

Preliminary release date: September 2022

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Table C2. Total energy expenditures by major fuel, 2018

	All buildings		Total energy expenditures (million dollars)				
	Number of buildings (thousand)	Total floorspace (million square feet)	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	5,918	96,423	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
Building floorspace (square feet)							
1,001 to 5,000	2,833	8,025	\$14,232	\$12,119	\$1,712	\$390	Q
5,001 to 10,000	1,359	10,204	\$13,605	\$11,521	\$1,735	\$248	Q
10,001 to 25,000	981	15,838	\$20,492	\$17,327	\$2,619	\$263	Q
25,001 to 50,000	386	13,957	\$20,228	\$17,314	\$2,621	\$113	\$180
50,001 to 100,000	218	15,302	\$20,973	\$17,586	\$2,588	\$169	\$629
100,001 to 200,000	93	13,003	\$18,687	\$15,936	\$2,016	\$135	\$600
200,001 to 500,000	40	11,776	\$19,622	\$16,565	\$1,926	\$205	\$926
Over 500,000	9	8,317	\$13,399	\$10,628	\$1,073	\$122	\$1,575
Principal building activity							
Education	437	13,623	\$15,875	\$12,594	\$2,154	\$407	\$721
Food sales	163	1,006	\$5,691	\$5,306	\$331	Q	N
Food service	286	1,385	\$7,114	\$5,890	\$1,139	Q	Q
Health care	137	4,018	\$10,852	\$8,911	\$1,304	\$144	\$493
Inpatient	9	2,259	\$7,182	\$5,576	\$1,020	\$138	\$448
Outpatient	129	1,760	\$3,670	\$3,334	\$284	\$7	Q
Lodging	207	6,976	\$11,513	\$9,634	\$1,454	\$90	\$335
Mercantile	517	10,781	\$18,814	\$16,549	\$2,194	\$68	Q
Retail (other than mall)	350	5,193	\$7,515	\$6,817	\$629	\$67	Q
Enclosed and strip malls	167	5,588	\$11,299	\$9,732	\$1,565	Q	N
Office	970	16,662	\$27,203	\$23,712	\$2,027	\$203	\$1,262
Public assembly	488	7,192	\$10,837	\$8,520	\$1,474	\$111	\$732
Public order and safety	81	1,538	\$2,564	\$2,061	\$329	Q	Q
Religious worship	439	5,471	\$3,942	\$2,989	\$788	\$112	Q
Service	867	6,240	\$6,566	\$5,049	\$1,200	\$252	Q
Warehouse and storage	1,004	17,483	\$11,751	\$10,221	\$1,460	Q	Q
Other	113	2,435	\$7,934	\$7,065	\$362	\$70	\$437
Vacant	208	1,612	\$581	\$495	\$76	Q	Q
Year constructed							
Before 1920	329	3,600	\$4,761	\$3,595	\$635	\$238	\$292
1920 to 1945	379	5,646	\$8,734	\$6,793	\$864	\$249	\$827
1946 to 1959	517	6,937	\$8,434	\$6,580	\$1,298	\$195	\$361
1960 to 1969	685	10,360	\$15,057	\$12,071	\$2,068	\$181	\$738
1970 to 1979	831	13,061	\$18,973	\$16,053	\$2,106	\$212	\$603
1980 to 1989	794	13,465	\$21,649	\$18,932	\$2,234	\$140	\$344
1990 to 1999	921	15,535	\$20,511	\$17,783	\$2,217	\$179	\$332
2000 to 2009	924	17,500	\$28,433	\$24,372	\$3,314	\$190	\$557
2010 to 2018	537	10,319	\$14,685	\$12,818	\$1,555	\$63	\$249

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All buildings	5,918	96,423	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
Census region and division							
Northeast	793	15,951	\$27,427	\$21,721	\$3,129	\$1,112	\$1,465
New England	275	3,749	\$8,198	\$6,785	\$637	\$510	\$266
Middle Atlantic	518	12,202	\$19,229	\$14,936	\$2,492	\$602	\$1,199
Midwest	1,719	25,932	\$35,506	\$29,028	\$5,294	\$167	\$1,017
East North Central	1,110	17,561	\$24,902	\$20,163	\$3,823	\$106	\$810
West North Central	609	8,372	\$10,604	\$8,865	\$1,471	\$60	\$207
South	2,143	34,907	\$47,198	\$40,783	\$4,818	\$222	\$1,374
South Atlantic	1,034	17,923	\$26,437	\$23,209	\$2,237	\$163	\$829
East South Central	347	5,404	\$7,329	\$6,159	\$1,083	\$15	\$72
West South Central	762	11,580	\$13,432	\$11,416	\$1,499	Q	Q
West	1,264	19,633	\$31,106	\$27,464	\$3,050	Q	\$447
Mountain	484	7,680	\$9,762	\$8,175	\$1,411	Q	\$120
Pacific	780	11,952	\$21,344	\$19,288	\$1,639	Q	\$328
Climate zone^a							
Cold or very cold	539	7,044	\$10,461	\$8,564	\$1,396	\$258	\$243
Cool	1,727	26,768	\$37,166	\$29,973	\$5,427	\$773	\$992
Mixed mild	1,216	25,096	\$39,643	\$32,131	\$4,588	\$500	\$2,424
Warm	1,606	25,085	\$37,402	\$32,968	\$3,803	\$84	\$547
Hot or very hot	831	12,429	\$16,566	\$15,361	\$1,077	\$31	\$96
Number of floors							
1	4,106	43,576	\$60,857	\$52,612	\$7,513	\$519	\$213
2	1,286	23,300	\$30,240	\$25,445	\$3,858	\$547	\$389
3	370	10,516	\$15,112	\$12,615	\$1,902	\$199	\$395
4 to 9	142	13,031	\$22,998	\$18,772	\$2,208	\$286	\$1,732
10 or more	16	6,000	\$12,031	\$9,552	\$810	\$95	\$1,573
Elevators and escalators (more than one may apply)							
Any elevators	503	36,501	\$59,914	\$49,588	\$5,884	\$596	\$3,845
1 elevator	366	14,215	\$18,838	\$15,653	\$2,266	\$236	\$684
2 to 5 elevators	121	13,316	\$23,034	\$19,486	\$2,122	\$176	\$1,250
6 or more elevators	16	8,970	\$18,041	\$14,449	\$1,496	\$185	\$1,911
Any escalators	14	3,753	\$6,370	\$4,986	\$463	\$58	\$863
Number of workers (main shift)							
Fewer than 5	3,270	21,065	\$20,859	\$17,564	\$2,560	\$526	Q
5 to 9	1,116	10,323	\$14,526	\$12,301	\$1,814	\$154	\$257
10 to 19	713	11,348	\$15,749	\$12,969	\$2,377	\$185	\$218
20 to 49	492	16,132	\$25,366	\$21,626	\$3,098	\$250	\$391
50 to 99	201	12,961	\$20,431	\$17,338	\$2,318	\$182	\$594
100 to 249	90	12,442	\$20,162	\$17,253	\$2,235	\$143	\$531
250 or more	37	12,152	\$24,145	\$19,946	\$1,889	\$206	\$2,104

