1	8.7	10.6	5.0	0.7	6.5	14.4
Plug-load control	91.3	21.6	8.1	11.2	5.0	7.3	9.8	4.6	0.7	Q	20.8
Demand responsive lighting	78.1	29.8	6.2	9.2	3.8	7.2	10.2	4.3	0.6	2.5	11.6
Building automation system (BAS) for lighting	87.8	24.7	7.5	11.6	4.2	8.8	11.9	5.9	0.6	4.0	14.1
Electric vehicle (EV) charging											
Charging stations associated with the building	72.3	21.2	5.8	10.0	3.9	7.9	11.5	3.9	0.5	3.7	11.4

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

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

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

HVAC = Heating, ventilation, and air conditioning.

^aThe major fuels intensity calculation is conditional on the presence of the end use, and therefore the intensities for each end use will not sum to the total intensity. In this table, each column is calculated as the sum of electricity, natural gas, fuel oil and district heat use for the end use divided by the floorspace in buildings that use any of those sources for the particular end use. The *total* column only includes the floorspace of buildings that use at least one of the major fuels and differs from the gross energy intensity in Table C4 which includes the floorspace for all buildings, regardless of whether the building uses energy.

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

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

^dOffice 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.