

Table C37. District heat consumption and expenditure intensities, 2018

	District heat consumption		District heat expenditures			
	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
Building floorspace (square feet)						
1,001 to 25,000	649	54.7	79.3	\$8.40	\$0.71	\$12.95
25,001 to 50,000	1,509	40.1	72.3	\$17.30	\$0.46	\$11.49
50,001 to 100,000	3,489	47.1	51.1	\$41.70	\$0.56	\$11.96
100,001 to 200,000	6,070	47.0	52.9	\$81.40	\$0.63	\$13.41
200,001 to 500,000	15,707	50.3	47.9	\$199.50	\$0.64	\$12.70
Over 500,000	41,239	38.8	25.7	\$734.80	\$0.69	\$17.82
Principal building activity						
Education	N	N	N	N	N	N
Food sales	1,540	43.5	59.7	\$18.60	\$0.52	\$12.06
Food service	Q	Q	Q	Q	Q	Q
Health care	15,686	44.2	26.1	\$197.20	\$0.56	\$12.57
Inpatient	27,189	48.8	27.5	\$335.60	\$0.60	\$12.34
Outpatient	Q	Q	Q	Q	Q	Q
Lodging	2,955	31.5	79.8	\$38.70	\$0.41	\$13.08
Mercantile	Q	Q	Q	Q	Q	Q
Retail (other than mall)	N	N	N	N	N	N
Enclosed and strip malls	Q	Q	Q	Q	Q	Q
Office	5,691	30.7	16.4	\$126.20	\$0.68	\$22.17
Public assembly	5,000	66.4	133.4	\$58.50	\$0.78	\$11.70
Public order and safety	Q	Q	Q	Q	Q	Q
Religious worship	Q	Q	Q	Q	Q	Q
Service	Q	Q	Q	Q	Q	Q
Warehouse and storage	Q	Q	Q	Q	Q	Q
Other	Q	83.9	96.3	Q	\$1.01	\$12.02
Vacant	Q	Q	N	Q	Q	Q

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All buildings	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
Year constructed						
Before 1920	Q	49.7	Q	Q	\$0.88	\$17.70
1920 to 1945	3,790	39.8	31.7	\$77.00	\$0.81	\$20.31
1946 to 1959	1,696	49.8	59.9	\$17.90	\$0.53	\$10.56
1960 to 1969	4,152	48.0	47.4	\$54.40	\$0.63	\$13.09
1970 to 1979	5,565	45.6	38.3	\$74.70	\$0.61	\$13.43
1980 to 1989	4,031	35.3	22.5	\$54.00	\$0.47	\$13.40
1990 to 1999	3,189	41.7	37.4	\$43.40	\$0.57	\$13.62
2000 to 2009	7,070	59.2	73.4	\$92.30	\$0.77	\$13.06
2010 to 2018	5,305	37.7	Q	\$68.50	\$0.49	\$12.90
Census region and division						
Northeast	2,999	47.5	34.2	\$50.70	\$0.80	\$16.92
New England	1,221	49.4	66.6	\$16.70	\$0.68	\$13.67
Middle Atlantic	5,184	47.0	30.3	\$92.60	\$0.84	\$17.86
Midwest	5,761	58.7	55.8	\$66.30	\$0.67	\$11.50
East North Central	7,288	58.7	60.9	\$83.40	\$0.67	\$11.45
West North Central	Q	58.4	41.8	Q	\$0.68	\$11.73
South	3,643	42.7	44.0	\$55.00	\$0.64	\$15.10
South Atlantic	Q	43.2	41.6	Q	\$0.67	\$15.54
East South Central	Q	21.0	18.4	Q	\$0.24	\$11.62
West South Central	Q	52.3	Q	Q	Q	\$15.02
West	Q	30.1	30.4	\$26.00	\$0.35	\$11.56
Mountain	3,452	29.1	35.1	\$35.40	\$0.30	\$10.26
Pacific	Q	30.6	28.8	Q	\$0.37	\$12.13
Climate zone^a						
Cold or very cold	2,397	56.4	57.4	\$27.70	\$0.65	\$11.58
Cool	3,909	52.4	56.0	\$44.10	\$0.59	\$11.29
Mixed mild	5,278	50.3	40.6	\$92.60	\$0.88	\$17.54
Warm	2,050	31.8	29.4	\$22.30	\$0.34	\$10.86
Hot or very hot	1,636	19.9	18.9	\$22.00	\$0.27	\$13.42
Number of floors						
1	791	55.3	79.6	\$9.50	\$0.67	\$12.04
2	1,353	53.5	78.3	\$17.00	\$0.67	\$12.58
3	2,871	44.1	52.2	\$33.40	\$0.51	\$11.64
4 to 9	5,701	47.0	50.8	\$68.90	\$0.57	\$12.08
10 or more	18,962	38.9	23.5	\$379.30	\$0.78	\$20.00

