



**Table E10. Fuel oil consumption and energy intensities (in gallons) by end use, 2018**

	Total fuel oil consumption (million gallons)				Fuel oil energy intensity <sup>a</sup> (gallons/thousand square feet in buildings using fuel oil for the end use)			
	Total	Space heating	Water heating	Other	Total	Space heating	Water heating	Other
<b>All buildings</b>	736.7	585.5	29.1	122.1	34.8	141.6	16.1	6.6
<b>Year constructed</b>								
Before 1920	106.7	101.4	Q	3.5	142.8	260.0	Q	9.0
1920 to 1945	105.0	88.0	Q	14.3	65.9	209.7	Q	11.6
1946 to 1959	84.5	76.4	Q	4.8	62.8	130.5	Q	5.8
1960 to 1969	77.3	69.5	1.7	6.0	41.6	130.9	8.9	4.0
1970 to 1979	96.2	68.8	Q	23.8	33.8	124.7	Q	9.2
1980 to 1989	54.3	33.3	Q	16.4	17.0	137.4	Q	5.4
1990 to 1999	95.8	74.3	Q	13.8	31.6	129.7	Q	5.2
2000 to 2009	90.4	59.5	3.1	27.8	22.2	125.1	10.1	7.2
2010 to 2018	26.5	Q	Q	11.7	10.6	Q	Q	4.8
<b>Census region and division</b>								
Northeast	500.5	441.6	21.7	37.2	84.4	175.6	18.8	8.9
New England	227.0	204.7	10.9	Q	138.5	268.3	21.9	11.4
Middle Atlantic	273.5	236.8	10.8	25.9	63.7	135.2	16.5	8.2
Midwest	76.6	34.5	1.2	40.9	16.7	48.6	6.3	9.7
East North Central	48.7	19.5	Q	28.4	16.7	49.3	Q	10.4
West North Central	28.0	15.0	Q	12.5	16.7	47.6	Q	8.5
South	98.0	65.8	2.1	30.2	14.4	90.3	Q	4.7
South Atlantic	70.1	49.3	Q	18.9	16.1	90.5	Q	4.7
East South Central	7.1	Q	Q	2.9	8.8	Q	Q	3.9
West South Central	Q	Q	Q	8.5	Q	Q	Q	5.3
West	Q	Q	Q	13.8	Q	Q	Q	3.7
Mountain	Q	Q	Q	7.1	Q	Q	Q	3.8
Pacific	Q	Q	Q	6.7	Q	Q	Q	3.5
<b>Climate zone<sup>b</sup></b>								
Cold or very cold	118.0	94.4	5.6	17.9	72.6	130.9	17.7	16.5
Cool	353.2	291.2	15.4	46.6	61.1	176.7	23.2	9.8
Mixed mild	213.3	170.9	7.5	34.9	27.2	120.1	11.2	5.0
Warm	38.0	Q	Q	10.6	10.8	89.0	Q	3.2
Hot or very hot	14.3	Q	Q	12.1	5.9	Q	Q	5.1

