

**Table C33. Total fuel oil consumption and expenditures, 2018**

	All buildings using fuel oil		Fuel oil consumption			Fuel oil expenditures	
	Number of buildings (thousand)	Total floorspace (million square feet)	Floorspace per building (thousand square feet)	Total (trillion British thermal units [Btu])	Total (million gallons)	Total (million dollars)	
<b>All buildings</b>	583	21,185	36.3	101	737	\$1,646	
<b>Building floorspace (square feet)</b>							
1,001 to 5,000	242	726	3.0	21	153	\$390	
5,001 to 10,000	104	774	7.5	14	101	\$248	
10,001 to 25,000	107	1,827	17.1	16	120	\$263	
25,001 to 50,000	48	1,774	36.8	7	51	\$113	
50,001 to 100,000	39	2,893	73.6	10	73	\$169	
100,001 to 200,000	23	3,266	142.0	11	82	\$135	
200,001 to 500,000	14	4,541	314.4	14	104	\$205	
Over 500,000	5	5,383	1042.5	7	53	\$122	
<b>Principal building activity</b>							
Education	34	2,709	80.3	29	213	\$407	
Food sales	Q	Q	Q	Q	Q	Q	
Food service	Q	Q	Q	Q	Q	Q	
Health care	20	2,499	122.5	8	60	\$144	
Inpatient	8	2,040	259.2	8	58	\$138	
Outpatient	13	458	36.6	0	3	\$7	
Lodging	32	2,161	68.1	6	45	\$90	
Mercantile	29	925	31.4	4	27	\$68	
Retail (other than mall)	25	442	17.4	4	26	\$67	
Enclosed and strip malls	Q	Q	Q	Q	Q	Q	
Office	102	5,419	53.3	12	84	\$203	
Public assembly	44	1,359	31.2	7	48	\$111	
Public order and safety	29	896	30.8	Q	Q	Q	
Religious worship	32	393	12.2	6	45	\$112	
Service	153	1,463	9.6	15	106	\$252	
Warehouse and storage	52	2,098	40.2	Q	Q	Q	
Other	18	736	41.8	4	32	\$70	
Vacant	Q	Q	Q	Q	Q	Q	

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	Number of buildings (thousand)	Total floorspace (million square feet)	Floorspace per building (thousand square feet)	Total (trillion British thermal units [Btu])	Total (million gallons)	Total (million dollars)
<b>All buildings</b>	583	21,185	36.3	101	737	\$1,646
<b>Year constructed</b>						
Before 1920	54	748	14.0	15	107	\$238
1920 to 1945	52	1,594	30.9	14	105	\$249
1946 to 1959	56	1,346	23.9	12	85	\$195
1960 to 1969	57	1,858	32.4	11	77	\$181
1970 to 1979	87	2,842	32.8	13	96	\$212
1980 to 1989	69	3,200	46.3	7	54	\$140
1990 to 1999	73	3,031	41.3	13	96	\$179
2000 to 2009	94	4,069	43.2	12	90	\$190
2010 to 2018	41	2,498	61.5	4	27	\$63
<b>Census region and division</b>						
Northeast	230	5,930	25.8	69	500	\$1,112
New England	103	1,639	15.9	31	227	\$510
Middle Atlantic	127	4,291	33.8	38	274	\$602
Midwest	120	4,585	38.3	11	77	\$167
East North Central	69	2,913	42.1	7	49	\$106
West North Central	Q	1,672	Q	4	28	\$60
South	144	6,794	47.2	13	98	\$222
South Atlantic	83	4,355	52.2	10	70	\$163
East South Central	18	803	43.6	1	7	\$15
West South Central	42	1,637	39.0	Q	Q	Q
West	89	3,875	43.5	Q	Q	Q
Mountain	45	1,899	42.1	Q	Q	Q
Pacific	44	1,976	44.9	Q	Q	Q
<b>Climate zone<sup>a</sup></b>						
Cold or very cold	65	1,624	25.1	16	118	\$258
Cool	239	5,783	24.2	49	353	\$773
Mixed mild	146	7,834	53.5	29	213	\$500
Warm	86	3,526	41.2	5	38	\$84
Hot or very hot	48	2,418	50.7	2	14	\$31
<b>Number of floors</b>						
1	322	4,910	15.2	30	220	\$519
2	157	3,743	23.9	34	250	\$547
3	54	2,396	44.2	13	93	\$199
4 to 9	41	6,080	149.5	18	129	\$286
10 or more	9	4,055	447.2	6	44	\$95

