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Executive Summary

The U.S. Department of Energy (DOE) Building Technologies program has set aggressive goals for energy efficiency improvements in buildings that will require collaboration between the DOE laboratories and the building industry. This report details the development of standard or reference energy models for the most common commercial buildings to serve as starting points for energy efficiency research. These models represent reasonably realistic building characteristics and construction practices. Fifteen commercial building types and one multifamily residential building were determined by consensus between DOE, the National Renewable Energy Laboratory, Pacific Northwest National Laboratory, and Lawrence Berkeley National Laboratory, and represent approximately two-thirds of the commercial building stock.

The reference buildings provide a common starting point to measure the progress of DOE energy efficiency goals for commercial buildings. The models of the reference buildings are used for DOE commercial buildings research to assess new technologies; optimize designs; analyze advanced controls; develop energy codes and standards; and to conduct lighting, daylighting, ventilation, and indoor air quality studies.

The input parameters for the building models came from several sources. Some were determined from ASHRAE Standards 90.1-2004, 62.1-2004, and 62-1999 for new construction and Standard 90.1-1989 for post-1980 construction; others were determined from studies of data and standard practices. National weighting factors are needed for each model in each location, so the relative importance of each can be factored into nationwide analyses. These factors characterize the number of buildings that are similar to each reference building type in each location.

Acronyms and Abbreviations

ACH	air changes per hour
AEDG	Advanced Energy Design Guide
AF	area factor
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
CAV	constant air volume
CBECS	Commercial Buildings Energy Consumption Survey
COP	coefficient of performance
DOE	U.S. Department of Energy
EER	energy efficiency ratio
FCU	fan coil unit
GGHC	Green Guide for Health Care
HSPF	heating seasonal performance factor
HVAC	heating, venting, and air conditioning
IESNA	Illuminating Engineering Society of North America
ILD	internal load density
IRAC	individual room air conditioner
ISH	individual space heater
LBNL	Lawrence Berkeley National Laboratory
LPD	lighting power density
MZ	multizone
NREL	National Renewable Energy Laboratory
OA	outside air
PACU	packaged air-conditioning unit
PBA	principal building activity
PNNL	Pacific Northwest National Laboratory
PTAC	packaged terminal air conditioner
PTHP	packaged terminal heat pump
SAMSON	solar and meteorological surface observational network
SEER	seasonal energy efficiency ratio
SHGC	solar heat gain coefficient
SHW	service hot water
SS	split system
SSPC	standing standards project committee
SZ	single zone
VAV	variable air volume
WLCNS	wall construction

Contents

Figure

Tables

1.0 Introduction

The U.S. Department of Energy (DOE) Building Technologies program has set aggressive goals for energy efficiency improvements in buildings. This goal will require collaboration between the DOE laboratories and the building industry. Several analysis activities are under way to determine the best paths forward. Coordinating research activities and tracking progress require common points of reference.

The purpose of this project was to develop standard or reference building energy models for the most common commercial buildings to serve as starting points for analysis related to energy efficiency research. These models represent realistic building characteristics and construction practices. Fifteen commercial building types and one multifamily residential building (see Table 1 on page 14) were determined by consensus between DOE, the National Renewable Energy Laboratory (NREL), Pacific Northwest National Laboratory (PNNL), and Lawrence Berkeley National Laboratory (LBNL). These represent approximately two-thirds of the commercial building stock. The remaining one-third is composed of several building types that are not easily defined by a small number of models; however, some are similar to one or more of the 16 reference building types.

There are three versions of the reference building models for each building type: new construction, post-1980 construction, and pre-1980 construction. All have the same building form and area and the same operation schedules. The differences are reflected in the insulation values, lighting levels, and HVAC equipment types and efficiencies. The new construction models comply with the minimum requirements of ANSI/ASHRAE/IESNA Standard 90.1-2004 (ASHRAE 2004a), the post-1980 models meet the minimum requirements of Standard 90.1-1989 (ASHRAE 1989), and the pre-1980 models are built to a set of requirements developed from previous standards and other studies of construction practices.

The reference building models are described in detail in this report and are available as EnergyPlus input files (http://commercialbuildings.energy.gov/reference_buildings.html). Spreadsheet scorecards document the model parameters and annual energy performance for each building type and location.

Throughout the development of the reference buildings, the DOE Building Energy Codes Program, the ASHRAE simulation working group, and Standard 90.1 subcommittees have provided in-depth review of the underlying assumptions.

2.0 Project Scope

The reference building models cover 16 building types and 16 U.S. locations. They directly characterize more than 60% of the commercial building stock and are very similar to other commercial building types. The models are fully defined in the spreadsheet scorecards and are available as EnergyPlus input files.

2.1 Intended Uses of the Reference Building Models

The purpose of these models is to represent new and existing buildings. The reference building models will be used for DOE commercial buildings research to assess new technologies; optimize designs; analyze advanced controls; develop energy codes and standards; and to conduct lighting, daylighting, ventilation, and indoor air quality studies. They also provide a common starting point to measure the progress of DOE energy efficiency goals for commercial buildings. DOE's Building Energy Code Program and PNNL use these models for the analytical support in the development of new versions of ASHRAE Standard 90.1. The models provide consistency in modeling approaches and implementation across commercial buildings.

2.2 Uses Not Intended for the Reference Building Models

These reference building models are not intended to represent energy use in any particular building. Rather, they are hypothetical models with ideal operations that meet certain minimum requirements.

The reference building model definitions are not intended to act as targets to rate the energy performance of single existing or proposed buildings. The models and weighting factors are not appropriate for analysis at the state level, as the datasets used to generate the models and the weighting factors are too small to form a valid statistical model at this level. Variations of these models and weighting factors could be created for such purposes, but that is not the objective of this project.

3.0 Previous Work

Several projects have created prototypical building energy models. The most familiar are from LBNL, which developed a series of prototypical buildings over several years. Huang et al. (1991) and Huang and Franconi (1999) present extensive summaries of work in this area; Huang et al. (2005) present an analysis of 1999 building data. Three recent efforts to develop prototypical energy models of buildings include a set of standardized energy simulation models for commercial buildings from the University of Massachusetts (Stocki et al. 2005), a residential building benchmark model from the DOE Building America program (Hendron 2007), and an assessment of the entire commercial building stock by NREL (Griffith et al. 2007). Projects that focused on single building types were carried out to create the *Advanced Energy Design Guides* (AEDGs) for small office, small retail, warehouses, K–12 schools, highway lodging, and small healthcare (ASHRAE 2009).

Huang et al. (1991) developed 481 prototypical commercial buildings (37 building types and 13 locations) for a market assessment of cogeneration systems. The building types, sizes, and locations were selected based on the best potential to use cogeneration. The purpose of the project was to model the energy use in existing commercial building stock as closely as reasonable. The paper presents a summary of building characteristics databases, engineering studies, characterizations, and prototypes for energy simulations. The data included the Nonresidential Building Energy Consumption Survey, which later became the Commercial Buildings Energy Consumption Survey (CBECS) (EIA 2005), and F.W. Dodge building stock and forecast data (McGraw-Hill 2005). They completed sensitivity analyses to better understand the effects of building size, external wall models, thermal zoning, and HVAC types on the simulated energy use.

Huang and Franconi (1999) estimated the heating and cooling loads in existing commercial buildings by component and the efficiencies of the equipment used to meet those loads. They used 120 prototypical buildings covering 12 building types of old and new construction. The models were updated versions of the 1991 Huang et al. models based on 1989 CBECS data. The models were extrapolated to represent the regional and national building stock with weighting factors derived from the 1992 CBECS.

Stocki et al. (2005) present a set of standardized assumptions for commercial building energy analyses. They define seven building types: large office, small office, retail, education, apartment, small hotel, and hospital. These are meant to represent typical commercial buildings; however, there is little justification for the types chosen. The building sizes were based on work by Huang and Franconi (1999). Energy-related parameters conform to ASHRAE Standards 90.1-2001 (ASHRAE 2001) and 62.1-1999 (ASHRAE 1999). These models could be used to analyze energy performance of any of the seven building types in any climate; however, there is no method to extend the results beyond each type and size.

The Building America benchmark model (Hendron 2007) provides a common baseline for determining energy savings of new residential buildings. Hourly energy simulations are used to determine the savings. The size and location of the benchmark (baseline) building are set to match the proposed building, but everything else is defined by a set of modeling rules. The operating schedules are clearly defined and are used for both building simulations.

Griffith et al. (2007) completed an assessment of the commercial building sector for the potential to reach net zero energy. They autogenerated energy simulation models for all the buildings in 1999 CBECS (EIA 2002), except refrigerated warehouses. This effort resulted in5,375 models which were used to examine potentials of different technology scenarios for the commercial building stock. While robust, the number of buildings results in a computational burden for extensive analysis.

4.0 Overall Approach

It is impractical to model every new commercial building, or even to represent every building sub-sector, so we selected a small number of prevalent building types and developed weighting factors to represent a percentage of the commercial building stock. A goal was set to represent 70% of the U.S. commercial building floor area.

National data from the 2003 CBECS (EIA 2005) were used to determine the appropriate, average mix of representative buildings. We selected 16 building types and developed weighting factors to adjust for the percentage of the building stock represented by each building type for 16 locations. This mix of buildings and locations demonstrates the climatic and geographic effects in each construction vintage. The three vintages of 16 building types in 16 locations result in 768 models.

Creating energy simulation input files is tedious and time consuming, and mistakes are common. Analysis activities of the national building sub-sectors can involve creating hundreds—or even thousands—of input files. To alleviate some of the workload and minimize the potential for mistakes, we developed computer programs to create the input files for the energy simulations based on sets of easily implemented rules. The input files by location are autocreated from a seed file for each building type and vintage based on rules from appropriate energy efficiency standards for climate-variable parameters.

4.1 Determining Building Types

The best publicly available data on commercial buildings are from CBECS (EIA 2005), for which the 2003 version contains 5,215 buildings. The CBECS variables PBA8 and PBAplus8 separate the commercial sector into 29 categories and 51 subcategories based on principal building activity (PBA). Analysis of the CBECS data provided the project team with the most typical building types, and the final set of building types was selected by consensus among DOE, NREL, LBNL, and PNNL. The set of 15 building types from CBECS is listed in Table 1, along with the PBA numbers. A midrise apartment building model is also included to total 16 building types. Multifamily housing buildings are not included in CBECS, and the midrise apartment model was developed from other data in a separate PNNL study (Gowri et al. 2007).

This set of 15 commercial building types represents 3,279 buildings (of 5,215) from the full CBECS dataset. This subset represents 44 billion ft^2 (4.1 billion m^2) or 62% of the total weighted floor area in the survey (64% if the vacant buildings are removed from the total) and 65% of the total energy consumption. The remaining CBECS building types include buildings that vary significantly in size, internal loads, and operation; several building types would need to be added to reach the 70% goal. Religious worship buildings are the next-largest group of buildings, which would raise the percentage of the total weighted floor area to 67%. However, they represent 74% of the new construction from 2003 to 2007 contained in the McGraw-Hill Construction Starts Database (Jarnagin and Bandyopadhyay 2010).

Table 1 Categorization of 2003 CBECS Data for Reference Building Models

Name	PBA8	PBAPLUS8
Small Office	2	2, 3, 4, 5, 6, 7
Medium Office	2	2, 3, 4, 5, 6, 7
Large Office	2	2, 3, 4, 5, 6, 7
Primary School	14	28
Secondary School	14	29
Stand-Alone Retail	25	42
Strip Mall	23	50
Supermarket	6	14
Quick Service Restaurant	15	32
Full Service Restaurant	15	33
Small Hotel	18	39
Large Hotel	18	38
Hospital	13	35
Outpatient Healthcare	8	18,19
Warehouse	5	9, 10
Midrise Apartment	N/A	N/A

4.2 Determining Locations

Locations were selected to represent significant portions of the existing building stock and all U.S. climate zones. Population is a good indicator of building distribution; however, if it were the only criterion, some climate zones would not be represented. Approximately 78% of the population is located in five of the 15 climate zones. To represent all U.S. climate zones and the highest building densities, we selected the most populous cities in each climate zone.

Briggs et al. (2003) developed a climate zone classification system for DOE and ASHRAE Standard 90.1-2004 based on SAMSON (NCDC 1993) weather data, as shown in Figure 1. An important characteristic of these climate zones is that they tend to run in east–west bands across the country; subdivisions for moist, dry, and marine divide these bands. As part of this effort, PNNL developed a set of "typical" locations (cities) based on their representativeness in each climate zone. The selections had little to do with population or number of buildings.

We selected a revised set of locations as a balance of the representativeness of the climate and the number of buildings in each climate zone (see Table 2). Two locations were selected for climate zone 3B because they represent different climates within one zone, which is evident from the reference building model energy simulation results. These subclimate zones are designated as "3B-CA" for the California coast and "3B-other" for the remaining part of climate zone 3B.

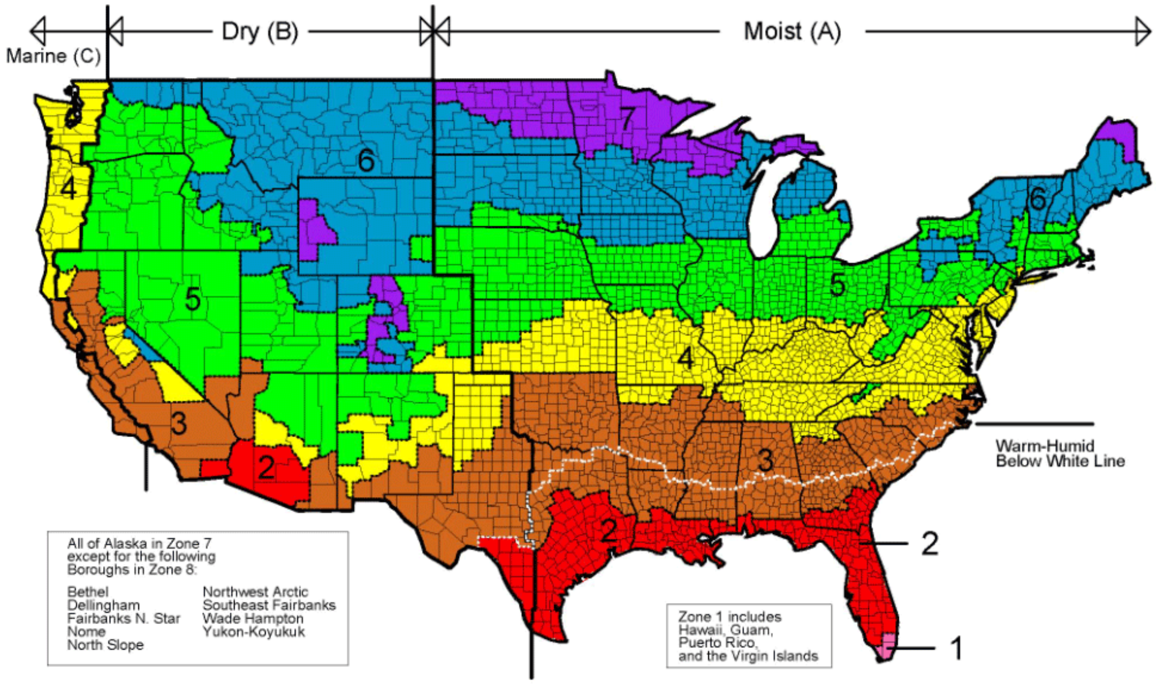

Figure 1 Climate zone classification
(Credit: Briggs et al. [2003]; DOE [2005])

Table 2 Selected Commercial Building Reference Model Locations

Number	Climate Zone	Representative City	TMY2 Weather file location
1	1A	Miami, Florida	Miami, Florida
2	2A	Houston, Texas	Houston, Texas
3	2B	Phoenix, Arizona	Phoenix, Arizona
4	3A	Atlanta, Georgia	Atlanta, Georgia
5	3B-CA	Los Angeles, California	Los Angeles, California
6	3B-other	Las Vegas, Nevada	Las Vegas, Nevada
7	3C	San Francisco, California	San Francisco, California
8	4A	Baltimore, Maryland	Baltimore, Maryland
9	4B	Albuquerque, New Mexico	Albuquerque, New Mexico
10	4C	Seattle, Washington	Seattle, Washington
11	5A	Chicago, Illinois	Chicago-O'Hare, Illinois
12	5B	Denver, Colorado	Boulder, Colorado
13	6A	Minneapolis, Minnesota	Minneapolis, Minnesota
14	6B	Helena, Montana	Helena, Montana
15	7	Duluth, Minnesota	Duluth, Minnesota
16	8	Fairbanks, Alaska	Fairbanks, Alaska

5.0 Energy Model Development

The intent of the reference building models is to characterize the energy performance of typical building types under typical operations. Detailed building energy models require several pieces of information that are not available from standard data sources; therefore, information from several sources was combined in a sensible way to represent "typical" performance. To better organize the efforts, we divided the model inputs into program, form, fabric, and equipment (see Table 3).

Table 3 Building Energy Model Input Categories

Program	Form	Fabric	Equipment
Location	Number of floors	Exterior walls	Lighting
Total floor area	Aspect ratio	Roof	HVAC system types
Plug and process loads	Window fraction	Floors	Water heating equipment
Ventilation requirements	Window locations	Windows	Refrigeration
Occupancy	Shading	Interior partitions	Component efficiency
Space environmental conditions	Floor height	Internal mass	Control settings
Service hot water demand	Orientation	Infiltration	
Operating schedules			

The program and form for the small office, schools, warehouse, small hotel, and outpatient healthcare were taken, with slight modifications, from the work on the AEDGs for these building types. PNNL developed the midrise apartment model for its work to support the development of Standard 90.1. The program and form of the remaining models were developed from analysis of CBECS (EIA 2005) and Time-Saver Standards for Building Types (DeChiara and Crosbie 2001) and from experience with these building types.

The fabric and equipment parameters set by energy standards were determined from ASHRAE Standards 90.1-2004 (ASHRAE 2004a), 62.1-2004 (ASHRAE 2004b), and 62-1999 (ASHRAE 1999) for new construction and Standard 90.1-1989 (ASHRAE 1989) for post-1980 construction. NREL, PNNL, and LBNL performed research to determine the remaining model inputs. PNNL completed a series of reports analyzing 2003 CBECS and past energy standards to determine many of the energy model parameters used in these models. Winiarski et al. (2007a; 2007b; 2008) published two reports and a conference paper that analyzed envelope construction and some building form characteristics. The HVAC system types were determined from the results of a study by Winiarski et al. (2006) of system types and efficiencies for pre-1980 and post-1980 models and from input from the standing standards project committee (SSPC) 90.1 Simulation Working Group and Mechanical Subcommittee for the new construction models. Throughout the development of the reference building models, the DOE Building Energy Codes Program, the ASHRAE simulation working group, and SSPC 90.1 subcommittees have provided in-depth review of the models and the underlying assumptions.

5.1 Program

The building program includes the activity, location, occupancy, plug and process loads, service water heating demand, and schedules. The PBAs were determined during the process of analyzing the national building data (see Table 1). The reference building models are intended to look much more like real buildings as compared to the generic boxes often used for energy simulation studies. LBNL developed the original geometry characterization of the reference building models (except for the midrise apartment), including the shape, floor area, number of floors, and thermal zoning based on previous work and analysis of 2003 CBECS (EIA 2005). Nine models were completely changed and modifications were made to the other models based on input from industry and further data analysis. PNNL, NREL, and the AEDG project committees developed the models for the small office, primary and secondary schools, warehouse, small hotel, and outpatient health care for the AEDGs for these respective building types (ASHRAE 2009). NREL developed the stand-alone retail and supermarket reference building models based on work with national retailers and CBECS. NREL and PNNL developed the strip mall model from CBECS data and from a review of actual strip mall layouts.

Table 13 lists the building floor areas and many form parameters. Appendix A lists the zone level program parameters in IP units (Table A-1) and SI units (Table A-2) for each model.

5.1.1 Occupancy

Occupancy information is included in CBECS; however, close inspection reveals that these data are unreliable. For example, office building occupancy (based on the number of workers on the main shift from the 1999 CBECS [EIA 2002]) ranges from 334 ft^2/person to 300,000 ft^2/person (31 m^2/person to 27,871 m^2/person) with a mean of more than 25,000 ft^2/person (2,323 m^2/person). The occupancy rates for the reference building models were instead taken from the AEDG studies for the appropriate building types and from the default occupancy rates in Standard 62.1-2004 (ASHRAE 2004b) following a recommendation by the ASHRAE 90.1 Simulation Working Group. Changes were made for dining, kitchen, storage, and shipping and receiving areas, where these occupancy rates exceed the 2003 International Building Code maximum (ICC 2003). The occupancy rates by space type are listed in Table 4, either as the total number of occupants per space or as occupant density. Appendix A lists occupancy by zone for each model.

Pless et al. (2007) documented the primary school model with 650 students and the secondary school with 1200 students; however, the occupancy densities and schedules from the energy models resulted in much higher numbers of students. The classroom occupancy schedules were adjusted by factors of 0.75 for the primary school and 0.70 for the secondary school to arrive at the student numbers documented in the project report.

The hotel guest rooms were assumed to have 1.5 occupants each, and occupancy rates for the two hotel models were assumed to be 65% to align with the industry average occupancy rate and Jiang et al. (2008). Rooms were randomly assigned occupants in the small hotel model so 50 of the 77 rooms are occupied. The occupancy, lighting, and hot water schedules for the unoccupied rooms were set to zero. The plug load schedule was set to a constant value of 20% for all rooms. The thermal zoning and the use of multipliers in the large hotel model do not allow for this type of control; therefore, a set of schedules was created to reduce the occupancy and loads to match the 65% occupancy rate across all guest rooms.

Table 4 Occupancy by Space Type

Space Type	Occupancy per Space	Occupancy		Data Source
		ft^2/person	m^2/person	
Apartment	3.0	–	–	Gowri et al. 2007
Auditorium seating area	–	10.8	1	Pless et al. 2007
Cafeteria/FF dining	–	15	1.4	ICC 2003
Classrooms	–	43	4	Pless et al. 2007
Corridor (school)	–	107.6	10	Pless et al. 2007
Corridor (public spaces)	–	1000	93	Engineering judgment
Hotel guest room	1.5	–	–	Jiang et al. 2008
Gym (primary school)	–	35.8	3.3	Pless et al. 2007
Gym (secondary school)	–	10.8	1.0	Pless et al. 2007
Gym, auxiliary (secondary school)	–	35.8	3.3	Pless et al. 2007
Kitchen (commercial)	–	200	18.6	ICC 2003
Laundry	–	250	23.	Jiang et al. 2008
Library/Media center	–	46.8	4.4	Pless et al. 2007
Lobby (school)	0.0	–	–	Engineering judgment
Lobby (hotel)	–	33.3	3	ASHRAE 2004b
Lobby (office building)	–	100	9.3	ASHRAE 2004b
Office	–	200	18.6	ASHRAE 2004b
Office (apartment)	2.0	–	–	Gowri et al. 2007
Office (school)	–	215	20	Pless et al. 2007
Office (warehouse)	5.0	–	–	Liu et al. 2007
Reception areas	–	33.3	3.1	ASHRAE 2004b
Restaurant dining rooms	–	15		ICC 2003
Restroom (school)	–	1076	100	Pless et al. 2007
Sales	–	66.7	6.2	ASHRAE 2004b
Shipping/Receiving	–	300	28	ICC 2003
Storage	–	300	28	ICC 2003
Supermarket	–	125	11.6	ASHRAE 2004b
Warehouse	0.0	–	–	Liu et al. 2007
Hospital spaces				
Critical and intensive care	–	50	4.7	Doebber et al. 2009
ER exam rooms and triage	–	50	4.7	ASHRAE 2004b
Laboratory	–	200	18.6	GGHC 2007
Nurse's station/waiting rooms	–	750	69.7	Engineering judgment
Operating/surgical cystoscopic rooms	–	200	18.6	GGHC 2007
Patient room	–	200	18.6	GGHC 2007
Physical therapy	–	200	18.6	GGHC 2007
Radiology		200	18.6	GGHC 2007
Outpatient spaces				
Nurse's station	–	50	4.7	GGHC 2007
Operating room	–	50	4.7	GGHC 2007
Procedure room	–	50	4.7	GGHC 2007
Exam room	–	50	4.7	GGHC 2007
Clean/soiled areas	–	50	4.7	GGHC 2007
Recovery room	–	50	4.7	GGHC 2007

5.1.2 Ventilation

The ventilation or outside air (OA) requirements are listed by space type in Table 5 (IP units) and Table 6 (SI units). Standard 90.1-2004 refers to Standard 62-1999 as a normative reference, so the ventilation requirements from Standard 62-1999 Table 2 are used (ASHRAE 1999). The occupancy rates were taken from the AEDG technical support documents for those buildings with AEDGs and the default occupancy rates from 62.1-2004 for other building types as recommended by the Standard 90.1 Simulation Working Group. The occupancy rates in Standard 62.1-2004 are considered to be more realistic than those in 62-1999. We assumed that the ventilation requirements are the same for all vintages of reference building models because reliable data for older buildings are not available. We will reevaluate this assumption as more information about existing buildings becomes available.

The OA requirements for the hospital and the outpatient facility were determined from the 2007 *Green Guide for Health Care* (GGHC 2007), the 2001 *Guidelines for Design and Construction of Hospital and Health Care Facilities* (AIA 2001), and from Standard 62-1999.

A brief discussion of the ventilation design practices for hospitals is worthwhile. Most hospitals are designed to comply with AIA (2001). This document is updated periodically; e.g., 1987, 1992, 1996, 2001, and 2006. The Centers for Medicare and Medicaid Services references the 2001 edition, but most consultants design to the current version. Compliance is law in many states, and is a requirement for reimbursement for Medicare and Medicaid. Regardless, very few hospitals choose to not accept Medicare and Medicaid patients. In 2004 most designs probably would have complied with the 2001 edition. Today most are shifting to the 2006 edition, although it is not generally required by law.

Table 5 Outside Air Requirements (IP units)

Space Type	Default Occupancy	OA		Total OA	OA Data Sources		
	ft²/person	cfm/person	cfm/ft²	cfm/ft²	ACH	Occupancy	Ventilation
Auditorium seating area	10.8	15	–	1.39	–	Pless et al. 2007	ASHRAE 1999
Bath (cfm/room)	–	20	–	–	–		ASHRAE 1999
Cafeteria/FF dining	15	20	–	1.33	–	ICC 2003	ASHRAE 1999
Classrooms	43.1	15	–	0.35	–	Pless et al. 2007	ASHRAE 1999
Corridor (school)	–	–	0.10	0.10	–	–	ASHRAE 1999
Corridor (public spaces)	–	–	0.05	0.05	–	–	ASHRAE 1999
Hotel guest room (cfm/room)	–	30	–		–	–	ASHRAE 1999
Gym (primary school)	35.8	20	–	0.56	–	Pless et al. 2007	ASHRAE 1999
Gym (secondary school)	10.8	20	–	1.86	–	Pless et al. 2007	ASHRAE 1999
Kitchen (commercial)	200	15	–	0.075	–	ICC 2003	ASHRAE 1999
Kitchen (residential, cfm/room)	–	25	–	–	–	–	ASHRAE 1999
Living areas (residential)	–	15	–	–	–	–	ASHRAE 1999
Lobby (school, treat as a corridor)	–		0.10	0.10	–	–	ASHRAE 1999
Lobby (hotel)	33.3	20	–	0.60	–	ASHRAE 2004b	ASHRAE 1999
Lobby (office building)	100	20	–	0.20	–	ASHRAE 2004b	ASHRAE 1999
Office	200	20	–	0.10	–	ASHRAE 2004b	ASHRAE 1999
Reception areas	33.3	15	–	0.45	–	ASHRAE 2004b	ASHRAE 1999
Restaurant dining rooms	15	20	–	1.33	–	ICC 2003	ASHRAE 1999
Restroom (cfm/wc or urinal)	–	50	–	–	–		ASHRAE 1999
Sales	66.7	–	0.30	0.30	–	ASHRAE 2004b	ASHRAE 1999
Shipping/receiving	300	–	0.15	0.15	–	ICC 2003	ASHRAE 1999
Storage	300	–	0.15	0.15	–	ICC 2003	ASHRAE 1999
Supermarket	125	15	–	0.12	–	ASHRAE 2004b	ASHRAE 1999
Warehouse	–	–	0.05	0.05	–	–	ASHRAE 1999
ER waiting room	–	–	–	–	ASHRAE 2004b	–	AIA 2001
Operating/surgical cystoscopic rooms	–	–	–	–	Pless et al. 2007	–	AIA 2001
Critical and intensive care	–	–	–	–	ASHRAE 2004b	–	AIA 2001
Patient room	–	–	–	–	ASHRAE 2004b	–	AIA 2001
Examination room	50	–	0.30	0.30	–	ASHRAE 2004b	GGHC 2007
Clean linens	–	–	0.30	0.30	–	–	GGHC 2007
Soiled linens	–	–	1.50	1.50	–	–	GGHC 2007
Nurse station	–	–	0.15	0.15	–	–	GGHC 2007
Physical therapy	50	–	0.30	0.30	–	ASHRAE 2004b	GGHC 2007
Radiology	–	–	0.30	0.30	–	–	GGHC 2007
Anesthesia storage	–	–	1.20	1.20	–	–	GGHC 2007

Table 6 Outside Air Requirements (SI units)

Space Type	Default Occupancy	OA		Total OA	OA Data Sources		
	m^2/person	L/s/person	L/s/m^2	L/s/m^2	ACH	Occupancy	Ventilation
Auditorium seating area	1.00	7.08	–	7.08	–	Pless et al. 2007	ASHRAE 1999
Bath (cfm/room)	–	9.44	–	0.00	–		ASHRAE 1999
Cafeteria/FF dining	1.39	9.44	–	6.77	–	ICC 2003	ASHRAE 1999
Classrooms	4.00	7.08		1.77	–	Pless et al. 2007	ASHRAE 1999
Corridor (school)	–	–	0.51	0.51	–	–	ASHRAE 1999
Corridor (public spaces)	–	–	0.25	0.25	–	–	ASHRAE 1999
Hotel guest room (cfm/room)	–	14.16	–	–	–	–	ASHRAE 1999
Gym (primary school)	3.33	9.44	–	2.83	–	Pless et al. 2007	ASHRAE 1999
Gym (secondary school)	1.00	9.44	–	9.44	–	Pless et al. 2007	ASHRAE 1999
Kitchen (commercial)	18.59	7.08	–	0.38	–	ICC 2003	ASHRAE 1999
Kitchen (residential, cfm/room)	–	11.80	–	–	–	–	ASHRAE 1999
Living areas (residential)	–	7.08	–	–	–	–	ASHRAE 1999
Lobby (school, treat as a corridor)	–		0.51	0.51	–	–	ASHRAE 1999
Lobby (hotel)	3.10	9.44	–	3.05	–	ASHRAE 2004b	ASHRAE 1999
Lobby (office building)	9.29	9.44	–	1.02	–	ASHRAE 2004b	ASHRAE 1999
Office	18.59	9.44	–	0.51	–	ASHRAE 2004b	ASHRAE 1999
Reception areas	3.10	7.08	–	2.29	–	ASHRAE 2004b	ASHRAE 1999
Restaurant dining rooms	1.39	9.44	–	6.77	–	ICC 2003	ASHRAE 1999
Restroom (cfm/wc or urinal)		23.60	–		–	–	ASHRAE 1999
Sales	6.20	–	1.52	1.52	–	ASHRAE 2004b	ASHRAE 1999
Shipping/receiving	27.88	–	0.76	0.76	–	ICC 2003	ASHRAE 1999
Storage	27.88	–	0.76	0.76	–	ICC 2003	ASHRAE 1999
Supermarket	11.62	7.08	–	0.61	–	ASHRAE 2004b	ASHRAE 1999
Warehouse	–	–	0.25	0.25	–	–	ASHRAE 1999
ER waiting room	–	–	–	–	ASHRAE 2004b	–	AIA 2001
Operating/surgical cystoscopic rooms	–	–	–	–	Pless et al. 2007	–	AIA 2001
Critical and intensive care	–	–	–	–	ASHRAE 2004b	–	AIA 2001
Patient room	–	–	–	–	ASHRAE 2004b	–	AIA 2001
Examination room	4.65	–	1.52	1.52	–	ASHRAE 2004b	GGHC 2007
Clean linens	–	–	1.52	1.52	–	–	GGHC 2007
Soiled linens	–	–	7.62	7.62	–	–	GGHC 2007
Nurse station	–	–	0.76	0.76	–	–	GGHC 2007
Physical therapy	4.65	–	1.52	1.52	–	ASHRAE 2004b	GGHC 2007
Radiology	–	–	1.52	1.52	–	–	GGHC 2007
Anesthesia storage	–	–	6.10	6.10	–	–	GGHC 2007

5.1.3 Plug and Process Loads

Determining the plug or process load intensity is difficult because available measured data are scarce. Thus, we had to make several assumptions based on experience with a small number of buildings, previous work by Huang et al. (1991), levels from ASHRAE (1989), and the AEDG series. The plug and process loads and schedules are determined at the zone level based on the activities in each zone. The models will be updated as new data become available. Appendix A lists all the plug loads by zone for each building model in IP and SI units. Table 7 lists the main references for the plug and process loads by building type. Kitchen loads for all building models with kitchens are discussed in the Commercial Kitchen sections.

