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## User's Guide to the 2012 CBECS Large Buildings Water Usage Public Use Microdata File

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A public use microdata file of water usage information from the 2012 Commercial Buildings Energy Consumption Survey (CBECS) is available for users to conduct detailed analysis of water usage in large commercial buildings greater than 200,000 square feet. This document provides information on the CBECS design, as well as useful tips and examples to guide users through the proper statistical use of the CBECS water usage microdata.

### **CBECS sample design and sampling error**

The CBECS uses a multi-stage, multi-frame area probability design to select a sample of buildings that estimate energy characteristics, consumption, and expenditures for the national stock of commercial buildings. For detailed information on how the sample was selected, see *How Were Buildings Selected for the 2012 CBECS?* (<http://www.eia.gov/consumption/commercial/2012-cbecs-building-sampling.cfm>).

To produce population estimates and proper measures of sampling error, the weights included in the file must be used. The variable FINALWT in the data file represents the final sampling weight, which is the number of buildings in the population that the observation represents. For example, if FINALWT for a building is 1,000, that building represents itself and 999 other non-sampled buildings. The final sampling weight has been calculated to account for different probabilities of selection and rates of participation in the survey. The jackknife replicate weights, FINALWT1 – FINALWT197, are used to calculate standard errors associated with estimates.

Software packages like SAS/STAT, R, Stata, SUDAAN, and WesVar can process replicate weights to calculate standard errors. Note that while EXCEL can be used to calculate point estimates, it cannot process replicate weights to calculate standard errors for CBECS or other complex sample designs with varying probabilities of selection. EIA recommends calculating standard errors or relative standard errors (RSEs) in conjunction with estimates to account for sampling error. These measures help assess the level of uncertainty (reliability or precision) of the estimates. Examples showing how to calculate estimates in Excel and estimates along with RSEs in SAS, as well as more technical details on sampling error, RSEs, and the jackknife method of standard error estimation, are included in the *User's Guide to the 2012 CBECS Public Use Microdata Files* ([http://www.eia.gov/consumption/commercial/data/2012/pdf/user\\_guide\\_public\\_use\\_aug2016.pdf](http://www.eia.gov/consumption/commercial/data/2012/pdf/user_guide_public_use_aug2016.pdf)).

### **About the water usage microdata file**

Although the CBECS samples commercial buildings of all sizes, the water usage microdata file only contains data for large buildings greater than 200,000 square feet. For details on the collection and publication of this data, see *How was water usage information collected for commercial buildings?* (<http://www.eia.gov/consumption/commercial/reports/2012/water/methodology.php>).

The file contains two water-related variables that are not included in the main CBECS microdata file: WTUSED (water used in the building) and WTCNS (annual water consumption in gallons), along with their associated imputation flags. In addition, the file contains some variables that are also included in the main microdata file, such as the weights variables (FINALWT and FINALWT1 – FINALWT97), the unique identification variable (PUBID), and select building characteristics (for example, PBA, SQFT, and NWKER). Full variable definitions and response codes can be found in the *Variable and response codebook* ([http://www.eia.gov/consumption/commercial/reports/2012/water/xls/large\\_buildings\\_water\\_public\\_use\\_file\\_codebook.xlsx](http://www.eia.gov/consumption/commercial/reports/2012/water/xls/large_buildings_water_public_use_file_codebook.xlsx)).

Data users who want to analyze water usage with variables included in the main CBECS microdata file but that are not in the water usage file can merge the files together by the common ID variable, PUBID. Example SAS code is provided below:

```
* Sort both datasets by pubid;
proc sort data=_2012_public_use_data_aug2016;
  by pubid;
run;

proc sort data=lrgbldg_water_pubuse_102416;
  by pubid;
run;

* Merge by pubid and keep only the observations in the water use
dataset;
data lrgbldg_water_new;
  merge lrgbldg_water_pubuse_102416 (in=water)
  _2012_public_use_data_aug2016;
  by pubid;
  if water;
run;
```

To combine the CSV files using Excel, filter the main CBECS file for cases where SQFTC (square footage category) equals 08, 09, or 10. The filter yields 1,129 cases, the same number of cases in the water usage file. Make sure that both files are sorted by PUBID, then copy the columns containing the additional variables you wish to use from the filtered main CBECS Excel file into the water usage file.