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	Number of buildings (thousand)	Total floorspace (million square feet)	Floorspace per building (thousand square feet)	Total (trillion British thermal units [Btu])	Total (million gallons)	Total (million dollars)
<b>All buildings</b>	583	21,185	36.3	101	737	\$1,646
<b>Number of workers (main shift)</b>						
Fewer than 5	299	1,835	6.1	29	214	\$526
5 to 9	77	968	12.5	8	58	\$154
10 to 19	60	1,000	16.6	11	82	\$185
20 to 49	65	2,868	43.9	16	114	\$250
50 to 99	38	2,811	73.3	14	103	\$182
100 to 249	23	3,839	165.9	10	75	\$143
250 or more	20	7,864	391.4	12	89	\$206
<b>Weekly operating hours</b>						
Fewer than 40	104	1,110	10.7	8	60	\$143
40 to 48	161	2,800	17.4	22	161	\$342
49 to 60	116	4,410	37.9	15	106	\$224
61 to 84	64	2,839	44.3	21	150	\$360
85 to 167	26	2,330	90.3	Q	Q	Q
Open continuously	112	7,696	68.7	27	199	\$452
<b>Ownership and occupancy</b>						
Nongovernment owned	442	14,809	33.5	61	443	\$1,063
Owner occupied	337	9,593	28.5	43	313	\$746
Leased to tenant or tenants	105	5,162	48.9	18	130	\$316
Unoccupied	Q	Q	Q	Q	Q	Q
Government owned	140	6,375	45.4	40	294	\$583
Federal	6	793	Q	Q	Q	Q
State	37	1,768	48.1	5	33	\$80
Local	98	3,814	38.9	32	233	\$445
<b>Party responsible for operation of energy systems</b>						
Building owner	497	17,810	35.8	90	652	\$1,440
Business owner or tenant	60	2,019	33.4	7	50	\$122
Property management	Q	727	Q	Q	Q	Q
Other	16	629	39.5	Q	Q	Q
<b>Provider of direct input on energy-related equipment purchases</b>						
Building owner	510	18,405	36.1	91	666	\$1,471
Business owner or tenant	43	1,313	30.3	4	32	\$80
Property management	6	449	78.6	Q	Q	Q
Other	24	1,018	43.2	Q	Q	Q

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	Number of buildings (thousand)	Total floorspace (million square feet)	Floorspace per building (thousand square feet)	Total (trillion British thermal units [Btu])	Total (million gallons)	Total (million dollars)
<b>All buildings</b>	583	21,185	36.3	101	737	\$1,646
<b>Number of establishments</b>						
1	467	13,205	28.3	82	597	\$1,331
2 to 5	96	4,025	41.8	13	98	\$219
6 to 10	10	1,185	Q	1	5	\$10
11 to 20	6	986	154.0	1	11	\$24
More than 20	4	1,719	459.1	4	26	\$61
Currently unoccupied	Q	Q	Q	Q	Q	Q
<b>Predominant exterior wall material</b>						
Brick, stone, or stucco	174	9,803	56.2	52	377	\$790
Concrete (block or poured)	111	4,089	36.8	15	112	\$262
Concrete panels	14	2,684	189.8	2	14	\$33
Siding or shingles	137	958	7.0	21	153	\$379
Metal panels	125	1,765	14.2	8	55	\$123
Window glass	7	1,225	186.5	0	3	\$7
Other	15	660	44.2	Q	Q	Q
<b>Predominant roof material</b>						
Metal surfacing	210	2,776	13.2	17	121	\$276
Synthetic or rubber	112	8,883	79.0	31	224	\$465
Built-up	71	5,325	75.1	20	147	\$330
Slate or tile shingles	24	584	24.7	3	24	\$58
Wooden materials (including shingles)	Q	Q	Q	Q	Q	Q
Asphalt, fiberglass, or other shingles	144	2,041	14.2	24	172	\$409
Concrete	8	615	73.7	3	20	\$51
Other	5	834	181.1	Q	Q	Q
<b>Roof tilt</b>						
Flat	178	14,976	83.9	46	336	\$687
Shallow pitch	202	3,842	19.1	24	177	\$433
Steeper pitch	203	2,367	11.7	31	223	\$527
<b>Cool roof characteristics (more than one may apply)</b>						
White or reflective coating or paint	113	7,930	70.5	24	177	\$360
White or reflective tiles or shingles	11	694	63.7	2	11	\$25
Aluminum coating	60	1,163	19.4	6	43	\$96
Ballasted roof system	23	2,493	109.3	4	32	\$63
Other cool roof property	Q	752	Q	Q	Q	Q