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	Total	Space heating	Water heating	Other	Total	Space heating	Water heating	Other
<b>All buildings</b>	736.7	585.5	29.1	122.1	34.8	141.6	16.1	6.6
<b>Number of floors</b>								
1	220.2	188.0	8.8	23.4	44.8	171.2	29.0	6.1
2	250.2	216.0	6.2	28.0	66.9	206.0	16.0	9.1
3	93.2	68.2	3.9	21.1	38.9	113.9	11.0	10.5
4 to 9	129.2	90.6	9.0	29.6	21.3	96.7	20.7	5.3
10 or more	43.9	Q	Q	20.0	10.8	Q	Q	5.1
<b>Number of workers (main shift)</b>								
Fewer than 5	214.3	186.3	Q	21.4	116.8	201.4	Q	21.8
5 to 9	58.3	50.7	Q	Q	60.2	128.7	Q	Q
10 to 19	82.5	Q	Q	4.4	82.5	Q	Q	5.7
20 to 49	113.6	82.1	9.1	22.4	39.6	109.3	26.3	9.7
50 to 99	103.3	88.3	2.6	12.4	36.8	188.3	8.4	4.9
100 to 249	75.4	58.4	1.7	15.3	19.6	127.7	8.1	4.2
250 or more	89.2	44.4	3.5	41.3	11.3	51.6	7.0	5.4
<b>Weekly operating hours</b>								
Fewer than 40	60.3	57.6	Q	2.0	54.3	165.0	Q	2.7
40 to 48	161.5	145.0	Q	12.5	57.7	173.7	11.3	5.5
49 to 60	106.3	91.9	Q	12.7	24.1	96.2	Q	3.5
61 to 84	149.8	137.7	5.1	7.1	52.8	237.5	18.5	3.0
85 to 167	Q	Q	Q	13.1	Q	Q	Q	6.0
Open continuously	199.0	107.8	16.5	74.7	25.9	95.5	23.7	10.2
<b>Ownership and occupancy</b>								
Nongovernment owned	443.0	343.3	16.7	83.0	29.9	134.3	16.8	6.5
Owner occupied	312.8	229.6	16.1	67.1	32.6	119.0	20.1	8.3
Leased to tenant or tenants	129.8	113.4	Q	15.7	25.1	183.0	Q	3.4
Unoccupied	Q	Q	Q	Q	Q	Q	Q	Q
Government owned	293.7	242.2	12.4	39.1	46.1	153.6	15.3	6.9
Federal	Q	Q	Q	7.1	Q	Q	Q	9.4
State	33.4	Q	Q	8.4	18.9	Q	Q	5.0
Local	233.1	201.0	8.6	23.6	61.1	168.7	14.7	7.3





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	Total	Space heating	Water heating	Other	Total	Space heating	Water heating	Other
<b>All buildings</b>	736.7	585.5	29.1	122.1	34.8	141.6	16.1	6.6
<b>Renovations since 2000 (more than one may apply)</b>								
Any type of renovation	440.1	361.9	15.4	62.9	35.8	150.0	13.6	5.8
Addition or annex	90.9	69.1	2.5	19.4	24.0	82.3	6.5	5.7
Reduction in floorspace	Q	Q	Q	1.6	Q	Q	Q	2.3
Roof replacement	223.6	179.7	9.6	34.3	35.8	148.1	13.0	6.1
Interior wall reconfiguration	182.0	139.3	8.0	34.7	24.5	108.1	12.0	5.1
Window replacement	168.9	142.4	8.2	18.3	44.2	156.9	16.7	5.6
HVAC equipment upgrade	280.1	224.0	7.5	48.7	32.4	162.2	9.3	6.2
Lighting upgrade	278.2	233.9	6.0	38.3	29.9	152.1	7.9	4.6
Electrical upgrade	163.6	131.4	3.2	28.9	28.1	126.5	5.8	5.5
Plumbing system upgrade	146.1	112.2	Q	26.8	25.5	114.2	12.2	5.1
Insulation upgrade	114.1	94.8	3.1	16.2	34.8	134.4	6.2	5.6
Fire, safety, or security upgrade	166.9	123.5	9.0	34.4	24.4	120.3	12.7	5.4
Structural upgrade	35.5	Q	Q	7.6	20.7	Q	Q	4.8
Other	Q	Q	N	Q	Q	Q	N	Q
No renovations	277.9	211.9	13.6	52.4	38.9	140.8	20.7	8.6
Buildings constructed 2013 or later	18.7	Q	Q	6.8	10.8	Q	Q	4.1
<b>Energy sources (more than one may apply)</b>								
Electricity	736.7	585.5	29.1	122.1	34.8	141.6	16.1	6.6
Natural gas	196.6	121.3	5.3	70.0	13.1	67.8	7.0	5.0
Fuel oil	736.7	585.5	29.1	122.1	34.8	141.6	16.1	6.6
District heat	15.9	Q	Q	11.5	5.3	Q	Q	4.0
District chilled water	9.7	Q	Q	8.0	5.2	Q	Q	4.5
Propane	203.7	167.3	13.9	22.5	64.8	156.7	20.4	8.9
Solar	10.5	Q	Q	2.2	10.3	Q	Q	2.3
Wood, coal, and other	12.4	Q	Q	1.8	20.2	Q	Q	3.8
<b>Space-heating energy sources</b>								
Fuel oil	652.4	585.5	27.4	39.5	157.8	141.6	17.8	25.6
Fuel oil main	552.7	515.7	23.3	13.7	248.6	231.9	23.5	23.2
Fuel oil secondary	99.8	69.8	4.2	25.8	52.2	36.5	7.6	27.0
Other excluding fuel oil	80.0	N	Q	78.3	4.8	N	Q	4.8
Buildings without heating	4.3	N	Q	4.3	8.3	N	Q	8.3