Table 7 Plug and Process Load References

Building/Zone	Data Source
Small Office	Engineering judgment
Medium Office	Engineering judgment
Large Office	Engineering judgment
Primary School	Pless et al. 2007
Secondary School	Pless et al. 2007
Stand-Alone Retail	Engineering judgment
Strip Mall	Engineering judgment
Supermarket	Engineering judgment
Small Hotel	Jiang et al. 2008
Large Hotel	Huang et al. 1991
Hospital	Doebber et al. 2009, GGHC 2007
Outpatient Healthcare	Doebber et al. 2009, GGHC 2007
Warehouse	Liu et al. 2007
Midrise Apartment	Hendron 2007

The laundry facility loads for the hotels were modified from Jiang et al. (2008), who assumed 60-lb (27-kg) commercial washing machines that use 3.4 Btu/h (1,390 W) of electricity per cycle and gas dryers that use 2.6 Btu/h (750 W) of electricity per cycle. They also assumed 9 lb (4.1 kg) of laundry per room per day and that the washed laundry retains water equal to 87.5% of its dry weight. For the assumed 65% occupancy, the small hotel requires 8 loads per day and the large hotel requires 18 loads per day. To calculate gas use, we assumed a heat of vaporization of 1000 Btu/lb (2,326 kJ/kg) of water and a thermal efficiency of the gas dryer of 80%. The total energy use for washing and drying was divided evenly over 8 hours. (See Appendix A for the electricity and gas loads for each space.)

5.1.4 Elevators

Elevators are included in all buildings with multiple floors. They are modeled in EnergyPlus as a zone load but labeled as "elevators," so they are reported separately in the EnergyPlus output. The number of elevators in the reference building models was determined from rules of thumb presented by Beyer (2009) (see Table 8). The office buildings have one elevator for every 45,000 ft^2 (4,181 m^2), plus one service elevator for the large office building. The hotels have one elevator for every 75 rooms, and the large hotel includes one service elevator for every two public elevators, plus one additional elevator for the dining and banquet facilities on the top floor. The hospital has one public and one service elevator for every 100 beds (250 total), plus two elevators for the offices and cafeteria on the top floor. The outpatient healthcare model has the minimum recommendation of two elevators. The apartment building has one elevator for every 90 units, and the secondary school has two elevators.

Table 8 Number of Elevators Installed and Motor Power

Building Type	Number of Elevators	Motor Power (w/each)
Medium Office	2	14,610
Large Office	12	18,537
Secondary School	2	14,610
Small Hotel	2	14,610
Large Hotel	6	18,537
Hospital	8	18,537
Outpatient Healthcare	3	14,610
Midrise Apartment	1	14,610

For buildings with fewer than six stories (counting the basement), we assumed the elevators use hydraulic motors with no over counter weighting, weigh 2,500 lb (1,134 kg), travel 150 fpm (46 mpm), and have a mechanical efficiency of 58%. In this case, the heat gain was added to the first floor core zone. For buildings six stories and higher, we assumed the elevators use traction motors with 40% over counter weighting, weigh 2,500 lb (1,134 kg), travel 350 fpm (1.78 m/s), and have a mechanical efficiency of 64%. In this case, the heat gain was added to the top floor core zone. The following equation is used to calculate the motor power in horsepower (Baldor Electric Company 1998). The schedules were taken from ASHRAE (1989).

$$Motor\ HP = \frac{W \cdot V \cdot [1 - OCW]}{33{,}000 \cdot \eta_m}$$

where

W	=	weight of car (lb)
V	=	speed of car (fpm)
OCW	=	over counter weight (fraction of car capacity)
η_m	=	mechanical efficiency of elevator (fraction)

5.1.5 Commercial Kitchens

Six reference buildings have commercial kitchens, and the supermarket has a deli and a bakery that use similar types of equipment. Commercial kitchens have high electric and gas equipment densities for refrigeration, food preparation, and dishwashing, and often have high ventilation requirements. The internal loads in kitchens can vary tremendously depending on the types and amounts of food served. The internal loads included in the reference buildings are shown in Table 9, along with the SHW and ventilation requirements. These loads represent the installed capacity; actual peak demand and total energy use are determined by applying the operating schedules in Appendix B. The electricity loads include reach-in refrigerators, and some of the electric food preparation load is assumed to be in the dining zones. Walk-in coolers and freezers are modeled as separate EnergyPlus objects and are discussed in the Refrigeration section.

Table 9 Commercial Kitchen Loads

Building	Meals per Day	Gas Load (kW)	Electricity Load (kW)	Electricity in Dining Zone	SHW gal/h (L/h)	SHW Temp. at Fixture °F (°C)	Hooded Exhaust cfm (L/s)
Primary School	400	160	40	20%	100 (379)	120 (49)	3,300 (1,557)
Secondary School	600	242	60	20%	133 (503)	120 (49)	4,000 (1,888)
Supermarket Deli	–	6	5	–	5 (19)	120 (49)	–
Supermarket Bakery	–	11	3	–	5 (19)	120 (49)	2,500 (1,180)
Quick Service Restaurant	800	150	50	30%	40 (151)	120 (49)	3,300 (1,557)
Full Service Restaurant	780	167	75	30%	133 (503)	120 (49)	4,000 (1,888)
Large Hotel	780	167	75	30%	133 (503)	120 (49)	4,000 (1,888)
Hospital	800	283	75	0%	150 (568)	120 (49)	5,300 (2,501)

We assume the kitchens in the full service restaurant, large hotel, and schools have similar loads and can be scaled with the estimated number of meals served each day. The kitchen electricity and gas process loads and the exhaust flow rates are based on information from Brown (2007), Fisher (2003), Smith et al. (1999), Smith and Fisher (2001), data from the California Energy Commission (CEC 2004) and SGE (2004), a review of actual kitchen designs, and examination of annual utility data from more than 1000 operating commercial kitchens. Table 10 shows the energy distribution of the kitchen loads within the EnergyPlus zone energy balance. All gas appliances are assumed to be under exhaust hoods, so a high fraction of the energy is "lost" out the exhaust hood and not added to the space load.

Table 10 Distribution of Kitchen Loads in Zone Energy Balance

Fraction	Gas Equipment	Electrical Equipment	Exhaust Hoods
Lost	0.7	0.20	1.0
Latent	0.1	0.25	0.0
Radiant	0.2	0.30	0.0
Convective	0.0	0.25	0.0

The kitchen exhaust rates are shown in the final column of Table 9. Transfer air from the dining zones is used for all or part of the make-up air requirements, depending on how much air is available from the dining areas. This transfer air is modeled with an EnergyPlus ZoneMixing object in the kitchen zone and a zero power exhaust fan in the dining zone. EnergyPlus version 4.0 has two limitations that force a modeling workaround for the exhaust fans and make-up air:

- Exhaust fans are controlled with an on–off schedule only, and cannot have a fractional schedule; therefore, the fans are assumed to run at full flow.
- EnergyPlus does not account for the transfer air from adjacent zones when the OA requirements are calculated. It determines the OA as the maximum of the exhaust fan flow rate and the minimum OA schedule multiplied by the peak OA flow rate without consideration of the transfer air.

To work around this problem, we calculated the hourly energy use of the exhaust fans in a spreadsheet and entered it in the EnergyPlus model as an electricity load to the zones. The OA requirements for the kitchens are set with the zone sizing object and an hourly schedule.

5.1.6 Service Hot Water Demand

The peak service hot water (SHW) demand for each reference building space type is shown in Table 11, along with the temperatures at the fixture and the sources of data. These numbers are used in conjunction with the operating schedules to estimate the total hot water consumption. Hot water use in kitchens is included in the Commercial Kitchen section. Natural gas water heaters are used in all cases; storage tanks are kept at 140ºF (60ºC).

Table 11 Peak Service Hot Water Demand and Data Sources

Space Type	Use Rate		Temp. at Fixture		Data Sources
	gal/h	L/h	ºF	ºC	
Guest room (small hotel)	1.75	6.6	110	43	Jiang et al. 2008, ASHRAE 2007
Guest room (large hotel)	1.25	4.7	110	43	Jiang et al. 2008, ASHRAE 2007
Laundry (small hotel)	67.5	255.5	140	60	Jiang et al. 2008, ASHRAE 2007
Laundry (large hotel)	156.6	592.8	140	60	Jiang et al. 2008, ASHRAE 2007
Restrooms (primary school)	56.5	214.0	110	43	ASHRAE 2007
Restrooms (secondary school)	104.4	395.0	110	43	ASHRAE 2007
Gym (secondary school)	189.5	717.2	110	43	ASHRAE 2007
Small office	3.0	11.4	110	43	Jarnagin et al. 2006, ASHRAE 2007
Medium office (per floor)	9.9	37.5	110	43	Jarnagin et al. 2006, ASHRAE 2007
Large office (per floor)	21.3	80.6	110	43	Jarnagin et al. 2006, ASHRAE 2007
Apartment	3.5	13.2	110	43	Gowri et al. 2007
Outpatient healthcare	30.0	113.5	110	43	Doebber et al. 2009
Hospital					
ER waiting room	1.0	3.8	120	49	Engineering judgment
Operating/surgical cystoscopic	2.0	7.6	120	49	Engineering judgment
Laboratory	2.0	7.6	120	49	Engineering judgment
Patient room	1.0	3.8	120	49	Engineering judgment

Data for the two hotel buildings are from Jiang et al. (2008) and ASHRAE (2007). Average hot water use per guest room is assumed to be 14 g/day (53 L/day) in the small hotel and 10 g/day (38 L/day) in the large hotel from Table 7 (ASHRAE 2007). These total daily consumption values are the product of the peak value and the SHW schedule, which assumes a total full load equivalent consumption over 8 hours per day and gives the hourly peak loads shown in Table 11.

The laundry facility loads were modified from Jiang et al. (2008). We assumed 9 lb (4.1 kg) of laundry per room per day and 1.2 gal/lb (9.9 L/kg) of laundry of 140ºF (60ºC) hot water. The total hot water load for washing was divided evenly over 8 hours.

The average hot water use for schools is 0.6 gal/student/day (2.3 L/student/day) for primary schools and 1.8 gal/student/day (6.8 L/student/day) in secondary schools (ASHRAE 2007). We assumed that the secondary school uses 0.6 gal/student/day (2.3 L/student/day) in the restrooms to match the use in the primary school and 1.2 gal/student/day (4.5 L/student/day) in the gymnasium showers. The primary school has 650 students and the secondary school has 1200 students. The total daily hot water use was divided over the hot water use schedule to arrive at the peak values shown in Table 11.

For the offices, we assumed 1 gal/occupant/day (3.8 L/occupant/day) divided evenly over a 9-h occupancy period. We assumed 310 gal/day (1,172 L/day) for the outpatient healthcare model over a 14-h occupancy period, with the operating rooms consuming the most SHW of all the space types. Healthcare space types consumed similar quantities of SHW in the hospital model, but most use occurred in the commercial kitchen associated with the hospital cafeteria.

5.1.7 Schedules

Few data are available that enable us to determine the best operating schedules for building energy simulations. We used the schedules from the AEDG Technical Support Documents for the schools, lodging, warehouse, and healthcare models and a PNNL study for the apartment model (see Table 12). For the other models we started with Standard 90.1-1989 Section 13, which includes schedules for use with the Energy Cost Budget Method (ASHRAE 1989). Schedules published in the original version of 90.1-1989 were modified by Addendum L in 1994 by a public review process, and are published with minor modifications in Section G of the User’s Manual for 90.1-2004 (ASHRAE 2004c). Although these schedules are not perfect, no better published source of schedules has been identified. We started with these schedules and made modifications based on experience with monitoring real buildings to account for differences in zone-level and equipment operations, and lighting and plug loads. In 90.1-1989 (with addenda), the lights and equipment share the same schedules, but case study research and broad anecdotal evidence suggest that plug and process loads do not track lighting loads and that during off hours the plug loads are higher, probably because of information technology and security equipment. Therefore, we created new plug and process schedules and developed additional schedules for spaces that operate on different schedules, based on experience with monitoring buildings. All the schedules for each model are included in Appendix B.

Table 12 Reference Building Model Schedule Starting Points

Principal Building Activity	Data Source
Office	ASHRAE 1989
Education	Pless et al. 2007
Retail	ASHRAE 1989
Food Sales	ASHRAE 1989
Food Services	ASHRAE 1989
Lodging	Jiang et al. 2008
Healthcare	Doebber et al. 2009
Warehouse	Liu et al. 2007
Apartment	Gowri et al. 2007

5.1.8 Utility Tariffs

Utility rate schedules are needed to calculate energy costs, which are important for analyzing the economics of energy efficiency and energy production technologies. Electricity and natural gas are the only two energy forms considered for the reference buildings. Utility rate schedules vary widely across the country and within each census division, and capturing this variability is difficult. Also, utility rates can vary significantly from year to year. Utility rate schedules were selected from the EnergyPlus UtilityTariffObject.imf file when locations were selected. They were taken from the Tariff Analysis Project (http://tariffs.lbl.gov/) and directly from the utility company Web sites. These data are from 2004 and may not reflect current prices.

Tax rates on utilities vary at the city and county government levels, and most utility companies do not publish these with their tariffs because they vary within the service territory. However, taxes form an important part of energy costs in the commercial sector and should be included in the modeling. These data were filled by assuming that energy taxes are equal to the state sales tax rate plus 2% to cover city and county taxes based on a brief review of utility tax rates.

5.2 Form

Building form parameters are listed in Table 3. The form parameters for each reference building are shown in Table 13. Aspect ratio is defined as the overall length in the east–west direction divided by the overall length in the north–south direction. Expert opinion was used to determine the aspect ratios and floor-to-floor height for each building type. Ceiling plenums are included in the large office and medium office models. The sources for the other form parameters are shown in Table 14.

Table 13 Reference Building Form Assignments

Building Type	Floor Area		Aspect Ratio	No. of Floors	Floor-to-Floor Height		Floor-to-Ceiling Height		Glazing Fraction
	ft^2	m^2			ft	m	ft	m	
Small Office	5,500	511	1.5	1	10	3.05	10	3.05	0.21
Medium Office	53,628	4,982	1.5	3	13	3.96	9	2.74	0.33
Large Office	498,588	46,320	1.5	12*	13	3.96	9	2.74	0.38
Primary School	73,960	6,871	E-Shape	1	13	3.96	13	3.96	0.35
Secondary School	210,887	19,592	E-Shape	2	13	3.96	13	3.96	0.33
Stand-Alone Retail	24,962	2,294	1.3	1	20	6.10	20	6.10	0.07
Strip Mall	22,500	2,090	4.0	1	17	5.18	17	5.18	0.11
Supermarket	45,000	4,181	1.5	1	20	6.10	20	6.10	0.11
Quick Service Restaurant	2,500	232	1.0	1	10	3.05	10	3.05	0.14
Full Service Restaurant	5,500	511	1.0	1	10	3.05	10	3.05	0.17
Small Hotel	43,200	4,013	3.0	4	11** 9	3.35** 2.74	11** 9	3.35** 2.74	0.11
Large Hotel	122,120	11,345	3.8** 5.1	6	13** 10	3.96** 3.05	13** 10	3.96** 3.05	0.27
Hospital	241,351	22,422	1.3	5*	14	4.27	14	4.27	0.15
Outpatient Healthcare	40,946	3,804	1.4	3	10	3.05	10	3.05	0.19
Warehouse	52,045	4,835	2.2	1	28	8.53	28	8.53	0.006
Midrise Apartment	33,740	3,135	2.7	4	10	3.05	10	3.05	0.15

* Plus basement (not included in the table number)

** First floor

Table 14 Sources for Reference Building Form Data

Principal Building Activity	Data Source
Small Office	Jarnagin et al. 2006, EIA 2005
Medium Office	EIA 2005
Large Office	EIA 2005
Primary School	Pless et al. 2007
Secondary School	Pless et al. 2007
Stand-Alone Retail	EIA 2005
Strip Mall	EIA 2005
Supermarket	EIA 2005
Quick Service Restaurant	Huang et al. 1991
Full Service Restaurant	Huang et al. 1991
Small Hotel	Jiang et al. 2008
Large Hotel	Huang et al. 1991
Hospital	Huang et al. 1991
Outpatient Healthcare	Doebber et al. 2009
Warehouse	Liu et al. 2007
Midrise Apartment	Gowri et al. 2007

5.3 Fabric

The fabric includes the construction types and thermal properties of the walls, roofs, floors, and windows. Winiarski et al. (2007a; 2007b) analyzed CBECS 2003 to determine pre-1980 and post-1980 construction types. They assumed that the new construction models and the post-1980 use the same construction types.

5.3.1 Envelope Constructions

CBECS PBAplus information was used to map data from the 2003 CBECS dataset to the reference building types. Office buildings were divided into small, medium, and large, based on the number of floors (small is defined as single story, medium as two to four stories, and large more than four stories).

CBECS provides seven categories of roof construction material plus an “other” category and a “not one major type” category. The most common roof descriptions were determined for each reference building type by percentage of roof area and fraction of buildings. (No consideration is given to skylight area.) Roof area is assumed to correspond to the building footprint. This implies that roof area is equal to the projected roof area on the building footprint. No attempt was made to estimate the relative increase in roof area for sloped roofs compared to flat roofs.

Standard 90.1-2004 defines three primary roof types based on the location of insulation relative to the roof with the following assumptions:

- **Insulation Entirely Above Deck.** Has continuous insulation above the structural roof deck.
- **Metal Building.** Has insulation compressed between structural members.
- **Attic and Other.** Insulation is laid between roof joists.

A fourth option for determining roof insulation levels in Standard 90.1-2004 is defined as single-rafter roofs, a subclass of Attic and Other, in which the roof above and the ceiling below are attached to the same rafter. For these assemblies, the requirement in Standard 90.1-2004 is the lesser of two values: the attic requirement or a separate requirement that the rafter cavity be filled with fiberglass insulation. We consider single-rafter roofs in the Attic and Other classification; no further consideration is given to single-rafter roofs.

Comparison of the three ASHRAE Standard 90.1-2004 roof types with the 2003 CBECS roof descriptions indicates that the only description that can be unambiguously mapped to a Standard 90.1 roof type is the CBECS built-up classification mapped to 90.1 Insulation Entirely Above Deck. Slate, shingles, shakes, and tiles of any material map fairly well to the Standard 90.1 Attic and Other category, as these are typically installed over an attic or single-rafter roof. Less straightforward is mapping the CBECS Asphalt, Fiberglass, Other classification. This category can be mapped to 90.1's Attic and Other in the case of asphalt shingles, but could also be mapped to Insulation Entirely Above Deck in the case of a built-up roof with an asphalt topcoat. The CBECS Metal Surface category may be mapped to 90.1 Metal Building, or it may indicate that a metal roof has been used in place of shingles over an attic roof structure. The CBECS Plastic, Rubber, Synthetic category most likely maps to the Insulation Entirely Above Deck category (most commonly where a synthetic membrane is placed over foam), although commercially available recycled rubber and plastic shingles could be installed over an attic. These relationships are shown in Table 15.

Table 15 Relationship of CBECS Roof Descriptions and Standard 90.1 Roof Constructions

CBECS Roof Descriptions	Standard 90.1 Roof Construction		
	Insulation Entirely Above Deck	Metal Building	Attic and Other
Asphalt, fiberglass, other	X		X
Built-up	X		
Concrete			X
Metal surfacing		X	X
No one major type			
Other			
Plastic, rubber, synthetic	X		X
Slate, tile shingles			X
Wood shingles, shakes, other			X

CBECS provides the Wall Construction (WLCNS) statistic as a classification of the major wall construction type for each building. The CBECS WLCNS categories are:

- Brick, stone, or stucco
- Concrete block or poured concrete
- Decorative or construction glass

- Precast concrete panels
- Sheet metal panels
- Siding, shingles, tiles, or shakes
- Window or vision glass
- No one major type
- Other.

For each reference building, Table 16 lists the top five CBECS WLCNS choices in decreasing order of occurrence by percentage of calculated total opaque wall area or number of buildings. To determine the percentage of total opaque wall area, we removed the window area from the frequency statistic (total wall area). Some buildings have their primary wall construction in CBECS characterized as vision or construction glass, which is not opaque. Thus, these buildings tend to rank lower than if we had ranked buildings by total wall area including glazed area.

Table 16 Relationships Between CBECS Wall Descriptions and Standard 90.1 Wall Constructions

CBECS Wall Descriptions	ASHRAE Standard 90.1 Wall Construction			
	Mass Wall	Metal Building Wall	Steel Framed Wall	Wood Framed and Other Wall
Brick, stone, stucco	X	X	X	X
Concrete, block or poured	X			
Precast concrete panels	X			
Sheet metal panels		X		
Siding, shingles, tiles, shakes			X	X
Decorative or construction glass			X	
Window or vision glass			X	
No major type	Unknown	Unknown	Unknown	Unknown
Other	Unknown	Unknown	Unknown	Unknown

Standard 90.1-2004 defines four wall types based on the functional performance of the wall, with the following assumptions:

- **Mass Wall.** Has continuous insulation.
- **Metal Building Wall.** Has insulation compressed between metal members, possibly augmented by continuous insulation to decrease the overall U-factor.
- **Steel Framed Wall.** Is a simple frame wall with different structural members (and therefore different thermal bypass factors).
- **Wood Framed and Other Wall.** Is a simple frame wall with different structural members (and therefore different thermal bypass factors).

Mass Wall in Standard 90.1-2004 must be defined as a wall with a heat capacity exceeding 7 $Btu/ft^2 \cdot °F$ (143 $MJ/m^2 \cdot °C$) or 5 $Btu/ft^2 \cdot °F$ (102 $MJ/m^2 \cdot °C$), provided that it has a material unit weight not greater than 120 lb/ft^3 (4.7 GJ/m^3). The 7 $Btu/ft^2 \cdot °F$ is for any weight wall; the 5 $Btu/ft^2 \cdot °F$ (102 $MJ/m^2 \cdot °C$) is only for walls lighter than 120 lb/ft^3 (4.7 GJ/m^3). Thus, regardless of insulation type and placement, walls exceeding this level of heat capacity are treated as mass walls for setting minimum U-factor requirements. The definition is such that a 4-in. (10-cm) brick facing on a frame wall construction does not create a mass wall under the Standard 90.1 definition.

Comparing the four Standard 90.1-2004 wall types with the 2003 CBECS wall descriptions indicates that the brick, stone, and stucco description could conceivably be mapped to any one of the four ASHRAE 90.1 WLCNSs. This is problematic because the brick, stone, and stucco description is the single most common in the 2003 CBECS for all the reference building types examined in this analysis. These relationships between the Standard 90.1-2004 roof types and the 2003 CBECS wall descriptions are shown in Table 16.

The recommended roof and wall constructions for each model and each construction vintage are shown in Table 17 and Table 18. Winiarski et al. (2006) recommended an attic roof construction for the new construction small hotel; however, Jiang et al. (2008) recommended insulation entirely above deck for the roof, which is used in the reference small hotel model. Gowri et al. (2007) determined the constructions for the midrise apartment building model and assumed they were the same for all vintages of the reference building.

Table 17 Recommended Roof Constructions by Building Type

Building Type	Pre-1980	Post-1980	New Construction
Small Office	Insulation entirely above deck	Attic and other	Attic and other
Medium Office	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck
Large Office	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck
Primary School	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck
Secondary School	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck
Stand-Alone Retail	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck
Strip Mall	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck
Supermarket	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck
Quick Service Restaurant	Insulation entirely above deck	Attic and other	Attic and other
Full Service Restaurant	Insulation entirely above deck	Attic and other	Attic and other
Small Hotel	Attic and other	Attic and other	Insulation entirely above deck
Large Hotel	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck
Hospital	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck
Outpatient Healthcare	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck
Warehouse	Insulation entirely above deck	Metal building roof	Metal building roof
Midrise Apartment	Insulation entirely above deck	Insulation entirely above deck	Insulation entirely above deck

Table 18 Recommended Wall Constructions by Building Type

Building Type	Pre-1980	Post-1980	New Construction
Small Office	Steel frame	Mass	Mass
Medium Office	Steel frame	Steel frame	Steel frame
Large Office	Mass	Mass	Mass
Primary School	Steel frame	Steel frame	Steel frame
Secondary School	Steel frame	Steel frame	Steel frame
Stand-Alone Retail	Steel frame	Mass	Mass
Strip Mall	Steel frame	Steel frame	Steel frame
Supermarket	Mass	Mass	Mass
Quick Service Restaurant	Mass	Wood frame	Wood frame
Full Service Restaurant	Steel frame	Steel frame	Steel frame
Small Hotel	Steel frame	Steel frame	Steel frame
Large Hotel	Mass	Mass	Mass
Hospital	Mass	Mass	Mass
Outpatient Healthcare	Steel frame	Steel frame	Steel frame
Warehouse	Metal building	Metal building	Metal building
Midrise Apartment	Steel frame	Steel frame	Steel frame

The choice of a wall or roof type for a reference building has energy implications. Versions of ASHRAE Standard 90 (dating back to 90-75) have different assembly U-factor requirements for different wall and roof types. For example, Standard 90.1-2004 has a variation for roof assembly U-factor of 0.034 to 0.065 (depending on roof type) in Zone 5 (typical of Chicago, Illinois). This same building in the same location could show a variation in wall assembly U-factor of 0.084 to 0.113 for lightweight construction.

The overall U-values of opaque constructions and fenestrations must be determined for the different vintages of baseline building models. The new construction reference building models follow Standard 90.1-2004; the post-1980 models follow Standard 90.1-1989. For the pre-1980 models, we chose to follow values from Briggs et al. (1987), who estimated envelope thermal properties by construction year for office buildings. We estimated the envelope thermal properties from the Briggs paper for 1970 construction and assumed that these values apply across all building and construction types. Table 19 through Table 25 show the roof and wall U-values, slab-on-grade and underground R-values, window U-values, and solar heat gain coefficients (SHGCs) for all construction types and for the three vintages of reference buildings. The U-values include the interior and exterior film coefficients from Standard 90.1-2004.

Standard 90.1-2004 contains residential and nonresidential construction performance parameters. The residential constructions are more stringent and should be used for whole buildings or floors of buildings where 50% or more of the spaces adjacent to the exterior walls are used primarily for living and sleeping quarters. This definition requires that the residential constructions be used for the small hotel and midrise apartment, for floors 2–4 of the hospital, and for floors 2–6 of the large hotel.

