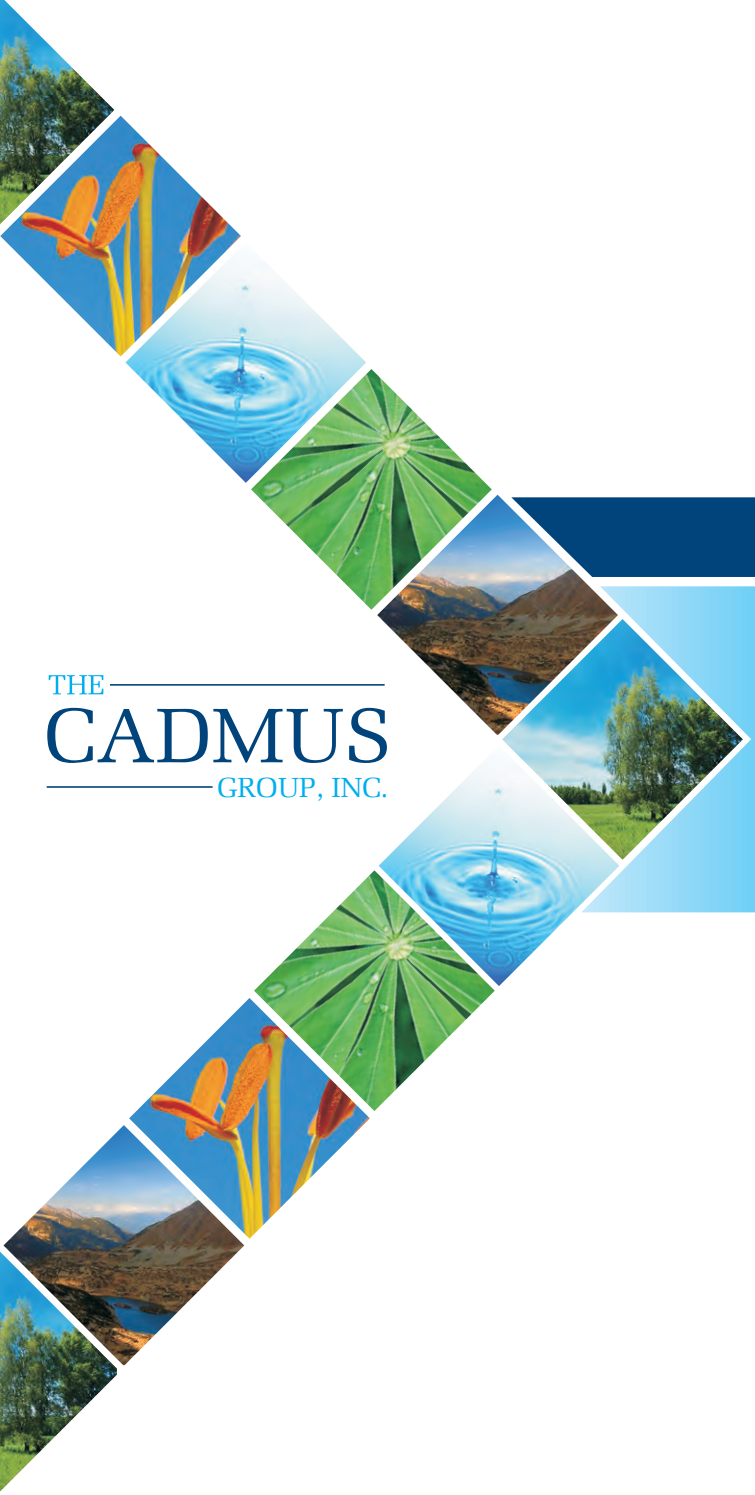

THE CADMUS GROUP, INC.

NORTHWEST COMMERCIAL BUILDING STOCK ASSESSMENT

FINAL REPORT

December 21, 2009

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Acknowledgements

We wish to thank the sponsors of the project and the advisory group, particularly David Cohan of the Northwest Energy Efficiency Alliance, Charlie Grist of the Northwest Power and Conservation Council, Lauren Gage of Bonneville Power Administration and Phil Degens, the Energy Trust of Oregon.

We are indebted to our utility sponsors Gurvinder Singh, Puget Sound Energy, Mike Darrington, Idaho Power Company, Jon Powell, Avista, Nancy Philipp, Benton PUD, Larry Blaufus, Clark PUD, Bob Lorenzen, EWEB, Dennis Pearson, Seattle City Light, Rich Arneson, Tacoma Power, Jill Steiner, Snohomish PUD, Katherine Barnard, Cascade Natural Gas Corporation, and Byron Defenbach, Intermountain Gas Company. Their guidance and assistance in the data collection substantially enhanced the availability and quality of the information collected in this study.

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1. Executive Summary

The Commercial Building Stock Assessment (CBSA) study, completed in 2003, was a unique effort to characterize the physical and energy-use characteristics of commercial facilities in the Pacific Northwest by integrating and updating information from several previous regional data collection efforts. The study's resulting database has served as a valuable resource for regional energy planners and researchers.

The 2003 CBSA sample was compiled from several previous regional surveys conducted between 1986 and 1999. In total, the database included 1,157 commercial facilities, which were divided into three cohorts based on construction year: pre-1987, 1988–1994, and 1995–2001.

NEEA contracted The Cadmus Group, Inc. (Cadmus) to update and expand upon the previous CBSA study. The current CBSA had three objectives:

1. To expand the original 2003 CBSA by integrating data from other surveys of commercial buildings completed in the region.
2. To fill in data gaps in the 2003 CBSA database by expanding the samples, notably for buildings built during the 1999–2000 period. To fulfill this objective, Cadmus conducted surveys of 80 additional sites in the 1999–2000 cohort and 15 rural sites to fill the identified data gaps.
3. To update information from the 2003 study, with a focus on buildings with incomplete or missing data. This objective was met by updating survey information for approximately 500 sites in the original sample through detailed technical audits, walk-in audits, and drive-by surveys.

Study Methodology

At the outset of the study, Cadmus characterized the actual regional distribution of commercial floor space (square feet) by building type, location, size, and vintage based on data available from CBSA and RW Dodge (Dodge) data through 2005.[1] A supplemental sample consisting of 80 to 100 sites was allocated to fill in those data gaps. Based on the distribution of sties in the CBSA database, the supplemental sample focused on buildings built between 1999 and 2000, a period of intense commercial construction activity in the Northwest. The sample was drawn from Dodge data on 1999–2000 construction starts for each state and for the region as a whole.

A majority of this study, however, was a resurvey of sites from the 2003 CBSA. Buildings in the CBSA database were sorted into two groups based on the depth of information available for each building. Sites with crucial data on lighting power density (LPD), main HVAC, and square footage were categorized as "Complete." Sites lacking these crucial data points were classified as "Incomplete." The data collection activities were designed to collect as much data as possible on as many sites as the budget permitted, with a priority given to the supplemental sample and

[1] Dodge is a database of new construction starts in each year developed from local building permits, and tracks the total square footage added from new buildings or additions for individual buildings by building type in each county.

collecting data on buildings with "incomplete" data. To fulfill this purpose, the data collection process incorporated a sequence of methods, including telephone surveys, drive-bys, walk-in audits, and detailed audits. In addition to site visits, Cadmus collected electric and natural gas billing histories for the majority of sites in the CBSA database to assist with EUI estimation.

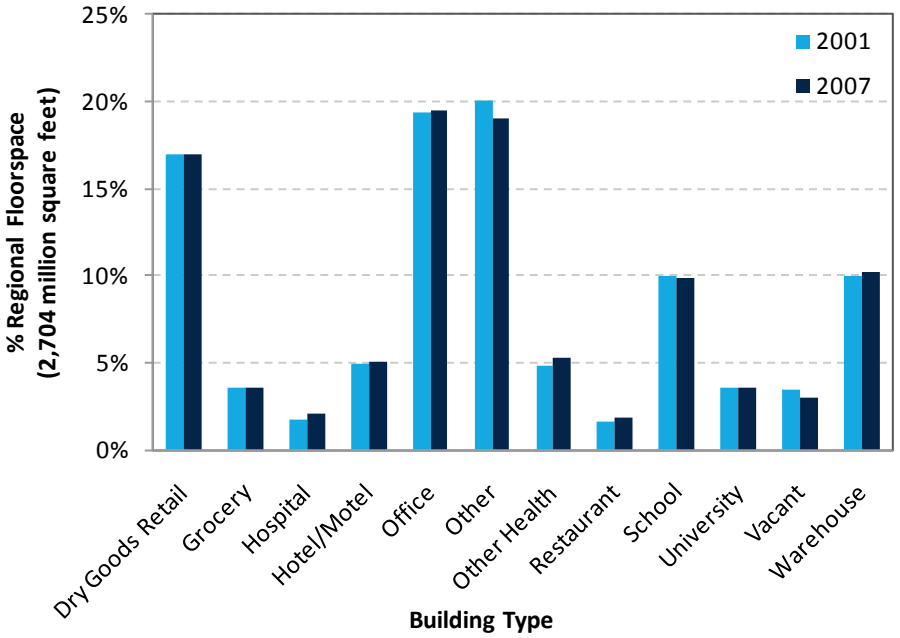
At the conclusion of all database augmentation and fieldwork, the CBSA database contains information on 2,061 buildings. Cadmus used building start and construction data to scale the regional population to 2007 totals, accounting for floor space added and demolished. Cadmus used the population estimates to develop case weights for the CBSA sample, based on building type, building size, and cohort.

Key Findings

Total Pacific Northwest commercial floor space is estimated at 2.7 billion square feet, compared with 2.4 billion square feet in 2001 and 1.7 billion in 1987. The change in floor space represents a 13% increase from 2001 and a nearly 60% increase over 1987 commercial floor space.

Floor space by building type is shown in Figure 1. Office and buildings account for the largest share of floor space; the distribution of building types is nearly identical to the distribution observed in 2001.

Figure 1. Floor Space by Building Type



Regional floor space categorized by building size shows: 28% of regional floor space is in buildings with 100,000 to 499,000 square feet; 23% is in buildings with 5,000 to 19,000 square feet; and 19% is in buildings with 20,000 to 49,000 square feet. A majority of regional floor space was constructed before 1988, though 16% of floor space was constructed between 1995 and 2001, and another 13% was constructed between 2002 and 2007.

Heating and Cooling Equipment

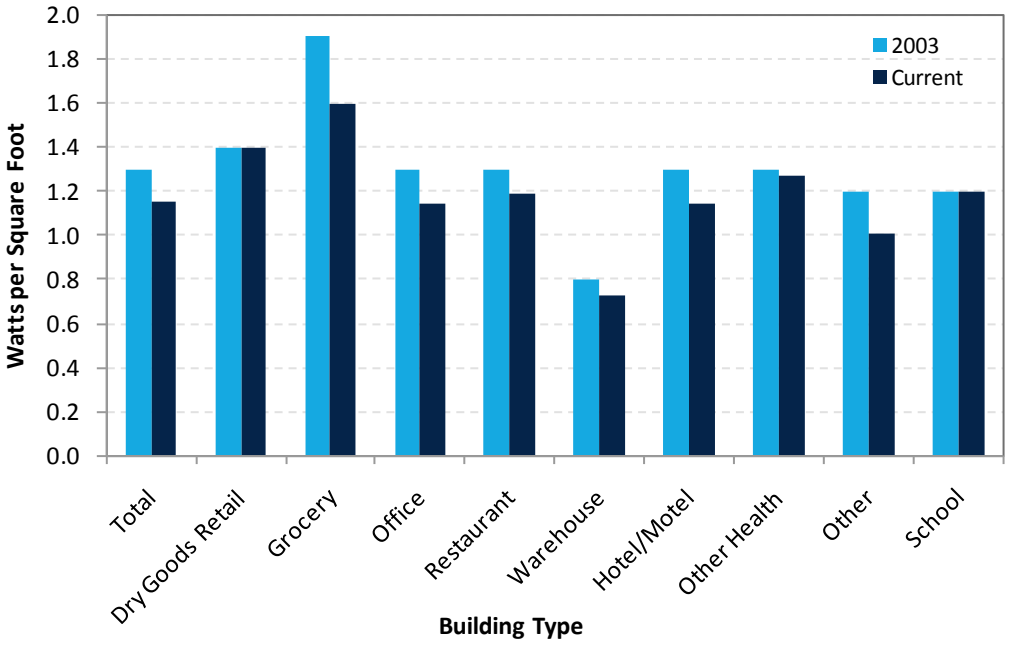
The predominant heating fuel for regional heated commercial floor space is natural gas (68% of heated floor space). This is a slight increase over the 2001 CBSA natural gas saturations. Packaged heat and DX cooling are the predominant systems serving the commercial conditioned floor space (35%), followed by boiler/chiller combination systems (16%). HVAC distribution systems are dominated by constant volume air distribution system (62% of regional floor space). Variable volume systems serve approximately 16% of regional floor space.

Lighting

Overall, lamp type composition and lighting power density have changed regionally. T8 lamps are the predominant lamp type, and T8 installations have increased significantly since 2003. While T12 installations have gone down, they still account for 35% of fluorescent lighting installed in regional commercial buildings. Predominantly, lighting is controlled manually; however, the saturation of manual controls has decreased since the 2003 study, while occupancy sensors, timers, and energy management system saturations have increased.

Indoor LPD is shown in Figure 2. The average regional interior lighting power density is 1.15 watts per square foot, compared to 1.3 watts per square foot in 2003.

Figure 2. Indoor Lighting Power Density by Building Type

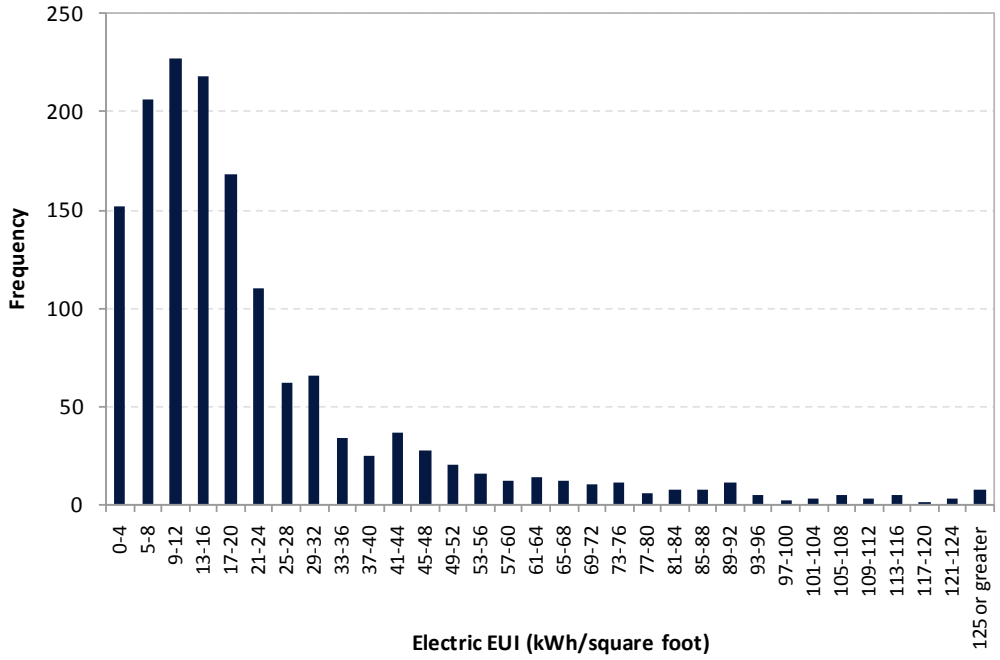


Energy Use Intensities

Energy Use Intensity (EUI) is the ratio of total energy use to total floor space for a given building. Electric EUIs were calculated for 73% of buildings, and natural gas EUIs were calculated for 59% of all CBSA buildings, or 73% of buildings that use natural gas as a fuel source.

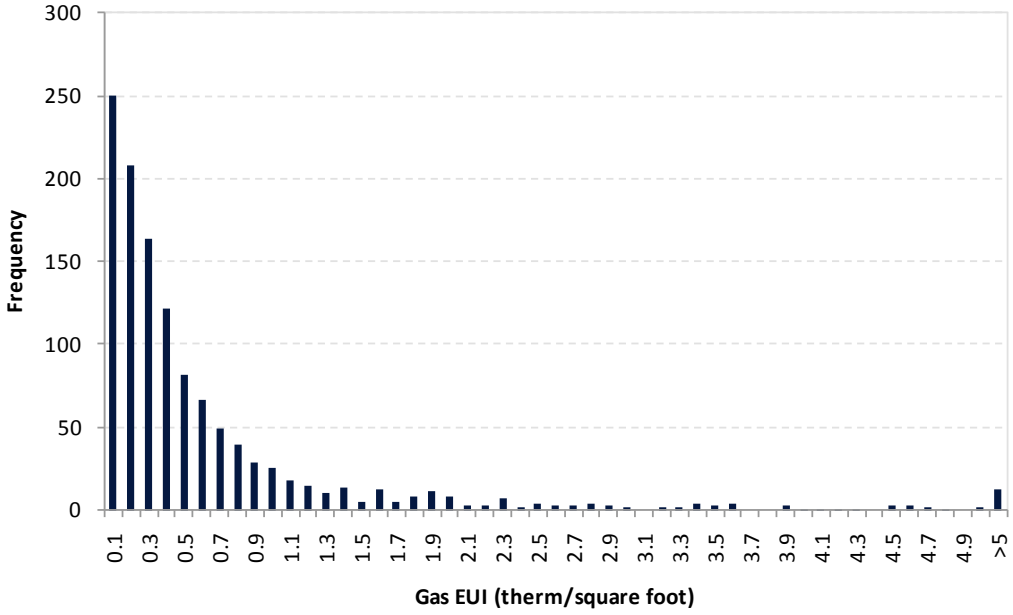
Northwest commercial buildings had an average EUI of 17 kWh/square foot, as shown in Figure 32. This value is a slight increase over the average 2003 study's EUI of 16 kWh/square foot. Groceries and restaurants have the highest EUIs in the commercial sector. Overall, EUIs vary widely from building to building; thus, the mean is not always the most appropriate representation of data. Figure 3 shows a distribution of the electric EUIs.

Figure 3. Distribution of Electric EUIs



Overall weather-normalized annual natural gas EUI was 0.46 therms per square foot. This is similar to 2003 findings, where the overall natural gas EUI was 0.49 therms per square foot. Restaurants have the highest gas EUI, at 2.3 therms per square foot; however, this EUI has dropped considerably since 2001. Offices, warehouses, and retail have the lowest natural gas EUIs. Figure 4 shows a distribution of the natural gas EUIs. Most EUIs are 0.5 therms per square foot or less.

Figure 4. Distribution of Natural Gas EUIs



2. Introduction

Background

This report summarizes the research findings characterizing the commercial building stock in the Pacific Northwest. The research was intended to update and augment the Commercial Building Stock Assessment (CBSA) study completed in 2003. The 2003 study was a unique effort to characterize the physical and energy-use characteristics of commercial facilities in the Pacific Northwest by integrating and updating information from several previous regional data collection efforts. The study's resulting database has served as a valuable resource for regional energy planners and researchers.

The 2003 CBSA sample was compiled from surveys conducted between 1986 and 1999. In total, the database included 1,157 commercial facilities, which were divided into three chronological cohorts, based on the year they were constructed:

- Cohort 1 (pre-1987)
- Cohort 2 (1988–1994)
- Cohort 3 (1995–2001)

The 2003 CBSA study updated as much of the information in these surveys as possible through a combination of data collection approaches, including:

- Detailed technical audits
- Walk-in surveys
- Telephone surveys
- Drive-by surveys

Extensive technical data were compiled for at least two-thirds of the facilities in the three cohorts, providing reasonably detailed information on key structural characteristics, energy systems, and components existing at the time of the study.

2008 CBSA Study

In late 2007, the Northwest Energy Efficiency Alliance (NEEA) retained The Cadmus Group, Inc., (Cadmus) and Ecotope to update the CBSA database. This study had three objectives:

1. To expand the 2003 CBSA database by integrating data from other surveys of commercial buildings completed in the region since that time. These surveys consisted of the following:

- 2007 survey of 347 new construction facilities sponsored by NEEA;[2]
- 2007 survey of 105 facilities in Snohomish County sponsored by Snohomish PUD;
- 2008–2009 survey of 80 commercial buildings in Puget Sound Energy (PSE) territory conducted to augment PSE's share of the CBSA sample;
- 2008–2009 survey of 50 commercial buildings in Idaho Power (IPC) territory conducted to augment IPC's share of the CBSA sample; and
- 1995 survey of 260 facilities in Portland General Electric (PGE) service area. Pre-1988 PGE sites were not included in the 2003 study because they were not in the site visit sample. However, in the current 2007 study, these buildings were included in the site visit sample, and were updated where possible.

2. To fill data gaps in the 2003 CBSA database by expanding samples, notably for buildings built in the 1998–2001 period. To fulfill this objective, Cadmus conducted surveys of 80 additional sites in the 1998–2001 cohort and 15 rural sites to fill the identified data gaps.
3. To update information from the 2003 study, with a focus on buildings with incomplete or missing data. This objective was met by collecting survey information on 500 sites in the original sample through detailed technical audits, walk-in audits, and drive-by surveys.

Figure 5, on the following page, provides an overview of the CBSA database augmentation.

About the Updated Database

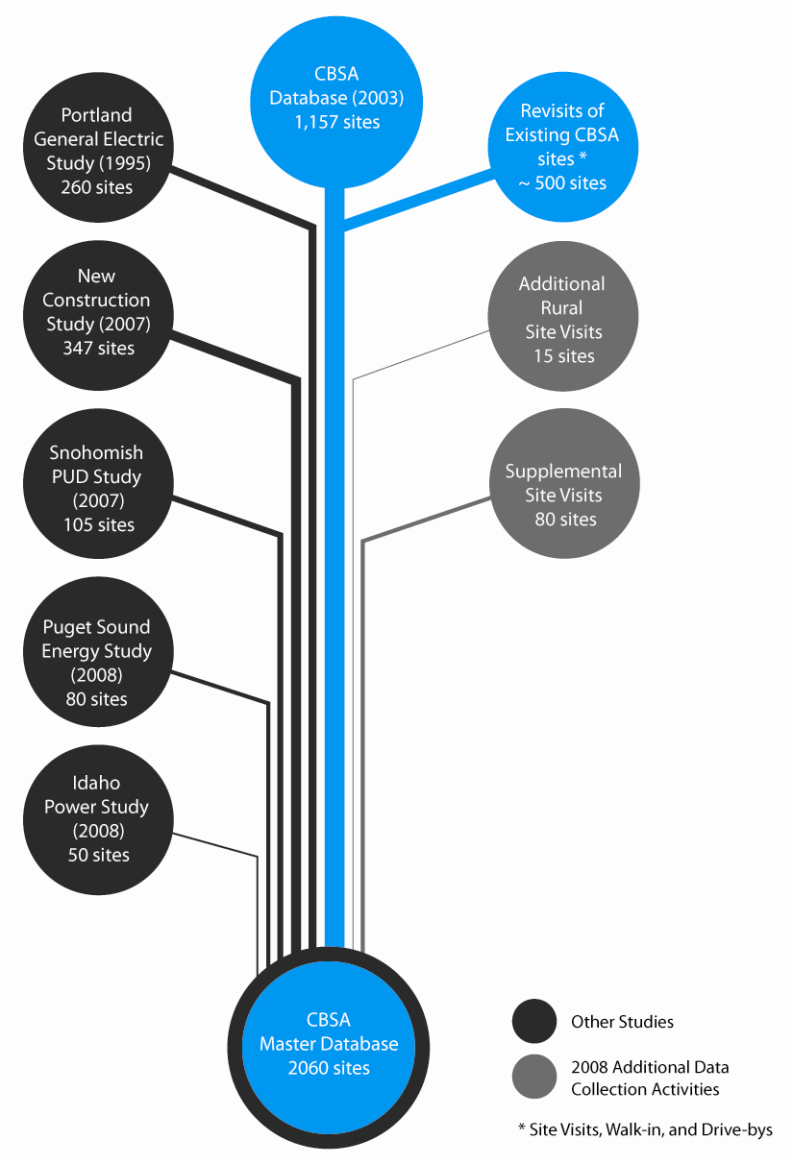
The current updated database includes information, in varying degrees of detail, on 2,061 buildings throughout the Northwest. This database has already proven valuable in the creation of the NW Power and Conservation Council's 6th Power Plan, and provides important, new information critical for various regional planning and policy development initiatives, including:

- Conservation potential studies, integrated resource planning, and energy-efficiency program design activities for regional utilities.
- Regional assessments of trends in energy use and energy use intensity in the commercial sector, and determining the effects of normal market forces on these trends (non-programmatic conservation).
- Baseline data for future energy efficiency and program evaluations.

To facilitate this, the current database will be made available online to allow easy access for the region's utilities, planners, and researchers.

[2] Northwest Energy Efficiency Alliance. Baseline Characteristics of the 2002-2004 Nonresidential Sector: Idaho, Montana, Oregon, and Washington. Ecotope. July 24, 2008.

Figure 5. 2008 CBSA Database Augmentation



Guide to This Document

Summaries of the sampling, data collection, and analysis activities are presented in Chapter 3, followed by a summary of the key findings in Chapter 4. Additional information is included in the following Appendices:

- Appendix A – Gap Analysis Summary
- Appendix B – Data Collection Form
- Appendix C – Detailed Building Characteristic Summary Tables
- Appendix D – EUI Summary Tables
- Appendix E – Map of Regional Weather Zones

3. Study Methodology

This chapter provides information on the methodology used for developing the samples, data collection process, calculation of case weights, and estimating energy use intensity (EUI) values.

Sample Disposition

The 2008 Commercial Building Stock Assessment (CBSA) study consisted of incorporating other commercial building stock surveys into the database (an overview of this activity is shown in Figure 5), filling data gaps, and updating the 2003 CBSA database. The sample frame development for the latter activity is described below, followed by a description of the final sample of the current CBSA database.

2003 CBSA

The 2003 CBSA database was the sample frame for site visits in the current study. This sample frame consisted of 1,157 2003 CBSA sites and an additional 260 sites from the 1995 PGE study, for a total of 1,416 sites. The distribution of the sample frame by state is shown in Table 1.

Table 1. 2003 Sample Disposition

State	*Sample*[1]
Idaho	105
Montana	47
Oregon	632
Washington	630
Total	1416[1]

[1]Includes two sites in Wyoming

Buildings in the CBSA sample (Table 1) were divided into two groups, based on the depth of information available for each building. Buildings with crucial data on lighting power density (LPD), main HVAC system, and floor space (ft^2) were categorized as "Complete." Those lacking these crucial data were classified as "Incomplete." An attempt was made to update the data for as many of the buildings as possible, though higher priority was given to the sites categorized as "Incomplete" in the 2003 study.

Cadmus' Snohomish PUD commercial building survey and Ecotope's 2002–2004 Non-Residential Baseline Survey were relatively recent and did not need to be revisited. Data from those surveys were mapped directly into the CBSA database.

Supplemental Sample

At the outset of the study, Cadmus characterized the actual regional distribution of commercial floor space (square feet) by building type, location, size, and vintage, based on data available from CBSA and Dodge data through 2005. By comparing floor space distributions in the CBSA sample to the regional floor space distributions, we were able to identify data gaps in the CBSA database. Appendix A contains tables that summarize this gap analysis. A supplemental sample of 80 to 100 sites was allocated to fill in those data gaps, with a focus on buildings built between 1999 and 2000, a period of intense commercial construction activity in the Northwest.

In developing the population for the supplemental sample, we screened the RW Dodge (Dodge) database to identify 1999–2000 construction starts in each of the four states in the Northwest. Dodge is a database of new construction starts in each year developed from local building permits, and tracks the total square footage added from new buildings or additions for individual buildings by building type in each county.

The sample frame was stratified using the Dalenius-Hodges technique, which divided the population into three strata regardless of state boundaries. The strata were based on building size as follows:

- Strata 1 = buildings <25,000 square feet
- Strata 2 = buildings between 25,000 square feet and 125,000 square feet
- Strata 3 = buildings >125,000 square feet.

The population was then randomized, and a sample frame was drawn for each strata. Table 2 summarizes this sample by strata and state.

Table 2. Supplemental Sample

	Strata			
State	**1**	**2**	**3**	**Total**
ID	5	3	5	13
OR	12	9	5	26
WA	12	17	19	48
Total	29	29	29	87

Overall, we conducted 81 site visits for the supplemental sample. The shortfall of six buildings relative to the sample design occurred because, for buildings in stratum 3, the contact list contained 149 buildings, and we were only able to recruit 22 buildings. Table 3 provides a summary.

Table 3. Site Visits Completed

	Strata			
State	**1**	**2**	**3**	**Total**
ID	7	2	2	11
OR	7	8	10	25
WA	16	19	10	45
Total	30	29	22	81

In addition to the supplemental sample, Cadmus examined the representation of buildings located in rural areas. Table 4 shows the percent of floor space for rural sites (as defined by the U.S. Department of Agriculture, USDA) in the CBSA sample is less than the expected rural population floor space. Buildings located in rural areas represented 29% of the population's floor space and only 13% of the sample floor space. To increase rural floor space, Cadmus conducted an additional 15 site visits in areas classified as rural to help address this discrepancy. Because there was no easily accessible list of commercial buildings located in rural areas, an auditor drove out to rural areas in Oregon and Washington, and recruited 15 sites for participation.

Table 4. Urban/Rural Comparison[1]

	# of Building in Database	Sample Floor Space	Population Floor Space	% Sample Floor space	% Population Floor space
All	1157	89,158,452	2,365,863,747	--	--
Rural	332	11,993,983	689,653,515	13%	29%
Urban	835	77,164,469	1,676,210,232	87%	71%

[1]Based on USDA definition of Rural

Final CBSA Database

The final sample disposition of the CBSA database, by state and building type, is shown in Table 5. Sample size and sample floor space are provided as well as population floor space for comparison. The disposition of the final sample is by cohort and building type is shown in Table 6.

Table 5. Database Distribution by State and Building Type

State	Floor space (millions of square feet) and Sample Size	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Other Health	Hotel/Motel	Other	School	University	Vacant
ID	Population SF	45.7	7.3	36.4	1.1	23.8	2.1	11.6	11.4	46.0	41.8	19.7	7.1
	Sample SF	2.2	0.4	1.1	0.0	1.1	0.1	0.4	0.3	0.7	1.6	0.8	0.2
	# of buildings	50	12	27	5	19	5	12	6	33	42	9	8
MT	Population SF	9.0	2.2	14.1	0.3	8.7	3.9	3.1	4.2	20.6	6.5	13.6	0.4
	Sample SF	0.7	0.0	0.2	0.0	0.3	0.2	0.2	0.2	0.4	0.3	0.4	0.0
	# of buildings	13	1	12	1	10	7	3	4	12	8	7	2
OR	Population SF	189.3	42.1	224.6	33.0	100.6	39.7	40.6	47.7	103.8	95.9	6.2	26.1
	Sample SF	9.1	2.0	17.4	0.4	5.1	5.9	2.1	1.6	5.5	5.5	0.4	0.7
	# of buildings	123	69	167	74	60	35	27	19	78	70	7	24
WA	Population SF	214.4	45.9	250.5	17.2	142.4	10.6	86.3	72.1	343.0	123.7	58.2	49.1
	Sample SF	11.6	2.5	29.8	0.2	7.7	3.4	3.1	8.2	6.5	7.9	2.0	1.0
	# of buildings	181	69	195	50	93	12	52	41	142	91	54	22
Total	Population SF	458.5	97.5	525.5	51.6	275.5	56.2	141.6	135.3	513.5	267.9	97.8	82.6
	Sample SF	23.6	4.9	48.5	0.7	14.2	9.6	5.8	10.3	13.0	15.4	3.5	1.9
	# of buildings	366	151	400	130	182	59	94	70	265	211	77	56

Table 6. Database Distribution by Cohort and Building Type

Cohort	Floor space (millions of square feet) and Sample Size	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Other Health	Hotel/Motel	Other	School	University	Vacant
Pre-'87	Population SF	319.3	56.5	346.4	41.9	117.6	44.3	68.0	93.5	290.8	153.2	73.7	71.3
	Sample SF	9.0	1.6	33.7	0.4	2.3	7.3	2.3	6.4	6.2	6.0	1.5	1.1
	# of buildings	159	78	209	78	72	33	34	33	103	77	42	40
'88-'94	Population SF	35.9	12.5	35.8	2.9	30.0	-	14.9	7.6	56.0	32.6	3.8	7.2
	Sample SF	3.3	1.0	5.1	0.1	1.7	-	0.4	0.4	1.9	2.2	0.2	0.4
	# of buildings	63	28	82	31	23	-	14	5	50	30	4	14
'95-'01	Population SF	50.9	21.5	78.1	3.9	76.5	2.6	26.0	20.3	102.0	45.0	8.9	4.1
	Sample SF	4.7	1.2	6.4	0.0	4.5	0.1	0.9	1.2	3.1	2.8	0.9	0.5
	# of buildings	63	27	70	11	46	3	21	22	72	40	15	2
'02-'07	Population SF	52.4	7.0	65.2	2.8	51.4	9.3	32.8	13.9	64.7	37.1	11.3	-
	Sample SF	6.6	1.1	3.4	0.0	5.8	2.3	2.2	2.3	1.9	4.4	0.9	-
	# of buildings	81	18	39	10	41	23	25	10	40	64	16	-
Total	Population SF	458.5	97.5	525.5	51.6	275.5	56.2	141.6	135.3	513.5	267.9	97.8	82.6
	Sample SF	23.6	4.9	48.5	0.7	14.2	9.6	5.8	10.3	13.0	15.4	3.5	1.9
	# of buildings	366	151	400	130	182	59	94	70	265	211	77	56

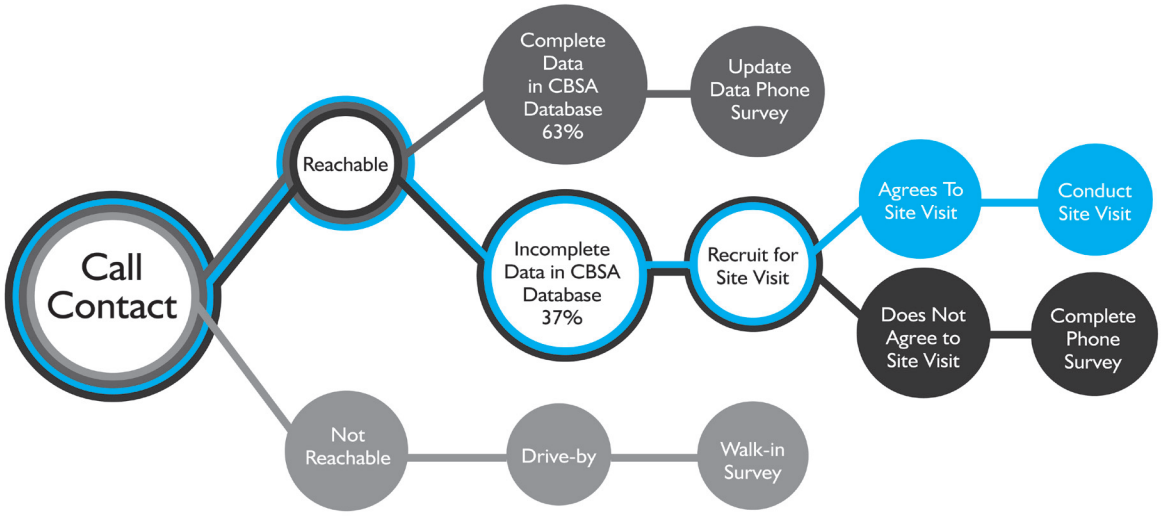
Data Collection

The data collection activities were designed to collect as much data as possible on as many sites as the budget permitted, with priority given to the supplemental sample and to collecting data on buildings with incomplete data. To achieve this, the data collection process incorporated a variety of methods, including:

- Telephone surveys—to speak with representatives at inaccessible sites (due to scheduling or security issues).
- Drive-bys—to confirm the presence and primary use of buildings.
- Walk-in audits—to gather information on buildings where scheduled appointments were not possible.
- Detailed audits—to collect complete building characteristics with arranged appointments.

Figure 6 provides an overview of the recruitment process.

Figure 6. Building Recruitment Flow Chart



This approach also ensured valid data would become available on demolition rates, which are essential for calculating case-weights. The supplemental sample data collection was conducted in Summer 2008, with the revisits occurring from Fall 2008 through Spring 2009.

Surveys and Recruitment

In preparation for contacting sites, the existing site address and contact information fields in the CBSA database and supplemental sample were checked thoroughly for data quality and format consistency. Cadmus conducted research to determine the best possible number to call before attempting contact, which frequently resulted in multiple phone numbers associated with each site. These numbers were prioritized within the contact lists; so the most current number was called first, followed by one to three additional numbers where available. (In some instances, these were numbers for the original architects or contractors.) It was also expected calling would result in additional contacts as the survey caller navigated through phone trees, reception, and/or chains of command.

Once calling began, we categorized buildings into reachable and unreachable contacts. Reachable contacts were defined as "calls answered by a person with knowledge about the site address in question." These contacts could result in an update survey, a site visit recruit, or a refusal. An unreachable contact included any contact that did not result in a survey or scheduled site visit (or that resulted in a refusal). In most instances, the unreachable contact was a site where a working phone or knowledgeable contact could not be found. At least four attempts were made for each site before marking them as "unreachable."

Three survey instruments were designed to screen contacts based on the need to update existing data, collect new data, or recruit the contact for a site visit. For buildings designated as having complete data, an update survey was designed to collect information on any changes that had occurred to the building since the previous study. Sites designated as having incomplete data were first recruited for a site visit. If the building contact refused a site visit, the survey caller

would then attempt to conduct a phone survey to collect important buildings characteristics. Ultimately, after receiving a few responses, we stopped conducting this survey, as the quality of information was questionable.[3] Instead, the priority was fully placed on the recruitment of site visits.

Site Visits and Walk-in Audits

Both buildings where representatives either agreed to site visits during recruitment calls, and those that could not be reached during phone screening were considered eligible for a site visit. Site visits were scheduled where possible. For some corporate and chain stores, corporate authorization was obtained before attempting site visits. Because building managers and owners are difficult to contact, many of the site visits were conducted via "walk-in" audits, where the auditor dropped by the building to collect building characteristics or to arrange a formal site visit time with the site contacts.

A detailed data collection form was designed consistent with the original CBSA to allow integration of new data into the CBSA database. A Web-based tool also was developed to mirror the detailed data collection form for ease of data entry and subsequent analysis. A copy of the data collection form is located in Appendix B.

A primary consideration in designing data collection forms was meeting specific data requests from the Northwest Power and Conservation Council (NWPCC). The NWPCC provided a list of high-priority data elements needed for modeling purposes. This list consisted of elements for which existing data were scarce in various building types, with a focus on retail and grocery sectors.

Auditors conducting site visits for the projects were trained by Cadmus' lead engineer before going into the field. During the training, the auditors reviewed the data collection tool and conducted a group audit to ensure consistency and efficiency during audits.

Developing Case Weights

Overview

The main objective of this study was to characterize the Northwest's commercial building stock. As such, information collected through the study sample had to be extrapolated to represent the population of the commercial buildings in the region. This was accomplished by assigning case weights (population expansion factors) to individual buildings in the database.

The current database, however, incorporates data from several different studies conducted at different times and locations within the region. Moreover, these studies were conducted for different purposes, such as market characterization, code compliance, or program evaluations. As it would be difficult (if not impossible) to reconstruct the original sampling weights of these studies, case weights had to be developed by cell, where a cell is defined by the combination of building type, size category, and vintage cohort.

[3] While this approach has been used in the past, the survey data are less reliable than auditor data since the expertise of the building contact cannot be verified. Cadmus does not recommend this approach in the future unless an interview with a knowledgeable building engineer is scheduled.

Method for Case Weight Development

Case weights were developed by post-stratifying the sample by building type, building size, and vintage categories. The case weight for each cell was then calculated as the ratio of the population floor space in that cell to the sample's floor space in the cell. Using this approach, the case weights represent a scaling factor for square footage rather than the number of buildings. Each square foot of floor space in the sample represents a certain amount of floor space in the population. The advantage of this approach is the data on population floor space generally tend to be more available and reliable than building counts.

The methodology for calculating population floor space for various cohorts in the database was as follows:

1. For the 1987 and earlier construction years, total floor space in 1987 by building type and size category is taken from the PNNonRes study.[4] For the purposes of CBSA, these values are treated as known quantities.
2. For subsequent years, total floor space added each year by building type and size is available from Dodge construction reports.[5] The raw Dodge databases were cleaned for duplicates, and missing square footage were interpolated based on building value.
3. The 2007 commercial floor was calculated by adding the new floor space since 2001 to the 2001 estimate, then applying the estimated percent survival to the total.

After estimating regional commercial floor space by building type, year constructed, and building size, population and sample floor space are summed for each combination of expansion weight categories, referred to as cells. The ratio of these sums is the expansion weight within a cell:

$$w_{cbz} = \frac{X_{cbz}}{x_{cbz}}$$

Where:

c = building type
b= building size
z=cohort
w=weight
X = sum of population floor space for cbz
x = sum of sample floor space for cbz

Table 7 shows the categories that define the expansion cells (*cbz*).

[4] Bonneville Power Administration. Pacific Northwest Non-Residential/Commercial Energy Survey –Phase II. (PNNonRes). 1987.
[5] McGraw Hill Construction, 2002-2006 construction starts from Oregon, Washington, Idaho, and Montana.

Table 7: Case Weight Expansion Cell Categories

Building Type	*Building Size (Square Feet)*	*Vintage Cohort (Year Constructed)*
Dry Goods Retail	<5,000	Before 1988
Groceries	5,000-20,000	1988-1994
Offices	20,000-50,000	1995-2001
Restaurants	50,000-100,000	2002-2007
Warehouse	100,000-500,000	
Hospitals	>500,000	
Other Health		
Hotel/Motels		
Schools		
Colleges/Universities		
Other		
Vacant		

There are currently four building vintage cohorts in the CBSA database: pre-1988; 1988–1994; 1995–2001; and 2002–2007. These cohorts were developed based on either the timing of regional survey activities and significant code changes. The pre-1988 cohort is consistent with the PNNonRES surveys, and the next division is due to significant commercial code changes that occurred in 1995. Cadmus added in a fourth cohort covering 2002–2007, which are consistent with the surveys conducted as part of NEEA's most recent Nonresidential Baseline survey (new construction).

Once we have controlled for building type, size, and vintage, we assume there is no systematic over- or under-representation of other characteristics within the sample. This assumption is not perfect, but it is the only practical basis on which the sample results can be expanded to the population. Note that case weights cannot be used to extrapolate characteristics by state or utility territory.

Stock Demolition and Survival

In the 2003 study, demolition rates were estimated using a stock survival model. The model consisted of a regression equation, which estimated the probability of a building's survival as a function of covariates, such as building age, building type, and building size.

In the current study, survival rates were estimated by adjusting the stock floor space with the observed demolitions. Auditors determined the status (demolished or not) of a majority of buildings, though it was not possible to resurvey all existing buildings from the 2003 study.

It is important to note that in cases where a building was demolished and a new structure was built in its place, the building was categorized as demolished because the new structure is captured in the non-residential new construction study. Survival rates are reported in Table 8. The highest rates of demolition (the lowest survival rate) occurred in:

- Pre-1987 grocery buildings and restaurants
- 1988–1994 dry good retail and grocery buildings.