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	Total	Space heating	Water heating	Other	Total	Space heating	Water heating	Other
<b>All buildings</b>	736.7	585.5	29.1	122.1	34.8	141.6	16.1	6.6
<b>Primary space-heating energy source</b>								
Electricity	49.6	Q	Q	41.9	8.6	Q	Q	7.7
Natural gas	110.3	59.2	3.3	47.9	11.4	44.1	6.0	5.3
Fuel oil	552.7	515.7	23.3	13.7	248.6	231.9	23.5	23.2
District heat	14.0	Q	Q	11.0	5.1	Q	Q	4.1
Propane	Q	Q	Q	Q	Q	Q	Q	Q
Other sources <sup>c</sup>	Q	Q	N	Q	Q	Q	N	Q
<b>Cooling energy sources</b>								
Fuel oil	Q	Q	N	Q	Q	Q	N	Q
Other excluding fuel oil	642.7	500.3	26.0	116.4	31.7	136.4	15.6	6.4
Buildings without cooling	92.5	85.1	Q	Q	105.0	183.6	Q	Q
<b>Water-heating energy sources</b>								
Fuel oil	332.7	282.9	29.1	20.6	184.1	183.6	16.1	22.1
Other excluding fuel oil	384.9	284.4	N	100.5	20.4	119.1	N	5.8
Buildings without water heating	19.1	Q	N	Q	36.3	Q	N	Q
<b>Cooking energy sources</b>								
Fuel oil	Q	Q	Q	Q	Q	Q	Q	Q
Other excluding fuel oil	389.5	294.8	18.9	75.8	30.4	134.0	15.7	6.5
Buildings without cooking	340.3	285.3	9.5	45.5	41.3	149.8	16.6	6.8
<b>Energy end uses (more than one may apply)</b>								
Buildings with space heating	732.4	585.5	29.1	117.8	35.4	141.6	16.4	6.5
Buildings with cooling	644.2	500.4	26.0	117.8	31.7	136.3	15.6	6.5
Buildings with water heating	717.6	567.3	29.1	121.1	34.7	144.4	16.1	6.7
Buildings with cooking	396.4	300.2	19.6	76.6	30.6	134.7	15.9	6.5
Buildings with manufacturing	17.3	Q	Q	Q	12.8	Q	Q	Q
Buildings with electricity generation	342.7	204.7	17.0	121.0	18.7	108.6	17.3	6.8
Buildings with lighting	736.7	585.5	29.1	122.1	34.8	141.6	16.1	6.6