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<b>All buildings</b>	583	21,185	36.3	101	737	\$1,646
<b>Renovations since 2000 (more than one may apply)</b>						
Any type of renovation	278	12,297	44.3	60	440	\$997
Addition or annex	49	3,789	76.8	12	91	\$195
Reduction in floorspace	4	744	192.9	Q	Q	Q
Roof replacement	112	6,251	56.0	31	224	\$489
Interior wall reconfiguration	96	7,413	77.0	25	182	\$409
Window replacement	77	3,823	49.8	23	169	\$388
HVAC equipment upgrade	139	8,634	62.2	38	280	\$649
Lighting upgrade	142	9,299	65.5	38	278	\$627
Electrical upgrade	90	5,817	64.7	22	164	\$348
Plumbing system upgrade	71	5,731	80.8	20	146	\$311
Insulation upgrade	65	3,281	50.8	16	114	\$236
Fire, safety, or security upgrade	82	6,839	83.0	23	167	\$362
Structural upgrade	19	1,716	91.0	5	36	\$77
Other	Q	Q	Q	Q	Q	Q
No renovations	277	7,149	25.8	38	278	\$603
Buildings constructed 2013 or later	28	1,738	62.3	3	19	\$45
<b>Energy sources (more than one may apply)</b>						
Electricity	583	21,185	36.3	101	737	\$1,646
Natural gas	217	14,958	68.8	27	197	\$438
Fuel oil	583	21,185	36.3	101	737	\$1,646
District heat	14	2,990	210.7	2	16	\$41
District chilled water	7	1,859	256.4	1	10	\$27
Propane	83	3,144	37.7	28	204	\$448
Solar	4	1,025	291.6	1	11	\$23
Wood, coal, and other	41	615	15.1	2	12	\$31
<b>Space-heating energy sources</b>						
Fuel oil	266	4,134	15.6	90	652	\$1,455
Fuel oil main	222	2,223	10.0	76	553	\$1,237
Fuel oil secondary	44	1,910	43.8	14	100	\$218
Other excluding fuel oil	295	16,534	56.0	11	80	\$182
Buildings without heating	22	517	23.7	1	4	\$10

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<b>All buildings</b>	583	21,185	36.3	101	737	\$1,646
<b>Primary space-heating energy source</b>						
Electricity	158	5,780	36.7	7	50	\$111
Natural gas	148	9,679	65.5	15	110	\$241
Fuel oil	222	2,223	10.0	76	553	\$1,237
District heat	14	2,738	200.9	2	14	\$35
Propane	Q	Q	Q	Q	Q	Q
Other sources <sup>b</sup>	Q	Q	Q	Q	Q	Q
<b>Cooling energy sources</b>						
Fuel oil	Q	Q	Q	Q	Q	Q
Other excluding fuel oil	455	20,291	44.6	88	643	\$1,433
Buildings without cooling	128	881	6.9	13	93	\$210
<b>Water-heating energy sources</b>						
Fuel oil	72	1,807	25.1	46	333	\$704
Other excluding fuel oil	429	18,852	43.9	53	385	\$895
Buildings without water heating	82	526	6.4	3	19	\$47
<b>Cooking energy sources</b>						
Fuel oil	Q	Q	Q	Q	Q	Q
Other excluding fuel oil	195	12,794	65.5	54	389	\$810
Buildings without cooking	384	8,238	21.4	47	340	\$817
<b>Energy end uses (more than one may apply)</b>						
Buildings with space heating	561	20,667	36.8	101	732	\$1,636
Buildings with cooling	455	20,304	44.6	89	644	\$1,436
Buildings with water heating	501	20,659	41.2	99	718	\$1,599
Buildings with cooking	199	12,946	65.1	54	396	\$829
Buildings with manufacturing	52	1,356	26.2	2	17	\$42
Buildings with electricity generation	343	18,298	53.4	47	343	\$726
Buildings with lighting	583	21,185	36.3	101	737	\$1,646
<b>Percent of floorspace heated</b>						
Not heated	22	517	23.7	1	4	\$10
1% to 50%	88	1,523	17.2	5	34	\$83
51% to 99%	107	5,304	49.4	26	192	\$387
100%	365	13,840	37.9	70	506	\$1,167