Note that survival rates were uniformly applied across building sizes, except for buildings larger than 500,000 square feet, as none of the buildings in this size category were demolished between the 2003 and current study.

Table 8. Survival Rates[1] by Cohort and Building Type

Building Type	Cohort					
	pre-1988		*1988-1994*		*1995-2001*	
	Rate	n	Rate	n	Rate	n
Dry Goods Retail	0.980	81	0.948	55	0.999	41
Grocery	0.944	29	0.948	27	0.999	17
Office	0.999	111	0.977	81	0.999	55
Restaurant	0.957	38	1.00	26	1.00	8
Warehouse	0.977	68	1.00	26	1.00	31
Hospital	0.998	10	1.00	0	1.00	3
Other Health	0.992	28	1.00	14	1.00	12
Hotel/Motel	0.999	29	1.00	3	1.00	11
Other	0.992	68	1.00	47	1.00	65
School	0.988	24	1.00	24	1.00	31
University	0.998	43	1.00	4	1.00	12
Vacant	0.989	30	1.00	5	1.00	0

[1] "n" indicates number of buildings in 2003 study sample.

Calculating EUIs

Consumption histories, which form the basis of calculating EUI indices, are one of the key data elements in this study. Given the importance of this data, Cadmus obtained consumption histories from as many utilities possible under terms of non-disclosure agreements.

Specifically, we sent a list of CBSA buildings in a utility's service territory to the utility contact. The utility would then provide billing histories—generally meter readings and read dates for a year or more—corresponding to as many buildings on the list as the utility staff was able to find. Overall, 14 utilities provided information for the buildings in their service territory.

Upon receiving the billing information, Cadmus then matched the utility billing data to the CBSA sites. Ideally, the utility would provide data with a direct link (unique key) to the CBSA site (e.g., using account or meter number). However, the data often were without this link and, at times, we had to perform a record-by-record match using name or address. In some cases, one meter from the utility billing data represented the entire building. In other cases, multiple meters were associated with the CBSA site. Nearly 90% of site data were matched to utility billing data. For some buildings, multiple meters were matched to the site.

Once CBSA sites were linked to utility billing data, the billing histories were normalized to calendar months, and weather-normalized. At this point, EUIs were calculated for each site using estimated annual energy consumption and square footage. Cadmus screened EUI values to check for reasonableness. For buildings with anomalous EUIs, additional research into the matched meter/meters or square footage was conducted. It is possible the billing history for a particular site did not include all meters, or the total square footage of a site did not accurately represent the occupied space. Ultimately, EUIs were dropped when we were not confident of the accuracy.

Table 9 and Table 10 show the final percent of buildings in the database that have electric and natural gas consumption histories by building type for Idaho, Oregon, Washington, and region-wide.

Restaurants, offices, other health, and hotels/motels have the best coverage, while universities and hospitals have much lower coverage and, thus, less reliability. Universities and hospitals, which typically have campus-like sites with multiple buildings, are difficult to match meters to corresponding buildings and square footage estimates.

Note that natural gas percentages are shown out of total buildings, and not all buildings in the region use natural gas as a fuel source.

Table 9. Electric Billing Histories by Building Type

Building Type	*Percent and Number of Buildings with Billing Histories*								
	Idaho		**Montana**		**Oregon**		**Washington**		**Region-wide**
	%	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Dry Goods Retail	80%	40	55%	6	67%	83	77%	140	73%
University	44%	4	57%	4	29%	2	9%	5	19%
Other	79%	26	75%	9	76%	59	61%	86	68%
Vacant	75%	6	0%	0	58%	14	45%	10	54%
Grocery	92%	11	0%	0	74%	51	77%	53	76%
Office	89%	24	20%	2	83%	139	83%	162	82%
Restaurant	100%	5	0%	0	89%	66	86%	43	88%
Warehouse	84%	16	60%	6	80%	48	76%	71	77%
Hospital	60%	3	14%	1	46%	16	25%	3	39%
Other Health	83%	10	0%	0	78%	21	85%	44	80%
Hotel/Motel	83%	5	75%	3	95%	18	78%	32	83%
School	71%	30	38%	3	74%	52	70%	64	71%
All Buildings	**79%**	180	45%	34	**76%**	569	**71%**	713	**73%**

Table 10. Natural Gas Billing Histories by Building Type

Building Type	*Percent and Number of Buildings with Billing Histories*								
	Idaho		**Montana**		**Oregon**		**Washington**		**Region-wide**
	%	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Dry Goods Retail	46%	23	36%	4	71%	87	65%	117	63%
University	56%	5	29%	2	71%	5	17%	9	27%
Other	55%	18	17%	2	71%	55	49%	69	54%
Vacant	50%	4	0%	0	88%	21	45%	10	63%
Grocery	33%	4	0%	0	70%	48	58%	40	61%
Office	48%	13	20%	2	78%	130	41%	80	56%
Restaurant	40%	2	0%	0	84%	62	86%	43	82%
Warehouse	63%	12	50%	5	73%	44	59%	55	64%
Hospital	40%	2	0%	0	51%	18	42%	5	42%
Other Health	83%	10	0%	0	81%	22	60%	31	67%
Hotel/Motel	83%	5	25%	1	79%	15	68%	28	70%
School	26%	11	0%	0	70%	49	59%	54	54%
All Buildings	**48%**	**109**	**21%**	**16**	**74%**	**556**	**54%**	**541**	**59%**

4. Key Findings

Overview

The findings of this study are based on data from the 2061 Northwest commercial buildings in the CBSA database. As shown in Figure 5, the database is composed of the 2003 CBSA database, plus additional sites from:

- Snohomish PUD
- Portland General Electric (PGE)
- Northwest Energy Efficiency Alliance's (NEEA) Baseline Study (new construction)
- Idaho Power
- Puget Sound Energy (PSE)

To provide a snapshot of regional commercial building stock, key structural characteristics and energy equipment are summarized in this chapter. Detailed tables of building characteristics, with number of observations for each characteristic, are provided in Appendix C; EUI details are provided in Appendix D. Most characteristics are reported as a percent of regional floor space rather than building counts or averages per buildings, as floor space measurement is a more consistent and meaningful way to report commercial building characteristics. (Details regarding the sampling, data collection, and analysis activities conducted as part of the current CBSA study are summarized in Chapter 3.)

Change Analysis

An important aspect of the CBSA study was an examination of how building characteristics have changed over time. Before the 2003 CBSA study, the only coordinated regional commercial building study was the 1987 Pacific Northwest Non-Residential (PNNonRES) study, which was quite different from the 2003 study and made longitudinal comparisons difficult. The relative consistency in database format between the 2003 study and the current study allows for more comparisons between the two. Where adequate data are available, the 2003 data are presented and compared with the current data in the following sections of this report. Some of the notable areas of changes include overall floor space, lamp types and lighting power densities (LPDs), and EUIs.

Statistical tests between the 2003 study results and the current study were performed for important indicators such as LPDs, lamp types, and EUIs. Generally, statistical tests were conducted between the 2003 study data and all *data* from the current study. In some cases though, the data were subset to only pre-2002 to tease out the influence of newer buildings that may have been affected by code changes in 2002.

Building Characteristics

Total Floor Space

The total Pacific Northwest commercial floor space in 2007 was estimated at 2.7 billion square feet. This represents a 13% increase from 2.4 billion square feet in 2001, and a nearly 60% increase over 1.7 billion square feet in 1987 of estimated commercial floor space. As described in the previous chapter, the commercial floor space is extrapolated from the 2003 study by account for commercial floor space constructed, using Dodge data estimates, and accounting for observed demolition rates. The total population floor space estimate (details on this estimate are in Chapter 3) was based on regional Dodge data up to 2007. As such, the year referenced for the current building stock is 2007.

Building Type

The distribution of commercial floor space by building type, where building type is categorized by the predominant commercial activity taking place, is shown in Figure 7 as a percent of regional floor space and in Figure 8 as floor space (millions of square feet).

Office buildings account for the largest share of floor space (19%), followed by miscellaneous other building types (19%), and retail (17%). These building types are followed by warehouses and schools at 10% each. Overall, the distribution of building type is nearly identical to the distribution observed in 2003.

Figure 7. Floor Space by Building Type

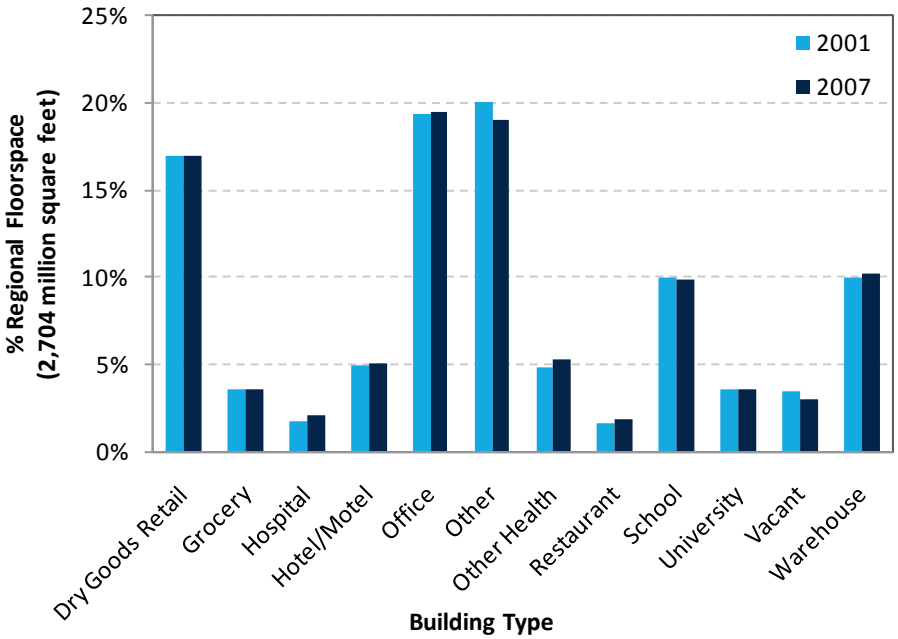
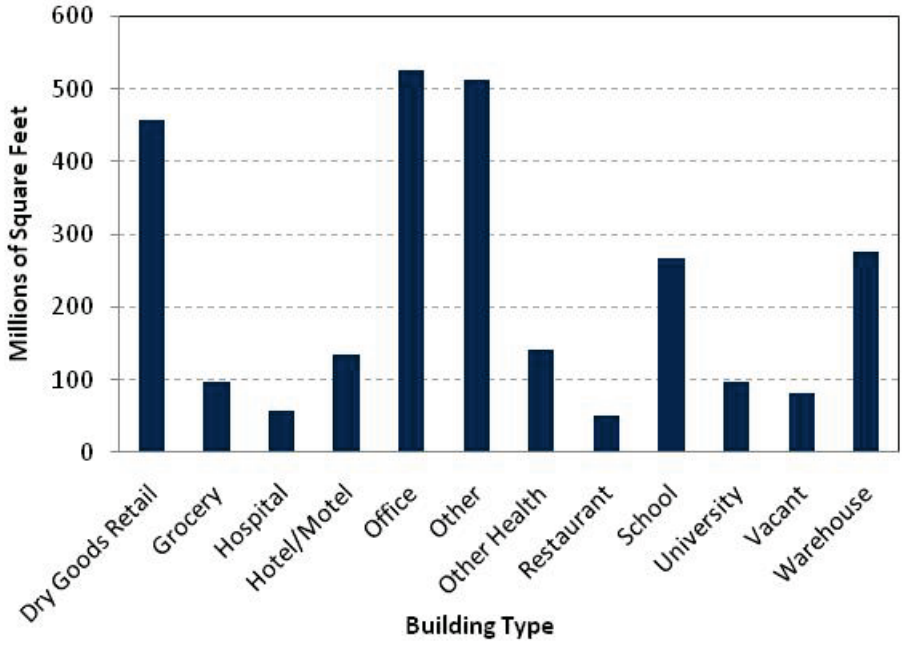


Figure 8. Floor Space by Building Type



Building Type Conversions

Table 11 displays conversions in building use between the 2003 and the current CBSA studies as a percentage of 2001 floor space. Note that this analysis is limited to buildings already in the 2001 sample; buildings added to the database after the 2003 study have been excluded.

Vacancies account for the largest share of conversions, with 6% of restaurants and other health floor space, 5% of warehouse floor space, and 2% grocery and office floor space all converting to vacant.

Conversely, 83% of floor space that was vacant in 2001 is still classified as vacant. The remaining 17% has converted to: grocery (8%), warehouse (6%), other health (2%), retail (1%), and restaurant (1%). Restaurant floor space has also changed by 16%, with most converting to floor space categorized as "other" (9%).

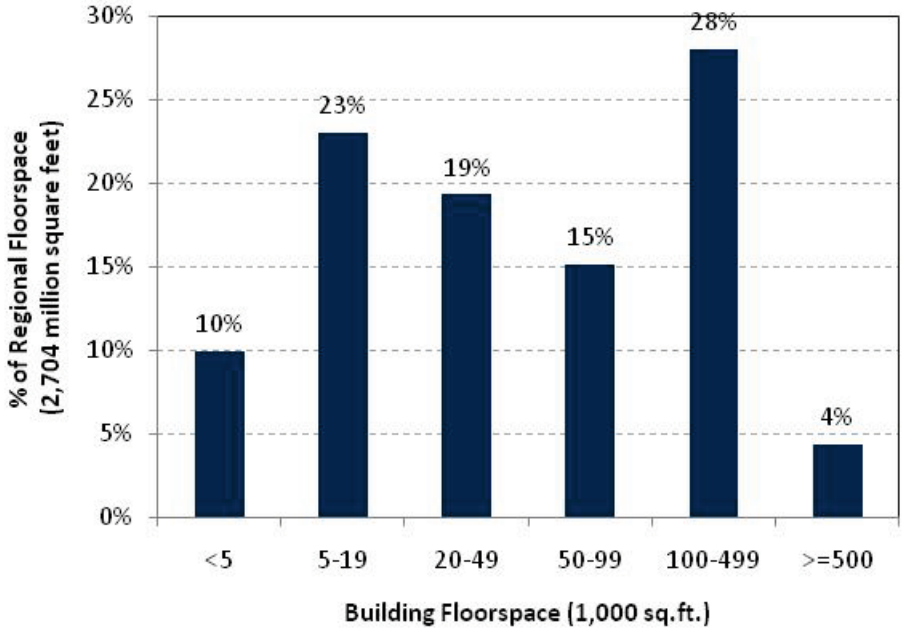
Table 11. Changes in Building Type 2001 to 2007
(% of 2001 regional floor space)

	2001 Building Type											
2007 Building Type	**Dry Goods Retail**	**Grocery**	**Office**	**Restaurant**	**Warehouse**	**Hospital**	**Other Health**	**Hotel/Motel**	**School**	**University**	**Other**	**Vacant**
Dry Goods Retail	**94%**	0%	0%	1%	0%	0%	0%	0%	0%	0%	3%	1%
Grocery	0%	**94%**	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%
Office	0%	0%	**97%**	0%	3%	0%	0%	0%	0%	0%	1%	8%
Restaurant	0%	0%	0%	**84%**	0%	0%	0%	0%	0%	0%	1%	1%
Warehouse	0%	4%	1%	0%	**87%**	0%	0%	0%	0%	0%	2%	6%
Hospital	0%	0%	0%	0%	0%	**100%**	0%	0%	0%	0%	0%	0%
Other Health	0%	0%	0%	0%	0%	0%	**94%**	0%	0%	0%	0%	2%
Hotel/Motel	0%	0%	0%	0%	0%	0%	0%	**100%**	0%	0%	0%	0%
School	0%	0%	0%	0%	0%	0%	0%	0%	**93%**	0%	0%	0%
University	0%	0%	0%	0%	0%	0%	0%	0%	1%	**100%**	0%	0%
Other	4%	0%	1%	9%	5%	0%	0%	0%	7%	0%	**88%**	0%
Vacant	1%	2%	2%	6%	5%	0%	6%	0%	0%	0%	2%	**83%**
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Building Size

With respect to building size, buildings ranging from 100,000–499,000 square feet in size account for 28% of regional floor space (Figure 9). The majority of remaining floor space is split among buildings ranging from 5,000 square feet to 99,000 square feet in size, specifically: 23% in buildings ranging from 5,000–19,000 square feet, 19% in buildings ranging from 20,000–49,000 square feet, and 15% in buildings ranging from 50,000–99,000. Buildings over 500,000 square feet represent 4% of floor space.

Figure 9. Distribution of Floor space by Building Size



Building Vintage

Figure 10 displays regional floor space by cohort. A majority (62%) of the regional commercial floor space was built before 1987. The 1995–2001 cohort, which represents a period of significant construction activity in the Northwest, is the next largest cohort, with 16% of the existing floor space.

Distribution of the regional floor space by year constructed is shown in Figure 11. To display the age of commercial buildings across the Northwest better, the "1987 or earlier" cohort is broken into smaller increments. Approximately 29% of buildings were constructed after 1994, while approximately 28% were constructed between 1988 and 1994. The buildings with unknown construction dates all fall in the 1987 or earlier cohort, but the exact construction data is unknown.

Figure 10. Distribution of Floor Space by Cohort

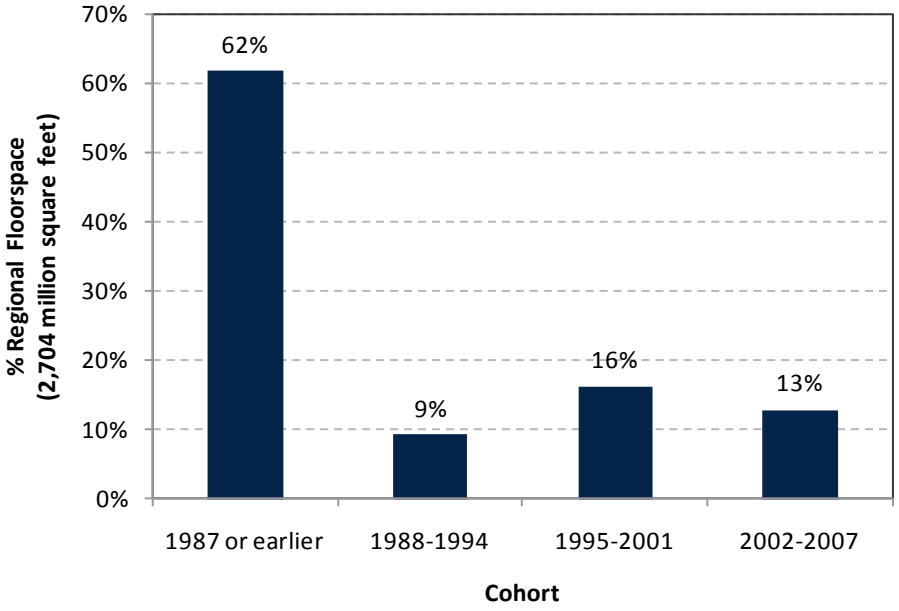
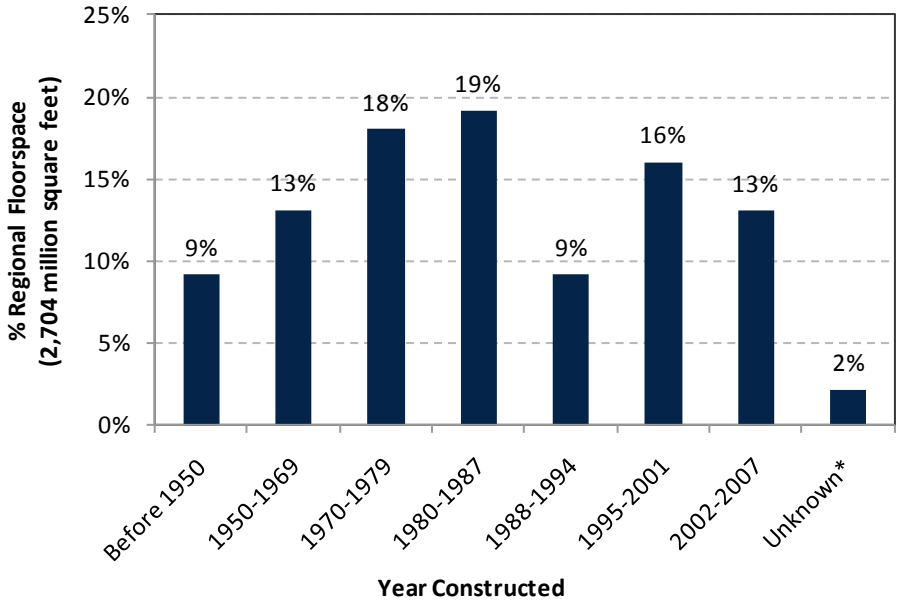


Figure 11. Distribution of Floor Space with Additional Detail

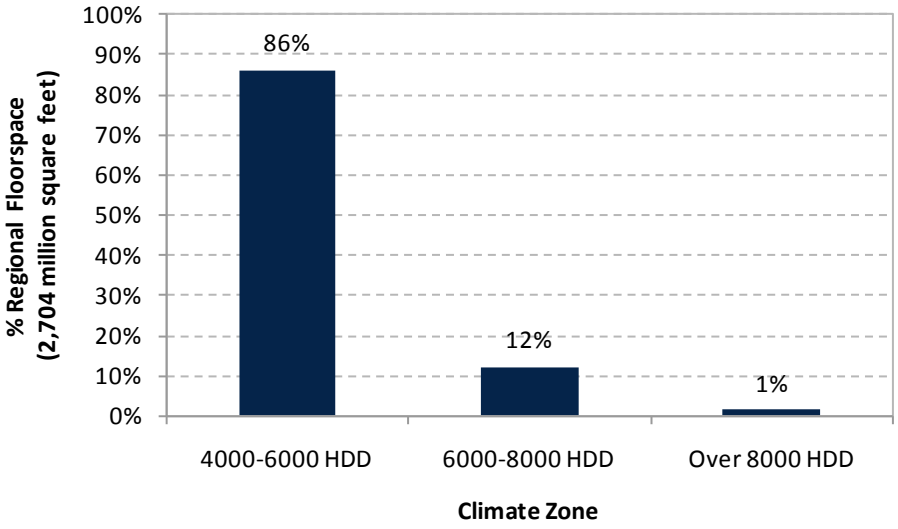


*Buildings were built in 1987 or earlier but exact construction date is unknown.

Climate Zone

The climate zone affects heating and cooling loads, and thus the potential for energy savings from heating and cooling efficiency measures. Buildings in the CBSA database have been classified into the three Northwest climate zones, as defined by the Northwest Power and Conservation Council. A map of the heating climate zones is located in Appendix E. Commercial floor space (86%) is predominately located in Climate Zone 1 (4,000 to 6,000 heating degree days). The remaining commercial floor space is located in cooler climates, with 12% in Climate Zone 2 (6,000 to 8,000 heating degree days), and 1% located in regions with over 8,000 heating degree days.

Figure 12. Floor Space by Climate Zone



Heating and Cooling

Heating Fuel

Natural gas is the predominant heating fuel for 68% of the regional heated floor space, while electricity only serves about 27% of the heated floor space (see Figure 13 on the following page). The predominant heating fuel is used to power the heating equipment serving the largest percentage of floor space. The penetration of natural gas has increased 3% since the 2003 CBSA and 18% since 1987. Electricity has decreased by 2% since 2003.

Figure 13. Heated Floor Space by Predominant Heating Fuel

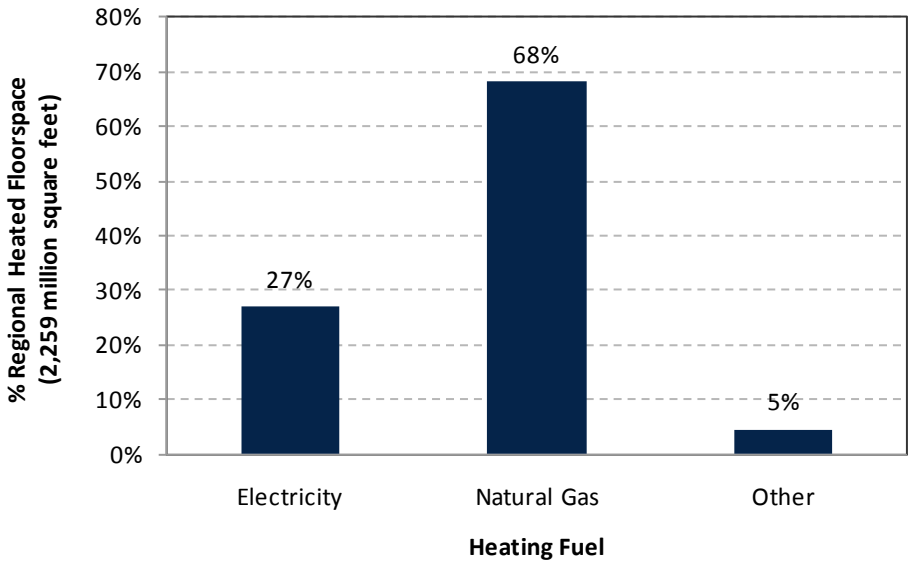
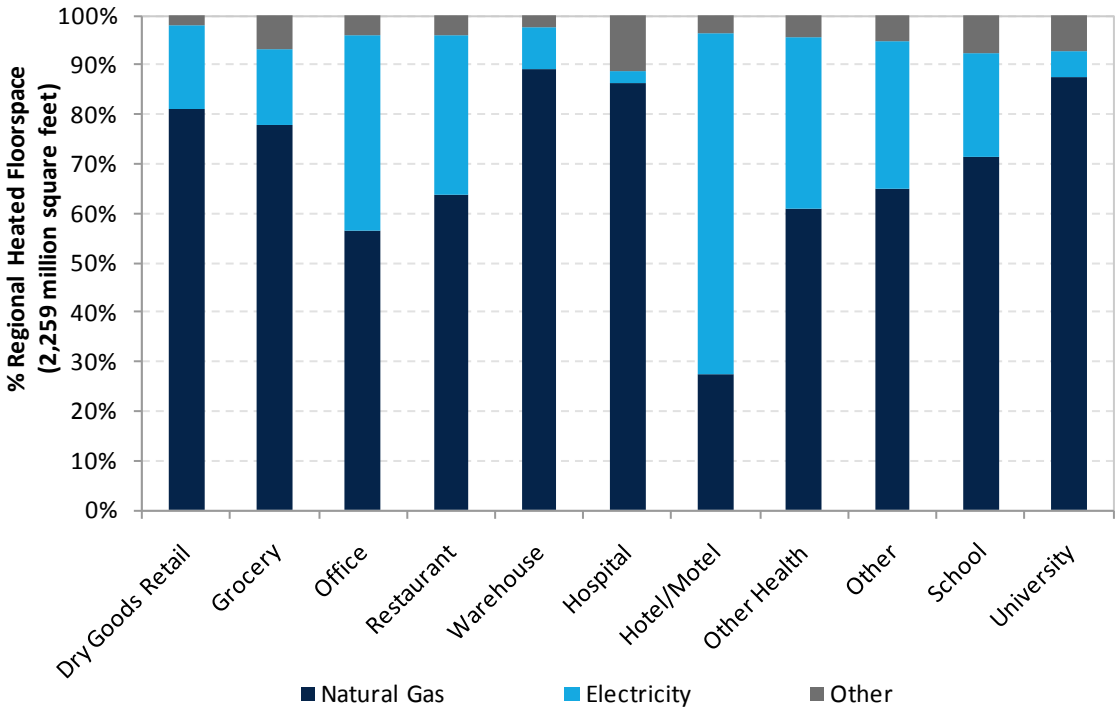


Figure 14 breaks out the predominant heating fuel by building type. Hotels/motels are the only building type to use electricity as the predominant heating fuel for a majority of the floor space.

Figure 14. Heated Floor Space by Building Type and Fuel[1]



[1]Other includes fuel oil, propane, purchased hot water or steam, and heat recovery

Primary HVAC System

The primary heating and cooling systems are shown in Figure 15. The primary HVAC system is designated as the system representing the largest fraction of:

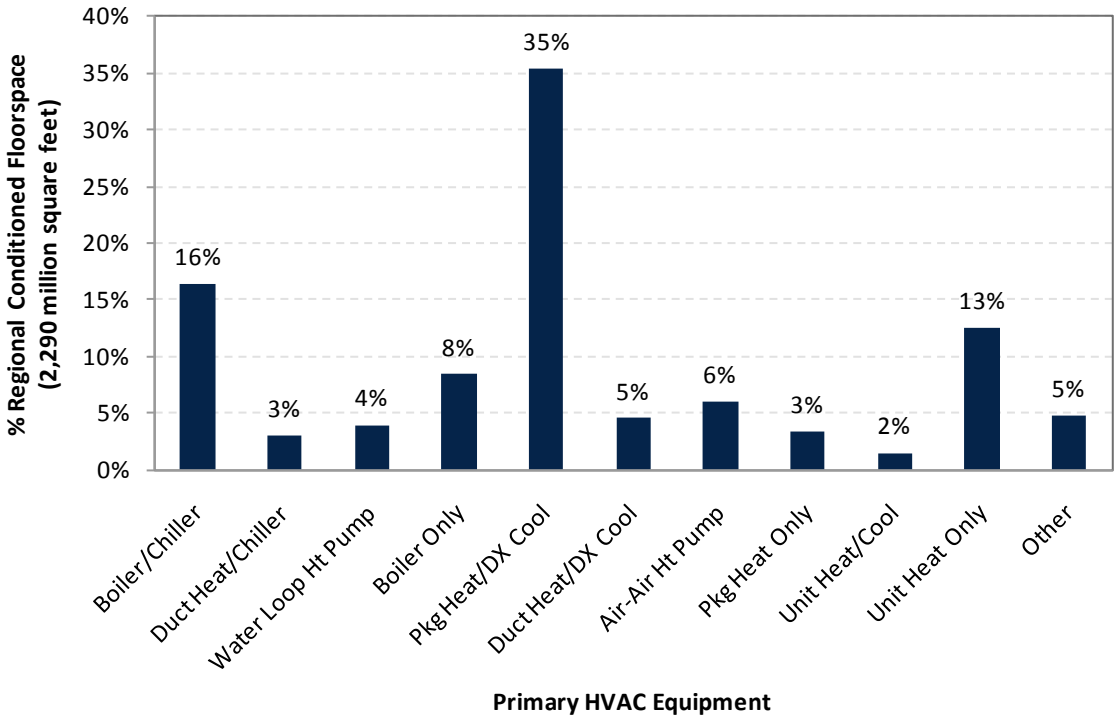
1. Percent of floor space served, or
2. Total reported HVAC capacity.

Boilers, chillers, and water source heat pumps are considered primary systems over packaged systems if both types of systems exist in the building.

Packaged heat and DX cooling comprise the predominant system, serving slightly more than one-third of the commercial conditioned floor space. The second most common system is a boiler and chiller combination (16%), followed by unit heat with no cooling (13%).

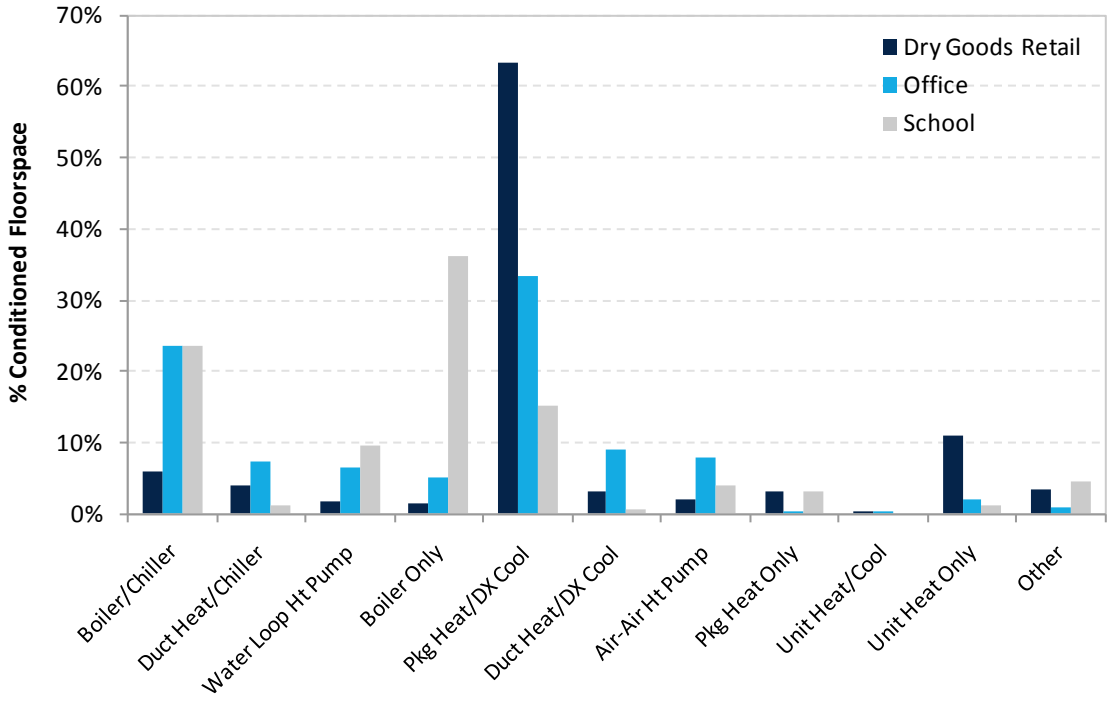
These results are similar to the 2003 results. Additional details regarding heating and cooling systems are shown in Appendix C.

Figure 15. Primary Heating and Cooling System



The type of heating and cooling system is highly correlated to building type. Figure 16 shows the distribution of heating and cooling system in offices, retail, and schools. Schools are more likely to have a boiler only or boiler/chiller system, whereas retail buildings tend to have packaged heating and DX cooling.

Figure 16. Heating and Cooling System For Office, Retail, and School



HVAC Distribution System

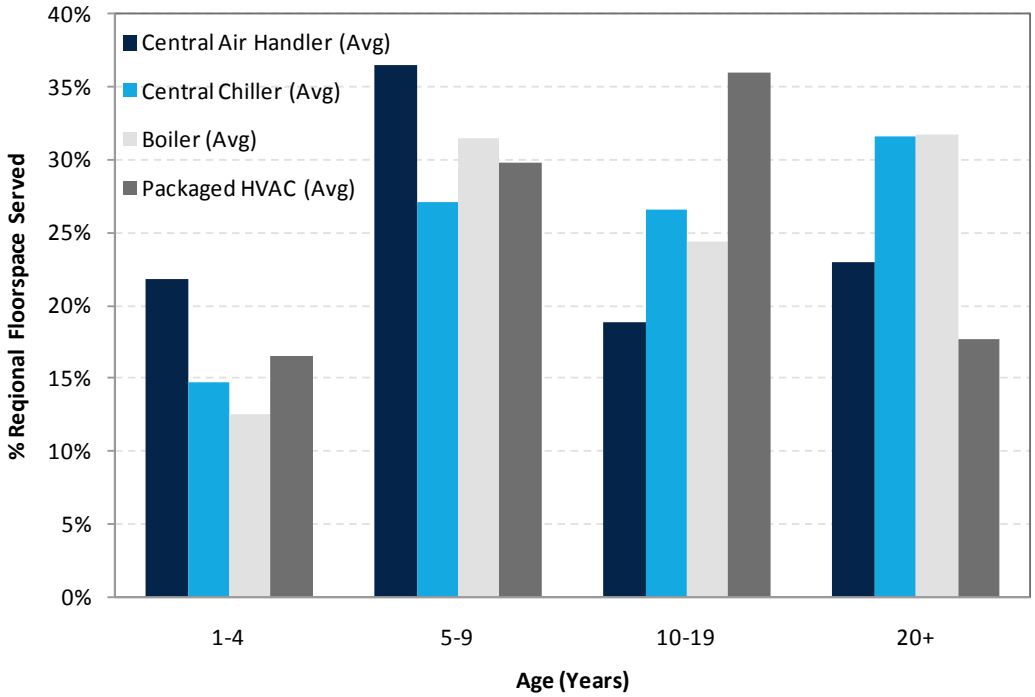
Similar to 2003, the current study revealed that air systems are the predominant form of HVAC distribution. A majority of the distribution types are constant volume (62% of regional floor space served). Variable volume systems served approximately 16% of regional floor space and are more common in health and office buildings. Approximately 44% of conditioned floor space is served by systems with economizers.

Energy management systems (EMS) are the most common type of distribution controls, serving 37% of conditioned floor space. Programmable thermostats serve 33% of conditioned floor space, and manual thermostats serve 29% of conditioned floor space.

HVAC System Age

Figure 17 shows the mean age of the central air handler, chiller, boiler, or HVAC system. Most air handling systems average between five and nine years in age, although over 20% of systems are 20 years or older. Most packaged HVAC systems are between 10 and 19 years old, and approximately one-third of boilers and chillers are more than 20 years old. Nearly 20% of all the systems listed in Figure 17 are new equipment (from one to four years).

Figure 17. Age of Heating and Cooling Systems



Lighting

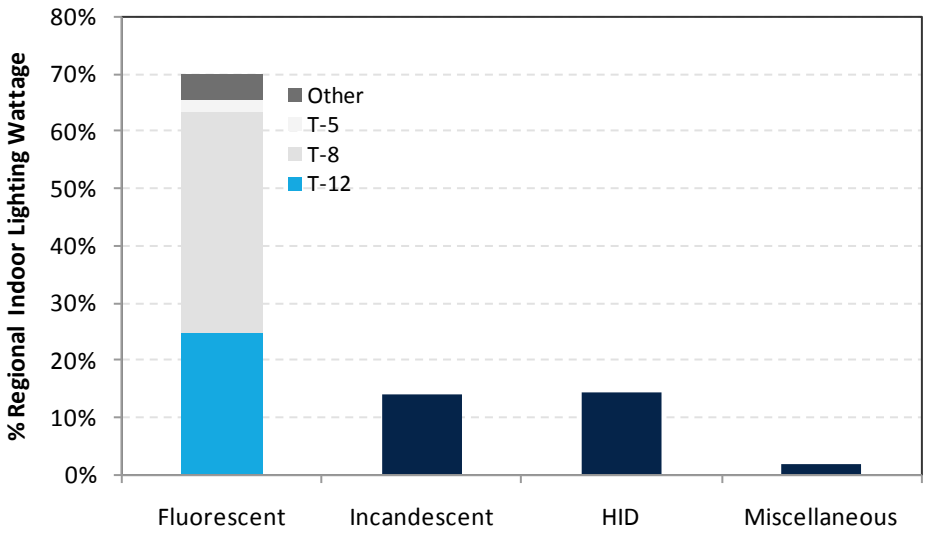
Indoor Lamp Types

A majority of commercial indoor lighting wattage (approximately 70%) is from fluorescent lamps and fixtures. The remaining indoor lighting wattage is composed of incandescent lamps (15%), high-intensity discharge [HID] (13%), and miscellaneous (2%) (see Figure 18).

Of the fluorescent indoor lighting wattage, 55% consists of T-8 lamps, 35% of T-12 lamps, 2% of T-5 lamps, with the remainder miscellaneous fluorescent lighting.

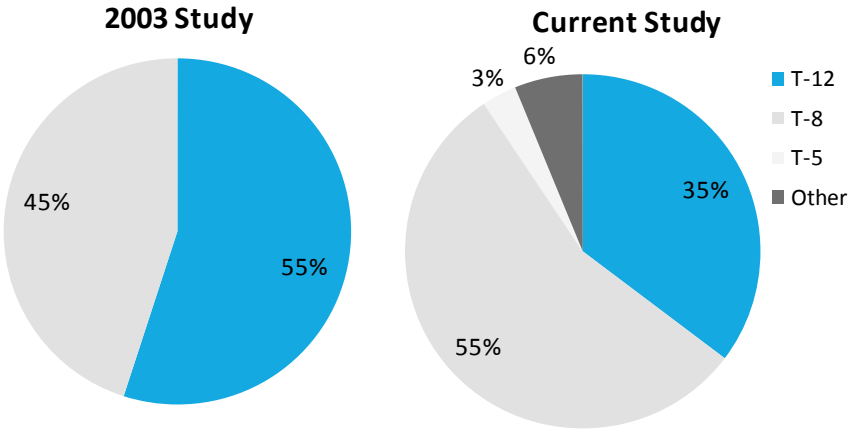
Metal halide lamps account for the largest share (85%) of the indoor HID lighting lamps. Of the remainder, high-pressure sodium lamps are 12%, mercury vapor lamps are 2%, and neon lamps are less than 1%.

Figure 18. Indoor Lighting Wattage by Lamp Type



While the overall composition of indoor lighting wattage—among fluorescent, incandescent, and HID lights—is virtually the same as that found in the 2003 CBSA, the composition of fluorescent fixtures has changed. Overall, there has been a clear shift toward more efficient lighting, with a 10% increase in the number of T-8 bulbs installed across the region since the prior study. Figure 19 shows the change in fluorescent lighting composition. The decrease in T12 installations and increase in T8 lighting installations are statistically significant (T12: p=0.0008; T8: p=0.0001).[6]

Figure 19. Change in Fluorescent Lighting Composition



[6] Statistical significance was established using a difference-of means test. Results were deemed statistically significant if the difference showed a probability value of <0.05.

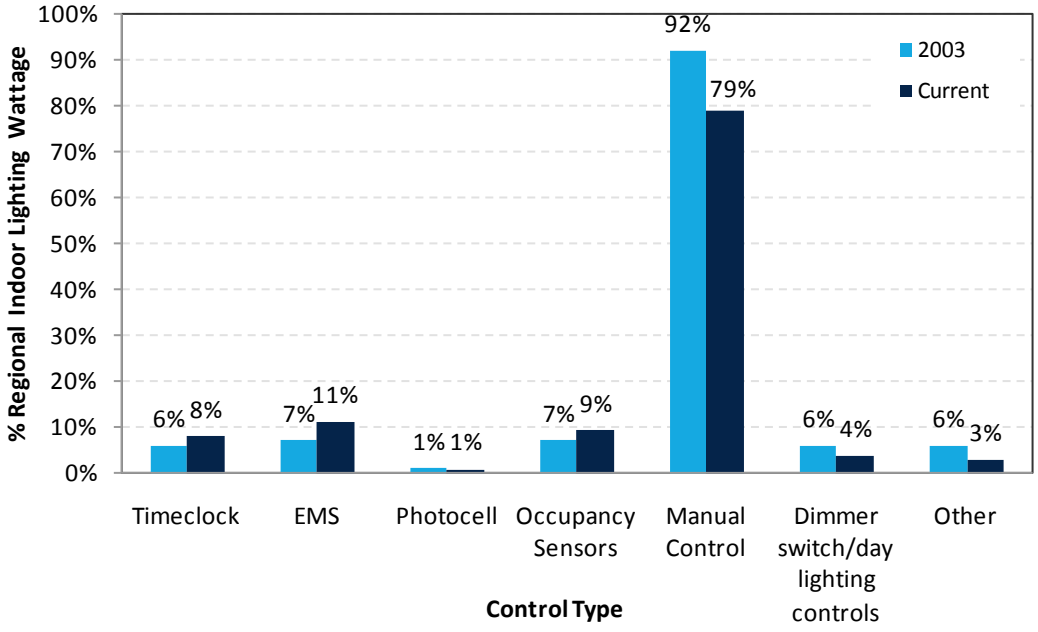
Lighting Controls

Manual lighting controls (on/off switches) are the most common lighting control type, although the penetration of this control type has decreased since the 2003 study.