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	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
Number of workers (main shift)						
Fewer than 5	Q	Q	Q	Q	Q	Q
5 to 9	1,346	57.1	213.6	\$17.20	\$0.73	\$12.78
10 to 19	1,298	49.3	96.2	\$14.80	\$0.56	\$11.43
20 to 49	2,619	43.8	86.3	\$31.70	\$0.53	\$12.09
50 to 99	5,746	47.7	88.8	\$70.20	\$0.58	\$12.22
100 to 249	7,697	44.1	54.1	\$99.50	\$0.57	\$12.93
250 or more	20,778	43.0	23.6	\$346.50	\$0.72	\$16.68
Weekly operating hours						
Fewer than 40	Q	Q	Q	Q	Q	Q
40 to 48	1,351	31.9	40.4	\$16.60	\$0.39	\$12.27
49 to 60	1,584	31.0	25.6	\$23.00	\$0.45	\$14.55
61 to 84	3,565	54.0	45.6	\$52.10	\$0.79	\$14.61
85 to 167	7,271	61.6	83.8	\$79.90	\$0.68	\$10.99
Open continuously	8,633	47.2	40.1	\$130.20	\$0.71	\$15.08
Ownership and occupancy						
Nongovernment owned	3,006	43.7	33.8	\$45.60	\$0.66	\$15.16
Owner occupied	2,882	46.9	38.1	\$42.50	\$0.69	\$14.76
Leased to tenant or tenants	Q	30.6	19.3	Q	\$0.54	\$17.78
Unoccupied	Q	Q	N	Q	Q	Q
Government owned	4,347	46.9	52.9	\$56.50	\$0.61	\$13.00
Federal	Q	50.6	43.6	Q	\$1.11	\$21.90
State	3,837	48.9	61.5	\$42.40	\$0.54	\$11.06
Local	4,519	37.8	38.9	\$54.10	\$0.45	\$11.97
Party responsible for operation of energy systems						
Building owner	3,562	46.6	43.7	\$50.10	\$0.66	\$14.07
Business owner or tenant	Q	Q	Q	Q	Q	Q
Property management	Q	Q	Q	Q	Q	Q
Other	Q	Q	Q	Q	Q	Q
Provider of direct input on energy-related equipment purchases						
Building owner	3,529	45.3	41.9	\$49.90	\$0.64	\$14.13
Business owner or tenant	Q	Q	Q	Q	Q	Q
Property management	Q	Q	Q	Q	Q	Q
Other	2,024	39.7	Q	\$28.80	\$0.56	\$14.21

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	Per building (million British thermal units [Btu])	Per square foot (thousand Btu)	Per worker (million Btu)	Per building (thousand dollars)	Per square foot (dollars)	Per million Btu (dollars)
All buildings	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
Number of establishments						
1	2,855	46.9	55.0	\$37.90	\$0.62	\$13.27
2 to 5	5,064	45.9	42.1	\$65.80	\$0.60	\$13.00
6 to 10	11,461	28.9	14.5	\$236.40	\$0.60	\$20.62
11 to 20	17,143	47.4	19.7	\$265.40	\$0.73	\$15.48
More than 20	24,574	40.6	20.3	\$496.60	\$0.82	\$20.21
Currently unoccupied	Q	Q	N	Q	Q	Q
Predominant exterior wall material						
Brick, stone, or stucco	2,805	45.5	43.5	\$40.50	\$0.66	\$14.43
Concrete (block or poured)	4,680	42.9	39.9	\$60.90	\$0.56	\$13.01
Concrete panels	12,755	47.0	43.4	\$171.40	\$0.63	\$13.44
Siding or shingles	Q	Q	Q	Q	Q	Q
Metal panels	Q	Q	Q	Q	Q	Q
Window glass	19,813	44.0	25.0	\$289.10	\$0.64	\$14.59
Other	Q	Q	Q	Q	Q	Q
Predominant roof material						
Metal surfacing	N	N	N	N	N	N
Synthetic or rubber	2,050	43.7	53.7	\$31.40	\$0.67	\$15.32
Built-up	4,514	40.8	36.0	\$56.60	\$0.51	\$12.54
Slate or tile shingles	6,273	52.3	43.2	\$97.80	\$0.82	\$15.59
Wooden materials (including shingles)	1,544	40.8	48.4	\$21.20	\$0.56	\$13.73
Asphalt, fiberglass, or other shingles	1,421	45.6	43.5	\$18.20	\$0.58	\$12.83
Concrete	Q	Q	Q	Q	Q	Q
Other	8,922	32.5	30.5	\$167.60	\$0.61	\$18.79
Roof tilt						
Flat	4,979	45.1	38.1	\$70.60	\$0.64	\$14.19
Shallow pitch	2,035	58.5	85.1	\$26.50	\$0.76	\$13.01
Steeper pitch	1,228	33.9	39.8	\$18.60	\$0.51	\$15.15