Table 19 Roof U-Values (Btu/h·ft^2·°F) by Reference Building Vintage

Location	90.1-2004 Climate Zone	90.1-1989 Table	Pre-1980	Post-1980	New Construction Insulation Above Deck	New Construction Attic
Miami, FL	1A	8A-15	0.100	0.074	0.063	0.034
Houston, TX	2A	8A-10	0.100	0.066	0.063	0.034
Phoenix, AZ	2B	8A-18	0.100	0.046	0.063	0.034
Atlanta, GA	3A	8A-8	0.100	0.072	0.063	0.034
Los Angeles, CA	3B-CA	8A-6	0.100	0.100	0.063	0.034
Las Vegas, NV	3B-other	8A-14	0.100	0.048	0.063	0.034
San Francisco, CA	3C	8A-5	0.100	0.088	0.063	0.034
Baltimore, MD	4A	8A-25	0.086	0.058	0.063	0.034
Albuquerque, NM	4B	8A-23	0.089	0.059	0.063	0.034
Seattle, WA	4C	8A-19	0.085	0.064	0.063	0.034
Chicago, IL	5A	8A-26	0.072	0.053	0.063	0.034
Denver, CO	5B	8A-28	0.076	0.051	0.063	0.034
Minneapolis, MN	6A	8A-33	0.060	0.045	0.063	0.027
Helena, MT	6B	8A-32	0.060	0.049	0.063	0.027
Duluth, MN	7	8A-36	0.060	0.040	0.063	0.027
Fairbanks, AK	8	8A-38	0.060	0.031	0.048	0.027

Table 20 Steel Frame Wall U-Values (Btu/h·ft^2·°F) by Reference Building Vintage

Location	90.1-2004 Climate Zone	90.1-1989 Table	Pre-1980		Post-1980		New Construction	
			Btu/h·ft^2·°F	W/m^2·K	Btu/h·ft^2·°F	W/m^2·K	Btu/h·ft^2·°F	W/m^2·K
Miami, FL	1A	8A-15	0.230	1.306	1.000	5.678	0.124	0.704
Houston, TX	2A	8A-10	0.230	1.306	0.150	0.852	0.124	0.704
Phoenix, AZ	2B	8A-18	0.230	1.306	0.240	1.363	0.124	0.704
Atlanta, GA	3A	8A-8	0.225	1.278	0.130	0.738	0.124	0.704
Los Angeles, CA	3B-CA	8A-6	0.230	1.306	0.220	1.249	0.124	0.704
Las Vegas NV	3B-other	8A-14	0.230	1.306	0.160	0.909	0.124	0.704
San Francisco, CA	3C	8A-5	0.224	1.272	0.130	0.738	0.124	0.704
Baltimore, MD	4A	8A-25	0.178	1.011	0.089	0.505	0.124	0.704
Albuquerque, NM	4B	8A-23	0.184	1.045	0.100	0.568	0.124	0.704
Seattle, WA	4C	8A-19	0.175	0.994	0.092	0.522	0.124	0.704
Chicago, IL	5A	8A-26	0.156	0.886	0.082	0.466	0.084	0.477
Denver, CO	5B	8A-28	0.161	0.914	0.082	0.466	0.084	0.477
Minneapolis, MN	6A	8A-33	0.145	0.823	0.065	0.369	0.084	0.477
Helena, MT	6B	8A-32	0.145	0.823	0.072	0.409	0.084	0.477
Duluth, MN	7	8A-36	0.136	0.772	0.058	0.329	0.064	0.363
Fairbanks, AK	8	8A-38	0.125	0.710	0.045	0.256	0.064	0.363

Table 21 Mass Wall U-Values (Btu/h·ft²·ºF) by Reference Building Vintage

Location	90.1-2004 Climate Zone	90.1-1989 Table	Pre-1980		Post-1980		New Construction	
			Btu/ h·ft²·ºF	W/m²·K	Btu/ h·ft²·ºF	W/m²·K	Btu/ h·ft²·ºF	W/m²·K
Miami, FL	1A	8A-15	0.230	1.306	1.000	5.678	0.580	3.293
Houston, TX	2A	8A-10	0.230	1.306	0.340	1.931	0.580	3.293
Phoenix, AZ	2B	8A-18	0.230	1.306	0.410	2.328	0.580	3.293
Atlanta, GA	3A	8A-8	0.225	1.278	0.290	1.647	0.151	0.857
Los Angeles, CA	3B-CA	8A-6	0.230	1.306	1.000	5.678	0.151	0.857
Las Vegas, NV	3B-other	8A-14	0.230	1.306	0.290	1.647	0.580	3.293
San Francisco, CA	3C	8A-5	0.224	1.272	0.490	2.782	0.580	3.293
Baltimore, MD	4A	8A-25	0.178	1.011	0.120	0.681	0.580	3.293
Albuquerque, NM	4B	8A-23	0.184	1.045	0.190	1.079	0.151	0.857
Seattle, WA	4C	8A-19	0.175	0.994	0.100	0.568	0.151	0.857
Chicago, IL	5A	8A-26	0.156	0.886	0.100	0.568	0.151	0.857
Denver, CO	5B	8A-28	0.161	0.914	0.140	0.795	0.151	0.857
Minneapolis, MN	6A	8A-33	0.145	0.823	0.071	0.403	0.123	0.698
Helena, MT	6B	8A-32	0.145	0.823	0.079	0.449	0.123	0.698
Duluth, MN	7	8A-36	0.136	0.772	0.061	0.346	0.123	0.698
Fairbanks, AK	8	8A-38	0.125	0.710	0.047	0.267	0.104	0.591

Table 22 Unheated Slab-On-Grade Floor Insulation by Reference Building Vintage R-Value (h·ft²·ºF/Btu) for 24-in. Vertical Insulation

Location	90.1-2004 Climate Zone	90.1-1989 Table	Pre-1980	Post-1980	New Construction
Miami, FL	1A	8A-15	0.0	0.0	NR
Houston, TX	2A	8A-10	0.0	0.0	NR
Phoenix, AZ	2B	8A-18	0.0	0.0	NR
Atlanta, GA	3A	8A-8	0.0	6.0	NR
Los Angeles, CA	3B-CA	8A-6	0.0	0.0	NR
Las Vegas, NV	3B-other	8A-14	0.0	0.0	NR
San Francisco, CA	3C	8A-5	0.0	6.0	NR
Baltimore, MD	4A	8A-25	0.0	8.0	NR
Albuquerque, NM	4B	8A-23	0.0	7.0	NR
Seattle, WA	4C	8A-19	0.0	8.0	NR
Chicago, IL	5A	8A-26	0.0	8.0	NR
Denver, CO	5B	8A-28	0.0	8.0	NR
Minneapolis, MN	6A	8A-33	0.0	8.0	NR
Helena, MT	6B	8A-32	0.0	8.0	NR
Duluth, MN	7	8A-36	0.0	8.0	NR
Fairbanks, AK	8	8A-38	0.0	8.0	10.0

Table 23 Underground Wall Insulation by Reference Building Vintage R-Value (h·ft^2·ºF/Btu)

Location	90.1-2004 Climate Zone	90.1-1989 Table	Pre-1980	Post-1980	New Construction
Miami, FL	1A	8A-15	0.0	0.0	NR
Houston, TX	2A	8A-10	0.0	0.0	NR
Phoenix, AZ	2B	8A-18	0.0	0.0	NR
Atlanta, GA	3A	8A-8	0.0	7.0	NR
Los Angeles, CA	3B-CA	8A-6	0.0	0.0	NR
Las Vegas, NV	3B-other	8A-14	0.0	0.0	NR
San Francisco, CA	3C	8A-5	0.0	7.0	NR
Baltimore, MD	4A	8A-25	0.0	9.0	NR
Albuquerque, NM	4B	8A-23	0.0	8.0	NR
Seattle, WA	4C	8A-19	0.0	9.0	NR
Chicago, IL	5A	8A-26	0.0	10.0	NR
Denver, CO	5B	8A-28	0.0	10.0	NR
Minneapolis, MN	6A	8A-33	0.0	12.0	NR
Helena, MT	6B	8A-32	0.0	11.0	NR
Duluth, MN	7	8A-36	0.0	13.0	7.5
Fairbanks, AK	8	8A-38	0.0	16.0	7.5

Table 24 Window Overall U-Value (Btu/h·ft^2·ºF) by Reference Building Vintage

Location	90.1-2004 Climate Zone	90.1-1989 Table	Pre-1980	Post-1980	New Construction
Miami, FL	1A	8A-15	1.22	1.22	1.22
Houston, TX	2A	8A-10	1.22	1.22	1.22
Phoenix, AZ	2B	8A-18	1.22	1.22	1.22
Atlanta, GA	3A	8A-8	1.22	0.72	0.57
Los Angeles, CA	3B-CA	8A-6	1.22	1.22	0.57
Las Vegas, NV	3B-other	8A-14	1.22	1.22	0.57
San Francisco, CA	3C	8A-5	1.22	0.72	1.22
Baltimore, MD	4A	8A-25	1.22	0.59	0.57
Albuquerque, NM	4B	8A-23	1.22	0.72	0.57
Seattle, WA	4C	8A-19	1.22	0.72	0.57
Chicago, IL	5A	8A-26	0.62	0.59	0.57
Denver, CO	5B	8A-28	0.62	0.59	0.57
Minneapolis, MN	6A	8A-33	0.62	0.52	0.57
Helena, MT	6B	8A-32	0.62	0.52	0.57
Duluth, MN	7	8A-36	0.62	0.52	0.57
Fairbanks, AK	8	8A-38	0.62	0.52	0.35

Table 25 Window Solar Heat Gain Coefficient by Reference Building Vintage

Location	90.1-2004 Climate Zone	90.1-1989 Table	Pre-1980	Post-1980	New Construction
Miami, FL	1A	8A-15	0.54	0.25	0.25
Houston, TX	2A	8A-10	0.54	0.25	0.25
Phoenix, AZ	2B	8A-18	0.54	0.25	0.25
Atlanta, GA	3A	8A-8	0.54	0.25	0.25
Los Angeles, CA	3B-CA	8A-6	0.54	0.44	0.25
Las Vegas, NV	3B-other	8A-14	0.54	0.25	0.25
San Francisco, CA	3C	8A-5	0.54	0.39	0.34
Baltimore, MD	4A	8A-25	0.54	0.36	0.39
Albuquerque, NM	4B	8A-23	0.54	0.36	0.39
Seattle, WA	4C	8A-19	0.54	0.39	0.39
Chicago, IL	5A	8A-26	0.41	0.39	0.39
Denver, CO	5B	8A-28	0.41	0.39	0.39
Minneapolis, MN	6A	8A-33	0.41	0.39	0.39
Helena, MT	6B	8A-32	0.41	0.39	0.39
Duluth, MN	7	8A-36	0.41	0.49	0.49
Fairbanks, AK	8	8A-38	0.41	NR	NR

Standard 90.1-2004 has different roof U-values depending on the construction type; the U-value for Attic and Other is typically about half that for Insulation Entirely Above Deck. Standard 90.1-1989 has only one value for the roof U-value, and the Briggs paper does not differentiate by construction type. Therefore, we use the same roof U-value for all construction types in the pre-1980 and post-1980 constructions.

Standard 90.1-1989 has varying levels of insulation for mass walls, depending on the internal load density (ILD), the wall heat capacity, the amount of fenestration, and the location of the insulation. We made the following assumptions:

- The ILD for all building types is 1.5–3 W/ft^2.
- The heat capacity of the walls is greater than 15 Btu/ft^2·°F.
- The percent fenestration is in the lower of the two ranges.
- The insulation is on the interior of the mass wall.

Briggs et al. (1987) published wall U-values for mass walls only. Thus, we used the same value for the pre-1980 steel frame wall construction. This paper does not include underground walls, and we assumed that there is no insulation on pre-1980 underground walls for all locations.

Standard 90.1-1989 contains ranges of window U-values and shading coefficients, depending on the window-to-wall glazing fraction and ILD. We assumed the highest U-values from 90.1-1989 for the post-1980 reference buildings, which agree very closely with other versions of Standard 90.1 for most locations. We used the SHGC from Standard 90.1-1999 for the post-1980 reference buildings. For the pre-1980 reference buildings, we assumed the windows in climate zones 1–4 are single glazed 0.25-in. (.6-cm) bronze tinted glass and for climate zones 5–8, double-glazed bronze and clear glass windows. For new construction following 90.1-2004, we assumed all windows are fixed except the midrise apartment building, which is assumed to have operable windows.

5.3.2 Infiltration

Infiltration is different in each building and varies continuously with changing environmental and building operating conditions. Modeling approaches to infiltration are typically very simple because of the lack of knowledge about the sizes and distribution of cracks in the building envelope, the permeability of the envelope, the flow of air internal to the building, and the pressure distribution in and around the building. EnergyPlus allows a simple approach and a more detailed air flow nodal network approach to infiltration modeling. We chose the simple approach to simplify the assumptions needed and to decrease simulation run times.

The simple method has an empirical correlation that modifies the infiltration as a function of wind speed and temperature difference across the envelope. The difficulty in using this equation is determining valid coefficients for each building type in each location. The EnergyPlus documentation presents two sets of correlation coefficients, both of which were derived from a small number of measurements taken from published reports. These coefficients vary dramatically and provide very different results that cause great uncertainty in determining which numbers to use. Therefore, we chose to model a fixed infiltration rate (which may not be realistic for hourly modeling), but we feel that it can represent the average impact over a year.

Even in the simple model, we have to make assumptions about the infiltration level and how it is affected by the operation of the mechanical ventilation systems. A proposed addendum to Standard 90.1-2004 included an airtightness level for building envelopes. This document proposed that one approach to meeting the standard would be to perform a pressurization test to show that the building leakage does not exceed 0.4 cfm/ft^2 at 0.3 in. w.c. (2 L/s/m^2 at 75 Pa) of above-grade envelope area (exterior walls and roof). This airtightness level provides a number that can be used for the energy simulations and was assumed to be the level for new construction reference building models.

For existing buildings, we turn to measured airtightness data. Persily (1998) collected data from 139 buildings that showed a wide scatter in airtightness and little correlation between building age and airtightness. The average leakage rate across all building types and locations was 1.5 cfm/ft^2 at 0.3 in. w.c. (7.5 L/s/m^2 at 75 Pa) of above-grade envelope area. This number is used for the pre-1980 and post-1980 reference building models.

Several assumptions have to be made to go from leakage rates to the simple infiltration model in the building energy simulation. The infiltration was calculated based on the above-grade envelope area (exterior walls and roof), then converted to a pressure of 0.016 in. w.c. (4 Pa), assuming a flow exponent of 0.65. This lower pressure was assumed to be the average pressure difference across the envelope without pressurization or depressurization from the HVAC and exhaust fans.

Infiltration is often assumed to drop to zero when buildings are pressurized in energy models, because there is a lack of evidence about what really happens and lack of knowledge about how to model it in an energy simulation. We assumed that the uncontrolled infiltration is reduced to 25% of the value calculated at 0.016 in. w.c. (4 Pa) when the ventilation system is running. When the ventilation system is off (no OA), the infiltration is modeled at the full leakage rate calculated at 0.016 in. w.c. (4 Pa). Infiltration is modeled at constant air changes per hour

(ACH). We assumed that constant ACH models the average effects over the year and in different locations. This is a gross simplification, but is necessary without moving to more complicated flow network simulations.

5.4 Equipment

The equipment category includes interior and exterior lighting, HVAC, SWH equipment, and commercial refrigeration systems.

5.4.1 Interior Lighting

We used the building area method or the space-by-space method from Standard 90.1-2004 to determine maximum lighting power densities (LPDs) for the new construction models and Standard 90.1-1989 for the existing building models (see Table 26). For space types not defined in Standard 90.1-2004 for the hospital and outpatient models, we took LPD values from GGHC (2007). The LPDs for each zone in each building are listed in Appendix A.

The LPDs in the strip mall were divided into three levels: high in two stores, medium in three stores, and low in five stores to simulate a mix of stores based on research from Liu et al. (2006). We assumed that the typical pre-1980 building lighting systems were updated to at least the Standard 90.1-1989 LPDs. Standard 90.1-1989 provides prescriptive criteria and system performance criteria approaches for determining the allowed lighting power. The prescriptive criteria approach provides building-level LPDs. The system performance criteria approach provides space-level LPDs and an area factor (AF) multiplier. The LPD for reference buildings with multiple space types was determined as the product of the allowable unit power density from ASHRAE (1989). The AF is defined as

$$AF = 0.2 + 0.8\left(1/0.9^{n}\right)$$

$$n = \frac{10.21\left(CH - 2.5\right)}{\sqrt{A_r}} - 1$$

where

AF	=	area factor
A_r	=	room area, ft^2
CH	=	ceiling height, ft

Table 26 Reference Building Lighting Assumptions

Building Type	Existing Stock Models (ASHRAE 90.1-1989)	New Construction Models (ASHRAE 90.1-2004)
Small Office	Table 6-5 Offices	Table 9.5.1 office
Medium Office	Table 6-5 Offices	Table 9.5.1 office
Large Office	Table 6-5 Offices	Table 9.5.1 office
Primary School	Table 6-6a by space type (classroom AF = 1.0)	Table 9.6.1 by space type
Secondary School	Table 6-6a by space type (classroom AF = 1.0)	Table 9.6.1 by space type
Stand-Alone Retail	Table 6-6b retail space type C; Table 6-6a fine storage for back	Table 9.6.1 sales area, active storage
Strip Mall	2 Stores: 5.6 W/ft2 (60.26 W/m2) (Table 6-6b space type A) 3 Stores: 3.3 W/ft2 (35.51 W/m2) (Table 6-6b space type C) 5 Stores: 2.7W/ft2 (29.05 W/m2) (Table 6-6b space type F)	2 Stores: 2.23 W/ft2 (24 W/m2) (Table 9.6.1 retail plus accent lighting) 3 Stores: 1.7 W/ft2 (18.3 W/m2) (Table 9.6.1 retail) 5 Stores: 1.28 W/ft2 (13.8 W/m2)
Supermarket	Table 6-6b retail space type E; Table 6-6a office category 1; Table 6-6a fine storage for back	Table 9.6.1 sales area, active storage
Quick Service Restaurant	Table 6-6a by space type	Table 9.6.1 family dining; food prep
Full Service Restaurant	Table 6-6a by space type	Table 9.6.1 family dining; food prep
Small Hotel	Table 6-6b by space type	Table 9.6.1 by space type
Large Hotel	Table 6-6b by space type	Table 9.6.1 by space type
Hospital	Table 6-6b by space type	Table 9.6.1 by space type
Outpatient Healthcare	Table 6-5 offices and Table 6.6b dental suite/ examination	Table 9.6.1 by space type GGHC 2007 Table L-1 where appropriate
Warehouse	Table 6-6a by space type	Table 9.6.1 office, bulk storage, fine storage
Midrise Apartment	Hendron 2007, 90.1-1989 Table 6-6a for corridor	Hendron 2007, 90.1-2004 Table 9.6.1 for corridor

5.4.2 Exterior Lights

Exterior lighting is included in all reference building models following the values shown in Table 27 and Table 28. All exterior lighting operates on an astronomical clock that turns on the lights when the sun is down and turns them off when the sun is up. Exterior façade lighting is included in all buildings around the perimeter of the building per area of the first floor exterior walls plus the first floor plenum exterior walls. Exterior lights were added to the main entryway doors and other exterior doors in all models. Exterior canopy lights were included in the small hotel, large hotel, and hospital emergency room entrances. The hotel canopies are considered to be high traffic areas and the hospital emergency room entrance is considered to be a low traffic area for Standard 90.1-1989. The quick service restaurant model includes lighting for the drive-through window. Standard 90.1-1989 does not have a category for drive-through windows; therefore, we used the Standard 90.1-2004 value for the existing stock models.

Table 27 Exterior Lighting Assumptions

Area	Existing Stock Models (90.1-1989)	New Construction Models (90.1-2004)
Façade	0.25 W/ft^2 (2.69 W/m^2)	0.2 W/ft^2 (2.15 W/m^2)
Main entry doors	30 W/ft (98.4 W/m)	30 W/ft (98.4 W/m)
Other doors	25 W/ft (82.0 W/m)	20 W/ft (65.6 W/m)
Canopy (heavy traffic)	10 W/ft^2 (108 W/m^2)	1.25 W/ft^2 (13.5 W/m^2)
Canopy (light traffic)	4 W/ft^2 (43 W/m^2)	1.25 W/ft^2 (13.5 W/m^2)
Drive through	–	400 W
Parking lot	0.18 W/ft^2 (1.9 W/m^2)	0.15 W/ft^2 (1.6 W/m^2)

Table 28 Parking Lot Lighting Levels

Building Type	Parking Lot Area	Total Parking Lot Lighting Level	
		Existing Stock Models	New Construction Models
Small Office	8,910 ft^2 (828 m^2)	1,604 W	1,337 W
Medium Office	86,832 ft^2 (8,067 m^2)	15,630 W	13,025 W
Large Office	325,087 ft^2 (30,201 m^2)	58,516 W	48,763 W
Primary School	14,718 ft^2 (1,367 m^2)	2,649 W	2,208 W
Secondary School	59,263 ft^2 (5,506 m^2)	10,667 W	8,889 W
Stand-Alone Retail	35,018 ft^2 (3,253 m^2)	6,303 W	5,253 W
Strip Mall	42,368 ft^2 (3,936 m^2)	7,626 W	6,355 W
Supermarket	63,810 ft^2 (5,928 m^2)	11,486 W	9,572 W
Quick Service Restaurant	10,125 ft^2 (941 m^2)	1,823 W	1,519 W
Full Service Restaurant	22,275 ft^2 (2,069 m^2)	4,010 W	3,341 W
Small Hotel	33,696 ft^2 (3,130 m^2)	6,065 W	5,054 W
Large Hotel	88,544 ft^2 (8,226 m^2)	15,938 W	13,282 W
Hospital	77,493 ft^2 (7,199 m^2)	13,949 W	11,624 W
Outpatient Healthcare	82,924 ft^2 (7,704 m^2)	14,926 W	12,439 W
Warehouse	20,048 ft^2 (1,862 m^2)	3,609 W	3,007 W
Midrise Apartment	28,578 ft^2 (2,655 m^2)	5,144 W	4,287 W

5.4.3 HVAC Equipment

ASHRAE (2004) specifies HVAC equipment for baseline buildings. This information is used to develop reference buildings and does not necessarily represent typical construction practices. Winiarski et al. (2006) performed an analysis of 2003 CBECS to estimate typical HVAC system types by building type to use with the reference buildings. They examined the data in two sets:

all buildings with a construction year of 1980 or earlier and the remaining buildings built after 1980. The final equipment types selected represented the largest percentage of floor area. The results for post-1980 and new construction are shown in Table 29 and for pre-1980 construction in Table 30. Strip malls were not included and are assumed to have the same systems as the stand-alone retail model. The number of chillers and condenser type (air or water) were determined by discussions with the ASHRAE Standard 90.1 mechanical subcommittee.

Table 29 HVAC Equipment Types for Post-1980 and New Construction

Building Type	Heating	Cooling	Air Distribution
Small Office	Furnace	PACU (packaged air-conditioning unit)	SZ CAV (single-zone constant air volume)
Medium Office	Furnace	PACU	MZ VAV (multizone variable air volume)
Large Office	Boiler	Chiller (2) – water cooled	MZ VAV
Primary School	Boiler	PACU	CAV
Secondary School	Boiler	Chiller – air cooled	MZ VAV
Stand-Alone Retail	Furnace	PACU	SZ CAV
Strip Mall	Furnace	PACU	SZ CAV
Supermarket	Furnace	PACU	CAV
Quick Service Restaurant	Furnace	PACU	SZ CAV
Full Service Restaurant	Furnace	PACU	SZ CAV
Small Hotel	ISH (individual space heater), furnace	IRAC (individual room air conditioner), PACU	SZ CAV
Large Hotel	Boiler	Chiller (2) – air cooled	FCU (fan coil unit) and VAV*
Hospital	Boiler	Chiller – water cooled	CAV and VAV**
Outpatient Healthcare	Furnace	PACU	CAV and VAV**
Warehouse	ISH, furnace	PACU	SZ CAV
Midrise Apartment	Furnace	PACU-SS (split system)	SZ CAV

* Hotels may be characterized with two system types serving different areas. Both multizone systems (VAV or CAV) may serve public spaces (lobby/conference rooms), whereas single zone fan coil systems may be common for living areas.

** Hospitals may use CAV systems in some operating and critical care type areas with variable air flow used for pressurization, but classic VAV multizone systems in areas such as offices. CBECS buildings reporting VAV are significantly less common in pre-1980 construction (67% versus 95% in post-1980 hospitals).

Table 30 HVAC Equipment Types for Pre-1980 Construction

Building Type	Heating	Cooling	Air Distribution
Small Office	Furnace	PACU	SZ CAV
Medium Office	Furnace	PACU	SZ CAV
Large Office	Boiler	Chiller (2) – water cooled	MZ VAV
Primary School	Boiler	PACU	CAV
Secondary School	Boiler	PACU	CAV
Stand-Alone Retail	Furnace	PACU	SZ CAV
Strip Mall	Furnace	PACU	SZ CAV
Supermarket	Furnace	PACU	CAV
Quick Service Restaurant	Furnace	PACU	SZ CAV
Full Service Restaurant	Furnace	PACU	SZ CAV
Small Hotel	ISH	IRAC	SZ CAV
Large Hotel	Boiler	Chiller (2) – air cooled	FCU and MZ CAV*
Hospital	Boiler	Chiller – water cooled	FCU, CAV and VAV**
Outpatient Healthcare	Furnace	PACU	CAV and VAV**
Warehouse	Furnace, ISH	PACU	SZ CAV
Midrise Apartment	Furnace	PACU-SS	SZ CAV

* Hotels may be characterized with two system types serving different areas. Both multizone systems (VAV or CAV) may serve public spaces (lobby/conference rooms), whereas single zone fan coil systems may be common for living areas.

** Hospitals may use CAV systems in some operating and critical care type areas with variable air flow used for pressurization, but classic VAV multizone systems in areas such as offices. CBECS buildings reporting VAV are significantly less common in pre-1980 construction (67% versus 95% in post-1980 hospitals).

Equipment sizing for all reference building models is determined from design day runs by EnergyPlus for each location with a sizing factor of 1.2. Nominal coefficient of performance (COP), energy efficiency ratio (EER), seasonal energy efficiency ratio (SEER), and boiler and furnace efficiencies are taken from the appropriate energy standard based on equipment type and size. Performance curves and HVAC system models are used to model how performance might vary when operating away from the nominal operation point using the models available in EnergyPlus. Economizer operation is determined from the cooling system size and climate zone following 90.1-2004 requirements. Exception (e) to Section 6.5.1 in 90.1-2004 for systems serving residential spaces eliminates the requirement for economizers for systems smaller than 27 tons and 56 tons, depending on climate zone. Moreover, economizers are not used in any healthcare critical systems that are required to operate within specified humidity constraints.

The equipment efficiencies are determined from 90.1-2004 for the new construction reference building models, 90.1-1989 for the post-1980 reference building models, and from an analysis of historical equipment efficiencies and equipment lifetimes for the pre-1980 reference building models (Winiarski and Halverson 2008). The equipment efficiencies for pre-1980 reference building models for cooling equipment are shown in Table 31, for space heating equipment in Table 32, and for water heating equipment in Table 33 through Table 35.

Table 31 Estimated Unitary Cooling Equipment Efficiencies for Pre-1980 Construction

Equipment Category	Capacity (Btu/h)	Heating Section	Equipment Subcategory	Efficiency Metric	Average Efficiency	Life (years)
Air conditioners, air cooled	0–65,000	Any	Single package	SEER	11.06	15
		Any	Split	SEER	11.09	15
	65,000–135,000	Electric or none	Split and single package	EER	9.63	15
		Other	Split and single package	EER	9.63	15
	135,000–240,000	Electric or none	Split and single package	EER	9.28	15
		Other	Split and single package	EER	9.28	15
	240,000–760,000	Electric or none	Split and single package	EER	8.92	15
		Other	Split and single package	EER	8.92	15
	> 760,000	Electric or none	Split and single package	EER	8.63	15
		Other	Split and single package	EER	8.63	15
Air conditioners, water or evaporatively cooled	0–65,000	Any	Split and single package	EER	10.50	19
		Any	Split and single package	EER	10.50	19
	65,000–135,000	Electric or none	Split and single package	EER	10.75	19
		Other	Split and single package	EER	10.58	19
	135,000–240,000	Electric or none	Split and single package	EER	10.04	19
		Other	Split and single package	EER	9.87	19
	>240,000	Electric or none	Split and single package	EER	10.04	19
		Other	Split and single package	EER	9.87	19
Heat pumps, air cooled	0–65,000	Any	Single package	SEER	11.33	15
		Any	Split	SEER	11.33	15
	65,000–135,000	Electric or none	Split and single package	EER	9.61	15
		Other	Split and single package	EER	9.61	15
	135,000–240,000	Electric or none	Split and single package	EER	9.27	15
		Other	Split and single package	EER	9.27	15
	> 240,000	Electric or none	Split and single package	EER	8.92	15
		Other	Split and single package	EER	8.92	15
Heat pumps, water source	0–17,000	All	All	EER	10.09	19
	17,000–65,000	All	All	EER	10.46	19
	65,000–135,000	All	All	EER	10.99	19
	135,000–	All	All	EER	10.99	19

Equipment Category	Capacity (Btu/h)	Heating Section	Equipment Subcategory	Efficiency Metric	Average Efficiency	Life (years)
	240,000					
Heat pumps, ground water source	0–135,000	All	All	EER	14.53	19
Heat pumps, ground source	0–135,000	All	All	EER	11.89	19
Heat pumps, air cooled	0–65,000	Any	Single package	HSPF	6.93	19
		Any	Split	HSPF	7.04	19
	65,000–135,000	Electric or none	Split and single package	COP47	3.03	19
		Other	Split and single package	COP47	3.03	19
	135,000–240,000	Electric or none	Split and single package	COP47	2.94	19
		Other	Split and single package	COP47	2.94	19
	> 240,000	Electric or none	Split and single package	COP47	2.94	19
		Other	Split and single package	COP47	2.94	19
Heat pumps, water source	0–17,000	All	All	COP68	3.88	19
	17,000–135,000	All	All	COP68	3.88	19
Heat pumps, ground water source	0–135,000	All	All	COP50	NA	19
Heat pumps, ground source	0–135,000	All	All	COP32	NA	19

COP32 heating COP at 32°F ground source temperature
COP47 heating COP at 47°F outdoor air source temperature
COP50 heating COP at 50°F ground water source temperature
COP68 heating COP at 68°F water source temperature
HSPF heating seasonal performance factor
NA analysis incomplete

Table 32 Estimated Water Chilling Equipment Efficiencies for Pre-1980 Construction

Equipment Category	Capacity (tons)	Equipment Subcategory	Efficiency Metric	Average Efficiency	Life (years)
Chiller, air cooled, electrically operated	<150	All	COP	2.70	23
	150–300	All	COP	2.64	23
	> 300	All	COP	2.64	23
Chiller, water cooled, electrically operated	< 150	Reciprocating	COP	3.98	23
	150–300	Reciprocating	COP	3.98	23
	> 300	Reciprocating	COP	3.98	23
Chiller, water cooled, electrically operated	<150	Screw/scroll	COP	4.13	23
	150–300	Screw/scroll	COP	4.50	23
	> 300	Screw/scroll	COP	5.11	23
Chiller, water cooled, electrically operated	< 150	Centrifugal	COP	4.53	23
	150–300	Centrifugal	COP	4.93	23
	> 300	Centrifugal	COP	5.54	23
Chiller, air cooled, absorption, single effect	All	-	COP	0.55	23
Chiller, water cooled absorption, single effect	All	-	COP	0.69	23
Chiller, double effect, direct fired	All	-	COP	0.98	23
Chiller, double effect, indirect fired	All	-	COP	0.98	23

Table 33 Estimated Packaged Terminal Cooling Equipment Efficiencies for Pre-1980 Construction

Equipment Category	Capacity (Btu/h)	Efficiency Metric	Average Efficiency	Life (years)
PTAC	9,000	EER	9.79	10
	12,000	EER	9.22	10
PTHP	9,000	EER	9.67	10
	12,000	EER	9.09	10
PTHP-heating	9,000	COP47	2.86	10
	12,000	COP47	2.78	10
PTAC < 42 × 16 in.	9,000	EER	8.82	10
	12,000	EER	8.24	10
PTHP < 42 × 16 in.	9,000	EER	8.76	10
	12,000	EER	8.18	10
PTHP heating < 42 × 16 in.	9,000	COP47	2.69	10
	12,000	COP47	2.60	10

COP47 heating COP at 47°F outdoor air source temperature
HSPF heating seasonal performance factor
NA analysis incomplete
PTAC packaged terminal air-conditioning
PTHP packaged terminal heat pump

Table 34 Estimated Space Heating Equipment Efficiencies for Pre-1980 Construction

Equipment Category	Capacity	Efficiency Metric	Average Efficiency	Life (years)
Furnace	< 225 kBtu/h	E_c	0.80	15
	≥ 225 kBtu/h	E_c	0.80	15
Duct furnace	All	E_c	0.80	15
Unit heater, gas	All	E_c	0.80	15
Boiler, gas, hot water	< 300 kBtu/h	E_t	0.73	30
	300–2500 kBtu/h	E_t	0.74	30
	> 2500 kBtu/h	E_t	0.76	30

E_c combustion efficiency (1-flue losses)
E_t thermal efficiency

Table 35 Estimated Water Heating Equipment Efficiencies for Pre-1980 Construction

Equipment Category	Capacity	Efficiency Metric	Average Efficiency	Life (years)
Electric storage water heater	< 12 kW	EF	NA	7
	> 12 kW	SL	NA	7
Gas storage water heater	< 75,000 Btu/h	EF	NA	7
	> 75,000, <155,000 Btu/h	E_t	0.80	7
		SL	NA	7
	> 155,000 Btu/h	E_t	0.80	7
		SL	NA	7
Gas instantaneous water heater	50–200 kBtu/h	EF	NA	15
	> 200 Kbtu/h, < 10 gal	E_t	0.80	15
	> 200 Kbtu/h, > 10 gal	E_t	0.79	15
		SL	NA	15
Hot water supply boiler, gas	> 300, < 12,500 kBtu/h, < 10 gal	E_t	0.79	25
	> 300, < 12,500 kBtu/h, > 10 gal	E_t	0.78	25
		SL	NA	25

E_c combustion efficiency (1-flue losses)
EF energy factor
E_t thermal efficiency
SL standby loss (rating to be defined either in Btu/h or in % per hour of stored water heat above ambient)
NA analysis incomplete

5.4.4 Fan Efficiencies

EnergyPlus requires the fan pressure rise, total efficiency, motor efficiency, and fraction of the motor in the air stream. For all cases, we assumed that the fraction of the motor in the air stream is 1.0. The other inputs are summarized in Table 34 for each fan type. Electrical motor efficiencies must comply with the requirements of the Energy Policy Act of 1992, which are listed in Table 10.8 of Standard 90.1-2004. To simplify the standard implementation, we assume all motors are open, four-pole, 1800-rpm. Table 36 lists nominal motor efficiency. The actual motor efficiency is determined for each case automatically by applying the standard after a sizing run is completed. Fan system flow rates are determined by EnergyPlus during system sizing.

Table 36 Fan System Inputs

System Type	Pressure Rise		Fan Mechanical Efficiency	Total Fan Efficiency**	Nominal Motor Efficiency
	in. w.c.	Pa			
Exhaust fans*	0.5	125	(a)	0.338	(a)
Unit heaters	0.2	50	0.650	0.536	0.825
PTAC and FCU fans	1.33	330	0.650	0.520	0.800
CAV < 7,487 cfm	2.5	622	0.650	(b)	(c)
CAV ≥ 7,487 cfm, < 20,000 cfm	4.46	1110	0.650	(b)	(c)
CAV ≥ 20,000 cfm	4.09	1,018	0.650	(b)	(c)
VAV < 4,648 cfm	4.0	995	0.650	(b)	(c)
VAV ≥ 4,648 cfm, < 20,000 cfm	6.32	1572	0.650	(b)	(c)
VAV ≥ 20,000 cfm	5.58	1388	0.650	(b)	(c)

* Exhaust fans are modeled as exterior loads, so only the total efficiency is important.

** Total fan efficiency is the product of fan mechanical efficiency and nominal motor efficiency. For example, a nominal motor efficiency of 85% and a fan mechanical efficiency of 65% produce a total fan efficiency of 55.25%.