There are 8 vacant and warehouse buildings included in the file that do not use water, indicated by WTUSED='2'.

## Things to consider when using the microdata file

### Publication standards

EIA does not publish CBECS estimates where the RSE is higher than 50 or the count of buildings used for the calculation is lower than 20 (indicated by a Q in the data tables). These RSE and number of building thresholds are also EIA's recommended guidelines for custom analysis using the public use microdata file.

### Tabulations

Results tabulated from the public use microdata file will not exactly match the detailed water tables published as part of the water report, which use unmasked data. For public data users who wish to verify their tabulations, a table is available that uses the masked, public use data on page 5 of this document. This table is also available in Excel format along with the CBECS Large Buildings Water Usage Public Use Microdata Files.

### Imputation variables

WTUSED and WTCNS were imputed for buildings that answered "Don't know" or "Refuse" to the survey questions, as well as those where the reported water consumption data did not pass the quality checks. The Z variables, also referred to as imputation flags, are included in the public use microdata file. Each variable that was imputed has a corresponding Z variable; the Z variable name is simply the name of the variable that was imputed with the letter Z in front of it. For example, the Z variable for the variable WTUSED is ZWTUSED. The imputation flags provide information on the source of the data for the corresponding non-Z variable. EIA recommends using the imputed data to avoid biased estimation.

The imputation flag for WTUSED and its codes are:

- Reported (Z variable='0'). Indicates that the variable's value was reported by the respondent.
- Imputed (Z variable='1'). WTUSED was imputed using hot-deck imputation.
- Estimated (Z variable='2'). This code applies to strip shopping center buildings for which the value was estimated using data from establishment interviews within the building

The imputation flag for WTCNS and its codes are:

- Reported (Z variable='0'). Indicates that the variable's value was reported by the respondent.
- Estimated for strip shopping center (Z variable='1'). This code applies to strip shopping center buildings for which the value was estimated using data from establishment interviews within the building.
- Imputed (Z variable='2'). Water consumption data were imputed using a non-linear regression model.
- Inapplicable (Z variable='9'). Indicates that water was not used in the building.

## **Confidentiality and masking procedures**

The 2012 CBECS was collected under the authority of the Confidential Information Protection and Statistical Efficiency Act (CIPSEA). EIA project staff and EIA contractors are personally accountable for protecting the identity of individual respondents. The following steps were taken to avoid disclosure of information that would reveal the identity of a building on the water usage microdata file.

- No building identification information such as building name, address, city, state, and ZIP code was included.
- Square footage (SQFT): For buildings larger than one million square feet, the numeric square footage was replaced with the weighted average square footage of all responding buildings larger than one million square feet. Separate weighted means were calculated for each of the four Census regions. For buildings between 200,000 and one million square feet, the numeric square footage was rounded to within 5% of the upper limit of the buildings' square footage categories. If the rounded value fell below the lower limit of the category, the value was coded at the lower limit.
- Number of workers (NWKER): For buildings where the number of workers was between 2,500 and 4,999, the reported number was rounded to the nearest 250. For buildings where the number of workers was 5,000 or more, the reported number of workers was replaced with the weighted average number of workers of all responding buildings with 5,000 or more workers.
- Water consumption (WTCNS): The total consumption was randomly perturbed by a small percentage (less than 5%) so that the reported annual totals would not exactly match the actual billing records, and the building would not be identifiable by anyone with access to those records.

## **Table W1 created with the public use data**

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Results tabulated from the public use microdata file will not exactly match the published water consumption table, which uses unmasked data. For public data users who wish to verify their tabulations, Table W1 is available using the masked public use data. The table of estimates starts on the next page and is followed by the RSE table.