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All buildings	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
Cool roof characteristics (more than one may apply)						
White or reflective coating or paint	4,133	38.9	35.1	\$56.20	\$0.53	\$13.60
White or reflective tiles or shingles	5,653	45.7	45.4	\$73.40	\$0.59	\$12.99
Aluminum coating	Q	Q	Q	Q	Q	Q
Ballasted roof system	Q	49.4	29.7	Q	\$0.72	\$14.64
Other cool roof property	Q	Q	Q	Q	Q	Q
Renovations since 2000 (more than one may apply)						
Any type of renovation	4,948	45.1	36.7	\$70.70	\$0.64	\$14.29
Addition or annex	Q	52.7	42.1	Q	\$0.68	\$12.85
Reduction in floorspace	Q	Q	Q	Q	Q	Q
Roof replacement	3,709	42.8	32.2	\$53.80	\$0.62	\$14.50
Interior wall reconfiguration	6,383	44.1	31.2	\$95.10	\$0.66	\$14.90
Window replacement	Q	40.9	30.1	Q	\$0.64	\$15.65
HVAC equipment upgrade	5,237	42.7	32.6	\$78.20	\$0.64	\$14.93
Lighting upgrade	4,908	42.3	32.9	\$71.70	\$0.62	\$14.61
Electrical upgrade	4,691	40.2	32.0	\$70.10	\$0.60	\$14.95
Plumbing system upgrade	5,082	42.4	32.5	\$77.00	\$0.64	\$15.14
Insulation upgrade	Q	34.5	26.6	Q	\$0.58	\$16.82
Fire, safety, or security upgrade	4,313	42.0	33.0	\$65.80	\$0.64	\$15.25
Structural upgrade	Q	38.4	25.4	Q	\$0.58	\$15.17
Other renovation	Q	Q	Q	Q	Q	Q
No renovations	2,211	47.9	54.7	\$30.90	\$0.67	\$13.99
Buildings constructed 2013 or later	4,667	31.7	Q	\$58.70	\$0.40	\$12.57
Energy sources (more than one may apply)						
Electricity	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
Natural gas	4,659	41.2	38.0	\$63.20	\$0.56	\$13.57
Fuel oil	8,091	38.4	29.7	\$132.20	\$0.63	\$16.34
District heat	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
District chilled water	3,977	46.1	41.6	\$51.00	\$0.59	\$12.83
Propane	Q	26.6	32.2	Q	\$0.42	\$15.94
Solar	5,529	45.6	39.9	\$78.20	\$0.65	\$14.15
Wood, coal, and other	Q	Q	Q	Q	Q	Q

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All buildings	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
Space-heating energy sources						
District heat	3,651	46.0	41.9	\$51.70	\$0.65	\$14.17
District heat main	3,755	48.1	43.4	\$53.20	\$0.68	\$14.18
District heat secondary	Q	23.1	21.7	Q	\$0.31	\$13.62
Other excluding district heat	Q	Q	Q	Q	Q	Q
Buildings without heating	Q	Q	Q	Q	Q	Q
Primary space-heating energy source						
Electricity	Q	14.0	Q	Q	Q	\$15.68
Natural gas	Q	21.1	Q	Q	\$0.24	\$11.38
Fuel oil	N	N	N	N	N	N
District heat	3,755	48.1	43.4	\$53.20	\$0.68	\$14.18
Propane	N	N	N	N	N	N
Other sources ^b	N	N	N	N	N	N
Cooling energy sources						
District heat	Q	Q	Q	Q	Q	Q
Other excluding district heat	3,767	43.3	39.5	\$53.70	\$0.62	\$14.25
Buildings without cooling	Q	Q	Q	Q	Q	Q
Water-heating energy sources						
District heat	5,453	49.8	42.3	\$81.30	\$0.74	\$14.91
Other excluding district heat	2,026	38.0	37.8	\$25.10	\$0.47	\$12.39
Buildings without water heating	Q	Q	Q	Q	Q	Q
Cooking energy sources						
District heat	14,132	43.1	37.1	\$182.90	\$0.56	\$12.95
Other excluding district heat	7,953	46.1	35.9	\$115.20	\$0.67	\$14.49
Buildings without cooking	2,107	44.8	48.3	\$29.60	\$0.63	\$14.07