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	Number of buildings (thousand)	Total floorspace (million square feet)	Floorspace per building (thousand square feet)	Total (trillion British thermal units [Btu])	Total (million gallons)	Total (million dollars)
<b>All buildings</b>	583	21,185	36.3	101	737	\$1,646
<b>Heating equipment (more than one may apply)</b>						
Packaged heating units	162	9,506	58.8	17	126	\$277
Furnaces	185	2,255	12.2	17	127	\$307
Individual space heaters	174	5,084	29.3	23	170	\$345
Boilers	181	10,222	56.6	76	551	\$1,212
Heat pumps	57	3,587	63.0	8	56	\$129
District heat	14	2,876	206.0	2	14	\$35
Duct reheat	24	3,125	132.9	9	66	\$111
Other	Q	Q	Q	Q	Q	Q
<b>HVAC features (more than one may apply)</b>						
Economizer cycle	117	12,213	104.1	35	257	\$519
Variable air volume (VAV) system	97	11,664	119.8	26	192	\$413
Dedicated outside air system (DOAS)	24	3,994	164.4	15	108	\$241
Demand controlled ventilation (DCV)	51	3,622	70.9	28	202	\$418
Regular HVAC maintenance	428	19,743	46.1	90	655	\$1,456
Building automation system (BAS) controls heating or cooling	134	14,218	106.2	46	334	\$684
Internet-connected or smart thermostat	29	1,112	38.7	5	33	\$83
Programmable thermostat	165	2,709	16.4	23	171	\$405
<b>Water-heating equipment</b>						
Centralized system	392	13,155	33.6	74	538	\$1,173
Distributed system	78	2,609	33.3	16	119	\$282
Combination of centralized and distributed systems	31	4,895	158.4	8	61	\$143
<b>Generation technologies (more than one may apply)</b>						
Reciprocating engine generators	323	17,198	53.3	46	332	\$704
Solar panels	3	1,003	290.8	1	10	\$23
Other generation technology	20	1,164	56.9	0	3	\$7

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	Number of buildings (thousand)	Total floorspace (million square feet)	Floorspace per building (thousand square feet)	Total (trillion British thermal units [Btu])	Total (million gallons)	Total (million dollars)
<b>All buildings</b>	583	21,185	36.3	101	737	\$1,646
<b>Food preparation or serving areas in non-food service buildings (more than one may apply)</b>						
Snack bar, concession stand, or coffee shop	19	4,763	246.2	8	58	\$130
Fast food or small restaurant	20	3,272	163.2	7	54	\$125
Cafeteria or large restaurant	27	6,481	242.7	28	205	\$384
Commercial kitchen or food preparation area	46	6,549	142.3	20	145	\$290
Small kitchen area	119	6,252	52.6	24	178	\$402
<b>Annual consumption (gallons)</b>						
1,000 or less	449	13,961	31.1	13	98	\$239
1,001 to 5,000	102	4,191	41.1	27	197	\$485
5,001 to 10,000	23	1,207	52.8	21	155	\$352
10,001 to 25,000	7	856	129.8	14	103	\$225
Over 25,000	3	971	356.2	25	183	\$344

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

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

<sup>b</sup>Other 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 C33. Total fuel oil consumption and expenditures, 2018**

	RSEs for all buildings using fuel oil			RSEs for fuel oil consumption	RSEs for fuel oil expenditures	
	Number of buildings	Total floorspace	Floorspace per building	Total	Total	Total
<b>All buildings</b>	9.7	5.4	9.1	16.7	16.7	16.4
<b>Building floorspace (square feet)</b>						
1,001 to 5,000	14.5	16.3	5.7	31.8	31.8	31.8
5,001 to 10,000	28.2	27.5	4.4	33.3	33.3	31.6
10,001 to 25,000	14.3	15.3	3.7	28.3	28.3	29.9
25,001 to 50,000	14.5	14.4	2.9	30.2	30.2	29.6
50,001 to 100,000	8.9	8.8	1.8	26.1	26.1	27.3
100,001 to 200,000	9.4	9.4	1.3	32.9	32.9	25.0
200,001 to 500,000	7.3	7.4	1.7	34.6	34.6	32.3
Over 500,000	9.6	11.3	5.2	18.6	18.6	19.2
<b>Principal building activity</b>						
Education	21.0	12.0	19.0	29.7	29.7	26.6
Food sales	40.9	49.6	33.5	47.3	47.3	49.1
Food service	36.6	38.5	18.4	56.7	56.7	55.1
Health care	17.2	7.1	15.2	29.0	29.0	29.3
Inpatient	20.8	8.0	19.8	30.0	30.0	30.3
Outpatient	23.3	16.4	17.0	38.4	38.4	39.0
Lodging	23.3	18.8	24.3	38.0	38.0	39.4
Mercantile	23.0	19.5	16.3	44.9	44.9	44.2
Retail (other than mall)	25.9	32.4	17.6	46.2	46.2	45.3
Enclosed and strip malls	55.1	28.3	32.2	33.7	33.7	33.6
Office	19.1	10.1	19.6	32.5	32.5	33.7
Public assembly	28.9	12.2	33.7	36.9	36.9	36.9
Public order and safety	24.7	18.7	23.9	64.2	64.2	66.4
Religious worship	28.7	28.0	21.2	35.1	35.1	34.7
Service	21.2	16.1	13.7	35.4	35.4	35.4
Warehouse and storage	25.6	17.2	28.1	58.4	58.4	61.7
Other	32.6	25.7	28.7	30.9	30.9	30.0
Vacant	52.2	31.3	41.1	47.5	47.5	49.8
<b>Year constructed</b>						
Before 1920	23.7	22.4	26.7	26.7	26.7	26.4
1920 to 1945	22.3	20.0	25.9	38.5	38.5	40.5
1946 to 1959	21.6	16.9	16.8	36.9	36.9	36.9
1960 to 1969	24.2	10.3	24.6	28.3	28.3	33.4
1970 to 1979	28.2	10.7	27.2	30.4	30.4	27.9
1980 to 1989	17.9	13.9	16.1	27.0	27.0	27.1
1990 to 1999	20.8	11.1	18.4	37.2	37.2	23.8
2000 to 2009	23.6	9.2	21.6	28.5	28.4	29.0
2010 to 2018	25.7	14.5	26.5	31.9	31.9	32.0