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All buildings	5,918	96,423	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
Weekly operating hours							
Fewer than 40	1,370	10,766	\$9,071	\$7,493	\$1,342	\$143	Q
40 to 48	1,483	18,826	\$20,736	\$17,637	\$2,537	\$342	\$219
49 to 60	1,250	22,845	\$27,109	\$23,064	\$3,256	\$224	\$565
61 to 84	645	14,736	\$24,478	\$20,294	\$2,849	\$360	\$974
85 to 167	465	10,038	\$19,749	\$16,885	\$2,296	Q	\$443
Open continuously	705	19,213	\$40,096	\$33,623	\$4,011	\$452	\$2,010
Ownership and occupancy							
Nongovernment owned	4,982	74,728	\$111,023	\$94,736	\$12,816	\$1,063	\$2,408
Owner occupied	3,249	45,355	\$66,488	\$55,814	\$7,896	\$746	\$2,031
Leased to tenant or tenants	1,581	28,382	\$44,308	\$38,736	\$4,882	\$316	\$374
Unoccupied	152	990	\$227	\$186	Q	Q	Q
Government owned	937	21,695	\$30,215	\$24,261	\$3,476	\$583	\$1,895
Federal	70	1,946	\$3,285	\$2,461	\$239	Q	\$527
State	256	6,888	\$10,266	\$8,054	\$1,048	\$80	\$1,085
Local	610	12,861	\$16,663	\$13,745	\$2,190	\$445	\$283
Party responsible for operation of energy systems							
Building owner	4,872	79,282	\$114,970	\$96,280	\$13,101	\$1,440	\$4,149
Business owner or tenant	831	12,842	\$19,517	\$16,798	\$2,556	\$122	Q
Property management	97	1,994	\$3,213	\$2,830	\$286	Q	Q
Other	118	2,306	\$3,538	\$3,089	\$348	Q	Q
Provider of direct input on energy-related equipment purchases							
Building owner	5,127	82,862	\$119,473	\$100,132	\$13,803	\$1,471	\$4,067
Business owner or tenant	483	7,585	\$12,472	\$10,734	\$1,578	\$80	Q
Property management	49	1,072	\$1,853	\$1,615	\$171	Q	Q
Other	260	4,904	\$7,439	\$6,516	\$739	Q	\$124
Number of establishments							
1	4,719	65,391	\$93,412	\$78,184	\$11,085	\$1,331	\$2,812
2 to 5	811	16,431	\$24,293	\$20,572	\$2,903	\$219	\$600
6 to 10	135	5,539	\$9,238	\$7,982	\$1,053	\$10	\$192
11 to 20	63	3,894	\$7,157	\$6,224	\$746	\$24	\$162
More than 20	19	3,999	\$6,825	\$5,780	\$452	\$61	\$532
Currently unoccupied	170	1,168	\$313	\$254	\$53	Q	Q

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All buildings	5,918	96,423	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
Predominant exterior wall material							
Brick, stone, or stucco	2,490	46,134	\$71,070	\$58,633	\$9,083	\$790	\$2,563
Concrete (block or poured)	935	19,357	\$30,008	\$25,766	\$3,301	\$262	\$677
Concrete panels	137	8,331	\$11,607	\$10,000	\$1,166	\$33	\$409
Siding or shingles	948	5,992	\$9,252	\$7,961	\$858	\$379	Q
Metal panels	1,250	12,198	\$11,172	\$9,668	\$1,309	\$123	Q
Window glass	19	2,192	\$4,355	\$3,652	\$298	\$7	\$399
Other	139	2,219	\$3,774	\$3,317	\$277	Q	Q
Predominant roof material							
Metal surfacing	2,198	20,936	\$21,880	\$18,916	\$2,460	\$276	\$228
Synthetic or rubber	940	31,563	\$51,946	\$44,081	\$6,156	\$465	\$1,245
Built-up	708	19,308	\$31,405	\$25,857	\$3,450	\$330	\$1,768
Slate or tile shingles	376	3,997	\$6,105	\$5,046	\$769	\$58	\$233
Wooden materials (including shingles)	166	1,568	\$2,233	\$1,885	\$313	Q	N
Asphalt, fiberglass, or other shingles	1,311	14,058	\$19,527	\$16,172	\$2,492	\$409	\$455
Concrete	83	1,968	\$3,545	\$3,062	\$244	\$51	Q
Other	136	3,026	\$4,595	\$3,978	\$409	Q	\$186
Roof tilt							
Flat	1,914	54,253	\$89,516	\$75,513	\$9,846	\$687	\$3,470
Shallow pitch	2,313	27,609	\$33,446	\$28,398	\$4,147	\$433	\$468
Steeper pitch	1,691	14,561	\$18,275	\$15,086	\$2,298	\$527	\$364
Cool roof characteristics (more than one may apply)							
White or reflective coating or paint	1,285	32,799	\$51,177	\$43,908	\$5,636	\$360	\$1,274
White or reflective tiles or shingles	140	2,713	\$4,734	\$4,132	\$455	\$25	\$122
Aluminum coating	528	6,149	\$7,474	\$6,495	\$789	\$96	Q
Ballasted roof system	114	6,277	\$10,177	\$8,358	\$1,244	\$63	\$513
Other cool roof property	35	1,603	\$2,686	\$2,308	\$208	Q	Q

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All buildings	5,918	96,423	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
Renovations since 2000 (more than one may apply)							
Any type of renovation	2,032	45,165	\$70,443	\$58,359	\$8,314	\$997	\$2,773
Addition or annex	327	10,854	\$17,575	\$14,350	\$2,371	\$195	\$658
Reduction in floorspace	35	1,784	\$3,100	\$2,570	\$276	Q	Q
Roof replacement	847	20,862	\$32,159	\$26,603	\$3,789	\$489	\$1,277
Interior wall reconfiguration	709	21,283	\$33,879	\$27,945	\$3,634	\$409	\$1,891
Window replacement	484	10,977	\$16,923	\$13,541	\$2,124	\$388	\$871
HVAC equipment upgrade	1,006	27,575	\$44,655	\$36,828	\$5,059	\$649	\$2,119
Lighting upgrade	1,012	29,098	\$47,487	\$39,337	\$5,379	\$627	\$2,144
Electrical upgrade	565	15,761	\$26,710	\$21,852	\$3,107	\$348	\$1,403
Plumbing system upgrade	584	15,537	\$25,968	\$21,311	\$2,917	\$311	\$1,429
Insulation upgrade	307	7,980	\$12,733	\$10,286	\$1,522	\$236	\$689
Fire, safety, or security upgrade	570	19,985	\$33,190	\$27,415	\$3,756	\$362	\$1,657
Structural upgrade	147	4,203	\$7,589	\$6,197	\$897	\$77	\$419
Other	43	1,168	\$2,084	\$1,843	\$221	Q	Q
No renovations	3,530	43,832	\$60,969	\$52,094	\$6,892	\$603	\$1,379
Buildings constructed 2013 or later	357	7,426	\$9,826	\$8,544	\$1,085	\$45	\$151
Energy sources (more than one may apply)							
Electricity	5,613	94,844	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
Natural gas	2,974	67,722	\$104,268	\$85,118	\$16,292	\$438	\$2,420
Fuel oil	583	21,185	\$41,029	\$34,015	\$3,492	\$1,646	\$1,876
District heat	86	6,745	\$15,256	\$10,337	\$575	\$41	\$4,303
District chilled water	55	4,288	\$8,908	\$6,445	\$384	\$27	\$2,052
Propane	676	10,157	\$13,808	\$12,261	\$960	\$448	\$139
Solar	99	3,820	\$6,682	\$5,603	\$627	\$23	\$429
Wood, coal, and other	180	2,113	\$2,890	\$2,469	\$358	\$31	Q
Space-heating energy sources (more than one may apply)							
Electricity	2,563	45,603	\$71,662	\$63,895	\$6,580	\$436	\$751
Natural gas	2,587	58,042	\$85,699	\$70,206	\$14,643	\$291	\$558
Fuel oil	266	4,134	\$6,456	\$4,464	\$480	\$1,455	Q
District heat	83	6,547	\$14,811	\$9,971	\$536	\$35	\$4,269
Propane	431	3,896	\$4,531	\$4,208	\$221	\$101	Q
Other sources ^b	127	927	\$795	\$683	\$71	Q	Q
Primary space-heating energy source							
Electricity	1,856	27,618	\$42,389	\$39,865	\$2,357	\$111	Q
Natural gas	2,344	50,060	\$71,621	\$57,988	\$13,301	\$241	\$91
Fuel oil	222	2,223	\$3,335	\$2,057	Q	\$1,237	N
District heat	78	6,090	\$14,020	\$9,379	\$452	\$35	\$4,154
Propane	338	2,290	\$2,512	\$2,496	Q	Q	N
Other sources ^b	63	380	\$254	\$245	Q	Q	N