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All buildings	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
Energy end uses (more than one may apply)						
Buildings with space heating	3,602	45.3	41.0	\$50.90	\$0.64	\$14.12
Buildings with cooling	3,974	44.6	39.7	\$56.50	\$0.63	\$14.22
Buildings with water heating	3,584	45.4	40.8	\$50.70	\$0.64	\$14.14
Buildings with cooking	8,735	45.5	36.1	\$123.80	\$0.64	\$14.17
Buildings with manufacturing	16,190	53.7	68.8	\$384.80	\$1.28	\$23.77
Buildings with electricity generation	7,620	40.3	33.1	\$115.50	\$0.61	\$15.15
Buildings with lighting	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
Percent of floorspace heated						
Not heated	Q	Q	Q	Q	Q	Q
1% to 50%	Q	Q	Q	Q	Q	Q
51% to 99%	4,941	43.7	34.6	\$71.60	\$0.63	\$14.50
100%	3,230	47.2	45.0	\$45.10	\$0.66	\$13.96
Heating equipment (more than one may apply)						
Packaged heating units	4,676	30.1	28.6	\$64.30	\$0.41	\$13.76
Furnaces	Q	Q	Q	Q	Q	Q
Individual space heaters	4,148	36.1	32.7	\$60.20	\$0.52	\$14.50
Boilers	Q	33.4	26.4	Q	\$0.46	\$13.68
Heat pumps	3,393	21.3	23.0	\$50.80	\$0.32	\$14.98
District heat	3,651	46.0	41.9	\$51.70	\$0.65	\$14.17
Duct reheat	Q	34.3	24.9	Q	\$0.57	\$16.52
Other	Q	Q	Q	Q	Q	Q
HVAC features (more than one may apply)						
Economizer cycle	7,007	45.0	37.3	\$102.90	\$0.66	\$14.69
Variable air volume (VAV) system	5,531	45.0	37.8	\$79.30	\$0.64	\$14.34
Dedicated outside air system (DOAS)	6,293	41.6	32.3	\$81.80	\$0.54	\$13.00
Demand controlled ventilation (DCV)	5,998	48.9	42.0	\$78.20	\$0.64	\$13.04
Regular HVAC maintenance	3,697	44.5	39.6	\$52.60	\$0.63	\$14.22
Building automation system (BAS) controls heating or cooling	5,270	45.9	39.7	\$76.40	\$0.67	\$14.50
Internet-connected or smart thermostat	Q	Q	Q	Q	Q	Q
Programmable thermostat	Q	Q	Q	Q	Q	Q

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All buildings	3,526	45.2	40.9	\$49.80	\$0.64	\$14.12
Water-heating equipment						
Centralized system	3,457	47.4	47.4	\$48.10	\$0.66	\$13.91
Distributed system	1,979	40.7	30.5	\$31.00	\$0.64	\$15.65
Combination of centralized and distributed systems	Q	41.2	29.9	Q	\$0.58	\$14.16
Generation technologies (more than one may apply)						
Reciprocating engine generators	9,336	41.6	33.2	\$143.50	\$0.64	\$15.37
Solar panels	5,475	42.4	37.0	\$80.00	\$0.62	\$14.61
Other generation technology	3,651	26.1	19.5	\$62.20	\$0.45	\$17.03
Food preparation or serving areas in non-food service buildings (more than one may apply)						
Snack bar, concession stand, or coffee shop	17,716	43.4	34.4	\$235.30	\$0.58	\$13.28
Fast food or small restaurant	Q	47.5	31.9	Q	\$0.63	\$13.17
Cafeteria or large restaurant	18,736	40.8	28.5	\$286.60	\$0.62	\$15.29
Commercial kitchen or food preparation area	16,354	41.0	34.1	\$246.80	\$0.62	\$15.09
Small kitchen area	6,684	38.4	33.4	\$98.40	\$0.57	\$14.72

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

^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.