**Relative standard errors (RSEs) for Table C33. Total fuel oil consumption and expenditures, 2018**

	RSEs for all buildings using fuel oil			RSEs for fuel oil consumption	RSEs for fuel oil expenditures	
	Number of buildings	Total floorspace	Floorspace per building	Total	Total	Total
<b>All buildings</b>	9.7	5.4	9.1	16.7	16.7	16.4
<b>Census region and division</b>						
Northeast	15.2	10.3	12.7	23.1	23.1	22.7
New England	20.9	16.7	13.0	38.9	38.9	37.4
Middle Atlantic	21.8	12.6	18.9	27.8	27.8	27.9
Midwest	33.2	10.3	35.5	14.8	14.8	14.7
East North Central	22.4	13.2	21.1	19.0	19.0	18.0
West North Central	72.4	17.9	144.5	23.9	23.9	26.0
South	12.8	7.9	12.7	16.8	16.8	16.1
South Atlantic	12.8	10.2	14.2	15.9	15.9	15.9
East South Central	19.4	24.2	28.0	33.4	33.4	32.5
West South Central	36.0	13.4	33.9	57.8	57.8	55.7
West	14.7	17.2	16.5	61.0	61.0	60.7
Mountain	26.9	31.4	26.7	79.0	79.0	79.8
Pacific	13.2	15.7	20.2	86.3	86.3	85.8
<b>Climate zone<sup>a</sup></b>						
Cold or very cold	26.3	16.4	17.0	17.3	17.3	20.4
Cool	20.4	11.1	17.7	31.6	31.6	30.6
Mixed mild	19.5	12.4	16.8	18.1	18.1	18.2
Warm	17.8	11.1	14.6	38.8	38.8	37.4
Hot or very hot	21.1	13.6	17.1	29.4	29.4	28.9
<b>Number of floors</b>						
1	13.5	9.3	11.6	23.8	23.8	24.8
2	14.7	9.4	10.2	22.5	22.5	21.0
3	16.7	10.1	15.6	21.4	21.4	21.1
4 to 9	12.4	7.6	10.0	21.3	21.3	22.2
10 or more	12.0	14.7	10.0	39.5	39.5	35.9
<b>Number of workers (main shift)</b>						
Fewer than 5	15.6	14.7	8.9	23.8	23.8	22.9
5 to 9	15.6	18.7	13.9	22.3	22.3	27.5
10 to 19	21.4	18.3	14.4	37.4	37.4	39.8
20 to 49	13.5	10.3	9.0	26.2	26.2	27.5
50 to 99	13.5	9.0	10.0	41.7	41.7	41.1
100 to 249	10.6	8.8	7.2	30.4	30.4	26.5
250 or more	8.8	8.5	7.9	15.0	15.0	15.4