Motor nameplate horsepower is assumed to be the first available motor size in ASHRAE 90.1-2004, Table 10.8 greater than 110% of the motor brake horsepower, as calculated by the pressure rise and fan mechanical efficiency shown in Table 38 and the fan airflow as sized in the EnergyPlus simulation.

Exhaust fans typically have lower total efficiencies than space-conditioning fans. We assume a pressure rise of 0.5 in. w.c. (125 Pa) and a total fan efficiency of 0.338 for reference building exhaust fans. Because the heat from exhaust fans is released to the outdoors, only their total efficiencies are important. For space-conditioning fans, nominal motor efficiency would be important if one were to test the effect of lessening the fraction of motor heat in the air stream. Although the reference building models use 1.0 for that fraction, nominal motor efficiencies were chosen from 90.1-2004, Table 10.8, for consistency with typical practice. The two remaining model inputs that determine the power draw of the fan and the amount of fan heat gained by the space are fan mechanical efficiency and pressure rise. For simplicity, the reference building models use one fan mechanical efficiency value, 0.65, and vary the pressure rise to achieve the desired fan power.

For unit heaters, we assumed a pressure rise of 0.2 in. w.c. (50 Pa) and a fan motor efficiency of 0.825. For all PTACs and FCUs, we assumed a pressure rise of 1.33 in. w.c. (330 Pa) and a motor efficiency of 0.80. This corresponds to a power per flow rate of 0.3 W/cfm (636 W/m^3/s), corresponding with Standard 90.1-2007, Appendix G methodology. The pressure rise values of constant- and variable-volume air handlers are chosen to most closely approximate the fan power limitation determined in Standard 90.1-2004, Table 6.5.3.1. Below 5 hp (3.7 kW), which corresponds to 7,487 cfm at 2.5 in. w.c. (3.53 m^3/S at 620 Pa) for constant-volume fans and 4,648 cfm at 4.0 in. w.c. (2.19 m^3/s at 1000 Pa) for variable-volume, fans are not regulated by these limitations. Representative pressure rises are assumed in these cases (see Table 34).

Additionally, 2.0 in. w.c. (498 Pa) is added to fans in the hospital and outpatient healthcare models to account for extra filtration.

5.4.5 Cooling Equipment Efficiencies

EnergyPlus requires the efficiency of cooling equipment to be input as the COP for the compressors and condenser fans. We used an automated routine that looks up the equipment efficiencies from Standard 90.1-2004 based on equipment type and size determined from an EnergyPlus sizing run. These efficiencies reported in Standard 90.1-2004 include the energy of the supply air fan. The efficiencies of small residential size equipment are reported as SEER, which must first be converted to EER. We use an approximation developed by Nexant for the Public Utilities Commission of Texas (2003), based on data from Carrier Corporation for conversion from SEER to EER.

$$\mathrm{EER} = \mathrm{SEER} \cdot 0.697 + 2.0394$$

The COP of a unit is simply the cooling power output (Q_{cool}) divided by the electrical power input (P_{elec}) in consistent units:

$$\mathrm{COP} = Q_{cool} / P_{elec}$$

The EER is the cooling power output in Btu divided by the electrical power input in W and requires a simple unit conversion to arrive at the COP:

$$\mathrm{COP} = \mathrm{EER} / 3.412$$

However, energy modeling software requires the COP_{comp} of the compressor as an input, not the overall COP of the cooling equipment. The EER values specified in ASHRAE 90.1-2004 refer to overall efficiencies, so an extra calculation must be done to obtain COP_{comp}. The COP_{comp} value is calculated by subtracting the power of the supply fan rated at ARI standard conditions from the total power input to the unit. To approximate subtraction at ARI standard conditions, PNNL has developed the following relationship between COP_{comp} and EER (PNNL 2004), with R = 0.12 as a reasonable value to represent a broad class of products. R represents the ratio of supply fan power to total equipment power at the rating condition.

$$COP_{comp} = \frac{(EER/3.413) + R}{1 - R}$$

5.4.6 Refrigeration

Walk-in coolers and freezers are included in all commercial kitchens, based on data from Westphalen et al. (1996). The kitchen refrigeration systems are listed in Table 37 and Table 38. The refrigeration systems in the supermarket reference building are based on Westphalen et al. (2006) Faramarzi and Walker (2004), Deru and MacDonald (2007), and MacDonald and Deru (2007). The supermarket refrigeration systems are listed in Table 39 through Table 41.

Table 37 Walk-In Refrigeration System Descriptions (IP Units)

Building Type	Area (ft^2)	Length (ft)	Cooling Capacity (kBtu/h)	COP	Evaporator Fan (W)	Condenser Fan (W)	Lighting (W/ft^2)	Defrost (W)	Anti-Sweat (W)	Case Temp. (°F)	Heat Rejection Location
Walk-In Coolers											
Primary School	120	12	9.2	3	200	350	1	0.00	0	35	Outdoors
Secondary School	240	24	19.1	3	400	750	1	0.00	0	35	Outdoors
Quick Service Restaurant	100	10	7.7	3	200	330	1	0.00	0	35	Outdoors
Full Service Restaurant	100	10	7.7	3	200	330	1	0.00	0	35	Outdoors
Large Hotel	120	12	9.2	3	200	350	1	0.00	0	35	Outdoors
Hospital	360	29	27.0	3	600	1000	1	0.00	0	35	Outdoors
Walk-In Freezers											
Primary School	120	12	9.2	1.5	250	350	1	2000	0	–10	Outdoors
Secondary School	240	24	18.3	1.5	500	750	1	3000	0	–10	Outdoors
Quick Service Restaurant	80	8	5.7	1.5	180	329	1	2000	0	–10	Outdoors
Full Service Restaurant	80	8	5.7	1.5	180	329	1	2000	0	–10	Outdoors
Large Hotel	120	24	9.2	1.5	250	350	1	2000	0	–10	Outdoors
Hospital	360	36	27.5	1.5	760	1000	1	4000	0	–10	Outdoors

Table 38 Walk-In Refrigeration System Descriptions (SI Units)

Building Type	Area (m^2)	Length (m)	Cooling Capacity (kW)	COP	Evaporator Fan (W)	Condenser Fan (W)	Lighting (W/m^2)	Defrost (W)	Anti-Sweat (W)	Case Temp. (°C)	Heat Rejection Location
Walk-In Coolers											
Primary School	11.2	3.7	2.7	3	200	350	10.8	0.00	0	1.7	Outdoors
Secondary School	22.3	7.3	5.6	3	400	750	10.8	0.00	0	1.7	Outdoors
Quick Service Restaurant	9.3	3.0	2.2	3	200	330	10.8	0.00	0	1.7	Outdoors
Full Service Restaurant	9.3	3.0	2.2	3	200	330	10.8	0.00	0	1.7	Outdoors
Large Hotel	11.2	3.7	2.7	3	200	350	10.8	0.00	0	1.7	Outdoors
Hospital	33.5	8.9	7.9	3	600	1000	10.8	0.00	0	1.7	Outdoors
Walk-In Freezers											
Primary School	11.2	3.7	2.7	1.5	250	350	10.8	2000	0	–23.3	Outdoors
Secondary School	22.3	7.3	5.4	1.5	500	750	10.8	3000	0	–23.3	Outdoors
Quick Service Restaurant	7.4	2.4	1.7	1.5	180	329	10.8	2000	0	–23.3	Outdoors
Full Service Restaurant	7.4	2.4	1.7	1.5	180	329	10.8	2000	0	–23.3	Outdoors
Large Hotel	11.2	7.3	2.7	1.5	250	350	10.8	2000	0	–23.3	Outdoors
Hospital	33.5	11.0	8.1	1.5	760	1000	10.8	4000	0	–23.3	Outdoors

Table 39 Supermarket Refrigeration System Descriptions (IP Units)

Building Type	Area (ft^2)	Length (ft)	Cooling Capacity (Btu/h/ft)	Evaporator Fan (W/ft)	Lighting (W/ft)	Defrost (W/ft)	Anti-Sweat (W/ft)	SST (°F)	Case Temp. (°F)	Compressor Rack
Medium Temperature										
Multideck meat cases		120	1500	26.7	11.8	135	20	15	36	A
Other multideck cases		260	1500	12.5	18.3	0	0	15	36	A
Meat walk-in	400	50	400	50	400	50	0	15	36	C
Other walk-in	2600	325	2600	325	2600	325	0	15	36	C
Low Temperature										
Reach-in cases		268	560	20	33	400	71	–25	5	B
Single-level open cases		128	550	10	0	420	24	–25	10	B
Walk-in freezer	1000	125	640	32	8	232	0	–25	–10	D

Table 40 Supermarket Refrigeration System Descriptions (SI Units)

Building Type	Area (m^2)	Length (m)	Cooling Capacity (W/m)	Evaporator Fan (W/m)	Lighting (W/m)	Defrost (W/m)	Anti-Sweat (W/m)	SST (°C)	Case Temp. (°C)	Compressor Rack
Medium Temperature										
Multideck meat cases		36.6	1442	88	39	443	66	–9.4	2.2	A
Other multideck cases		79.2	1442	41	60	0	0	–9.4	2.2	A
Meat walk-in	37.2	15.2	385	164	1312	164	0	–9.4	2.2	C
Other walk-in	241.5	99.1	2500	1066	8530	1066	0	–9.4	2.2	C
Low Temperature										
Reach-in cases		81.7	538	66	108	1312	233	–31.7	–15.0	B
Single-level open cases		39.0	529	33	0	1378	79	–31.7	–12.2	B
Walk-in freezer	92.9	38.0	615	105	26	761	0	–31.7	–23.3	D

Table 41 Supermarket Compressor Descriptions

Compressor Rack	System Type	COP	Condenser Fan (W)	Condenser Type	Heat Rejection Location
A	Medium temperature	2.5	4500	Air cooled	Outdoors
B	Low temperature	1.3	4500	Air cooled	Outdoors
C	Medium temperature	2.5	4500	Air cooled	Outdoors
D	Low temperature	1.3	4500	Air cooled	Outdoors

6.0 Weighting Factors

The weighting factors characterize the number of buildings that are similar to each reference building type in each location. The weighting factors allow information from the individual reference buildings to be expanded to represent all buildings of this type in a region or combined to represent the whole country. Data for developing the weighting factors for U.S. commercial buildings are limited; CBECS is the best publicly available source for existing buildings. The database provides a wealth of information about the operational characteristics of buildings, but the number of buildings is limited and some of the data are masked to protect building identity. These limitations make it difficult to develop reliable statistical analysis across all building types and locations. The economic census from the U.S. Department of Commerce (U.S. Census Bureau 2005) contains economic data for commercial building activity by building type. However, it is difficult to determine building area from these data and to divide the building types into the subtypes such as small, medium, and large office buildings.

The McGraw-Hill Construction Projects Starts Database draws from permit data for new commercial building starts in the United States and represents more than 90% of new commercial buildings. Data are collected in real time and the collection process is independently monitored to ensure most U.S. commercial construction is covered. The strength of this database lies in the number of samples, the frequency of data collection, the detailed data about location of the projects down to the local community level, and the fact that high-rise residential buildings are included (contrary to CBECS). A weakness is the lack of characteristic data.

Jarnagin and Bandyopadhyay (2010) analyzed the McGraw-Hill database from 2003 to 2007 to develop weighting factors for the new construction reference buildings. Total building area for each model type and climate zone was determined over the five-year period. These numbers were divided by five to find the annual average then divided by the area of the reference buildings to find the weighting factors shown in Table 42.

Weighting factors for the pre-1980 and post-1980 reference buildings have not been developed, because adequate data about the existing building stock have not been identified. Weighting factors may be developed when data become available.

Table 42 New Construction Reference Building Weighting Factors

Building Type	Climate Zone														
	1A	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	6A	6B	7	8
Small Office	201.9	2559.5	695.7	2316.1	1142.2	187.0	2251.0	113.9	294.8	2213.0	774.1	580.2	72.7	77.8	11.3
Medium Office	31.9	200.5	72.0	188.9	176.4	33.5	293.5	9.0	48.3	261.4	84.4	73.6	8.6	8.1	1.7
Large Office	2.7	8.6	1.6	11.8	7.6	3.1	30.0	0.0	4.1	11.7	3.2	3.5	0.0	0.3	0.0
Primary School	11.4	167.0	29.4	169.0	79.8	8.5	160.1	5.4	16.8	164.6	40.0	30.1	6.7	4.2	0.6
Secondary School	10.1	95.5	14.4	118.8	51.4	6.9	126.3	4.0	15.2	143.2	27.5	26.1	5.4	4.7	0.8
Stand-Alone Retail	118.9	1176.9	268.5	1264.6	662.8	101.3	1349.3	63.1	227.1	1818.0	420.0	502.7	48.3	57.5	7.2
Strip Mall	80.8	582.6	149.1	600.2	367.9	60.8	592.9	13.2	62.8	601.5	118.4	89.8	9.4	4.0	0.8
Supermarket	3.2	48.5	13.9	58.2	36.0	4.9	93.8	1.6	10.8	113.4	15.6	24.7	2.8	3.0	0.5
Quick Service Restaurant	41.3	484.9	107.4	538.8	334.3	36.6	471.0	28.2	75.7	680.1	135.8	134.3	16.4	18.9	1.2
Full Service Restaurant	21.7	254.0	59.1	267.7	114.2	13.9	305.9	14.0	24.6	344.2	74.7	74.6	9.6	8.8	0.3
Small Hotel	3.1	88.1	9.1	82.0	34.8	6.7	96.3	6.2	12.0	111.7	27.4	32.6	9.4	6.3	1.2
Large Hotel	11.8	67.3	13.5	68.8	85.9	11.4	103.8	4.0	13.3	99.6	21.6	24.6	6.3	4.2	0.4
Hospital	2.2	26.2	5.3	25.6	14.9	2.1	33.7	1.2	5.8	44.5	12.0	12.1	1.3	1.8	0.1
Outpatient Healthcare	12.0	183.4	43.4	187.8	88.8	19.8	264.3	7.5	58.5	342.0	70.4	110.7	10.8	12.6	0.7
Warehouse	88.8	658.6	147.6	754.2	584.3	39.1	621.8	17.2	110.7	910.1	175.0	118.4	12.5	11.0	0.6
Midrise Apartment	100.8	428.9	36.6	323.6	338.1	102.2	664.3	8.6	145.5	439.9	124.9	122.9	22.1	12.7	0.0

7.0 Conculsions

The reference building models represent important starting points for energy simulation exercises and form standard reference points for building energy analysis projects. The models are being used for research projects by DOE, national laboratories, and industry to perform research on advanced building systems, assess the impact of new policies, and advance building energy codes and standards. They continue to evolve and expand; new versions are available for public use. The models are available as EnergyPlus input files on the DOE Web site (http://commercialbuildings.energy.gov/reference_buildings.html). Spreadsheet scorecards are also available for each building type to document the model parameters and annual energy performance by location.

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Appendix A Reference Building Internal Loads

Table A-1 Reference Building Zone Internal Loads (IP units)

Building Type/Zone	Area ft^2	Vol. ft^3	ft^2/ person	1989 Lights Wft^2	2004 Lights Wft^2	Elec. Proc. W/ft^2	Gas Proc. W/ft^2	Vent. cfm	Exhst cfm	Infil. ACH	SWH gal/h
Quick Service Restaurant	**2,501**	**25,015**									
Dining	1,250	12,508	15.0	1.44	2.1	12.0	0.0	1667.3	0.0	0.64	0.0
Kitchen	1,250	12,508	200.0	1.55	1.2	28.0	120.0	93.8	3300.0	0.64	40.0
Attic	2,501	9,264	0.0	0.00	0.0	0.0	0.0	0.0	0.0	1.00	0.0
Hospital	**241,350**	**3,138,208**									
Basement	40,250	322,083	400.0	0.70	1.1	0.8	0.0	2012.5	0.0	0.00	0.0
ER_Exam1_Mult4_Flr_1	300	4,201	50.0	3.84	2.7	1.5	0.0	140.0	0.0	0.24	1.0
ER_Exam2_Flr_1	300	4,201	50.0	3.84	2.7	4.0	0.0	140.0	0.0	0.42	1.0
ER_Exam3_Mult4_Flr_1	300	4,201	50.0	3.84	2.7	1.5	0.0	140.0	0.0	0.18	1.0
ER_Exam4_Flr_1	300	4,201	50.0	3.84	2.7	4.0	0.0	140.0	0.0	0.42	1.0
ER_Exam5_Mult4_Flr_1	300	4,201	50.0	3.84	2.7	2.0	0.0	140.0	0.0	0.24	1.0
Office1_Mult4_Flr_1	150	2,101	142.9	2.40	1.1	1.1	0.0	21.0	0.0	0.24	0.0
Lobby_Flr_1	15,875	222,303	140.0	1.29	1.5	0.1	0.0	2267.8	0.0	0.07	0.0
Corridor_Flr_1	6,125	85,772	1000.0	1.36	1.0	0.0	0.0	306.2	0.0	0.04	0.0
ER_NurseStat_Flr_1	13,300	186,248	160.0	2.10	1.1	1.4	0.0	6208.3	0.0	0.02	0.0
OR1_Flr_2	600	8,402	200.0	9.75	2.2	4.0	0.0	420.1	0.0	0.30	2.0
OR2_Mult5_Flr_2	600	8,402	200.0	9.75	2.2	4.0	0.0	420.1	0.0	0.12	2.0
OR3_Flr_2	600	8,402	200.0	9.75	2.2	4.0	0.0	420.1	0.0	0.18	2.0
OR4_Flr_2	2,400	33,609	200.0	7.89	2.2	4.0	0.0	1680.5	0.0	0.00	6.0
IC_PatRoom1_Mult5_Flr_2	225	3,150	200.0	3.84	0.8	3.0	0.0	105.0	0.0	0.24	0.0
IC_PatRoom2_Flr_2	300	4,201	200.0	3.84	0.8	3.0	0.0	140.0	0.0	0.42	0.0
IC_PatRoom3_Mult6_Flr_2	225	3,150	200.0	3.84	0.8	3.0	0.0	105.0	0.0	0.24	0.0
ICU_Flr_2	6,652	93,147	50.0	3.84	0.8	3.0	0.0	3104.9	0.0	0.09	0.0
ICU_NurseSat_Flr_2	7,199	100,806	200.0	2.17	1.0	2.0	0.0	719.9	0.0	0.00	0.0
Corridor_Flr_2	6,125	85,772	1000.0	1.36	1.0	0.0	0.0	122.5	0.0	0.04	0.0
OR_NurseSat_Flr_2	10,900	152,639	140.0	2.12	1.2	1.0	0.0	1557.1	0.0	0.05	0.0
PatRoom1_Mult10_Flr_3	225	3,150	200.0	2.19	0.7	2.0	0.0	105.0	0.0	0.24	1.0
PatRoom2_Flr_3	375	5,252	200.0	2.19	0.7	2.0	0.0	175.1	0.0	0.38	1.0
PatRoom3_Mult10_Flr_3	218	3,046	200.0	2.19	0.7	2.0	0.0	101.5	0.0	0.24	1.0
PatRoom4_Flr_3	375	5,252	200.0	2.19	0.7	2.0	0.0	175.1	0.0	0.38	1.0
PatRoom5_Mult10_Flr_3	225	3,150	200.0	2.19	0.7	2.0	0.0	105.0	0.0	0.24	1.0
PhysTherapy_Flr_3	5,250	73,519	200.0	2.50	0.9	1.5	0.0	393.7	0.0	0.00	1.0
PatRoom6_Flr_3	300	4,201	200.0	2.19	0.7	2.0	0.0	140.0	0.0	0.42	1.0
PatRoom7_Mult10_Flr_3	218	3,046	200.0	2.19	0.7	2.0	0.0	101.5	0.0	0.24	1.0
PatRoom8_Flr_3	300	4,201	200.0	2.19	0.7	2.0	0.0	140.0	0.0	0.42	1.0
NurseSat_Lobby_Flr_3	9,750	136,534	140.0	2.13	1.2	1.0	0.0	1392.8	0.0	0.00	0.0
Lab_Flr_3	2,850	39,910	200.0	2.10	1.4	4.0	0.0	285.0	0.0	0.00	2.0
Corridor_SE_Flr_3	6,100	85,422	1000.0	1.36	1.0	0.0	0.0	305.0	0.0	0.02	0.0
Corridor_NW_Flr_3	6,100	85,422	1000.0	1.36	1.0	0.0	0.0	305.0	0.0	0.02	0.0
PatRoom1_Mult10_Flr_4	225	3,150	200.0	2.19	0.7	2.0	0.0	105.0	0.0	0.24	1.0
PatRoom2_Flr_4	375	5,252	200.0	2.19	0.7	2.0	0.0	175.1	0.0	0.38	1.0
PatRoom3_Mult10_Flr_4	218	3,046	200.0	2.19	0.7	2.0	0.0	101.5	0.0	0.24	1.0
PatRoom4_Flr_4	375	5,252	200.0	2.19	0.7	2.0	0.0	175.1	0.0	0.38	1.0
PatRoom5_Mult10_Flr_4	225	3,150	200.0	2.19	0.7	2.0	0.0	105.0	0.0	0.24	1.0
Radiology_Flr_4	5,250	73,519	200.0	2.21	0.4	10.0	0.0	393.7	0.0	0.00	1.0
PatRoom6_Flr_4	300	4,201	200.0	2.19	0.7	2.0	0.0	140.0	0.0	0.42	1.0
PatRoom7_Mult10_Flr_4	218	3,046	200.0	2.19	0.7	2.0	0.0	101.5	0.0	0.24	1.0
PatRoom8_Flr_4	300	4,201	200.0	2.19	0.7	2.0	0.0	140.0	0.0	0.42	1.0
NurseSat_Lobby_Flr_4	9,750	136,534	140.0	2.13	1.2	1.0	0.0	1392.8	0.0	0.00	0.0
Lab_Flr_4	2,850	39,910	200.0	2.10	1.4	4.0	0.0	285.0	0.0	0.00	2.0
Corridor_SE_Flr_4	6,100	85,422	1000.0	1.36	1.0	0.0	0.0	305.0	0.0	0.02	0.0

Building Type/Zone	Area ft²	Vol. ft³	ft²/ person	1989 Lights Wft²	2004 Lights Wft²	Elec. Proc. W/ft²	Gas Proc. W/ft²	Vent. cfm	Exhst cfm	Infil. ACH	SWH gal/h
Corridor_NW_Flr_4	6,100	85,422	1000.0	1.36	1.0	0.0	0.0	305.0	0.0	0.02	0.0
Dining_Flr_5	7,500	105,027	100.0	2.58	0.9	1.0	0.0	1500.0	0.0	0.34	0.0
NurseSat_Flr_5	11,200	156,840	140.0	2.12	1.2	1.0	0.0	1600.0	0.0	0.28	0.0
Kitchen_Flr_5	10,000	140,036	200.0	1.42	1.2	7.5	28.3	750.0	5300.0	0.33	150.0
Office1_Flr_5	750	10,506	142.9	2.40	1.1	1.0	0.0	105.0	0.0	0.52	0.0
Office2_Mult5_Flr_5	750	10,503	142.9	2.40	1.1	1.0	0.0	105.0	0.0	0.37	0.0
Office3_Flr_5	750	10,503	142.9	2.40	1.1	1.0	0.0	105.0	0.0	0.52	0.0
Office4_Mult6_Flr_5	150	2,101	142.9	2.40	1.1	1.0	0.0	20.0	0.0	0.49	0.0
Corridor_Flr_5	5,400	75,620	1000.0	1.36	1.0	0.0	0.0	270.0	0.0	0.29	0.0
Large Hotel	**122,116**	**1,242,549**									
Basement	21,300	170,443	400.0	0.70	1.0	0.5	0.0	1065.0	0.0	0.00	0.0
Retail_1_Flr_1	722	9,385	66.7	3.54	1.5	1.0	0.0	216.6	0.0	0.56	0.0
Retail_2_Flr_1	836	10,868	66.7	3.54	1.5	1.0	0.0	250.8	0.0	0.09	0.0
Mech_Flr_1	1,768	22,983	0.0	0.80	1.5	0.5	0.0	88.4	0.0	0.11	0.0
Storage_Flr_1	1,020	13,260	500.0	0.37	0.9	0.3	0.0	153.0	0.0	0.11	0.0
Laundry_Flr_1	840	10,920	250.0	1.14	0.6	5.7	49.8	50.4	500.0	0.30	156.6
Cafe_Flr_1	2,033	26,428	15.0	1.46	1.3	0.5	0.0	2710.5	0.0	0.50	0.0
Lobby_Flr_1	14,081	183,056	33.3	1.88	1.1	0.8	0.0	8449.6	0.0	0.10	0.0
Room_1_Flr_3	420	4,200	280.0	1.77	1.1	0.6	0.0	30.0	0.0	0.37	1.3
Room_2_Flr_3	420	4,200	280.0	1.77	1.1	0.6	0.0	30.0	0.0	0.37	1.3
Room_3_Mult19_Flr_3	264	2,640	176.0	1.77	1.1	0.6	0.0	30.0	0.0	0.16	23.8
Room_4_Mult19_Flr_3	264	2,640	176.0	1.77	1.1	0.6	0.0	30.0	0.0	0.16	23.8
Room_5_Flr_3	420	4,200	280.0	1.77	1.1	0.6	0.0	30.0	0.0	0.37	1.3
Room_6_Flr_3	420	4,200	280.0	1.77	1.1	0.6	0.0	30.0	0.0	0.37	1.3
Corridor_Flr_3	4,191	41,915	1000.0	1.22	0.5	0.0	0.0	209.6	0.0	0.04	0.0
Room_1_Flr_6	420	4,200	280.0	1.77	1.1	0.6	0.0	30.0	0.0	0.72	1.3
Room_2_Flr_6	420	4,200	280.0	1.77	1.1	0.6	0.0	30.0	0.0	0.72	1.3
Room_3_Mult9_Flr_6	264	2,640	176.0	1.77	1.1	0.6	0.0	30.0	0.0	1.28	11.3
Banquet_Flr_6	3,570	35,699	15.0	2.56	1.3	6.3	0.0	4759.9	0.0	0.46	0.0
Dining_Flr_6	3,570	35,699	15.0	2.56	1.3	6.3	0.0	4759.9	0.0	0.46	0.0
Kitchen_Flr_6	1,112	11,120	200.0	1.56	1.2	47.2	149.9	83.4	4000.0	0.66	133.0
Corridor_Flr_6	4,436	44,361	1000.0	1.22	0.5	0.0	0.0	221.8	0.0	0.48	0.0
Large Office	**498,588**	**6,291,164**									
Basement	38,353	306,899	400.0	0.70	1.0	0.4	0.0	1917.6	0.0	0.00	0.0
Perimeter_bot_ZN_3	3,374	30,371	200.0	1.50	1.0	0.7	0.0	337.4	0.0	0.25	0.0
Perimeter_bot_ZN_2	2,174	19,572	200.0	1.50	1.0	0.7	0.0	217.4	0.0	0.26	0.0
Perimeter_bot_ZN_1	3,374	30,371	200.0	1.50	1.0	0.7	0.0	337.4	0.0	0.25	0.0
Perimeter_bot_ZN_4	2,174	19,572	200.0	1.50	1.0	0.7	0.0	217.4	0.0	0.26	0.0
Core_bottom	27,258	245,391	200.0	1.50	1.0	0.7	0.0	2725.8	0.0	0.00	21.3
Perimeter_mid_ZN_3	3,374	30,371	200.0	1.50	1.0	0.7	0.0	337.4	0.0	0.25	0.0
Perimeter_mid_ZN_2	2,174	19,572	200.0	1.50	1.0	0.7	0.0	217.4	0.0	0.26	0.0
Perimeter_mid_ZN_1	3,374	30,371	200.0	1.50	1.0	0.7	0.0	337.4	0.0	0.25	0.0
Perimeter_mid_ZN_4	2,174	19,572	200.0	1.50	1.0	0.7	0.0	217.4	0.0	0.26	0.0
Core_mid	27,258	245,391	200.0	1.50	1.0	0.7	0.0	2725.8	0.0	0.00	21.3
Perimeter_top_ZN_3	3,374	30,371	200.0	1.50	1.0	0.7	0.0	337.4	0.0	0.65	0.0
Perimeter_top_ZN_2	2,174	19,572	200.0	1.50	1.0	0.7	0.0	217.4	0.0	0.66	0.0
Perimeter_top_ZN_1	3,374	30,371	200.0	1.50	1.0	0.7	0.0	337.4	0.0	0.65	0.0
Perimeter_top_ZN_4	2,174	19,572	200.0	1.50	1.0	0.7	0.0	217.4	0.0	0.66	0.0
Core_top	27,258	245,391	200.0	1.50	1.0	0.7	0.0	2725.8	0.0	0.40	21.3
Groundfloor_plenum	38,353	153,412	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.07	0.0
Midfloor_plenum	38,353	153,412	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.07	0.0
Topfloor_plenum	38,353	153,412	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.97	0.0
Medium Office	**53,628**	**697,161**									
Perimeter_bot_ZN_3	2,232	20,086	200.0	1.57	1.0	0.7	0.0	223.2	0.0	0.26	0.0
Perimeter_bot_ZN_2	1,413	12,716	200.0	1.57	1.0	0.7	0.0	141.3	0.0	0.28	0.0
Perimeter_bot_ZN_1	2,232	20,086	200.0	1.57	1.0	0.7	0.0	223.2	0.0	0.26	0.0

Building Type/Zone	Area ft²	Vol. ft³	ft²/ person	1989 Lights Wft²	2004 Lights Wft²	Elec. Proc. W/ft²	Gas Proc. W/ft²	Vent. cfm	Exhst cfm	Infil. ACH	SWH gal/h
Perimeter_bot_ZN_4	1,413	12,715	200.0	1.57	1.0	0.7	0.0	141.3	0.0	0.28	0.0
Core_bottom	10,587	95,280	200.0	1.57	1.0	0.7	0.0	1058.7	0.0	0.00	9.9
Perimeter_mid_ZN_3	2,232	20,086	200.0	1.57	1.0	0.7	0.0	223.2	0.0	0.26	0.0
Perimeter_mid_ZN_2	1,413	12,716	200.0	1.57	1.0	0.7	0.0	141.3	0.0	0.28	0.0
Perimeter_mid_ZN_1	2,232	20,086	200.0	1.57	1.0	0.7	0.0	223.2	0.0	0.26	0.0
Perimeter_mid_ZN_4	1,413	12,715	200.0	1.57	1.0	0.7	0.0	141.3	0.0	0.28	0.0
Core_mid	10,587	95,280	200.0	1.57	1.0	0.7	0.0	1058.7	0.0	0.00	9.9
Perimeter_top_ZN_3	2,232	20,086	200.0	1.57	1.0	0.7	0.0	223.2	0.0	0.66	0.0
Perimeter_top_ZN_2	1,413	12,716	200.0	1.57	1.0	0.7	0.0	141.3	0.0	0.67	0.0
Perimeter_top_ZN_1	2,232	20,086	200.0	1.57	1.0	0.7	0.0	223.2	0.0	0.66	0.0
Perimeter_top_ZN_4	1,413	12,715	200.0	1.57	1.0	0.7	0.0	141.3	0.0	0.67	0.0
Core_top	10,587	95,280	200.0	1.57	1.0	0.7	0.0	1058.7	0.0	0.40	9.9
Firstfloor_plenum	17,876	71,504	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.11	0.0
Midfloor_plenum	17,876	71,504	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.11	0.0
Topfloor_plenum	17,876	71,504	0.0	0.00	0.0	0.0	0.0	0.0	0.0	1.00	0.0
Midrise Apartment	**33,741**	**337,378**									
G SW APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.24	3.5
G NW APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.24	3.5
OFFICE	950	9,498	474.9	2.04	1.0	1.2	0.0	40.0	0.0	0.24	0.0
G NE APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.24	3.5
G N1 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.14	3.5
G N2 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.14	3.5
G S1 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.14	3.5
G S2 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.14	3.5
M SW APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.24	3.5
M NW APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.24	3.5
M SE APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.24	3.5
M NE APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.24	3.5
M N1 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.14	3.5
M N2 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.14	3.5
M S1 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.14	3.5
M S2 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.14	3.5
T SW APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.59	3.5
T NW APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.59	3.5
T SE APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.59	3.5
T NE APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.59	3.5
T N1 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.50	3.5
T N2 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.50	3.5
T S1 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.50	3.5
T S2 APARTMENT	950	9,498	380.0	0.36	0.4	0.5	0.0	90.0	0.0	0.50	3.5
T CORRIDOR	836	8,359	0.0	0.92	0.5	0.0	0.0	41.8	0.0	0.40	0.0
G CORRIDOR	836	8,359	0.0	0.92	0.5	0.0	0.0	41.8	0.0	0.05	0.0
M CORRIDOR	836	8,359	0.0	0.92	0.5	0.0	0.0	41.8	0.0	0.05	0.0
Outpatient Health Care	**40,946**	**421,380**									
Floor 1 Anesthesia	108	1,080	0.0		3.0	2.0	0.0	129.6	144.0	0.30	1.0
Floor 1 Bio Haz	56	560	0.0		0.9	0.1	0.0	8.4	0.0	0.00	0.0
Floor 1 Café	420	4,200	10.8		0.9	1.0	0.0	780.4	0.0	0.17	0.0
Floor 1 Clean	126	1,260	53.8		1.2	2.0	0.0	37.8	0.0	0.00	0.0
Floor 1 Clean Work	165	1,650	53.8		1.2	2.0	0.0	49.5	0.0	0.00	0.0
Floor 1 Dictation	126	1,260	215.3		1.1	1.1	0.0	11.7	0.0	0.00	0.0
Floor 1 Dressing Room	45	450	215.3		1.1	1.1	0.0	4.2	0.0	0.71	0.0
Floor 1 Electrical Room	98	980	0.0		1.5	5.0	0.0	4.9	0.0	0.25	0.0
Floor 1 Elevator Pump Room	91	910	0.0		1.5	5.0	0.0	4.5	0.0	0.78	0.0
Floor 1 Humid	54	540	215.3		1.1	1.1	0.0	5.0	0.0	0.00	0.0
Floor 1 IT Hall	140	1,400	0.0		1.0	0.4	0.0	7.0	0.0	0.00	0.0
Floor 1 IT Room	112	1,120	215.3		1.1	1.1	0.0	10.4	0.0	0.00	0.0