Lighting controlled by energy management systems has increased (from 7% to 12%), as has the use of time clocks (from 6% to 8%) and occupancy sensors (from 7% to 9%).

Note the percentages sum to more than 100% because more than one type of control may apply to a building/lighting system.

Figure 20. Indoor Lighting Control Type



Indoor Lighting Power Density

Average interior LPD is 1.15 watts per square foot (Figure 21). Grocery stores show the highest LPD, at 1.6 watts per square foot, while warehouses show the lowest LPD at 0.73, as expected. A distribution of LPD values is shown in Figure 22.

The LPD is calculated as the ratio of total wattage to total floor space within a category. Figure 21 displays two alternate calculations of LPD:

- Total building floor space; and
- Total building floor space minus any indoor parking area.

LPDs using total floor space are comparable to the 2003 CBSA LPD calculations, while the LPDs calculated without parking areas are more comparable to the NEEA Baseline Study.

Figure 21. Lighting Power Density by Building Type

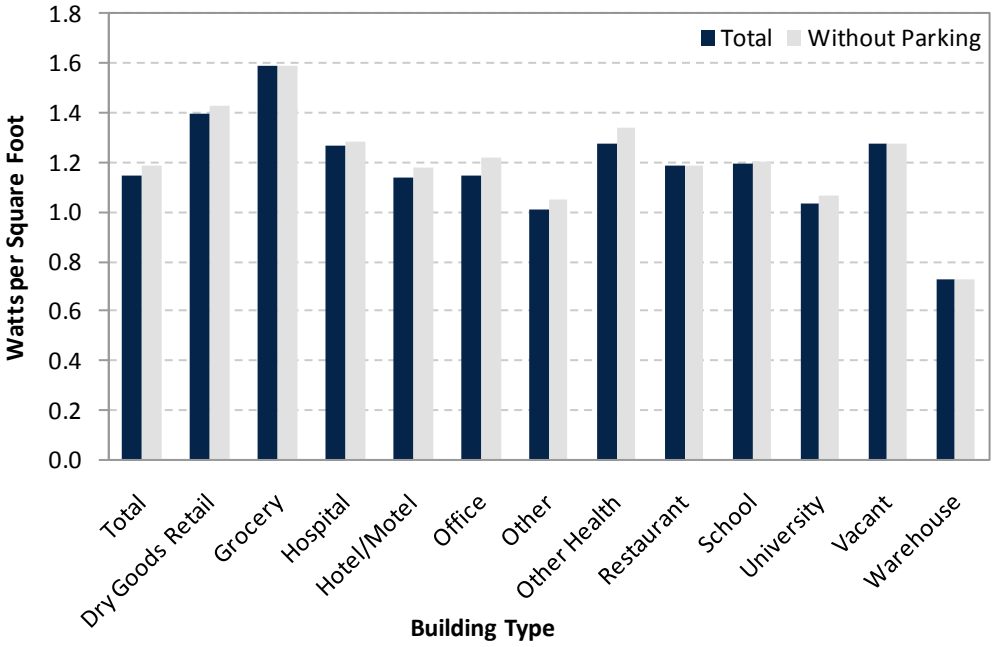


Figure 22. Distribution of Lighting Power Density

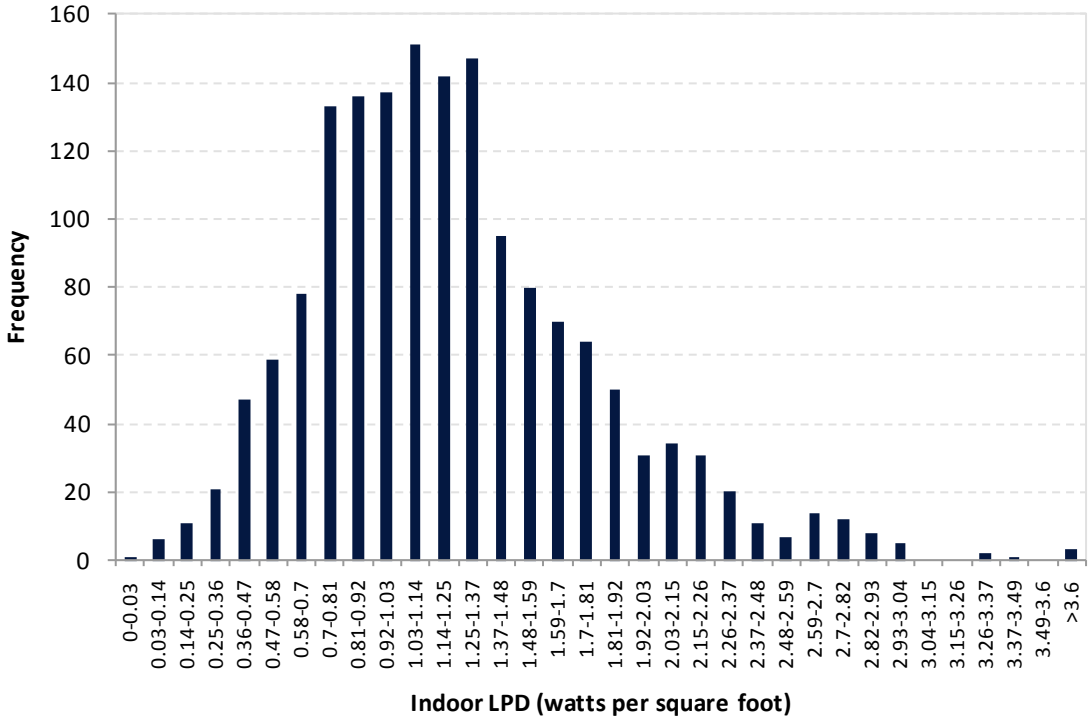


Figure 23 compares average LPDs by building type in 2003 and now. Since the 2003 study, there has been a slight drop in the overall LPD, from 1.3 watts per square foot to 1.15 watts per square

foot (approximately a 0.1 watt per square foot decrease), as shown in Figure 23. This decrease in LPD is statistically significant at the 90% confidence level (p =0.05).

While all building types except schools, retail, and other health[7] show a decline in LPD in the six-year period between studies, these differences are not statistically significant (due to a combination of smaller samples sizes and variations within a building type). Grocery stores show the largest decrease with a 0.3 watt per square foot drop; though a comparison of unweighted LPDs show no statistical difference between the previous study and current study. Retail and school LPDs stayed constant at 1.4 watts per square foot and 1.2 watts per square foot, respectively.

Figure 23. Lighting Power Density—Comparison to 2003 Study

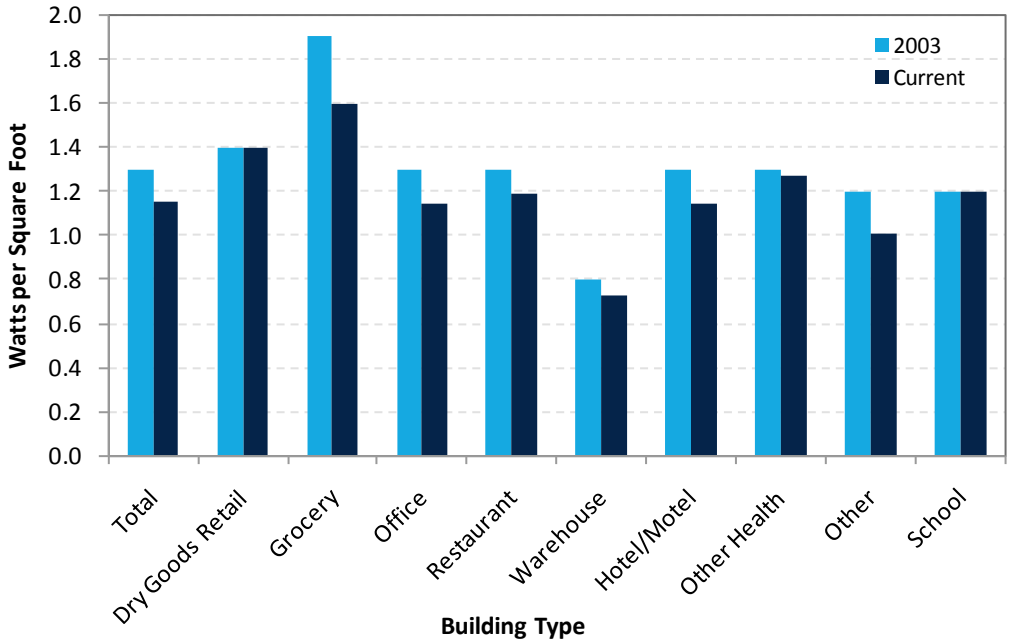
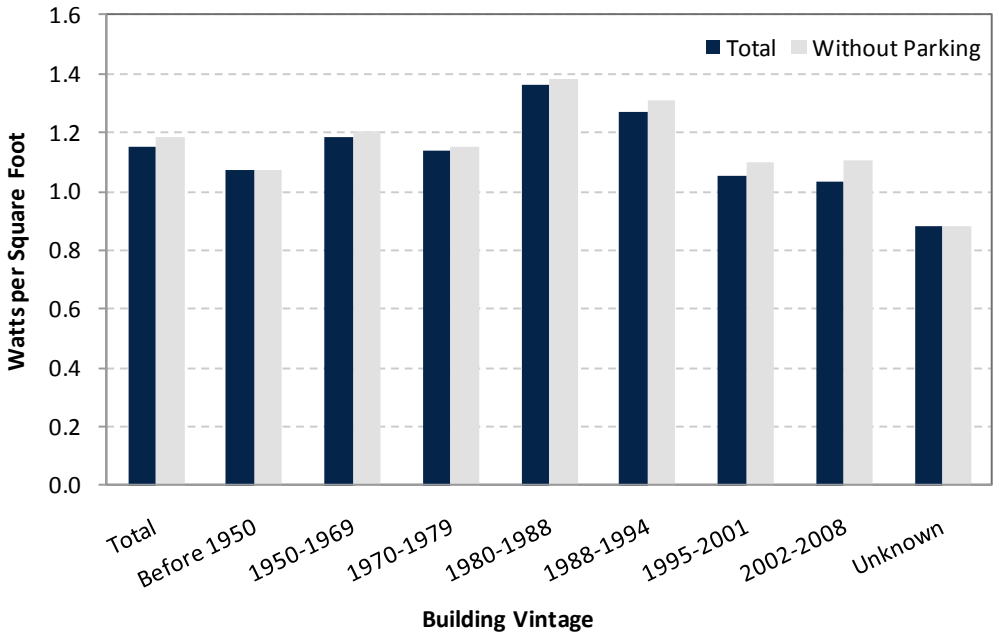


Figure 24 displays indoor lighting power density by year of construction, for LPD values with parking area and without parking area. Buildings constructed in the 1980–1994 appear to have higher LPDs than either the newer or the older vintages. Buildings constructed in 1995 or later have below average LPDs, at approximately 1.0 watt per square foot.

[7] In the 2001 CBSA report, the "Other Health" LPD was reported as 2.2 watts/per square foot. Cadmus recalculated the 2001 weighted average for other health using the 2003 data and weights (n=25), and found the number to be 1.3 watts/square foot.

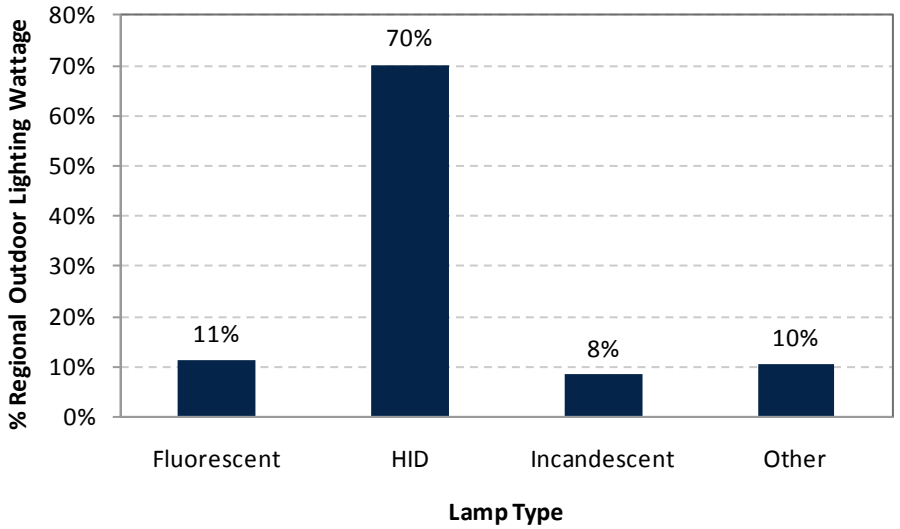
Figure 24. Lighting Power Density by Year Constructed



Outdoor Lamp Types

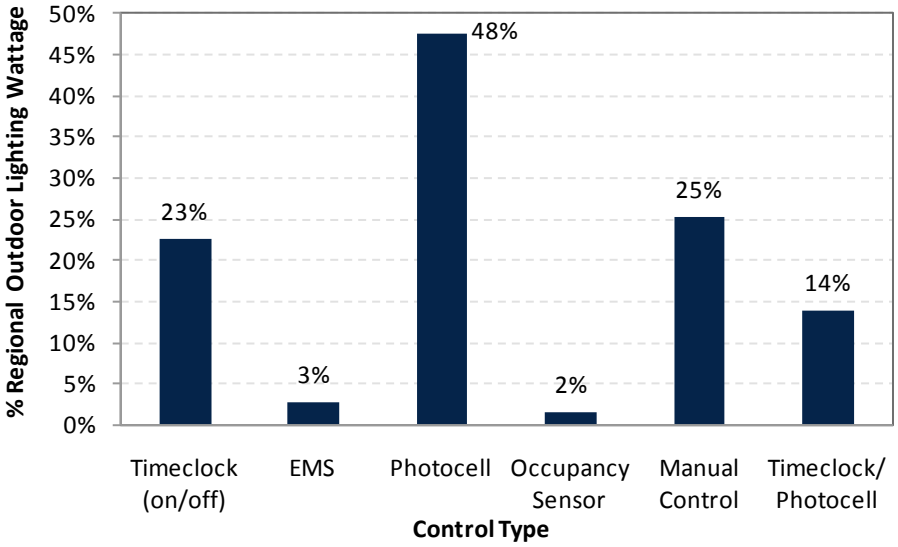
The predominant outdoor lamp type is HID, at 70% of the regional outdoor lighting wattage. This is an increase over the 2003 building stock data, in which HIDs made up 56% of regional outdoor lighting wattage. Fluorescent and incandescent bulbs are also utilized for outdoor lighting at 11% and 8%, respectively. The relative wattage of both lamp types has decreased from 2003, when these bulbs types comprised 15% and 13%, respectively, of outdoor lighting wattage.

Figure 25. Outdoor Lamp Type



The most common outdoor lighting control type is a photocell (48%), followed by manual controls (25%), and time clocks (23%). Since 2003, there has been a decrease in the use of photocells (from 55% to 48%), and a notable increase in time clocks (from 14% to 23%). Time clocks used in combination with photocells account for 14% of the outdoor lighting controls.

Figure 26. Outdoor Lighting Control Type



Windows

Table 12 shows the average layers of window glazing for commercial windows overall, and for buildings that typically have a larger window-to-wall ratio. The majority (72%) of windows in commercial buildings has two glazing layers, and nearly 28% have a single glazing layer. In 2003, only 13% of windows had a single glazing layer.

As in the 2003 study, the majority of windows are tinted. However, tinted windows comprise only 53% of window glaze types, compared to 74% in 2003. Currently, a greater portion of windows has clear glazing (44%).

Table 12. Summary of Window Characteristics

Avg. Layers Window Glazing	*Total*	*Dry Goods Retail*	*Office*	*School*
1 layer	27.90%	39.50%	22.50%	46.70%
2 layers	71.90%	60.50%	77.00%	53.30%
3 layers	0.10%	0.00%	0.40%	0.00%
--Total--	100%	100%	100%	100%
Observations	837	117	151	115

Miscellaneous Equipment

The data on miscellaneous equipment—such as cash register terminals, PCs, and servers—were available only for a small sub sample, and, therefore, are less reliable and less representative than the other data. The available data, however, suggest saturations, as measured by frequency per 1,000 square feet, did not change significantly since 2001.

Refrigeration

The CBSA database provides some information on refrigeration systems, including presence of different types of systems, compressor types, compressor operating temperatures, or the presence of floating head controls on refrigeration systems.

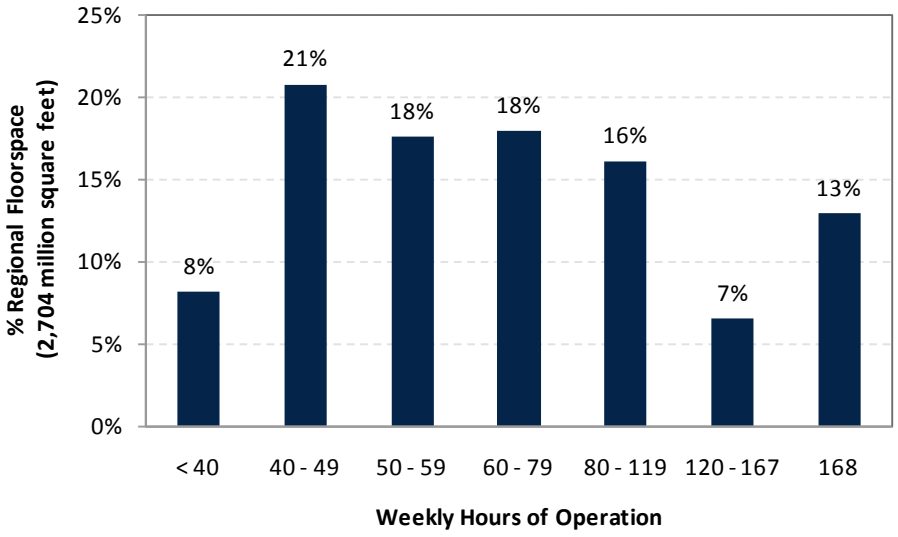
Region-wide, only 0.7% of regional commercial floor space is refrigerated. Of refrigerated floor space, 91% of the sites have a walk-in refrigeration system, while 57% of regional floor space has some type of refrigerated display case. Over 80% of display cases have some type of door. Note that some buildings—typically, grocery stores—may have both types of refrigeration systems on site.

The predominant condenser type is air-cooled (85% of refrigerated floor space), with the remainder being evaporative cooled. A majority of compressor units (68%) runs at medium temperature (30–40ºF), and only 38% of compressors have floating head pressure control.

Building Hours

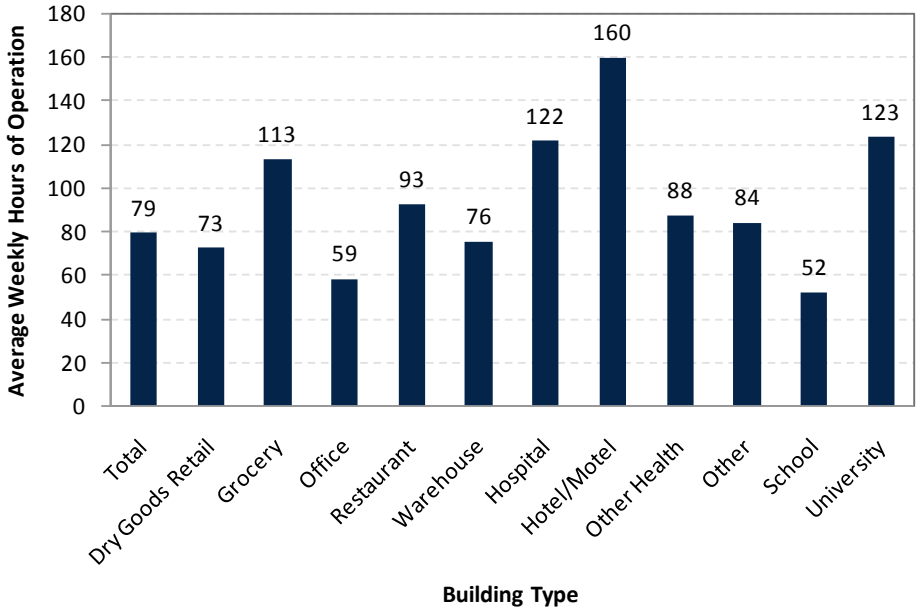
Weekly operating hours of regional commercial buildings split somewhat evenly between 40 through 120 hours, as shown in Figure 27. Few buildings (8%) operate less than 40 hours per week.

Figure 27. Weekly Building Operating Hours



Hotels/motels comprise most of the buildings open continuously, Figure 28, while universities and hospitals also operate nearly all hours of the day. Groceries operate an average of 113 hours, and operating hours of offices, retail stores, and schools range from 52 to 73 hours per week.

Figure 28. Average Weekly Operating Hours by Building Type



The distributions of building operating hours over time are shown for retail, grocery, and office buildings in Figure 29 through Figure 31.

In general, the hours of operation for both retail and grocery stores appear to have increased over time; however, there are now fewer 24-hour groceries. This building type tends to operate between 120 and167 hours per week.

While there was significant difference in office operating hours between 1987 and the 2003 study, office hours have not changed much since 2003.

Figure 29. Building Operating Hours for Dry Goods Retail

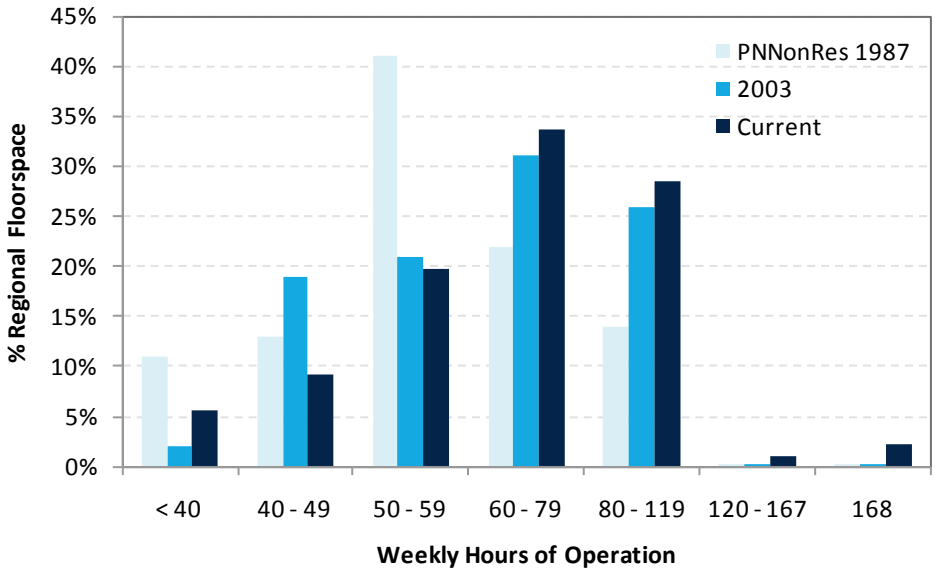


Figure 30. Building Operating Hours for Grocery

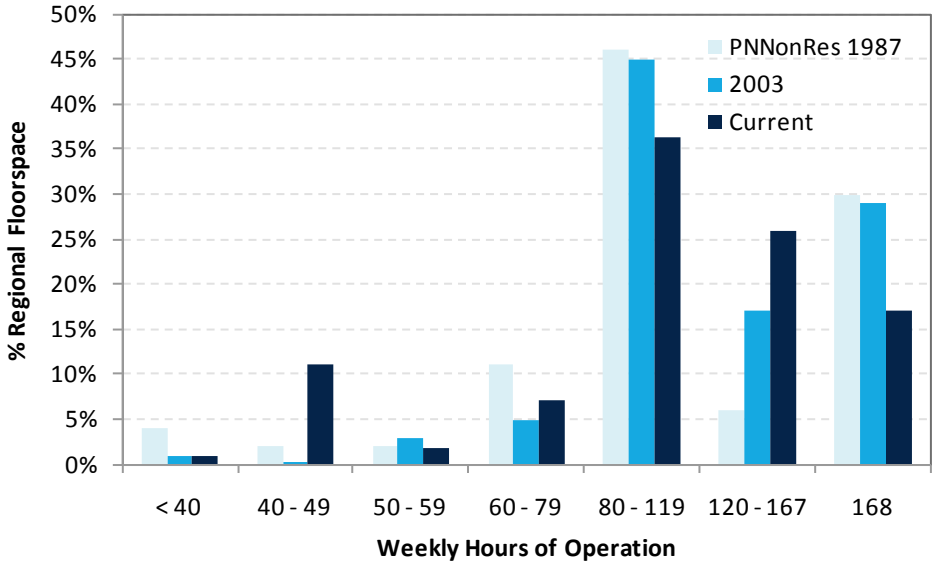
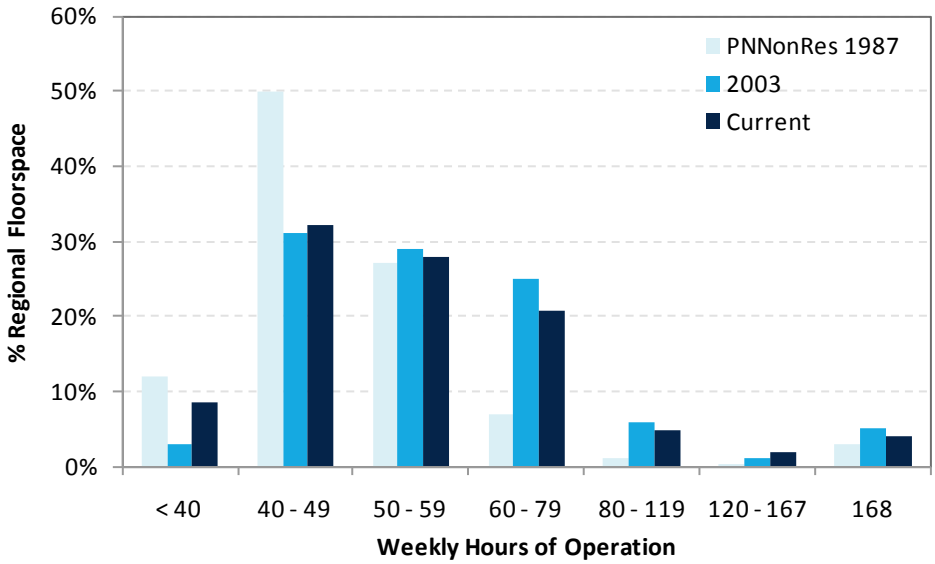


Figure 31. Building Operating Hours for Office



Energy Use Intensities

EUI is the ratio of total energy use to total floor space for a given building. EUIs were a priority data collection activity for this study. Cadmus contacted as many utilities as possible to collect monthly billing histories for buildings included in the CBSA database. These billing histories generally covered 2007 annual consumption, but, depending on the data received from the utility, some billing histories included data from 2006 or 2008. Billing histories for each account were matched to buildings in the database. In the case of sites with multiple meters, Cadmus made every effort to aggregate meters to the appropriate building. More details on this process are provided in Chapter 3.

It is important to note certain limitations to the collection and analysis of EUIs; these include:

- Mapping meters to the appropriate buildings and square footage served is not straightforward as there can be overlap or multiple meters, which serve the same area(s) in the facility.
- The billing address may not always match the meter location, depending on who pays the bill.
- While mean values are calculated and discussed, it is important to note significant variation occurs in the amount of energy, and how that energy is used, within a building type/category.[8]

[8] Refer to Ecotope's summary in the *Baseline Energy Use Index of the 2002-2004 Nonresidential Sector: Idaho, Oregon, Montana, and Washington* report for more information on the limitations of EUI estimates. http://www.nwalliance.org/research/reportdetail.aspx?ID=199

Electric EUIs were calculated for 73% of buildings, and natural gas EUIs were calculated for 59% of all CBSA buildings, or 73% of buildings using natural gas as a fuel source. Consumption histories were adjusted for long-term (30-year) weather conditions to calculate weather-normalized EUIs. This analysis, however, revealed actual values were very similar to the weather-normalized ones.

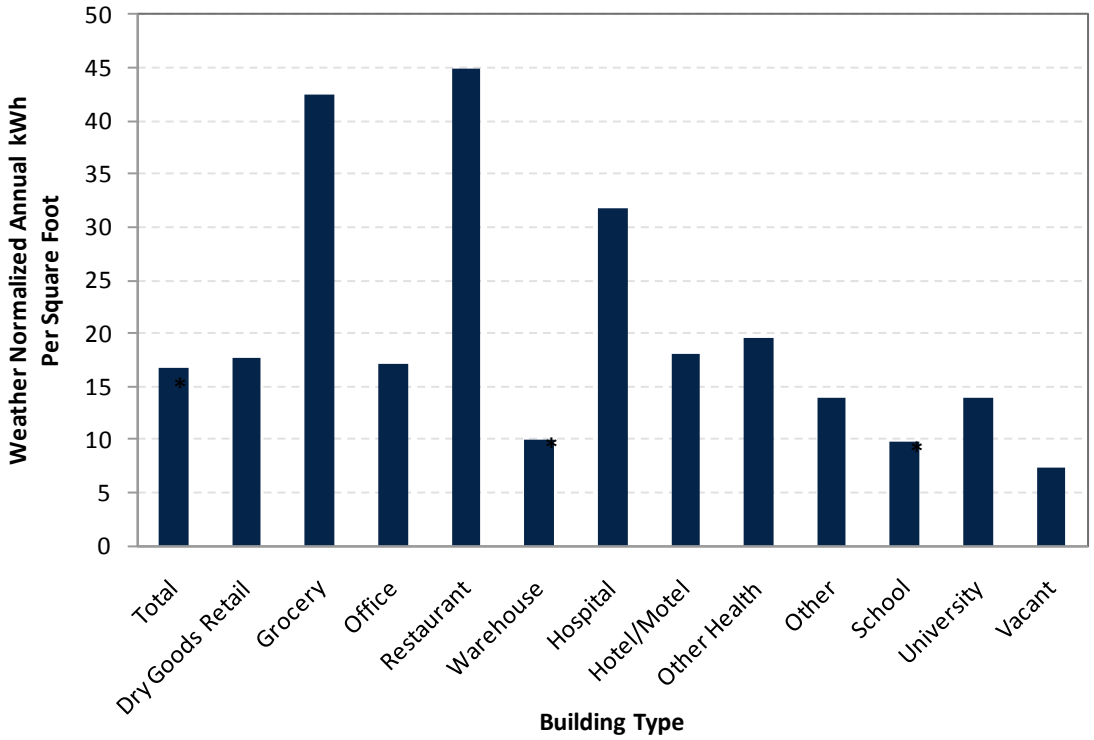
While EUIs were provided for a majority of buildings, the availability of consumption data varied by building size, age, and type. Only weather-normalized EUIs, calculated from actual utility bills, are presented in the following sections and in Appendix D.

Electricity EUIs

Northwest commercial buildings had an average EUI of 17 kWh/square foot, shown in Figure 32. This value is a slight increase over the average 2003 study EUI of 16 kWh/square foot. The EUI reported in this study should be treated as a snapshot of current energy use. Comparisons to the 2003 study should be made with caution due to the smaller number of observations

Groceries and restaurants have the highest EUIs in the commercial sector, similar to the 2003 study. Warehouses and schools have the lowest average EUI.

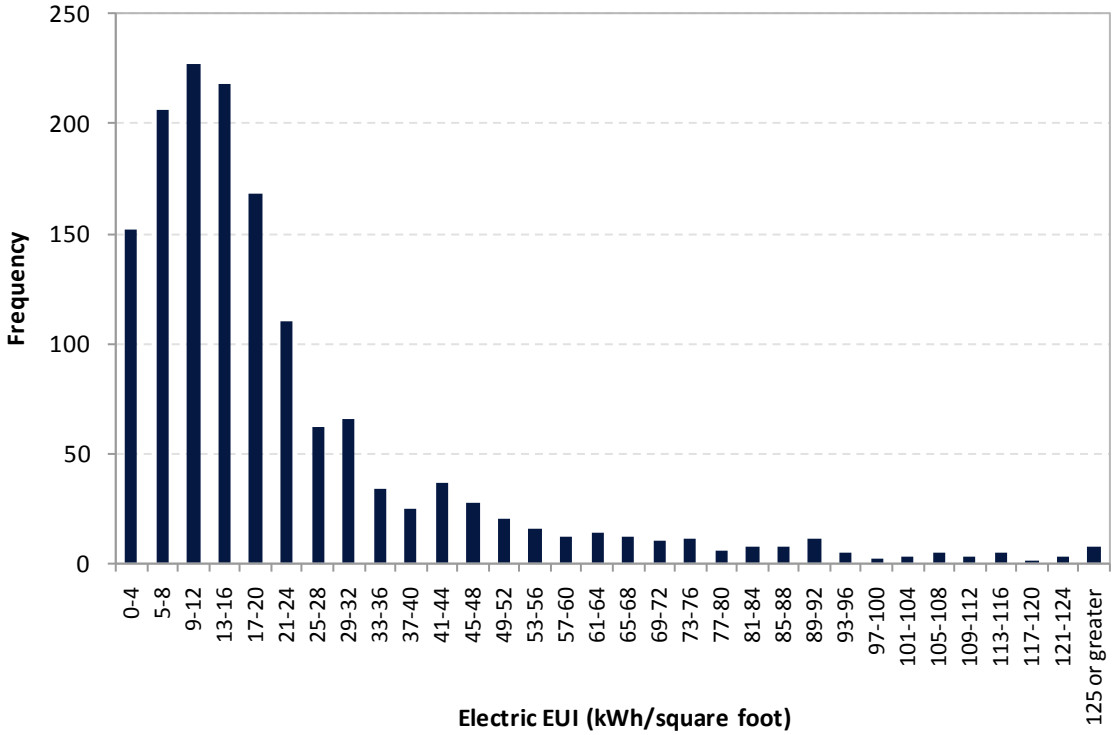
Figure 32. Annual Electric EUI by Building Type



Overall, EUIs vary widely from building to building, thus the mean is not always the most appropriate representation of the data. Figure 33 shows a distribution of the electric EUIs; the

distribution is right-skewed, with a small number of buildings displaying high EUI values. The majority of buildings' EUIs are less than 32 kWh/square foot.

Figure 33. Distribution of Electric EUIs



Corresponding standard errors for the calculated EUIs are reported in Table 13 below. Note that retail, grocery, office, and school EUI estimates offer a higher level of precision than the other building type categories, with relative standard errors in the range of 4% to 5%. The increased sample size of EUIs has helped reduce the margin of error; thus increasing the reliability of the numbers, as evidenced by the standard errors shown in Table 13.

The average EUI across all commercial buildings has a relative standard error (RSE) of 3%. Universities and hospitals have a higher level of uncertainty due to smaller samples sizes.

Table 13. Electric EUI Standard Errors
Building Type

Building Type	*Total*	*Dry Goods Retail*	*Grocery*	*Office*	*Restaurant*	*Warehouse*	*Hospital*	*Hotel/Motel*	*Other Health*	*Other*	*School*	*University*	*Vacant*
Electric EUI (weather normalized, weighted)	17	18	42	17	45	10	32	18	20	14	10	14	7
# of Observations	1,496	269	115	327	114	141	23	58	75	180	149	15	30
Electric EUI Std Err	0.42	0.75	2.33	0.67	3.02	1.18	4.13	1.47	1.40	1.28	0.54	4.40	1.72
RSE	3%	4%	5%	4%	7%	12%	13%	8%	7%	9%	5%	32%	23%

The Energy Information Administration (EIA) calculates commercial building EUIs as part of the Commercial Buildings Energy Consumption Survey (CBECS). The CBECS provides estimates for both national building stock and the census region summaries. The Western Census region (which includes Washington, Oregon, and California) is shown in this report.

Data from the 2003 CBECS, the most recent information available, are shown in Table 14. EIA anticipates it will release 2007 results later this year. Although slightly outdated, the 2003 estimates provide a good basis for comparison with CBSA data. As shown in Table 14, CBECS estimates are somewhat comparable with the current CBSA data. Offices, retail, and lodging have a slightly higher CBSA EUI than the CBECS estimate.

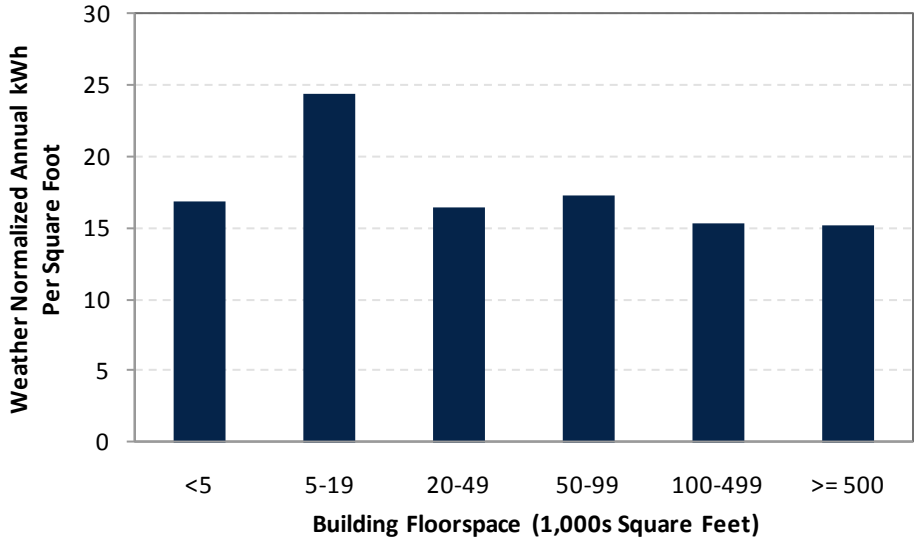
Table 14. Comparison of CBSA EUI Estimates With CBECS Estimates

CBSA Building Type	**2007 CBSA**	**2003 CBECS**	
	EUI (kWh/sq.ft.)	*Western EUI (kWh/sq.ft.)*	*% Difference from CBECs EUI*
Average (All Buildings)	17		
Dry Goods Retail	18	16	13%
Grocery	42	57	-26%
Office	17	14	21%
Restaurant	45	45	-1%
Warehouse	10	4	150%
Hospital	32	18	78%
Hotel/Motel	18	12	50%
Other Health	20	-	-
Other	14	10	40%
School	10	11	-9%
University	14	-	-
Vacant	7	-	-

Figure 34 displays electric EUIs by building size for both 2003 and the current study. EUIs for buildings in both the 5,000 to 19,000 square foot range and the 50,000 to 99,000 square foot

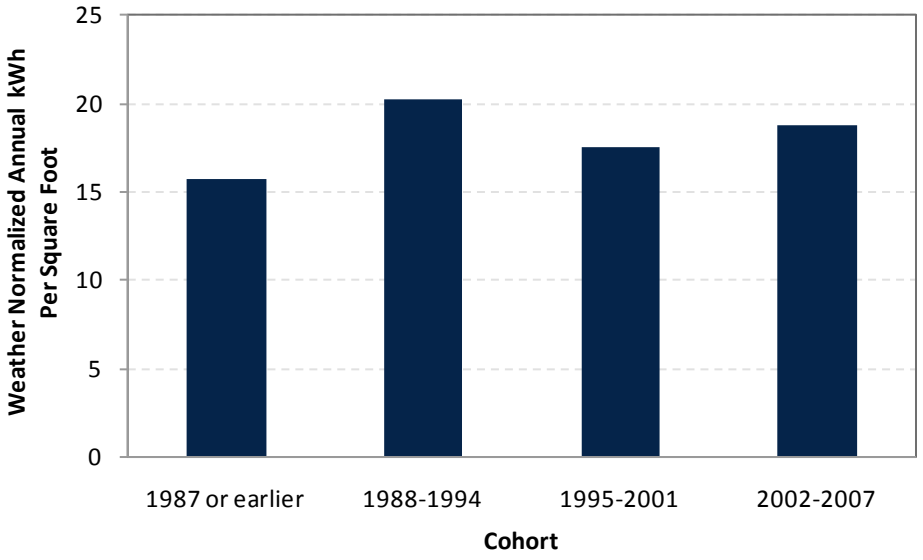
range have increased. All other size categories have remained relatively the same. The relative standard errors of these values range from 4% to 9%.[9]

Figure 34. Annual Electric EUI by Building Size



Another useful EUI presentation is by cohort, displayed in Figure 35. The EUI for buildings in the 1995–2001 cohort have decreased significantly since 2001, from 22.0 to 17.5 kWh per square foot. EUIs are also presented by construction year in Appendix D. Comparisons to CBECS are presented in Table 15; EUI estimates between CBSA and CBECS are comparable.

Figure 35. Annual Electric EUI by Cohort



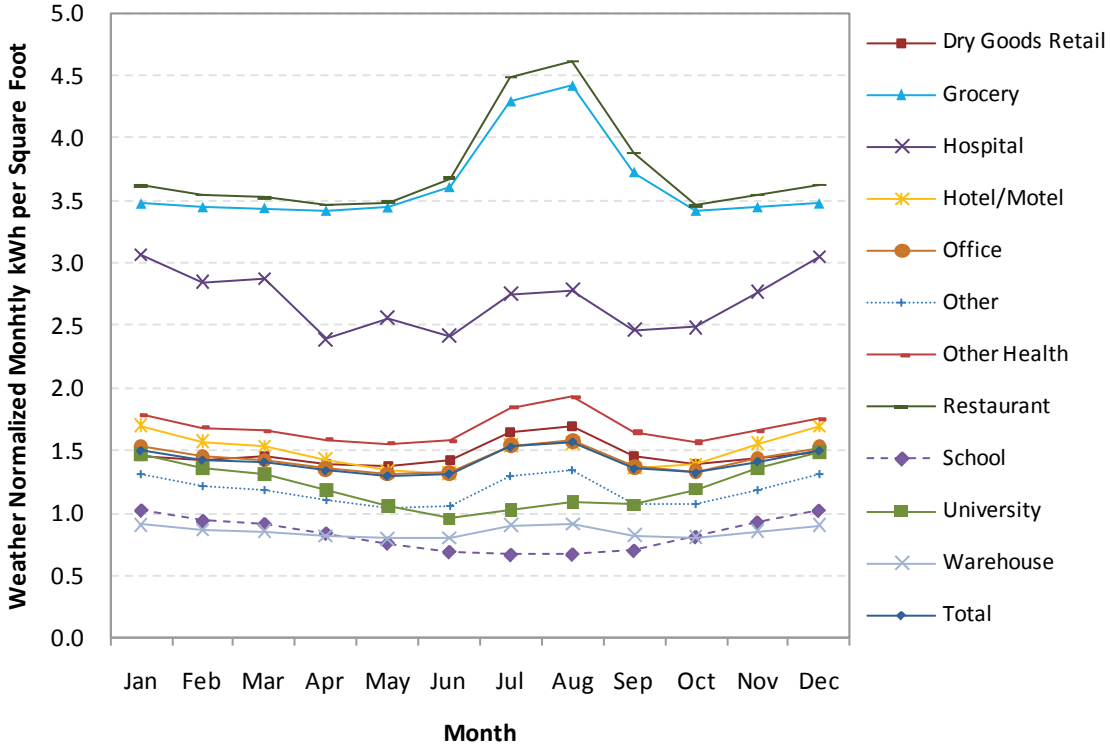
[9] Comparison of EUI by building size should be interpreted with caution due to the correlation between building floor space and building type.