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 C37. District heat consumption and expenditure intensities, 2018

	RSEs for district heat consumption			RSEs for district heat expenditures		
	Per building	Per square foot	Per worker	Per building	Per square foot	Per million British thermal units
All buildings	14.0	5.9	9.1	14.7	7.1	4.4
Building floorspace (square feet)						
1,001 to 25,000	20.6	15.8	26.4	21.2	17.0	7.3
25,001 to 50,000	20.5	20.7	28.0	20.3	20.6	0.9
50,001 to 100,000	14.9	15.2	30.4	21.3	21.7	10.0
100,001 to 200,000	14.9	15.2	23.4	20.7	21.3	10.3
200,001 to 500,000	9.9	10.1	17.7	10.8	9.2	5.7
Over 500,000	9.4	9.1	9.5	13.5	12.0	8.8
Principal building activity						
Education	0.0	0.0	0.0	0.0	0.0	0.0
Food sales	31.5	12.8	18.9	36.3	21.5	11.2
Food service	129.7	25.3	73.8	126.2	26.2	3.1
Health care	45.1	14.6	16.3	45.6	15.0	3.5
Inpatient	21.5	14.7	18.2	21.8	14.6	2.4
Outpatient	122.1	56.6	33.2	145.0	76.8	25.9
Lodging	19.8	17.8	27.4	21.2	17.0	5.8
Mercantile	0.0	0.0	0.0	0.0	0.0	0.0
Retail (other than mall)	0.0	0.0	0.0	0.0	0.0	0.0
Enclosed and strip malls	0.0	0.0	0.0	0.0	0.0	0.0
Office	28.3	8.1	7.8	33.0	13.3	8.2
Public assembly	25.6	12.1	16.4	23.9	9.5	8.0
Public order and safety	89.6	30.6	49.5	90.4	31.7	3.6
Religious worship	74.3	67.9	11.7	141.4	55.5	38.5
Service	29.1	44.6	40.7	20.6	28.5	25.8
Warehouse and storage	73.6	13.0	47.7	76.1	12.9	8.1
Other	70.6	17.9	32.9	70.7	21.6	10.6
Vacant	145.2	21.2	0.0	136.4	20.4	4.9

Relative standard errors (RSEs) for Table C37. District heat consumption and expenditure intensities, 2018

	RSEs for district heat consumption			RSEs for district heat expenditures		
	Per building	Per square foot	Per worker	Per building	Per square foot	Per million British thermal units
All buildings	14.0	5.9	9.1	14.7	7.1	4.4
Year constructed						
Before 1920	75.1	25.6	63.9	78.5	27.4	7.6
1920 to 1945	37.1	15.7	15.7	45.9	24.1	14.8
1946 to 1959	30.1	11.7	23.4	27.5	12.9	5.7
1960 to 1969	49.4	13.2	16.1	48.2	11.3	6.8
1970 to 1979	27.0	14.5	19.5	27.1	12.6	5.4
1980 to 1989	30.1	16.2	20.2	31.3	15.7	4.9
1990 to 1999	42.0	15.4	21.8	41.8	14.6	9.8
2000 to 2009	25.5	11.7	17.3	26.0	11.5	6.2
2010 to 2018	18.4	28.3	50.6	26.7	35.0	11.1
Census region and division						
Northeast	19.3	5.9	9.4	19.9	5.6	3.6
New England	27.7	17.0	21.5	27.0	15.0	6.7
Middle Atlantic	24.8	6.2	11.0	25.8	5.4	4.1
Midwest	31.0	8.0	15.1	30.8	9.4	2.8
East North Central	37.2	10.6	17.0	37.3	12.0	2.9
West North Central	72.0	13.1	37.1	72.4	13.6	6.3
South	30.4	15.9	23.6	34.7	20.7	14.9
South Atlantic	51.0	12.3	18.0	58.0	23.0	29.1
East South Central	106.7	42.6	29.6	102.1	39.7	2.7
West South Central	53.4	44.0	60.6	61.2	53.2	15.9
West	50.2	23.9	26.9	49.3	22.6	4.6
Mountain	40.9	32.5	42.4	37.1	27.0	12.8
Pacific	70.9	31.6	34.5	68.1	29.1	4.6
Climate zone^a						
Cold or very cold	24.5	10.6	20.0	26.4	12.7	5.4
Cool	30.9	7.3	11.0	30.1	7.8	4.0
Mixed mild	18.8	9.0	17.8	20.2	8.0	6.4
Warm	49.2	25.9	24.2	45.5	20.7	8.8
Hot or very hot	40.1	27.7	22.5	40.5	28.7	3.6
Number of floors						
1	33.8	20.8	45.0	31.7	19.3	2.3
2	27.0	14.2	20.2	27.7	16.6	7.3
3	23.0	16.5	34.2	21.2	16.8	7.0
4 to 9	13.5	8.5	14.8	16.7	12.5	7.0
10 or more	11.1	9.4	11.4	13.2	11.9	7.3

Relative standard errors (RSEs) for Table C37. District heat consumption and expenditure intensities, 2018