Building Type/Zone	Area ft^2	Vol. ft^3	ft^2/ person	1989 Lights Wft^2	2004 Lights Wft^2	Elec. Proc. W/ft^2	Gas Proc. W/ft^2	Vent. cfm	Exhst cfm	Infil. ACH	SWH gal/h
Floor 1 Lobby	622	6,220	35.9		1.3	1.1	0.0	260.0	0.0	0.13	0.0
Floor 1 Lobby Hall	240	2,400	0.0		1.0	0.4	0.0	12.0	0.0	0.00	0.0
Floor 1 Lobby Toilet	54	540	0.0		0.9	0.4	0.0	108.0	90.0	0.40	0.0
Floor 1 Locker Room	660	6,600	71.8		0.8	3.0	0.0	138.0	0.0	0.12	0.0
Floor 1 Locker Room Hall	496	4,960	0.0		1.0	0.4	0.0	24.8	0.0	0.00	0.0
Floor 1 Lounge	360	3,600	71.8		0.8	3.0	0.0	75.3	0.0	0.00	0.0
Floor 1 Med Gas	56	560	0.0		0.9	0.1	0.0	8.4	0.0	0.96	0.0
Floor 1 MRI Control Room	168	1,680	53.8		0.4	10.0	0.0	50.4	168.0	0.11	1.0
Floor 1 MRI Hall	147	1,470	0.0		1.0	0.4	0.0	7.3	0.0	0.00	0.0
Floor 1 MRI Room	440	4,400	53.8		0.4	10.0	0.0	132.0	440.0	0.00	1.0
Floor 1 MRI Toilet	54	540	0.0		0.9	0.4	0.0	108.0	90.0	0.40	0.0
Floor 1 Nourishment	182	1,820	53.8		1.0	2.0	0.0	67.6	0.0	0.00	0.0
Floor 1 Nurse Hall	496	4,960	0.0		1.0	0.4	0.0	24.8	0.0	0.00	0.0
Floor 1 Nurse Janitor	54	540	0.0		0.9	0.1	0.0	8.1	0.0	0.00	0.0
Floor 1 Nurse Station	261	2,610	53.8		1.0	2.0	0.0	97.0	0.0	0.00	0.0
Floor 1 Nurse Toilet	54	540	0.0		0.9	0.4	0.0	108.0	90.0	0.00	0.0
Floor 1 Office	483	4,830	215.3		1.1	1.1	0.0	44.9	0.0	0.00	0.0
Floor 1 Operating Room 1	460	4,600	53.8		2.2	4.0	7.0	230.0	0.0	0.33	6.0
Floor 1 Operating Room 2	480	4,800	53.8		2.2	4.0	7.0	240.0	0.0	0.18	6.0
Floor 1 Operating Room 3	476	4,760	53.8		2.2	4.0	7.0	238.0	0.0	0.00	6.0
Floor 1 PACU	108	1,080	53.8		0.8	3.0	0.0	36.0	0.0	0.00	1.0
Floor 1 Pre-Op Hall	528	5,280	0.0		1.0	0.4	0.0	26.4	0.0	0.00	0.0
Floor 1 Pre-Op Room 1	189	1,890	107.6		0.7	2.0	0.0	63.0	0.0	0.08	1.0
Floor 1 Pre-Op Room 2	338	3,380	107.6		0.7	2.0	0.0	112.7	0.0	0.00	1.0
Floor 1 Pre-Op Toilet	54	540	0.0		0.9	0.4	0.0	108.0	90.0	0.40	0.0
Floor 1 Procedure Room	285	2,850	53.8		2.7	3.0	0.0	142.5	0.0	0.24	1.0
Floor 1 Reception	509	5,090	35.9		1.3	1.1	0.0	212.8	0.0	0.09	0.0
Floor 1 Reception Hall	128	1,280	0.0		1.0	0.4	0.0	6.4	0.0	0.00	0.0
Floor 1 Recovery Room	540	5,400	53.8		0.8	3.0	0.0	180.0	0.0	0.30	1.0
Floor 1 Scheduling	119	1,190	215.3		1.1	1.1	0.0	11.1	0.0	0.21	0.0
Floor 1 Scrub	84	840	0.0		1.0	0.4	0.0	4.2	0.0	0.00	0.0
Floor 1 Soil	126	1,260	53.8		1.2	2.0	0.0	189.0	210.0	0.00	0.0
Floor 1 Soil Hold	56	560	53.8		1.2	2.0	0.0	84.0	93.3	0.00	0.0
Floor 1 Soil Work	180	1,800	53.8		1.2	2.0	0.0	270.0	300.0	0.00	0.0
Floor 1 Step Down	300	3,000	53.8		0.8	3.0	0.0	100.0	0.0	0.44	1.0
Floor 1 Sterile Hall	616	6,160	0.0		1.0	0.4	0.0	30.8	0.0	0.05	0.0
Floor 1 Sterile Storage	396	3,960	0.0		0.9	0.1	0.0	59.4	0.0	0.00	0.0
Floor 1 Storage	920	9,200	0.0		0.9	0.1	0.0	138.0	0.0	0.24	0.0
Floor 1 Sub-Sterile	196	1,960	0.0		1.0	0.4	0.0	9.8	0.0	0.26	0.0
Floor 1 Utility Hall	256	2,560	0.0		1.0	0.4	0.0	12.8	0.0	0.22	0.0
Floor 1 Utility Janitor	42	420	0.0		0.9	0.1	0.0	6.3	0.0	0.00	0.0
Floor 1 Utility Room	360	3,600	0.0		0.9	0.1	0.0	54.0	0.0	0.18	0.0
Floor 1 Vestibule	72	720	0.0		1.0	0.4	0.0	3.6	0.0	0.40	0.0
Floor 2 Conference	336	3,360	21.5		1.3	1.0	0.0	312.2	0.0	0.43	0.0
Floor 2 Conference Toilet	64	640	0.0		0.9	0.4	0.0	128.0	106.7	0.00	0.0
Floor 2 Dictation	70	700	215.3		1.1	1.1	0.0	6.5	0.0	0.00	0.0
Floor 2 Exam 1	360	3,600	53.8		1.5	1.1	0.0	108.0	0.0	0.42	0.0
Floor 2 Exam 2	540	5,400	53.8		1.5	1.1	0.0	162.0	0.0	0.12	0.0
Floor 2 Exam 3	720	7,200	53.8		1.5	1.1	0.0	216.0	0.0	0.12	0.0
Floor 2 Exam 4	84	840	53.8		1.5	1.1	0.0	25.2	0.0	0.30	0.0
Floor 2 Exam 5	350	3,500	53.8		1.5	1.1	0.0	105.0	0.0	0.26	0.0
Floor 2 Exam 6	225	2,250	53.8		1.5	1.1	0.0	67.5	0.0	0.24	0.0
Floor 2 Exam 7	792	7,920	53.8		1.5	1.1	0.0	237.6	0.0	0.11	0.0
Floor 2 Exam 8	270	2,700	53.8		1.5	1.1	0.0	81.0	0.0	0.24	0.0
Floor 2 Exam 9	396	3,960	53.8		1.5	1.1	0.0	118.8	0.0	0.11	0.0
Floor 2 Exam Hall 1	180	1,800	0.0		1.0	0.4	0.0	9.0	0.0	0.12	0.0

Building Type/Zone	Area ft²	Vol. ft³	ft²/ person	1989 Lights Wft²	2004 Lights Wft²	Elec. Proc. W/ft²	Gas Proc. W/ft²	Vent. cfm	Exhst cfm	Infil. ACH	SWH gal/h
Floor 2 Exam Hall 2	180	1,800	0.0		1.0	0.4	0.0	9.0	0.0	0.12	0.0
Floor 2 Exam Hall 3	180	1,800	0.0		1.0	0.4	0.0	9.0	0.0	0.12	0.0
Floor 2 Exam Hall 4	198	1,980	0.0		1.0	0.4	0.0	9.9	0.0	0.11	0.0
Floor 2 Exam Hall 5	198	1,980	0.0		1.0	0.4	0.0	9.9	0.0	0.11	0.0
Floor 2 Exam Hall 6	198	1,980	0.0		1.0	0.4	0.0	9.9	0.0	0.11	0.0
Floor 2 Janitor	63	630	0.0		0.9	0.1	0.0	9.4	0.0	0.91	0.0
Floor 2 Lounge	80	800	71.8		0.8	3.0	0.0	16.7	0.0	0.00	0.0
Floor 2 Nurse Station 1	150	1,500	53.8		1.0	2.0	0.0	55.7	0.0	0.00	0.0
Floor 2 Nurse Station 2	180	1,800	53.8		1.0	2.0	0.0	66.9	0.0	0.00	0.0
Floor 2 Office	560	5,600	215.3		1.1	1.1	0.0	52.0	0.0	0.26	0.0
Floor 2 Office Hall	444	4,440	0.0		1.0	0.4	0.0	22.2	0.0	0.00	0.0
Floor 2 Reception	984	9,840	35.9		1.3	1.1	0.0	411.4	0.0	0.18	0.0
Floor 2 Reception Hall	564	5,640	0.0		1.0	0.4	0.0	28.2	0.0	0.60	0.0
Floor 2 Reception Toilet	126	1,260	0.0		0.9	0.4	0.0	252.0	210.0	0.00	0.0
Floor 2 Scheduling 1	324	3,240	215.3		1.1	1.1	0.0	30.1	0.0	0.00	0.0
Floor 2 Scheduling 2	342	3,420	215.3		1.1	1.1	0.0	31.8	0.0	0.00	0.0
Floor 2 Storage 1	56	560	0.0		0.9	0.1	0.0	8.4	0.0	0.00	0.0
Floor 2 Storage 2	120	1,200	0.0		0.9	0.1	0.0	18.0	0.0	0.00	0.0
Floor 2 Storage 3	144	1,440	0.0		0.9	0.1	0.0	21.6	0.0	0.00	0.0
Floor 2 Utility	126	1,260	0.0		0.9	0.1	0.0	18.9	0.0	0.26	0.0
Floor 2 Work	1,690	16,900	215.3		1.1	1.1	0.0	157.0	0.0	0.05	0.0
Floor 2 Work Hall	834	8,340	0.0		1.0	0.4	0.0	41.7	0.0	0.03	0.0
Floor 2 Work Toilet	54	540	0.0		0.9	0.4	0.0	108.0	0.0	0.40	0.0
Floor 2 X-Ray	900	9,000	53.8		0.4	10.0	0.0	270.0	0.0	0.00	1.0
Floor 3 Dressing Room	42	420	215.3		1.1	1.1	0.0	3.9	0.0	0.00	0.0
Floor 3 Elevator Hall	370	3,700	0.0		1.0	0.4	0.0	18.5	0.0	0.04	0.0
Floor 3 Humid	108	1,080	215.3		1.1	1.1	0.0	10.0	0.0	0.00	0.0
Floor 3 Janitor	63	630	0.0		0.9	0.1	0.0	9.4	0.0	0.91	0.0
Floor 3 Locker	120	1,200	71.8		0.8	3.0	0.0	25.1	0.0	0.00	0.0
Floor 3 Lounge	759	7,590	71.8		0.8	3.0	0.0	158.7	0.0	0.11	0.0
Floor 3 Lounge Toilet	192	1,920	0.0		0.9	0.4	0.0	384.0	320.0	0.22	0.0
Floor 3 Mechanical	350	3,500	0.0		1.5	5.0	0.0	17.5	0.0	0.26	0.0
Floor 3 Mechanical Hall	300	3,000	0.0		1.0	0.4	0.0	15.0	0.0	0.00	0.0
Floor 3 Office	3,036	30,360	215.3		1.1	1.1	0.0	282.1	0.0	0.09	0.0
Floor 3 Office Hall	834	8,340	0.0		1.0	0.4	0.0	41.7	0.0	0.03	0.0
Floor 3 Office Toilet	54	540	0.0		0.9	0.4	0.0	108.0	90.0	0.40	0.0
Floor 3 Physical Therapy 1	1,300	13,000	53.8		0.9	1.5	0.0	362.3	0.0	0.23	1.0
Floor 3 Physical Therapy 2	592	5,920	53.8		0.9	1.5	0.0	165.0	0.0	0.00	1.0
Floor 3 Physical Therapy Toilet	84	840	0.0		0.9	0.4	0.0	168.0	140.0	0.00	0.0
Floor 3 Storage 1	108	1,080	0.0		0.9	0.1	0.0	16.2	0.0	0.00	0.0
Floor 3 Storage 2	84	840	0.0		0.9	0.1	0.0	12.6	0.0	0.00	0.0
Floor 3 Treatment	476	4,760	53.8		1.5	1.1	0.0	142.8	0.0	0.00	0.0
Floor 3 Undeveloped 1	2,268	22,680	215.3		1.1	1.1	0.0	340.2	0.0	0.11	0.0
Floor 3 Undeveloped 2	1,152	11,520	215.3		1.1	1.1	0.0	172.8	0.0	0.17	0.0
Floor 3 Utility	216	2,160	0.0		0.9	0.1	0.0	32.4	0.0	0.00	0.0
Floor 3 Work	574	5,740	215.3		1.1	1.1	0.0	53.3	0.0	0.26	0.0
NE Stair	168	5,040	0.0		1.0	0.4	0.0	8.4	0.0	0.74	0.0
NW Elevator	140	4,200	0.0		1.0	0.4	0.0	7.0	0.0	0.69	0.0
NW Stair	192	5,760	0.0		1.0	0.4	0.0	9.6	0.0	0.74	0.0
SW Stair	96	2,880	0.0		1.0	0.4	0.0	4.8	0.0	0.74	0.0
Retail	**24,692**	**494,171**									
Back_Space	4,089	81,836	300.0	1.17	0.8	0.8	0.0	613.4	0.0	0.37	0.0
Core_Retail	17,227	344,775	66.7	3.37	1.7	0.3	0.0	5168.2	0.0	0.22	0.0
Point_of_Sale	1,623	32,487	66.7	3.37	1.7	2.0	0.0	487.0	0.0	0.40	0.0
Front_Retail	1,623	32,487	66.7	3.37	1.7	0.3	0.0	487.0	0.0	0.40	0.0
Front_Entry	129	2,585	66.7	3.37	1.1	0.0	0.0	0.0	0.0	0.54	0.0

Building Type/Zone	Area ft^2	Vol. ft^3	ft^2/ person	1989 Lights Wft^2	2004 Lights Wft^2	Elec. Proc. W/ft^2	Gas Proc. W/ft^2	Vent. cfm	Exhst cfm	Infil. ACH	SWH gal/h
Primary Education	**73,959**	**970,588**									
CORNER_CLASS_1_POD_1_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	1.4	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_1_POD_1_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	1.4	0.0	1788.8	0.0	0.39	0.0
CORRIDOR_POD_1_ZN_1_FLR_1	2,067	27,122	107.6	2.00	0.5	0.4	0.0	206.7	0.0	0.29	0.0
CORNER_CLASS_2_POD_1_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	1.4	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_2_POD_1_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	1.4	0.0	1788.8	0.0	0.39	0.0
CORNER_CLASS_1_POD_2_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	1.4	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_1_POD_2_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	1.4	0.0	1788.8	0.0	0.39	0.0
CORRIDOR_POD_2_ZN_1_FLR_1	2,067	27,122	107.6	0.90	0.5	0.4	0.0	206.7	0.0	0.29	0.0
CORNER_CLASS_2_POD_2_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	1.4	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_2_POD_2_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	1.4	0.0	1788.8	0.0	0.39	0.0
CORNER_CLASS_1_POD_3_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	1.4	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_1_POD_3_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	1.4	0.0	1788.8	0.0	0.39	0.0
CORRIDOR_POD_3_ZN_1_FLR_1	2,067	27,122	107.6	0.90	0.5	0.4	0.0	206.7	0.0	0.29	0.0
CORNER_CLASS_2_POD_3_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	1.4	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_2_POD_3_ZN_1_FLR_1	3,391	44,496	43.1	2.00	1.4	0.7	0.0	1181.3	0.0	0.39	0.0
COMPUTER_CLASS_ZN_1_FLR_1	1,744	22,884	35.8	2.00	1.4	1.9	0.0	729.7	0.0	0.39	0.0
MAIN_CORRIDOR_ZN_1_FLR_1	5,877	77,127	0.0	1.04	0.5	0.4	0.0	587.7	0.0	0.29	0.0
LOBBY_ZN_1_FLR_1	1,841	24,155	0.0	1.14	1.3	0.4	0.0	184.1	0.0	0.39	0.0
MECH_ZN_1_FLR_1	2,713	35,597	1076.4	0.77	1.5	0.9	0.0	135.6	0.0	0.27	0.0
BATH_ZN_1_FLR_1	2,045	26,839	1076.4	0.90	0.9	0.4	0.0	600.0	600.0	0.33	56.5
OFFICES_ZN_1_FLR_1	4,747	62,295	215.3	1.89	1.1	1.0	0.0	441.0	0.0	0.38	0.0
GYM_ZN_1_FLR_1	3,843	50,429	35.8	1.07	1.4	0.5	0.0	2144.1	0.0	0.32	0.0
KITCHEN_ZN_1_FLR_1	1,808	23,731	71.8	1.60	1.2	17.7	88.7	377.8	3300.0	0.32	100.0
CAFETERIA_ZN_1_FLR_1	3,391	44,496	15.0	1.40	1.4	2.4	0.0	4520.8	0.0	0.40	0.0
LIBRARY_MEDIA_CENTER_ZN_1_FLR_1	4,295	56,362	46.8	2.11	1.3	1.4	0.0	1375.9	0.0	0.38	0.0
Secondary Education	**210,886**	**3,362,522**									
CORNER_CLASS_1_POD_1_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.22	0.0
CORNER_CLASS_1_POD_1_ZN_1_FLR_2	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_1_POD_1_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	0.9	0.0	1788.8	0.0	0.12	0.0
MULT_CLASS_1_POD_1_ZN_1_FLR_2	5,134	67,380	43.1	2.00	1.4	0.9	0.0	1788.8	0.0	0.39	0.0
CORRIDOR_POD_1_ZN_1_FLR_1	3,444	45,203	107.6	0.86	0.5	0.4	0.0	344.4	0.0	0.02	0.0
CORRIDOR_POD_1_ZN_1_FLR_2	3,444	45,203	107.6	0.86	0.5	0.4	0.0	344.4	0.0	0.29	0.0
CORNER_CLASS_2_POD_1_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.22	0.0
CORNER_CLASS_2_POD_1_Z	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.49	0.0

Building Type/Zone	Area ft²	Vol. ft³	ft²/ person	1989 Lights Wft²	2004 Lights Wft²	Elec. Proc. W/ft²	Gas Proc. W/ft²	Vent. cfm	Exhst cfm	Infil. ACH	SWH gal/h
N_1_FLR_2											
MULT_CLASS_2_POD_1_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	0.9	0.0	1788.8	0.0	0.12	0.0
MULT_CLASS_2_POD_1_ZN_1_FLR_2	5,134	67,380	43.1	2.00	1.4	0.9	0.0	1788.8	0.0	0.39	0.0
CORNER_CLASS_1_POD_2_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.22	0.0
CORNER_CLASS_1_POD_2_ZN_1_FLR_2	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_1_POD_2_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	0.9	0.0	1788.8	0.0	0.12	0.0
MULT_CLASS_1_POD_2_ZN_1_FLR_2	5,134	67,380	43.1	2.00	1.4	0.9	0.0	1788.8	0.0	0.39	0.0
CORRIDOR_POD_2_ZN_1_FLR_1	3,444	45,203	107.6	0.86	0.5	0.4	0.0	344.4	0.0	0.02	0.0
CORRIDOR_POD_2_ZN_1_FLR_2	3,444	45,203	107.6	0.86	0.5	0.4	0.0	344.4	0.0	0.29	0.0
CORNER_CLASS_2_POD_2_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.22	0.0
CORNER_CLASS_2_POD_2_ZN_1_FLR_2	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_2_POD_2_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	0.9	0.0	1788.8	0.0	0.12	0.0
MULT_CLASS_2_POD_2_ZN_1_FLR_2	5,134	67,380	43.1	2.00	1.4	0.9	0.0	1788.8	0.0	0.39	0.0
CORNER_CLASS_1_POD_3_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.22	0.0
CORNER_CLASS_1_POD_3_ZN_1_FLR_2	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_1_POD_3_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	0.9	0.0	1788.8	0.0	0.12	0.0
MULT_CLASS_1_POD_3_ZN_1_FLR_2	5,134	67,380	43.1	2.00	1.4	1.9	0.0	1788.8	0.0	0.39	0.0
CORRIDOR_POD_3_ZN_1_FLR_1	3,444	45,203	107.6	0.86	0.5	0.4	0.0	344.4	0.0	0.02	0.0
CORRIDOR_POD_3_ZN_1_FLR_2	3,444	45,203	107.6	0.86	0.5	0.4	0.0	344.4	0.0	0.29	0.0
CORNER_CLASS_2_POD_3_ZN_1_FLR_1	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.22	0.0
CORNER_CLASS_2_POD_3_ZN_1_FLR_2	1,066	13,985	43.1	2.00	1.4	0.9	0.0	371.3	0.0	0.49	0.0
MULT_CLASS_2_POD_3_ZN_1_FLR_1	5,134	67,380	43.1	2.00	1.4	0.9	0.0	1788.8	0.0	0.12	0.0
MULT_CLASS_2_POD_3_ZN_1_FLR_2	5,134	67,380	43.1	2.00	1.4	1.9	0.0	1788.8	0.0	0.39	0.0
MAIN_CORRIDOR_ZN_1_FLR_1	12,271	161,035	0.0	1.00	0.5	0.4	0.0	1227.1	0.0	0.05	0.0
MAIN_CORRIDOR_ZN_1_FLR_2	12,271	161,035	0.0	1.00	0.5	0.4	0.0	1227.1	0.0	0.32	0.0
LOBBY_ZN_1_FLR_1	2,260	29,664	0.0	1.12	1.3	0.4	0.0	226.0	0.0	0.08	0.0
LOBBY_ZN_1_FLR_2	2,260	29,664	0.0	1.12	1.3	0.4	0.0	226.0	0.0	0.35	0.0
BATHROOMS_ZN_1_FLR_1	2,260	29,664	107.6	0.89	0.9	0.4	0.0	600.0	0.0	0.15	52.2
BATHROOMS_ZN_1_FLR_2	2,260	29,664	107.6	0.89	0.9	0.4	0.0	600.0	0.0	0.42	52.2
OFFICES_ZN_1_FLR_1	5,726	75,150	215.3	1.87	1.1	1.0	0.0	532.0	0.0	0.11	0.0
OFFICES_ZN_1_FLR_2	5,726	75,150	215.3	1.87	1.1	1.0	0.0	532.0	0.0	0.38	0.0
GYM_ZN_1_FLR_1	21,269	558,254	10.8	1.06	1.4	0.5	0.0	39520.0	0.0	0.14	189.5
AUX_GYM_ZN_1_FLR_1	13,433	352,582	35.8	1.10	1.4	0.5	0.0	7495.5	0.0	0.20	0.0
AUDITORIUM_ZN_1_FLR_1	10,635	279,127	10.8	1.12	0.9	0.5	0.0	14820.0	0.0	0.21	0.0
KITCHEN_ZN_1_FLR_1	2,325	30,512	71.8	1.56	1.2	20.7	104.0	485.8	4000.0	0.05	133.0
LIBRARY_MEDIA_CENTER_Z	9,042	118,657	46.8	0.00	1.3	0.9	0.0	2896.6	0.0	0.35	0.0

Building Type/Zone	Area ft^2	Vol. ft^3	ft^2/ person	1989 Lights Wft^2	2004 Lights Wft^2	Elec. Proc. W/ft^2	Gas Proc. W/ft^2	Vent. cfm	Exhst cfm	Infil. ACH	SWH gal/h
N_1_FLR_2											
CAFETERIA_ZN_1_FLR_1	6,717	88,145	15.0	1.34	1.4	1.8	0.0	8955.6	0.0	0.09	0.0
MECH_ZN_1_FLR_1	3,681	48,310	1076.4	0.75	1.5	0.4	0.0	184.1	0.0	0.00	0.0
MECH_ZN_1_FLR_2	3,681	48,310	1076.4	0.75	1.5	0.4	0.0	184.1	0.0	0.00	0.0
Full Service Restaurant	**5,502**	**55,035**									
Dining	4,001	40,025	15.0	2.54	2.1	5.6	0.0	5335.3	0.0	0.52	0.0
Kitchen	1,501	15,009	200.0	1.52	1.2	35.0	111.3	112.5	4000.0	0.63	133.0
Attic	5,502	30,239	0.0	0.00	0.0	0.0	0.0	0.0	0.0	1.00	0.0
Supermarket	**45,002**	**900,272**									
Office	956	19,131	200.0	1.98	1.1	0.8	0.0	95.6	0.0	0.41	0.0
DryStorage	6,694	133,914	300.0	1.11	0.8	0.8	0.0	1004.1	0.0	0.32	0.0
Deli	2,419	48,390	125.0	2.78	1.7	5.0	2.5	725.7	0.0	0.29	5.0
Sales	25,025	500,642	125.0	2.78	1.7	0.5	0.0	7507.6	0.0	0.20	0.0
Produce	7,657	153,181	125.0	2.78	1.7	0.5	0.0	2297.1	0.0	0.27	0.0
Bakery	2,250	45,014	125.0	2.78	1.7	5.0	2.5	675.0	2500.0	0.34	5.0
Small Hotel	**43,202**	**410,418**									
REARSTAIRSFLR1	216	2,377	0.0	0.92	0.6	0.0	0.0	0.0	0.0	0.58	0.0
CORRIDORFLR1	1,620	17,820	0.0	0.88	0.5	0.0	0.0	0.0	0.0	0.07	0.0
REARSTORAGEFLR1	216	2,377	0.0	0.46	0.8	0.0	0.0	81.0	0.0	0.58	0.0
FRONTLOUNGEFLR1	1,755	19,307	33.2	1.31	1.1	1.4	0.0	0.0	0.0	0.19	0.0
RESTROOMFLR1	351	3,861	351.0	1.10	0.9	1.0	0.0	794.1	0.0	0.13	0.0
MEETINGROOMFLR1	864	9,505	20.1	2.13	1.3	1.2	0.0	0.0	400.0	0.13	0.0
MECHANICALROOMFLR1	351	3,861	0.0	0.96	1.5	0.0	0.0	858.5	0.0	0.13	0.0
GUESTROOM101	351	3,861	234.0	1.92	1.1	1.3	0.0	17.6	0.0	0.13	1.8
GUESTROOM102	351	3,861	234.0	1.92	1.1	1.3	0.0	30.0	0.0	0.13	1.8
GUESTROOM103	351	3,861	234.0	1.92	1.1	1.3	0.0	30.0	0.0	0.13	1.8
GUESTROOM104	351	3,861	234.0	1.92	1.1	1.3	0.0	30.0	0.0	0.13	1.8
GUESTROOM105	351	3,861	234.0	1.92	1.1	1.3	0.0	30.0	0.0	0.13	1.8
EMPLOYEELOUNGEFLR1	351	3,861	31.9	1.65	1.2	7.2	0.0	30.0	0.0	0.13	0.0
LAUNDRYROOMFLR1	1,053	11,583	95.7	1.04	0.6	2.0	17.1	165.3	0.0	0.13	67.5
ELEVATORCOREFLR1	162	1,782	0.0	0.00	0.0	11.9	0.0	275.1	0.0	0.13	0.0
EXERCISECENTERFLR1	351	3,861	31.9	1.37	0.9	1.1	0.0	162.0	0.0	0.13	0.0
FRONTOFFICEFLR1	1,404	15,444	140.4	2.01	1.1	1.2	0.0	220.3	0.0	0.13	0.0
FRONTSTAIRSFLR1	216	2,376	0.0	0.92	0.6	0.0	0.0	200.1	0.0	0.58	0.0
FRONTSTORAGEFLR1	135	1,485	0.0	0.53	0.8	0.0	0.0	0.0	0.0	0.13	0.0
REARSTAIRSFLR2	216	1,944	0.0	0.82	0.6	0.0	0.0	0.0	0.0	0.58	0.0
CORRIDORFLR2	1,350	12,150	0.0	0.86	0.5	0.0	0.0	0.0	0.0	0.06	0.0
REARSTORAGEFLR2	216	1,945	0.0	0.41	0.8	0.0	0.0	67.5	0.0	0.58	0.0
GUESTROOM201	351	3,159	234.0	1.74	1.1	1.3	0.0	0.0	0.0	0.41	1.8
GUESTROOM202_205	1,404	12,637	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.13	7.0
GUESTROOM206_208	1,134	10,207	252.0	1.74	1.1	1.3	0.0	120.0	0.0	0.13	5.3
GUESTROOM209_212	1,404	12,637	234.0	1.74	1.1	1.3	0.0	90.0	0.0	0.13	7.0
GUESTROOM213	351	3,159	234.0	1.74	1.1	1.3	0.0	120.0	0.0	0.13	1.8
GUESTROOM214	351	3,159	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.13	1.8
GUESTROOM215_218	1,404	12,636	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.13	7.0
ELEVATORCOREFLR2	162	1,458	0.0	0.00	0.0	0.0	0.0	120.0	0.0	0.13	0.0
GUESTROOM219	351	3,159	234.0	1.74	1.1	1.3	0.0	0.0	0.0	0.13	1.8
GUESTROOM220_223	1,404	12,636	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.13	7.0
GUESTROOM224	351	3,159	234.0	1.74	1.1	1.3	0.0	120.0	0.0	0.13	1.8
FRONTSTORAGEFLR2	135	1,215	0.0	0.45	0.8	0.0	0.0	30.0	0.0	0.13	0.0
FRONTSTAIRSFLR2	216	1,944	0.0	0.82	0.6	0.0	0.0	0.0	0.0	0.58	0.0
REARSTAIRSFLR3	216	1,944	0.0	0.82	0.6	0.0	0.0	0.0	0.0	0.58	0.0
CORRIDORFLR3	1,350	12,150	0.0	0.86	0.5	0.0	0.0	0.0	0.0	0.06	0.0
REARSTORAGEFLR3	216	1,945	0.0	0.41	0.8	0.0	0.0	67.5	0.0	0.58	0.0
GUESTROOM301	351	3,159	234.0	1.74	1.1	1.3	0.0	0.0	0.0	0.41	1.8
GUESTROOM302_305	1,404	12,637	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.13	7.0