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All buildings	5,918	96,423	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
Cooling energy sources (more than one may apply)							
Electricity	4,584	84,526	\$128,769	\$109,218	\$15,460	\$1,413	\$2,679
Natural gas	4	400	\$736	\$580	\$127	Q	Q
District chilled water	55	4,288	\$8,908	\$6,445	\$384	\$27	\$2,052
Water-heating energy sources (more than one may apply)							
Electricity	2,785	47,125	\$70,365	\$62,066	\$6,621	\$743	\$935
Natural gas	1,885	46,652	\$74,602	\$61,277	\$12,111	\$297	\$917
Fuel oil	72	1,807	\$3,342	\$2,352	\$200	\$704	Q
District heat	38	4,206	\$9,777	\$6,368	\$260	\$28	\$3,121
Propane	145	1,947	\$3,791	\$3,626	Q	Q	N
Cooking energy sources (more than one may apply)							
Electricity	1,216	30,509	\$54,136	\$45,677	\$6,327	\$555	\$1,577
Natural gas	727	27,705	\$51,703	\$41,912	\$8,040	\$275	\$1,476
Propane	159	3,101	\$5,543	\$4,861	\$295	\$320	Q
Energy end uses (more than one may apply)							
Buildings with space heating	4,901	88,661	\$134,131	\$112,030	\$16,163	\$1,636	\$4,302
Buildings with cooling	4,631	87,506	\$134,681	\$113,391	\$15,696	\$1,436	\$4,158
Buildings with water heating	4,595	87,717	\$135,611	\$113,720	\$16,015	\$1,599	\$4,277
Buildings with cooking	1,738	43,580	\$76,849	\$63,842	\$9,887	\$829	\$2,290
Buildings with manufacturing	322	6,871	\$10,440	\$8,837	\$1,199	\$42	Q
Buildings with electricity generation	706	29,457	\$54,876	\$46,043	\$5,761	\$726	\$2,347
Buildings with lighting	5,503	94,103	\$140,890	\$118,696	\$16,244	\$1,646	\$4,303
Percentage of floorspace heated							
Not heated	1,017	7,762	\$7,107	\$6,966	\$129	\$10	Q
1% to 50%	693	10,620	\$10,668	\$9,653	\$916	\$83	Q
51% to 99%	905	20,174	\$32,397	\$26,910	\$3,734	\$387	\$1,366
100%	3,303	57,867	\$91,066	\$75,468	\$11,513	\$1,167	\$2,919
Percentage of floorspace cooled							
Not cooled	1,288	8,917	\$6,557	\$5,606	\$596	\$210	Q
1% to 50%	1,111	19,722	\$17,684	\$14,383	\$2,659	\$377	\$265
51% to 99%	998	26,277	\$44,748	\$37,165	\$5,014	\$655	\$1,914
100%	2,522	41,507	\$72,249	\$61,843	\$8,023	\$405	\$1,978

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All buildings	5,918	96,423	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
Percentage lit when open							
0%	Q	Q	Q	Q	Q	N	N
1% to 50%	1,280	14,172	\$13,297	\$10,984	\$1,770	\$442	\$101
51% to 99%	1,784	38,847	\$62,495	\$52,403	\$7,299	\$612	\$2,181
100%	2,272	39,877	\$64,520	\$54,817	\$7,096	\$591	\$2,016
Building never open or electricity not used	513	2,998	\$691	\$581	\$104	Q	Q
Percentage lit during off hours							
0%	2,062	15,578	\$16,129	\$13,646	\$2,036	\$333	Q
1% to 50%	3,246	69,800	\$103,176	\$86,673	\$12,235	\$1,154	\$3,113
51% to 100%	240	7,243	\$16,926	\$14,436	\$1,509	\$130	\$851
Building always open with no off hours	64	2,223	\$5,007	\$4,241	\$512	\$28	\$225
Electricity not used	305	1,579	N	N	N	N	N
Heating equipment (more than one may apply)							
Packaged heating units	2,187	48,064	\$74,931	\$64,832	\$9,339	\$277	\$483
Furnaces	1,621	17,272	\$22,818	\$18,612	\$3,825	\$307	Q
Individual space heaters	1,246	21,122	\$30,020	\$25,212	\$4,047	\$345	\$416
Boilers	703	28,831	\$45,321	\$36,963	\$6,864	\$1,212	\$282
Heat pumps	673	15,110	\$24,118	\$21,283	\$2,471	\$129	\$235
District heat	83	6,547	\$14,811	\$9,971	\$536	\$35	\$4,269
Duct reheat	134	7,418	\$13,177	\$11,719	\$1,069	\$111	\$277
Other	17	821	\$2,903	\$2,666	\$203	Q	Q
Cooling equipment (more than one may apply)							
Packaged air-conditioning units	2,565	56,290	\$89,535	\$76,740	\$11,003	\$700	\$1,092
Residential-type central air conditioners	1,309	18,270	\$26,425	\$21,624	\$3,785	\$407	\$609
Individual air conditioners	735	13,619	\$21,061	\$17,352	\$2,724	\$472	\$513
Central chillers	202	17,926	\$33,343	\$27,563	\$3,542	\$397	\$1,840
Heat pumps	492	11,098	\$17,576	\$15,329	\$1,704	\$172	\$371
District chilled water	55	4,288	\$8,908	\$6,445	\$384	\$27	\$2,052
Swamp coolers	85	2,070	\$3,233	\$2,739	\$439	\$5	Q
Other	Q	Q	Q	Q	Q	Q	N