Table 15. Electric EUI Estimates by Year Constructed Compared to CBECS

	2007 CBSA	*2003 CBECS*
CBSA Year Constructed	*EUI (kWh/sq.ft.)*	*Western EUI (kWh/sq.ft.)*
1987 and earlier	16 ± 4%	14
1988-1994	20 ± 5%	18
1995 – 2001	18 ± 6%	19
2002-2007	19 ± 6%	18 (to 2003)

A majority of commercial building types have a similar monthly EUI profile and range, shown in Figure 36. The overall EUI profile follows a similar pattern to offices and hotels/motels, and it is comparatively even throughout the year, with slight peaks in summer and winter. Restaurant and grocery buildings—which have higher EUIs—have more variable monthly EUI profiles, with a noticeable peak during the summer months. Hospitals also have a higher average EUI, but show a higher winter peak. As expected, school EUIs decrease during the summer.

Figure 36. Monthly Electric EUI by Building Type



Annual Electricity Use Estimates

Total annual electricity consumption in the region may be estimated as the sum of the product of each building's electric EUI by its floor space and case weight. The results from this exercise are shown in Table 16.

Table 16. 2007 Total Electricity Consumption Estimates

	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Total Square Feet (millions)	2,703	458	98	526	52	275	56	135	142	513	268	98	83
% Total Square Feet		17%	4%	19%	2%	10%	2%	5%	5%	19%	10%	4%	3%
Electric EUI		17.6	42.5	17.1	44.8	10.0	31.7	18.0	19.6	14.0	9.9	14.0	7.3
Estimate of Total MWh (1000s)	45,054	8,087	4,142	8,967	2,314	2,758	1,783	2,432	2,776	7,180	2,646	1,365	605
% of MWh		17%	11%	18%	6%	6%	4%	5%	6%	15%	6%	4%	2%

The Northwest Power and Conservation Council (Council) provides regional consumption estimates in the draft 6th Power Plan. The Council's reported 2007 actual commercial sector consumption was 53.5 million MWh.[10] The current study estimate is 49.6 million MWh, which falls within 16% of the Council's estimate of regional consumption in 2007.

The same exercise in the 2003 study produced a regional aggregate consumption figure within 5% of the Council's estimate. A number of factors can affect aggregate consumption estimates, as reported by regional utilities and as calculated in this study. For example, utility sales for the commercial sector often tend to include small industrial customers, thus overstating commercial sales. Calculation of case weights in this study from square footage numbers in Dodge might also affect the expansion of EUIs to the region.

Natural Gas EUIs

For the current study, Cadmus obtained more natural gas billing histories than in the 2003 study, which enabled us to provide more robust results. The 2003 study only reported on billing histories from 17% of CBSA buildings, compared to 59% of CBSA buildings in the current study. Detailed tables summarizing the natural gas EUIs are in Appendix D.

The overall weather-normalized annual natural gas EUI was 0.46 therms per square foot. This is similar to the 2003 findings, where the overall natural gas EUI was 0.49 therms per square foot.

[10] Northwest Power and Conservation Council. "Draft Sixth Power Plan." Accessed August 25, 2009. http://www.nwcouncil.org/energy/powerplan/6/C_090309.pdf

Figure 37 shows the annual natural gas EUIs by building type. Restaurants have the highest gas EUI, at 2.3 therms per square foot; however, this EUI has dropped considerably since 2001. Offices, warehouses, and retail have the lowest natural gas EUIs. Because the 2003 study had fewer gas EUI observations, statistical comparisons at the building level are not meaningful.

Figure 37. Annual Natural Gas EUI Building Type

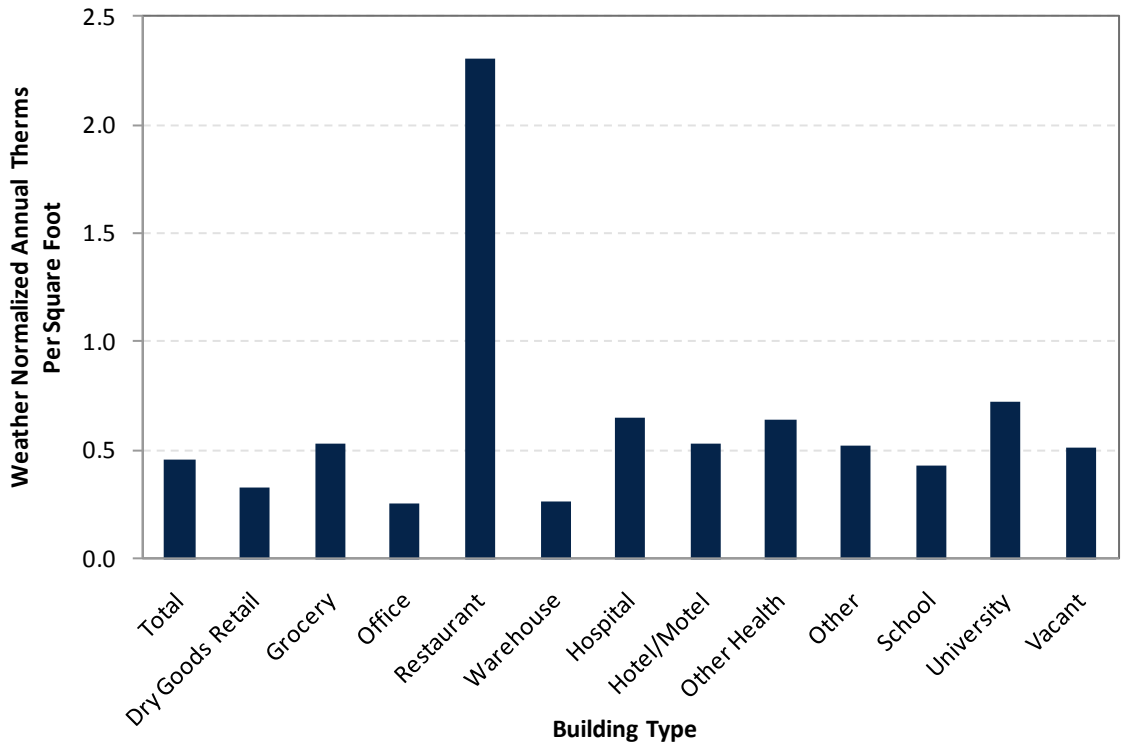
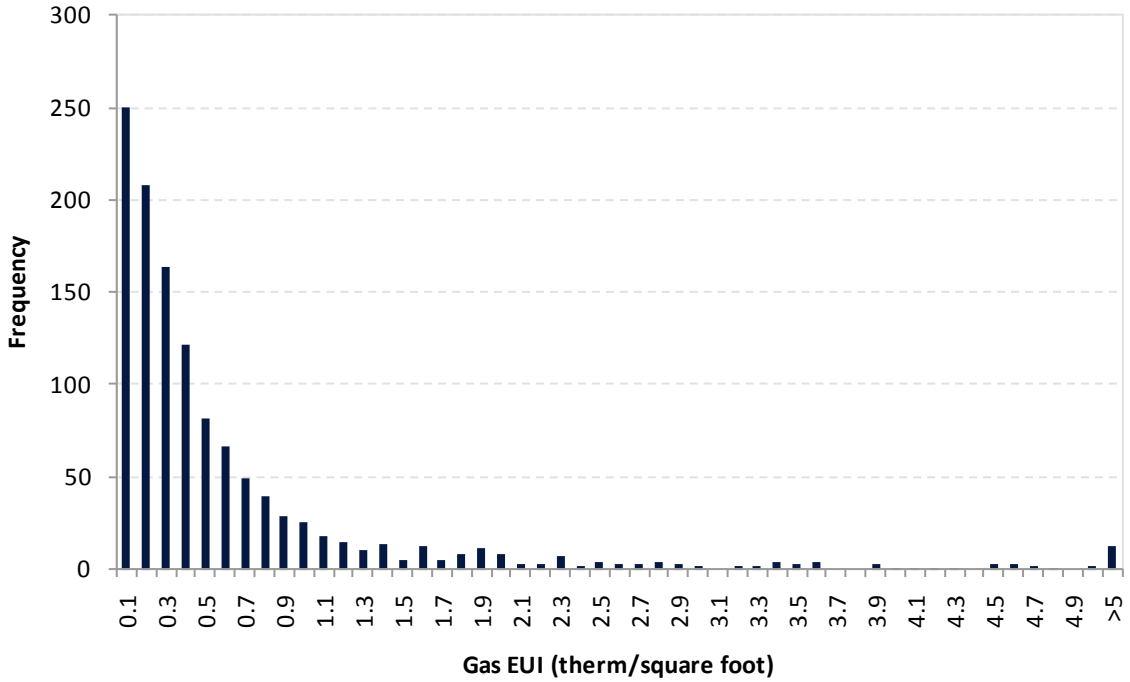


Figure 38 shows a distribution of the natural gas EUIs. Most EUIs are 0.5 therm per square foot or less. Distributions by a few key buildings types are shown in Appendix D.

Figure 38. Distribution of Natural Gas EUIs



The standard errors for the natural gas EUIs by building type are shown in Table 17. The natural gas EUIs are estimated with slightly less precision by building type than the electric EUIs, with a 7% RSE for retail, grocery, and office EUIs. A higher level of uncertainty is associated with the health, hospital, and university EUIs (RSE 8-23%) due to the smaller sample sizes.

Table 17. Natural Gas EUI Standard Errors
Building Type

Building Type	***Total***	***Dry Goods Retail***	***Grocery***	***Office***	***Restaurant***	***Warehouse***	***Hospital***	***Hotel/Motel***	***Other Health***	***Other***	***School***	***University***	***Vacant***
Gas EUI (weather normalized, weighted)	0.46	0.33	0.53	0.25	2.31	0.26	0.65	0.53	0.64	0.52	0.43	0.72	0.51
# of Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35
Gas EUI Std Err	0.02	0.03	0.04	0.02	0.17	0.04	0.13	0.05	0.10	0.06	0.04	0.14	0.14
RSE	4%	8%	8%	8%	7%	15%	21%	9%	16%	11%	9%	19%	28%

Table 18 contains data from the 2003 CBECS. On average, the CBSA natural gas EUIs are slightly lower than those reported in CBECS. The exceptions are restaurants and hotels/motels, which show slightly higher CBSA values.

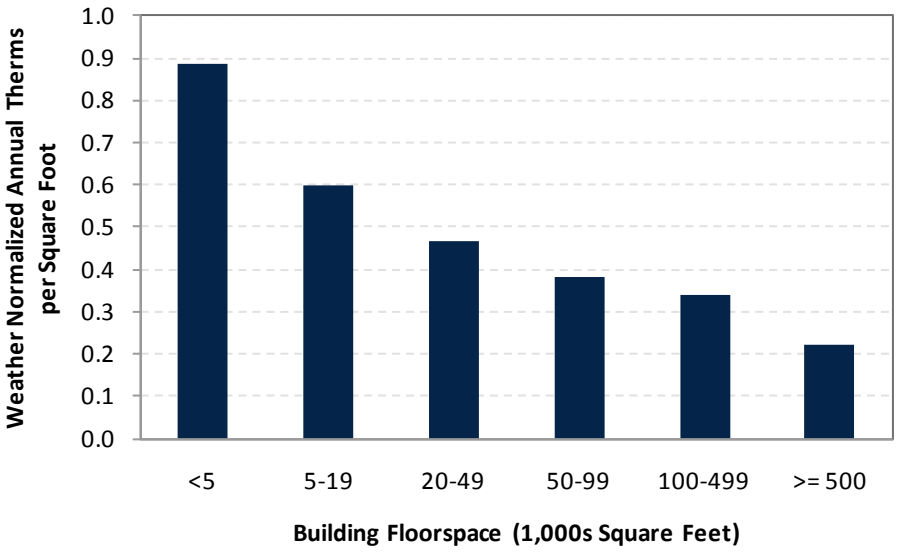
Table 18. Annual Natural Gas EUI Estimates Compared with CBECS
Building Type

CBSA Building Type	2007 CBSA	2003 CBECS
	EUI (therms/sq.ft.)	*Western EUI (therms/sq.ft.)*
Average (All Buildings)	0.46	
Dry Goods Retail	0.33	0.36
Grocery	0.53	0.18
Office	0.25	0.39
Restaurant	2.31	2.13
Warehouse	0.26	0.33
Hospital	0.65	--
Hotel/Motel	0.53	0.49
Other Health	0.64	0.67
Other	0.52	0.58
School	0.43	0.55
University	0.72	--
Vacant	0.51	--

Natural gas EUIs by building size are shown in Figure 39. Natural Gas EUI by Building Size. The results for buildings with less than 5,000 square feet are significantly higher than other building sizes. The EUI estimates steadily decrease as building size increases. Again, it is important to note building size correlates with building type.

Only current values are presented in Figure 39, as the sample sizes from the 2003 study were smaller and less reliable. Overall, similar trends were observed in 2003, although slightly higher values were estimated for the larger building sizes.

Figure 39. Natural Gas EUI by Building Size



The standard errors for the natural gas EUIs by building size range from 7% to 26% (Table 19). The results for large buildings (over 500,000 square feet) are the least precise due to the low number of observations (n=21).

Table 19 compares the natural gas EUI results by building size to CBECS data. Northwest EUI values are comparable to Western Census region estimates. CBSA buildings over 500,000 square feet exhibit a much lower gas EUI, even when considering the 26% RSE, than the value reported in the CBECS results.

Table 19. Annual Natural Gas EUI Estimates Compared with CBECS

Building Size

	2007 CBSA	2003 CBECS
CBSA Square Footage Categories	*EUI (therms/sq.ft.)*	*Western EUI (therms/sq.ft.)*
Less than 5,000	0.89 ± 10%	0.76
5,000-19,000	0.60 ± 8%	0.52
20,000-49,000	0.47 ± 7%	0.39
50,000-99,000	0.38 ± 8%	0.28
100,000-499,000	0.34 ± 9%	0.36
Over 500,000	0.22 ± 26%	0.60

CBECS data for natural gas EUIs by cohort are displayed in Figure 40 and Table 20. Overall, the average natural gas EUIs shows little variation among the four cohorts. As with building size, only current values are reported, although in comparison to 2003, the EUIs for 1995–2001 buildings have slightly decreased, while the older cohorts appear to have increased their therm per square foot gas consumption slightly.

Figure 40. Annual Natural Gas EUI by Cohort

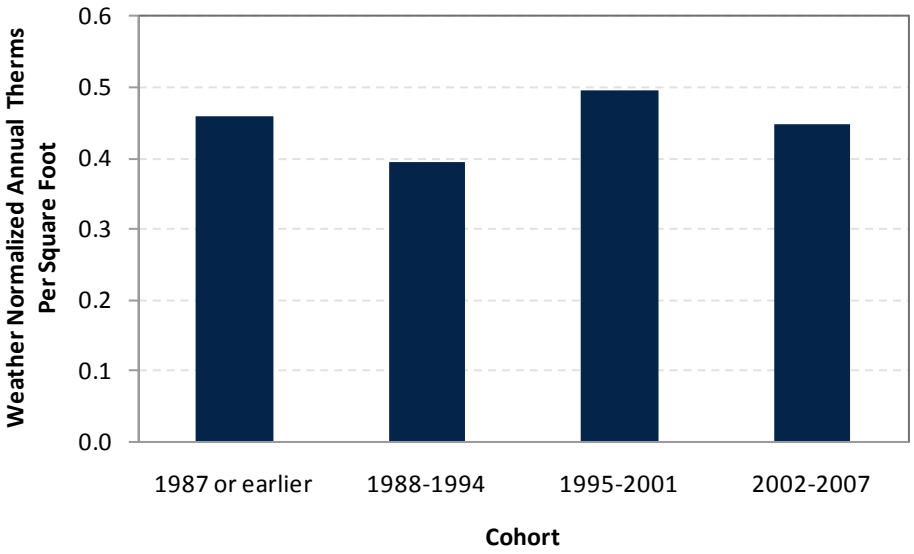


Table 20 provides the EUI values and corresponding standard errors by cohort. The EUIs do not vary much among the four cohorts, and all cohorts have overlapping confidence intervals, except the 1988–1994 and 1995–2001 cohorts.

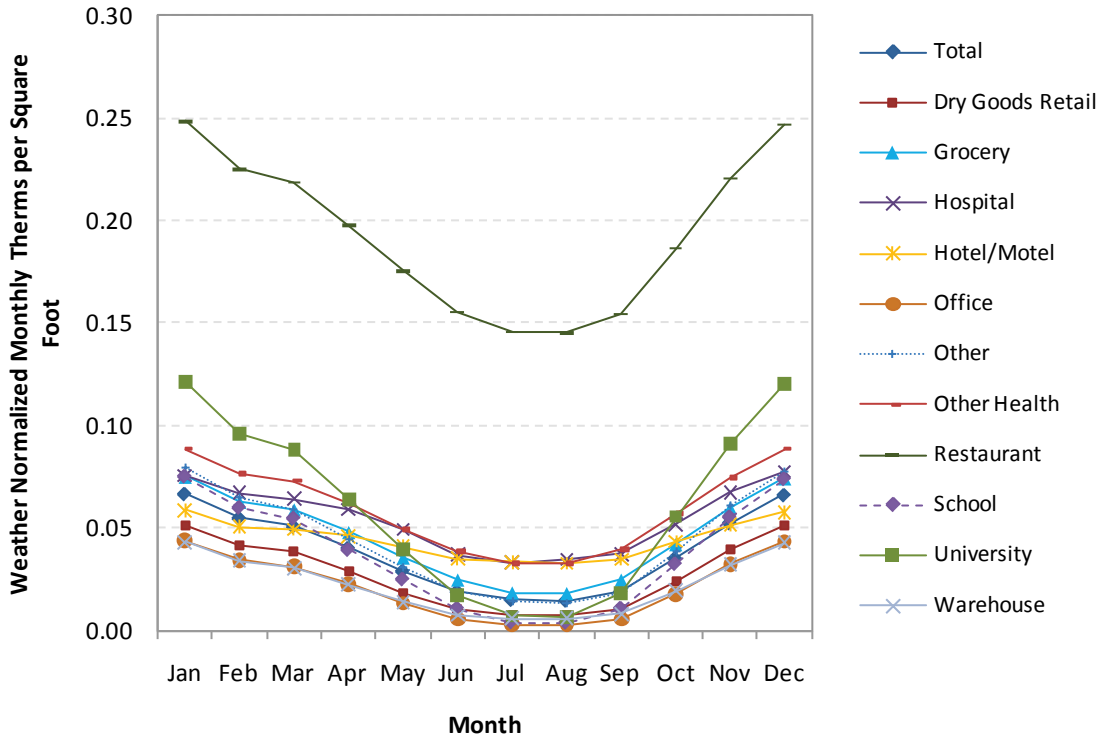
In comparison to CBECS estimates, the CBSA natural gas intensities by vintage are lower, particularly for more recent buildings (Table 20).

Table 20. Annual Natural Gas EUI Estimates Compared with CBECS
Year Constructed

	2007 CBSA	***2003 CBECS***
CBSA Year Constructed	*EUI (therms/sq.ft.)*	*Western EUI (therms/sq.ft.)*
1987 or earlier	0.37 ± 6%	0.58
1988-1994	0.48 ± 9%	0.48
1995-2001	0.48 ± 9%	0.77
2002-2007	0.48 ± 10%	0.62 (to 2003)

The monthly natural gas EUI pattern, shown in Figure 41, is generally inverse to the monthly electric EUI with winter peaks for all building types. For all building types, the winter consumption nearly doubled from summer gas consumption. However, restaurants in particular have a pronounced gas consumption pattern, due to the more predominant use of gas in that sector.

Figure 41. Monthly Natural Gas EUI by Building Type



Appendix A: Gap Analysis Tables

Overview

Appendix A provides additional summary tables supporting the gap analysis. Tables A1 through A3 provide analysis for identifying the gaps addressed by the supplemental sample. Table A4 and A5 provide a summary of the urban/rural analysis.

Table A1. Ratio of Sample/Population
(100%=Same Representation Between Sample and Population, <100% = Low Sample Representation)

State	Cohort	Total	Building Type											
			Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
ID	Pre '87	15%	11%	48%	4%	34%	53%		38%	25%	4%	20%	54%	116%
	'88 - '94	93%	213%	274%	62%		244%		9%		123%			
	'95 - '01	72%	155%	129%	31%		94%	20%	60%	85%	64%	93%	740%	
MT/WY	Pre '87	22%	1%	8%	3%	34%		14%			1%		77%	75%
	'88 - '94													
	'95 - '01	58%	120%		15%		16%	6%	53%	107%	116%	69%	296%	
OR	Pre '87	153%	126%	150%	115%	172%	65%	164%	35%	432%	381%	219%	52%	117%
	'88 - '94	158%	237%	184%	158%	282%	141%			106%	137%	136%		449%
	'95 - '01	106%	162%	88%	70%	44%	199%	1%	50%	50%	143%	174%		
WA	Pre '87	81%	50%	35%	104%	47%	45%	67%	175%	77%	44%	34%	75%	80%
	'88 - '94	134%	222%	187%	148%	284%	192%		105%	68%	115%	163%	141%	512%
	'95 - '01	111%	185%	110%	82%	64%	151%		53%	78%	115%	197%	343%	
Total	Pre '87	94%	72%	73%	102%	89%	54%	106%	111%	110%	90%	78%	71%	92%
	'88 - '94	140%	229%	189%	151%	283%	181%		56%	91%	124%	153%	141%	471%
	'95 - '01	99%	172%	107%	69%	62%	156%	13%	54%	76%	113%	148%	408%	

**Highlighted cells indicate areas of sample deficiency.*

Table A2. Survey Distribution by Building Type

State	Cohort	Total*	Building Type											
			Dry Goods Retail	Grocery	Office	Restaurant	Ware-house	Hospital	Hotel/ Motel	Other Health	Other	School	University	Vacant
Idaho	*Pre '87*	36	6	2	5	2	3	0	2	3	5	3	1	4
	'88 - '94	23	5	1	4	0	4	0	1	0	8	0	0	0
	'95 - '01	46	5	2	5	0	2	1	2	5	13	8	3	0
	Post '01	64	15	2	10	3	6	4	0	5	5	11	3	0
Montana/	*Pre '87*	17	1	1	1	1	0	5	0	0	2	0	4	2
Wyoming	*'88 - '94*	0	0	0	0	0	0	0	0	0	0	0	0	0
	'95 - '01	32	4	0	6	0	2	1	3	1	7	6	2	0
	Post '01	29	8	0	4	0	8	1	1	2	2	2	1	0
Oregon	*Pre '87*	416	63	48	95	47	28	28	9	6	43	36	2	11
	'88 - '94	157	26	19	46	19	12	0	0	6	18	8	0	3
	'95 - '01	60	4	4	16	1	10	1	4	3	11	6	0	0
	Post '01	108	23	6	18	4	10	7	6	3	4	24	3	0
Washington	*Pre '87*	350	49	18	72	21	42	1	18	22	42	16	36	13
	'88 - '94	132	24	7	31	7	10	0	2	8	21	16	4	2
	'95 - '01	148	28	11	28	7	17	0	2	3	34	11	7	0
	Post '01	146	32	10	18	1	17	13	11	6	6	30	2	0
	*Sno-PUD***	105	19	14	28	4	9	0	7	7	9	8	0	0
Total	*Pre '87*	819	119	69	173	71	73	34	29	31	92	55	43	30
	'88 - '94	312	55	27	81	26	26	0	3	14	47	24	4	5
	'95 - '01	286	41	17	55	8	31	3	11	12	65	31	12	0
	Post '01	347	78	18	50	8	41	25	18	16	17	67	9	0
	Sno-PUD	105	19	14	28	4	9	0	7	7	9	8	0	0
Total	*All*	1869	312	145	387	117	180	62	68	80	230	185	68	35

Table A3. Survey Distribution by State and Cohort

State	Field Data Collection							
	Cohort	Scheduled	Walk-In	Drive-By	Total Field Visits	Telephone Survey	Total Surveyed*	% With Electric Billing History
Idaho	*Pre '87*	17	4	15	36	0	36	81%
	'88 - '94	12	4	7	23	0	23	70%
	'95 - '01	44	2	0	46	0	46	76%
	Post '01	64	0	0	64	0	64	?
Montana/ Wyoming	*Pre '87*	1	12	1	14	3	17	35%
	'88 - '94	0	0	0	0	0	0	0%
	'95 - '01	32	0	0	32	0	32	59%
	Post '01	29	0	0	29	0	29	?
Oregon	*Pre '87*	302	59	51	412	4	416	83%
	'88 - '94	103	28	21	152	5	157	71%
	'95 - '01	59	1	0	60	0	60	38%
	Post '01	108	0	0	108	0	108	?
Washington	*Pre '87*	65	132	111	308	42	350	61%
	'88 - '94	32	32	45	109	23	132	61%
	'95 - '01	144	4	0	148	0	148	43%
	Post '01	146	0	0	146	0	146	?
	*Snohomish** *	105	0	0	105	0	105	100%
Total	*Pre '87*	385	207	178	770	49	819	73%
	88 - '94	147	64	73	284	28	312	67%
	'95 - '01	279	7	0	286	0	286	67%
	Post '01	347	0	0	347	0	347	?
	Snohomish	105	0	0	105	0	105	100%
Total	*ALL*	1263	278	251	1792	77	1869	59%

* Original CBSA included 1157 sites. PGE (260), Snohomish(105), New Construction (347) are now included.

**Snohomish data will be allocated to different cohorts

Table A3. Comparison of Actual Counts and Theoretical Counts Based on Population Distribution (USDA rural definition)

		PNNRES PRE 1988 (n=608)			CBSA 1 (n=1157)			CBSA 1 + Sno + PGE (n=1522)		
Building Size	**Type**	**Actual**	**Expect**	**Diff.**	**Actual**	**Expect**	**Dif.**	**Actual**	**Expect**	**Diff.**
1: Less than 5,000 SQFT	All	132	96	36	194	136	58	288	179	109
2: 5,000-20,000 SQFT	All	192	175	17	343	291	52	428	383	45
3: 20,000-50,000 SQFT	All	110	119	-9	237	218	19	317	287	30
4: 50,000-100,000 SQFT	All	48	68	-20	154	182	-28	201	239	-38
5: 100,000-500,000 SQFT	All	97	123	-26	200	291	-91	252	382	-130
6: Over 500,000 SQFT	All	29	26	3	29	39	-10	36	52	-16
All	**All**	**608**	**608**	**0**	**1,157**	**1,157**	**0**	**1,522**	**1,522**	**0**
1: Less than 5,000 SQFT	Rural	60	49	11	74	71	3	74	94	-20
2: 5,000-20,000 SQFT	Rural	63	81	-18	112	97	15	112	128	-16
3: 20,000-50,000 SQFT	Rural	27	33	-6	71	59	12	71	78	-7
4: 50,000-100,000 SQFT	Rural	12	19	-7	47	57	-10	47	75	-28
5: 100,000-500,000 SQFT	Rural	7	16	-9	28	53	-25	28	70	-42
All	**Rural**	**169**	**197**	**-28**	**332**	**337**	**-5**	**332**	**444**	**-112**
1: Less than 5,000 SQFT	Urban	72	47	25	120	65	55	214	85	129
2: 5,000-20,000 SQFT	Urban	129	95	34	231	194	37	316	255	61
3: 20,000-50,000 SQFT	Urban	83	86	-3	166	159	7	246	209	37
4: 50,000-100,000 SQFT	Urban	36	49	-13	107	125	-18	154	164	-10
5: 100,000-500,000 SQFT	Urban	90	108	-18	172	238	-66	224	312	-88
6: Over 500,000 SQFT	Urban	29	26	3	29	39	-10	36	52	-16
All	**Urban**	**439**	**411**	**28**	**825**	**820**	**5**	**1,190**	**1,078**	**112**

Table A3. Comparison of Actual Counts and Theoretical Counts Based on Population Distribution (Census rural definition)

		PNNRES PRE 1988 (n=608)			CBSA 1 (n=1157)			CBSA 1 + Sno + PGE (n=1522)		
Building Size	**Type**	Actual	Expect*	Diff.	Actual	Expect*	Diff.	Actual	Expect*	Diff.
1: Less than 5,000 SQFT	All	132	96	36	194	136	58	288	179	109
2: 5,000-20,000 SQFT	All	192	175	17	343	291	52	428	383	45
3: 20,000-50,000 SQFT	All	110	119	-9	237	218	19	317	287	30
4: 50,000-100,000 SQFT	All	48	68	-20	154	182	-28	201	239	-38
5: 100,000-500,000 SQFT	All	97	123	-26	200	291	-91	252	382	-130
6: Over 500,000 SQFT	All	29	26	3	29	39	-10	36	52	-16
All	**All**	**608**	**608**	**0**	**1157**	**1,157**	**0**	**1522**	**1,522**	**0**
1: Less than 5,000 SQFT	Rural	47	39	8	61	67	-6	79	88	-9
2: 5,000-20,000 SQFT	Rural	42	62	-20	74	71	3	81	93	-12
3: 20,000-50,000 SQFT	Rural	14	19	-5	51	39	12	56	52	4
4: 50,000-100,000 SQFT	Rural	4	9	-5	26	26	0	31	34	-3
5: 100,000-500,000 SQFT	Rural	5	5	0	13	30	-17	17	39	-22
All	**Rural**	**112**	**134**	**-22**	**225**	**233**	**-8**	**264**	**306**	**-42**
1: Less than 5,000 SQFT	Urban	85	57	28	133	69	64	209	91	118
2: 5,000-20,000 SQFT	Urban	150	113	37	269	220	49	347	290	57
3: 20,000-50,000 SQFT	Urban	96	100	-4	186	179	7	261	235	26
4: 50,000-100,000 SQFT	Urban	44	59	-15	128	156	-28	170	205	-35
5: 100,000-500,000 SQFT	Urban	92	118	-26	187	261	-74	235	343	-108
6: Over 500,000 SQFT	Urban	29	26	3	29	39	-10	36	52	-16
All	**Urban**	**496**	**474**	**22**	**932**	**924**	**8**	**1258**	**1,216**	**42**

*** Based on Population Distribution**

Appendix B: Data Collection Form

2008 Commercial Building Stock Assessment

****Confidential: All data collected on this form is confidential and may only be used for this study.*

1. General Building Information

Site Name			
Site Address			
City/State/Zip			

Primary Contact for Site Visit

Contact 1		Title					
Address		City		State		Zip	
Phone 1a		Phone 1b		Email			

Alternate Contact for Site Visit

Contact 2		Title					
Address		City		State		Zip	
Phone 2a		Phone 2b		Email			

General Building/Complex Information

Is the site building: **F**unctional, **D**emolished, **V**acant, or **I**naccessible?	F D V I
Is this site a **S**ingle building or a **M**ultiple building complex?	S M
What best describes the economic use of the building/complex? (table below)	
Total Bldg. Floor Area (SQFT) including enclosed parking (exclude residential)	
Primary Heating Fuel (table below)	
Primary Cooling Fuel (table below)	
No. of Floors above grade	
No. of Floors below grade	
Are there areas within bldg. with high concentration of computers/servers? (If Yes, see page 15)	Y N

Economic Use Codes

1	Retail	6	Health
2	Grocery	7	Hotel/Motel
3	Office	8	School
4	Restaurant	9	Other
5	Warehouse	10	Vacant

Fuel Type Codes

1	Electricity
2	Natural Gas
3	Fuel Oil
4	Propane
5	Other

Comments:

Building Occupancy & Management

What percentage of the building/complex is occupied by the Owner and/or Tenants?				%owner	%tenant
Original Construction		Original Total Floor Area			
Is a renovation/upgrade planned in the next 2 years?					
If yes, which systems? **L**ighting, **H**VAC, HVAC **C**ontrols, **R**efrigeration, **W**indows,				L H C R W Ro	
Is a staff person whose duties include energy conservation and/or management?					
Is maintenance/repair work done **I**n-house, or by an **O**utside party?					
General O&M	I O	HVAC Controls	I O	Refrigeration	I O
Lighting	I O	HVAC Equipment	I O		

General Space Information

	Primary Space	Secondary Space	Tertiary Space	Common Space	Indoor Parking
	Space ID: 1	Space ID: 2	Space ID: 3	Space ID: C	Space ID: P
Functional Use (table below)					
% Of Total Building SQFT					
Space Cooled?	Y N	Y N	Y N	Y N	
After Hours Shutoff/Setup?	Y N	Y N	Y N	Y N	Y N
Space Heated?	Y N	Y N	Y N	Y N	
After Hours Shutoff/Setback?	Y N	Y N	Y N	Y N	Y N

Functional Use Codes (Space Type)	
1 Assembly / Recreation	7 Office
2 Classroom	8 Sales
3 Dining	9 Storage – Low bay
4 Guest room	10 Vacant
5 Kitchen	11 Warehouse – High bay
6 Laundry / Housekeeping	

Utility Information

Electric Accounts

ID:	E1	E2	E3
Electric Utility Name:			
Meter #			

Gas Accounts

ID:	G1	G2	G3
Gas Utility Name:			
Meter #			

2a. Business Schedules

Primary Schedule For Space ID 1

Day Type	Business Hours (1-24)	Closed All Day?	Open 24 Hours?
Weekday	from _____ To _____	☐	☐
Saturday	from _____ To _____	☐	☐
Sunday	from _____ To _____	☐	☐

Primary Schedule For Space ID 2

Day Type	Business Hours (1-24)	Closed All Day?	Open 24 Hours?
Weekday	from _____ To _____	☐	☐
Saturday	from _____ To _____	☐	☐
Sunday	from _____ To _____	☐	☐

Primary Schedule For Space ID 3

Day Type	Business Hours (1-24)	Closed All Day?	Open 24 Hours?
Weekday	from _____ To _____	☐	☐
Saturday	from _____ To _____	☐	☐
Sunday	from _____ To _____	☐	☐

Primary Schedule For Space ID Common

Day Type	Business Hours (1-24)	Closed All Day?	Open 24 Hours?
Weekday	from _____ To _____	☐	☐
Saturday	from _____ To _____	☐	☐
Sunday	from _____ To _____	☐	☐

Primary Schedule For Space ID Indoor Parking

Day Type	Business Hours (1-24)	Closed All Day?	Open 24 Hours?
Weekday	from _____ To _____	☐	☐
Saturday	from _____ To _____	☐	☐
Sunday	from _____ To _____	☐	☐

3. Building Envelope

WALLS		Space 1	Space 2	Space 3	Space C
Surface Type:	**B** = Brick **C** = Concrete **CB** = Concrete Block **F** = Wood **M** = Metal	B C CB F M	B C CB F M	B C CB F M	B C CB F M
Framing Type:	**M** = Metal **W** = Wood	M W	M W	M W	M W

WINDOWS		Space 1	Space 2	Space 3	Space C
% of Wall Area					
Layers of Glazing		1 2 3	1 2 3	1 2 3	1 2 3
Glazing Material:	**C** = Clear **O** = Opaque **R** = Reflective **T** = Tinted	C O R T	C O R T	C O R T	C O R T
Frame Type:	**M** = Metal **V** = Vinyl **W** = Wood	M V W	M V W	M V W	M V W
Window Type:	**F** = Fixed **O** = Operable	F O	F O	F O	F O

ROOFS		Space 1	Space 2	Space 3	Space C
Roof Type:	**F** = Flat **P** = Pitched	F P	F P	F P	F P
Surface Material:	**B** = Built-up **C** = Cool Roof **E** = Membrane **M** = Metal **S** = Shingles/Felt	B C E M S	B C E M S	B C E M S	B C E M S
Deck Material:	**C** = Concrete **M** = Metal **W** = Wood	C M W	C M W	C M W	C M W
Roof Area (SF): [Flat Roof Only]					

FLOORS		Space 1	Space 2	Space 3	Space C
Floor Type:	**B** = Basement **C** = Crawl **S** = Slab **U** = Unconditioned	B C S U	B C S U	B C S U	B C S U

SKYLIGHTS	Space 1	Space 2	Space 3	Space C
Skylights?	Y N	Y N	Y N	Y N
Skylight Area (SF):				
Lighting Dimming Control?	Y N	Y N	Y N	Y N

4. Unitary HVAC System

Packaged System ID:	PS1	PS2	PS3
Space ID (s) Served	C 1 2 3	C 1 2 3	C 1 2 3
Packaged HVAC System Type (Table below)			
Number of Identical Units			
Age of Units (Years)			
Manufacturer			
Model Name/Number			
Rated Cooling Capacity (Tons)			
Performance Rating (Circle one)	*EER SEER*	*EER SEER*	*EER SEER*
Performance Rating Value			
Temperature Control Type (Table below)			
Supply Fans: **Volume Control:** [VAV systems only] **D**ischarge Damper **I**nlet Vane **V**FD	D I V	D I V	D I V
Return Fans?	Y N	Y N	Y N
Economizer: **A**ir **W**ater **N**one	A W N	A W N	A W N
Primary Heat: **Fuel Type** (Table below)			
Heating Type (Table below)			
Rated Efficiency (%) (may be > 100)			
Supp. Heat **Fuel Type** (Table below)			
Heating Type (Table below)			
Rated Efficiency (%) (may be > 100)			

Packaged HVAC System Type Codes			
0	Packaged Single Zone – HEAT only	7	Heat Pump, ground source
1	Packaged Single Zone – A/C only	8	Heat pump, water source
2	Packaged Single Zone – A/C w/ heat	9	Split System
3	Packaged Multi Zone	10	Unit Heater
4	Packaged VAV	11	Unit Ventilator
5	Evaporative Cooler	12	Window / Wall A/C unit
6	Heat Pump, air source	13	Window / Wall Heat Pump

Temperature Control Type Codes	
1	Thermostat – Programmable
2	Thermostat - Manual
3	EMS
4	Always On
5	Manual on/off
6	Time clock

Fuel Type Codes	
1	Electricity
2	Natural Gas
3	Fuel Oil
4	Propane
5	Other

Heating Type Codes	
1	Forced Air Furnace
2	Resistance
3	Central Boiler
4	Other

5a. Central HVAC System - Boiler

Boiler ID:	**B1**	**B2**	**B3**
Boiler Service: **S**team **H**ot Water	S H	S H	S H
Fuel Type (Table below)			
Number of Identical Boilers			
Number of Units on Standby			
Age of Boiler(s) (years)			
Manufacturer			
Model Name/Number			
Input Capacity (kBtu/hr)			
Efficiency *(Nominal %)*			
EMS Control?	Y N	Y N	Y N

HOT WATER PUMPS

Quantity			
Motor HP			
Motor Efficiency (% or S, H, P)			
Capacity Control: **1** speed **2** speed **V**ariable	1 2 V	1 2 V	1 2 V
EMS Control?	Y N	Y N	Y N

Fuel Type Codes	
1	Electricity
2	Natural Gas
3	Fuel Oil
4	Propane
5	Other

5b. Central HVAC System - Chiller

Chiller ID:	C1	C2	C3
Chiller Type (Table below)			
Number of Identical Chillers			
Age of Chiller(s) (Years)			
Manufacturer			
Model Name/Number			
Rated Cooling Capacity (Tons)			
Compressor: Design Full Load kW			
EMS Control?	Y N	Y N	Y N

HEAT REJECTION SYSTEM

Condenser Type (Table below)			
Fan Control: **CO**nstant **CY**cle **P**ony motor **T**wo-Speed **V**ariable Speed	CO CY P T V	CO CY P T V	CO CY P T V
Condenser Fans: Quantity			
HP			
EMS Control?	Y N	Y N	Y N

CHILLED WATER PUMPS

Pump Use: **P**rimary **S**econdary	P S	P S	P S
Quantity			
Motor HP			
Motor Efficiency (% or S, H, P)			
Capacity Control: **1** speed **2** speed **V**ariable	1 2 V	1 2 V	1 2 V
EMS Control?	Y N	Y N	Y N

CONDENSER WATER PUMPS

Quantity			
Motor HP			
Motor Efficiency (% or S, H, P)			
Capacity Control: **1** speed **2** speed **V**ariable	1 2 V	1 2 V	1 2 V
EMS Control?	Y N	Y N	Y N

Chiller Type Codes			
1	Centrifugal	4	Absorption, hot water
2	Reciprocating	5	Absorption, natural gas
3	Rotary	6	Absorption, steam

Condenser Type Codes	
1	Air Cooled Condenser
2	Cooling Tower
3	Evaporative Cooler
4	Other

5c. Central HVAC System – Air Handler

	Air Handler ID:	**AH1**	**AH2**	**AH3**
Air Distribution System Type	(Table below)			
Temperature Control Type	(Table below)			
Age of Air Handler	(Years)			
Supply Fans: Volume Control: **N**one **I**nlet Vane **V**FD		N I V	N I V	N I V
Motor HP				
Motor Efficiency	(% or S, H, P)			
Return Fans?		Y N	Y N	Y N
Motor HP				
Motor Efficiency	(% or S, H, P)	/ /	/ /	/ /
Economizer?		Y N	Y N	Y N
Terminal Reheat: **E**lectric **W**ater **S**team **N**one		E S W N	E S W N	E S W N

Air Distribution System Type Codes			
1	CV - Single Zone	8	VAV – Terminal Reheat
2	CV - Multi Zone	9	VAV – Dual Duct
3	CV - Dual Duct	10	Fan Coil
4	CV - Terminal Reheat	11	Baseboard
5	FPS – Fan Powered VAV - Series	12	Heat & Vent
6	FPP – Fan Powered VAV - Parallel	13	Hydronic Heat Pump
7	VAV – Cooling Only	14	Induction

Temperature Control Type Codes	
1	Thermostat – Programmable
2	Thermostat - Manual
3	EMS
4	Always On
5	Manual on/off
6	Time clock

6. Domestic Water Heating

Water Heater ID:	WH1	WH2	WH3	WH4
Water Heater Type (Table below)				
Fuel Type (Table below)				
Number of Identical Units				
Age Of Water Heater (years)				
Tank Capacity (Gallons)				
Input Capacity (kW or kBtu/hr)				
Tank Wrap?	Y N	Y N	Y N	Y N
Recirculation Pump?	Y N	Y N	Y N	Y N

Water Heater Type Codes	
1	Heat Pump
2	Heat Recovery
3	Instantaneous (tankless)
4	Self-Contained
5	Storage Tank (Central Boiler)
6	Other