Building Type/Zone	Area ft^2	Vol. ft^3	ft^2/ person	1989 Lights Wft^2	2004 Lights Wft^2	Elec. Proc. W/ft^2	Gas Proc. W/ft^2	Vent. cfm	Exhst cfm	Infil. ACH	SWH gal/h
GUESTROOM306_308	1,134	10,207	252.0	1.74	1.1	1.3	0.0	120.0	0.0	0.13	5.3
GUESTROOM309_312	1,404	12,637	234.0	1.74	1.1	1.3	0.0	90.0	0.0	0.13	7.0
GUESTROOM313	351	3,159	234.0	1.74	1.1	1.3	0.0	120.0	0.0	0.13	1.8
GUESTROOM314	351	3,159	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.13	1.8
GUESTROOM315_318	1,404	12,636	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.13	7.0
ELEVATORCOREFLR3	162	1,458	0.0	0.00	0.0	0.0	0.0	120.0	0.0	0.13	0.0
GUESTROOM319	351	3,159	234.0	1.74	1.1	1.3	0.0	0.0	0.0	0.13	1.8
GUESTROOM320_323	1,404	12,636	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.13	7.0
GUESTROOM324	351	3,159	234.0	1.74	1.1	1.3	0.0	120.0	0.0	0.13	1.8
FRONTSTORAGEFLR3	135	1,215	0.0	0.45	0.8	0.0	0.0	30.0	0.0	0.13	0.0
FRONTSTAIRSFLR3	216	1,944	0.0	0.82	0.6	0.0	0.0	0.0	0.0	0.58	0.0
REARSTAIRSFLR4	216	1,944	0.0	0.41	0.6	0.0	0.0	0.0	0.0	0.98	0.0
CORRIDORFLR4	1,350	12,150	0.0	0.86	0.5	0.0	0.0	0.0	0.0	0.45	0.0
REARSTORAGEFLR4	216	1,945	0.0	0.41	0.8	0.0	0.0	67.5	0.0	0.98	0.0
GUESTROOM401	351	3,159	234.0	1.74	1.1	1.3	0.0	0.0	0.0	0.80	1.8
GUESTROOM402_405	1,404	12,637	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.53	7.0
GUESTROOM406_408	1,134	10,207	252.0	1.74	1.1	1.3	0.0	120.0	0.0	0.53	5.3
GUESTROOM409_412	1,404	12,637	234.0	1.74	1.1	1.3	0.0	90.0	0.0	0.53	7.0
GUESTROOM413	351	3,159	234.0	1.74	1.1	1.3	0.0	120.0	0.0	0.53	1.8
GUESTROOM414	351	3,159	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.53	1.8
GUESTROOM415_418	1,404	12,636	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.53	7.0
ELEVATORCOREFLR4	162	1,458	0.0	0.00	0.0	0.0	0.0	120.0	0.0	0.53	0.0
GUESTROOM419	351	3,159	234.0	1.74	1.1	1.3	0.0	0.0	0.0	0.53	1.8
GUESTROOM420_423	1,404	12,636	234.0	1.74	1.1	1.3	0.0	30.0	0.0	0.53	7.0
GUESTROOM424	351	3,159	234.0	1.74	1.1	1.3	0.0	120.0	0.0	0.53	1.8
FRONTSTORAGEFLR4	135	1,215	0.0	0.45	0.8	0.0	0.0	30.0	0.0	0.53	0.0
FRONTSTAIRSFLR4	216	1,944	0.0	0.82	0.6	0.0	0.0	0.0	0.0	0.98	0.0
Small Office	**5,502**	**55,056**									
Core_ZN	1,611	16,120	200.0	1.81	1.0	0.8	0.0	161.1	0.0	0.00	3.0
Perimeter_ZN_1	1,221	12,220	200.0	1.81	1.0	0.8	0.0	122.1	0.0	0.62	0.0
Perimeter_ZN_2	724	7,249	200.0	1.81	1.0	0.8	0.0	72.4	0.0	0.66	0.0
Perimeter_ZN_3	1,221	12,220	200.0	1.81	1.0	0.8	0.0	122.1	0.0	0.62	0.0
Perimeter_ZN_4	724	7,249	200.0	1.81	1.0	0.8	0.0	72.4	0.0	0.66	0.0
Attic	6,114	25,433	0.0	0.00	0.0	0.0	0.0	0.0	0.0	1.00	0.0
Strip Mall	**22,500**	**382,500**									
LGStore1	3,750	63,750	66.7	5.60	2.2	0.4	0.0	1125.0	0.0	0.38	0.0
SMStore1	1,875	31,875	66.7	5.60	2.2	0.4	0.0	562.5	0.0	0.31	0.0
SMStore2	1,875	31,875	66.7	3.30	1.7	0.4	0.0	562.5	0.0	0.31	0.0
SMStore3	1,875	31,875	66.7	3.30	1.7	0.4	0.0	562.5	0.0	0.31	0.0
SMStore4	1,875	31,875	66.7	3.30	1.7	0.4	0.0	562.5	0.0	0.31	0.0
LGStore2	3,750	63,750	66.7	2.70	1.3	0.4	0.0	1125.0	0.0	0.31	0.0
SMStore5	1,875	31,875	66.7	2.70	1.3	0.4	0.0	562.5	0.0	0.31	0.0
SMStore6	1,875	31,875	66.7	2.70	1.3	0.4	0.0	562.5	0.0	0.31	0.0
SMStore7	1,875	31,875	66.7	2.70	1.3	0.4	0.0	562.5	0.0	0.31	0.0
SMStore8	1,875	31,875	66.7	2.70	1.3	0.4	0.0	562.5	0.0	0.45	0.0
Warehouse	**52,045**	**1,385,797**									
Office	2,550	35,695	510.0	2.02	1.1	0.8	0.0	100.0	0.0	0.16	0.0
FineStorage	14,999	384,244	0.0	1.08	1.4	0.0	0.0	749.9	0.0	0.22	0.0
BulkStorage	34,497	965,859	0.0	0.31	0.9	0.2	0.0	80001.0	0.0	0.19	0.0

Table A-2 Reference Building Zone Internal Loads (SI units)

Building Type/Zone	Area m^2	Vol. m^3	m^2/ person	1989 Lights Wm^2	2004 Lights Wm^2	Elec. Proc. W/m^2	Gas Proc. W/m^2	Vent. L/s	Exhst L/s	Infil. ACH	SWH L/h
Quick Service Restaurant	**232**	**708**									
Dining	116	354	1.39	15.45	22.60	129.1	0.0	833.6	0.0	0.64	0.0
Kitchen	116	354	18.58	16.64	12.91	301.3	1291.7	50.0	1557.4	0.64	151.4
Attic	232	262								1.00	0.0
Hospital	**22,422**	**88,864**									
Basement	3,739	9,120	37.16	7.53	11.84	8.1	0.0	1006.2	0.0	0.00	0.0
ER_Exam1_Mult4_Flr_1	28	119	4.65	41.35	29.05	16.1	0.0	66.1	0.0	0.24	3.8
ER_Exam2_Flr_1	28	119	4.65	41.35	29.05	43.0	0.0	66.1	0.0	0.42	3.8
ER_Exam3_Mult4_Flr_1	28	119	4.65	41.35	29.05	16.1	0.0	66.1	0.0	0.18	3.8
ER_Exam4_Flr_1	28	119	4.65	41.35	29.05	43.0	0.0	66.1	0.0	0.42	3.8
ER_Exam5_Mult4_Flr_1	28	119	4.65	41.35	29.05	21.5	0.0	66.1	0.0	0.24	3.8
Office1_Mult4_Flr_1	14	60	13.27	25.78	11.84	11.8	0.0	10.5	0.0	0.24	0.0
Lobby_Flr_1	1,475	6,295	13.01	13.91	15.82	1.1	0.0	1133.9	0.0	0.07	0.0
Corridor_Flr_1	569	2,429	92.90	14.59	10.76	0.0	0.0	142.3	0.0	0.04	0.0
ER_NurseStat_Flr_1	1,236	5,274	14.86	22.63	12.05	14.6	0.0	2930.0	0.0	0.02	0.0
OR1_Flr_2	56	238	18.58	104.94	23.67	43.0	0.0	198.3	0.0	0.30	7.6
OR2_Mult5_Flr_2	56	238	18.58	104.94	23.67	43.0	0.0	198.3	0.0	0.12	7.6
OR3_Flr_2	56	238	18.58	104.94	23.67	43.0	0.0	198.3	0.0	0.18	7.6
OR4_Flr_2	223	952	18.58	84.88	23.67	43.0	0.0	793.1	0.0	0.00	22.7
IC_PatRoom1_Mult5_Flr_2	21	89	18.58	41.35	8.61	32.3	0.0	49.6	0.0	0.24	0.0
IC_PatRoom2_Flr_2	28	119	18.58	41.35	8.61	32.3	0.0	66.1	0.0	0.42	0.0
IC_PatRoom3_Mult6_Flr_2	21	89	18.58	41.35	8.61	32.3	0.0	49.6	0.0	0.24	0.0
ICU_Flr_2	618	2,638	4.65	41.35	8.61	32.3	0.0	1465.4	0.0	0.09	0.0
ICU_NurseSat_Flr_2	669	2,855	18.58	23.34	10.76	21.5	0.0	359.9	0.0	0.00	0.0
Corridor_Flr_2	569	2,429	92.90	14.59	10.76	0.0	0.0	142.3	0.0	0.04	0.0
OR_NurseSat_Flr_2	1,013	4,322	13.01	22.84	12.70	11.2	0.0	778.6	0.0	0.05	0.0
PatRoom1_Mult10_Flr_3	21	89	18.58	23.56	7.53	21.5	0.0	49.6	0.0	0.24	3.8
PatRoom2_Flr_3	35	149	18.58	23.56	7.53	21.5	0.0	82.6	0.0	0.38	3.8
PatRoom3_Mult10_Flr_3	20	86	18.58	23.56	7.53	21.5	0.0	47.9	0.0	0.24	3.8
PatRoom4_Flr_3	35	149	18.58	23.56	7.53	21.5	0.0	82.6	0.0	0.38	3.8
PatRoom5_Mult10_Flr_3	21	89	18.58	23.56	7.53	21.5	0.0	49.6	0.0	0.24	3.8
PhysTherapy_Flr_3	488	2,082	18.58	26.93	9.68	16.4	0.0	210.0	0.0	0.00	3.8
PatRoom6_Flr_3	28	119	18.58	23.56	7.53	21.5	0.0	66.1	0.0	0.42	3.8
PatRoom7_Mult10_Flr_3	20	86	18.58	23.56	7.53	21.5	0.0	47.9	0.0	0.24	3.8
PatRoom8_Flr_3	28	119	18.58	23.56	7.53	21.5	0.0	66.1	0.0	0.42	3.8
NurseSat_Lobby_Flr_3	906	3,866	13.01	22.96	12.70	11.2	0.0	696.4	0.0	0.00	0.0
Lab_Flr_3	265	1,130	18.58	22.65	15.06	43.0	0.0	142.5	0.0	0.00	7.6
Corridor_SE_Flr_3	567	2,419	92.90	14.60	10.76	0.0	0.0	141.7	0.0	0.02	0.0
Corridor_NW_Flr_3	567	2,419	92.90	14.60	10.76	0.0	0.0	141.7	0.0	0.02	0.0
PatRoom1_Mult10_Flr_4	21	89	18.58	23.56	7.53	21.5	0.0	49.6	0.0	0.24	3.8
PatRoom2_Flr_4	35	149	18.58	23.56	7.53	21.5	0.0	82.6	0.0	0.38	3.8
PatRoom3_Mult10_Flr_4	20	86	18.58	23.56	7.53	21.5	0.0	47.9	0.0	0.24	3.8
PatRoom4_Flr_4	35	149	18.58	23.56	7.53	21.5	0.0	82.6	0.0	0.38	3.8
PatRoom5_Mult10_Flr_4	21	89	18.58	23.56	7.53	21.5	0.0	49.6	0.0	0.24	3.8
Radiology_Flr_4	488	2,082	18.58	23.82	4.30	53.1	0.0	210.0	0.0	0.00	3.8
PatRoom6_Flr_4	28	119	18.58	23.56	7.53	21.5	0.0	66.1	0.0	0.42	3.8
PatRoom7_Mult10_Flr_4	20	86	18.58	23.56	7.53	21.5	0.0	47.9	0.0	0.24	3.8
PatRoom8_Flr_4	28	119	18.58	23.56	7.53	21.5	0.0	66.1	0.0	0.42	3.8
NurseSat_Lobby_Flr_4	906	3,866	13.01	22.96	12.70	11.2	0.0	696.4	0.0	0.00	0.0
Lab_Flr_4	265	1,130	18.58	22.65	15.06	43.0	0.0	142.5	0.0	0.00	7.6
Corridor_SE_Flr_4	567	2,419	92.90	14.60	10.76	0.0	0.0	141.7	0.0	0.02	0.0
Corridor_NW_Flr_4	567	2,419	92.90	14.60	10.76	0.0	0.0	141.7	0.0	0.02	0.0
Dining_Flr_5	697	2,974	9.29	27.72	9.68	10.8	0.0	750.0	0.0	0.34	0.0
NurseSat_Flr_5	1,041	4,441	13.01	22.81	12.70	11.2	0.0	800.0	0.0	0.28	0.0
Kitchen_Flr_5	929	3,965	18.58	15.29	12.91	80.7	304.8	400.0	2501.3	0.33	567.8
Office1_Flr_5	70	298	13.27	25.78	11.84	10.8	0.0	52.5	0.0	0.52	0.0
Office2_Mult5_Flr_5	70	297	13.27	25.78	11.84	10.8	0.0	52.5	0.0	0.37	0.0
Office3_Flr_5	70	297	13.27	25.78	11.84	10.8	0.0	52.5	0.0	0.52	0.0
Office4_Mult6_Flr_5	14	60	13.94	25.78	11.84	10.8	0.0	10.0	0.0	0.49	0.0

Building Type/Zone	Area m^2	Vol. m^3	m^2/ person	1989 Lights Wm^2	2004 Lights Wm^2	Elec. Proc. W/m^2	Gas Proc. W/m^2	Vent. L/s	Exhst L/s	Infil. ACH	SWH L/h
Corridor_Flr_5	502	2,141	92.90	14.60	10.76	0.0	0.0	125.4	0.0	0.29	0.0
Large Hotel	**11,345**	**35,185**									
Basement	1,979	4,826	37.16	7.53	10.76	5.4	0.0	502.6	0.0	0.00	0.0
Retail_1_Flr_1	67	266	6.19	38.09	16.14	10.8	0.0	102.2	0.0	0.56	0.0
Retail_2_Flr_1	78	308	6.19	38.09	16.14	10.8	0.0	118.4	0.0	0.09	0.0
Mech_Flr_1	164	651	0.00	8.60	16.14	5.4	0.0	41.7	0.0	0.11	0.0
Storage_Flr_1	95	375	46.45	3.96	9.68	2.7	0.0	72.2	0.0	0.11	0.0
Laundry_Flr_1	78	309	23.23	12.23	6.46	61.7	535.9	23.8	236.0	0.30	592.8
Cafe_Flr_1	189	748	1.39	15.74	13.99	5.4	0.0	1279.1	0.0	0.50	0.0
Lobby_Flr_1	1,308	5,184	3.10	20.28	11.84	8.1	0.0	3987.4	0.0	0.10	0.0
Room_1_Flr_3	39	119	26.01	19.09	11.84	6.8	0.0	14.2	0.0	0.37	4.7
Room_2_Flr_3	39	119	26.01	19.09	11.84	6.8	0.0	14.2	0.0	0.37	4.7
Room_3_Mult19_Flr_3	25	75	16.35	19.09	11.84	10.5	0.0	14.2	0.0	0.16	89.9
Room_4_Mult19_Flr_3	25	75	16.35	19.09	11.84	10.5	0.0	14.2	0.0	0.16	89.9
Room_5_Flr_3	39	119	26.01	19.09	11.84	6.8	0.0	14.2	0.0	0.37	4.7
Room_6_Flr_3	39	119	26.01	19.09	11.84	6.8	0.0	14.2	0.0	0.37	4.7
Corridor_Flr_3	389	1,187	92.90	13.11	5.38	0.0	0.0	98.9	0.0	0.04	0.0
Room_1_Flr_6	39	119	26.01	19.09	11.84	6.8	0.0	14.2	0.0	0.72	4.7
Room_2_Flr_6	39	119	26.01	19.09	11.84	6.8	0.0	14.2	0.0	0.72	4.7
Room_3_Mult9_Flr_6	25	75	16.35	19.09	11.84	10.5	0.0	14.2	0.0	1.28	42.6
Banquet_Flr_6	332	1,011	1.39	27.55	13.99	67.8	0.0	2246.2	0.0	0.46	0.0
Dining_Flr_6	332	1,011	1.39	27.55	13.99	67.8	0.0	2246.2	0.0	0.46	0.0
Kitchen_Flr_6	103	315	18.58	16.83	12.91	508.0	1612.8	39.4	1887.8	0.66	503.5
Corridor_Flr_6	412	1,256	92.90	13.08	5.38	0.0	0.0	104.7	0.0	0.48	0.0
Large Office	**46,320**	**178,146**									
Basement	3,563	8,690	37.16	7.53	10.76	10.76	0.0	958.8	0.0	0.15	0.0
Perimeter_bot_ZN_3	313	860	18.58	16.14	10.76	10.76	0.0	168.7	0.0	0.30	0.0
Perimeter_bot_ZN_2	202	554	18.58	16.14	10.76	10.76	0.0	108.7	0.0	0.30	0.0
Perimeter_bot_ZN_1	313	860	18.58	16.14	10.76	10.76	0.0	168.7	0.0	0.30	0.0
Perimeter_bot_ZN_4	202	554	18.58	16.14	10.76	10.76	0.0	108.7	0.0	0.30	0.0
Core_bottom	2,532	6,949	18.58	16.14	10.76	10.76	0.0	1362.9	0.0	0.15	80.6
Perimeter_mid_ZN_3	313	860	18.58	16.14	10.76	10.76	0.0	168.7	0.0	0.30	0.0
Perimeter_mid_ZN_2	202	554	18.58	16.14	10.76	10.76	0.0	108.7	0.0	0.30	0.0
Perimeter_mid_ZN_1	313	860	18.58	16.14	10.76	10.76	0.0	168.7	0.0	0.30	0.0
Perimeter_mid_ZN_4	202	554	18.58	16.14	10.76	10.76	0.0	108.7	0.0	0.30	0.0
Core_mid	2,532	6,949	18.58	16.14	10.76	10.76	0.0	1362.9	0.0	0.15	80.6
Perimeter_top_ZN_3	313	860	18.58	16.14	10.76	10.76	0.0	168.7	0.0	0.30	0.0
Perimeter_top_ZN_2	202	554	18.58	16.14	10.76	10.76	0.0	108.7	0.0	0.30	0.0
Perimeter_top_ZN_1	313	860	18.58	16.14	10.76	10.76	0.0	168.7	0.0	0.30	0.0
Perimeter_top_ZN_4	202	554	18.58	16.14	10.76	10.76	0.0	108.7	0.0	0.30	0.0
Core_top	2,532	6,949	18.58	16.14	10.76	10.76	0.0	1362.9	0.0	0.15	80.6
Groundfloor_plenum	3,563	4,344								0.00	0.0
Midfloor_plenum	3,563	4,344								0.00	0.0
Topfloor_plenum	3,563	4,344								0.00	0.0
Medium Office	**4,982**	**19,741**									
Perimeter_bot_ZN_3	207	569	18.58	16.89	10.76	10.76	0.0	111.6	0.0	0.26	0.0
Perimeter_bot_ZN_2	131	360	18.58	16.89	10.76	10.76	0.0	70.6	0.0	0.28	0.0
Perimeter_bot_ZN_1	207	569	18.58	16.89	10.76	10.76	0.0	111.6	0.0	0.26	0.0
Perimeter_bot_ZN_4	131	360	18.58	16.89	10.76	10.76	0.0	70.6	0.0	0.28	0.0
Core_bottom	984	2,698	18.58	16.89	10.76	10.76	0.0	529.3	0.0	0.00	37.5
Perimeter_mid_ZN_3	207	569	18.58	16.89	10.76	10.76	0.0	111.6	0.0	0.26	0.0
Perimeter_mid_ZN_2	131	360	18.58	16.89	10.76	10.76	0.0	70.6	0.0	0.28	0.0
Perimeter_mid_ZN_1	207	569	18.58	16.89	10.76	10.76	0.0	111.6	0.0	0.26	0.0
Perimeter_mid_ZN_4	131	360	18.58	16.89	10.76	10.76	0.0	70.6	0.0	0.28	0.0
Core_mid	984	2,698	18.58	16.89	10.76	10.76	0.0	529.3	0.0	0.00	37.5
Perimeter_top_ZN_3	207	569	18.58	16.89	10.76	10.76	0.0	111.6	0.0	0.66	0.0
Perimeter_top_ZN_2	131	360	18.58	16.89	10.76	10.76	0.0	70.6	0.0	0.67	0.0

Building Type/Zone	Area m^2	Vol. m^3	m^2/ person	1989 Lights Wm^2	2004 Lights Wm^2	Elec. Proc. W/m^2	Gas Proc. W/m^2	Vent. L/s	Exhst L/s	Infil. ACH	SWH L/h
Perimeter_top_ZN_1	207	569	18.58	16.89	10.76	10.76	0.0	111.6	0.0	0.66	0.0
Perimeter_top_ZN_4	131	360	18.58	16.89	10.76	10.76	0.0	70.6	0.0	0.67	0.0
Core_top	984	2,698	18.58	16.89	10.76	10.76	0.0	529.3	0.0	0.40	37.5
Firstfloor_plenum	1,661	2,025								0.11	0.0
Midfloor_plenum	1,661	2,025								0.11	0.0
Topfloor_plenum	1,661	2,025								1.00	0.0
Midrise Apartment	**3,135**	**9,553**									
G SW APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.24	13.2
G NW APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.24	13.2
OFFICE	88	269	44.12	21.99	10.76	12.9	0.0	18.9	0.0	0.24	0.0
G NE APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.24	13.2
G N1 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.14	13.2
G N2 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.14	13.2
G S1 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.14	13.2
G S2 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.14	13.2
M SW APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.24	13.2
M NW APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.24	13.2
M SE APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.24	13.2
M NE APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.24	13.2
M N1 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.14	13.2
M N2 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.14	13.2
M S1 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.14	13.2
M S2 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.14	13.2
T SW APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.59	13.2
T NW APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.59	13.2
T SE APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.59	13.2
T NE APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.59	13.2
T N1 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.50	13.2
T N2 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.50	13.2
T S1 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.50	13.2
T S2 APARTMENT	88	269	35.30	3.87	3.88	5.4	0.0	42.5	0.0	0.50	13.2
T CORRIDOR	78	237	0.00	9.91	5.38	0.0	0.0	19.7	0.0	0.40	0.0
G CORRIDOR	78	237	0.00	9.91	5.38	0.0	0.0	19.7	0.0	0.05	0.0
M CORRIDOR	78	237	0.00	9.91	5.38	0.0	0.0	19.7	0.0	0.05	0.0
Outpatient Health Care	**3,804**	**11,932**									
Floor 1 Anesthesia	10	31	0.00		32.29	21.5	0.0	61.2	68.0	0.30	3.8
Floor 1 Bio Haz	5	16	0.00		9.69	1.1	0.0	4.0	0.0	0.00	0.0
Floor 1 Café	39	119	1.00		9.69	10.8	0.0	368.3	0.0	0.17	0.0
Floor 1 Clean	12	36	5.00		12.92	21.5	0.0	17.8	0.0	0.00	0.0
Floor 1 Clean Work	15	47	5.00		12.92	21.5	0.0	23.4	0.0	0.00	0.0
Floor 1 Dictation	12	36	20.00		11.84	11.8	0.0	5.5	0.0	0.00	0.0
Floor 1 Dressing Room	4	13	20.00		11.84	11.8	0.0	2.0	0.0	0.71	0.0
Floor 1 Electrical Room	9	28	0.00		16.15	53.8	0.0	2.3	0.0	0.25	0.0
Floor 1 Elevator Pump Room	8	26	0.00		16.15	53.8	0.0	2.1	0.0	0.78	0.0
Floor 1 Humid	5	15	20.00		11.84	11.8	0.0	2.4	0.0	0.00	0.0
Floor 1 IT Hall	13	40	0.00		10.76	4.3	0.0	3.3	0.0	0.00	0.0
Floor 1 IT Room	10	32	20.00		11.84	11.8	0.0	4.9	0.0	0.00	0.0
Floor 1 Lobby	58	176	3.33		13.99	11.8	0.0	122.7	0.0	0.13	0.0
Floor 1 Lobby Hall	22	68	0.00		10.76	4.3	0.0	5.7	0.0	0.00	0.0
Floor 1 Lobby Toilet	5	15	0.00		9.69	4.3	0.0	51.0	42.5	0.40	0.0
Floor 1 Locker Room	61	187	6.67		8.61	32.3	0.0	65.1	0.0	0.12	0.0
Floor 1 Locker Room Hall	46	140	0.00		10.76	4.3	0.0	11.7	0.0	0.00	0.0
Floor 1 Lounge	33	102	6.67		8.61	32.3	0.0	35.5	0.0	0.00	0.0
Floor 1 Med Gas	5	16	0.00		9.69	1.1	0.0	4.0	0.0	0.96	0.0
Floor 1 MRI Control Room	16	48	5.00		4.31	107.6	0.0	23.8	79.3	0.11	3.8
Floor 1 MRI Hall	14	42	0.00		10.76	4.3	0.0	3.5	0.0	0.00	0.0

Building Type/Zone	Area m^2	Vol. m^3	m^2/ person	1989 Lights Wm^2	2004 Lights Wm^2	Elec. Proc. W/m^2	Gas Proc. W/m^2	Vent. L/s	Exhst L/s	Infil. ACH	SWH L/h
Floor 1 MRI Room	41	125	5.00		4.31	107.6	0.0	62.3	207.7	0.00	3.8
Floor 1 MRI Toilet	5	15	0.00		9.69	4.3	0.0	51.0	42.5	0.40	0.0
Floor 1 Nourishment	17	52	5.00		10.76	21.5	0.0	31.9	0.0	0.00	0.0
Floor 1 Nurse Hall	46	140	0.00		10.76	4.3	0.0	11.7	0.0	0.00	0.0
Floor 1 Nurse Janitor	5	15	0.00		9.69	1.1	0.0	3.8	0.0	0.00	0.0
Floor 1 Nurse Station	24	74	5.00		10.76	21.5	0.0	45.8	0.0	0.00	0.0
Floor 1 Nurse Toilet	5	15	0.00		9.69	4.3	0.0	51.0	42.5	0.00	0.0
Floor 1 Office	45	137	20.00		11.84	11.8	0.0	21.2	0.0	0.00	0.0
Floor 1 Operating Room 1	43	130	5.00		23.68	43.1	75.3	108.5	0.0	0.33	22.7
Floor 1 Operating Room 2	45	136	5.00		23.68	43.1	75.3	113.3	0.0	0.18	22.7
Floor 1 Operating Room 3	44	135	5.00		23.68	43.1	75.3	112.3	0.0	0.00	22.7
Floor 1 PACU	10	31	5.00		8.61	32.3	0.0	17.0	0.0	0.00	3.8
Floor 1 Pre-Op Hall	49	150	0.00		10.76	4.3	0.0	12.5	0.0	0.00	0.0
Floor 1 Pre-Op Room 1	18	54	10.00		7.53	21.5	0.0	29.7	0.0	0.08	3.8
Floor 1 Pre-Op Room 2	31	96	10.00		7.53	21.5	0.0	53.2	0.0	0.00	3.8
Floor 1 Pre-Op Toilet	5	15	0.00		9.69	4.3	0.0	51.0	42.5	0.40	0.0
Floor 1 Procedure Room	26	81	5.00		29.06	32.3	0.0	67.2	0.0	0.24	3.8
Floor 1 Reception	47	144	3.33		13.99	11.8	0.0	100.4	0.0	0.09	0.0
Floor 1 Reception Hall	12	36	0.00		10.76	4.3	0.0	3.0	0.0	0.00	0.0
Floor 1 Recovery Room	50	153	5.00		8.61	32.3	0.0	84.9	0.0	0.30	3.8
Floor 1 Scheduling	11	34	20.00		11.84	11.8	0.0	5.2	0.0	0.21	0.0
Floor 1 Scrub	8	24	0.00		10.76	4.3	0.0	2.0	0.0	0.00	0.0
Floor 1 Soil	12	36	5.00		12.92	21.5	0.0	89.2	99.1	0.00	0.0
Floor 1 Soil Hold	5	16	5.00		12.92	21.5	0.0	39.6	44.0	0.00	0.0
Floor 1 Soil Work	17	51	5.00		12.92	21.5	0.0	127.4	141.6	0.00	0.0
Floor 1 Step Down	28	85	5.00		8.61	32.3	0.0	47.2	0.0	0.44	3.8
Floor 1 Sterile Hall	57	174	0.00		10.76	4.3	0.0	14.5	0.0	0.05	0.0
Floor 1 Sterile Storage	37	112	0.00		9.69	1.1	0.0	28.0	0.0	0.00	0.0
Floor 1 Storage	85	261	0.00		9.69	1.1	0.0	65.1	0.0	0.24	0.0
Floor 1 Sub-Sterile	18	56	0.00		10.76	4.3	0.0	4.6	0.0	0.26	0.0
Floor 1 Utility Hall	24	72	0.00		10.76	4.3	0.0	6.0	0.0	0.22	0.0
Floor 1 Utility Janitor	4	12	0.00		9.69	1.1	0.0	3.0	0.0	0.00	0.0
Floor 1 Utility Room	33	102	0.00		9.69	1.1	0.0	25.5	0.0	0.18	0.0
Floor 1 Vestibule	7	20	0.00		10.76	4.3	0.0	1.7	0.0	0.40	0.0
Floor 2 Conference	31	95	2.00		13.99	10.8	0.0	147.3	0.0	0.43	0.0
Floor 2 Conference Toilet	6	18	0.00		9.69	4.3	0.0	60.4	50.3	0.00	0.0
Floor 2 Dictation	7	20	20.00		11.84	11.8	0.0	3.1	0.0	0.00	0.0
Floor 2 Exam 1	33	102	5.00		16.15	11.8	0.0	51.0	0.0	0.42	0.0
Floor 2 Exam 2	50	153	5.00		16.15	11.8	0.0	76.4	0.0	0.12	0.0
Floor 2 Exam 3	67	204	5.00		16.15	11.8	0.0	101.9	0.0	0.12	0.0
Floor 2 Exam 4	8	24	5.00		16.15	11.8	0.0	11.9	0.0	0.30	0.0
Floor 2 Exam 5	33	99	5.00		16.15	11.8	0.0	49.5	0.0	0.26	0.0
Floor 2 Exam 6	21	64	5.00		16.15	11.8	0.0	31.9	0.0	0.24	0.0
Floor 2 Exam 7	74	224	5.00		16.15	11.8	0.0	112.1	0.0	0.11	0.0
Floor 2 Exam 8	25	76	5.00		16.15	11.8	0.0	38.2	0.0	0.24	0.0
Floor 2 Exam 9	37	112	5.00		16.15	11.8	0.0	56.1	0.0	0.11	0.0
Floor 2 Exam Hall 1	17	51	0.00		10.76	4.3	0.0	4.2	0.0	0.12	0.0
Floor 2 Exam Hall 2	17	51	0.00		10.76	4.3	0.0	4.2	0.0	0.12	0.0
Floor 2 Exam Hall 3	17	51	0.00		10.76	4.3	0.0	4.2	0.0	0.12	0.0
Floor 2 Exam Hall 4	18	56	0.00		10.76	4.3	0.0	4.7	0.0	0.11	0.0
Floor 2 Exam Hall 5	18	56	0.00		10.76	4.3	0.0	4.7	0.0	0.11	0.0
Floor 2 Exam Hall 6	18	56	0.00		10.76	4.3	0.0	4.7	0.0	0.11	0.0
Floor 2 Janitor	6	18	0.00		9.69	1.1	0.0	4.5	0.0	0.91	0.0
Floor 2 Lounge	7	23	6.67		8.61	32.3	0.0	7.9	0.0	0.00	0.0
Floor 2 Nurse Station 1	14	42	5.00		10.76	21.5	0.0	26.3	0.0	0.00	0.0
Floor 2 Nurse Station 2	17	51	5.00		10.76	21.5	0.0	31.6	0.0	0.00	0.0