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	All buildings		Total energy expenditures (million dollars)				
	Number of buildings (thousand)	Total floorspace (million square feet)	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	5,918	96,423	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
HVAC features (more than one may apply)							
Economizer cycle	747	34,087	\$60,212	\$49,990	\$6,635	\$519	\$3,068
Variable air volume (VAV) system	698	29,268	\$50,917	\$42,285	\$5,115	\$413	\$3,104
Dedicated outside air system (DOAS)	249	9,027	\$17,023	\$14,221	\$1,797	\$241	\$763
Demand controlled ventilation (DCV)	349	10,474	\$17,092	\$14,106	\$1,937	\$418	\$631
Regular HVAC maintenance	3,554	78,015	\$123,757	\$104,072	\$14,123	\$1,456	\$4,105
Building automation system (BAS) controls heating or cooling	933	40,462	\$72,192	\$60,643	\$7,208	\$684	\$3,657
Internet-connected or smart thermostat	325	5,966	\$7,987	\$6,863	\$914	\$83	Q
Programmable thermostat	1,545	20,882	\$27,372	\$22,824	\$4,006	\$405	Q
Main equipment replaced since 2000 (more than one may apply)							
Heating	1,937	32,451	\$46,025	\$39,206	\$6,130	\$619	\$70
Cooling	1,269	23,013	\$33,197	\$27,227	\$4,363	\$640	\$967
Water-heating equipment							
Centralized system	3,538	59,280	\$90,487	\$75,055	\$11,234	\$1,173	\$3,025
Distributed system	782	14,307	\$21,951	\$18,823	\$2,354	\$282	\$491
Combination of centralized and distributed systems	274	14,129	\$23,174	\$19,842	\$2,427	\$143	\$761
Generation technologies (more than one may apply)							
Reciprocating engine generators	580	25,163	\$47,189	\$39,392	\$5,013	\$704	\$2,080
Solar panels	94	3,750	\$6,491	\$5,451	\$616	\$23	\$401
Other generation technology	43	2,055	\$4,258	\$3,708	\$386	\$7	\$157
Lighting equipment types (more than one may apply)							
Incandescent	1,100	21,081	\$36,703	\$30,451	\$4,398	\$512	\$1,342
Standard fluorescent	4,012	72,912	\$109,551	\$92,022	\$12,904	\$1,260	\$3,363
Compact fluorescent	1,130	33,691	\$58,553	\$48,580	\$6,490	\$698	\$2,785
High-intensity discharge (HID)	238	11,356	\$18,790	\$15,522	\$2,240	\$288	\$740
Halogen	552	15,012	\$26,740	\$22,352	\$3,155	\$295	\$938
LED	2,593	61,849	\$100,687	\$84,796	\$11,413	\$1,159	\$3,319
Other	Q	Q	Q	Q	Q	Q	N

Table C2. Total energy expenditures by major fuel, 2018

	All buildings		Total energy expenditures (million dollars)				
	Number of buildings (thousand)	Total floorspace (million square feet)	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	5,918	96,423	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
Refrigeration equipment (more than one may apply)							
Any refrigeration	3,850	77,589	\$122,759	\$103,017	\$14,561	\$1,411	\$3,770
Walk-in units	706	29,384	\$61,726	\$51,640	\$7,273	\$620	\$2,192
Cases or cabinets	837	28,517	\$56,746	\$47,736	\$6,846	\$566	\$1,599
Large cold storage areas	69	3,592	\$9,001	\$7,914	\$706	\$50	\$331
Commercial ice makers	872	34,672	\$64,416	\$53,515	\$7,851	\$534	\$2,517
Residential-type or compact units	3,321	64,735	\$97,433	\$81,383	\$11,834	\$1,066	\$3,149
Vending machines	800	42,071	\$69,023	\$57,618	\$7,871	\$736	\$2,798
No refrigeration	2,068	18,834	\$18,479	\$15,980	\$1,731	\$235	\$533
Office equipment (more than one may apply)^c							
Desktop computers	3,804	82,012	\$127,099	\$106,865	\$14,740	\$1,447	\$4,048
With multiple monitors	1,504	50,844	\$81,701	\$68,537	\$8,969	\$751	\$3,443
Laptop computers	2,786	69,375	\$106,537	\$89,332	\$12,168	\$1,147	\$3,891
Dedicated servers	1,400	51,595	\$84,675	\$71,502	\$9,272	\$868	\$3,034
Tablets charged in building	1,556	48,778	\$80,153	\$67,287	\$9,188	\$787	\$2,891
Large floor-standing office devices ^c	1,456	54,088	\$84,302	\$70,488	\$9,572	\$785	\$3,457
Smaller desktop office devices ^c	3,560	74,467	\$115,215	\$96,843	\$13,374	\$1,329	\$3,668
Interactive whiteboards	262	16,939	\$25,062	\$20,708	\$2,900	\$379	\$1,074
Televisions or video displays	2,451	63,618	\$102,428	\$86,239	\$11,929	\$979	\$3,281
Point-of-sale devices or cash registers	1,420	33,606	\$64,137	\$54,129	\$7,678	\$659	\$1,672
Food preparation or serving areas in non-food service buildings (more than one may apply)							
Snack bar, concession stand, or coffee shop	144	10,361	\$18,601	\$15,252	\$2,227	\$130	\$993
Fast food or small restaurant	160	9,759	\$19,245	\$16,277	\$2,178	\$125	\$665
Cafeteria or large restaurant	129	14,531	\$23,415	\$18,876	\$2,899	\$384	\$1,255
Commercial kitchen or food preparation area	284	17,698	\$32,437	\$26,749	\$4,186	\$290	\$1,212
Small kitchen area	1,018	20,519	\$29,584	\$24,376	\$3,831	\$402	\$975
Separate computer areas (more than one may apply)							
Server closet	1,237	48,722	\$76,371	\$64,282	\$8,626	\$704	\$2,760
Data center	116	11,383	\$21,346	\$17,778	\$2,068	\$226	\$1,274
Computer-based training room	228	16,556	\$26,611	\$21,804	\$2,995	\$290	\$1,521
Student or public computer center	236	12,527	\$17,820	\$14,260	\$2,483	\$328	\$748

Table C2. Total energy expenditures by major fuel, 2018

	All buildings		Total energy expenditures (million dollars)				
	Number of buildings (thousand)	Total floorspace (million square feet)	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	5,918	96,423	\$141,238	\$118,997	\$16,292	\$1,646	\$4,303
Window and interior lighting features (more than one may apply)							
Multipaned windows	3,527	72,694	\$112,161	\$94,108	\$13,354	\$1,222	\$3,477
Tinted window glass	1,679	44,363	\$71,656	\$60,716	\$8,152	\$514	\$2,273
Reflective window glass	497	17,929	\$31,359	\$26,795	\$3,319	\$258	\$987
External overhangs or awnings	1,513	28,718	\$47,178	\$40,019	\$5,965	\$334	\$859
Skylights or atriums	509	19,815	\$29,661	\$25,016	\$3,213	\$264	\$1,169
Light scheduling	910	33,552	\$58,979	\$50,153	\$6,149	\$476	\$2,201
Occupancy sensors	1,025	44,304	\$72,422	\$60,747	\$7,592	\$625	\$3,458
Multilevel lighting or dimming	332	14,424	\$25,535	\$21,106	\$2,985	\$223	\$1,222
Daylight harvesting	138	7,244	\$12,817	\$10,934	\$1,215	\$68	\$600
Plug-load control	58	1,961	\$3,733	\$3,284	\$335	\$25	\$89
Demand responsive lighting	98	2,045	\$3,347	\$2,644	\$408	Q	\$202
Building automation system (BAS) for lighting	317	16,645	\$29,423	\$25,457	\$2,847	\$192	\$927
Electric vehicle (EV) charging							
Charging stations associated with the building	132	10,165	\$15,272	\$12,974	\$1,397	\$119	\$782

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/>.