Fuel Type Codes	
1	Electricity
2	Natural Gas
3	Fuel Oil
4	Propane
5	Other

8a. Indoor Lighting

Lighting Group ID# (multiple pages OK)	IL-_____	IL-_____	IL-_____	IL-_____	IL-_____	IL-_____
Usage: General Area **R**etail Display **T**ask	G R T	G R T	G R T	G R T	G R T	G R T
FLUORESCENT						
F = Standard Tube	F	F	F	F	F	F
U = U-tube	U	U	U	U	U	U
Length (1.5' 2' 3' 4' 6' 8')						
Diameter (T5 T8 T10 T12)						
CF = Compact Fluorescent	CF	CF	CF	CF	CF	CF
CIR = Circline Fluorescent	CIR	CIR	CIR	CIR	CIR	CIR
HID						
MH = Metal Halide	MH	MH	MH	MH	MH	MH
H = High Pressure Sodium	H	H	H	H	H	H
MISC.						
I = Incandescent	I	I	I	I	I	I
Q = Quartz/Halogen	Q	Q	Q	Q	Q	Q
XI = Exit Incandescent	XI	XI	XI	XI	XI	XI
XCF = Exit CF	XCF	XCF	XCF	XCF	XCF	XCF
LED = Exit LED	LED	LED	LED	LED	LED	LED
Watts per lamp:						
Number of lamps per fixture:						
Total number of fixtures:						
Ballast Type: **ES** = ES Magnetic	ES	ES	ES	ES	ES	ES
E = Electronic	E	E	E	E	E	E
Control Type: **E** = EMS	E	E	E	E	E	E
DC = Daylighting - Continuous dimming	DC	DC	DC	DC	DC	DC
DS = Daylighting - Step dimming	DS	DS	DS	DS	DS	DS
MB = Manual – circuit breaker	MB	MB	MB	MB	MB	MB
MS = Manual – wall switch	MS	MS	MS	MS	MS	MS
OS = Occupancy sensor	OS	OS	OS	OS	OS	OS
P = Photocell	P	P	P	P	P	P
T = Timeclock	T	T	T	T	T	T
N = None (continuous)	N	N	N	N	N	N
% of Lighting load controlled:						
Are controls functional and used?	Y N	Y N	Y N	Y N	Y N	Y N

8b. Indoor Lighting – Overview

Lighting Group ID (unique entries)	**Description**	**Space ID** (select one)	**Area Surveyed (SF)**	**Total Area Represented (SF)**
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
IL-_____		C P 1 2 3		
		Total		

9. Outdoor Lighting

Outdoor Lighting ID#	OL-_____	OL-_____	OL-_____	OL-_____	OL-_____	OL-_____
Use type: **A**dvertising **P**arking Lot Bldg **F**açade **D**isplay **O**ther **S**afety/Security	A P F D G S	A P F D G S	A P F D G S	A P F D G S	A P F D G S	A P F D G S
FLUORESCENT						
F = Standard Tube	F	F	F	F	F	F
U = U-tube	U	U	U	U	U	U
Length (1.5' 2' 3' 4' 6' 8')						
Diameter (T5 T8 T10 T12)						
CF = Compact Fluorescent	CF	CF	CF	CF	CF	CF
CIR = Circline Fluorescent	CIR	CIR	CIR	CIR	CIR	CIR
HID						
MH = Metal Halide	MH	MH	MH	MH	MH	MH
H = High Pressure Sodium	H	H	H	H	H	H
N = Neon	N	N	N	N	N	N
MISC.						
Q = Quartz/Halogen	Q	Q	Q	Q	Q	Q
I = Incandescent	I	I	I	I	I	I
Watts per lamp (Enter 10 if Neon)						
-- Check if lamp watts were estimated?	☐	☐	☐	☐	☐	☐
Number of lamps per fixture (Enter 1 if Neon)						
Total number of fixtures (Total length if Neon)						
Ballast Type: **ES** = ES Magnetic	ES	ES	ES	ES	ES	ES
E = Electronic	E	E	E	E	E	E
Control Type: **E** = EMS	E	E	E	E	E	E
MB = Manual – circuit breaker	MB	MB	MB	MB	MB	MB
MS = Manual on/off switch	MS	MS	MS	MS	MS	MS
OS = Occupancy sensor	OS	OS	OS	OS	OS	OS
P = Photocell	P	P	P	P	P	P
PT = Photocell/Timeclock	PT	PT	PT	PT	PT	PT
T = Timeclock	T	T	T	T	T	T
N = None (continuous)	N	N	N	N	N	N
Are controls functional and used?	Y N	Y N	Y N	Y N	Y N	Y N

10. Miscellaneous Equipment

Economic Use Type	Equipment		
Grocery	Point-of-use terminals	(#)	
	Food Prep – Meat Dept.	(1=Yes, 0=No)	
	Food Prep – Deli	(1=Yes, 0=No)	
Hotel/Motel	Rooms	(#)	
	Annual Average occupancy	(%)	
	Kitchen – Full Service (below)	(1=Yes, 0=No)	
	Kitchen – Warming	(1=Yes, 0=No)	
	Laundry Facility (see below)	(1=Yes, 0=No)	
Office	PCs	(#)	
Other Health	Beds	(#)	
	Laundry Facility (see below)	(1=Yes, 0=No)	
Restaurant	Meals per day	(#)	
	Kitchen – Full Service (below)	(1=Yes, 0=No)	
	Kitchen – Warming	(1=Yes, 0=No)	
Retail	Point-of-use terminals	(#)	
School	Classrooms	(#)	
	Kitchen – Full Service (below)	(1=Yes, 0=No)	
	Kitchen – Warming	(1=Yes, 0=No)	
	Laundry Facility (see below)	(1=Yes, 0=No)	
Warehouse	Forklifts (electric only)	(#)	

Food Service Equipment		Electric / Gas
If Kitchen–Full Service	Broilers / Fryers	E G
	Griddle / Grill	E G
	Oven	E G
	Range	E G
	Dishwasher Booster	E G
If Laundry	Clothes Dryer – Commercial	E G
	Clothes Dryer – Residential	E G

Packaged Refrigeration Equipment	Count
Vending Machines	
Beverage Merchandizers	
Ice Machines	
Refrigerators	
Freezers	

11. Refrigeration Equipment

	Space ID:	C 1 2 3	C 1 2 3	C 1 2 3	C 1 2 3	C 1 2 3
Compressors	ID #:	**Cp-1**	**Cp-2**	**Cp-3**	**Cp-4**	**Cp-5**
Type: **R**eciprocating **S**crew **T**wo-stage multiplex **M**ultiplex **O**ther		R S T M O	R S T M O	R S T M O	R S T M O	R S T M O
Temp: **L**ow (0 to -10 °F) **M**edium (30 to 40 °F) **H**igh (50 to 55 °F)		L M H	L M H	L M H	L M H	L M H
Total HP:						
Quantity:						
Unloaders or VSD compressors?		U V NA	U V NA	U V NA	U V NA	U V NA
Heat Recovery Type: **N**one **S**pace Heating/Reheat **W**ater heating **O**ther		N S W O	N S W O	N S W O	N S W O	N S W O

Condensers	ID #:	**Cn-1**	**Cn-2**	**Cn-3**	**Cn-4**	**Cn-5**
Type: **A**ir-cooled **C**lose-approach **W**ater-cooled Air-cooled w/**P**re-cooler **E**vap-cooled		A P C E W	A P C E W	A P C E W	A P C E W	A P C E W
Total Fan HP:	(all types)					
Fan VSD?		Y N	Y N	Y N	Y N	Y N
Pump Motor HP	(water-cooled units only)					
Pump VSD?		Y N	Y N	Y N	Y N	Y N

Display Cases	ID #:	**DC-1**	**DC-2**	**DC-3**	**DC-4**	**DC-5**
Case Length:	(LF)					
Do the cases have doors?		Y N	Y N	Y N	Y N	Y N
Anti-sweat heater control?		Y N	Y N	Y N	Y N	Y N
Lighting Type:		T12 T8 T5 LED	T12 T8 T5 LED	T12 T8 T5 LED	T12 T8 T5 LED	T12 T8 T5 LED
Watts per lamp:						
Total number of lamps:						

12. Server Rooms

Number of Hardware in Use:	Less than 3 years old	4-10 years old	11-15 years old
Servers			
Storage Devices			
Backup Devices			
Routers, switches			

Total Floor Area:			
Separate electric meter:	[Y]	[N]	[?]
Total electrical load: (kW)			
Number of servers with power management system installed:			
Is power management system activated:	[Y]	[N]	[?]
Does space have it's own conditioning:	[Y]	[N]	[?]
Cooling capacity: (tons)			
Lighting power density: (W/sf)			
UPS Electrical capacity:			
UPS Current load:			
Size of Backup generator on site: (MW)			

Appendix C: Building Characteristic Tables

Overview

Appendix C provides detailed summary tables of CBSA building characteristics and equipment stock. Number of observations is provided in each table to give the user an idea of the robustness of the data. When a particular cell or cross tab had five less than five observations, the data were replaced with an "S." An "M" indicates there were zero observations in a cell.

General Building Information

Table C-GB1
General Building Information: Total Floor Area
(Millions of Square Feet)

Heated Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Square Feet (MM)	2,259.0	387.6	84.6	456.4	42.3	173.0	52.3	117.6	134.9	415.1	262.9	92.1	40.3
Percent of Total	83.6%	84.5%	86.8%	86.9%	82.1%	62.8%	93.0%	86.9%	95.2%	80.8%	98.1%	94.2%	48.7%
Percent of Conditioned	98.7%	98.4%	97.3%	97.4%	99.8%	97.7%	99.8%	99.3%	100%	99.0%	100%	99.6%	100%
# Observations	1985	354	147	389	127	175	58	66	92	252	209	76	40

Table C-GB2
General Building Information: Building Floor Area
Percent of Regional Floor Area

Building Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
<5	10.0%	9.5%	8.1%	8.5%	42.7%	4.5%	0.4%	3.8%	6.0%	20.2%	3.4%	2.6%	11.4%
5-19	23.1%	30.2%	17.5%	20.1%	49.0%	26.6%	9.1%	16.1%	32.9%	27.0%	4.9%	4.9%	41.2%
20-49	19.3%	13.0%	46.7%	13.0%	8.3%	19.7%	8.5%	22.6%	28.4%	16.3%	31.0%	33.2%	19.4%
50-99	15.2%	12.0%	22.9%	12.0%	0.0%	14.8%	6.8%	12.7%	11.2%	14.8%	25.7%	31.5%	20.3%
100-499	28.1%	32.3%	4.9%	34.7%	0.0%	28.8%	57.2%	32.4%	20.5%	21.7%	35.0%	27.8%	7.7%
>=500	4.4%	3.1%	0.0%	11.7%	0.0%	5.6%	18.1%	12.5%	1.0%	0.0%	0.0%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	2,061	366	151	400	130	182	59	70	94	265	211	77	56

Table C-GB3

General Building Information: Building Floor Area

Mean Per Building (Square Feet)

Building Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Mean Per Building	14,338	14,395	17,096	17,635	4,486	21,176	37,989	28,126	16,637	8,062	30,768	37,795	11,965
# Observations	2061	366	151	400	130	182	59	70	94	265	211	77	56

Table C-GB4

General Building Information: Conditioned Floor Area

Conditioned Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Square Feet (MM)	2,289.7	394.0	87.0	468.7	42.4	177.0	52.4	118.4	134.9	419.2	262.9	92.5	40.3
Percent of Total	84.7%	85.9%	89.2%	89.2%	82.2%	64.3%	93.2%	87.5%	95.3%	81.6%	98.1%	94.6%	48.7%
# Observations	1994	356	149	390	126	179	58	66	92	253	209	76	40
Total Floor Area	2,703.5	458.5	97.5	525.5	51.6	275.5	56.2	135.3	141.6	513.5	267.9	97.8	82.6

Table C-GB5
General Building Information: Heated Floor Area

Heated Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Square Feet (MM)	2,259.0	387.6	84.6	456.4	42.3	173.0	52.3	117.6	134.9	415.1	262.9	92.1	40.3
Percent of Total	83.6%	84.5%	86.8%	86.9%	82.1%	62.8%	93.0%	86.9%	95.2%	80.8%	98.1%	94.2%	48.7%
Percent of Conditioned	98.7%	98.4%	97.3%	97.4%	99.8%	97.7%	99.8%	99.3%	100%	99.0%	100%	99.6%	100%
# Observations	1985	354	147	389	127	175	58	66	92	252	209	76	40

Table C-GB6
General Building Information: Cooled Floor Area

Cooled Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Square Feet (MM)	1,733.2	334.6	78.6	444.0	39.1	69.2	50.9	109.6	130.4	254.1	177.1	20.7	25.0
Percent of Total	64.1%	73.0%	80.6%	84.5%	75.7%	25.1%	90.5%	81.0%	92.1%	49.5%	66.1%	21.2%	30.2%
Percent of Conditioned	75.7%	84.9%	90.4%	94.7%	92.0%	39.1%	97.1%	92.5%	96.6%	60.6%	67.4%	22.4%	62.0%
# Observations	1983	353	149	388	126	178	58	66	91	251	208	76	39
Total Floor Area	2,703.5	458.5	97.5	525.5	51.6	275.5	56.2	135.3	141.6	513.5	267.9	97.8	82.6

Table C-GB7
General Building Information: Unconditioned Floor Area

Unconditioned Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Square Feet (MM)	295.6	40.3	9.7	43.8	8.8	93.2	2.0	7.2	6.0	73.1	1.5	3.5	6.5
Percent of Total	10.9%	1.5%	0.4%	1.6%	0.3%	3.4%	0.1%	0.3%	0.2%	2.7%	0.1%	0.1%	0.2%
# Observations	1994	356	149	390	126	179	58	66	92	253	209	76	40
Total Floor Area	2,703.5	458.5	97.5	525.5	51.6	275.5	56.2	135.3	141.6	513.5	267.9	97.8	82.6

Table C-GB8
General Building Information: Refrigerated Floor Area

Refrigerated Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Square Feet (MM)	19.0	2.8	6.0	0.2	4.0	4.5	0.0	0.1	0.2	0.2	0.3	0.0	0.7
Percent of Total	0.7%	0.1%	0.2%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
# Observations	1905	327	143	375	124	171	58	65	92	247	188	75	40
Total Floor Area	2,703.5	458.5	97.5	525.5	51.6	275.5	56.2	135.3	141.6	513.5	267.9	97.8	82.6

Table C-GB9
General Building Information: Vacant Floor Area

Vacant Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Square Feet (MM)	100.7	10.0	1.0	13.7	2.1	3.8	0.4	1.4	1.9	3.2	0.0	0.3	62.7
Percent of Total	3.7%	0.4%	0.0%	0.5%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	2.3%
# Observations	1999	355	148	390	127	177	58	66	92	252	209	76	49
Total Floor Area	2,703.5	458.5	97.5	525.5	51.6	275.5	56.2	135.3	141.6	513.5	267.9	97.8	82.6

Table C-GB10
General Building Information: Number of Stories
Percent of Regional Floor Area

Number of Stories	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1	48.8%	68.3%	80.5%	21.6%	74.4%	76.7%	11.7%	4.6%	32.0%	54.1%	59.7%	25.5%	53.3%
2 to 3	32.7%	26.4%	19.5%	29.9%	23.6%	23.3%	23.3%	47.1%	56.0%	35.3%	40.0%	34.6%	38.0%
4 to 8	9.3%	2.5%	0.0%	18.5%	1.9%	0.0%	50.3%	15.9%	10.9%	7.8%	0.3%	28.7%	8.7%
8 or More	9.2%	2.7%	0.0%	30.0%	0.0%	0.0%	14.7%	32.4%	1.1%	2.9%	0.0%	11.3%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	2,061	366	151	400	130	182	59	70	94	265	211	77	56

Table C-GB11

General Building Information: Number of Stories

Number of Stories	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Mean Per Building	1.42	1.18	1.11	1.80	1.16	1.22	1.73	2.66	1.61	1.31	1.18	2.78	1.53
Observations	2061	366	151	400	130	182	59	70	94	265	211	77	56

Table C-GB12

General Building Information: Multiple/Single Building

Percent of Regional Floor Area

Multiple/Single Building	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Multiple Buildings	19.9%	9.1%	1.9%	6.9%	2.1%	25.1%	56.5%	34.8%	11.4%	28.8%	28.4%	65.6%	7.3%
Single building	80.1%	90.9%	98.1%	93.1%	97.9%	74.9%	43.5%	65.2%	88.6%	71.2%	71.6%	34.4%	92.7%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	2,061	366	151	400	130	182	59	70	94	265	211	77	56

Table C-GB13
General Building Information: Heating Fuel
Percent of Regional Heated Floor Area

Heating Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electricity	27.1%	17.2%	15.3%	39.4%	32.1%	8.5%	2.5%	69.2%	34.7%	29.5%	20.8%	5.2%	34.7%
Natural Gas	68.3%	80.9%	78.0%	56.7%	63.9%	89.2%	86.2%	27.3%	61.0%	65.1%	71.4%	87.5%	60.9%
Fuel Oil	1.1%	1.1%	0.2%	0.2%	0.0%	0.0%	3.3%	0.0%	0.8%	1.4%	4.2%	0.0%	0.0%
LPG	1.1%	0.6%	3.6%	0.4%	3.4%	0.2%	0.0%	0.0%	2.3%	1.5%	2.4%	0.0%	0.0%
Pur. HW or Steam	1.6%	0.2%	0.0%	2.9%	0.0%	0.0%	7.7%	3.4%	1.2%	1.8%	0.1%	5.0%	0.0%
Other	0.7%	0.0%	0.0%	0.4%	0.0%	2.1%	0.2%	0.0%	0.0%	0.6%	1.1%	2.2%	4.5%
Heat Recovery	0.1%	0.0%	2.8%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,982	354	147	388	127	174	58	66	92	252	208	76	40

Table C-GB14
General Building Information: Cooling Fuel
Percent of Regional Cooled Floor Area

Cooling Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electricity	98.9%	100%	100%	99.4%	99.8%	100%	100%	98.1%	100%	95.7%	100%	85.8%	100%
Other	1.1%	0.0%	0.0%	0.6%	0.2%	0.0%	0.0%	1.9%	0.0%	4.3%	0.0%	14.2%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,983	353	149	388	126	178	58	66	91	251	208	76	39

Table C-GB15

General Building Information: Secondary Fuel Type

Percent of Regional Conditioned Floor Area with a Secondary Fuel

Secondary Fuel Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electricity	54.9%	68.6%	31.4%	59.0%	6.0%	95.3%	86.5%	0.0%	52.3%	65.9%	50.0%	19.4%	52.5%
Natural Gas	24.7%	9.5%	13.6%	24.4%	91.3%	4.7%	13.5%	87.4%	32.0%	16.0%	25.0%	7.2%	19.1%
Fuel Oil	5.5%	1.7%	7.9%	3.1%	0.0%	0.0%	0.0%	9.9%	9.8%	0.0%	8.5%	64.5%	0.0%
LPG	2.5%	0.6%	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.6%	8.8%	0.0%	17.2%
Pur. HW or Steam	2.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.8%	1.4%	6.4%	0.0%
Other	2.9%	0.0%	0.0%	13.5%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	3.4%	0.0%	0.0%
Heat Recovery	7.2%	19.5%	43.0%	0.0%	2.6%	0.0%	0.0%	2.7%	5.8%	4.4%	2.8%	2.5%	11.2%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	329	62	30	42	9	23	11	23	16	52	45	11	5

Table C-GB16

General Building Information: Business Ownership

Percent of Regional Floor Area

Business Ownership	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Corporation	47.7%	62.9%	45.4%	65.4%	24.3%	74.2%	0.0%	73.4%	55.6%	28.1%	0.0%	0.0%	55.6%
Federal Gov	1.7%	0.0%	0.0%	5.2%	0.0%	1.2%	14.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%
Individual	17.1%	27.0%	54.6%	10.4%	65.9%	15.2%	0.0%	26.6%	36.0%	7.1%	2.1%	0.0%	28.2%
Local/State Gov	15.5%	0.0%	0.0%	9.2%	0.0%	0.2%	67.9%	0.0%	0.7%	27.7%	83.6%	35.6%	1.1%
Other	4.0%	2.3%	0.0%	5.0%	8.1%	0.7%	18.1%	0.0%	0.0%	6.5%	14.3%	0.0%	5.6%
Other Partnership	0.9%	1.2%	0.0%	2.0%	1.7%	2.3%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%
Religious	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.4%	0.0%	0.0%	0.0%
Syndicated Partnership (REIT)	2.9%	6.5%	0.0%	2.9%	0.0%	6.1%	0.0%	0.0%	6.0%	0.0%	0.0%	0.0%	9.5%
University/College	4.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	64.4%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	643	92	35	130	39	72	10	27	37	84	38	48	31

Table C-GB17

General Building Information: Climate Zone

Percent of Regional Floor Area

Climate Zone	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Zone 1: 4000-6000 HDD	86.2%	85.8%	88.3%	90.4%	96.7%	86.5%	84.6%	84.4%	84.3%	85.7%	83.1%	65.9%	95.6%
Zone 2: 6000-8000 HDD	12.3%	13.2%	9.5%	7.2%	2.7%	12.6%	10.1%	13.7%	15.7%	13.1%	15.1%	31.7%	4.0%
Zone 3: Over 8000 HDD	1.5%	0.9%	2.2%	2.3%	0.6%	0.8%	5.3%	2.0%	0.0%	1.2%	1.8%	2.4%	0.4%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	2,061	366	151	400	130	182	59	70	94	265	211	77	56

Indoor Lighting

Table C-IL1
Indoor Lighting: Watts Per Square Foot

Watts	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot	1.2	1.4	1.7	1.2	1.3	0.7	1.3	1.1	1.3	1.1	1.2	1.0	1.3
Observations	1543	301	129	281	104	133	48	52	64	199	185	27	20

Table C-IL2
Indoor Lighting: Watts Per Square Foot By Building Floor Area

Building Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Less than 5,000 SF	1.3	1.6	1.7	1.5	1.1	0.8	S	S	1.9	1.1	1.7	S	S
5,000 to 19,999 SF	1.3	1.4	1.7	1.3	1.2	0.8	1.5	1.7	1.6	1.2	1.1	1.1	1.1
20,000 to 49,999 SF	1.2	1.4	1.7	1.3	S	0.8	1.0	1.2	1.1	1.0	1.2	1.1	1.1
50,000 to 99,999 SF	1.1	1.2	1.7	1.2	M	0.6	1.6	0.9	1.2	1.0	1.2	1.0	S
100,000 to 499,999 SF	1.1	1.4	1.8	0.9	M	0.7	1.3	0.9	1.0	1.1	1.3	1.1	M
500,000 SF or More	0.9	S	M	0.9	M	S	S	S	S	M	M	M	M
# Observations	1543	301	129	281	104	133	48	52	64	199	185	27	20

Table C-IL3
Indoor Lighting: Watts Per Square Foot By Year Constructed, Detailed

Year Constructed	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Before 1950	1.1	1.5	M	1.0	1.3	S	M	S	M	0.9	1.0	M	S
1950 to 1969	1.2	1.2	1.8	1.7	S	S	S	0.9	S	1.1	1.4	M	S
1970 to 1979	1.2	1.2	1.6	1.4	0.9	0.6	1.6	S	1.7	1.1	1.3	M	S
1980 to 1987	1.4	1.7	1.8	1.3	1.6	1.0	1.2	S	S	1.1	1.3	M	1.6
1988 to 1994	1.4	1.5	1.8	1.3	1.5	1.0	M	S	1.2	1.4	1.3	M	1.4
1995 to 2001	1.1	1.3	1.7	1.0	1.1	0.7	S	0.9	1.1	1.1	1.2	1.2	S
2002 to 2007	1.0	1.4	1.6	0.9	1.5	0.7	1.1	0.7	1.2	1.0	1.1	1.0	M
Unknown	1.1	1.2	S	S	S	S	M	M	M	M	M	M	S
# Observations	1543	301	129	281	104	133	48	52	64	199	185	27	20

Table C-IL4

Indoor Lighting: Watts Per Square Foot By Year Constructed, Cohort

Cohort	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1987 and Earlier	1.3	1.4	1.8	1.3	1.3	0.7	1.4	1.3	1.5	1.0	1.3	M	1.2
1988 to 1994	1.4	1.5	1.8	1.3	1.5	1.0	M	S	1.2	1.4	1.3	M	1.4
1995 to 2001	1.1	1.3	1.7	1.0	1.1	0.7	S	0.9	1.1	1.1	1.2	1.2	S
2002 to 2007	1.0	1.4	1.6	0.9	1.5	0.7	1.1	0.7	1.2	1.0	1.1	1.0	M
# Observations	1543	301	129	281	104	133	48	52	64	199	185	27	20

Table C-IL5
Indoor Lighting: Watts Per Square Foot
Percent of Regional Floor Area

Watts per Square Foot	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Less than 0.4 W/sqft	7.4%	0.7%	0.0%	6.7%	13.6%	28.0%	0.0%	9.8%	3.8%	9.6%	0.7%	0.0%	0.0%
0.5 to 0.8	27.1%	18.2%	4.0%	26.8%	11.0%	53.0%	18.5%	41.9%	14.9%	29.8%	22.7%	32.6%	40.0%
0.9 to 1.2	32.2%	29.3%	14.0%	37.4%	33.0%	9.7%	38.3%	18.6%	42.2%	37.7%	44.8%	47.3%	14.5%
1.3 to 1.6	18.1%	25.7%	29.2%	15.0%	16.0%	6.7%	29.7%	12.8%	24.9%	15.4%	19.9%	16.5%	28.0%
1.7 to 2.0	7.6%	13.0%	30.6%	7.9%	10.5%	2.0%	4.0%	8.0%	5.8%	4.1%	3.3%	3.6%	10.9%
2.1 to 2.4	4.7%	6.9%	15.9%	3.6%	13.8%	0.3%	9.5%	1.5%	3.5%	2.2%	6.6%	0.0%	6.2%
2.5 to 2.8	1.7%	2.2%	5.7%	1.3%	1.4%	0.5%	0.0%	2.3%	4.3%	1.2%	1.5%	0.0%	0.5%
More than 2.8 W/sqft	1.3%	3.9%	0.6%	1.3%	0.7%	0.0%	0.0%	5.1%	0.6%	0.0%	0.4%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,543	301	129	281	104	133	48	52	64	199	185	27	20

Table C-IL6
Overall LPD distribution
Percent of Regional Indoor Lighting Wattage

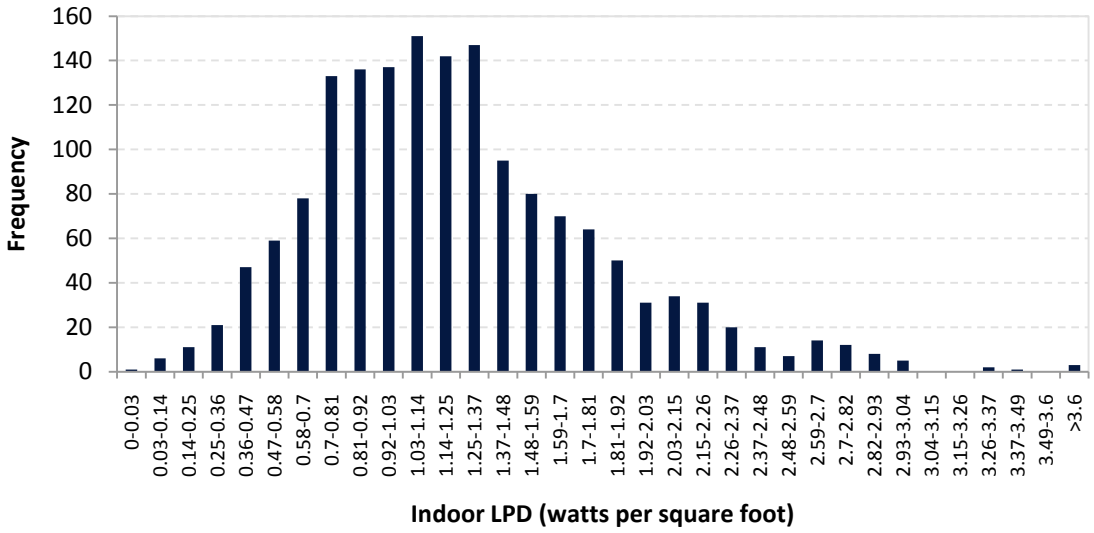


Table C-IL7
Office LPD distribution
Percent of Regional Indoor Lighting Wattage

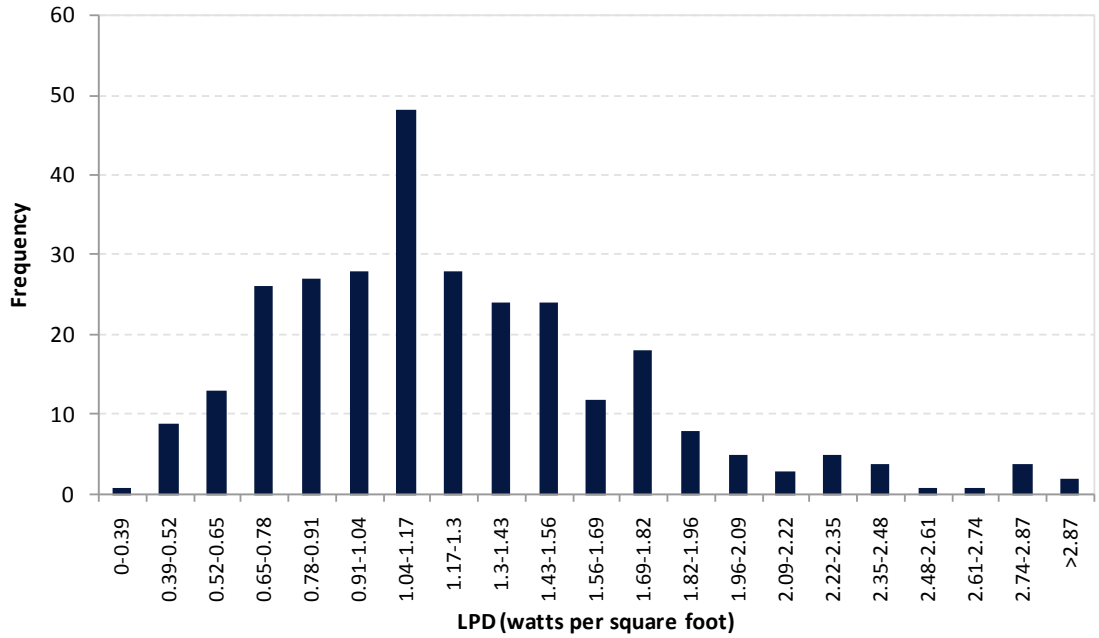


Table C-IL8
Retail LPD distribution
Percent of Regional Indoor Lighting Wattage

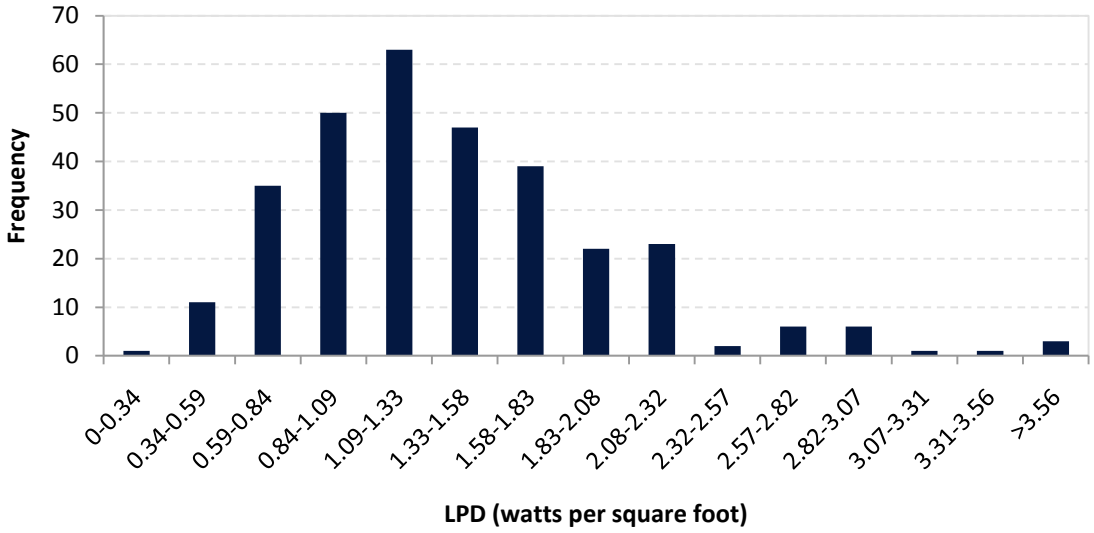


Table C-IL9
Grocery LPD distribution
Percent of Regional Indoor Lighting Wattage

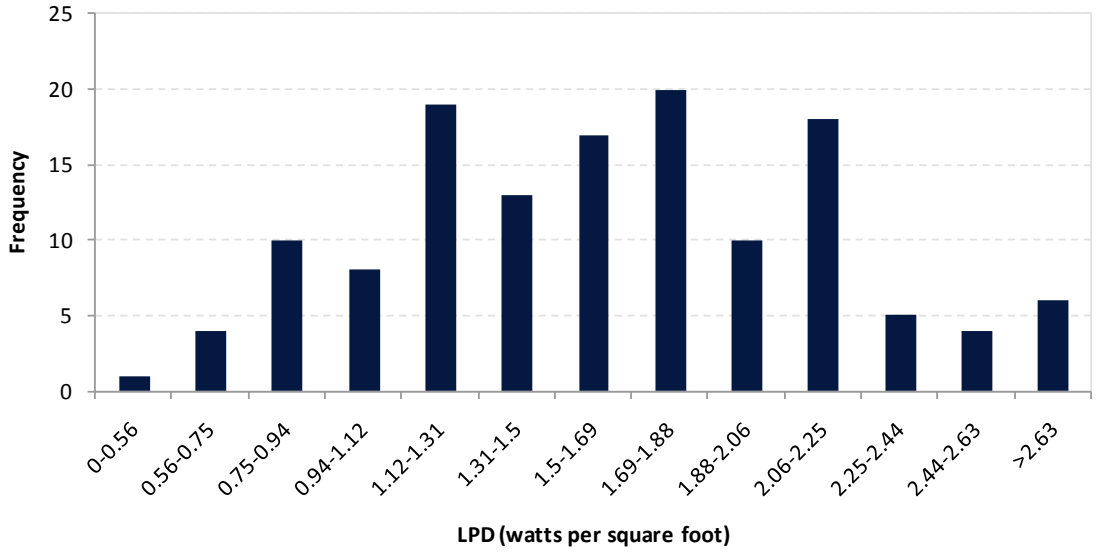


Table C-IL10
Warehouse LPD distribution
Percent of Regional Indoor Lighting Wattage

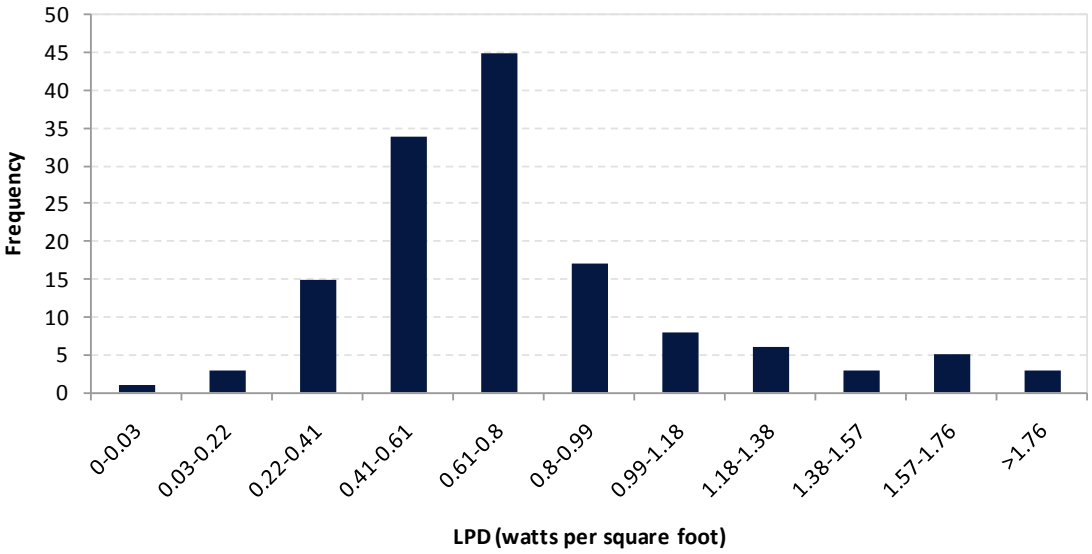


Table C-IL11
Motel/ Hotel LPD distribution
Percent of Regional Indoor Lighting Wattage

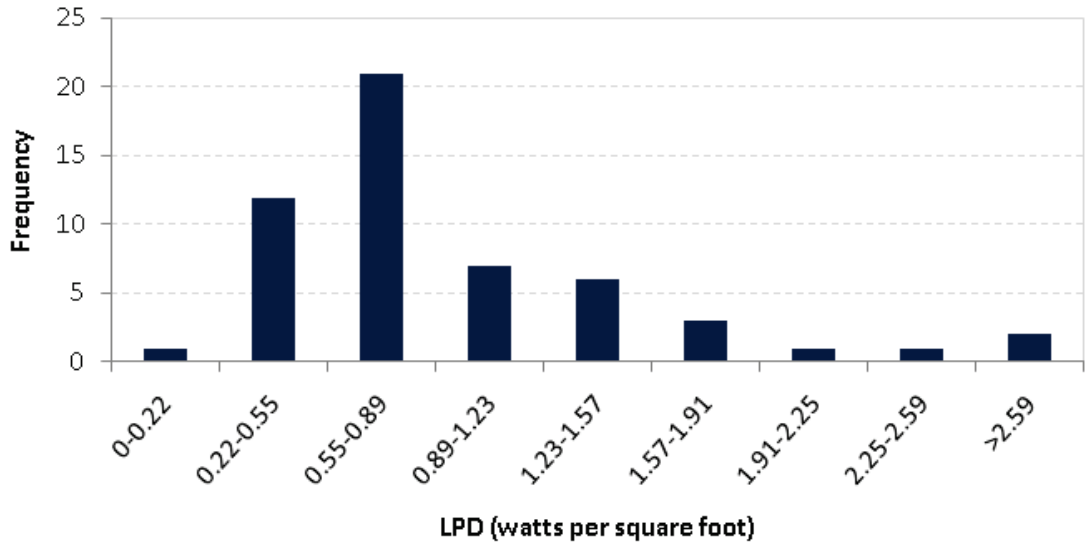


Table C-IL12

Indoor Lighting: Lamp Type

Percent of Regional Indoor Lighting Wattage

Lamp Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Fluorescent	70.0%	69.6%	78.3%	87.5%	51.3%	45.2%	89.3%	34.1%	76.7%	62.7%	86.6%	74.5%	57.2%
Incandescent	14.0%	13.7%	7.3%	8.0%	40.1%	12.3%	5.6%	63.7%	17.2%	10.8%	2.8%	17.0%	22.9%
HID	14.3%	13.5%	12.7%	3.7%	4.2%	42.2%	1.2%	1.3%	2.0%	24.4%	10.2%	7.5%	17.0%
Miscellaneous	1.8%	3.1%	1.7%	0.8%	4.4%	0.2%	3.8%	1.0%	4.1%	2.1%	0.4%	1.0%	3.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,227	258	85	205	54	125	26	52	58	173	156	27	8

Table C-IL13
Indoor Lighting: Lamp Type
Percent of Regional Floor Area

Lamp Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Fluorescent T12	24.9%	37.4%	17.7%	23.8%	34.3%	21.5%	2.7%	13.9%	21.7%	31.5%	10.2%	0.6%	32.4%
Fluorescent T8 Energy Efficient	48.0%	37.0%	71.6%	58.0%	16.4%	42.0%	70.0%	10.4%	46.2%	41.3%	81.8%	61.3%	24.7%
Fluorescent Other	10.3%	6.1%	2.2%	11.2%	11.9%	7.6%	22.8%	34.3%	19.1%	8.3%	4.9%	27.0%	12.7%
Incandescent	9.5%	10.3%	3.6%	4.6%	29.2%	12.2%	1.8%	39.2%	10.1%	7.9%	1.0%	8.2%	18.7%
HID	5.8%	6.7%	3.2%	1.2%	3.6%	16.0%	0.5%	0.5%	0.5%	9.2%	1.4%	1.3%	8.9%
Miscellaneous	1.6%	2.5%	1.6%	1.1%	4.6%	0.6%	2.1%	1.7%	2.4%	1.8%	0.6%	1.7%	2.5%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,280	269	89	224	63	127	26	52	60	176	158	27	9

Table C-IL14
Indoor Lighting: Fluorescent T12 # Feet
Percent of Regional Fluorescent T12 Indoor Lighting Wattage

Fluorescent T12 # Feet	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
4 Feet	63.2%	50.1%	36.8%	88.3%	62.3%	33.0%	0.0%	85.5%	86.8%	57.1%	82.7%	48.8%	84.2%
8 Feet	30.9%	47.2%	46.4%	6.9%	34.3%	55.5%	12.4%	0.4%	1.6%	37.3%	14.5%	0.0%	7.1%
Other # Feet	5.9%	2.8%	16.8%	4.8%	3.4%	11.5%	87.6%	14.2%	11.6%	5.7%	2.8%	51.2%	8.7%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	544	149	47	88	30	49	4	23	21	84	39	4	6

Table C-IL15

Indoor Lighting: Fluorescent T12 # Feet

Percent of Regional Floor Area Served By Fluorescent T12

Fluorescent T12 # Feet	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
4 Feet	65.8%	54.2%	48.5%	89.8%	58.9%	45.3%	0.0%	76.0%	80.6%	63.3%	87.5%	64.8%	84.2%
8 Feet	28.0%	42.6%	37.5%	5.4%	36.0%	44.8%	3.9%	0.3%	0.7%	32.4%	9.9%	0.0%	4.0%
Other # Feet	6.2%	3.2%	14.0%	4.8%	5.1%	10.0%	96.1%	23.7%	18.7%	4.3%	2.7%	35.2%	11.8%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	556	152	47	92	32	49	4	24	21	85	39	4	7

Table C-IL16

Indoor Lighting: Fluorescent T12 # Lamps

Percent of Regional Fluorescent T12 Indoor Lighting Wattage

Fluorescent T12 # Lamps	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1 Lamp	4.5%	4.3%	29.9%	0.6%	1.1%	1.9%	12.4%	10.3%	1.4%	5.1%	5.2%	0.0%	0.0%
2 Lamps	56.2%	55.8%	59.5%	34.4%	75.5%	72.2%	40.3%	73.0%	47.4%	69.6%	38.8%	51.2%	73.1%
3 Lamps	6.4%	1.9%	6.9%	10.8%	1.8%	1.2%	0.0%	11.4%	0.7%	3.4%	34.3%	0.0%	0.0%
4 Lamps	32.7%	38.1%	3.7%	53.9%	21.5%	24.7%	47.3%	5.4%	50.5%	21.9%	19.8%	0.0%	26.9%
5+ Lamps	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	48.8%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	500	131	42	78	24	45	4	23	21	84	39	4	5

Table C-IL17

Indoor Lighting: Fluorescent T12 # Lamps

Percent of Regional Floor Area Served By Fluorescent T12

Fluorescent T12 # Lamps	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1 Lamp	3.8%	5.4%	21.9%	0.7%	0.8%	1.4%	3.9%	7.1%	1.0%	4.1%	3.1%	0.0%	0.0%
2 Lamps	60.5%	55.0%	65.5%	36.3%	83.3%	71.0%	50.7%	74.2%	65.8%	72.1%	39.1%	35.2%	78.1%
3 Lamps	7.2%	6.0%	8.5%	10.9%	2.6%	4.7%	0.0%	13.9%	0.7%	2.8%	35.6%	0.0%	0.0%
4 Lamps	28.3%	33.6%	4.1%	51.7%	13.3%	22.9%	45.3%	4.9%	32.4%	21.0%	20.4%	0.0%	21.9%
5+ Lamps	0.2%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	64.8%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	513	135	42	82	26	45	4	24	21	85	39	4	6