**Relative standard errors (RSEs) for Table C33. Total fuel oil consumption and expenditures, 2018**

	RSEs for all buildings using fuel oil			RSEs for fuel oil consumption		RSEs for fuel oil expenditures
	Number of buildings	Total floorspace	Floorspace per building	Total	Total	Total
<b>All buildings</b>	9.7	5.4	9.1	16.7	16.7	16.4
<b>Weekly operating hours</b>						
Fewer than 40	17.8	13.7	17.3	33.6	33.6	33.7
40 to 48	18.6	10.0	15.2	26.0	26.0	23.3
49 to 60	15.5	9.8	14.5	20.8	20.8	20.5
61 to 84	21.7	10.4	18.6	30.0	30.0	30.8
85 to 167	22.1	14.1	20.9	61.2	61.2	56.1
Open continuously	12.7	7.7	10.5	15.0	15.0	15.1
<b>Ownership and occupancy</b>						
Nongovernment owned	10.6	6.2	9.9	18.1	18.1	18.0
Owner occupied	11.5	7.5	10.8	17.4	17.4	18.0
Leased to tenant or tenants	14.1	8.4	13.7	28.3	28.3	26.0
Unoccupied	58.6	45.1	34.8	93.2	93.2	92.0
Government owned	15.3	6.9	14.8	20.3	20.3	17.5
Federal	38.7	29.1	52.6	65.0	65.0	62.7
State	27.7	12.1	30.9	31.9	31.9	31.8
Local	18.0	8.9	16.4	24.1	24.1	20.7
<b>Party responsible for operation of energy systems</b>						
Building owner	9.9	5.5	9.3	17.3	17.3	16.8
Business owner or tenant	22.4	16.6	24.3	31.3	31.3	30.3
Property management	55.9	16.7	80.6	64.3	64.3	61.8
Other	36.1	21.1	42.3	65.5	65.5	67.7
<b>Provider of direct input on energy-related equipment purchases</b>						
Building owner	9.7	5.6	9.1	16.9	16.9	16.5
Business owner or tenant	27.1	18.2	30.6	36.4	36.4	35.5
Property management	44.7	24.8	39.8	66.1	66.1	63.5
Other	34.9	19.5	38.3	80.1	80.0	79.0
<b>Number of establishments</b>						
1	11.2	5.8	9.9	19.4	19.4	18.8
2 to 5	14.4	12.7	15.7	22.7	22.7	23.0
6 to 10	45.5	16.6	53.4	35.7	35.7	33.8
11 to 20	31.8	14.7	32.2	43.9	43.9	48.2
More than 20	14.0	13.1	13.9	38.4	38.4	40.8
Currently unoccupied	51.0	34.4	31.2	89.6	89.6	88.5

**Relative standard errors (RSEs) for Table C33. Total fuel oil consumption and expenditures, 2018**

	RSEs for all buildings using fuel oil			RSEs for fuel oil consumption	RSEs for fuel oil expenditures	
	Number of buildings	Total floorspace	Floorspace per building	Total	Total	Total
<b>All buildings</b>	9.7	5.4	9.1	16.7	16.7	16.4
<b>Predominant exterior wall material</b>						
Brick, stone, or stucco	10.0	7.2	8.0	25.5	25.5	24.3
Concrete (block or poured)	16.1	10.6	15.0	26.3	26.2	26.5
Concrete panels	17.5	13.3	16.4	33.9	33.9	31.8
Siding or shingles	17.5	19.6	15.5	22.5	22.5	24.5
Metal panels	19.3	11.8	17.8	28.1	28.1	27.6
Window glass	27.8	14.6	17.4	18.1	18.1	19.8
Other	38.9	19.1	33.2	53.4	53.4	52.5
<b>Predominant roof material</b>						
Metal surfacing	15.6	10.1	13.0	24.2	24.2	24.9
Synthetic or rubber	12.6	7.2	9.4	26.3	26.3	22.5
Built-up	19.8	10.1	20.3	28.7	28.7	28.9
Slate or tile shingles	31.2	22.3	19.5	45.3	45.3	44.9
Wooden materials (including shingles)	54.0	49.9	47.8	99.5	99.5	101.6
Asphalt, fiberglass, or other shingles	18.0	13.3	13.0	23.0	23.0	22.7
Concrete	34.3	17.5	24.5	33.6	33.6	31.8
Other	25.6	18.1	25.4	51.2	51.2	50.1
<b>Roof tilt</b>						
Flat	9.5	6.3	9.3	20.1	20.1	16.7
Shallow pitch	16.7	10.5	15.8	31.1	31.1	32.5
Steeper pitch	15.4	13.4	11.8	24.1	24.1	24.2
<b>Cool roof characteristics (more than one may apply)</b>						
White or reflective coating or paint	13.5	9.5	11.6	27.8	27.8	24.1
White or reflective tiles or shingles	33.3	14.6	28.1	38.1	38.1	36.5
Aluminum coating	29.3	18.1	26.1	40.6	40.5	38.2
Ballasted roof system	19.4	14.6	20.6	25.9	25.9	24.8
Other cool roof property	63.6	27.9	106.9	61.3	61.3	61.1