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 expenditures in buildings that have the end use but not the 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.

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Relative standard errors (RSEs) for Table C2. Total energy expenditures by major fuel, 2018

	RSEs for all buildings		RSEs for total energy expenditures				
	Number of buildings	Total floorspace	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	3.9	3.1	2.9	3.0	3.5	16.4	14.5
Building floorspace (square feet)							
1,001 to 5,000	4.9	5.3	5.9	6.1	8.9	31.8	86.3
5,001 to 10,000	5.9	5.8	5.8	5.9	8.8	31.6	42.5
10,001 to 25,000	5.6	6.1	7.8	8.7	8.0	29.9	36.0
25,001 to 50,000	5.6	5.6	6.5	7.0	6.4	29.6	33.6
50,001 to 100,000	5.3	5.3	5.5	5.6	7.0	27.3	32.7
100,001 to 200,000	5.6	5.5	5.8	5.7	7.3	25.0	34.1
200,001 to 500,000	5.0	5.0	6.9	7.1	6.8	32.3	18.7
Over 500,000	7.8	8.6	7.7	7.4	12.1	19.2	17.2
Principal building activity							
Education	7.8	5.3	5.9	5.7	7.6	26.6	35.7
Food sales	14.3	17.0	21.3	21.9	20.3	49.1	0.0
Food service	7.7	8.5	8.8	9.0	10.1	55.1	88.6
Health care	9.8	5.5	5.4	5.7	7.0	29.3	15.9
Inpatient	19.4	7.2	7.1	7.7	8.3	30.3	15.4
Outpatient	10.3	8.0	8.5	8.7	10.9	39.0	54.3
Lodging	9.4	8.3	8.7	9.0	9.3	39.4	27.6
Mercantile	7.3	6.0	6.4	6.5	7.5	44.2	70.4
Retail (other than mall)	10.1	8.6	8.5	8.6	12.1	45.3	70.4
Enclosed and strip malls	7.6	7.6	8.0	8.0	9.0	33.6	0.0
Office	7.2	5.5	5.4	5.3	7.7	33.7	19.6
Public assembly	9.1	5.8	7.1	7.5	8.1	36.9	17.5
Public order and safety	20.2	15.9	18.8	18.9	18.8	66.4	65.0
Religious worship	9.5	9.3	8.9	8.7	13.0	34.7	108.3
Service	7.4	8.1	8.5	8.4	13.5	35.4	74.6
Warehouse and storage	7.4	7.2	8.4	8.8	9.6	61.7	87.2
Other	17.1	15.1	16.0	16.6	22.5	30.0	36.0
Vacant	17.2	14.1	17.0	19.3	22.3	49.8	64.1
Year constructed							
Before 1920	12.8	10.8	12.1	12.8	12.6	26.4	46.7
1920 to 1945	10.7	8.8	9.8	9.5	10.4	40.5	30.1
1946 to 1959	8.1	7.6	8.2	8.1	10.0	36.9	21.2
1960 to 1969	6.4	5.2	6.2	6.2	6.6	33.4	26.4
1970 to 1979	7.4	6.0	6.6	7.0	7.5	27.9	16.0
1980 to 1989	7.0	5.9	5.9	6.1	8.3	27.1	22.0
1990 to 1999	7.5	6.6	5.5	5.8	7.6	23.8	21.5
2000 to 2009	8.0	6.3	6.9	7.3	7.1	29.0	22.1
2010 to 2018	11.0	7.6	7.9	8.1	8.6	32.0	45.9

Relative standard errors (RSEs) for Table C2. Total energy expenditures by major fuel, 2018

RSEs for all buildings RSEs for total energy expenditures

	Number of buildings	Total floorspace	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	3.9	3.1	2.9	3.0	3.5	16.4	14.5
Census region and division							
Northeast	9.9	7.2	6.6	7.2	7.2	22.7	10.4
New England	17.8	10.8	13.8	14.0	9.3	37.4	25.9
Middle Atlantic	12.0	8.8	7.4	8.5	8.7	27.9	11.6
Midwest	10.9	7.4	7.1	7.5	8.2	14.7	16.6
East North Central	13.1	10.4	9.8	10.3	10.5	18.0	20.6
West North Central	21.0	7.9	6.4	7.8	13.5	26.0	23.6
South	7.7	6.1	6.3	6.3	6.6	16.1	39.3
South Atlantic	11.0	6.8	8.1	8.2	7.1	15.9	44.5
East South Central	18.0	20.3	17.5	17.3	21.3	32.5	46.8
West South Central	14.7	11.5	12.1	11.9	9.7	55.7	83.5
West	8.1	7.1	5.9	5.6	10.3	60.7	29.2
Mountain	15.9	13.1	12.5	12.1	17.9	79.8	36.8
Pacific	9.0	8.1	6.4	6.0	11.7	85.8	37.6
Climate zone^a							
Cold or very cold	18.8	17.0	14.6	15.4	21.4	20.4	29.5
Cool	11.8	8.3	8.0	8.2	9.2	30.6	17.6
Mixed mild	15.1	10.5	10.0	9.6	11.4	18.2	22.3
Warm	11.4	10.0	9.2	8.9	11.7	37.4	43.5
Hot or very hot	18.8	14.1	13.5	13.8	13.9	28.9	20.5
Number of floors							
1	4.3	4.5	4.5	4.9	4.8	24.8	34.0
2	5.8	4.4	4.9	5.0	6.6	21.0	25.5
3	10.5	7.6	7.9	8.5	8.2	21.1	26.2
4 to 9	9.4	6.3	6.8	6.8	6.7	22.2	22.4
10 or more	9.8	11.0	10.1	10.0	15.7	35.9	17.5
Elevators and escalators (more than one may apply)							
Any elevators	6.5	4.5	4.6	4.5	4.8	19.3	15.9
1 elevator	7.7	6.0	6.4	6.2	6.5	35.1	33.0
2 to 5 elevators	6.7	5.2	6.0	6.2	6.6	23.3	23.8
6 or more elevators	7.8	8.4	7.2	7.2	9.9	15.2	14.8
Any escalators	28.9	13.7	13.8	12.7	23.8	29.7	32.1
Number of workers (main shift)							
Fewer than 5	5.5	5.9	6.0	6.3	7.9	22.9	34.5
5 to 9	6.1	6.9	8.4	9.4	9.2	27.5	35.2
10 to 19	6.5	7.4	6.1	6.3	8.0	39.8	30.0
20 to 49	6.3	4.8	5.0	5.3	6.1	27.5	34.4
50 to 99	6.7	5.9	7.3	7.4	7.9	41.1	39.8
100 to 249	7.1	5.6	6.1	6.3	7.2	26.5	24.1
250 or more	7.2	6.4	6.0	5.9	9.0	15.4	15.2