	RSEs for district heat consumption			RSEs for district heat expenditures		
	Per building	Per square foot	Per worker	Per building	Per square foot	Per British thermal units
All buildings	14.0	5.9	9.1	14.7	7.1	4.4
Number of workers (main shift)						
Fewer than 5	33.1	23.3	37.1	31.0	21.8	2.2
5 to 9	26.7	17.2	27.9	29.5	22.5	11.7
10 to 19	37.0	18.3	40.5	34.7	16.3	6.9
20 to 49	20.4	17.2	21.8	23.7	20.8	7.3
50 to 99	19.2	18.2	19.7	28.2	27.7	13.5
100 to 249	21.0	15.9	20.3	19.7	15.6	13.0
250 or more	14.1	8.3	7.5	18.4	8.8	7.1
Weekly operating hours						
Fewer than 40	27.0	20.5	50.7	25.8	20.4	1.9
40 to 48	18.3	21.9	26.9	19.4	21.2	3.0
49 to 60	38.0	16.3	14.8	37.1	14.6	6.5
61 to 84	32.6	13.3	27.1	36.5	18.7	9.9
85 to 167	17.3	12.7	25.1	18.5	13.6	8.7
Open continuously	16.1	8.0	11.9	19.0	9.6	8.0
Ownership and occupancy						
Nongovernment owned	18.3	9.8	14.6	19.1	11.3	3.6
Owner occupied	19.5	11.1	16.0	20.8	12.4	3.7
Leased to tenant or tenants	66.8	15.5	21.9	71.1	16.2	15.2
Unoccupied	0.0	0.0	0.0	0.0	0.0	0.0
Government owned	21.9	7.5	11.9	23.9	10.5	9.6
Federal	130.6	16.6	23.8	154.1	13.3	18.5
State	29.8	8.7	18.9	30.0	10.5	5.6
Local	33.8	13.7	18.4	33.3	12.1	7.1
Party responsible for operation of energy systems						
Building owner	14.5	5.8	9.2	15.1	7.4	4.5
Business owner or tenant	31.8	26.7	24.5	46.4	39.7	22.0
Property management	57.3	22.1	31.1	52.8	19.3	24.0
Other	154.3	15.2	28.5	171.4	19.0	11.4
Provider of direct input on energy-related equipment purchases						
Building owner	14.2	6.0	9.6	15.0	7.5	4.6
Business owner or tenant	24.8	76.6	88.2	22.8	64.2	13.2
Property management	93.8	10.8	29.6	88.1	10.8	11.6
Other	40.0	41.4	55.1	43.3	30.6	20.3

Relative standard errors (RSEs) for Table C37. District heat consumption and expenditure intensities, 2018

	RSEs for district heat consumption			RSEs for district heat expenditures		
	Per building	Per square foot	Per worker	Per building	Per square foot	Per million British thermal units
All buildings	14.0	5.9	9.1	14.7	7.1	4.4
Number of establishments						
1	16.9	8.0	12.2	18.5	11.3	6.4
2 to 5	42.8	10.5	12.7	44.0	11.6	5.2
6 to 10	23.2	22.9	36.4	26.7	19.3	10.9
11 to 20	39.2	23.6	21.9	38.3	15.0	11.9
More than 20	22.7	8.5	14.6	27.3	13.0	10.7
Currently unoccupied	216.9	16.0	0.0	202.4	8.8	7.3
Predominant exterior wall material						
Brick, stone, or stucco	17.7	7.2	11.6	19.5	10.8	7.4
Concrete (block or poured)	32.7	13.1	16.1	32.7	17.6	7.7
Concrete panels	21.9	13.1	23.0	21.7	15.1	6.7
Siding or shingles	218.0	31.0	34.0	184.6	28.8	20.0
Metal panels	27.5	46.8	46.8	42.4	47.9	22.4
Window glass	24.9	17.8	20.3	26.1	15.3	5.9
Other	71.4	29.2	36.8	83.0	48.1	28.0
Predominant roof material						
Metal surfacing	0.0	0.0	0.0	0.0	0.0	0.0
Synthetic or rubber	29.2	21.3	25.4	31.7	25.6	10.4
Built-up	19.9	6.8	11.5	20.1	7.4	2.7
Slate or tile shingles	36.8	11.3	17.2	37.5	13.7	7.7
Wooden materials (including shingles)	29.3	23.3	36.9	28.7	20.7	12.3
Asphalt, fiberglass, or other shingles	27.1	14.8	16.7	26.6	14.3	5.9
Concrete	30.1	21.3	41.5	27.7	20.8	12.4
Other	27.2	18.6	27.6	31.0	24.1	12.9
Roof tilt						
Flat	17.4	6.4	9.4	17.6	7.4	4.6
Shallow pitch	26.0	13.3	26.0	28.4	16.8	9.7
Steeper pitch	35.7	12.2	19.2	38.6	14.7	8.0