**Relative standard errors (RSEs) for Table C33. Total fuel oil consumption and expenditures, 2018**

	RSEs for all buildings using fuel oil			RSEs for fuel oil consumption		RSEs for fuel oil expenditures
	Number of buildings	Total floorspace	Floorspace per building	Total	Total	Total
<b>All buildings</b>	9.7	5.4	9.1	16.7	16.7	16.4
<b>Renovations since 2000 (more than one may apply)</b>						
Any type of renovation	11.6	6.0	10.7	22.4	22.4	22.3
Addition or annex	25.1	9.4	24.2	26.8	26.8	26.3
Reduction in floorspace	36.0	18.7	29.8	72.1	72.1	69.0
Roof replacement	16.5	8.3	14.7	22.6	22.6	22.4
Interior wall reconfiguration	13.2	8.1	12.9	21.4	21.4	21.2
Window replacement	19.7	11.9	21.9	29.2	29.2	29.0
HVAC equipment upgrade	14.7	7.2	13.1	31.7	31.7	31.8
Lighting upgrade	13.9	6.6	13.0	28.5	28.5	27.8
Electrical upgrade	15.5	8.9	15.2	24.2	24.2	25.0
Plumbing system upgrade	15.3	9.0	15.4	20.0	20.0	20.9
Insulation upgrade	22.8	14.0	24.7	26.3	26.3	33.4
Fire, safety, or security upgrade	18.7	8.1	17.9	22.7	22.7	26.9
Structural upgrade	36.7	22.0	43.1	38.3	38.3	36.7
Other	54.2	30.6	97.6	75.1	75.1	76.1
No renovations	11.8	7.3	10.3	18.6	18.6	18.0
Buildings constructed 2013 or later	36.3	17.1	40.4	39.6	39.6	39.8
<b>Energy sources (more than one may apply)</b>						
Electricity	9.7	5.4	9.1	16.7	16.7	16.4
Natural gas	13.1	6.2	12.0	15.1	15.1	15.3
Fuel oil	9.7	5.4	9.1	16.7	16.7	16.4
District heat	19.3	13.3	19.3	28.0	28.0	30.4
District chilled water	23.9	14.0	18.4	36.8	36.8	40.8
Propane	21.6	14.0	22.7	27.4	27.4	26.1
Solar	27.9	21.6	29.7	45.8	45.8	42.3
Wood, coal, and other	47.2	25.6	49.3	38.8	38.8	40.9
<b>Space-heating energy sources</b>						
Fuel oil	13.9	11.6	12.2	18.6	18.6	18.3
Fuel oil main	16.1	15.3	13.2	21.3	21.3	21.0
Fuel oil secondary	24.0	14.6	21.1	13.5	13.5	12.5
Other excluding fuel oil	13.9	5.9	13.8	14.6	14.6	14.4
Buildings without heating	34.2	28.5	26.2	31.8	31.8	30.1

## Relative standard errors (RSEs) for Table C33. Total fuel oil consumption and expenditures, 2018

	RSEs for all buildings using fuel oil			RSEs for fuel oil consumption		RSEs for fuel oil expenditures
	Number of buildings	Total floorspace	Floorspace per building	Total	Total	Total
<b>All buildings</b>	9.7	5.4	9.1	16.7	16.7	16.4
<b>Primary space-heating energy source</b>						
Electricity	17.7	9.2	15.7	21.1	21.1	20.6
Natural gas	15.5	7.9	14.3	12.5	12.5	11.6
Fuel oil	16.1	15.3	13.2	21.3	21.3	21.0
District heat	19.8	13.6	20.0	30.0	30.0	32.4
Propane	66.9	54.6	106.7	94.0	94.0	92.5
Other sources <sup>b</sup>	57.0	43.2	38.7	59.3	59.3	60.7
<b>Cooling energy sources</b>						
Fuel oil	71.1	62.8	19.6	62.1	62.1	61.4
Other excluding fuel oil	8.6	5.4	7.9	17.9	17.9	17.4
Buildings without cooling	22.7	21.5	16.9	40.5	40.5	41.4
<b>Water-heating energy sources</b>						
Fuel oil	24.0	15.4	22.1	22.7	22.7	22.5
Other excluding fuel oil	8.4	5.5	7.7	19.4	19.4	19.5
Buildings without water heating	30.8	26.4	22.3	44.7	44.7	48.2
<b>Cooking energy sources</b>						
Fuel oil	41.1	47.5	49.2	40.0	40.0	41.0
Other excluding fuel oil	11.5	6.5	9.5	17.6	17.6	15.2
Buildings without cooking	12.8	7.2	11.9	20.8	20.8	21.3
<b>Energy end uses (more than one may apply)</b>						
Buildings with space heating	10.1	5.5	9.4	16.8	16.8	16.5
Buildings with cooling	8.6	5.4	7.9	17.8	17.8	17.4
Buildings with water heating	8.3	5.5	7.4	17.1	17.1	16.8
Buildings with cooking	11.4	6.3	9.4	17.3	17.3	14.8
Buildings with manufacturing	29.4	18.2	28.6	34.6	34.6	34.7
Buildings with electricity generation	12.5	5.9	12.5	17.1	17.1	14.3
Buildings with lighting	9.7	5.4	9.1	16.7	16.7	16.4
<b>Percent of floorspace heated</b>						
Not heated	34.2	28.5	26.2	31.8	31.8	30.1
1% to 50%	26.3	14.1	26.4	36.8	36.8	40.5
51% to 99%	17.3	9.9	15.3	29.5	29.5	29.6
100%	10.0	6.0	9.0	18.8	18.8	17.5