Relative standard errors (RSEs) for Table C2. Total energy expenditures by major fuel, 2018

RSEs for all buildings RSEs for total energy expenditures

	Number of buildings	Total floorspace	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	3.9	3.1	2.9	3.0	3.5	16.4	14.5
Weekly operating hours							
Fewer than 40	6.1	6.6	8.3	8.7	10.5	33.7	31.2
40 to 48	6.2	5.1	6.3	6.9	6.6	23.3	29.8
49 to 60	5.2	4.3	4.5	4.4	6.9	20.5	21.8
61 to 84	7.6	5.3	5.8	5.8	6.5	30.8	39.2
85 to 167	8.6	6.2	6.3	6.6	7.8	56.1	21.5
Open continuously	8.1	5.0	4.8	5.0	5.1	15.1	15.2
Ownership and occupancy							
Nongovernment owned	3.8	3.3	3.0	3.2	3.7	18.0	18.4
Owner occupied	4.3	3.3	3.4	3.5	4.3	18.0	21.1
Leased to tenant or tenants	5.5	4.8	4.6	4.8	5.2	26.0	18.4
Unoccupied	20.3	19.2	24.7	27.7	35.7	92.0	51.6
Government owned	9.5	6.0	6.7	6.7	6.4	17.5	19.4
Federal	26.0	16.1	19.6	17.2	20.0	62.7	46.6
State	12.9	11.8	13.4	13.1	11.9	31.8	25.9
Local	10.1	6.0	5.5	5.8	7.7	20.7	17.0
Party responsible for operation of energy systems							
Building owner	4.4	3.2	3.2	3.3	4.0	16.8	14.8
Business owner or tenant	6.5	7.2	6.5	6.8	8.2	30.3	40.1
Property management	20.7	11.7	13.2	13.6	16.3	61.8	38.8
Other	18.8	11.1	10.9	11.4	14.1	67.7	48.0
Provider of direct input on energy-related equipment purchases							
Building owner	4.4	3.1	3.3	3.3	4.0	16.5	14.9
Business owner or tenant	8.9	8.8	8.9	9.3	8.6	35.5	64.2
Property management	25.5	16.2	16.7	16.7	22.9	63.5	58.1
Other	10.5	8.1	7.7	7.8	10.5	79.0	47.8
Number of establishments							
1	4.6	3.6	3.7	3.8	4.1	18.8	19.6
2 to 5	6.0	5.5	5.6	5.7	7.6	23.0	17.2
6 to 10	11.5	7.9	7.9	8.2	9.4	33.8	31.5
11 to 20	18.0	8.9	10.1	9.9	14.3	48.2	44.8
More than 20	18.6	10.1	10.9	10.7	14.8	40.8	25.4
Currently unoccupied	18.7	16.5	21.1	24.2	28.8	88.5	74.7

Relative standard errors (RSEs) for Table C2. Total energy expenditures by major fuel, 2018

RSEs for all buildings RSEs for total energy expenditures

	Number of buildings	Total floorspace	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	3.9	3.1	2.9	3.0	3.5	16.4	14.5
Predominant exterior wall material							
Brick, stone, or stucco	5.3	3.9	4.3	4.2	4.4	24.3	20.5
Concrete (block or poured)	5.3	4.8	4.2	4.4	6.2	26.5	22.1
Concrete panels	12.1	8.4	8.7	9.0	13.2	31.8	26.9
Siding or shingles	7.3	9.3	12.5	13.7	11.1	24.5	55.6
Metal panels	7.6	6.0	7.3	7.7	9.1	27.6	42.1
Window glass	21.3	11.4	12.5	13.2	17.4	19.8	16.4
Other	14.7	13.7	14.5	14.8	17.7	52.5	69.5
Predominant roof material							
Metal surfacing	6.2	5.6	6.7	7.3	7.7	24.9	33.9
Synthetic or rubber	6.0	4.1	4.5	4.8	4.8	22.5	14.7
Built-up	7.7	4.8	5.3	5.1	7.0	28.9	23.8
Slate or tile shingles	10.1	10.1	10.1	10.2	13.7	44.9	30.8
Wooden materials (including shingles)	12.9	17.8	16.9	18.0	20.4	101.6	0.0
Asphalt, fiberglass, or other shingles	6.2	5.6	6.6	7.2	7.3	22.7	18.1
Concrete	20.6	11.9	13.0	13.5	17.5	31.8	46.3
Other	15.6	9.8	14.4	16.0	13.2	50.1	23.4
Roof tilt							
Flat	4.9	3.3	3.4	3.5	4.2	16.7	14.1
Shallow pitch	5.0	4.8	5.1	5.4	5.8	32.5	33.9
Steeper pitch	7.5	5.7	6.8	7.5	7.0	24.2	25.3
Cool roof characteristics (more than one may apply)							
White or reflective coating or paint	5.8	4.4	4.6	4.7	5.3	24.1	25.0
White or reflective tiles or shingles	15.4	10.4	12.7	13.7	13.8	36.5	28.2
Aluminum coating	8.8	9.2	8.8	9.0	11.3	38.2	43.5
Ballasted roof system	14.8	9.5	9.4	9.5	12.4	24.8	19.3
Other cool roof property	29.3	19.2	18.2	18.9	20.9	61.1	29.5

Relative standard errors (RSEs) for Table C2. Total energy expenditures by major fuel, 2018