## PUBLIC USE FILE VERSION

Table W1. Water consumption in large commercial buildings, 2012

	All buildings over 200,000 square feet using water		Water consumption				Distribution of building-level intensities (gallons per square foot)		
	Number of buildings (thous- and)	Total floor- space (million square feet)	Total consump- tion (billion gallons)	Consump- tion per building (thousand gallons)	Consump- tion per square foot (gallons)	Consump- tion per worker (thousand gallons)	25th per- centile	Median	75th per- centile
<b>All buildings</b>	45	17,609	359	7,926	20.4	18.3	7.9	12.8	21.4
<b>Building floorspace (square feet)</b>									
200,001 to 500,000	37	10,618	203	5,424	19.1	19.6	7.8	12.7	20.7
Over 500,000	8	6,991	156	19,762	22.3	17.0	8.8	16.1	32.7
<b>Principal building activity</b>									
Education	9	2,403	35	4,003	14.6	25.0	7.7	11.7	17.1
Health care	4	2,064	97	23,792	47.0	26.0	26.8	44.5	62.0
Inpatient	3	1,874	94	27,167	50.2	27.3	39.1	46.2	67.0
Outpatient	1	190	3	4,804	15.5	10.4	10.2	11.9	17.7
Lodging	4	1,557	69	18,151	44.5	86.5	32.4	43.0	55.7
Mercantile	6	2,052	25	4,262	12.2	16.7	10.6	12.5	14.2
Retail (other than mall)	Q	Q	Q	Q	Q	Q	Q	Q	Q
Enclosed and strip malls	4	1,563	18	4,769	11.3	16.3	10.6	12.0	12.8
Office	9	4,224	61	6,759	14.5	6.4	10.0	12.3	17.4
Public assembly	3	1,348	35	11,987	26.2	37.1	12.8	17.4	31.3
Public order and safety	1	446	19	14,061	42.6	Q	15.6	53.5	67.7
Religious worship	Q	Q	Q	Q	Q	Q	Q	Q	Q
Service	Q	Q	Q	Q	Q	Q	Q	Q	Q
Warehouse and storage	8	2,918	10	1,227	3.3	10.9	1.5	2.2	2.9
Other	1	250	4	6,955	17.0	26.5	11.0	11.6	18.0
Vacant	Q	Q	Q	Q	Q	Q	Q	Q	Q
<b>Year constructed</b>									
Before 1920	1	566	12	10,631	20.9	24.7	2.3	16.5	21.5
1920 to 1945	2	1,254	27	10,993	21.3	13.6	8.5	13.8	24.0
1946 to 1959	4	1,211	25	6,177	20.3	20.6	7.6	12.7	19.8
1960 to 1969	5	2,036	41	7,554	20.4	18.8	5.2	12.8	22.5
1970 to 1979	5	2,354	53	10,255	22.6	15.9	8.6	12.8	20.4
1980 to 1989	11	3,860	76	7,185	19.6	18.7	7.5	12.4	24.5
1990 to 1999	8	2,973	57	7,528	19.2	20.1	8.2	12.7	19.9
2000 to 2003	3	1,323	21	6,569	15.7	15.5	6.7	10.1	16.3
2004 to 2007	3	1,329	31	8,954	23.1	24.1	8.0	14.0	35.2
2008 to 2012	2	704	17	7,102	24.1	19.5	5.8	15.3	44.5