Building Type/Zone	Area m^2	Vol. m^3	m^2/ person	1989 Lights Wm^2	2004 Lights Wm^2	Elec. Proc. W/m^2	Gas Proc. W/m^2	Vent. L/s	Exhst L/s	Infil. ACH	SWH L/h
Floor 2 Office	52	159	20.00		11.84	11.8	0.0	24.6	0.0	0.26	0.0
Floor 2 Office Hall	41	126	0.00		10.76	4.3	0.0	10.5	0.0	0.00	0.0
Floor 2 Reception	91	279	3.33		13.99	11.8	0.0	194.1	0.0	0.18	0.0
Floor 2 Reception Hall	52	160	0.00		10.76	4.3	0.0	13.3	0.0	0.60	0.0
Floor 2 Reception Toilet	12	36	0.00		9.69	4.3	0.0	118.9	99.1	0.00	0.0
Floor 2 Scheduling 1	30	92	20.00		11.84	11.8	0.0	14.2	0.0	0.00	0.0
Floor 2 Scheduling 2	32	97	20.00		11.84	11.8	0.0	15.0	0.0	0.00	0.0
Floor 2 Storage 1	5	16	0.00		9.69	1.1	0.0	4.0	0.0	0.00	0.0
Floor 2 Storage 2	11	34	0.00		9.69	1.1	0.0	8.5	0.0	0.00	0.0
Floor 2 Storage 3	13	41	0.00		9.69	1.1	0.0	10.2	0.0	0.00	0.0
Floor 2 Utility	12	36	0.00		9.69	1.1	0.0	8.9	0.0	0.26	0.0
Floor 2 Work	157	479	20.00		11.84	11.8	0.0	74.1	0.0	0.05	0.0
Floor 2 Work Hall	77	236	0.00		10.76	4.3	0.0	19.7	0.0	0.03	0.0
Floor 2 Work Toilet	5	15	0.00		9.69	4.3	0.0	51.0	42.5	0.40	0.0
Floor 2 X-Ray	84	255	5.00		4.31	107.6	0.0	127.4	0.0	0.00	3.8
Floor 3 Dressing Room	4	12	20.00		11.84	11.8	0.0	1.8	0.0	0.00	0.0
Floor 3 Elevator Hall	34	105	0.00		10.76	4.3	0.0	8.7	0.0	0.04	0.0
Floor 3 Humid	10	31	20.00		11.84	11.8	0.0	4.7	0.0	0.00	0.0
Floor 3 Janitor	6	18	0.00		9.69	1.1	0.0	4.5	0.0	0.91	0.0
Floor 3 Locker	11	34	6.67		8.61	32.3	0.0	11.8	0.0	0.00	0.0
Floor 3 Lounge	71	215	6.67		8.61	32.3	0.0	74.9	0.0	0.11	0.0
Floor 3 Lounge Toilet	18	54	0.00		9.69	4.3	0.0	181.2	151.0	0.22	0.0
Floor 3 Mechanical	33	99	0.00		16.15	53.8	0.0	8.3	0.0	0.26	0.0
Floor 3 Mechanical Hall	28	85	0.00		10.76	4.3	0.0	7.1	0.0	0.00	0.0
Floor 3 Office	282	860	20.00		11.84	11.8	0.0	133.1	0.0	0.09	0.0
Floor 3 Office Hall	77	236	0.00		10.76	4.3	0.0	19.7	0.0	0.03	0.0
Floor 3 Office Toilet	5	15	0.00		9.69	4.3	0.0	51.0	42.5	0.40	0.0
Floor 3 Physical Therapy 1	121	368	5.00		9.69	16.2	0.0	171.0	0.0	0.23	3.8
Floor 3 Physical Therapy 2	55	168	5.00		9.69	16.2	0.0	77.9	0.0	0.00	3.8
Floor 3 Physical Therapy Toilet	8	24	0.00		9.69	4.3	0.0	79.3	66.1	0.00	0.0
Floor 3 Storage 1	10	31	0.00		9.69	1.1	0.0	7.6	0.0	0.00	0.0
Floor 3 Storage 2	8	24	0.00		9.69	1.1	0.0	5.9	0.0	0.00	0.0
Floor 3 Treatment	44	135	5.00		16.15	11.8	0.0	67.4	0.0	0.00	0.0
Floor 3 Undeveloped 1	211	642	20.00		11.84	11.8	0.0	160.5	0.0	0.11	0.0
Floor 3 Undeveloped 2	107	326	20.00		11.84	11.8	0.0	81.5	0.0	0.17	0.0
Floor 3 Utility	20	61	0.00		9.69	1.1	0.0	15.3	0.0	0.00	0.0
Floor 3 Work	53	163	20.00		11.84	11.8	0.0	25.2	0.0	0.26	0.0
NE Stair	16	143	0.00		10.76	4.3	0.0	4.0	0.0	0.74	0.0
NW Elevator	13	119	0.00		10.76	4.3	0.0	3.3	0.0	0.69	0.0
NW Stair	18	163	0.00		10.76	4.3	0.0	4.5	0.0	0.74	0.0
SW Stair	9	82	0.00		10.76	4.3	0.0	2.3	0.0	0.74	0.0
Retail	**2,294**	**13,993**									
Back_Space	380	2,317	27.87	12.55	8.61	8.1	0.0	284.9	0.0	0.37	0.0
Core_Retail	1,600	9,763	6.19	36.25	18.29	3.2	0.0	2400.7	0.0	0.22	0.0
Point_of_Sale	151	920	6.19	36.25	18.29	21.5	0.0	226.2	0.0	0.40	0.0
Front_Retail	151	920	6.19	36.25	18.29	3.2	0.0	226.2	0.0	0.40	0.0
Front_Entry	12	73	6.19	36.25	11.84	0.0	0.0	0.0	0.0	0.54	0.0
Primary Education	**6,871**	**27,484**									
CORNER_CLASS_1_POD_1_ZN_1_FLR_1	99	396	4.00	21.52	15.06	15.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_1_POD_1_ZN_1_FLR_1	477	1,908	4.00	21.52	15.06	15.0	0.0	954.0	0.0	0.39	0.0
CORRIDOR_POD_1_ZN_1_FLR_1	192	768	10.00	21.52	5.38	4.0	0.0	96.0	0.0	0.29	0.0
CORNER_CLASS_2_POD_1_ZN_1_FLR_1	99	396	4.00	21.52	15.06	15.0	0.0	198.0	0.0	0.49	0.0

Building Type/Zone	Area m²	Vol. m³	m²/ person	1989 Lights Wm²	2004 Lights Wm²	Elec. Proc. W/m²	Gas Proc. W/m²	Vent. L/s	Exhst L/s	Infil. ACH	SWH L/h
MULT_CLASS_2_POD_1_ZN_1_FLR_1	477	1,908	4.00	21.52	15.06	15.0	0.0	954.0	0.0	0.39	0.0
CORNER_CLASS_1_POD_2_ZN_1_FLR_1	99	396	4.00	21.52	15.06	15.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_1_POD_2_ZN_1_FLR_1	477	1,908	4.00	21.52	15.06	15.0	0.0	954.0	0.0	0.39	0.0
CORRIDOR_POD_2_ZN_1_FLR_1	192	768	10.00	9.69	5.38	4.0	0.0	96.0	0.0	0.29	0.0
CORNER_CLASS_2_POD_2_ZN_1_FLR_1	99	396	4.00	21.52	15.06	15.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_2_POD_2_ZN_1_FLR_1	477	1,908	4.00	21.52	15.06	15.0	0.0	954.0	0.0	0.39	0.0
CORNER_CLASS_1_POD_3_ZN_1_FLR_1	99	396	4.00	21.52	15.06	15.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_1_POD_3_ZN_1_FLR_1	477	1,908	4.00	21.52	15.06	15.0	0.0	954.0	0.0	0.39	0.0
CORRIDOR_POD_3_ZN_1_FLR_1	192	768	10.00	9.69	5.38	4.0	0.0	96.0	0.0	0.29	0.0
CORNER_CLASS_2_POD_3_ZN_1_FLR_1	99	396	4.00	21.52	15.06	15.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_2_POD_3_ZN_1_FLR_1	315	1,260	4.00	21.52	15.06	8.1	0.0	630.0	0.0	0.39	0.0
COMPUTER_CLASS_ZN_1_FLR_1	162	648	3.33	21.52	15.06	20.0	0.0	389.2	0.0	0.39	0.0
MAIN_CORRIDOR_ZN_1_FLR_1	546	2,184	0.00	11.14	5.38	4.0	0.0	273.0	0.0	0.29	0.0
LOBBY_ZN_1_FLR_1	171	684	0.00	12.26	13.99	4.0	0.0	85.5	0.0	0.39	0.0
MECH_ZN_1_FLR_1	252	1,008	100.00	8.26	16.14	10.0	0.0	63.0	0.0	0.27	0.0
BATH_ZN_1_FLR_1	190	760	100.00	9.70	9.68	4.0	0.0	300.0	283.2	0.33	4.00
OFFICES_ZN_1_FLR_1	441	1,764	20.00	20.33	11.84	10.8	0.0	220.5	0.0	0.38	0.0
GYM_ZN_1_FLR_1	357	1,428	3.33	11.47	15.06	5.0	0.0	1072.1	0.0	0.32	0.0
KITCHEN_ZN_1_FLR_1	168	672	6.67	17.20	12.91	190.5	954.1	201.5	1557.4	0.32	4.00
CAFETERIA_ZN_1_FLR_1	315	1,260	1.39	15.05	15.06	25.4	0.0	2260.4	0.0	0.40	0.0
LIBRARY_MEDIA_CENTER_ZN_1_FLR_1	399	1,596	4.35	22.75	13.99	15.0	0.0	733.8	0.0	0.38	0.0
Secondary Education	**19,592**	**95,216**									
CORNER_CLASS_1_POD_1_ZN_1_FLR_1	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.22	0.0
CORNER_CLASS_1_POD_1_ZN_1_FLR_2	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_1_POD_1_ZN_1_FLR_1	477	1,908	4.00	21.52	15.06	10.0	0.0	954.0	0.0	0.12	0.0
MULT_CLASS_1_POD_1_ZN_1_FLR_2	477	1,908	4.00	21.52	15.06	10.0	0.0	954.0	0.0	0.39	0.0
CORRIDOR_POD_1_ZN_1_FLR_1	320	1,280	10.00	9.25	5.38	4.0	0.0	160.0	0.0	0.02	0.0
CORRIDOR_POD_1_ZN_1_FLR_2	320	1,280	10.00	9.25	5.38	4.0	0.0	160.0	0.0	0.29	0.0
CORNER_CLASS_2_POD_1_ZN_1_FLR_1	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.22	0.0
CORNER_CLASS_2_POD_1_ZN_1_FLR_2	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_2_POD_1_ZN_1_FLR_1	477	1,908	4.00	21.52	15.06	10.0	0.0	954.0	0.0	0.12	0.0
MULT_CLASS_2_POD_1_ZN_1_FLR_2	477	1,908	4.00	21.52	15.06	10.0	0.0	954.0	0.0	0.39	0.0
CORNER_CLASS_1_POD_2_ZN_1_FLR_1	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.22	0.0
CORNER_CLASS_1_POD_2_ZN_1_FLR_2	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_1_POD_2_ZN_1_	477	1,908	4.00	21.52	15.06	10.0	0.0	954.0	0.0	0.12	0.0

Building Type/Zone	Area m²	Vol. m³	m²/ person	1989 Lights Wm²	2004 Lights Wm²	Elec. Proc. W/m²	Gas Proc. W/m²	Vent. L/s	Exhst L/s	Infil. ACH	SWH L/h
FLR_1											
MULT_CLASS_1_POD_2_ZN_1_FLR_2	477	1,908	4.00	21.52	15.06	10.0	0.0	954.0	0.0	0.39	0.0
CORRIDOR_POD_2_ZN_1_FLR_1	320	1,280	10.00	9.25	5.38	4.0	0.0	160.0	0.0	0.02	0.0
CORRIDOR_POD_2_ZN_1_FLR_2	320	1,280	10.00	9.25	5.38	4.0	0.0	160.0	0.0	0.29	0.0
CORNER_CLASS_2_POD_2_ZN_1_FLR_1	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.22	0.0
CORNER_CLASS_2_POD_2_ZN_1_FLR_2	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_2_POD_2_ZN_1_FLR_1	477	1,908	4.00	21.52	15.06	10.0	0.0	954.0	0.0	0.12	0.0
MULT_CLASS_2_POD_2_ZN_1_FLR_2	477	1,908	4.00	21.52	15.06	10.0	0.0	954.0	0.0	0.39	0.0
CORNER_CLASS_1_POD_3_ZN_1_FLR_1	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.22	0.0
CORNER_CLASS_1_POD_3_ZN_1_FLR_2	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_1_POD_3_ZN_1_FLR_1	477	1,908	4.00	21.52	15.06	10.0	0.0	954.0	0.0	0.12	0.0
MULT_CLASS_1_POD_3_ZN_1_FLR_2	477	1,908	4.00	21.52	15.06	20.0	0.0	954.0	0.0	0.39	0.0
CORRIDOR_POD_3_ZN_1_FLR_1	320	1,280	10.00	9.25	5.38	4.0	0.0	160.0	0.0	0.02	0.0
CORRIDOR_POD_3_ZN_1_FLR_2	320	1,280	10.00	9.25	5.38	4.0	0.0	160.0	0.0	0.29	0.0
CORNER_CLASS_2_POD_3_ZN_1_FLR_1	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.22	0.0
CORNER_CLASS_2_POD_3_ZN_1_FLR_2	99	396	4.00	21.52	15.06	10.0	0.0	198.0	0.0	0.49	0.0
MULT_CLASS_2_POD_3_ZN_1_FLR_1	477	1,908	4.00	21.52	15.06	10.0	0.0	954.0	0.0	0.12	0.0
MULT_CLASS_2_POD_3_ZN_1_FLR_2	477	1,908	4.00	21.52	15.06	20.0	0.0	954.0	0.0	0.39	0.0
MAIN_CORRIDOR_ZN_1_FLR_1	1,140	4,560	0.00	10.74	5.38	4.0	0.0	570.0	0.0	0.05	0.0
MAIN_CORRIDOR_ZN_1_FLR_2	1,140	4,560	0.00	10.74	5.38	4.0	0.0	570.0	0.0	0.32	0.0
LOBBY_ZN_1_FLR_1	210	840	0.00	12.00	13.99	4.0	0.0	105.0	0.0	0.08	0.0
LOBBY_ZN_1_FLR_2	210	840	0.00	12.00	13.99	4.0	0.0	105.0	0.0	0.35	0.0
BATHROOMS_ZN_1_FLR_1	210	840	10.00	9.60	9.68	4.0	0.0	300.0	0.0	0.15	4.00
BATHROOMS_ZN_1_FLR_2	210	840	10.00	9.60	9.68	4.0	0.0	300.0	0.0	0.42	4.00
OFFICES_ZN_1_FLR_1	532	2,128	20.00	20.09	11.84	10.8	0.0	266.0	0.0	0.11	0.0
OFFICES_ZN_1_FLR_2	532	2,128	20.00	20.09	11.84	10.8	0.0	266.0	0.0	0.38	0.0
GYM_ZN_1_FLR_1	1,976	15,808	1.00	11.38	15.06	5.0	0.0	19760.0	0.0	0.14	717.2
AUX_GYM_ZN_1_FLR_1	1,248	9,984	3.33	11.81	15.06	5.0	0.0	3747.7	0.0	0.20	0.0
AUDITORIUM_ZN_1_FLR_1	988	7,904	1.00	12.08	9.68	5.0	0.0	7904.0	0.0	0.21	0.0
KITCHEN_ZN_1_FLR_1	216	864	6.67	16.76	12.91	222.2	1119.0	259.1	1887.8	0.05	4.00
LIBRARY_MEDIA_CENTER_ZN_1_FLR_2	840	3,360	4.35	0.00	13.99	10.0	0.0	1544.8	0.0	0.35	0.0
CAFETERIA_ZN_1_FLR_1	624	2,496	1.39	14.38	15.06	19.3	0.0	4477.8	0.0	0.09	0.0
MECH_ZN_1_FLR_1	342	1,368	100.00	8.05	16.14	4.0	0.0	85.5	0.0	0.00	0.0
MECH_ZN_1_FLR_2	342	1,368	100.00	8.05	16.14	4.0	0.0	85.5	0.0	0.00	0.0
Full Service Restaurant	**511**	**1,558**									
Dining	372	1,133	1.39	27.38	22.60	60.3	0.0	2667.7	0.0	0.52	0.0
Kitchen	139	425	18.58	16.37	12.91	376.6	1197.9	60.0	1887.8	0.63	503.5
Attic	511	856								1.00	
Supermarket	**4,181**	**25,493**									
Office	89	542	18.58	21.36	11.84	8.1	0.0	47.8	0.0	0.41	0.0

Building Type/Zone	Area m^2	Vol. m^3	m^2/ person	1989 Lights Wm^2	2004 Lights Wm^2	Elec. Proc. W/m^2	Gas Proc. W/m^2	Vent. L/s	Exhst L/s	Infil. ACH	SWH L/h
Dry Storage	622	3,792	27.87	11.90	8.61	8.1	0.0	466.4	0.0	0.32	0.0
Deli	225	1,370	11.61	29.94	18.29	53.8	26.9	337.1	0.0	0.29	18.9
Sales	2,325	14,177	11.61	29.94	18.29	5.4	0.0	3487.4	0.0	0.20	0.0
Produce	711	4,338	11.61	29.94	18.29	5.4	0.0	1067.0	0.0	0.27	0.0
Bakery	209	1,275	11.61	29.94	18.29	53.8	26.9	313.6	1179.9	0.34	18.9
Small Hotel	**4,014**	**11,622**									
REARSTAIRSFLR1	20	67		9.95	6.46	0.0	0.0	0.0	0.0	0.58	0.0
CORRIDORFLR1	151	505		9.50	5.38	0.0	0.0	37.6	0.0	0.07	0.0
REARSTORAGEFLR1	20	67		4.98	8.61	0.0	0.0	0.0	0.0	0.58	0.0
FRONTLOUNGEFLR1	163	547	3.08	14.15	11.84	15.4	0.0	423.5	0.0	0.19	0.0
RESTROOMFLR1	33	109	32.61	11.82	9.68	10.8	0.0	0.0	200.0	0.13	0.0
MEETINGROOMFLR1	80	269	1.87	22.91	13.99	12.9	0.0	429.3	0.0	0.13	0.0
MECHANICALROOMFLR1	33	109		10.34	16.14	0.0	0.0	8.2	0.0	0.13	0.0
GUESTROOM101	33	109	21.74	20.68	11.84	14.3	0.0	14.2	0.0	0.13	0.2
GUESTROOM102	33	109	21.74	20.68	11.84	14.3	0.0	14.2	0.0	0.13	0.2
GUESTROOM103	33	109	21.74	20.68	11.84	14.3	0.0	14.2	0.0	0.13	0.2
GUESTROOM104	33	109	21.74	20.68	11.84	14.3	0.0	14.2	0.0	0.13	0.2
GUESTROOM105	33	109	21.74	20.68	11.84	14.3	0.0	14.2	0.0	0.13	0.2
EMPLOYEELOUNGEFLR1	33	109	2.96	17.73	12.91	77.2	0.0	88.1	0.0	0.13	0.0
LAUNDRYROOMFLR1	98	328	8.89	11.18	6.46	21.9	184.2	143.1	0.0	0.13	2.6
ELEVATORCOREFLR1	15	50		0.00	0.00	128.4	0.0	75.3	0.0	0.13	0.0
EXERCISECENTERFLR1	33	109	2.96	14.77	9.68	11.5	0.0	110.2	0.0	0.13	0.0
FRONTOFFICEFLR1	130	437	13.04	21.67	11.84	12.9	0.0	100.0	0.0	0.13	0.0
FRONTSTAIRSFLR1	20	67		9.95	6.46	0.0	0.0	0.0	0.0	0.58	0.0
FRONTSTORAGEFLR1	13	42		5.75	8.61	0.0	0.0	0.0	0.0	0.13	0.0
REARSTAIRSFLR2	20	55		8.77	6.46	0.0	0.0	0.0	0.0	0.58	0.0
CORRIDORFLR2	125	344		9.22	5.38	0.0	0.0	31.4	0.0	0.06	0.0
REARSTORAGEFLR2	20	55		4.39	8.61	0.0	0.0	0.0	0.0	0.58	0.0
GUESTROOM201	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.41	0.2
GUESTROOM202_205	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.13	0.2
GUESTROOM206_208	105	289	23.41	18.77	11.84	14.3	0.0	42.5	0.0	0.13	0.2
GUESTROOM209_212	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.13	0.2
GUESTROOM213	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.13	0.2
GUESTROOM214	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.13	0.2
GUESTROOM215_218	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.13	0.2
ELEVATORCOREFLR2	15	41		0.00	0.00	0.0	0.0	0.0	0.0	0.13	0.0
GUESTROOM219	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.13	0.2
GUESTROOM220_223	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.13	0.2
GUESTROOM224	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.13	0.2
FRONTSTORAGEFLR2	13	34		4.89	8.61	0.0	0.0	0.0	0.0	0.13	0.0
FRONTSTAIRSFLR2	20	55		8.77	6.46	0.0	0.0	0.0	0.0	0.58	0.0
REARSTAIRSFLR3	20	55		8.77	6.46	0.0	0.0	0.0	0.0	0.58	0.0
CORRIDORFLR3	125	344		9.22	5.38	0.0	0.0	31.4	0.0	0.06	0.0
REARSTORAGEFLR3	20	55		4.39	8.61	0.0	0.0	0.0	0.0	0.58	0.0
GUESTROOM301	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.41	0.2
GUESTROOM302_305	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.13	0.2
GUESTROOM306_308	105	289	23.41	18.77	11.84	14.3	0.0	42.5	0.0	0.13	0.2
GUESTROOM309_312	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.13	0.2
GUESTROOM313	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.13	0.2
GUESTROOM314	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.13	0.2
GUESTROOM315_318	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.13	0.2
ELEVATORCOREFLR3	15	41		0.00	0.00	0.0	0.0	0.0	0.0	0.13	0.0
GUESTROOM319	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.13	0.2
GUESTROOM320_323	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.13	0.2
GUESTROOM324	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.13	0.2
FRONTSTORAGEFLR3	13	34		4.89	8.61	0.0	0.0	0.0	0.0	0.13	0.0

Building Type/Zone	Area m^2	Vol. m^3	m^2/ person	1989 Lights Wm^2	2004 Lights Wm^2	Elec. Proc. W/m^2	Gas Proc. W/m^2	Vent. L/s	Exhst L/s	Infil. ACH	SWH L/h
FRONTSTAIRSFLR3	20	55		8.77	6.46	0.0	0.0	0.0	0.0	0.58	0.0
REARSTAIRSFLR4	20	55		4.39	6.46	0.0	0.0	0.0	0.0	0.98	0.0
CORRIDORFLR4	125	344		9.22	5.38	0.0	0.0	31.4	0.0	0.45	0.0
REARSTORAGEFLR4	20	55		4.39	8.61	0.0	0.0	0.0	0.0	0.98	0.0
GUESTROOM401	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.80	0.2
GUESTROOM402_405	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.53	0.2
GUESTROOM406_408	105	289	23.41	18.77	11.84	14.3	0.0	42.5	0.0	0.53	0.2
GUESTROOM409_412	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.53	0.2
GUESTROOM413	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.53	0.2
GUESTROOM414	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.53	0.2
GUESTROOM415_418	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.53	0.2
ELEVATORCOREFLR4	15	41		0.00	0.00	0.0	0.0	0.0	0.0	0.53	0.0
GUESTROOM419	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.53	0.2
GUESTROOM420_423	130	358	21.74	18.77	11.84	14.3	0.0	56.6	0.0	0.53	0.2
GUESTROOM424	33	89	21.74	18.77	11.84	14.3	0.0	14.2	0.0	0.53	0.2
FRONTSTORAGEFLR4	13	34		4.89	8.61	0.0	0.0	0.0	0.0	0.53	0.0
FRONTSTAIRSFLR4	20	55		8.77	6.46	0.0	0.0	0.0	0.0	0.98	0.0
Small Office	**511**	**1,559**									
Core_ZN	150	456	18.58	19.48	10.76	10.76	0.0	80.5	0.0	0.00	11.4
Perimeter_ZN_1	113	346	18.58	19.48	10.76	10.76	0.0	61.1	0.0	0.62	0.0
Perimeter_ZN_2	67	205	18.58	19.48	10.76	10.76	0.0	36.2	0.0	0.66	0.0
Perimeter_ZN_3	113	346	18.58	19.48	10.76	10.76	0.0	61.1	0.0	0.62	0.0
Perimeter_ZN_4	67	205	18.58	19.48	10.76	10.76	0.0	36.2	0.0	0.66	0.0
Attic	568	720	0.00		0.00	0.0	0.0	0.0	0.0	1.00	0.0
Strip Mall	**2,090**	**10,831**									
LGStore1	348	1,805	6.19	60.26	23.99	4.3	0.0	522.6	0.0	0.38	0.0
SMStore1	174	903	6.19	60.26	23.99	4.3	0.0	261.3	0.0	0.31	0.0
SMStore2	174	903	6.19	35.51	18.29	4.3	0.0	261.3	0.0	0.31	0.0
SMStore3	174	903	6.19	35.51	18.29	4.3	0.0	261.3	0.0	0.31	0.0
SMStore4	174	903	6.19	35.51	18.29	4.3	0.0	261.3	0.0	0.31	0.0
LGStore2	348	1,805	6.19	29.05	13.77	4.3	0.0	522.6	0.0	0.31	0.0
SMStore5	174	903	6.19	29.05	13.77	4.3	0.0	261.3	0.0	0.31	0.0
SMStore6	174	903	6.19	29.05	13.77	4.3	0.0	261.3	0.0	0.31	0.0
SMStore7	174	903	6.19	29.05	13.77	4.3	0.0	261.3	0.0	0.31	0.0
SMStore8	174	903	6.19	29.05	13.77	4.3	0.0	261.3	0.0	0.45	0.0
Warehouse	**4,835**	**39,241**									
Office	237	1,011	47.38	21.69	11.84	8.1	0.0	50.0	0.0	0.16	0.0
Fine Storage	1,393	10,881	0.00	11.64	15.06	0.0	0.0	348.4	0.0	0.22	0.0
Bulk Storage	3,205	27,350	0.00	3.34	9.68	2.6	0.0	37758.1	0.0	0.19	0.0

Appendix B Schedules

Table B-1 Quick Service Restaurant Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BLDG_EQUIP_SCH	Weekday	0.1	0.1	0.1	0.1	0.1	0.1	0.35	0.35	0.25	0.25	0.35	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.35	0.35	0.25	0.25	0.35	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25
	SummerDesign	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.1	0.1	0.1	0.1	0.1	0.1	0.35	0.35	0.25	0.25	0.35	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25
BLDG_LIGHT_SCH	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Weekday, Sat, Sun, Hol, Other	0.45	0.15	0.15	0.15	0.15	0.45	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
BLDG_OCC_SCH	WD	0.05	0	0	0	0	0.05	0.1	0.4	0.4	0.3	0.2	0.5	0.8	0.7	0.4	0.2	0.25	0.5	0.55	0.55	0.55	0.5	0.35	0.2
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sat, Sun, Hol, Other	0.05	0	0	0	0	0.05	0.05	0.3	0.3	0.3	0.2	0.45	0.6	0.5	0.35	0.3	0.3	0.3	0.55	0.55	0.55	0.5	0.35	0.2
GAS_EQUIP_SCH	SummerDesign	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.02	0.02	0.02	0.02	0.02	0.03	0.09	0.14	0.1	0.1	0.22	0.27	0.24	0.21	0.14	0.13	0.15	0.17	0.17	0.17	0.15	0.14	0.12	0.02
INFIL_HALF_ON_SCH	WD, SummerDesign	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Sat, WinterDesign	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Sun, Hol, Other	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Kitchen_Exhaust_SCH	All	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
CLGSETP_KITCHEN_SCH	WinterDesign	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Other	26	30	30	30	30	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
HTGSETP_KITCHEN_SCH	SummerDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	WinterDesign	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
	Other	19	15.6	15.6	15.6	15.6	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
CLGSETP_SCH	WinterDesign	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Other	24	30	30	30	30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
HTGSETP_SCH	SummerDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Other	21	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
HVACOperationSchd	All	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MinOA_Sched	All	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kitchen_Case:1_WALKINFREEZER_ CaseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Kitchen_Case:1_WALKINFREEZER_ CaseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_Case:1_WALKINFREEZER_ CaseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_Case:1_WALKINFREEZER_ WalkInStockingSched	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
Kitchen_Case:2_SELFCONTAINEDD ISPLAYCASE_CaseStockingSched	All	0	0	0	0	0	0	50	70	70	80	70	50	50	80	90	80	0	0	0	0	0	0	0	0
BLDG_SWH_SCH	WD, SummerDesign	0.2	0	0	0	0	0	0.15	0.6	0.55	0.45	0.4	0.45	0.4	0.35	0.3	0.3	0.3	0.4	0.55	0.6	0.5	0.55	0.45	0.25
	Sat, WinterDesign	0.2	0	0	0	0	0	0.15	0.15	0.15	0.5	0.45	0.5	0.5	0.45	0.4	0.4	0.35	0.4	0.55	0.55	0.5	0.55	0.4	0.3
	Sun, Hol, Other	0.25	0	0	0	0	0	0.15	0.15	0.15	0.15	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.5	0.4	0.5	0.4	0.2
Kitchen Water Equipment Hot Supply Temp Sched	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Kitchen Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Kitchen Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Kitchen Water Equipment Temp Sched	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
PlantOnSched	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1 Water Heater Setpoint Temperature Schedule Name	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-2 Hospital Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kitchen_Exhaust_SCH	WD	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	SummerDesign	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	WinterDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Sats	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADMIN_EQUIP_SCH	WD	0.3	0.3	0.3	0.3	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	0.3	0.3	0.3	0.3
	SummerDesign	0.3	0.3	0.3	0.3	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	0.3	0.3	0.3	0.3
	WinterDesign	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Sat	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3
	Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
ADMIN_LIGHT_SCH	WD	0.1	0.1	0.1	0.1	0.3	0.3	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.6	0.6	0.3	0.3	0.1	0.1
	SummerDesign	0.1	0.1	0.1	0.1	0.3	0.3	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.6	0.6	0.3	0.3	0.1	0.1
	WinterDesign	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1
	Other	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05
ADMIN_OCC_SCH	WD	0.05	0.05	0.05	0.05	0.2	0.2	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.5	0.5	0.2	0.2	0.05	0.05
	SummerDesign	0.05	0.05	0.05	0.05	0.2	0.2	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.5	0.5	0.2	0.2	0.05	0.05
	WinterDesign	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.05	0.05	0.05	0.05
	Sat	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.05	0.05	0.05	0.05
	Sun, Hol, Other	0	0	0	0	0	0	0	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0	0	0	0	0	0	0
BLDG_ELEVATORS	WD, SummerDesign	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.75	1	1	1	0.75	1	1	1	1	1	0.52	0.52	0.52	0.28	0.2	0.2
	Sat, WinterDesign	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.46	0.7	0.7	0.7	0.51	0.51	0.51	0.51	0.51	0.25	0.2	0.2	0.2	0.2	0.2	0.2
	Other	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BLDG_LIGHT_SCH	WD	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.1
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.1	0.1	0.1	0.1	0.1	0.1
	Other	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
CRITICAL_EQUIP_SCH	WD	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	0.8	0.8	0.5	0.5	0.5	0.5
	SummerDesign	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	0.8	0.8	0.5	0.5	0.5	0.5
	WinterDesign	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Sat	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	0.8	0.8	0.5	0.5	0.5	0.5
	Sun, Hol, Other	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	0.8	0.8	0.5	0.5	0.5	0.5
CRITICAL_LIGHT_SCH	WD	0.5	0.5	0.5	0.5	0.7	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.7	0.7	0.7	0.5	0.5
	SummerDesign	0.5	0.5	0.5	0.5	0.7	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.7	0.7	0.7	0.5	0.5
	WinterDesign	0.5	0.5	0.5	0.5	0.7	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.7	0.7	0.7	0.5	0.5
	Sat	0.5	0.5	0.5	0.5	0.7	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.7	0.7	0.7	0.5	0.5
	Other	0.5	0.5	0.5	0.5	0.7	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.7	0.7	0.7	0.5	0.5
CRITICAL_OCC_SCH	WD	0.4	0.4	0.4	0.4	0.65	0.65	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.65	0.65	0.65	0.65	0.4	0.4
	SummerDesign	0.4	0.4	0.4	0.4	0.65	0.65	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.65	0.65	0.65	0.65	0.4	0.4
	WinterDesign	0.4	0.4	0.4	0.4	0.65	0.65	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.65	0.65	0.65	0.65	0.4	0.4
	Sat	0.4	0.4	0.4	0.4	0.65	0.65	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.65	0.65	0.65	0.65	0.4	0.4
	Other	0.4	0.4	0.4	0.4	0.65	0.65	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.65	0.65	0.65	0.65	0.4	0.4