RSEs for all buildings RSEs for total energy expenditures

	Number of buildings	Total floorspace	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	3.9	3.1	2.9	3.0	3.5	16.4	14.5
Renovations since 2000 (more than one may apply)							
Any type of renovation	5.0	3.4	3.4	3.5	4.2	22.3	14.2
Addition or annex	9.4	6.0	5.3	5.3	7.9	26.3	18.5
Reduction in floorspace	22.2	13.2	14.7	14.8	18.3	69.0	34.4
Roof replacement	6.8	4.3	4.4	4.8	5.7	22.4	14.3
Interior wall reconfiguration	6.0	4.2	4.6	4.5	6.9	21.2	17.6
Window replacement	9.5	5.8	5.9	6.0	7.6	29.0	21.8
HVAC equipment upgrade	7.0	4.2	4.3	4.5	5.1	31.8	13.0
Lighting upgrade	5.9	3.9	3.8	3.9	5.2	27.8	12.9
Electrical upgrade	7.1	5.6	5.1	5.1	7.0	25.0	14.2
Plumbing system upgrade	7.8	5.2	5.3	5.4	6.9	20.9	14.8
Insulation upgrade	9.2	7.8	8.2	8.3	10.5	33.4	21.9
Fire, safety, or security upgrade	6.2	4.4	4.7	4.7	6.2	26.9	14.5
Structural upgrade	13.9	10.2	11.3	11.8	14.2	36.7	27.4
Other	29.5	14.9	13.8	14.2	19.6	76.1	63.9
No renovations	4.3	3.9	4.3	4.5	4.6	18.0	21.2
Buildings constructed 2013 or later	11.9	8.3	7.8	7.9	9.7	39.8	34.7
Energy sources (more than one may apply)							
Electricity	3.9	3.0	2.9	3.0	3.5	16.4	14.5
Natural gas	4.8	3.4	3.0	3.0	3.5	15.3	14.9
Fuel oil	9.7	5.4	5.8	6.1	6.6	16.4	15.6
District heat	14.7	11.4	11.0	10.8	11.9	30.4	14.5
District chilled water	20.1	13.7	14.2	13.5	16.9	40.8	21.9
Propane	10.0	7.6	9.5	10.3	14.0	26.1	30.9
Solar	15.5	11.5	10.9	10.6	13.4	42.3	34.3
Wood, coal, and other	17.3	14.0	14.9	15.8	18.3	40.9	63.5
Space-heating energy sources (more than one may apply)							
Electricity	4.7	3.7	3.8	4.1	4.3	17.7	22.4
Natural gas	5.2	3.6	3.1	3.1	3.8	11.5	18.5
Fuel oil	13.9	11.6	12.8	12.8	14.7	18.3	43.4
District heat	15.4	11.6	11.0	10.7	12.4	32.0	14.6
Propane	13.5	13.1	17.0	16.9	44.3	31.0	105.0
Other sources ^b	21.3	19.6	23.6	23.0	28.7	57.4	97.7
Primary space-heating energy source							
Electricity	6.4	5.5	5.6	5.8	6.7	20.6	59.1
Natural gas	5.5	4.1	3.8	3.8	4.1	11.6	37.0
Fuel oil	16.1	15.3	17.8	16.6	59.3	21.0	0.0
District heat	15.8	12.6	12.0	11.7	13.2	32.4	15.2
Propane	17.5	16.9	25.1	25.0	48.1	92.5	0.0
Other sources ^b	22.4	30.3	26.7	27.3	39.4	60.7	0.0

Relative standard errors (RSEs) for Table C2. Total energy expenditures by major fuel, 2018

RSEs for all buildings RSEs for total energy expenditures

	Number of buildings	Total floorspace	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	3.9	3.1	2.9	3.0	3.5	16.4	14.5
Cooling energy sources (more than one may apply)							
Electricity	3.9	3.0	2.9	3.0	3.4	17.7	14.3
Natural gas	37.3	24.2	17.8	17.6	25.9	64.1	61.2
District chilled water	20.1	13.7	14.2	13.5	16.9	40.8	21.9
Water-heating energy sources (more than one may apply)							
Electricity	4.0	3.6	3.7	4.0	4.3	20.8	16.2
Natural gas	5.5	3.7	3.3	3.4	4.0	14.4	17.0
Fuel oil	24.0	15.4	14.5	14.6	24.1	22.5	31.6
District heat	17.4	12.8	12.2	12.1	14.7	39.8	15.0
Propane	15.8	14.7	27.9	28.7	37.8	68.0	0.0
Cooking energy sources (more than one may apply)							
Electricity	5.7	3.9	4.3	4.5	5.2	14.8	14.3
Natural gas	5.4	3.4	3.4	3.5	3.8	17.8	12.3
Propane	14.8	11.7	13.9	15.5	19.8	32.9	39.0
Energy end uses (more than one may apply)							
Buildings with space heating	4.1	3.0	3.0	3.0	3.6	16.5	14.5
Buildings with cooling	3.9	3.0	2.9	3.0	3.4	17.4	14.9
Buildings with water heating	3.9	2.9	2.9	3.0	3.5	16.8	14.5
Buildings with cooking	5.0	3.1	3.4	3.6	3.8	14.8	12.3
Buildings with manufacturing	11.3	7.9	11.7	12.6	10.4	34.7	50.8
Buildings with electricity generation	7.4	4.4	4.5	4.7	4.8	14.3	15.0
Buildings with lighting	3.9	3.0	2.9	3.0	3.5	16.4	14.5
Percentage of floorspace heated							
Not heated	8.2	10.0	10.4	10.4	27.1	30.1	54.9
1% to 50%	8.5	7.1	7.7	8.1	11.7	40.5	67.0
51% to 99%	6.7	5.3	5.3	5.3	5.7	29.6	17.9
100%	4.1	3.2	3.3	3.3	4.3	17.5	16.8
Percentage of floorspace cooled							
Not cooled	7.1	8.0	16.8	18.7	14.6	41.4	44.8
1% to 50%	5.9	5.2	5.3	5.7	7.5	25.1	40.0
51% to 99%	6.6	5.1	5.3	5.3	6.0	21.8	18.0
100%	4.3	3.5	3.3	3.4	4.1	17.6	20.5

Relative standard errors (RSEs) for Table C2. Total energy expenditures by major fuel, 2018

RSEs for all buildings RSEs for total energy expenditures

	Number of buildings	Total floorspace	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	3.9	3.1	2.9	3.0	3.5	16.4	14.5
Percentage lit when open							
0%	35.1	38.5	77.3	73.7	50.4	0.0	0.0
1% to 50%	6.7	6.0	6.3	6.6	7.9	30.7	31.7
51% to 99%	4.8	3.6	4.0	4.1	4.4	20.2	17.0
100%	4.7	3.8	3.7	3.7	4.8	17.4	21.6
Building never open or electricity not used	11.6	12.1	16.1	18.1	18.9	70.0	74.7
Percentage lit during off hours							
0%	6.5	6.7	7.3	7.8	8.8	24.2	34.7
1% to 50%	3.8	3.0	3.0	3.1	3.8	17.9	16.5
51% to 100%	10.6	6.7	8.0	8.4	6.9	20.7	25.1
Building always open with no off hours	15.2	11.6	12.5	13.1	14.2	32.8	34.3
Electricity not used	16.0	17.6	0.0	0.0	0.0	0.0	0.0
Heating equipment (more than one may apply)							
Packaged heating units	4.0	3.6	3.4	3.5	4.0	16.9	20.6
Furnaces	7.2	5.7	5.8	6.0	6.1	27.8	50.7
Individual space heaters	5.9	4.8	5.4	5.7	7.0	18.2	28.7
Boilers	6.2	4.0	4.2	4.6	4.8	17.1	23.0
Heat pumps	7.7	5.4	5.4	5.4	6.6	31.9	33.4
District heat	15.4	11.6	11.0	10.7	12.4	32.0	14.6
Duct reheat	12.6	7.0	7.6	7.8	9.5	36.8	26.9
Other	46.4	24.1	36.5	38.4	23.6	78.7	97.2
Cooling equipment (more than one may apply)							
Packaged air-conditioning units	4.3	3.4	3.4	3.6	3.6	24.3	13.7
Residential-type central air conditioners	7.6	5.2	5.7	5.9	5.8	38.4	23.9
Individual air conditioners	6.6	5.3	5.8	6.0	6.7	18.1	19.4
Central chillers	9.0	5.0	4.9	4.9	5.1	15.6	17.8
Heat pumps	11.0	6.8	7.1	7.1	9.3	32.4	25.0
District chilled water	20.1	13.7	14.2	13.5	16.9	40.8	21.9
Swamp coolers	12.8	13.1	13.7	13.8	18.1	48.1	47.3
Other	53.2	36.4	42.4	43.2	52.3	41.3	0.0

Relative standard errors (RSEs) for Table C2. Total energy expenditures by major fuel, 2018