PUBLIC USE FILE VERSION

Table W1. Water consumption in large commercial buildings, 2012

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	Number of buildings (thous- and)	Total floor- space (million square feet)	Total consump- tion (billion gallons)	Consump- tion per building (thousand gallons)	Consump- tion per square foot (gallons)	Consump- tion per worker (thousand gallons)	Distribution of building-level intensities (gallons per square foot)			
							25th per- centile	Median	75th per- centile	
<b>All buildings</b>	45	17,609	359	7,926	20.4	18.3	7.9	12.8	21.4	
<b>Census region and division</b>										
Northeast	9	3,943	79	8,404	20.0	13.8	9.8	14.2	22.6	
New England	2	800	13	5,592	16.3	18.7	8.3	10.1	17.4	
Middle Atlantic	7	3,142	66	9,333	21.0	13.1	10.0	15.6	23.7	
Midwest	11	4,086	75	6,727	18.5	17.6	6.6	10.3	15.8	
East North Central	9	3,127	59	6,680	18.7	18.5	6.8	10.3	14.0	
West North Central	2	959	17	6,893	17.6	15.0	3.3	11.8	19.1	
South	16	6,232	126	7,994	20.3	21.2	5.6	13.6	23.8	
South Atlantic	9	3,748	77	8,306	20.5	20.5	7.5	13.9	29.8	
East South Central	2	812	16	7,144	20.1	24.0	3.4	14.5	20.8	
West South Central	4	1,671	33	7,776	19.9	21.5	3.4	12.8	18.7	
West	9	3,349	78	8,817	23.3	21.9	9.9	14.1	24.7	
Mountain	3	1,238	31	9,501	25.3	25.9	11.2	16.3	20.8	
Pacific	6	2,111	47	8,413	22.2	19.8	9.3	12.7	30.5	
<b>Number of workers (main shift)</b>										
Fewer than 5	Q	Q	Q	Q	Q	Q	Q	Q	Q	
5 to 9	Q	Q	Q	Q	Q	Q	Q	Q	Q	
10 to 19	Q	Q	Q	Q	Q	Q	Q	Q	Q	
20 to 49	2	664	7	3,062	10.4	91.2	2.1	8.0	15.8	
50 to 99	6	1,905	35	5,693	18.2	82.7	2.3	7.7	30.9	
100 to 249	16	4,922	81	5,012	16.4	33.4	8.8	12.8	17.1	
250 or more	19	9,495	232	12,466	24.4	14.0	10.7	15.9	31.3	
<b>Weekly operating hours</b>										
Fewer than 40	Q	Q	Q	Q	Q	Q	Q	Q	Q	
40 to 48	4	1,309	14	3,229	10.5	12.1	2.3	8.6	14.4	
49 to 60	9	3,363	42	4,448	12.4	9.0	4.7	10.5	15.5	
61 to 84	9	3,599	43	4,617	12.0	10.3	8.2	11.5	14.8	
85 to 167	6	2,299	23	3,660	10.1	16.2	2.6	8.3	15.2	
Open continuously	15	6,825	235	15,265	34.5	29.1	14.5	28.6	48.2	
<b>Energy end uses (more than one may apply)</b>										
Buildings with space heating	44	17,063	349	7,946	20.4	18.1	8.1	12.8	21.5	
Buildings with cooling	45	17,446	358	7,996	20.5	18.3	8.0	12.8	21.7	
Buildings with water heating	44	17,278	357	8,072	20.7	18.4	8.2	12.8	22.5	
Buildings with cooking	30	12,175	306	10,127	25.1	19.7	10.5	15.2	30.8	
Buildings with manufacturing	3	904	8	2,755	8.5	10.1	2.3	2.9	12.8	
Buildings with electricity generation	29	12,450	286	9,900	22.9	18.9	9.5	14.5	29.3	