Relative standard errors (RSEs) for Table C37. District heat consumption and expenditure intensities, 2018

	RSEs for district heat consumption			RSEs for district heat expenditures		
	Per building	Per square foot	Per worker	Per building	Per square foot	Per thermal units
All buildings	14.0	5.9	9.1	14.7	7.1	4.4
Cool roof characteristics (more than one may apply)						
White or reflective coating or paint	21.1	12.8	19.2	23.2	15.6	5.2
White or reflective tiles or shingles	28.9	18.8	26.7	37.8	17.0	15.0
Aluminum coating	40.9	27.6	29.1	44.5	25.7	6.8
Ballasted roof system	63.2	11.6	17.1	67.9	10.3	7.6
Other cool roof property	26.2	19.4	47.6	37.4	21.0	39.9
Renovations since 2000 (more than one may apply)						
Any type of renovation	21.1	6.3	10.4	21.7	7.1	3.7
Addition or annex	126.2	12.3	17.3	125.4	11.3	3.9
Reduction in floorspace	98.3	27.7	28.6	93.7	19.5	10.2
Roof replacement	34.6	8.1	11.9	34.9	7.6	4.7
Interior wall reconfiguration	42.2	9.3	13.9	43.0	9.8	4.7
Window replacement	51.0	13.9	16.2	51.5	16.4	9.1
HVAC equipment upgrade	28.1	8.5	11.0	28.6	7.8	4.5
Lighting upgrade	25.7	6.8	9.7	26.2	6.2	4.6
Electrical upgrade	33.5	9.7	11.4	33.4	9.0	5.9
Plumbing system upgrade	35.2	8.6	11.5	35.0	7.6	5.7
Insulation upgrade	73.7	17.8	15.4	75.9	19.4	10.3
Fire, safety, or security upgrade	31.6	8.2	10.1	32.8	7.3	5.2
Structural upgrade	98.4	22.7	21.8	98.8	25.7	7.1
Other renovation	78.8	34.9	16.8	144.5	13.2	41.6
No renovations	22.2	11.8	15.1	25.0	14.9	9.9
Buildings constructed 2013 or later	13.1	27.9	74.9	15.6	28.0	4.8
Energy sources (more than one may apply)						
Electricity	14.0	5.9	9.1	14.7	7.1	4.4
Natural gas	18.7	7.6	11.7	18.8	8.1	3.7
Fuel oil	18.8	7.4	9.0	21.0	10.2	7.4
District heat	14.0	5.9	9.1	14.7	7.1	4.4
District chilled water	22.5	9.9	15.0	23.5	13.1	6.5
Propane	85.4	32.7	26.0	90.3	30.9	15.9
Solar	39.0	20.5	27.7	44.7	23.0	19.9
Wood, coal, and other	2,055.1	93.2	67.7	2,253.6	91.1	12.6

Relative standard errors (RSEs) for Table C37. District heat consumption and expenditure intensities, 2018

	RSEs for district heat consumption			RSEs for district heat expenditures		
	Per building	Per square foot	Per worker	Per building	Per square foot	Per million British thermal units
All buildings	14.0	5.9	9.1	14.7	7.1	4.4
Space-heating energy sources						
District heat	14.6	5.9	9.4	15.3	7.2	4.4
District heat main	15.0	5.4	9.3	15.7	7.0	4.5
District heat secondary	60.9	15.6	20.0	61.1	19.5	7.7
Other excluding district heat	236.9	69.5	133.8	232.8	79.1	38.9
Buildings without heating	0.0	0.0	0.0	0.0	0.0	0.0
Primary space-heating energy source						
Electricity	99.5	48.6	55.0	101.6	55.3	13.9
Natural gas	99.4	33.2	53.4	98.6	34.2	11.3
Fuel oil	0.0	0.0	0.0	0.0	0.0	0.0
District heat	15.0	5.4	9.3	15.7	7.0	4.5
Propane	0.0	0.0	0.0	0.0	0.0	0.0
Other sources ^b	0.0	0.0	0.0	0.0	0.0	0.0
Cooling energy sources						
District heat	53.3	12.5	26.9	63.9	4.8	14.9
Other excluding district heat	14.8	6.6	10.0	15.8	8.0	4.5
Buildings without cooling	36.1	27.3	38.0	34.0	25.7	2.2
Water-heating energy sources						
District heat	14.3	6.0	9.5	15.2	7.7	5.6
Other excluding district heat	21.6	8.9	12.4	21.5	10.1	5.5
Buildings without water heating	44.3	30.7	86.5	42.7	29.3	6.9
Cooking energy sources						
District heat	36.4	24.6	27.3	39.1	23.6	5.4
Other excluding district heat	18.8	7.6	10.5	18.5	5.7	5.2
Buildings without cooking	20.2	10.1	13.9	22.1	13.9	8.7