RSEs for all buildings RSEs for total energy expenditures

	Number of buildings	Total floorspace	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	3.9	3.1	2.9	3.0	3.5	16.4	14.5
HVAC features (more than one may apply)							
Economizer cycle	5.6	3.9	3.9	4.0	4.6	14.7	13.6
Variable air volume (VAV) system	8.4	4.9	5.1	4.9	5.5	13.9	18.2
Dedicated outside air system (DOAS)	11.0	7.8	8.9	9.8	9.4	33.1	17.2
Demand controlled ventilation (DCV)	8.8	5.5	5.8	6.2	6.4	36.8	24.3
Regular HVAC maintenance	4.2	3.2	3.2	3.2	3.8	18.5	15.0
Building automation system (BAS) controls heating or cooling	6.4	3.7	4.0	4.1	4.2	18.5	15.3
Internet-connected or smart thermostat	12.2	10.5	10.3	10.5	12.5	35.9	61.3
Programmable thermostat	4.7	5.4	5.4	5.4	7.1	31.6	38.2
Main equipment replaced since 2000 (more than one may apply)							
Heating	4.9	3.8	3.7	3.8	4.9	29.0	49.9
Cooling	4.8	4.3	4.6	4.6	6.2	20.5	19.1
Water-heating equipment							
Centralized system	4.4	3.4	3.8	3.8	4.3	13.5	18.9
Distributed system	8.9	6.4	6.3	6.8	6.7	43.0	22.6
Combination of centralized and distributed systems	8.8	5.2	5.8	5.9	6.9	28.5	17.5
Generation technologies (more than one may apply)							
Reciprocating engine generators	8.8	4.8	4.9	5.2	5.3	14.7	16.2
Solar panels	15.4	11.5	11.0	10.8	13.4	43.2	34.5
Other generation technology	21.4	14.4	17.7	18.9	18.5	30.4	33.7
Lighting equipment types (more than one may apply)							
Incandescent	7.8	4.5	4.4	4.5	5.5	19.1	17.0
Standard fluorescent	4.2	3.4	3.3	3.3	3.6	17.3	13.0
Compact fluorescent	5.2	4.2	4.5	4.4	4.7	23.5	19.5
High-intensity discharge (HID)	9.8	7.1	6.5	6.6	8.9	24.8	18.0
Halogen	8.0	4.2	4.4	4.5	6.3	25.8	18.3
LED	3.6	2.9	3.0	3.2	3.6	16.0	12.5
Other	57.3	24.1	26.2	26.0	32.8	70.9	0.0

Relative standard errors (RSEs) for Table C2. Total energy expenditures by major fuel, 2018

RSEs for all buildings RSEs for total energy expenditures

	Number of buildings	Total floorspace	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	3.9	3.1	2.9	3.0	3.5	16.4	14.5
Refrigeration equipment (more than one may apply)							
Any refrigeration	4.1	3.0	2.9	3.0	3.6	17.9	16.1
Walk-in units	5.4	3.4	3.8	4.0	4.2	22.0	15.6
Cases or cabinets	5.8	3.7	3.9	4.0	4.4	23.2	17.1
Large cold storage areas	17.2	11.3	14.9	15.9	16.2	30.9	27.5
Commercial ice makers	5.5	3.5	3.8	3.7	4.3	21.0	16.2
Residential-type or compact units	4.3	3.2	2.9	2.9	3.8	17.4	16.6
Vending machines	6.1	3.8	3.7	3.7	4.3	16.8	18.8
No refrigeration	5.3	5.3	6.5	6.9	8.7	22.8	20.2
Office equipment (more than one may apply)							
Desktop computers	4.0	2.9	2.9	3.0	3.6	16.5	15.0
With multiple monitors	5.0	3.5	3.7	3.7	4.2	14.7	16.8
Laptop computers	4.0	3.0	3.1	3.1	3.9	15.7	15.3
Dedicated servers	4.9	3.3	3.0	3.0	3.7	16.1	16.6
Tablets charged in building	4.4	3.3	3.7	3.6	4.0	13.6	19.7
Large floor-standing office devices ^c	4.4	3.0	3.3	3.3	4.0	16.5	16.1
Smaller desktop office devices ^c	4.1	3.1	3.1	3.2	3.7	16.9	15.5
Interactive whiteboards	8.7	4.5	5.3	5.6	7.1	23.6	12.4
Televisions or video displays	3.8	3.0	3.0	3.1	3.7	14.9	15.0
Point-of-sale devices or cash registers	5.2	3.4	3.7	3.9	4.6	18.9	12.6
Food preparation or serving areas in non-food service buildings (more than one may apply)							
Snack bar, concession stand, or coffee shop	11.0	6.7	6.0	5.9	8.2	15.1	17.8
Fast food or small restaurant	9.4	5.9	5.6	5.6	7.3	29.0	18.3
Cafeteria or large restaurant	7.7	4.6	4.9	5.0	6.4	22.7	14.4
Commercial kitchen or food preparation area	8.5	4.4	4.7	5.0	5.4	20.6	17.7
Small kitchen area	6.5	4.7	5.1	5.1	6.2	20.7	19.9
Separate computer areas (more than one may apply)							
Server closet	5.3	3.4	3.3	3.2	4.2	19.9	17.5
Data center	13.1	6.7	6.5	6.6	8.2	35.6	22.5
Computer-based training room	8.4	4.6	5.2	4.8	6.6	16.7	23.0
Student or public computer center	8.0	4.6	5.1	5.1	7.3	29.3	15.0

Relative standard errors (RSEs) for Table C2. Total energy expenditures by major fuel, 2018

RSEs for all buildings RSEs for total energy expenditures

	Number of buildings	Total floorspace	Sum of major fuels	Electricity	Natural gas	Fuel oil	District heat
All buildings	3.9	3.1	2.9	3.0	3.5	16.4	14.5
Window and interior lighting features (more than one may apply)							
Multipaned windows	4.2	3.2	3.2	3.3	3.8	19.3	15.7
Tinted window glass	4.2	3.4	3.4	3.4	4.2	28.7	14.8
Reflective window glass	7.0	5.6	5.6	5.4	6.7	36.9	38.8
External overhangs or awnings	5.0	4.5	4.2	4.4	4.7	20.5	17.4
Skylights or atriums	7.1	4.5	4.2	4.3	5.6	16.7	17.5
Light scheduling	5.2	4.1	4.3	4.2	4.9	19.3	20.8
Occupancy sensors	6.5	3.8	3.8	3.8	4.9	18.9	15.2
Multilevel lighting or dimming	10.0	6.6	7.2	7.1	7.8	34.9	22.2
Daylight harvesting	12.0	6.3	7.1	7.3	7.9	24.3	18.0
Plug-load control	18.4	12.2	14.5	15.2	12.8	48.0	29.0
Demand responsive lighting	30.7	15.2	12.6	12.5	22.8	69.6	39.0
Building automation system (BAS) for lighting	9.3	5.2	5.2	5.3	7.2	36.8	14.4
Electric vehicle (EV) charging							
Charging stations associated with the building	11.5	7.2	7.8	7.6	10.1	24.2	30.4

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>.

^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.

^cOffice devices refers to any combination of printers, copiers, scanners, or FAX machines.