PUBLIC USE FILE VERSION

Table W1. Water consumption in large commercial buildings, 2012

	All buildings over 200,000 square feet using water		Water consumption				Distribution of building-level intensities (gallons per square foot)		
	Number of buildings (thous- and)	Total floor- space (million square feet)	Total consump- tion (billion gallons)	Consump- tion per building (thousand gallons)	Consump- tion per square foot (gallons)	Consump- tion per worker (thousand gallons)	Distribution of building-level intensities (gallons per square foot)		
							25th per- centile	Median	75th per- centile
<b>All buildings</b>	45	17,609	359	7,926	20.4	18.3	7.9	12.8	21.4
<b>Heating equipment (more than one may apply)</b>									
Heat pumps	6	2,572	66	10,304	25.6	19.0	10.5	14.9	30.9
Furnaces	2	779	14	6,839	17.8	29.6	2.2	14.9	24.0
Individual space heaters	13	5,147	93	7,107	18.0	17.3	5.2	11.9	20.8
District heat	7	3,377	81	11,858	24.1	15.5	11.0	15.6	26.6
Boilers	20	7,402	193	9,796	26.1	21.1	10.0	13.7	30.7
Packaged heating units	25	9,326	168	6,643	18.0	18.9	5.6	12.5	19.9
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q
<b>Cooling equipment (more than one may apply)</b>									
Residential-type central air conditioners	3	751	16	6,216	21.3	38.4	2.2	12.0	14.9
Heat pumps	6	2,479	64	10,290	25.6	18.5	10.8	16.0	30.3
Individual air conditioners	8	3,294	80	9,852	24.3	19.3	8.2	15.1	26.6
District chilled water	5	2,240	55	11,420	24.3	17.8	9.2	15.6	26.6
Central chillers	22	9,239	241	10,830	26.0	18.7	10.1	15.9	35.4
Packaged air conditioning units	28	10,828	204	7,194	18.9	18.9	5.6	12.4	20.4
Swamp coolers	1	399	12	12,070	30.6	35.7	12.0	20.7	38.5
Other	Q	Q	Q	Q	Q	Q	Q	Q	Q
<b>Water-heating equipment</b>									
Centralized system	21	7,906	183	8,713	23.1	21.1	8.2	13.9	30.9
Distributed system	7	2,792	37	5,491	13.4	13.2	2.3	11.5	16.3
Combination of centralized and distributed system	16	6,581	137	8,326	20.8	17.2	9.2	12.8	20.8
<b>Refrigeration equipment (more than one may apply)</b>									
Any refrigeration	43	16,985	355	8,231	20.9	18.5	8.3	12.9	22.6
Walk-in units	27	11,109	287	10,616	25.8	21.1	10.5	14.9	31.4
Cases or cabinets	27	11,052	269	9,787	24.3	19.9	10.2	14.5	30.2
Large cold storage areas	5	1,895	48	10,273	25.2	28.4	11.3	14.5	30.9
Commercial ice makers	31	12,625	304	9,845	24.1	20.0	10.1	14.5	30.2
Residential-type or compact units	36	14,345	293	8,226	20.4	17.3	7.9	12.7	20.8
Vending machines	38	15,171	322	8,373	21.2	18.5	8.5	13.1	23.4
No refrigeration	2	624	4	1,765	6.0	12.0	1.2	2.0	5.6



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Table W1. Water consumption in large commercial buildings, 2012

	All buildings over 200,000 square feet using water		Water consumption						
	Number of buildings (thous- and)	Total floor- space (million square feet)	Total consump- tion (billion gallons)	Consump- tion per building (thousand gallons)	Consump- tion per square foot (gallons)	Consump- tion per worker (thousand gallons)	Distribution of building-level intensities (gallons per square foot)		
							25th per- centile	Median	75th per- centile
<b>All buildings</b>	45	17,609	359	7,926	20.4	18.3	7.9	12.8	21.4
<b>Food preparation or serving areas in non-food service buildings (more than one may apply)</b>									
Snack bar or concession stand	11	5,217	134	12,232	25.7	20.7	10.9	15.8	30.9
Fast food or small restaurant	11	4,708	120	11,306	25.5	20.2	11.7	14.5	30.8
Cafeteria or large restaurant	17	7,545	210	12,314	27.9	20.9	10.1	16.5	36.9
Commercial kitchen/ food preparation area	16	6,550	206	12,778	31.5	29.3	11.2	18.3	44.0
Small kitchen area	8	3,822	96	11,408	25.1	18.8	11.1	15.1	28.6
<b>Separate computer areas</b>									
Data center or server farm	16	7,079	172	11,094	24.3	15.7	10.5	15.9	30.7
<b>Special activities or equipment contributing to water use</b>									
Sterilizers or autoclaves	7	2,918	121	18,427	41.5	25.9	16.8	31.4	54.5
Commercial ice makers	31	12,625	304	9,845	24.1	20.0	10.1	14.5	30.2
Activities with large amounts of hot water required	24	9,692	270	11,195	27.9	24.1	11.5	16.3	37.8
Laundry in building	2	1,054	48	20,300	45.2	72.0	32.2	44.0	58.4
Indoor swimming pool	4	1,422	50	13,207	35.3	58.7	14.9	36.7	45.4

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 20 buildings were sampled.