Table C-IL18

Indoor Lighting: Fluorescent T8 # Lamps

Percent of Regional Fluorescent T8 Indoor Lighting Wattage

Fluorescent T8 # Lamps	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1 Lamp	4.9%	3.4%	5.3%	6.7%	2.9%	1.2%	5.4%	20.1%	4.6%	9.6%	1.3%	4.5%	0.9%
2 Lamps	39.0%	46.3%	37.9%	36.5%	29.3%	36.6%	33.9%	57.4%	33.9%	46.5%	32.7%	46.6%	40.6%
3 Lamps	35.6%	13.7%	18.4%	49.3%	28.7%	35.7%	34.0%	11.1%	45.9%	20.8%	51.6%	35.8%	33.7%
4 Lamps	16.3%	29.9%	28.5%	6.4%	39.0%	21.9%	15.9%	11.5%	13.0%	17.1%	11.8%	12.1%	24.8%
5+ Lamps	4.2%	6.8%	9.9%	1.1%	0.0%	4.7%	10.7%	0.0%	2.6%	6.0%	2.7%	1.1%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	912	177	72	156	23	80	26	34	47	123	144	27	3

Table C-IL19

Indoor Lighting: Fluorescent T8 # Lamps

Percent of Regional Floor Area Served By Fluorescent T8

Fluorescent T8 # Lamps	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1 Lamp	4.8%	3.9%	5.7%	6.2%	3.0%	1.5%	6.1%	19.6%	5.2%	7.4%	1.6%	3.9%	0.6%
2 Lamps	40.3%	42.9%	37.9%	39.7%	33.4%	29.9%	36.7%	57.9%	36.3%	50.8%	34.8%	47.3%	32.7%
3 Lamps	36.0%	18.7%	17.5%	46.7%	30.2%	44.3%	32.7%	10.5%	42.2%	21.9%	49.7%	33.9%	38.6%
4 Lamps	15.2%	28.8%	30.8%	6.5%	33.4%	17.5%	13.6%	12.0%	14.0%	15.2%	11.0%	14.0%	28.2%
5+ Lamps	3.8%	5.7%	8.1%	1.0%	0.0%	6.8%	10.8%	0.0%	2.3%	4.8%	2.9%	0.9%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	931	182	73	163	25	80	26	34	48	124	145	27	4

Table C-IL20

Indoor Lighting: Electronic Ballast Measure

Percent of Regional Indoor Lighting Wattage

Electronic Ballast Measure	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	46.4%	34.5%	61.4%	53.3%	26.4%	33.6%	71.8%	28.3%	56.0%	37.6%	76.6%	64.5%	32.8%
No	53.6%	65.5%	38.6%	46.7%	73.6%	66.4%	28.2%	71.7%	44.0%	62.4%	23.4%	35.5%	67.2%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,236	262	88	222	54	113	26	49	59	170	157	27	9

Table C-IL21
Indoor Lighting: Electronic Ballast Measure
Percent of Regional Floor Area

Electronic Ballast Measure	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	55.9%	40.7%	74.3%	62.5%	28.9%	50.6%	74.2%	42.5%	60.9%	49.9%	84.4%	77.5%	34.6%
No	44.1%	59.3%	25.7%	37.5%	71.1%	49.4%	25.8%	57.5%	39.1%	50.1%	15.6%	22.5%	65.4%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,251	264	88	225	60	114	26	49	60	172	157	27	9

Table C-IL22
Indoor Lighting: Main HID Type
Percent of Regional Indoor HID Wattage

Main HID Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
High Pressure Sodium	12.1%	6.8%	7.3%	8.5%	0.0%	32.9%	0.0%	1.1%	49.9%	1.9%	13.5%	0.1%	S
Mercury Vapor	1.7%	0.7%	0.0%	3.2%	0.0%	1.5%	0.0%	0.0%	0.0%	1.4%	5.8%	0.0%	s
Metal Halide	85.4%	89.2%	90.6%	88.0%	86.1%	65.5%	100%	98.9%	50.1%	96.7%	80.7%	99.9%	s
Neon	0.8%	3.3%	2.1%	0.3%	13.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	s
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	s
Observations	491	92	29	58	7	73	10	16	13	84	91	17	1

Table C-IL23
Indoor Lighting: Control, Timeclock (On/Off)
Percent of Regional Indoor Wattage

Control Timeclock (On/Off)	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	9.3%	9.1%	26.0%	13.5%	6.3%	2.4%	15.2%	2.6%	0.0%	8.8%	4.9%	12.1%	17.7%
No	90.7%	90.9%	74.0%	86.5%	93.7%	97.6%	84.8%	97.4%	100%	91.2%	95.1%	87.9%	82.3%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,292	264	114	239	95	105	45	39	55	140	157	20	19

Table C-IL24
Indoor Lighting: Control, EMCS
Percent of Regional Indoor Wattage

Control EMCS	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	12.3%	21.9%	9.5%	15.1%	0.0%	9.0%	2.0%	14.3%	2.0%	11.3%	6.1%	6.7%	0.0%
No	87.7%	78.1%	90.5%	84.9%	100%	91.0%	98.0%	85.7%	98.0%	88.7%	93.9%	93.3%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,423	274	120	264	96	119	48	48	62	172	175	25	20

Table C-IL25
Indoor Lighting: Control, Photocell
Percent of Regional Indoor Wattage

Control Photocell	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	0.9%	0.9%	0.0%	1.1%	0.6%	1.9%	0.0%	1.2%	0.0%	1.8%	0.0%	2.5%	0.0%
No	99.1%	99.1%	100%	98.9%	99.4%	98.1%	100%	98.8%	100%	98.2%	100%	97.5%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,420	273	120	263	95	119	48	48	62	172	175	25	20

Table C-IL26
Indoor Lighting: Control, Occupancy Sensors
Percent of Regional Indoor Wattage

Control Occupancy Sensors	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	12.6%	7.1%	3.0%	15.1%	0.0%	14.7%	24.1%	1.5%	20.9%	10.0%	25.4%	41.7%	0.0%
No	87.4%	92.9%	97.0%	84.9%	100%	85.3%	75.9%	98.5%	79.1%	90.0%	74.6%	58.3%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,206	248	81	200	58	125	26	50	58	173	153	26	8

Table C-IL27
Indoor Lighting: Control, On/Off Switch
Percent of Regional Indoor Wattage

Control On/Off Switch	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	85.7%	81.2%	82.9%	82.2%	95.5%	83.7%	83.5%	100%	94.7%	86.5%	89.2%	78.1%	83.8%
No	14.3%	18.8%	17.1%	17.8%	4.5%	16.3%	16.5%	0.0%	5.3%	13.5%	10.8%	21.9%	16.2%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,423	274	120	264	96	119	48	48	62	172	175	25	20

Table C-IL28
Indoor Lighting: Control, Dimmer Switch/Daylighting Controls
Percent of Regional Indoor Wattage

Control Dimmer/Day lighting	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	5.0%	3.1%	3.4%	5.7%	1.1%	2.5%	2.8%	0.0%	0.0%	11.9%	3.5%	7.0%	0.0%
No	95.0%	96.9%	96.6%	94.3%	98.9%	97.5%	97.2%	100%	100%	88.1%	96.5%	93.0%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,206	248	81	200	58	125	26	50	58	173	153	26	8

Outdoor Lighting

Table C-IL29
Indoor Lighting: Control, Other
Percent of Regional Indoor Wattage

Control Other	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	5.6%	6.7%	5.8%	9.6%	0.0%	0.4%	10.4%	0.0%	3.3%	6.9%	4.4%	9.3%	0.0%
No	94.4%	93.3%	94.2%	90.4%	100%	99.6%	89.6%	100%	96.7%	93.1%	95.6%	90.7%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	890	166	51	126	39	109	26	35	49	144	111	26	8

Table C-OL1
Outdoor Lighting: Watts Per Indoor Square Foot By Year Constructed, Cohort

Cohort	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1987 and Earlier	0.23	0.22	0.28	0.14	0.47	0.09	0.10	0.11	0.21	0.43	0.18	S	0.19
1988 to 1994	0.14	0.14	0.19	0.11	0.55	0.13	M	S	0.06	0.10	0.16	M	0.11
1995 to 2001	0.28	0.33	0.53	0.13	0.84	0.12	S	0.31	0.22	0.58	0.08	0.07	S
2002 to 2007	0.17	0.25	0.31	0.14	0.68	0.09	0.07	0.10	0.10	0.11	0.42	0.11	M
# Observations	1365	245	124	248	87	118	39	46	60	178	168	24	28

Table C-OL2

Outdoor Lighting: Lamp Type

Percent of Regional Outdoor Lighting Wattage

Lamp Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Fluorescent	11.3%	20.9%	19.3%	11.8%	14.1%	0.7%	3.8%	12.6%	4.9%	10.0%	2.6%	6.1%	19.1%
Incandescent	8.3%	9.9%	3.7%	11.0%	31.4%	7.3%	2.5%	14.3%	32.7%	3.8%	1.4%	1.1%	37.6%
Neon	0.3%	0.6%	0.4%	0.3%	3.4%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.3%
HID	70.1%	68.2%	76.1%	72.7%	48.6%	90.1%	86.3%	72.0%	59.6%	69.7%	71.2%	92.9%	43.0%
Other	10.0%	0.4%	0.4%	4.1%	2.6%	1.8%	7.4%	0.5%	2.7%	16.6%	24.9%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,142	216	89	184	58	112	23	46	57	162	150	24	21

Table C-OL3
Outdoor Lighting: Lamp Type
Percent of Regional Floor Area

Lamp Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Fluorescent	22.7%	26.5%	27.9%	25.5%	43.4%	3.4%	33.5%	33.0%	22.2%	25.8%	17.9%	39.8%	11.7%
Incandescent	13.0%	16.9%	3.0%	17.8%	19.8%	7.7%	3.4%	13.4%	20.7%	13.3%	4.4%	1.4%	23.4%
Neon	0.9%	3.3%	3.3%	0.3%	7.6%	0.0%	0.0%	1.1%	0.1%	0.0%	0.0%	0.0%	0.9%
HID	61.7%	52.6%	65.3%	53.7%	26.4%	88.7%	60.6%	52.2%	55.3%	58.9%	74.9%	58.8%	64.0%
Other	1.6%	0.6%	0.4%	2.8%	2.8%	0.2%	2.5%	0.3%	1.7%	2.0%	2.8%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,195	224	92	198	60	119	23	48	61	167	155	24	24

Table C-OL5
Outdoor Lighting: Control, Timeclock (On/Off)
Percent of Regional Outdoor Lighting Wattage

Control Timeclock (On/Off)	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	24.7%	33.1%	32.4%	19.2%	19.1%	15.2%	12.9%	8.1%	59.3%	10.5%	53.1%	56.8%	20.8%
No	75.3%	66.9%	67.6%	80.8%	80.9%	84.8%	87.1%	91.9%	40.7%	89.5%	46.9%	43.2%	79.2%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,252	213	118	218	80	108	39	45	58	160	165	23	25

Table C-OL6
Outdoor Lighting: Control, Timeclock (On/Off)
Percent of Regional Buildings

Control Timeclock (On/Off)	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	18.5%	23.8%	19.2%	19.9%	16.8%	9.6%	5.7%	17.8%	45.6%	8.5%	43.2%	34.5%	10.9%
No	81.5%	76.2%	80.8%	80.1%	83.2%	90.4%	94.3%	82.2%	54.4%	91.5%	56.8%	65.5%	89.1%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,386	241	123	254	95	119	45	47	64	174	173	23	28

Table C-OL7
Outdoor Lighting: Control, EMCS
Percent of Regional Outdoor Lighting Wattage

Control EMCS	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	3.1%	10.9%	4.7%	3.2%	0.0%	3.7%	0.0%	0.0%	0.0%	0.4%	2.2%	0.0%	0.0%
No	96.9%	89.1%	95.3%	96.8%	100%	96.3%	100%	100%	100%	99.6%	97.8%	100%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,252	213	118	218	80	108	39	45	58	160	165	23	25

Table C-OL8
Outdoor Lighting: Control, EMCS
Percent of Regional Buildings

Control EMCS	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	0.7%	1.0%	1.2%	0.7%	0.0%	1.8%	0.0%	0.0%	0.0%	0.1%	3.8%	0.0%	0.0%
No	99.3%	99.0%	98.8%	99.3%	100%	98.2%	100%	100%	100%	99.9%	96.2%	100%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,386	241	123	254	95	119	45	47	64	174	173	23	28

Table C-OL9
Outdoor Lighting: Control, Photocell
Percent of Regional Outdoor Lighting Wattage

Control Photocell	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	52.0%	58.0%	39.5%	59.6%	43.1%	68.6%	45.6%	71.5%	49.6%	47.8%	44.2%	57.4%	67.7%
No	48.0%	42.0%	60.5%	40.4%	56.9%	31.4%	54.4%	28.5%	50.4%	52.2%	55.8%	42.6%	32.3%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,252	213	118	218	80	108	39	45	58	160	165	23	25

Table C-OL10
Outdoor Lighting: Control, Photocell
Percent of Regional Buildings

Control Photocell	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	50.2%	44.9%	45.6%	61.7%	28.6%	79.1%	76.4%	48.5%	34.7%	50.6%	33.6%	61.3%	62.3%
No	49.8%	55.1%	54.4%	38.3%	71.4%	20.9%	23.6%	51.5%	65.3%	49.4%	66.4%	38.7%	37.7%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,386	241	123	254	95	119	45	47	64	174	173	23	28

Table C-OL11
Outdoor Lighting: Control, Occupancy Sensors
Percent of Regional Outdoor Lighting Wattage

Control Occupancy Sensors	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	1.8%	0.6%	1.9%	1.3%	0.0%	3.7%	0.0%	0.0%	4.1%	2.3%	0.0%	0.0%	25.0%
No	98.2%	99.4%	98.1%	98.7%	100%	96.3%	100%	100%	95.9%	97.7%	100%	100%	75.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,252	213	118	218	80	108	39	45	58	160	165	23	25

Table C-OL12
Outdoor Lighting: Control, Occupancy Sensors
Percent of Regional Buildings

Control Occupancy Sensors	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	3.7%	0.8%	4.3%	2.1%	0.0%	2.4%	0.0%	0.0%	9.0%	7.8%	0.7%	0.0%	4.2%
No	96.3%	99.2%	95.7%	97.9%	100%	97.6%	100%	100%	91.0%	92.2%	99.3%	100%	95.8%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,386	241	123	254	95	119	45	47	64	174	173	23	28

Table C-OL13
Outdoor Lighting: Control, On/Off Switch
Percent of Regional Outdoor Lighting Wattage

Control On/Off Switch	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	27.7%	12.8%	23.0%	12.3%	48.3%	37.7%	31.5%	8.2%	7.4%	28.4%	61.1%	0.0%	56.1%
No	72.3%	87.2%	77.0%	87.7%	51.7%	62.3%	68.5%	91.8%	92.6%	71.6%	38.9%	100%	43.9%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,252	213	118	218	80	108	39	45	58	160	165	23	25

Table C-OL14
Outdoor Lighting: Control, On/Off Switch
Percent of Regional Buildings

Control On/Off Switch	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	23.5%	20.0%	26.0%	6.9%	23.9%	27.8%	7.5%	40.2%	20.1%	37.3%	4.0%	0.0%	29.8%
No	76.5%	80.0%	74.0%	93.1%	76.1%	72.2%	92.5%	59.8%	79.9%	62.7%	96.0%	100%	70.2%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,386	241	123	254	95	119	45	47	64	174	173	23	28

Table C-OL15
Outdoor Lighting: Control, Timeclock/Photocell
Percent of Regional Outdoor Lighting Wattage

Control Timeclock/Photocell	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	15.3%	26.9%	26.7%	14.9%	10.8%	15.9%	21.6%	19.6%	25.3%	6.2%	14.0%	52.7%	5.8%
No	84.7%	73.1%	73.3%	85.1%	89.2%	84.1%	78.4%	80.4%	74.7%	93.8%	86.0%	47.3%	94.2%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,252	213	118	218	80	108	39	45	58	160	165	23	25

Table C-OL16
Outdoor Lighting: Control, Timeclock/Photocell
Percent of Regional Buildings

Control Timeclock/Photocell	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	13.9%	14.6%	17.8%	10.6%	4.9%	7.1%	4.7%	9.7%	20.0%	19.4%	12.0%	22.7%	1.9%
No	86.1%	85.4%	82.2%	89.4%	95.1%	92.9%	95.3%	90.3%	80.0%	80.6%	88.0%	77.3%	98.1%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,386	241	123	254	95	119	45	47	64	174	173	23	28

Operating Schedule

Table C-SC1

Typical Operating Week Schedule Information: Weekly Hours of Operation

Percent of Regional Floor Area

Weekly Hours of Operation	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Less than 40	8.2%	5.7%	0.9%	8.7%	4.5%	3.3%	0.7%	0.0%	1.1%	7.9%	14.4%	1.5%	62.1%
40 to 49	20.8%	9.2%	11.0%	32.2%	3.7%	31.3%	7.8%	0.0%	23.1%	20.6%	40.0%	1.7%	6.7%
50 to 59	17.6%	19.8%	1.7%	27.8%	15.2%	17.1%	3.1%	0.0%	18.5%	16.7%	24.0%	2.9%	4.3%
60 to 79	17.9%	33.6%	7.1%	20.8%	17.9%	13.7%	18.3%	3.2%	19.0%	14.2%	16.3%	1.1%	11.4%
120 to 167	6.5%	0.9%	26.0%	1.9%	12.4%	11.5%	0.0%	13.6%	5.9%	8.6%	0.1%	24.1%	4.4%
80 to 119	16.1%	28.6%	36.3%	4.7%	40.5%	15.2%	21.9%	6.0%	11.7%	16.3%	3.2%	47.5%	4.2%
168 (always open)	12.9%	2.1%	17.0%	4.0%	5.7%	8.0%	48.2%	77.2%	20.6%	15.6%	1.9%	21.1%	6.8%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,650	302	131	325	117	134	52	54	74	174	174	64	49

Table C-SC2

Typical Operating Week Schedule Information: Weekly Hours of Operation, Average

Average Weekly Hours of Operation	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Average (weight Bldg Sqft)	79.3	72.6	113.2	58.6	92.6	75.7	121.6	160.0	87.5	84.3	52.2	123.4	35.4
Observations	1650	302	131	325	117	134	52	54	74	174	174	64	49

Table C-SC3

Typical Operating Week Schedule Information: Primary Schedule, Open 24 Hr

Percent of Regional Floor Area

Open 24 Hrs	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	9.7%	1.3%	8.4%	3.5%	3.7%	5.8%	27.6%	62.1%	13.5%	10.6%	1.8%	19.0%	11.8%
No	90.3%	98.7%	91.6%	96.5%	96.3%	94.2%	72.4%	37.9%	86.5%	89.4%	98.2%	81.0%	88.2%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,682	309	132	326	117	139	54	55	77	177	181	66	49

Table C-SC4

Typical Operating Week Schedule Information: Primary Schedule, Open Saturday

Percent of Regional Floor Area

Open Saturday	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	58.0%	85.9%	87.5%	32.3%	88.4%	30.7%	80.2%	98.0%	58.2%	73.3%	7.1%	99.3%	23.1%
No	42.0%	14.1%	12.5%	67.7%	11.6%	69.3%	19.8%	2.0%	41.8%	26.7%	92.9%	0.7%	76.9%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,361	236	116	296	110	101	44	50	52	142	115	50	49

Table C-SC5

Typical Operating Week Schedule Information: Primary Schedule, Open Sunday

Percent of Regional Floor Area

Open Sunday	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	46.3%	66.0%	80.0%	16.8%	81.4%	25.0%	78.0%	98.0%	38.8%	57.1%	3.1%	97.7%	19.1%
No	53.7%	34.0%	20.0%	83.2%	18.6%	75.0%	22.0%	2.0%	61.2%	42.9%	96.9%	2.3%	80.9%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,360	235	116	296	110	101	44	50	52	142	115	50	49

HVAC System

Table C-HS1

HVAC System Summary: Central Air Handler Age (Oldest Air Handler)

Percent of Regional Conditioned Floor Area Served By a Central Air Handler

Oldest Central Air Handler	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1 to 4 years	20.2%	42.7%	21.8%	10.6%	23.6%	30.1%	15.9%	16.9%	30.0%	17.2%	16.1%	47.7%	0.0%
5 to 10 years	36.6%	25.7%	31.6%	39.6%	4.7%	50.4%	27.1%	28.3%	49.5%	43.2%	29.7%	50.4%	21.8%
10 to 19 years	19.5%	17.3%	35.7%	19.0%	65.7%	15.5%	30.3%	7.3%	14.1%	18.9%	18.9%	1.9%	57.5%
20 to 29 years	14.1%	4.5%	9.8%	23.6%	6.0%	4.0%	9.9%	16.3%	0.0%	13.6%	18.1%	0.0%	20.7%
30+ years	9.6%	9.8%	1.0%	7.2%	0.0%	0.0%	16.8%	31.2%	6.4%	7.0%	17.3%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	756	115	53	147	18	56	43	24	41	97	130	26	6

Table C-HS2

HVAC System Summary: Central Chiller Age (Oldest Chiller)

Percent of Regional Cooled Floor Area Served By a Central Chiller

Oldest Central Chiller	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1 to 4 years	13.7%	5.2%	0.0%	9.6%	0.0%	18.6%	8.7%	12.0%	13.9%	27.4%	21.0%	19.6%	0.0%
5 to 10 years	26.3%	14.0%	0.0%	21.3%	0.0%	31.4%	26.2%	9.4%	51.0%	34.4%	30.3%	80.4%	0.0%
10 to 19 years	27.2%	12.9%	66.7%	30.9%	87.3%	18.4%	34.5%	6.3%	30.5%	24.3%	18.5%	0.0%	72.1%
20 to 29 years	17.3%	16.7%	29.4%	22.2%	12.7%	31.7%	11.4%	30.1%	1.3%	13.9%	16.2%	0.0%	27.9%
30+ years	15.5%	51.3%	3.9%	16.0%	0.0%	0.0%	19.3%	42.3%	3.3%	0.0%	14.0%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	249	10	13	74	2	4	28	9	17	21	55	11	5

Table C-HS3

HVAC System Summary: Boiler Age (Oldest Boiler)

Percent of Regional Heated Floor Area Served By a Boiler

Oldest Boiler	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1 to 4 years	13.2%	15.2%	100%	8.5%	9.3%	2.1%	7.6%	23.4%	13.1%	17.5%	13.0%	31.2%	0.0%
5 to 10 years	30.3%	12.3%	0.0%	24.0%	2.1%	65.2%	27.2%	24.2%	49.2%	44.6%	22.3%	68.8%	45.7%
10 to 19 years	24.4%	13.1%	0.0%	25.9%	88.6%	0.0%	21.5%	5.1%	33.3%	14.6%	32.9%	0.0%	54.3%
20 to 29 years	16.9%	23.7%	0.0%	27.1%	0.0%	32.7%	25.4%	47.3%	4.3%	8.2%	12.4%	0.0%	0.0%
30+ years	15.2%	35.8%	0.0%	14.4%	0.0%	0.0%	18.3%	0.0%	0.0%	15.1%	19.4%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	373	17	1	85	4	7	29	15	18	45	135	15	2

Table C-HS4

HVAC System Summary: Central Boiler Fuel

Percent of Regional Heated Floor Area Served By a Boiler

Central Boiler Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electricity	11.1%	12.9%	0.0%	28.1%	0.0%	0.0%	0.0%	17.5%	5.7%	0.2%	6.6%	0.0%	0.0%
Natural Gas	81.9%	85.2%	78.9%	68.9%	100%	100%	98.7%	82.5%	83.8%	90.6%	82.5%	59.2%	100%
Fuel Oil	2.1%	0.0%	0.0%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.9%	0.0%	0.0%
LPG	1.9%	1.9%	21.1%	0.2%	0.0%	0.0%	0.0%	0.0%	6.9%	2.9%	2.6%	0.0%	0.0%
Other	2.9%	0.0%	0.0%	1.0%	0.0%	0.0%	1.3%	0.0%	3.7%	6.3%	2.4%	40.8%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	437	21	3	102	4	8	38	21	23	54	148	12	3

Table C-HS5

HVAC System Summary: Total Boiler Capacity (mmBTU)

Percent of Regional Heated Floor Area Served By a Boiler

Total Boiler Capacity	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Less than 500 MMBTU	10.9%	33.3%	M	11.2%	S	4.9%	16.7%	25.0%	0.0%	5.4%	9.9%	23.9%	S
500 to 999 MMBTU	19.2%	9.7%	M	20.7%	S	0.0%	23.1%	12.0%	41.6%	16.9%	15.8%	13.3%	S
1000 to 1999 MMBTU	21.1%	13.7%	M	19.2%	S	49.5%	7.3%	18.5%	9.7%	23.7%	24.3%	46.2%	S
2000 to 3999 MMBTU	19.4%	43.4%	M	16.3%	S	14.8%	8.1%	44.4%	0.5%	20.8%	21.9%	0.0%	S
4000 to 6999 MMBTU	14.2%	0.0%	M	23.2%	S	30.8%	23.8%	0.0%	3.1%	2.9%	18.0%	0.0%	S
7000 or more MMBTU	15.2%	0.0%	M	9.4%	S	0.0%	21.0%	0.0%	45.1%	30.4%	10.0%	16.6%	S
--Total--	100%	100%	M	100%	S	100%	100%	100%	100%	100%	100%	100%	S
Observations	332	13	M	72	**4**	8	28	15	15	41	126	8	2

Table C-HS6

HVAC System Summary: Average (Weight Sq ft) Packaged HVAC System Vintage

Percent of Regional Conditioned Floor Area Served By a Packaged System

Packaged HVAC Sys Vintage	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1 to 4 years	15.6%	16.8%	13.5%	12.5%	16.2%	13.0%	38.7%	19.8%	21.8%	12.5%	17.5%	63.8%	0.0%
5 to 10 years	29.8%	20.6%	22.5%	35.4%	19.8%	34.1%	19.0%	31.7%	33.3%	33.8%	28.4%	22.4%	16.8%
10 to 19 years	36.6%	41.0%	41.0%	25.7%	40.2%	35.6%	8.7%	24.6%	37.1%	42.6%	43.8%	13.8%	63.5%
20 to 29 years	14.7%	14.0%	21.8%	24.1%	19.5%	14.9%	33.6%	19.3%	6.1%	8.4%	8.1%	0.0%	17.8%
30+ years	3.3%	7.6%	1.3%	2.4%	4.3%	2.3%	0.0%	4.6%	1.7%	2.6%	2.1%	0.0%	1.9%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,293	248	105	246	80	117	31	45	58	177	151	19	16

Table C-HS7

HVAC System Summary: Average (Weight Tons) Packaged HVAC System Vintage

Percent of Regional Conditioned Floor Area Served By a Packaged System

Packaged HVAC Sys Vintage	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1 to 4 years	16.5%	19.4%	13.3%	11.8%	15.9%	14.0%	38.7%	22.1%	24.8%	11.9%	20.2%	63.8%	0.0%
5 to 10 years	31.7%	22.8%	26.4%	37.1%	24.1%	35.9%	19.0%	35.5%	37.8%	34.5%	29.3%	22.4%	16.8%
10 to 19 years	35.4%	40.7%	38.3%	24.7%	36.2%	33.2%	8.7%	30.5%	35.5%	41.2%	41.1%	13.8%	63.5%
20 to 29 years	14.0%	10.6%	20.6%	23.5%	19.9%	12.9%	33.6%	11.9%	0.0%	12.0%	8.4%	0.0%	17.8%
30+ years	2.5%	6.5%	1.4%	2.9%	3.8%	3.9%	0.0%	0.0%	1.9%	0.4%	0.9%	0.0%	1.9%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,132	204	96	222	65	99	31	41	54	151	134	19	16

Table C-HS8

HVAC System Summary: HVAC System Upgrades Within Last 5 Years

Percent of Regional Conditioned Floor Area

HVAC Upgrade within 5 Years	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	19.0%	20.4%	24.5%	18.9%	12.6%	7.6%	22.4%	30.4%	18.2%	18.7%	26.0%	12.4%	2.7%
No	81.0%	79.6%	75.5%	81.1%	87.4%	92.4%	77.6%	69.6%	81.8%	81.3%	74.0%	87.6%	97.3%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	761	131	38	115	34	78	31	29	50	93	91	63	8

Table C-HS9

HVAC System Summary: Primary HVAC, Equipment

Percent of Regional Conditioned Floor Area

UNIT HT ONLY	12.6%	11.0%	6.5%	2.2%	3.3%	57.4%	0.0%	2.9%	1.2%	22.3%	1.3%	12.0%	17.7%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,847	341	142	372	121	174	49	60	81	239	206	30	32

Table C-HS10

HVAC System Summary: Primary HVAC, Heat Fuel

Percent of Regional Conditioned Floor Area

Primary HVAC Heat Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electricity	28.7%	19.9%	17.4%	43.3%	36.5%	14.4%	5.2%	70.5%	29.6%	24.8%	20.7%	20.4%	33.7%
Natural Gas	66.3%	78.4%	74.5%	53.3%	59.0%	83.4%	91.0%	25.7%	66.3%	67.3%	72.6%	41.2%	55.0%
Fuel Oil	1.1%	1.0%	0.2%	0.3%	0.0%	0.0%	0.3%	0.0%	0.0%	1.5%	4.2%	0.0%	0.0%
LPG	1.3%	0.6%	3.8%	0.4%	3.3%	0.2%	0.0%	0.0%	2.8%	2.1%	2.4%	0.0%	0.0%
Pur. HW or Steam	1.5%	0.2%	0.0%	2.4%	0.0%	0.0%	3.2%	3.8%	1.3%	1.9%	0.1%	30.8%	0.0%
Other	1.0%	0.0%	1.0%	0.5%	0.6%	2.0%	0.3%	0.0%	0.0%	2.4%	0.1%	7.7%	11.3%
Heat Recovery	0.1%	0.0%	3.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,847	341	142	372	121	174	49	60	81	239	206	30	32

Table C-HS11

HVAC System Summary: Primary HVAC, Cool Fuel

Percent of Regional Conditioned Floor Area

Primary HVAC Cool Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electricity	75.4%	83.8%	91.6%	92.2%	94.2%	34.2%	99.0%	87.5%	94.8%	62.2%	59.5%	67.7%	59.8%
Other	24.6%	16.2%	8.4%	7.8%	5.8%	65.8%	1.0%	12.5%	5.2%	37.8%	40.5%	32.3%	40.2%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,847	341	142	372	121	174	49	60	81	239	206	30	32

Table C-HS12

HVAC System Summary: Pri HVAC Sys, Heat Eqpt

Percent of Regional Heated Floor Area

Primary HVAC Heat Equipment	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Air-source Heat Pump	5.7%	2.2%	3.8%	8.1%	14.7%	1.3%	0.6%	20.9%	4.5%	5.7%	4.1%	4.4%	7.4%
Duct Heater	6.7%	5.8%	1.6%	14.3%	0.0%	3.8%	7.7%	0.0%	7.2%	6.8%	1.9%	13.7%	0.0%
Electric Baseboard	0.3%	0.0%	0.0%	0.1%	0.4%	0.5%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%
Furnace Heat/Cool	39.5%	69.4%	84.1%	34.5%	66.7%	27.8%	4.3%	11.3%	41.6%	35.2%	18.6%	8.7%	57.9%
Wall/Windo w Unit	3.0%	0.3%	0.0%	0.1%	0.1%	2.1%	0.4%	32.3%	9.8%	2.9%	0.0%	0.0%	0.0%
Infrared Heater	0.3%	0.0%	0.0%	0.3%	0.0%	3.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
NOHEAT	0.1%	0.0%	0.3%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.2%
Resistance Heater	0.1%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	3.1%	0.0%
Space Heating Not Listed	0.2%	0.0%	0.0%	0.4%	0.0%	0.2%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%
Steam Boiler	7.5%	3.2%	0.0%	7.3%	0.0%	1.9%	63.9%	3.4%	6.9%	6.1%	16.2%	19.6%	0.0%
Steam/Heat Recovery Heat Exchanger	1.1%	0.2%	2.7%	2.4%	0.7%	0.0%	0.0%	3.9%	1.0%	0.6%	0.0%	13.9%	0.0%
Unit Heater	12.1%	11.7%	6.6%	1.9%	3.9%	55.3%	0.0%	2.3%	1.2%	21.3%	0.7%	9.2%	17.7%
Unit Ventilator	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%
Unknown Type Boiler	0.3%	0.0%	0.0%	0.1%	0.0%	0.5%	0.0%	4.2%	0.0%	0.0%	0.3%	3.6%	0.0%
Water Boiler	18.6%	5.4%	0.7%	23.5%	0.3%	3.6%	22.2%	18.1%	22.5%	18.0%	47.2%	23.9%	4.2%
Water-source Heat Pump	4.1%	1.7%	0.0%	6.6%	13.0%	0.0%	0.9%	3.0%	5.3%	1.3%	10.4%	0.0%	7.6%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,838	339	140	371	122	170	49	60	81	238	206	30	32

Table C-HS13

HVAC System Summary: Pri HVAC Sys, Cool Eqpt

Percent of Regional Cooled Floor Area

Primary HVAC Cool Equipment	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Absorption Chiller	0.2%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.8%	0.0%
Air-source Heat Pump	7.1%	2.4%	4.0%	7.9%	14.1%	4.7%	0.6%	22.6%	4.6%	9.1%	6.0%	4.9%	10.7%
Centrifugal Chiller	11.5%	7.8%	0.0%	19.0%	0.0%	7.7%	66.8%	11.7%	8.8%	9.2%	2.9%	0.0%	0.0%
Chiller (Unknown type)	11.9%	5.2%	6.8%	7.0%	0.3%	29.9%	7.5%	4.9%	13.7%	11.8%	31.7%	51.7%	27.2%
Direct Expansion Unit	49.8%	75.2%	89.2%	45.6%	64.4%	49.9%	11.6%	8.3%	47.3%	50.7%	28.2%	27.7%	51.3%
Double Bundle Chiller	0.3%	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Evaporative Cooler	1.0%	2.7%	0.0%	0.0%	7.0%	0.3%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	0.0%
Heat/Cool Wall/Window Unit	3.9%	1.2%	0.0%	0.6%	0.1%	3.0%	0.4%	35.3%	10.0%	4.4%	0.0%	0.0%	0.0%
Reciprocating Chiller	9.0%	3.5%	0.0%	11.5%	0.0%	4.6%	12.4%	11.9%	11.0%	9.8%	16.4%	6.9%	0.0%
Space Cooling Not Listed	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	0.4%	0.0%	0.0%	0.0%
Water-source Heat Pump	5.0%	1.9%	0.0%	6.8%	14.1%	0.0%	0.9%	3.2%	4.6%	1.7%	14.8%	0.0%	10.8%
Window/Thru Wall Unit	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,839	340	142	370	121	173	49	60	80	238	205	30	31

Table C-HS14

HVAC System Summary: Primary HVAC, Distribution

Percent of Regional Conditioned Floor Area

Primary HVAC Distribution	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
2 Pipe, Fan Coil	2.2%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	6.1%	2.3%	0.4%	8.6%	10.6%	0.0%
4 Pipe, Fan Coil	1.4%	2.8%	0.0%	0.3%	0.0%	0.0%	1.5%	3.4%	0.8%	0.2%	3.7%	6.6%	0.0%
AIR Dual Duct, Constant Volume	0.5%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AIR Dual Duct, Variable Volume	1.1%	0.0%	0.0%	2.7%	0.0%	2.5%	4.9%	4.5%	0.0%	0.0%	0.2%	0.0%	0.0%
AIR Multi-Zone	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AIR Multi-Zone, Constant Volume	4.5%	5.4%	5.1%	2.6%	0.7%	1.1%	22.9%	6.6%	0.9%	4.6%	6.4%	2.8%	6.7%
AIR Multi-Zone, Variable Volume	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
AIR Single Duct, Constant Volume	56.1%	74.9%	87.6%	53.3%	94.3%	34.8%	20.8%	34.5%	65.5%	46.4%	58.3%	12.5%	71.4%
AIR Single Duct, Variable Volume	14.8%	3.3%	0.8%	30.3%	0.0%	3.5%	49.5%	4.1%	18.8%	17.4%	10.3%	51.8%	4.2%
AIR Variable Volume, Variable Temperatur	0.3%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	2.3%	0.0%
Hydronic Baseboard System	0.1%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
Radiator	2.4%	0.8%	0.0%	2.4%	0.0%	0.0%	0.0%	1.4%	3.0%	2.7%	8.0%	0.0%	0.0%
Unitary	16.7%	12.6%	6.5%	2.8%	5.1%	57.5%	0.4%	39.5%	7.6%	28.0%	4.5%	13.5%	17.7%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,841	341	143	370	121	173	49	58	80	238	206	30	32

Table C-HS15

HVAC System Summary: Secondary HVAC, Equipment

Percent of Regional Conditioned Floor Area with a Secondary HVAC System

Secondary HVAC Equipment	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
AIR-AIR HT PUMP	9.5%	7.9%	12.9%	9.2%	0.0%	10.4%	4.4%	12.7%	2.8%	13.5%	8.2%	0.0%	2.3%
BOILER ONLY	3.3%	0.0%	0.0%	3.6%	0.0%	0.0%	2.7%	0.0%	6.9%	8.6%	3.5%	0.0%	7.3%
BOILER/CHILLER	1.7%	0.0%	0.0%	0.9%	50.2%	0.0%	11.3%	6.2%	0.0%	0.0%	4.4%	0.0%	0.0%
BOILER/DX COOL	0.4%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%
CHILLER ONLY	0.2%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.2%	0.0%
COMBO HT/AC UNIT	0.3%	0.0%	0.0%	0.0%	1.7%	0.0%	2.3%	0.0%	3.8%	0.0%	0.6%	0.0%	0.0%
DUCT HT/CHILLER	0.3%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	0.0%	0.0%	0.0%	3.9%
DUCT HT/DX COOL	1.0%	0.0%	0.0%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%
DX COOL ONLY	5.8%	5.5%	0.4%	12.4%	13.5%	4.6%	25.6%	1.7%	8.0%	2.3%	2.6%	0.0%	10.7%
EVAP COOL ONLY	3.1%	2.3%	0.8%	1.5%	10.7%	2.6%	0.0%	2.7%	0.0%	5.7%	0.3%	0.0%	35.4%
H2O LOOP HT PUMP	5.1%	3.2%	0.0%	14.2%	0.0%	0.0%	0.0%	7.4%	0.7%	4.4%	4.2%	0.0%	0.0%
HT REC ONLY	2.3%	6.4%	17.0%	0.0%	0.9%	0.0%	0.0%	1.9%	4.1%	0.3%	0.4%	4.4%	4.3%
HT REC/DX COOL	0.7%	0.0%	7.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%
PKG HEAT ONLY	5.4%	4.3%	0.0%	2.5%	5.2%	5.1%	1.5%	0.0%	0.0%	4.9%	18.6%	16.2%	0.0%
PKG:HEAT/DX COOL	35.3%	23.1%	14.6%	22.3%	3.7%	69.2%	37.9%	60.9%	46.4%	35.2%	38.5%	43.8%	14.0%
PKG:HT/EVAP CL	0.6%	0.0%	3.4%	0.0%	3.6%	0.0%	0.0%	0.0%	1.6%	1.4%	0.3%	5.4%	0.0%
UNIT CL ONLY	1.9%	3.8%	0.0%	2.8%	2.4%	0.0%	0.0%	0.0%	0.0%	2.8%	1.3%	0.0%	0.0%
UNIT HEAT/AC	1.8%	2.5%	0.0%	2.2%	0.0%	0.2%	0.0%	0.0%	2.6%	1.9%	0.0%	0.0%	19.5%
UNIT HT ONLY	21.1%	40.7%	43.8%	21.6%	7.9%	7.9%	14.3%	4.2%	19.2%	16.9%	16.5%	24.9%	2.5%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	758	149	58	128	18	93	19	31	28	109	96	14	15

Table C-HS16

HVAC System Summary: Secondary HVAC, Heat Fuel

Percent of Regional Conditioned Floor Area with a Secondary HVAC System

Secondary HVAC Heat Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electricity	30.3%	24.6%	17.6%	49.8%	1.7%	18.4%	30.1%	29.6%	40.2%	32.6%	20.8%	10.7%	25.8%
Natural Gas	52.3%	55.7%	56.8%	25.1%	63.6%	74.4%	44.3%	64.0%	45.6%	49.4%	72.2%	68.3%	23.9%
Fuel Oil	0.6%	0.6%	4.3%	1.0%	0.0%	0.0%	0.0%	0.0%	2.2%	0.0%	0.0%	0.0%	0.0%
LPG	0.6%	0.8%	0.0%	0.0%	7.1%	0.0%	0.0%	0.0%	0.0%	0.8%	1.6%	0.0%	0.0%
Pur. HW or Steam	1.3%	0.4%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	4.1%	0.6%	11.3%	0.0%
Other	12.1%	11.5%	1.2%	22.6%	26.7%	7.2%	25.6%	4.4%	8.0%	10.8%	4.5%	5.2%	46.1%
Heat Recovery	2.9%	6.4%	20.2%	0.0%	0.9%	0.0%	0.0%	1.9%	4.1%	2.3%	0.4%	4.4%	4.3%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	756	149	58	127	18	93	19	31	28	108	96	14	15

Table C-HS17
HVAC System Summary: Secondary HVAC, Cool Fuel
Percent of Regional Conditioned Floor Area with a Secondary HVAC System

Secondary HVAC Cool Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electricity	67.0%	49.5%	39.2%	72.2%	85.9%	86.9%	81.4%	92.6%	69.9%	64.3%	61.8%	54.5%	85.8%
Natural Gas	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%	0.0%	0.0%	0.0%
Other	32.0%	50.5%	60.8%	27.8%	14.1%	13.1%	18.6%	7.4%	30.1%	30.7%	38.2%	45.5%	14.2%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	758	149	58	128	18	93	19	31	28	109	96	14	15

Table C-HS20
HVAC System Summary: Distribution with Economizers
Percent of Regional Conditioned Floor Area

Economizers	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	44.3%	44.5%	31.2%	49.1%	24.7%	29.1%	70.4%	17.8%	48.8%	47.1%	51.7%	73.4%	21.0%
No	55.7%	55.5%	68.8%	50.9%	75.3%	70.9%	29.6%	82.2%	51.2%	52.9%	48.3%	26.6%	79.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,369	234	110	272	92	101	48	47	64	179	170	27	25

Heating and Cooling Equipment

Table C-HC1

Heating and Cooling Equipment: Electric Baseboard

Percent of Regional Heated Floor Area

Electric Baseboard	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	7.6%	8.3%	4.1%	7.7%	4.3%	9.0%	9.3%	9.9%	0.9%	10.4%	6.2%	4.5%	0.0%
No	92.4%	91.7%	95.9%	92.3%	95.7%	91.0%	90.7%	90.1%	99.1%	89.6%	93.8%	95.5%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,732	323	133	351	107	145	47	60	79	224	204	30	29

Table C-HC2

Heating and Cooling Equipment: Water Boiler

Percent of Regional Heated Floor Area

Water Boiler	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	21.8%	5.5%	0.7%	29.3%	14.0%	3.7%	24.7%	27.4%	24.6%	23.9%	53.5%	5.6%	6.7%
No	78.2%	94.5%	99.3%	70.7%	86.0%	96.3%	75.3%	72.6%	75.4%	76.1%	46.5%	94.4%	93.3%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,985	354	147	389	127	175	58	66	92	252	209	76	40