**Relative standard errors (RSEs) for Table C33. Total fuel oil consumption and expenditures, 2018**

	RSEs for all buildings using fuel oil			RSEs for fuel oil consumption		RSEs for fuel oil expenditures
	Number of buildings	Total floorspace	Floorspace per building	Total	Total	Total
<b>All buildings</b>	9.7	5.4	9.1	16.7	16.7	16.4
<b>Heating equipment (more than one may apply)</b>						
Packaged heating units	10.0	7.5	9.8	16.6	16.6	16.9
Furnaces	19.1	12.2	16.4	28.3	28.3	27.8
Individual space heaters	14.4	9.4	14.1	21.4	21.4	18.2
Boilers	11.6	7.1	10.3	18.3	18.3	17.1
Heat pumps	18.1	12.3	18.0	31.5	31.5	31.9
District heat	19.6	13.2	19.5	29.5	29.5	32.0
Duct reheat	19.1	10.2	16.4	47.1	47.1	36.8
Other	75.3	50.2	73.7	78.5	78.5	78.7
<b>HVAC features (more than one may apply)</b>						
Economizer cycle	11.0	6.9	9.9	18.8	18.8	14.7
Variable air volume (VAV) system	9.1	6.7	8.6	13.6	13.6	13.9
Dedicated outside air system (DOAS)	23.7	12.7	24.1	34.7	34.7	33.1
Demand controlled ventilation (DCV)	19.7	10.1	20.7	36.2	36.2	36.8
Regular HVAC maintenance	8.9	5.6	7.9	18.8	18.8	18.5
Building automation system (BAS) controls heating or cooling	12.4	6.6	9.8	20.5	20.5	18.5
Internet-connected or smart thermostat	31.9	24.6	35.7	36.1	36.1	35.9
Programmable thermostat	14.1	11.1	13.1	29.9	29.9	31.6
<b>Water-heating equipment</b>						
Centralized system	8.5	7.1	8.0	14.4	14.4	13.5
Distributed system	27.6	11.3	26.5	42.7	42.7	43.0
Combination of centralized and distributed systems	19.2	7.9	18.6	27.3	27.3	28.5
<b>Generation technologies (more than one may apply)</b>						
Reciprocating engine generators	13.1	6.1	13.0	17.6	17.6	14.7
Solar panels	28.4	21.9	30.3	46.8	46.8	43.2
Other generation technology	33.1	17.6	31.1	30.2	30.2	30.4

## Relative standard errors (RSEs) for Table C33. Total fuel oil consumption and expenditures, 2018

	RSEs for all buildings using fuel oil			RSEs for fuel oil consumption	RSEs for fuel oil expenditures	
	Number of buildings	Total floorspace	Floorspace per building	Total	Total	Total
<b>All buildings</b>	9.7	5.4	9.1	16.7	16.7	16.4
<b>Food preparation or serving areas in non-food service buildings (more than one may apply)</b>						
Snack bar, concession stand, or coffee shop	12.2	11.6	15.2	14.9	14.9	15.1
Fast food or small restaurant	22.4	12.2	24.8	29.0	29.0	29.0
Cafeteria or large restaurant	11.1	8.8	9.4	27.9	27.9	22.7
Commercial kitchen or food preparation area	13.6	8.2	12.5	21.4	21.4	20.6
Small kitchen area	15.8	9.4	13.2	18.5	18.5	20.7
<b>Annual consumption (gallons)</b>						
1,000 or less	11.2	5.8	9.9	12.7	12.7	13.9
1,001 to 5,000	21.7	10.9	19.7	20.7	20.7	20.5
5,001 to 10,000	32.0	23.0	37.5	33.0	33.0	35.7
10,001 to 25,000	26.8	22.8	19.8	26.2	26.2	27.3
Over 25,000	26.3	18.2	21.1	31.3	31.3	25.7

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

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

<sup>b</sup>*Other sources* includes wood, coal, solar, and all other energy sources.