Relative standard errors (RSEs) for Table C37. District heat consumption and expenditure intensities, 2018

	RSEs for district heat consumption			RSEs for district heat expenditures		
	Per building	Per square foot	Per worker	Per building	Per square foot	Per million British thermal units
All buildings	14.0	5.9	9.1	14.7	7.1	4.4
Energy end uses (more than one may apply)						
Buildings with space heating	14.3	5.9	9.1	15.0	7.1	4.4
Buildings with cooling	14.5	6.3	9.7	15.3	7.5	4.6
Buildings with water heating	13.9	6.0	9.1	14.6	7.2	4.4
Buildings with cooking	17.6	6.4	10.0	17.1	5.8	4.0
Buildings with manufacturing	32.6	20.3	35.1	47.5	29.1	18.0
Buildings with electricity generation	16.8	6.9	9.9	17.9	9.0	6.8
Buildings with lighting	14.0	5.9	9.1	14.7	7.1	4.4
Percent of floorspace heated						
Not heated	0.0	0.0	0.0	0.0	0.0	0.0
1% to 50%	62.0	28.0	72.6	64.0	30.8	4.7
51% to 99%	37.3	11.7	14.0	35.3	10.0	8.5
100%	15.9	7.7	12.2	17.9	9.8	5.3
Heating equipment (more than one may apply)						
Packaged heating units	29.6	17.6	23.2	30.2	17.7	4.9
Furnaces	63.1	41.6	36.8	62.8	40.7	5.8
Individual space heaters	34.7	19.3	28.4	37.9	21.9	9.7
Boilers	175.6	23.2	33.2	173.9	25.3	8.5
Heat pumps	49.1	23.3	22.8	47.5	23.6	12.4
District heat	14.6	5.9	9.4	15.3	7.2	4.4
Duct reheat	169.0	25.3	21.9	167.0	24.6	11.3
Other	14,507.4	15.6	49.8	4,049.7	71.3	76.7
HVAC features (more than one may apply)						
Economizer cycle	12.7	6.7	9.4	14.3	7.8	5.0
Variable air volume (VAV) system	22.6	8.1	11.1	23.5	9.8	5.9
Dedicated outside air system (DOAS)	26.2	11.1	18.6	28.3	11.7	8.1
Demand controlled ventilation (DCV)	32.8	12.8	16.5	32.7	15.2	8.7
Regular HVAC maintenance	14.5	6.2	9.7	15.2	7.5	4.7
Building automation system (BAS) controls heating or cooling	18.0	6.9	11.3	18.8	8.0	4.5
Internet-connected or smart thermostat	91.5	27.7	13.0	87.4	27.2	15.4
Programmable thermostat	28.3	31.5	43.1	28.5	25.5	22.8

Relative standard errors (RSEs) for Table C37. District heat consumption and expenditure intensities, 2018

	RSEs for district heat consumption			RSEs for district heat expenditures		
	Per building	Per square foot	Per worker	Per building	Per square foot	Per million British thermal units
All buildings	14.0	5.9	9.1	14.7	7.1	4.4
Water-heating equipment						
Centralized system	15.5	6.9	11.5	17.0	10.0	6.1
Distributed system	45.0	10.3	14.4	48.1	14.9	11.7
Combination of centralized and distributed systems	52.8	14.0	14.4	52.8	12.9	4.1
Generation technologies (more than one may apply)						
Reciprocating engine generators	17.2	7.5	10.2	18.9	9.8	7.4
Solar panels	43.5	19.0	25.5	49.0	23.6	21.0
Other generation technology	20.2	16.9	21.7	30.3	27.0	19.6
Food preparation or serving areas in non-food service buildings (more than one may apply)						
Snack bar, concession stand, or coffee shop	13.4	11.1	11.8	15.2	10.6	5.0
Fast food or small restaurant	71.0	13.3	18.6	71.6	11.9	6.7
Cafeteria or large restaurant	18.7	9.3	10.6	20.2	9.7	5.0
Commercial kitchen or food preparation area	13.9	9.2	12.7	15.3	10.1	6.1
Small kitchen area	27.4	10.9	12.4	29.3	12.9	7.5

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