Notes: • Because of rounding, data may not sum to totals. • See *Guide to the 2012 CBECS Detailed Tables* or *CBECS Terminology* for definition of terms used in these tables and/or comparison of differences with prior CBECS tables. Both references can be accessed from <http://www.eia.gov/consumption/commercial/data/2012/>

Source: U.S. Energy Information Administration, Office of Energy Consumption and Efficiency Statistics, Form EIA-871A of the 2012 Commercial Buildings Energy Consumption Survey.

**PUBLIC USE FILE VERSION****RSEs for Table W1. Water consumption in large commercial buildings, 2012**

	All buildings over 200,000 square feet using water		Water consumption				RSEs not available for percentiles		
	RSEs for number of buildings	RSEs for total floorspace	RSEs for total consump- tion	RSEs for consump- tion per building	RSEs for consump- tion per square foot	RSEs for consump- tion per worker	25th per- centile	Median	75th per- centile
<b>All buildings</b>	6.0	5.6	6.0	4.7	3.6	4.8	P	P	P
<b>Building floorspace (square feet)</b>									
200,001 to 500,000	6.8	6.5	7.5	4.8	4.5	6.3	P	P	P
Over 500,000	9.2	9.3	9.8	6.5	5.4	7.1	P	P	P
<b>Principal building activity</b>									
Education	14.5	14.6	18.0	10.4	8.9	10.0	P	P	P
Health care	14.2	9.2	7.7	9.5	4.2	3.6	P	P	P
Inpatient	14.7	8.7	7.8	10.2	3.2	3.3	P	P	P
Outpatient	39.2	37.6	33.8	17.9	13.5	22.3	P	P	P
Lodging	16.8	17.2	16.5	10.2	5.0	13.9	P	P	P
Mercantile	19.3	15.6	17.2	7.0	4.1	9.6	P	P	P
Retail (other than mall)	30.9	29.3	34.1	9.9	9.8	17.8	P	P	P
Enclosed and strip malls	23.1	17.4	18.8	10.1	3.4	10.8	P	P	P
Office	10.6	11.4	12.7	7.3	4.0	4.8	P	P	P
Public assembly	26.2	24.4	21.4	19.3	13.9	13.5	P	P	P
Public order and safety	34.2	29.5	32.5	23.7	23.5	115.2	P	P	P
Religious worship	52.8	55.3	65.8	40.9	22.7	34.1	P	P	P
Service	47.9	75.2	65.4	31.5	13.1	19.8	P	P	P
Warehouse and storage	14.7	16.1	16.4	9.8	9.6	11.9	P	P	P
Other	36.8	32.7	28.5	29.9	17.6	17.4	P	P	P
Vacant	39.2	42.1	39.9	36.2	37.4	27.6	P	P	P
<b>Year constructed</b>									
Before 1920	27.3	27.4	32.7	24.1	23.1	26.0	P	P	P
1920 to 1945	16.9	13.8	21.1	16.2	16.1	19.6	P	P	P
1946 to 1959	19.4	16.8	15.0	13.8	10.3	19.4	P	P	P
1960 to 1969	15.2	14.5	14.9	11.5	9.1	18.7	P	P	P
1970 to 1979	12.3	10.5	10.0	9.9	6.7	9.4	P	P	P
1980 to 1989	12.5	10.3	11.6	9.7	7.3	11.3	P	P	P
1990 to 1999	12.7	10.8	14.1	10.6	10.1	12.3	P	P	P
2000 to 2003	17.8	18.9	20.5	19.0	12.3	14.5	P	P	P
2004 to 2007	17.2	16.8	20.8	18.8	12.1	12.1	P	P	P
2008 to 2012	35.2	29.3	35.0	26.1	23.3	11.2	P	P	P