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	Total	Space heating	Water heating	Other	Total	Space heating	Water heating	Other
<b>All buildings</b>	736.7	585.5	29.1	122.1	34.8	141.6	16.1	6.6
<b>Percentage of floorspace heated</b>								
Not heated	4.3	N	Q	4.3	8.3	N	Q	8.3
1% to 50%	34.3	28.4	Q	5.8	22.6	84.9	Q	4.7
51% to 99%	191.7	162.8	5.4	23.4	36.1	173.5	12.1	5.0
100%	506.4	394.2	23.6	88.6	36.6	137.8	18.8	7.3
<b>Heating equipment (more than one may apply)</b>								
Packaged heating units	125.7	73.9	5.0	46.8	13.2	64.0	11.2	5.3
Furnaces	126.7	119.6	Q	6.3	56.2	133.1	Q	4.1
Individual space heaters	169.5	127.6	Q	37.5	33.3	119.0	Q	8.6
Boilers	551.5	455.1	27.1	69.3	54.0	144.2	17.6	8.2
Heat pumps	55.8	29.8	Q	22.0	15.5	92.3	Q	6.4
District heat	14.3	Q	Q	11.2	5.0	Q	Q	4.0
Duct reheat	66.1	Q	Q	17.9	21.1	146.4	Q	5.9
Other	Q	N	N	Q	Q	N	N	Q
<b>HVAC features (more than one may apply)</b>								
Economizer cycle	256.9	163.6	8.4	85.0	21.0	91.1	8.5	7.4
Variable air volume (VAV) system	191.9	112.4	7.0	72.6	16.5	85.7	9.7	6.5
Dedicated outside air system (DOAS)	107.6	70.7	4.3	32.6	26.9	Q	Q	8.7
Demand controlled ventilation (DCV)	201.7	168.3	5.8	27.6	55.7	187.9	Q	8.6
Regular HVAC maintenance	654.9	515.9	26.8	112.3	33.2	155.9	16.0	6.4
Building automation system (BAS) controls heating or cooling	333.9	222.6	11.9	99.4	23.5	129.8	11.2	7.3
Internet-connected or smart thermostat	33.2	Q	Q	2.3	29.8	Q	Q	2.4
Programmable thermostat	170.7	157.4	Q	7.0	63.0	191.8	Q	3.5
<b>Water-heating equipment</b>								
Centralized system	538.3	426.2	25.1	87.0	40.9	144.6	18.3	7.8
Distributed system	118.5	106.8	Q	10.9	45.4	214.6	Q	4.9
Combination of centralized and distributed systems	60.8	34.3	3.3	23.2	12.4	70.9	9.6	4.9

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	Total	Space heating	Water heating	Other	Total	Space heating	Water heating	Other
<b>All buildings</b>	736.7	585.5	29.1	122.1	34.8	141.6	16.1	6.6
<b>Generation technologies (more than one may apply)</b>								
Reciprocating engine generators	332.4	196.7	16.8	118.9	19.3	109.0	17.5	7.0
Solar panels	10.3	Q	Q	2.1	10.3	Q	Q	2.2
Other generation technology	3.1	Q	N	3.1	2.7	Q	N	2.7
<b>Food preparation or serving areas in non-food service buildings (more than one may apply)</b>								
Snack bar, concession stand, or coffee shop	58.1	32.1	1.6	24.3	12.2	52.2	5.2	5.3
Fast food or small restaurant	53.8	33.0	Q	17.3	16.5	76.8	Q	5.4
Cafeteria or large restaurant	205.1	155.7	9.5	39.9	31.7	120.6	12.1	6.6
Commercial kitchen or food preparation area	144.6	98.4	8.5	37.8	22.1	108.5	15.7	6.1
Small kitchen area	177.6	138.6	7.1	31.9	28.4	135.5	14.0	5.6
<b>Annual consumption (gallons)</b>								
1,000 or less	97.9	66.4	Q	30.7	7.0	68.7	Q	2.4
1,001 to 5,000	197.3	154.0	7.1	36.1	47.1	136.8	14.2	10.6
5,001 to 10,000	154.9	142.0	Q	7.3	128.4	248.5	Q	8.9
10,001 to 25,000	103.3	81.3	9.7	12.3	120.7	136.1	21.3	24.6
Over 25,000	183.3	141.7	6.0	35.6	188.9	162.7	12.0	45.1

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/>.

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.

<sup>a</sup>The fuel oil 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 fuel oil intensity. In this table, each column is calculated as fuel oil consumption for the end use divided by the floorspace in buildings that use fuel oil for the particular end use.

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

<sup>c</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.