Table C-HC3
Heating and Cooling Equipment: Steam Boiler
Percent of Regional Heated Floor Area

Steam Boiler	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	9.2%	3.8%	0.0%	8.4%	2.7%	2.3%	70.3%	6.6%	10.0%	6.6%	18.9%	25.5%	0.0%
No	90.8%	96.2%	100%	91.6%	97.3%	97.7%	29.7%	93.4%	90.0%	93.4%	81.1%	74.5%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,516	252	117	329	101	107	46	59	62	202	189	24	28

Table C-HC4
Heating and Cooling Equipment: Furnace
Percent of Regional Heated Floor Area

Furnace	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	70.0%	89.3%	95.8%	57.4%	75.0%	83.6%	19.2%	58.9%	65.0%	72.1%	59.4%	45.0%	79.0%
No	30.0%	10.7%	4.2%	42.6%	25.0%	16.4%	80.8%	41.1%	35.0%	27.9%	40.6%	55.0%	21.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,734	321	134	351	120	144	47	57	76	226	196	30	32

Distribution Controls

Table C-DC1

Distribution Controls: EMCS

Percent of Regional Conditioned Floor Area

EMCS	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	37%	24%	32%	50%	<1%	11%	56%	25%	41%	35%	59%	80%	10%
No	63%	76%	68%	50%	99%	89%	44%	75%	59%	65%	41%	20%	90%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,608	284	127	329	108	128	48	58	72	206	195	28	25

Table C-DC2

Distribution Controls: Thermostatic (Programmable) W/Night Set-Back

Percent of Regional Conditioned Floor Area

Thermostatic Night Set-Back	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	33%	34%	38%	27%	35%	59%	16%	36%	42%	32%	29%	25%	18%
No	67%	66%	62%	73%	65%	41%	84%	64%	58%	68%	71%	75%	82%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,596	284	126	329	108	125	47	58	71	204	192	27	25

Table C-DC3
Distribution Controls: Thermostatic (Manual)
Percent of Regional Conditioned Floor Area

Thermostatic (Manual)	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	29%	32%	26%	12%	16%	55%	19%	54%	32%	36%	20%	14%	42%
No	71%	68%	74%	88%	84%	45%	81%	46%	68%	64%	80%	86%	58%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,596	284	126	329	108	125	47	58	71	204	192	27	25

Table C-DC4
Distribution Controls: Timeclock (On/Off)
Percent of Regional Conditioned Floor Area

Timeclock (On/Off)	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	<1%	<1%	0%	<1%	<1%	2%	0%	0%	0%	0%	1%	0%	0%
No	99%	100%	100%	99%	99%	98%	100%	100%	100%	100%	99%	100%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,609	284	128	329	108	128	48	58	72	206	195	28	25

Table C-DC5

Distribution Controls: On/Off Switch

Percent of Regional Conditioned Floor Area

On/Off Switch	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	7%	5%	2%	6%	11%	8%	0%	16%	6%	9%	7%	0%	39%
No	93%	95%	98%	94%	89%	92%	100%	84%	94%	91%	93%	100%	61%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,609	284	128	329	108	128	48	58	72	206	195	28	25

Auxiliary Fans

Table C-AF1
Auxiliary Fans: Exhaust Fan(s)
Percent of Regional Floor Area

Exhaust Fan(s)	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	86%	88%	90%	86%	91%	78%	96%	81%	92%	82%	91%	81%	79%
No	14%	12%	10%	14%	9%	22%	4%	19%	8%	18%	9%	19%	21%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	706	80	70	114	65	49	33	20	37	101	97	23	17

Table C-AF2
Auxiliary Fans: Lab Hood Fan(s)
Percent of Regional Floor Area

Lab Hood Fan(s)	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	3%	4%	6%	2%	6%	5%	2%	4%	7%	2%	4%	8%	0%
No	97%	96%	94%	98%	94%	95%	98%	96%	93%	98%	96%	92%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	697	79	69	112	65	49	33	18	37	100	96	23	16

Table C-AF3
Auxiliary Fans: Make-Up-Air Fan(s)
Percent of Regional Floor Area

Make-up-air Fan(s)	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	4%	6%	3%	5%	3%	4%	0%	13%	<1%	6%	1%	0%	8%
No	96%	94%	97%	95%	97%	96%	100%	87%	99%	94%	99%	100%	92%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	702	79	70	114	65	49	33	20	37	99	97	23	16

Table C-AF4
Auxiliary Fans: Other Fans
Percent of Regional Floor Area

Other Fan(s)	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	6%	2%	<1%	8%	0%	13%	2%	3%	<1%	11%	3%	11%	14%
No	94%	98%	99%	92%	100%	87%	98%	97%	100%	89%	97%	89%	86%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	702	80	69	114	65	49	33	18	37	101	96	23	17

Table C-AF5

Auxiliary Fans: Total Supply Fan HP

Percent of Regional Floor Area with Supply Fan(S)

Total Supply Fan HP	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Less than 10 HP	37%	42%	37%	33%	95%	58%	9%	S	76%	48%	16%	32%	70%
10 to 29 HP	17%	0%	53%	12%	5%	30%	5%	S	5%	21%	33%	0%	22%
30 to 59 HP	9%	7%	11%	12%	0%	0%	5%	S	11%	6%	9%	14%	8%
60 to 99 HP	11%	41%	0%	6%	0%	12%	5%	S	<1%	14%	9%	0%	0%
100 or more HP	27%	10%	0%	36%	0%	0%	76%	S	8%	12%	33%	54%	0%
--Total--	100%	100%	100%	100%	100%	100%	100%	S	100%	100%	100%	100%	100%
Observations	245	14	22	78	10	6	25	3	8	26	35	8	10

Table C-AF6

Auxiliary Fans: Total Supply Fan HP

Per Square Foot (1000s), Base=Have Supply Fan(s)

Total Fan Supply HP	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.51	0.26	0.37	0.50	0.21	0.27	1.07	S	0.20	0.53	0.63	1.15	0.22
Observations	245	14	22	78	10	6	25	3	8	26	35	8	10

Table C-AF7

Auxiliary Fans: Total Return Fan HP

Percent of Regional Floor Area with Return Fan(s)

Total Return Fan HP	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Less than 0.25 HP	6%	0%	4%	8%	6%	0%	4%	S	S	12%	7%	S	20%
0.25 to 0.49 HP	9%	11%	19%	4%	15%	40%	0%	S	S	4%	12%	S	9%
0.50 to 0.99 HP	20%	5%	34%	17%	34%	49%	11%	S	S	41%	12%	S	52%
1.0 to 9.9 HP	31%	68%	34%	23%	20%	10%	15%	S	S	9%	21%	S	6%
10 to 19 HP	7%	4%	4%	7%	0%	0%	11%	S	S	9%	12%	S	0%
20 or More HP	28%	12%	5%	40%	25%	0%	59%	S	S	24%	35%	S	14%
--Total--	100%	100%	100%	100%	100%	100%	100%	S	S	100%	100%	S	100%
Observations	304	45	32	82	43	6	20	1	5	26	26	5	13

Table C-AF8

Auxiliary Fans: Total Return Fan HP

Per Square Foot (1000s), Base=Have Return Fan(s)

Total Return Fan HP	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.57	0.10	0.09	0.22	8.73	0.02	0.36	S	S	0.23	0.15	S	0.10
Observations	304	45	32	82	43	6	20	1	5	26	26	5	13

Water Heating

Table C-WH1

Water Heating: Predominant Service Hot Water Eqpt Type

Percent of Regional Floor Area

Prim Hot Water Equipment	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Heat Pump	0.6%	0.3%	3.3%	0.9%	0.7%	0.8%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
Heat Recovery	2.8%	3.6%	8.6%	1.8%	2.3%	2.7%	20.9%	3.1%	4.1%	2.0%	0.0%	0.0%	0.0%
Instantaneous (tankless)	2.2%	1.6%	3.2%	1.3%	0.6%	1.6%	10.4%	4.9%	0.0%	2.1%	3.5%	1.8%	0.0%
Other	0.4%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.8%	0.0%	0.0%	0.0%
Self-Contained	79.3%	89.1%	83.6%	78.0%	90.6%	93.2%	24.2%	67.0%	77.4%	78.3%	74.7%	47.3%	77.2%
Storage Tank (Central Boiler)	14.7%	5.5%	1.4%	17.0%	5.8%	1.7%	44.5%	24.2%	18.5%	16.4%	21.7%	50.9%	22.8%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,474	258	124	304	106	115	42	57	68	173	181	27	19

Table C-WH2

Water Heating: Predominant Service Hot Water Fuel

Percent of Regional Floor Area

Hot Water Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electricity	54.2%	63.0%	38.2%	68.0%	35.2%	76.9%	22.3%	31.5%	36.6%	51.3%	38.1%	26.3%	60.5%
Natural Gas	42.3%	35.0%	54.5%	28.9%	64.8%	22.1%	66.0%	64.6%	59.0%	44.8%	57.0%	62.6%	39.5%
Fuel Oil	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%
LPG	0.9%	0.0%	2.9%	0.3%	0.0%	0.1%	0.0%	1.4%	2.9%	0.9%	2.4%	0.0%	0.0%
Pur. HW or Steam	1.2%	0.5%	0.0%	1.9%	0.0%	0.0%	11.0%	2.6%	1.5%	1.1%	0.0%	4.4%	0.0%
Other	1.2%	1.5%	4.4%	0.9%	0.0%	0.8%	0.7%	0.0%	0.0%	1.8%	0.9%	6.7%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,529	269	126	310	106	121	42	63	73	191	182	23	23

Table C-WH3

Water Heating: Secondary Service Hot Water Eqpt Type

Percent of Regional Floor Area with Secondary Service Hot Water Eqpt

Sec Hot Water Equipment	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Heat Recovery	4.1%	10.4%	41.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Instantaneous (tankless)	25.0%	21.9%	1.8%	18.9%	100%	82.6%	0.0%	67.5%	39.9%	3.8%	18.5%	0.0%	0.0%
Other	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%
Self-Contained	67.5%	67.7%	56.9%	81.1%	0.0%	17.4%	62.8%	32.5%	60.1%	96.2%	78.9%	0.0%	100%
Storage Tank (Central Boiler)	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	37.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0.0%	100%
Observations	91	16	15	14	2	3	6	5	5	5	19	.	1

Table C-WH4

Water Heating: Additional Tank Wrap

Percent of Regional Floor Area

Additional Tank Wrap	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	33.1%	40.4%	29.2%	32.4%	43.8%	23.4%	85.0%	14.8%	37.8%	26.8%	33.0%	56.6%	49.5%
No	66.9%	59.6%	70.8%	67.6%	56.2%	76.6%	15.0%	85.2%	62.2%	73.2%	67.0%	43.4%	50.5%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	938	156	95	222	94	59	20	35	35	100	103	3	16

Table C-WH5
Water Heating: Pipe Insulation
Percent of Regional Floor Area

Pipe Insulation	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	53.5%	45.6%	43.5%	56.6%	13.8%	26.6%	80.1%	64.0%	54.0%	48.1%	84.7%	100%	36.3%
No	46.5%	54.4%	56.5%	43.4%	86.2%	73.4%	19.9%	36.0%	46.0%	51.9%	15.3%	0.0%	63.7%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	680	85	67	171	73	39	21	27	29	82	65	4	17

Envelope

Table C-EN1

Envelope Information: Wall Construction Type

Percent of Regional Wall Area

Wall Construction Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Brick	18.8%	6.7%	15.2%	22.6%	23.5%	1.3%	19.7%	53.8%	31.9%	15.4%	38.7%	39.3%	8.5%
Concrete	39.3%	52.5%	26.5%	43.8%	20.1%	58.9%	65.3%	9.0%	31.9%	29.5%	29.1%	25.0%	2.9%
Concrete Block	18.6%	26.8%	48.9%	7.8%	37.1%	14.9%	9.2%	0.0%	0.0%	25.6%	10.2%	3.0%	39.3%
F	1.5%	2.1%	0.0%	1.9%	2.9%	0.0%	0.0%	9.9%	0.0%	1.1%	0.0%	8.5%	19.6%
Metal	7.5%	4.3%	2.2%	8.5%	3.2%	11.2%	2.7%	1.5%	0.0%	15.7%	0.7%	0.0%	21.8%
Wood	14.2%	7.6%	7.1%	15.5%	13.2%	13.7%	3.1%	25.8%	36.2%	12.6%	21.3%	24.2%	7.8%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	683	107	67	123	55	52	40	7	25	84	94	17	12

Table C-EN2

Envelope Information: Primary Wall Framing Type

Percent of Regional Wall Area

Primary Wall Framing Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Metal	62.3%	74.5%	67.6%	65.2%	32.3%	78.3%	64.6%	41.8%	52.3%	61.7%	47.1%	70.6%	65.9%
Wood	37.7%	25.5%	32.4%	34.8%	67.7%	21.7%	35.4%	58.2%	47.7%	38.3%	52.9%	29.4%	34.1%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	650	85	38	112	44	64	32	20	34	93	98	24	6

Table C-EN3
Envelope Information: Average Layers of Window Glazing
Percent of Regional Window Area

Avg. Layers Window Glazing	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1 layer	27.9%	39.5%	56.0%	22.5%	42.3%	29.1%	34.3%	6.8%	12.2%	21.9%	46.7%	5.4%	63.2%
2 layers	71.9%	60.5%	44.0%	77.0%	57.7%	70.9%	65.7%	93.2%	87.8%	78.1%	53.3%	94.6%	36.8%
3 layers	0.1%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	837	117	69	151	60	68	48	20	36	117	115	23	13

Table C-EN4
Envelope Information: Window Glaze Type
Percent of Regional Window Area

Window Glaze Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Clear	44.4%	61.0%	63.5%	27.7%	48.8%	38.3%	29.7%	71.7%	60.8%	46.1%	62.7%	40.5%	68.5%
Opaque	0.4%	0.0%	0.0%	0.0%	1.1%	1.1%	7.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Reflective	2.0%	0.0%	1.6%	5.1%	0.0%	1.1%	0.9%	0.0%	0.0%	0.5%	0.4%	0.0%	0.0%
Tinted	53.2%	39.0%	34.8%	67.2%	50.1%	59.4%	61.9%	28.3%	39.2%	53.4%	36.9%	59.5%	31.5%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	842	119	70	150	62	69	48	19	38	115	116	23	13

Table C-EN5

Envelope Information: Predominant Window Glazing Low E/Gas Type

Percent of Regional Window Area

Window Glaze Low E/Gas	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Both	19.1%	9.6%	0.0%	11.5%	0.0%	11.1%	5.7%	0.0%	8.7%	39.2%	21.4%	30.3%	0.0%
Gas-filled	18.1%	5.9%	14.4%	28.7%	0.0%	9.6%	26.2%	14.0%	13.2%	17.8%	9.6%	5.5%	0.0%
Low-E	47.5%	56.7%	38.2%	52.0%	28.2%	29.9%	68.1%	55.0%	65.9%	33.1%	52.7%	55.0%	0.0%
Neither	15.4%	27.8%	47.4%	7.8%	71.8%	49.5%	0.0%	31.1%	12.2%	9.9%	16.3%	9.2%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0.0%
Observations	335	40	9	49	13	34	19	13	22	61	59	16	.

Table C-EN6

Envelope Information: Predominant Window Frame Type

Percent of Regional Window Area

Window Frame Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Metal	84.9%	82.7%	95.5%	90.8%	76.1%	96.1%	92.1%	33.5%	77.1%	82.1%	89.4%	63.5%	87.8%
Vinyl	8.0%	2.6%	0.8%	4.2%	8.0%	3.6%	3.8%	66.5%	22.5%	7.2%	4.2%	24.9%	0.0%
Wood	7.1%	14.7%	3.6%	4.9%	15.9%	0.3%	4.2%	0.0%	0.3%	10.7%	6.4%	11.6%	12.2%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	835	116	69	150	62	67	47	20	37	116	115	23	13

Table C-EN7
Envelope Information: Window Type
Percent of Regional Window Area

Window Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Fixed	78.4%	80.8%	98.9%	88.3%	90.7%	86.8%	94.0%	17.4%	63.7%	64.4%	56.0%	63.9%	82.4%
Operable	21.6%	19.2%	1.1%	11.7%	9.3%	13.2%	6.0%	82.6%	36.3%	35.6%	44.0%	36.1%	17.6%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	586	81	61	120	58	41	36	9	15	69	70	14	12

Table C-EN8
Envelope Information: Primary Roof Surface Construction Code
Percent of Regional Floor Area

Roof Surf Const Code	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Built-up	54.6%	64.8%	67.6%	57.1%	74.0%	55.5%	100%	44.8%	53.6%	39.9%	49.4%	70.2%	42.9%
Cool Roof	1.5%	1.9%	5.4%	2.1%	1.2%	1.5%	0.0%	0.0%	0.0%	0.5%	2.3%	0.0%	0.0%
Membrane	11.2%	15.0%	12.3%	16.4%	2.5%	7.0%	0.0%	8.6%	4.8%	6.8%	14.2%	4.1%	17.7%
Metal	17.9%	12.3%	11.5%	17.7%	8.1%	31.1%	0.0%	15.9%	17.8%	21.8%	14.3%	16.9%	29.9%
Shingles/Felt	14.4%	3.8%	3.2%	6.4%	14.2%	4.8%	0.0%	30.7%	23.8%	31.0%	19.9%	8.8%	9.5%
Wood	0.4%	2.3%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,375	249	117	286	85	115	43	50	69	155	156	17	33

Table C-EN9
Envelope Information: Skylights
Percent of Regional Floor Area

Skylights	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	31.4%	31.9%	20.3%	22.2%	18.1%	45.2%	49.0%	22.8%	32.8%	38.0%	35.5%	37.5%	4.2%
No	68.6%	68.1%	79.7%	77.8%	81.9%	54.8%	51.0%	77.2%	67.2%	62.0%	64.5%	62.5%	95.8%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,235	233	73	225	72	147	24	44	71	157	137	20	32

Table C-EN10
Envelope Information: Floor Construction Type
Percent of Regional Floor Area

Floor Construction Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Basement	11.9%	6.2%	0.8%	25.8%	20.1%	0.0%	36.4%	12.6%	11.6%	9.7%	8.4%	23.5%	8.6%
Crawl	4.2%	1.6%	3.7%	4.3%	3.6%	0.5%	0.0%	4.8%	15.5%	5.1%	3.0%	0.0%	13.9%
Slab	80.8%	90.8%	95.1%	65.9%	75.4%	97.6%	59.4%	79.7%	69.6%	77.8%	88.6%	67.9%	77.5%
Unconditioned	3.2%	1.5%	0.3%	3.9%	0.9%	1.9%	4.3%	2.9%	3.3%	7.3%	0.0%	8.5%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,784	326	141	355	125	157	46	62	84	227	198	24	39

Table C-EN11
Envelope Information: Wall Area: Gross Floor Area

Wall Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Wall Area:Gross Floor Area	0.77	0.77	0.60	0.70	0.71	0.96	1.29	0.75	0.55	0.87	0.75	0.68	0.53
Observations	927	155	78	162	63	78	47	20	39	123	121	28	13

Table C-EN12
Envelope Information: Window Area: Wall Area

Window Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Window Area:Wall Area	0.18	0.25	0.12	0.24	0.16	0.06	0.22	0.17	0.26	0.10	0.14	0.20	0.29
Observations	872	136	74	149	63	71	47	20	38	121	117	23	13

Refrigeration

Table C-RF1

Refrigeration Compressors: Compressor Temperatures

Percent of Regional Floor Area with Refrigeration

Compressor Temperatures	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Low	25.7%	25.9%	29.3%	20.9%	8.0%	35.1%	58.9%	50.0%	45.0%	35.4%	17.6%	0.0%	26.5%
Medium	67.5%	69.8%	64.6%	79.1%	88.3%	54.8%	30.7%	50.0%	54.9%	57.5%	82.4%	0.0%	46.9%
High	6.8%	4.2%	6.1%	0.0%	3.8%	10.1%	10.4%	0.0%	0.1%	7.0%	0.0%	0.0%	26.7%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0.0%	100%
Observations	378	52	102	25	73	12	12	10	12	22	48	0	10

Table C-RF2

Refrigeration Compressors: Floating Head Pressure Control

Percent of Regional Floor Area with Refrigeration

Floating Head Press Control	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	38.0%	17.9%	56.1%	14.4%	5.8%	S	38.6%	0.0%	S	6.5%	64.6%	M	51.9%
No	62.0%	82.1%	43.9%	85.6%	94.2%	S	61.4%	100%	S	93.5%	35.4%	M	48.1%
--Total--	100%	100%	100%	100%	100%	S	100%	100%	S	100%	100%	M	100%
Observations	231	22	69	19	48	5	10	6	4	14	25	M	9

Table C-RF3

Refrigeration Compressors: Refrigeration Heat Recovery

Percent of Regional Floor Area with Refrigeration

Refrigeration Heat Recovery	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	30.9%	55.1%	59.0%	0.0%	1.5%	12.9%	0.0%	0.0%	0.0%	46.5%	0.0%	0.0%	64.1%
No	69.1%	44.9%	41.0%	100%	98.5%	87.1%	100%	100%	100%	53.5%	100%	0.0%	35.9%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0.0%	100%
Observations	528	70	109	60	66	28	18	19	19	52	66	10	11

Table C-RF4

Refrigeration Condensers: Predominant Condenser Type

Percent of Regional Floor Area with Refrigeration

Condenser Type	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Air-cooled	84.7%	100%	93.9%	100%	99.8%	41.4%	100%	100%	100%	100%	98.7%	M	95.2%
Evap-cooled	15.2%	0.0%	6.1%	0.0%	0.0%	58.6%	0.0%	0.0%	0.0%	0.0%	1.3%	M	4.8%
Water-cooled	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	M	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	M	100%
Observations	347	49	100	21	66	11	11	9	10	17	44	M	9

Table C-RF5

Refrigeration Equipment Use: Display Case

Percent of Regional Floor Area with Refrigeration

Display Case	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	57.1%	81.7%	94.9%	77.4%	5.2%	0.0%	0.0%	0.0%	98.1%	49.3%	0.0%	0.0%	98.3%
No	42.9%	18.3%	5.1%	22.6%	94.8%	100%	100%	0.0%	1.9%	50.7%	100%	0.0%	1.7%
--Total--	100%	100%	100%	100%	100%	100%	100%	0.0%	100%	100%	100%	0.0%	100%
Observations	607	111	116	40	64	47	33	10	30	50	80	16	10

Table C-RF6

Refrigeration Equipment Use: Cases with Doors

Percent of Regional Floor Area with Refrigeration

Cases with Doors	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	81.1%	70.3%	68.6%	81.0%	97.5%	S	100%	S	S	97.3%	90.2%	S	96.7%
No	18.9%	29.7%	31.4%	19.0%	2.5%	S	0.0%	S	S	2.7%	9.8%	S	3.3%
--Total--	100%	100%	100%	100%	100%	S	100%	S	S	100%	100%	S	100%
Observations	305	64	117	13	50	2	10	2	4	9	23	1	10

Other Equipment

Table C-EQ1

Miscellaneous Equipment: Number of Terminals (Cash Registers)

Per Square Foot (1000s), Base=Have Terminal(s)

Number of Terminals (Cash Registers)	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.32	0.41	0.28	0.21	0.55	0.13	-	S	S	0.24	S	S	S
Observations	234	107	78	9	12	7	0	5	2	8	1	1	4

Table C-EQ2

Miscellaneous Equipment: Number of PCs

Per Square Foot (1000s), Base=Have PC(s)

Number of PCs	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	1.45	0.65	0.23	3.22	0.40	0.36	2.00	0.14	1.26	0.73	1.94	2.46	S
Observations	716	128	28	181	20	68	16	18	43	102	94	13	5

Table C-EQ3

Miscellaneous Equipment: Number of Servers

Per Square Foot (1000s), Base=Have Server(s)

Number of Servers	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.11	0.08	S	0.18	S	0.04	S	S	0.10	0.03	0.16	M	S
Observations	165	16	5	74	2	12	3	3	11	17	20	M	2

Table C-EQ4

Miscellaneous Equipment: Number of Refrigerators

Per Square Foot (1000s), Base=Have Refrigeration

Number of Refrigerators	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.23	0.31	0.17	0.14	0.69	0.08	M	1.21	0.21	0.18	0.06	S	S
Observations	215	33	8	69	6	20	M	9	13	40	11	1	5

Table C-EQ5

Miscellaneous Equipment: Number of Auxiliary Pumps

Per Square Foot (1000s), Base=Have Auxiliary Pump(s)

Number of Auxilary Pumps	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.09	0.09	0.16	0.03	S	S	0.14	0.06	0.15	0.11	0.07	0.13	S
Observations	223	12	7	22	3	5	21	13	24	34	62	18	2

Table C-EQ6

Miscellaneous Equipment: Other Health, Lab

Percent of Regional Floor Area

Other Health/Lab	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.4%	0.0%	0.4%	0.0%	0.0%	0.1%	M
No	99.9%	100%	100%	99.9%	100%	99.9%	99.6%	100%	99.6%	100%	100%	99.9%	M
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	M
Observations	357	75	21	36	9	40	21	9	25	37	64	20	M

Table C-EQ7
Full Kitchen Equipment: Number of Broilers
Per Square Foot (1000s), Base=Have Broiler(s)

Number of Broilers	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.06	0.03	0.03	0.01	0.75	-	0.01	0.02	0.01	0.07	0.02	-	0.18
Observations	39	6	3	4	8	0	1	9	1	4	2	0	1

Table C-EQ8
Full Kitchen Equipment: Broiler Fuel Electric
Percent of Regional Floor Area with Broiler(s)

Broiler Fuel Elec	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	39.6%	54.2%	58.6%	59.0%	7.6%	M	S	7.8%	S	10.0%	71.8%	M	S
No	60.4%	45.8%	41.4%	41.0%	92.4%	M	S	92.2%	S	90.0%	28.2%	M	S
--Total--	100%	100%	100%	100%	100%	M	S	100%	S	100%	100%	M	S
Observations	151	9	30	9	49	M	5	12	4	10	20	M	3

Table C-EQ9
Full Kitchen Equipment: Number of Fryers
Per Square Foot (1000s), Base=Have Fryer(s)

Number of Fryers	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.05	0.06	0.05	0.01	0.60	M	S	0.01	S	0.03	0.02	M	S
Observations	133	18	26	13	24	M	1	13	4	13	19	M	2

Table C-EQ10

Full Kitchen Equipment: Fryer Fuel Elec

Percent of Regional Floor Area with Fryer(s)

Fryer Fuel Elec	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	45.1%	45.2%	61.0%	76.4%	8.9%	M	80.7%	21.0%	0.0%	29.9%	58.6%	M	S
No	54.9%	54.8%	39.0%	23.6%	91.1%	M	19.3%	79.0%	100%	70.1%	41.4%	M	S
--Total--	100%	100%	100%	100%	100%	M	100%	100%	100%	100%	100%	M	S
Observations	237	21	56	18	56	M	6	16	7	18	35	M	4

Table C-EQ11

Full Kitchen Equipment: Number of Griddle/Grills

Per Square Foot (1000s), Base=Have Griddle/Grill(s)

Number of Griddles/Grills	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.07	0.04	0.04	0.01	0.71	M	S	0.03	0.03	0.10	0.03	S	S
Observations	138	15	11	19	20	M	3	15	9	19	23	1	3

Table C-EQ12

Full Kitchen Equipment: Griddle/Grill Fuel Elec

Percent of Regional Floor Area with Griddle/Grill(s)

Grill/Griddle Fuel Elec	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	42.4%	39.2%	50.7%	67.9%	6.6%	M	79.8%	3.4%	0.0%	43.0%	57.9%	S	S
No	57.6%	60.8%	49.3%	32.1%	93.4%	M	20.2%	96.6%	100%	57.0%	42.1%	S	S
--Total--	100%	100%	100%	100%	100%	M	100%	100%	100%	100%	100%	S	S
Observations	245	20	35	24	57	M	7	18	12	25	41	1	5

Table C-EQ13

Full Kitchen Equipment: Number of Ovens

Per Square Foot (1000s), Base=Have Oven(s)

Number of Ovens	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.45	0.43	0.23	0.03	1.46	S	S	0.33	0.09	1.13	0.10	S	S
Observations	261	37	28	26	26	4	4	16	14	42	57	4	3

Table C-EQ14

Full Kitchen Equipment: Oven Fuel Elec

Percent of Regional Floor Area with Oven(s)

Oven Fuel Elec	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	53.5%	48.9%	54.4%	66.0%	15.2%	S	69.7%	13.8%	25.8%	58.9%	64.8%	S	S
No	46.5%	51.1%	45.6%	34.0%	84.8%	S	30.3%	86.2%	74.2%	41.1%	35.2%	S	S
--Total--	100.00%	100.0 0%	100.0 0%	100.0 0%	100.0 0%	S	100.0 0%	100.0 0%	100.0 0%	100.0 0%	100.0 0%	S	S
Observations	382	45	57	33	59	2	8	19	17	51	82	5	4

Table C-EQ15

Full Kitchen Equipment: Number of Range Tops

Per Square Foot (1000s), Base=Have Range Top(s)

Number of Range Tops	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.18	0.23	0.04	0.08	1.37	S	S	0.13	0.06	0.21	0.07	S	S
Observations	132	10	7	14	17	4	1	14	9	33	21	1	1

Table C-EQ16

Full Kitchen Equipment: Range Fuel Elec

Percent of Regional Floor Area with Range(s)

Range Fuel Elec	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	43.0%	36.6%	46.0%	27.5%	5.2%	S	S	11.1%	28.0%	52.2%	64.1%	S	S
No	57.0%	63.4%	54.0%	72.5%	94.8%	S	S	88.9%	72.0%	47.8%	35.9%	S	S
--Total--	100%	100%	100%	100%	100%	S	S	100%	100%	100%	100%	S	S
Observations	239	17	30	18	49	2	4	17	12	44	43	2	1

Table C-EQ17

Laundry Equipment: Number of Dryers

Per Square Foot (1000s), Base=Have Dryer(s)

Number of Dryers	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.11	0.05	S	0.02	S	S	0.03	0.07	0.10	0.15	0.02	0.19	S
Observations	157	14	3	10	2	5	6	34	16	31	27	7	2

Table C-EQ18

Laundry Equipment: Dryer Fuel Elec

Percent of Regional Floor Area with Dryer(s)

Dryer Fuel Elec	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	59.0%	77.6%	M	87.0%	S	S	45.0%	27.6%	56.5%	62.4%	85.4%	86.6%	S
No	41.0%	22.4%	M	13.0%	S	S	55.0%	72.4%	43.5%	37.6%	14.6%	13.4%	S
--Total--	100%	100%	M	100%	S	S	100%	100%	100%	100%	100%	100%	S
Observations	187	15	M	13	3	5	6	44	17	36	38	8	2

Table C-EQ19

Laundry Equipment: Number of Washers

Per Square Foot (1000s), Base=Have Washer(s)

Number of Washers	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Per Square Foot (1000s)	0.11	0.04	S	0.02	S	0.05	0.03	0.06	0.10	0.16	0.02	0.03	S
Observations	150	13	3	8	2	6	6	34	16	30	23	7	2

Table C-EQ20

Laundry Equipment: Washer Fuel Electric

Percent of Regional Floor Area with Washer(s)

Washer Fuel Elec	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	93.0%	95.3%	S	95.8%	S	81.9%	87.5%	85.0%	100%	99.0%	92.8%	81.3%	S
No	7.0%	4.7%	S	4.2%	S	18.1%	12.5%	15.0%	0.0%	1.0%	7.2%	18.7%	S
--Total--	100%	100%	S	100%	S	100%	100%	100%	100%	100%	100%	100%	S
Observations	175	13	3	9	2	6	6	47	18	32	29	8	2

Pools and Spas

Table C-PS1

Pools and Spas: Pool

Percent of Regional Floor Area

Pool	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Pool	100.00%	100.0%	0.00%	100.0%	100.0%	0.00%	0.00%	100.0%	100.0%	100.0%	100.0%	100.0%	0.00%
--Total--	100.00%	100.0%	0.00%	100.0%	100.0%	0.00%	0.00%	100.0%	100.0%	100.0%	100.0%	100.0%	0.00%
Observations	46	1	.	1	1	.	.	27	3	4	4	5	.

Table C-PS2

Pools and Spas: Pool Cover

Percent of Regional Floor Area with Pool(s)

Pool Cover	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
No	78.90%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	78.70%	100.0%	82.10%	44.40%	100.0%	0.00%
Yes	21.10%	0.00%	0.00%	0.00%	100.0%	0.00%	0.00%	21.30%	0.00%	17.90%	55.60%	0.00%	0.00%
--Total--	100.00%	0.00%	0.00%	0.00%	100.0%	0.00%	0.00%	100.0%	100.0%	100.0%	100.0%	100.0%	0.00%
Observations	34	.	.	.	1	.	.	20	3	2	3	5	.

Space Information

Table C-SP1
Space Information: Franchise
Percent of Regional Floor Area

Franchise	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	2.0%	2.5%	6.3%	2.8%	7.3%	1.0%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%
No	98.0%	97.5%	93.7%	97.2%	92.7%	99.0%	100%	100%	100%	97.4%	100%	100%	100%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	559	94	39	115	39	71	1	26	35	88	27	3	21

Table C-SP2
Space Information: Chain
Percent of Regional Floor Area

Chain	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	28.9%	40.5%	34.3%	29.0%	27.6%	50.9%	0.0%	53.9%	11.2%	7.1%	16.7%	0.0%	44.5%
No	71.1%	59.5%	65.7%	71.0%	72.4%	49.1%	100%	46.1%	88.8%	92.9%	83.3%	100%	55.5%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	559	94	39	115	39	71	1	26	35	88	27	3	21

Table C-SP3
Space Information: Functional Use
Percent of Regional Floor Area

Functional Use	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Dry Goods Retail	17.7%	88.0%	34.4%	3.5%	4.3%	0.8%	0.0%	0.0%	0.0%	3.0%	0.0%	0.0%	0.6%
Grocery	2.5%	1.0%	60.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.6%
Office	20.8%	0.7%	0.6%	89.9%	0.0%	2.8%	2.3%	0.0%	18.4%	6.1%	1.0%	2.4%	10.9%
Restaurant	1.7%	0.3%	0.0%	0.0%	79.9%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	2.2%
Warehouse	14.1%	7.0%	2.5%	1.3%	0.0%	92.7%	0.0%	0.0%	0.0%	15.3%	0.0%	0.0%	13.8%
Hospital	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	86.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hotel/Motel	5.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	99.0%	0.0%	2.3%	0.0%	2.1%	0.0%
Other Health	4.6%	0.0%	0.0%	1.1%	0.0%	0.0%	11.4%	0.0%	76.4%	0.0%	0.0%	0.0%	3.8%
Other	16.1%	2.5%	2.4%	2.3%	15.7%	1.6%	0.0%	1.0%	4.7%	69.0%	5.9%	6.7%	22.4%
School	10.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%	93.1%	1.7%	4.4%
University	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	87.0%	0.0%
Vacant	1.7%	0.6%	0.0%	1.7%	0.0%	2.0%	0.0%	0.0%	0.5%	1.9%	0.0%	0.0%	36.3%
Parking	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,981	354	150	386	128	173	57	67	90	250	209	76	41

Occupancy and Management

Table C-OM1

Building Occupancy and Management: Year Constructed

Percent of Regional Floor Area

Year Constructed	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Before 1950	9.4%	11.5%	0.3%	9.2%	11.5%	4.3%	3.4%	9.1%	0.7%	12.7%	8.6%	13.0%	24.2%
1950-1969	13.4%	11.3%	12.8%	6.4%	5.4%	5.7%	32.0%	20.7%	8.6%	8.6%	29.3%	42.5%	28.9%
1970-1979	18.4%	20.8%	13.8%	17.9%	31.4%	16.1%	24.7%	14.8%	23.3%	19.7%	13.8%	19.9%	13.0%
1980-1988	19.6%	25.1%	30.8%	31.9%	32.1%	13.0%	18.6%	24.6%	14.6%	13.7%	5.6%	0.0%	18.1%
1988-1994	9.4%	8.1%	12.9%	7.2%	5.9%	12.8%	0.0%	5.6%	10.7%	12.0%	12.2%	3.9%	10.0%
1995-2001	16.4%	11.5%	22.1%	15.0%	7.9%	28.8%	4.7%	14.5%	18.6%	20.3%	16.2%	8.9%	1.7%
2002-2008	13.4%	11.8%	7.2%	12.5%	5.7%	19.3%	16.6%	10.7%	23.5%	13.1%	14.5%	11.8%	4.1%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	2,027	357	150	397	126	178	57	70	92	260	211	77	52

Table C-OM2

Building Occupancy and Management: Year Constructed

Mean Per Building

Year Constructed	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Mean Per Building	1970	1972	1980	1979	1975	1983	1988	1966	1982	1958	1977	1971	1962
Observations	2027	357	150	397	126	178	57	70	92	260	211	77	52

Table C-OM3

Building Occupancy and Management: Building Age

Building Age	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Mean Per Building	39.0	37.1	29.0	29.9	33.7	26.2	21.3	42.7	27.3	50.9	31.6	38.4	47.0
Observations	2027	357	150	397	126	178	57	70	92	260	211	77	52

Table C-OM4

Building Occupancy and Management: Tenants Own

Percent of Regional Floor Area

Tenants Own	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	67.2%	53.9%	81.1%	39.6%	68.9%	53.2%	97.7%	84.7%	68.6%	80.2%	98.3%	81.8%	73.6%
No	32.8%	46.1%	18.9%	60.4%	31.1%	46.8%	2.3%	15.3%	31.4%	19.8%	1.7%	18.2%	26.4%
--Total--	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Observations	1,393	274	100	246	82	138	33	56	70	178	162	30	24

Appendix D: EUI Summary Tables

Overview

Appendix D provides detailed summary tables of energy use intensity estimates. Number of observations is provided in each table to give the user an idea of the robustness of the data. When a particular cell or cross tab had five less than five observations, the data were replaced with an "S." An "M" indicates there were zero observations in a cell.