**PUBLIC USE FILE VERSION**

**RSEs for Table W1. Water consumption in large commercial buildings, 2012**

	All buildings over 200,000 square feet using water		Water consumption				RSEs not available for percentiles		
	RSEs for number of buildings	RSEs for total floorspace	RSEs for total consump- tion	RSEs for consump- tion per building	RSEs for consump- tion per square foot	RSEs for consump- tion per worker	25th per- centile	Median	75th per- centile
<b>All buildings</b>	6.0	5.6	6.0	4.7	3.6	4.8	P	P	P
<b>Census region and division</b>									
Northeast	11.5	8.6	10.3	8.0	7.1	7.0	P	P	P
New England	27.2	25.3	23.0	19.3	20.4	17.8	P	P	P
Middle Atlantic	12.3	8.8	11.5	8.1	7.1	7.5	P	P	P
Midwest	11.1	9.3	10.7	10.1	7.4	11.1	P	P	P
East North Central	13.4	11.1	13.1	12.2	9.0	14.0	P	P	P
West North Central	14.8	15.7	13.0	15.3	11.5	15.9	P	P	P
South	11.1	11.5	10.3	8.5	6.7	9.7	P	P	P
South Atlantic	15.2	15.4	14.7	11.0	8.1	12.6	P	P	P
East South Central	30.5	39.0	17.8	24.6	32.9	42.6	P	P	P
West South Central	18.9	18.1	18.6	17.0	12.1	12.1	P	P	P
West	15.9	14.3	16.8	9.1	6.8	9.3	P	P	P
Mountain	16.4	23.3	24.4	16.6	7.6	13.7	P	P	P
Pacific	23.5	18.2	23.1	10.1	10.4	13.1	P	P	P
<b>Number of workers (main shift)</b>									
Fewer than 5	40.8	40.4	90.6	83.2	84.3	87.6	P	P	P
5 to 9	41.3	40.2	50.4	42.9	43.1	45.1	P	P	P
10 to 19	27.9	28.8	54.8	43.7	44.6	40.1	P	P	P
20 to 49	22.5	23.1	27.4	18.7	18.1	21.8	P	P	P
50 to 99	14.5	14.4	22.2	17.4	16.2	17.9	P	P	P
100 to 249	11.0	10.0	12.6	8.9	8.5	9.4	P	P	P
250 or more	7.1	7.3	7.6	5.1	3.6	4.8	P	P	P
<b>Weekly operating hours</b>									
Fewer than 40	44.1	43.0	51.0	34.2	25.6	17.0	P	P	P
40 to 48	17.1	15.5	19.0	15.2	12.9	16.3	P	P	P
49 to 60	12.4	11.4	16.4	12.0	10.7	15.0	P	P	P
61 to 84	11.2	8.9	9.9	7.4	4.2	6.9	P	P	P
85 to 167	13.5	15.4	19.1	15.7	14.3	11.5	P	P	P
Open continuously	8.4	7.2	7.0	6.2	4.3	5.7	P	P	P
<b>Energy end uses (more than one may apply)</b>									
Buildings with space heating	6.1	5.7	5.9	4.6	3.5	4.8	P	P	P
Buildings with cooling	6.1	5.7	6.0	4.7	3.6	4.8	P	P	P
Buildings with water heating	6.1	5.7	6.0	4.6	3.5	4.9	P	P	P
Buildings with cooking	7.1	6.0	6.3	5.6	3.4	5.2	P	P	P
Buildings with manufacturing	21.4	18.2	25.9	27.2	22.0	10.2	P	P	P
Buildings with electricity generation	6.9	6.7	6.9	4.9	3.7	5.8	P	P	P

**PUBLIC USE FILE VERSION**

**RSEs for Table W1. Water consumption in large commercial buildings, 2012**

	All buildings over 200,000 square feet using water		Water consumption				RSEs not available for percentiles		
	RSEs for number of buildings	RSEs for total floorspace	RSEs for total consump- tion	RSEs for consump- tion per building	RSEs for consump- tion per square foot	RSEs for consump- tion per worker	25th per- centile	Median	75th per- centile
<b>All buildings</b>	6.0	5.6	6.0	4.7	3.6	4.8	P	P	P
<b>Heating equipment (more than one may apply)</b>									
Heat pumps	15.1	12.9	12.4	10.4	8.2	11.1	P	P	P
Furnaces	21.7	18.0	17.7	16.9	13.0	16.5	P	P	P
Individual space heaters	9.9	9.0	9.2	9.4	7.7	7.9	P	P	P
District heat	15.0	13.7	12.9	11.0	7.7	7.9	P	P	P
Boilers	9.1	7.6	7.9	6.9	4.9	7.1	P	P	P
Packaged heating units	7.4	6.5	7.7	5.8	5.1	6.1	P	P	P
Other	34.3	31.8	33.3	20.3	16.2	7.1	P	P	P
<b>Cooling equipment (more than one may apply)</b>									
Residential-type central air conditioners	29.4	25.1	35.1	28.4	25.7	30.5	P	P	P
Heat pumps	14.9	12.4	12.0	10.8	8.0	12.9	P	P	P
Individual air conditioners	10.9	10.3	12.0	9.6	8.4	12.1	P	P	P
District chilled water	19.8	19.3	15.9	15.1	8.9	11.2	P	P	P
Central chillers	7.8	6.3	6.8	6.0	4.0	6.0	P	P	P
Packaged air conditioning units	7.3	6.0	7.2	5.9	5.2	6.0	P	P	P
Swamp coolers	28.2	23.5	24.0	26.2	16.4	22.7	P	P	P
Other	46.6	37.3	34.9	17.7	10.8	22.0	P	P	P
<b>Water-heating equipment</b>									
Centralized system	9.3	8.8	9.3	6.9	4.8	7.4	P	P	P
Distributed system	11.7	10.9	16.4	13.9	13.6	15.2	P	P	P
Combination of centralized and distributed system	8.1	6.7	7.6	6.7	4.8	6.5	P	P	P
<b>Refrigeration equipment (more than one may apply)</b>									
Any refrigeration	6.1	5.6	6.0	4.7	3.5	4.8	P	P	P
Walk-in units	7.4	6.2	6.5	5.8	3.5	5.8	P	P	P
Cases or cabinets	7.9	6.9	6.9	5.8	4.1	6.3	P	P	P
Large cold storage areas	17.3	16.2	14.5	15.3	10.2	16.6	P	P	P
Commercial ice makers	7.3	6.1	6.4	5.5	3.8	5.4	P	P	P
Residential-type or compact units	6.4	6.1	5.9	5.1	3.7	4.9	P	P	P
Vending machines	6.5	6.0	6.2	4.9	3.8	5.3	P	P	P
No refrigeration	22.3	21.5	25.7	24.1	22.4	16.9	P	P	P

**PUBLIC USE FILE VERSION**

**RSEs for Table W1. Water consumption in large commercial buildings, 2012**

	All buildings over 200,000 square feet using water						Water consumption		
	RSEs for number of buildings	RSEs for total floorspace	RSEs for total consumption	RSEs for consumption per building	RSEs for consumption per square foot	RSEs for consumption per worker	RSEs not available for percentiles		
							25th percentile	Median	75th percentile
<b>All buildings</b>	6.0	5.6	6.0	4.7	3.6	4.8	P	P	P
<b>Food preparation or serving areas in non-food service buildings (more than one may apply)</b>									
Snack bar or concession stand	9.5	9.3	10.1	8.1	4.8	8.1	P	P	P
Fast food or small restaurant	11.5	8.4	9.0	10.5	5.9	8.9	P	P	P
Cafeteria or large restaurant	7.8	6.9	6.8	6.6	4.2	6.6	P	P	P
Commercial kitchen/food preparation area	8.9	7.8	7.6	7.3	4.7	7.2	P	P	P
Small kitchen area	9.9	10.4	11.0	9.2	6.2	11.2	P	P	P
<b>Separate computer areas</b>									
Data center or server farm	8.9	7.9	8.3	6.8	4.8	6.5	P	P	P
<b>Special activities or equipment contributing to water use</b>									
Sterilizers or autoclaves	12.0	8.6	8.3	8.0	5.0	6.6	P	P	P
Commercial ice makers	7.3	6.1	6.4	5.5	3.8	5.4	P	P	P
Activities with large amounts of hot water required	8.4	7.3	7.1	6.1	4.0	6.9	P	P	P
Laundry in building	20.2	21.3	19.1	14.0	6.5	13.5	P	P	P
Indoor swimming pool	15.8	16.9	17.9	12.8	9.5	12.4	P	P	P