Table D-EA1
Electric Actual EUI Results
(kWh Per Square Foot)

	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
EUI	16.7	17.5	42.0	17.1	44.3	10.0	31.8	18.3	19.4	13.8	10.0	13.9	7.3
Observations	1496	269	115	327	114	141	23	58	75	180	149	15	30

Table D-EA2
Electric Actual EUI Results: Building Floor Area
(kWh Per Square Foot)

Building Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
<5	23.8	17.9	78.3	21.6	61.5	7.1	M	4.4	16.7	17.1	18.7	M	30.2
5-19	16.4	15.4	30.7	14.2	35.2	10.1	26.6	31	18.9	14.5	17.5	32.2	7.7
20-49	17.3	17.1	39.2	22.3	13.5	9.6	41.8	16.7	22.4	9.8	11.6	32.6	13
50-99	15.3	21.7	44	17.4	M	12.4	29.4	12.8	18.5	11.3	8.6	13.9	6.3
100-499	15.2	19.7	30.9	16.4	M	9.3	30.3	17.3	17.3	14.5	8	11.1	2.3
>=500	14.1	9.8	M	14.7	M	10.6	35.5	17.3	M	M	M	M	M
Observations	1,496	269	115	327	114	141	23	58	75	180	149	15	30

Table D-EA3
Electric Actual EUI Results: Year Constructed, Detailed
(kWh Per Square Foot)

Year Constructed	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Before 1950	10.6	12.3	46.6	14.1	20.2	2.5	M	14.4	21.7	7.1	6.8	2.5	0.7
1950-1969	14.6	11.7	24.1	13.5	43.2	2.9	28.8	16.7	16.3	25.1	10.4	7.7	7.4
1970-1979	16.1	19.6	47.8	15.3	44.4	3.9	37.5	28.5	18.9	11.7	10.3	9.9	2.2
1980-1988	18.4	16.6	36.5	18.5	37.2	10.8	22.5	18.5	26.2	12.8	9.3	M	11
1988-1994	19.4	21.5	50.1	21.8	62.4	12	M	21.8	16.7	14.8	10.8	79.3	13.5
1995-2001	17.7	19.7	50.9	15.9	93.3	12.1	16.2	12.9	21	13.9	8.2	18.3	23.2
2002-2008	18.7	23.2	43	17.8	76.4	16	46.5	11.3	18	15.8	12.6	32.6	4.6
Unknown	10.8	14.5	M	14.6	36.1	4.6	M	M	10.8	3.5	M	M	M
Observations	1,496	269	115	327	114	141	23	58	75	180	149	15	30

Table D-EA4
Electric Actual EUI Results: Year Constructed, Cohort
(kWh Per Square Foot)

Cohort	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1987 or earlier	15.6	15.7	36.6	16.5	37.5	6	31.2	19.7	20.2	13.1	9.8	8.3	5.8
1988-1994	20.1	21.5	50.1	22.4	62.4	13	M	21.8	16.7	15.8	10.8	79.3	13.5
1995-2001	17.5	19.7	50.9	15.9	93.3	12.1	16.2	12.9	21	13.9	8.5	18.3	10.1
2002-2007	18.9	23.2	43	17.8	76.4	16	46.5	11.2	18	15.8	12.5	32.6	M
Observations	1,496	269	115	327	114	141	23	58	75	180	149	15	30

Table D-EA5
Electric Actual EUI Results: Heating/Cooling Combination
(kWh Per Square Foot)

Heating/Cooling Combination	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electric Main Heat and Cooling	19.9	14.6	44.7	20.1	30.8	11.8	36.6	19	21.6	19.2	14.3	66.6	10.5
Electric Supplemental Heat only and Cooling	18.6	19.9	39.7	19.8	M	13.5	M	M	33.2	13.3	11.2	M	M
Electric Main Heat and no cooling	15	21.7	52.2	29.8	24.6	2.6	M	26.3	35.5	9.1	10.8	M	0.4
Electric Cooling and no heating	16.8	18.3	41.5	14.8	52.9	9.4	31.4	18.4	17.5	12.9	9.1	28.5	12.6
No electric heating or cooling	9.4	8.1	32.4	8.2	81.8	12.7	M	6.5	11.2	9.4	8.5	9.2	1.2
Observations	1,452	265	114	325	112	120	23	58	74	173	149	15	24

Table D-EA6
Electric Actual EUI Results: Heating Fuel
(kWh Per Square Foot)

Heating Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	19.3	17.4	44.9	20.3	29.9	10.9	36.6	19.2	21.7	16.5	14.1	66.6	7.8
No	15.9	17.5	40.8	14.7	53	10	31.4	16.3	18.3	12.2	9	11	11.1
Observations	1,439	262	111	322	111	119	23	58	74	172	148	15	24

Table D-EA7
Electric Actual EUI Results: Whether Or Not Cool
(kWh Per Square Foot)

Whether or Not Cool	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	17.8	18	42	17.2	45.5	9.9	31.8	18.7	19.5	15.2	10.4	36.4	12
No	10.1	12.2	36.3	7.1	26.5	10.8	M	11.9	11.2	9.1	8.4	8.3	1.2
Observations	1,466	264	114	320	112	140	23	58	73	175	149	15	23

Table D-EA8
Electric Actual EUI Results: Month
(kWh Per Square Foot)

Month	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
January	1.52	1.47	3.47	1.54	3.67	0.89	3.99	1.83	1.80	1.31	0.99	1.32	0.63
\February	1.39	1.36	3.22	1.45	3.26	0.80	2.44	1.67	1.61	1.19	0.94	1.40	0.57
March	1.45	1.45	3.48	1.46	3.57	1.04	2.63	1.61	1.68	1.22	0.93	1.36	0.61
April	1.33	1.36	3.35	1.35	3.38	0.79	2.26	1.48	1.57	1.10	0.85	1.15	0.59
May	1.37	1.44	3.58	1.38	3.71	0.83	2.74	1.41	1.63	1.11	0.86	1.00	0.64
June	1.38	1.48	3.89	1.40	3.83	0.83	2.60	1.43	1.66	1.11	0.71	0.91	0.62
July	1.47	1.60	4.10	1.50	4.27	0.90	2.86	1.55	1.75	1.20	0.58	0.99	0.67
August	1.43	1.58	3.95	1.47	4.18	0.87	2.83	1.48	1.71	1.11	0.64	1.07	0.65
September	1.35	1.44	3.62	1.35	3.79	0.81	2.60	1.35	1.61	1.06	0.78	1.20	0.59
October	1.36	1.42	3.54	1.35	3.57	0.81	2.55	1.38	1.61	1.10	0.88	1.35	0.59
November	1.37	1.42	3.39	1.39	3.46	0.82	2.46	1.43	1.61	1.17	0.92	1.28	0.58
December	1.49	1.51	3.49	1.51	3.62	0.87	2.56	1.63	1.78	1.31	0.97	1.48	0.61
Observations	1,496	269	115	327	114	141	23	58	75	180	149	15	30

Table D-EA
Electric Actual EUI Results: Distribution of All EUIs
(kWh Per Square Foot)

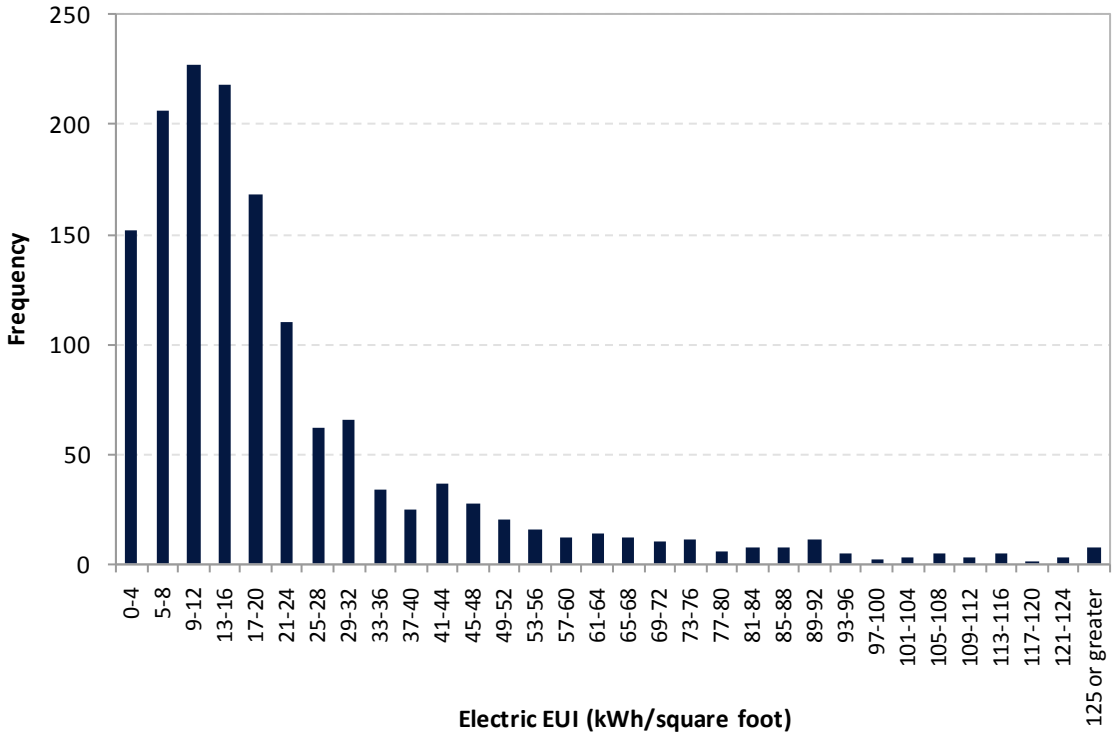


Table D-EA
Electric Actual EUI Results: Distribution of Office EUIs
(kWh Per Square Foot)

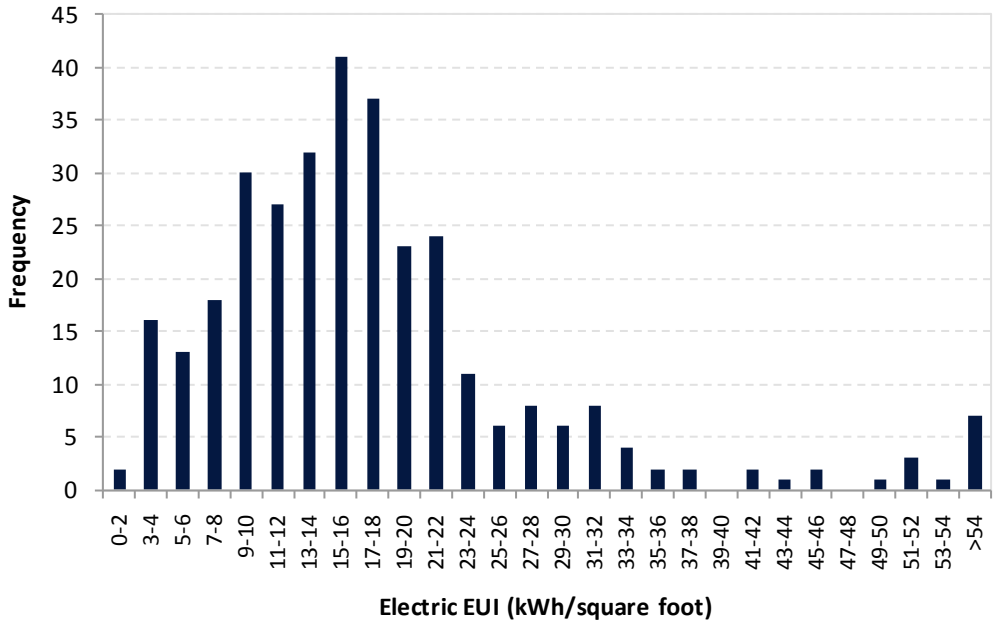


Table D-EA
Electric Actual EUI Results: Distribution of Retail EUIs
(kWh Per Square Foot)

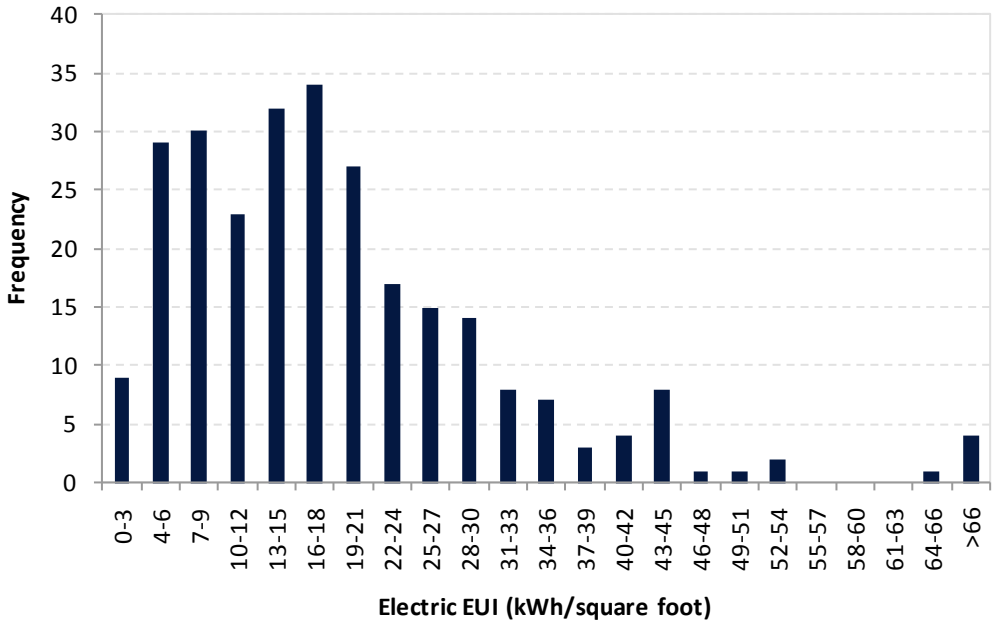


Table D-EA
Electric Actual EUI Results: Distribution of Grocery EUIs
(kWh Per Square Foot)

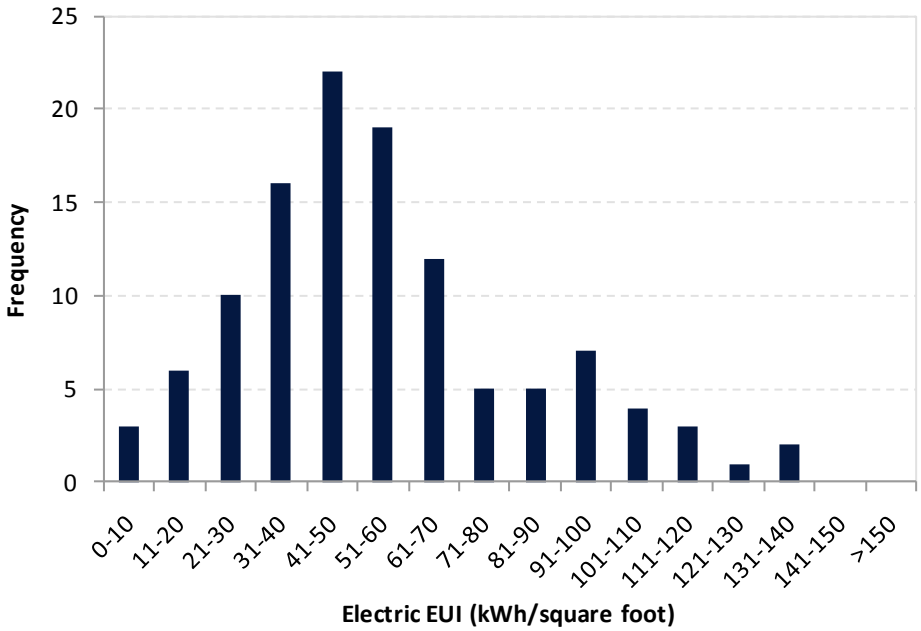


Table D-GA1
Gas Actual EUI Results
(Therms Per Square Foot)

	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
EUI	0.47	0.34	0.54	0.26	2.34	0.26	0.67	0.55	0.64	0.53	0.44	0.74	0.52
Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35

Table D-GA2
Gas Actual EUI Results: Building Floor Area
(Therms Per Square Foot)

Building Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
<5	0.9	0.5	0.4	0.5	2.6	0.3	M	M	0.4	0.5	0.1	M	1
5-19	0.6	0.4	0.3	0.5	2.1	0.2	0.9	1	0.3	0.8	0.6	0.5	0.6
20-49	0.5	0.5	0.6	0.3	M	0.3	0.4	0.7	0.6	0.3	0.7	1.2	0.7
50-99	0.4	0.4	0.6	0.2	M	0.5	0.4	0.4	0.4	0.5	0.4	0.2	0.2
100-499	0.3	0.2	0.2	0.2	M	0.2	0.7	0.5	1.2	0.4	0.4	0.8	0
>=500	0.2	0.2	M	0.1	M	0.1	1	0.3	1	M	M	M	M
Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35

Table D-GA3
GAS ACTUAL EUI RESULTS: Year Constructed, Detailed
(Therms Per Square Foot)

Year Constructed	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Before 1950	0.4	0.5	M	0.3	1.1	0.2	M	0.3	0.1	0.1	0.4	0.2	0.5
1950-1969	0.5	0.4	0.2	0.4	1.9	0.4	0.5	0.5	0.6	0.4	0.5	1.3	0.5
1970-1979	0.5	0.2	0.5	0.2	2.5	0.1	1.3	0.7	0.2	0.6	0.5	0.6	0.6
1980-1988	0.5	0.5	0.5	0.3	2.3	0.2	0.4	0.6	0.4	0.8	0.4	M	0.8
1988-1994	0.4	0.3	0.5	0.2	3.3	0.2	M	0.8	0.6	0.4	0.3	0.2	0.2
1995-2001	0.5	0.3	0.9	0.2	4	0.4	0	0.4	0.6	0.7	0.4	0.3	0.3
2002-2008	0.4	0.3	0.6	0.2	1.4	0.2	0.7	0.4	1.1	0.4	0.5	0.6	M
Unknown	0.3	0.3	M	0.1	2.3	0.1	M	M	0.1	0.1	M	M	0.1
Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35

Table D-GA4
Gas Actual EUI Results: Year Constructed, Cohort
(Therms Per Square Foot)

Cohort	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1987 or earlier	0.5	0.4	0.4	0.3	2.1	0.2	0.7	0.6	0.3	0.5	0.5	0.8	0.6
1988-1994	0.4	0.3	0.5	0.2	3.3	0.2	M	0.8	0.6	0.5	0.3	0.2	0.2
1995-2001	0.5	0.3	0.9	0.2	4	0.4	0	0.4	0.6	0.7	0.4	0.3	0.3
2002-2007	0.4	0.3	0.6	0.2	1.4	0.2	0.7	0.4	1.1	0.4	0.5	0.6	M
Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35

Table D-GA5
Gas Actual EUI Results: Heating
(Therms Per Square Foot)

Heating	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electric Main Heat and Cooling	0.5	0.3	0.6	0.3	2.4	0.2	0.7	0.6	0.7	0.5	0.5	0.8	0.6
Electric Supplemental Heat only and Cooling	0.5	0.8	0.8	0.5	2.9	M	0	0.4	0.4	0.3	0.3	M	0
Observations	997	205	84	175	89	103	20	19	49	117	95	14	27

Table D-GA6
Gas Actual EUI Results: Heating Fuel
(Therms Per Square Foot)

Heating Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	0.5	0.3	0.6	0.3	2.4	0.2	0.7	0.6	0.7	0.5	0.5	0.8	0.6
No	0.4	0.3	0.3	0.2	2.2	0.2	0.2	0.5	0.4	0.6	0.3	0.5	0.4
Observations	1,199	229	91	222	105	110	25	49	62	139	113	21	33

Table D-GA7
Gas Actual EUI Results: Whether Or Not Cool
(Therms Per Square Foot)

Whether or Not Cool	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	0.5	0.3	0.5	0.3	2.4	0.2	0.7	0.6	0.7	0.5	0.5	0.3	0.4
No	0.5	0.3	0.6	0.3	1.9	0.5	M	0.3	0.1	0.5	0.4	0.9	0.3
Observations	1,203	228	91	222	106	115	25	49	61	143	113	21	29

Table D-GA8
Gas Actual EUI Results: Month
(Therms Per Square Foot)

Month	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
January	0.073	0.058	0.077	0.052	0.268	0.048	0.082	0.063	0.096	0.089	0.080	0.105	0.061
February	0.058	0.045	0.063	0.038	0.225	0.037	0.060	0.053	0.077	0.071	0.065	0.103	0.051
March	0.051	0.038	0.060	0.031	0.220	0.029	0.054	0.051	0.075	0.058	0.054	0.099	0.051
April	0.038	0.024	0.048	0.020	0.187	0.019	0.067	0.048	0.057	0.043	0.037	0.080	0.058
May	0.027	0.016	0.035	0.012	0.173	0.010	0.041	0.042	0.047	0.029	0.023	0.043	0.049
June	0.020	0.011	0.026	0.006	0.157	0.007	0.033	0.036	0.039	0.020	0.010	0.026	0.036
July	0.017	0.010	0.022	0.004	0.156	0.007	0.044	0.034	0.034	0.015	0.005	0.010	0.030
August	0.016	0.010	0.020	0.004	0.157	0.007	0.034	0.034	0.035	0.015	0.005	0.006	0.020
September	0.020	0.013	0.026	0.007	0.159	0.010	0.034	0.035	0.041	0.021	0.014	0.015	0.020
October	0.034	0.023	0.043	0.017	0.182	0.017	0.062	0.042	0.055	0.037	0.035	0.044	0.037
November	0.051	0.038	0.061	0.031	0.213	0.030	0.072	0.049	0.072	0.057	0.053	0.089	0.049
December	0.068	0.053	0.077	0.046	0.257	0.043	0.094	0.059	0.091	0.078	0.072	0.124	0.063
# Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35

Table D-EN1
Electric Weather Normalized EUI Results
(kWh Per Square Foot)

	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
EUI	16.8	17.6	42.5	17.1	44.8	10.0	31.7	18.0	19.6	14.0	9.9	14.0	7.3
# Observations	1,496	269	115	327	114	141	23	58	75	180	149	15	30

Table D-EN2
Electric Weather Normalized EUI Results: Building Floor Area
(kWh Per Square Foot)

Building Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
<5	24.4	18.5	80.1	21.6	62.4	7.1	M	4.3	16.8	18.1	17.9	M	30.9
5-19	16.4	15.5	30.7	14.2	35.6	10	27	30.2	19.4	14.4	16.9	32.2	7.6
20-49	17.3	17	39.9	22.3	13.6	9.6	41.2	16	22.5	9.8	11.5	31.1	13.1
50-99	15.3	21.8	44	17.3	M	12.5	29.2	12.6	18.5	11.3	8.5	14.2	6.3
100-499	15.2	19.7	31.1	16.4	M	9.3	30.2	17.3	17.3	14.7	8	11.1	2.5
>=500	14.2	9.8	M	14.7	M	10.5	35.5	17.3	M	M	M	M	M
Observations	1,496	269	115	327	114	141	23	58	75	180	149	15	30

Table D-EN3
Electric Weather Normalized EUI Results: Year Constructed, Detailed
(kWh Per Square Foot)

Year Constructed	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Before 1950	10.7	12.5	47	14.2	20.7	2.4	M	14.5	23.6	7	6.7	2.2	0.7
1950-1969	14.9	11.9	24.2	13.5	47	2.8	29	16.6	17	26.9	10.3	7.7	7.3
1970-1979	16.1	19.8	49.2	15.1	44.8	3.9	37.8	27.6	19.1	11.7	10.1	9.9	2.2
1980-1988	18.5	16.7	37	18.6	37.6	10.7	22.8	18.5	26.6	12.7	9.3	M	10.7
1988-1994	19.6	21.7	50.5	21.9	63.9	12.1	M	21	17.2	15.1	10.7	83	13.8
1995-2001	17.7	19.7	51.4	15.9	94	12.2	16.3	12.5	21	13.9	8.2	18.2	22
2002-2008	18.5	23	43	17.7	75.9	15.8	44.9	11.2	17.9	15.7	12.4	31.3	4.9
Unknown	10.9	14.6	M	14.9	36.6	4.7	M	M	10.9	3.9	M	M	M
Observations	1,496	269	115	327	114	141	23	58	75	180	149	15	30

Table D-EN4
Electric Weather Normalized EUI Results: Year Constructed, Cohort
(kWh Per Square Foot)

Cohort	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1987 or earlier	15.8	15.9	37.2	16.6	38.1	6	31.4	19.5	20.5	13.3	9.7	8.3	5.8
1988-1994	20.3	21.7	50.5	22.5	63.9	13.1	M	21	17.2	16.1	10.7	83	13.8
1995-2001	17.5	19.7	51.4	15.9	94	12.2	16.3	12.5	21	13.9	8.5	18.2	10
2002-2007	18.7	23	43	17.7	75.9	15.8	44.9	11.1	17.9	15.7	12.3	31.3	M
Observations	1,496	269	115	327	114	141	23	58	75	180	149	15	30

Table D-EN5
Electric Weather Normalized EUI Results: Heating/Cooling Combination
(kWh Per Square Foot)

Heating/Cooling Combination	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Electric Main Heat and Cooling	20	15.2	44.9	20.2	31.6	11.8	36.5	18.7	21.9	19.9	14.1	69.6	10.6
Electric Supplemental Heat only and Cooling	18.5	19.9	39.5	19.6	M	13.5	M	M	33.5	13.1	11	M	M
Electric Main Heat and no cooling	14.8	21.9	50.4	30	24.4	2.6	M	23.6	37.9	8.8	9.4	M	0.4
Electric Cooling and no heating	16.9	18.4	42.2	14.8	53.5	9.4	31.4	18.3	17.6	12.9	9	27.4	12.5
No electric heating or cooling	9.4	8.2	32.8	8.3	83.4	12.5	M	6.4	11.5	9.7	8.5	9.2	1.2
Observations	1,452	265	114	325	112	120	23	58	74	173	149	15	24

Table D-EN6
Electric Weather Normalized EUI Results: Heating Fuel
(kWh Per Square Foot)

Heating Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	19.4	17.9	45	20.3	30.5	10.9	36.5	18.9	22.1	17	13.8	69.6	7.9
No	15.9	17.6	41.4	14.7	53.6	10	31.4	16.2	18.4	12.3	8.9	10.9	11.1
Observations	1,439	262	111	322	111	119	23	58	74	172	148	15	24

Table D-EN7
Electric Weather Normalized EUI Results: Whether Or Not Cool
(kWh Per Square Foot)

Whether or Not Cool	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	17.9	18.1	42.6	17.2	46.1	9.9	31.7	18.4	19.6	15.4	10.3	36.6	11.9
No	10	12.5	36.3	7.2	26.3	10.7	M	10.9	11.5	9.1	8.3	8.3	1.2
Observations	1,466	264	114	320	112	140	23	58	73	175	149	15	23

Table D-EN8
Electric Weather Normalized EUI Results: Month
(kWh Per Square Foot)

Month	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
January	1.50	1.46	3.47	1.53	3.62	0.91	3.06	1.70	1.78	1.31	1.02	1.48	0.64
February	1.43	1.42	3.44	1.45	3.55	0.87	2.85	1.57	1.68	1.22	0.94	1.36	0.61
March	1.41	1.46	3.44	1.42	3.52	0.85	2.87	1.53	1.66	1.18	0.91	1.31	0.60
April	1.34	1.40	3.42	1.35	3.46	0.82	2.39	1.43	1.59	1.11	0.84	1.19	0.58
May	1.30	1.38	3.44	1.31	3.49	0.79	2.56	1.34	1.55	1.04	0.76	1.06	0.57
June	1.31	1.42	3.61	1.32	3.68	0.80	2.42	1.32	1.58	1.06	0.69	0.96	0.59
July	1.53	1.65	4.30	1.54	4.49	0.90	2.75	1.54	1.84	1.29	0.67	1.02	0.68
August	1.57	1.70	4.42	1.58	4.61	0.92	2.78	1.56	1.93	1.34	0.67	1.08	0.69
September	1.36	1.46	3.73	1.37	3.88	0.82	2.46	1.36	1.65	1.08	0.70	1.06	0.60
October	1.32	1.39	3.42	1.33	3.46	0.81	2.49	1.39	1.56	1.07	0.81	1.19	0.57
November	1.41	1.44	3.44	1.43	3.54	0.86	2.77	1.55	1.66	1.19	0.93	1.36	0.60
December	1.50	1.48	3.47	1.52	3.62	0.90	3.05	1.69	1.75	1.31	1.02	1.49	0.62
Observations	1,496	269	115	327	114	141	23	58	75	180	149	15	30

Table D-GN1
Gas Weather Normalized EUI Results
(Therms Per Square Foot)

	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
EUI	0.46	0.33	0.53	0.25	2.31	0.26	0.65	0.53	0.64	0.52	0.43	0.72	0.51
Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35

Table D-GN2
Gas Weather Normalized EUI Results: Building Floor Area
(Therms Per Square Foot)

Building Floor Area	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
<5	0.9	0.5	0.3	0.5	2.6	0.3	M	M	0.4	0.6	0.1	M	1
5-19	0.6	0.4	0.3	0.4	2.1	0.2	0.7	0.9	0.3	0.8	0.6	0.5	0.6
20-49	0.5	0.5	0.6	0.2	M	0.3	0.4	0.7	0.6	0.3	0.7	1.2	0.7
50-99	0.4	0.3	0.6	0.2	M	0.5	0.4	0.4	0.4	0.5	0.3	0.2	0.2
100-499	0.3	0.2	0.2	0.1	M	0.2	0.6	0.5	1.2	0.4	0.3	0.7	0
>=500	0.2	0.2	M	0.1	M	0.1	1	0.3	1	M	M	M	M
Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35

Table D-GN3
Gas Weather Normalized EUI Results: Year Constructed
(Therms Per Square Foot)

Year Constructed	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Before 1950	0.4	0.5	M	0.3	1.1	0.2	M	0.3	0.1	0.1	0.4	0.2	0.5
1950-1969	0.5	0.3	0.2	0.4	1.9	0.4	0.5	0.5	0.6	0.3	0.5	1.2	0.5
1970-1979	0.5	0.2	0.5	0.2	2.4	0.1	1.2	0.7	0.2	0.6	0.4	0.6	0.5
1980-1988	0.5	0.4	0.5	0.3	2.2	0.2	0.3	0.6	0.4	0.7	0.4	M	0.8
1988-1994	0.4	0.3	0.4	0.2	3.3	0.2	M	0.8	0.6	0.4	0.2	0.3	0.1
1995-2001	0.5	0.3	0.9	0.2	4	0.4	0	0.4	0.6	0.7	0.5	0.3	0.3
2002-2008	0.4	0.3	0.6	0.2	1.4	0.2	0.7	0.4	1.1	0.4	0.5	0.6	M
Unknown	0.3	0.3	M	0.1	2.2	0.1	M	M	0.1	0.1	M	M	0.1
Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35

Table D-GN4
Gas Weather Normalized EUI Results: Year Constructed, Cohort
(Therms Per Square Foot)

Cohort	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
1987 or earlier	0.5	0.4	0.4	0.3	2.1	0.2	0.7	0.6	0.3	0.5	0.4	0.8	0.6
1988-1994	0.4	0.3	0.4	0.2	3.3	0.2	M	0.8	0.6	0.5	0.2	0.3	0.1
1995-2001	0.5	0.3	0.9	0.2	4	0.4	0	0.4	0.6	0.7	0.5	0.3	0.3
2002-2007	0.4	0.3	0.6	0.2	1.4	0.2	0.7	0.4	1.1	0.4	0.5	0.6	M
Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35

Table D-GN5
Gas Weather Normalized EUI Results: Heating
(Therms Per Square Foot)

Heating	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Gas Main Heat	0.5	0.3	0.6	0.3	2.4	0.2	0.7	0.6	0.7	0.5	0.5	0.8	0.6
Gas Supplemental Heat only	0.4	0.8	0.8	0.5	2.7	M	0	0.4	0.3	0.3	0.3	M	0
Observations	997	205	84	175	89	103	20	19	49	117	95	14	27

Table D-GN6
Gas Weather Normalized EUI Results: Heating Fuel
(Therms Per Square Foot)

Heating Fuel	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	0.5	0.3	0.6	0.3	2.4	0.2	0.7	0.6	0.7	0.5	0.5	0.8	0.6
No	0.4	0.3	0.3	0.2	2.1	0.2	0.2	0.5	0.4	0.6	0.2	0.5	0.4
Observations	1,199	229	91	222	105	110	25	49	62	139	113	21	33

Table D-GN7
Gas Weather Normalized EUI Results: Whether Or Not Cool
(Therms Per Square Foot)

Whether or Not Cool	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
Yes	0.4	0.3	0.5	0.3	2.3	0.2	0.7	0.5	0.6	0.5	0.4	0.3	0.4
No	0.5	0.3	0.5	0.3	1.9	0.5	M	0.3	0.1	0.5	0.4	0.8	0.3
Observations	1,203	228	91	222	106	115	25	49	61	143	113	21	29

Table D-GN8
Gas Weather Normalized EUI Results: Month
(Therms Per Square Foot)

Month	Total	Dry Goods Retail	Grocery	Office	Restaurant	Warehouse	Hospital	Hotel/Motel	Other Health	Other	School	University	Vacant
January	0.067	0.052	0.075	0.044	0.248	0.043	0.076	0.059	0.088	0.080	0.075	0.122	0.057
February	0.055	0.042	0.063	0.034	0.225	0.034	0.067	0.050	0.077	0.064	0.060	0.096	0.048
March	0.051	0.038	0.059	0.031	0.219	0.030	0.064	0.049	0.073	0.059	0.055	0.088	0.045
April	0.040	0.028	0.048	0.023	0.198	0.022	0.059	0.046	0.062	0.044	0.039	0.064	0.050
May	0.029	0.018	0.036	0.013	0.175	0.014	0.049	0.041	0.049	0.030	0.025	0.040	0.042
June	0.019	0.010	0.025	0.006	0.155	0.008	0.037	0.035	0.039	0.019	0.011	0.017	0.035
July	0.015	0.007	0.019	0.003	0.146	0.006	0.033	0.033	0.033	0.014	0.004	0.007	0.032
August	0.015	0.007	0.018	0.003	0.145	0.006	0.035	0.033	0.033	0.014	0.004	0.006	0.022
September	0.019	0.010	0.025	0.005	0.154	0.008	0.037	0.035	0.039	0.018	0.011	0.018	0.024
October	0.035	0.024	0.042	0.018	0.186	0.019	0.052	0.043	0.057	0.038	0.032	0.055	0.044
November	0.053	0.039	0.060	0.032	0.220	0.032	0.067	0.051	0.075	0.061	0.055	0.091	0.054
December	0.066	0.051	0.074	0.043	0.247	0.043	0.077	0.058	0.088	0.078	0.074	0.120	0.066
Observations	1,222	231	92	225	107	116	25	49	63	144	114	21	35

Table D-GN9
Natural Gas EUI Results: Distribution of All Gas EUIs
(Therms Per Square Foot)

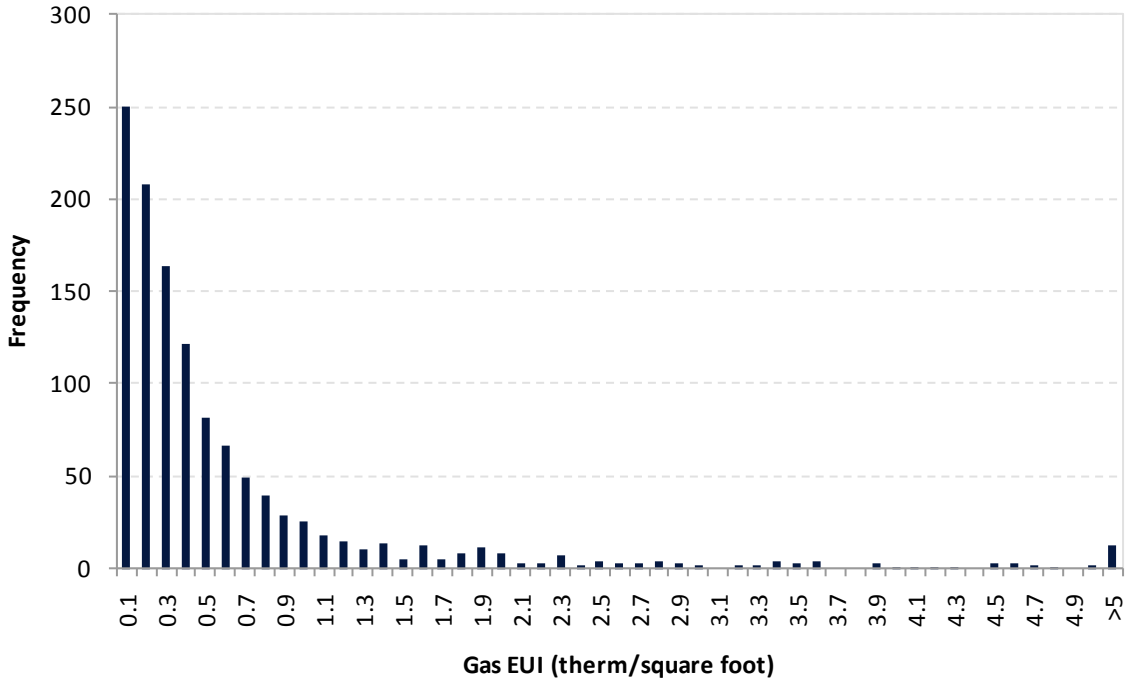


Table D-GN10
Natural Gas EUI Results: Distribution of Restaurant EUIs
(Therms Per Square Foot)

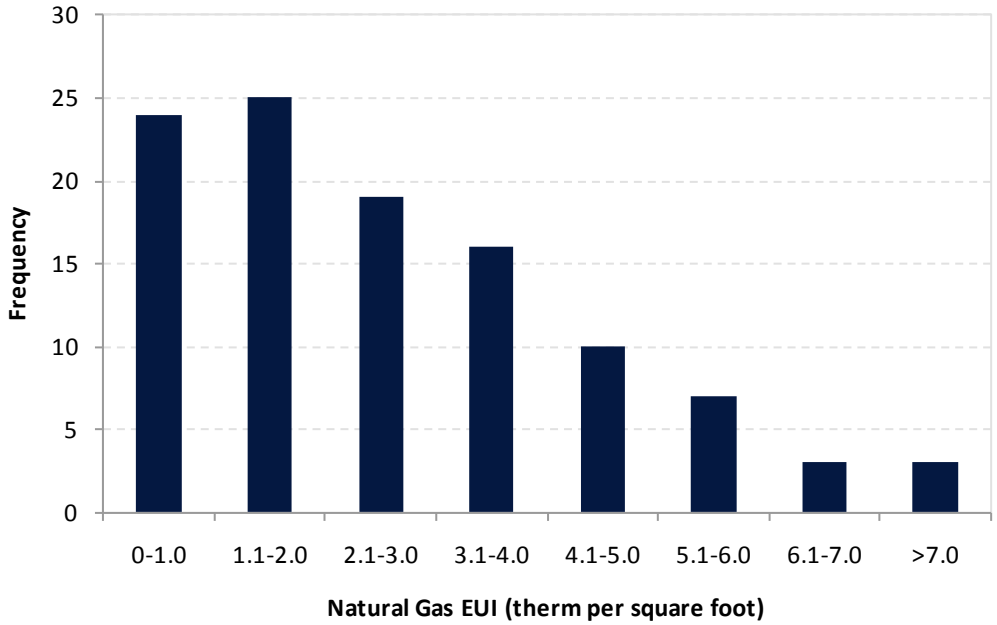


Table D-GN11
Natural Gas EUI Results: Distribution of School EUIs
(Therms Per Square Foot)

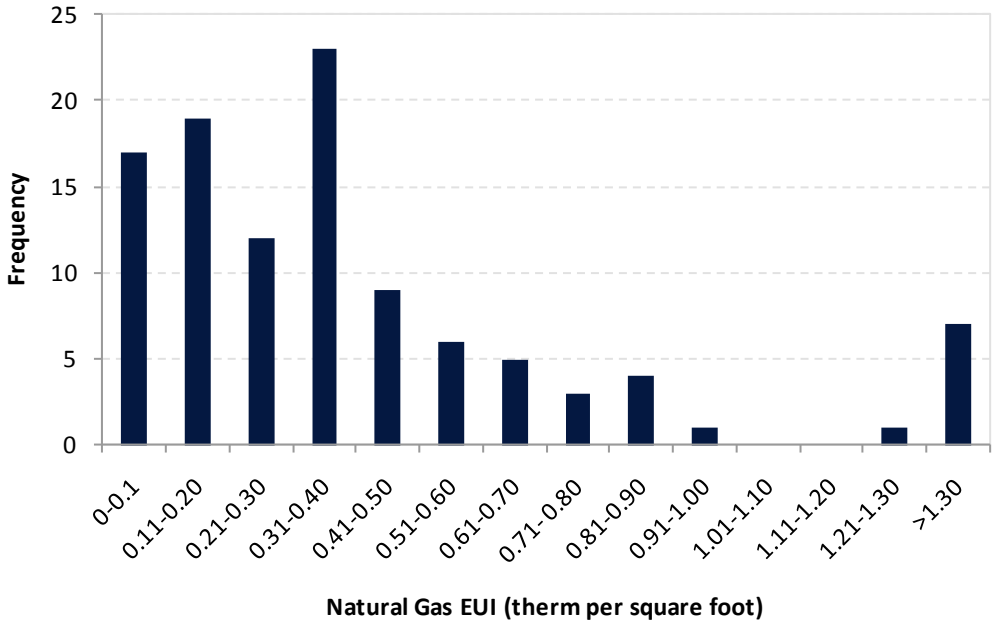
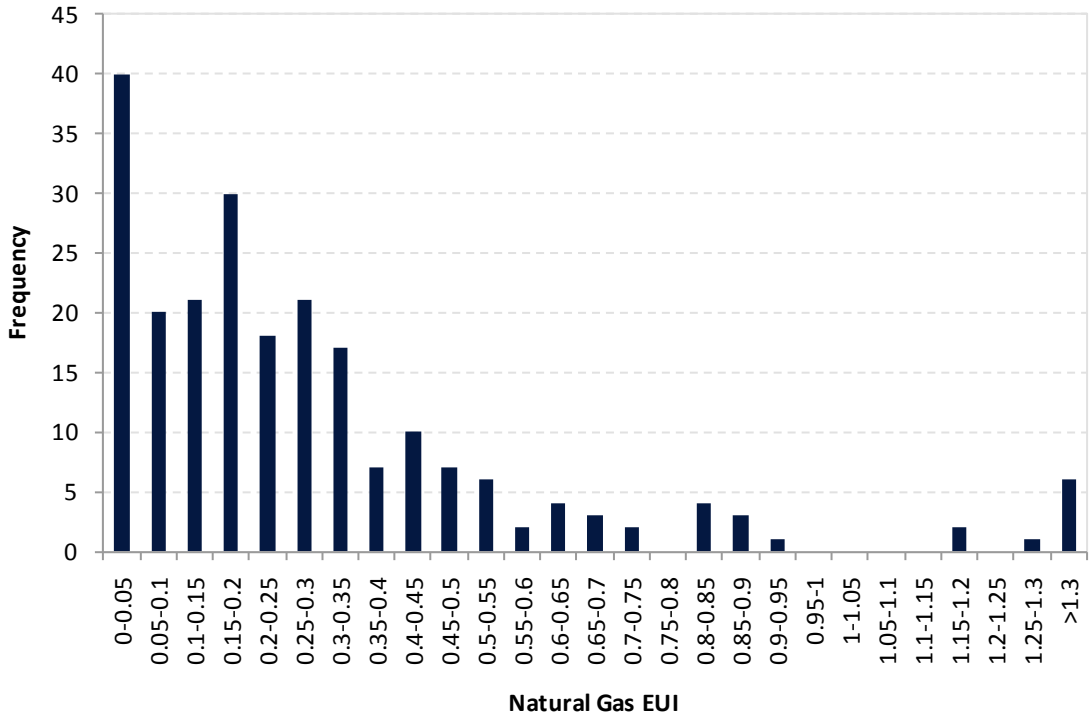
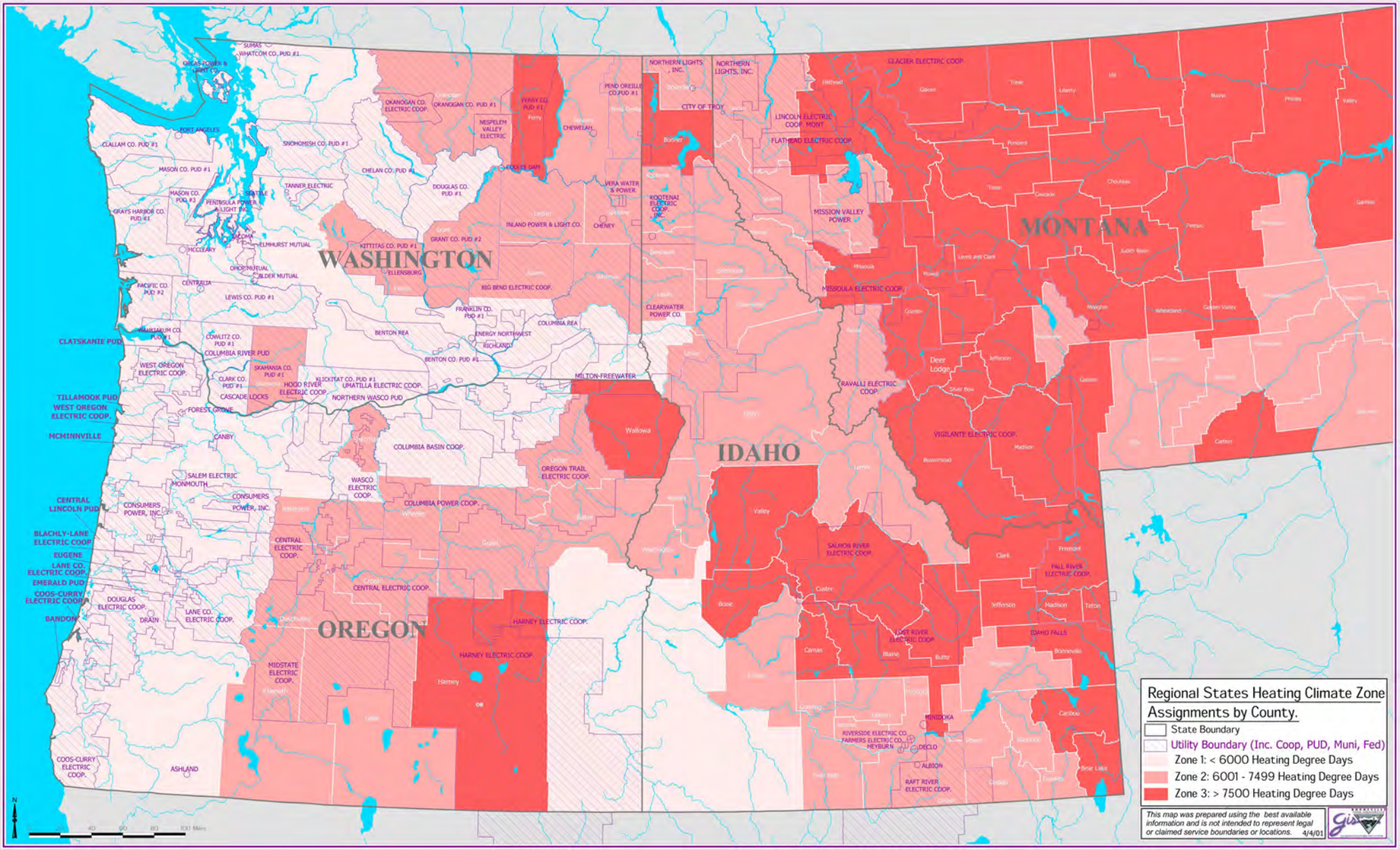


Table D-GN12
Natural Gas EUI Results: Distribution of Office EUIs
(Therms Per Square Foot)



Appendix E: Weather Zone Map


WASHINGTON
OREGON
IDAHO
MONTANA
Regional States Heating Climate Zone Assignments by County.
State Boundary
Utility Boundary (Inc. Coop, PUD, Muni, Fed)
Zone 1: < 6000 Heating Degree Days
Zone 2: 6001 - 7499 Heating Degree Days
Zone 3: > 7500 Heating Degree Days
This map was prepared using the best available information and is not intended to represent legal or claimed service boundaries or locations. 4/4/01

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