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
INFIL_QUARTER_ON_SCH	WD	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	Sat	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	SummerDesign, WinterDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Other	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Kitchen_Elec_Equip_SCH	Weekday	0.1	0.1	0.1	0.1	0.1	0.1	0.25	0.35	0.35	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25	0.25
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.25	0.35	0.35	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25	0.25
	SummerDesign	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.1	0.1	0.1	0.1	0.1	0.1	0.25	0.35	0.35	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25	0.25
Kitchen_Gas_Equip_SCH	WD, Sat	0.02	0.02	0.02	0.02	0.02	0.05	0.1	0.15	0.2	0.15	0.25	0.25	0.25	0.2	0.15	0.2	0.3	0.3	0.3	0.2	0.2	0.15	0.1	0.05
	SummerDesign	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.02	0.02	0.02	0.02	0.02	0.05	0.1	0.15	0.2	0.15	0.25	0.25	0.25	0.2	0.15	0.2	0.3	0.3	0.3	0.2	0.2	0.15	0.1	0.05
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ADMIN_CLGSETP_SCH	WD	25	25	25	25	25	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	25	25	25	25	25	25
	SummerDesign	25	25	25	25	25	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	25	25	25	25	25	25
	WinterDesign	25	25	25	25	25	25	25	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	25	25	25	25	25	25	25	25	25
	Sats	25	25	25	25	25	25	25	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	25	25	25	25	25	25	25	25	25
	Other	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
ADMIN_HTGSETP_SCH	WD	18.3	18.3	18.3	18.3	18.3	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	18.3	18.3	18.3	18.3	18.3	18.3
	SummerDesign	18.3	18.3	18.3	18.3	18.3	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	18.3	18.3	18.3	18.3	18.3	18.3
	WinterDesign	18.3	18.3	18.3	18.3	18.3	18.3	18.3	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
	Sats	18.3	18.3	18.3	18.3	18.3	18.3	18.3	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
	Other	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
Kitchen_CLGSETP_SCH	WD	30	30	30	30	30	26	26	26	26	26	26	26	26	26	26	26	26	26	30	30	30	30	30	30
	SummerDesign	30	30	30	30	30	26	26	26	26	26	26	26	26	26	26	26	26	26	30	30	30	30	30	30
	WinterDesign	30	30	30	30	30	30	30	26	26	26	26	26	26	26	26	30	30	30	30	30	30	30	30	30
	Sats	30	30	30	30	30	30	30	26	26	26	26	26	26	26	26	30	30	30	30	30	30	30	30	30
	Other	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Kitchen_HTGSETP_SCH	WD	15.6	15.6	15.6	15.6	15.6	19	19	19	19	19	19	19	19	19	19	19	19	19	15.6	15.6	15.6	15.6	15.6	15.6
	SummerDesign	15.6	15.6	15.6	15.6	15.6	19	19	19	19	19	19	19	19	19	19	19	19	19	15.6	15.6	15.6	15.6	15.6	15.6
	WinterDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	19	19	19	19	19	19	19	19	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	Sats	15.6	15.6	15.6	15.6	15.6	15.6	15.6	19	19	19	19	19	19	19	19	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	Other	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
CRITICAL_CLGSETP_SCH	All	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2
CRITICAL_HTGSETP_SCH	All	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1
OR_CLGSETP_SCH	All	22.2	22.2	22.2	22.2	22.2	22.2	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	22.2	22.2	22.2	22.2	22.2	22.2	22.2
OR_HTGSETP_SCH	All	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
MaxRelHumSetSch	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
MinRelHumSetSch	All	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
CAV_SAT_SCH	All	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Heating-Supply-Air-Temp-Sch	All	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Seasonal-Reset-Supply-Air-Temp-Sch	All	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
HVACOperationSchd	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAV_OAminFracSchedule	All	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
VAV_OAminFracSchedule	All	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
CW-Loop-Temp-Schedule	All	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
HW-Loop-Temp-Schedule	All	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2
PlantOnSched	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kitchen_Flr_5_Case:1_WALKINFREEZER_CaseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Kitchen_Flr_5_Case:1_WALKINFREEZER_CaseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_Flr_5_Case:1_WALKINFREEZER_CaseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_Flr_5_Case:1_WALKINFREEZER_WalkInStockingSched	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
Kitchen_Flr_5_Case:2_SELFCONTAINEDDISPLAYCASE_CaseStockingSched	All	0	0	0	0	0	0	50	70	70	80	70	50	50	80	90	80	0	0	0	0	0	0	0	0
BLDG_SWH_EXTD_SCH	WD, SummerDesign	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.58	0.66	0.78	0.82	0.71	0.82	0.78	0.74	0.63	0.41	0.35	0.35	0.35	0.3	0.3	0.3
	Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.3	0.3	0.3	0.3	0.3	0.3
BLDG_SWH_SCH	WD, SummerDesign	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.17	0.58	0.66	0.78	0.82	0.71	0.82	0.78	0.74	0.63	0.41	0.18	0.18	0.18	0.1	0.01	0.01
	Sat, WinterDesign	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.2	0.28	0.3	0.3	0.24	0.24	0.23	0.23	0.23	0.1	0.01	0.01	0.01	0.01	0.01	0.01
	Sun, Hol, Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Water Equipment Hot Supply Temp Sched	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Water Equipment Temp Sched	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1 Water Heater Setpoint Temperature Schedule Name	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-3 Large Hotel Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BLDG_ELEVATORS	All	0.05	0.05	0.05	0.05	0.1	0.2	0.4	0.5	0.5	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.35	0.5	0.5	0.4	0.4	0.3	0.2	0.1
BLDG_EQUIP_SCH	WD	0.3	0.25	0.2	0.2	0.2	0.3	0.5	0.6	0.5	0.5	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.7	0.9	0.95	0.9	0.7	0.4
	Sat	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.5	0.5	0.4	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.7	0.8	0.8	0.8	0.7	0.4
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.6	0.8	0.9	0.7	0.6	0.4
BLDG_LIGHT_SCH	WD	0.2	0.15	0.1	0.1	0.1	0.2	0.4	0.5	0.4	0.4	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.6	0.8	0.9	0.8	0.6	0.3
	Sat	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.4	0.3	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.6	0.7	0.7	0.7	0.6	0.3
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.5	0.7	0.8	0.6	0.5	0.3
BLDG_OCC_SCH	WD	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.5	0.5	0.7	0.7	0.8	0.9	0.9
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sat	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.6	0.6	0.6	0.7	0.7	0.7
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.6	0.6	0.8	0.8	0.8
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GuestRoom_Eqp_Sch	WD	0.2	0.2	0.2	0.2	0.2	0.2	0.62	0.9	0.43	0.43	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.51	0.51	0.49	0.66	0.7	0.35	0.2
	Sat, Sun, Hol	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.62	0.9	0.62	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.43	0.51	0.49	0.66	0.7	0.35	0.2
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GuestRoom_Ltg_Sch_Base	WD	0.22	0.17	0.11	0.11	0.11	0.22	0.44	0.56	0.44	0.44	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.67	0.89	1	0.89	0.67	0.33
	Sat, Sun, Hol	0.26	0.26	0.11	0.11	0.11	0.11	0.41	0.41	0.56	0.56	0.41	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.85	1	1	1	0.85	0.41
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GuestRoom_Occ_Sch	WD	0.65	0.65	0.65	0.65	0.65	0.65	0.5	0.28	0.28	0.13	0.13	0.13	0.13	0.13	0.13	0.2	0.35	0.35	0.35	0.5	0.5	0.58	0.65	0.65
	Sat, Sun, Hol	0.65	0.65	0.65	0.65	0.65	0.65	0.5	0.34	0.34	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.34	0.35	0.65	0.65	0.5	0.5	0.5
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INFIL_QUARTER_ON_SCH	All	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Kitchen_Elec_Equip_SCH	Weekday	0.1	0.1	0.1	0.1	0.1	0.1	0.25	0.35	0.35	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25	0.25
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.25	0.35	0.35	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25	0.25
	SummerDesign	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.1	0.1	0.1	0.1	0.1	0.1	0.25	0.35	0.35	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25	0.25

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kitchen_Gas_Equip_SCH	WD, Sat	0.02	0.02	0.02	0.02	0.02	0.05	0.1	0.15	0.2	0.15	0.25	0.25	0.25	0.2	0.15	0.2	0.3	0.3	0.3	0.2	0.2	0.15	0.1	0.05
	SummerDesign	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.02	0.02	0.02	0.02	0.02	0.05	0.1	0.15	0.2	0.15	0.25	0.25	0.25	0.2	0.15	0.2	0.3	0.3	0.3	0.2	0.2	0.15	0.1	0.05
LaundryRoom_Eqp_Elec_Sch	WD, Sat, Sun, Hol	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LaundryRoom_Eqp_Gas_Sch	WD, Sat, Sun, Hol	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Lobby_Occ_Sch	WD	0.1	0.1	0.1	0.1	0.1	0.3	0.7	0.7	0.7	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.2	0.2	0.2	0.2	0.1	0.1
	Sat, Sun, Hol	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.7	0.7	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_Exhaust_SCH	All	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CLGSETP_SCH	All	30	30	30	30	30	30	30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
HTGSETP_SCH	All	16	16	16	16	16	16	16	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Corr_CLGSETP_SCH	All	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Corr_HTGSETP_SCH	All	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
Guest_CLGSETP_SCH	All	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Guest_HTGSETP_SCH	All	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Kitchen_CLGSETP_SCH	All	30	30	30	30	30	30	30	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
Kitchen_HTGSETP_SCH	All	16	16	16	16	16	16	16	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HVACOperationSchd	All	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MinOA_Sched	All	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Seasonal-Reset-Supply-Air-Temp-Sch	All	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
CW-Loop-Temp-Schedule	All	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
HW-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
PlantOnSched	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kitchen_Flr_6_Case:1_WALKINFREEZER_ CaseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Kitchen_Flr_6_Case:1_WALKINFREEZER_ CaseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_Flr_6_Case:1_WALKINFREEZER_ CaseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_Flr_6_Case:1_WALKINFREEZER_ WalkInStockingSched	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
Kitchen_Flr_6_Case:2_SELFCONTAINEDD ISPLAYCASE_CaseStockingSched	All	0	0	0	0	0	0	50	70	70	80	70	50	50	80	90	80	0	0	0	0	0	0	0	0

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kitchen_SWH_SCH	WD, SummerDesign	0.2	0.15	0.15	0.15	0.2	0.25	0.5	0.6	0.55	0.45	0.4	0.45	0.4	0.35	0.3	0.3	0.3	0.4	0.55	0.6	0.5	0.55	0.45	0.25
	Sat, WinterDesign	0.2	0.15	0.15	0.15	0.2	0.25	0.4	0.5	0.5	0.5	0.45	0.5	0.5	0.45	0.4	0.4	0.35	0.4	0.55	0.55	0.5	0.55	0.4	0.3
	Sun, Hol, Other	0.25	0.2	0.2	0.2	0.2	0.3	0.5	0.5	0.5	0.55	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.5	0.4	0.5	0.4	0.2
GuestRoom_SWH_Sch	WD	0.2	0.15	0.15	0.15	0.2	0.35	0.6	0.8	0.55	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.55	0.4	0.4	0.6	0.45	0.25
	Other	0.2	0.15	0.15	0.15	0.2	0.25	0.35	0.6	0.8	0.55	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.25	0.3	0.4	0.4	0.4	0.6	0.35
LaundryRoom_SWH_Sch	All	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Guest Room Water Equipment Hot Supply Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
Guest Room Water Equipment Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
Kitchen Water Equipment Hot Supply Temp Sched	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Kitchen Water Equipment Temp Sched	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Laundry Water Equipment Hot Supply Temp Sched	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Laundry Water Equipment Temp Sched	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1 Water Heater Setpoint Temperature Schedule Name	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-4 Large Office Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BLDG_ELEVATORS	All	0.05	0.05	0.05	0.05	0.1	0.2	0.4	0.5	0.5	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.35	0.5	0.5	0.4	0.4	0.3	0.2	0.1
INFIL_QUARTER_ON_SCH	WD, SummerDesign	1	1	1	1	1	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	1
	Sat, WinterDesign	1	1	1	1	1	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	1	1	1	1	1
	Sun, Hol, Other	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BLDG_OCC_SCH	SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.05	0.05
	WD	0	0	0	0	0	0	0.1	0.2	0.95	0.95	0.95	0.95	0.5	0.95	0.95	0.95	0.95	0.7	0.4	0.4	0.1	0.1	0.05	0.05
	Sat	0	0	0	0	0	0	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_LIGHT_SCH	WD	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.5	0.5	0.3	0.3	0.1	0.05
	Sat	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.15	0.15	0.15	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
BLDG_EQUIP_SCH	WD	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.8	0.6	0.6	0.5	0.5	0.4	0.4
	Sat	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.35	0.35	0.35	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CLGSETP_SCH	WD, SummerDesign	26.7	26.7	26.7	26.7	26.7	26.7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	26.7	26.7
	Sat	26.7	26.7	26.7	26.7	26.7	26.7	24	24	24	24	24	24	24	24	24	24	24	24	26.7	26.7	26.7	26.7	26.7	26.7
	WinterDesign	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7
	Other	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7
HTGSETP_SCH	WD	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6
	SummerDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	Sat	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6	15.6	15.6	15.6	15.6
	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Other	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
Seasonal-Reset-Supply-Air-Temp-Sch	All	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
MinOA_MotorizedDamper_Sched	WD, SummerDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
	Sat, WinterDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HVACOperationSchd	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
	Sat, WinterDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CW-Loop-Temp-Schedule	All	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
HW-Loop-Temp-Schedule	All	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
BLDG_SWH_SCH	WD, SummerDesign	0.05	0.05	0.05	0.05	0.05	0.08	0.07	0.19	0.35	0.38	0.39	0.47	0.57	0.54	0.34	0.33	0.44	0.26	0.21	0.15	0.17	0.08	0.05	0.05
	Sat, WinterDesign	0.05	0.05	0.05	0.05	0.05	0.08	0.07	0.11	0.15	0.21	0.19	0.23	0.2	0.19	0.15	0.13	0.14	0.07	0.07	0.07	0.07	0.09	0.05	0.05
	Other	0.04	0.04	0.04	0.04	0.04	0.07	0.04	0.04	0.04	0.04	0.04	0.06	0.06	0.09	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.07	0.04	0.04
Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Water Equipment Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
Water Equipment Hot Supply Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
SWHSys1 Water Heater Setpoint Temperature Schedule Name	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-5 Medium Office Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BLDG_ELEVATORS	WD, SummerDesign	0	0	0	0	0	0	0	0.35	0.69	0.43	0.37	0.43	0.58	0.48	0.37	0.37	0.46	0.62	0.12	0.04	0.04	0	0	0
	Sat, WinterDesign	0	0	0	0	0	0	0	0.16	0.14	0.21	0.18	0.25	0.21	0.13	0.08	0.04	0.05	0.06	0	0	0	0	0	0
	Sun, Hol, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_OCC_SCH	SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.05	0.05
	WD	0	0	0	0	0	0	0.1	0.2	0.95	0.95	0.95	0.95	0.5	0.95	0.95	0.95	0.95	0.7	0.4	0.4	0.1	0.1	0.05	0.05
	Sat	0	0	0	0	0	0	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_LIGHT_SCH	WD	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.5	0.5	0.3	0.3	0.1	0.05
	Sat	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.15	0.15	0.15	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
BLDG_EQUIP_SCH	WD	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.8	0.6	0.6	0.5	0.5	0.4	0.4
	Sat	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.35	0.35	0.35	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INFIL_QUARTER_ON_SCH	WD, SummerDesign	1	1	1	1	1	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	1
	Sat, WinterDesign	1	1	1	1	1	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	1	1	1	1	1
	Sun, Hol, Other	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
CLGSETP_SCH	WD, SummerDesign	26.7	26.7	26.7	26.7	26.7	26.7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	26.7	26.7
	Sat	26.7	26.7	26.7	26.7	26.7	26.7	24	24	24	24	24	24	24	24	24	24	24	24	26.7	26.7	26.7	26.7	26.7	26.7
	WinterDesign	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7
	Other	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7
HTGSETP_SCH	WD	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6
	SummerDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	Sat	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6	15.6	15.6	15.6	15.6
	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Other	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
HVACOperationSchd	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
	Sat, WinterDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MinOA_MotorizedDamper_Sched	WD, SummerDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
	Sat, WinterDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal-Reset-Supply-Air-Temp-Sch	All	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
BLDG_SWH_SCH	WD, SummerDesign	0.05	0.05	0.05	0.05	0.05	0.08	0.07	0.19	0.35	0.38	0.39	0.47	0.57	0.54	0.34	0.33	0.44	0.26	0.21	0.15	0.17	0.08	0.05	0.05
	Sat, WinterDesign	0.05	0.05	0.05	0.05	0.05	0.08	0.07	0.11	0.15	0.21	0.19	0.23	0.2	0.19	0.15	0.13	0.14	0.07	0.07	0.07	0.07	0.09	0.05	0.05
	Sun, Hol, Other	0.04	0.04	0.04	0.04	0.04	0.07	0.04	0.04	0.04	0.04	0.04	0.06	0.06	0.09	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.07	0.04	0.04
Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Water Equipment Hot Supply Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
Water Equipment Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1 Water Heater Setpoint Temperature Schedule Name	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BLDG_ELEVATORS	WD, SummerDesign	0	0	0	0	0	0	0	0.35	0.69	0.43	0.37	0.43	0.58	0.48	0.37	0.37	0.46	0.62	0.12	0.04	0.04	0	0	0
	Sat, WinterDesign	0	0	0	0	0	0	0	0.16	0.14	0.21	0.18	0.25	0.21	0.13	0.08	0.04	0.05	0.06	0	0	0	0	0	0
	Sun, Hol, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_OCC_SCH	SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.05	0.05
	WD	0	0	0	0	0	0	0.1	0.2	0.95	0.95	0.95	0.95	0.5	0.95	0.95	0.95	0.95	0.7	0.4	0.4	0.1	0.1	0.05	0.05
	Sat	0	0	0	0	0	0	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_LIGHT_SCH	WD	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.5	0.5	0.3	0.3	0.1	0.05
	Sat	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.15	0.15	0.15	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
BLDG_EQUIP_SCH	WD	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.8	0.6	0.6	0.5	0.5	0.4	0.4
	Sat	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.35	0.35	0.35	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INFIL_QUARTER_ON_SCH	WD, SummerDesign	1	1	1	1	1	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	1
	Sat, WinterDesign	1	1	1	1	1	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	1	1	1	1	1
	Sun, Hol, Other	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
CLGSETP_SCH	WD, SummerDesign	26.7	26.7	26.7	26.7	26.7	26.7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	26.7	26.7
	Sat	26.7	26.7	26.7	26.7	26.7	26.7	24	24	24	24	24	24	24	24	24	24	24	24	26.7	26.7	26.7	26.7	26.7	26.7
	WinterDesign	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7
	Other	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7

Table B-6 Midrise Apartment Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BLDG_ELEVATORS	All	0.05	0.05	0.05	0.05	0.1	0.2	0.4	0.5	0.5	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.35	0.5	0.5	0.4	0.4	0.3	0.2	0.1
INFIL_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
OFFICE_INFIL_SCH	WD	1	1	1	1	1	1	1	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	1	1	1	1	1	1
	Other	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
APT_OCC_SCH	All	1	1	1	1	1	1	1	0.85	0.39	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.3	0.52	0.87	0.87	0.87	1	1	1
OFF_OCC_SCH	WD, SummerDesign, WinterDesign	0	0	0	0	0	0	0	0	1	1	1	1	0.5	1	1	1	1	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APT_LIGHT_SCH	All	0.07	0.07	0.07	0.07	0.19	0.39	0.44	0.39	0.17	0.12	0.12	0.12	0.12	0.12	0.12	0.21	0.44	0.62	0.83	0.99	1	0.69	0.38	0.16
OFF_LIGHT_SCH	WD, SummerDesign	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	Other	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
COR_LIGHT_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
APT_EQP_SCH	All	0.45	0.41	0.39	0.38	0.38	0.43	0.54	0.65	0.66	0.67	0.69	0.7	0.69	0.66	0.65	0.68	0.8	1	1	0.93	0.89	0.85	0.71	0.58
OFF_EQP_SCH	WD, SummerDesign	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.5	1	1	1	1	0.94	1	1	1	1	0.5	0.33	0.33	0.33	0.33	0.33	0.33
	Other	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
UnitHeater_ClgSP_Sch	All	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
UnitHeater_HtgSP_Sch	All	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
APT_CLGSETP_SCH	All	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9
APT_HTGSETP_SCH	All	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1
OFF_HTGSETP_SCH	WD, WinterDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	18.3	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	18.3	15.6	15.6	15.6	15.6	15.6	15.6
	Other	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
OFF_CLGSETP_SCH	WD, SummerDesign	29.4	29.4	29.4	29.4	29.4	29.4	29.4	26.7	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	26.7	29.4	29.4	29.4	29.4	29.4	29.4
	Other	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Apt_Operation	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Office_Operation	WD, SummerDesign, WinterDesign	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MinOA_Sched	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Apartment Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Apartment Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Apartment Water Equipment Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
Apartment Water Equipment Hot Supply Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
SWHSys1 Water Heater Setpoint	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Temperature Schedule Name																									
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
APT_DHW_SCH	All	0.08	0.04	0.01	0.01	0.04	0.27	0.94	1	0.96	0.84	0.76	0.61	0.53	0.47	0.41	0.47	0.55	0.73	0.86	0.82	0.75	0.61	0.53	0.29

Table B-7 Outpatient Health Care Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BLDG_ELEVATORS	WD, SummerDesign	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.5	0.75	1	1	1	0.75	1	1	1	1	1	0.52	0.52	0.52	0.28	0.05	0.05
	Sat	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.4	0.46	0.7	0.7	0.7	0.51	0.51	0.51	0.51	0.51	0.25	0.05	0.05	0.05	0.05	0.05	0.05
	Other	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
BLDG_EQUIP_SCH	WD, SummerDesign	0.3	0.3	0.3	0.3	0.5	0.5	1	1	1	1	1	1	1	1	1	1	1	1	0.5	0.5	0.3	0.3	0.3	0.3
	Sat	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3
	Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3
BLDG_LIGHT_SCH	WD, SummerDesign	0.1	0.1	0.1	0.1	0.3	0.3	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.6	0.6	0.3	0.3	0.1	0.1
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1
	Other	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05
BLDG_OCC_SCH	WD, SummerDesign	0.05	0.05	0.05	0.05	0.2	0.2	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.5	0.5	0.2	0.2	0.05	0.05
	Sat	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.05	0.05	0.05	0.05
	Other	0	0	0	0	0	0	0	0	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0	0	0	0	0	0	0
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
INFIL_SCH	SummerDesign, WinterDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Other	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
RADIOLOGY_EQUIP_SCH	WD, Sat, SummerDesign	0.01	0.01	0.01	0.01	0.01	0.01	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.01	0.01	0.01	0.01	0.01	0.01
	Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
OR_CLGSETP_SCH	All	22.2	22.2	22.2	22.2	22.2	22.2	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	22.2	22.2	22.2	22.2	22.2	22.2	22.2
OR_HTGSETP_SCH	All	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
CLGSETP_SCH	WD, SummerDesign	25	25	25	25	25	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	25	25	25	25	25	25
	Sat, WinterDesign	25	25	25	25	25	25	25	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	25	25	25	25	25	25	25	25	25
	Other	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
HTGSETP_SCH	WD, SummerDesign	18.3	18.3	18.3	18.3	18.3	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	18.3	18.3	18.3	18.3	18.3	18.3
	Sat, WinterDesign	18.3	18.3	18.3	18.3	18.3	18.3	18.3	21.1	21.1	21.1	21.1	21.1	21.1	21.1	21.1	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
	Other	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
MaxRelHumSetSch	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
MinRelHumSetSch	All	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
AHU-1_MinOAFracSchedule	All	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
AHU-1_Fan_Sch	WD, Sat	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
	SummerDesign, WinterDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
AHU-2_Fan_Sch	WD, Sat	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	SummerDesign, WinterDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VAV_SAT_SCH	All	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
CAV_SAT_SCH	All	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
HW-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
PlantOnSched	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CW-Loop-Temp-Schedule	All	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
HeatSys1 Loop Setpoint Sched	All	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2	82.2
BLDG_SWH_SCH	WD, SummerDesign	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.17	0.58	0.66	0.78	0.82	0.71	0.82	0.78	0.74	0.63	0.41	0.18	0.18	0.18	0.1	0.01	0.01
	Sat	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.2	0.28	0.3	0.3	0.24	0.24	0.23	0.23	0.23	0.1	0.01	0.01	0.01	0.01	0.01	0.01
	Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Water Equipment Hot Supply Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
Water Equipment Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1 Water Heater Setpoint Temperature Schedule Name	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-8 Primary School Hourly Operation Schedules

Schedule	Through (Date)	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	12/31	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BLDG_EQUIP_SCH	6/30	WD, SummerDesign	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.35	0.35	0.35	0.35	0.35	0.35	0.35
		Other	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
	9/1	WD, SummerDesign	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.25	0.25	0.25	0.25	0.25	0.25	0.25
		Other	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	12/31	WD, SummerDesign	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.35	0.35	0.35	0.35	0.35	0.35	0.35
		Other	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
BLDG_LIGHT_SCH	6/30	WD, SummerDesign	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.18	0.18	0.18
		Other	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	9/1	WD, SummerDesign	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.18	0.18	0.18	0.18
		Other	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	12/31	WD, SummerDesign	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.18	0.18	0.18
		Other	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
BLDG_OCC_SCH	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.15	0.15	0.15	0.15	0.15	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.15	0.15	0.15	0.15	0.15	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_OCC_SCH_Cafeteria	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0.15	0.15	0.05	0.05	0.95	0.95	0.15	0.15	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0.15	0.15	0.05	0.05	0.95	0.95	0.15	0.15	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_OCC_SCH_Gym	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.95	0.95	0.95	0.95	0.95	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.95	0.95	0.95	0.95	0.95	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_OCC_SCH_Offices	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.15	0.15	0.15	0.15	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.15	0.15	0.15	0.15	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KITCHEN_ELEC_EQUIP_SCH	6/30	WD, SummerDesign	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.15	0.15	0.25	0.25	0.25	0.15	0.15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	9/1	WD, SummerDesign	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.13	0.13	0.2	0.2	0.2	0.13	0.13	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	12/31	WD, SummerDesign	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.15	0.15	0.25	0.25	0.25	0.15	0.15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Schedule	Through (Date)	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
KITCHEN_GAS_EQUIP_SCH	6/30	WD, SummerDesign	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.15	0.15	0.2	0.2	0.2	0.1	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Other	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	9/1	WD, SummerDesign	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.1	0.15	0.15	0.15	0.1	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Other	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	12/31	WD, SummerDesign	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.15	0.15	0.2	0.2	0.2	0.1	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Other	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Kitchen_Exhaust_SCH	12/31	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INFIL_SCH	12/31	All	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1
WORK_EFF_SCH	12/31	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLOTHING_SCH	04/30	All	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	09/30	All	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	12/31	All	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
ACTIVITY_SCH	12/31	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	12/31	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CLGSETP_SCH	6/30	SummerDesign	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
		WE, Hol, WinterDesign	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
		Other	27	27	27	27	27	27	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	27	27	27
	9/1	SummerDesign	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
		WE, Hol, WinterDesign	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
		Other	27	27	27	27	27	27	27	24	24	24	24	24	24	24	24	24	24	24	27	27	27	27	27	27
	12/31	SummerDesign	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
		WE, Hol, WinterDesign	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
		Other	27	27	27	27	27	27	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	27	27	27
CLGSETP_SCH_BathCorrMechKitchen	12/31	SummerDesign	27	27	27	27	27	27	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	27	27	27
		Other	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
HTGSETP_SCH	6/30	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
		WE, Hol, SummerDesign	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
		Other	16	16	16	16	16	16	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	16	16	16
	9/1	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
		WE, Hol, SummerDesign	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
		Other	16	16	16	16	16	16	16	21	21	21	21	21	21	21	21	21	21	21	16	16	16	16	16	16
	12/31	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
		WE, Hol, SummerDesign	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
		Other	16	16	16	16	16	16	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	16	16	16
HTGSETP_SCH_BathCorrMechKitchen	12/31	WinterDesign	16	16	16	16	16	16	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	16	16	16
		Other	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
HVACOperationSchd	12/31	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Schedule	Through (Date)	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
MinOA_Sched	12/31	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal-Reset-Supply-Air-Temp-Sch	12/31	All	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
Dual Zone Control Type Sched	12/31	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HW-Loop-Temp-Schedule	12/31	All	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
PlantOnSched	12/31	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kitchen_ZN_1_FLR_1_Case:1_WALKIN FREEZER_CaseCreditReduxSched	12/31	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Kitchen_ZN_1_FLR_1_Case:1_WALKIN FREEZER_CaseDefrost2aDaySched	12/31	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_ZN_1_FLR_1_Case:1_WALKIN FREEZER_CaseDripDown2aDaySched	12/31	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_ZN_1_FLR_1_Case:1_WALKIN FREEZER_WalkInStockingSched	12/31	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
Kitchen_ZN_1_FLR_1_Case:2_SELFCONTAINEDDISPLAYCASE_CaseStocking Sched	12/31	All	0	0	0	0	0	0	50	70	70	80	70	50	50	80	90	80	0	0	0	0	0	0	0	0
BLDG_SWH_SCH	6/30	WD, SummerDesign	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.34	0.6	0.63	0.72	0.79	0.83	0.61	0.65	0.1	0.1	0.19	0.25	0.22	0.22	0.12	0.09
		Sat, WinterDesign	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
		Other	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	9/1	WD, SummerDesign	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.19	0.25	0.22	0.22	0.12	0.09
		Sat, WinterDesign	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
		Other	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	12/31	WD, SummerDesign	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.34	0.6	0.63	0.72	0.79	0.83	0.61	0.65	0.1	0.1	0.19	0.25	0.22	0.22	0.12	0.09
		Sat, WinterDesign	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
		Other	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
SHW_default Latent fract sched	12/31	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
SHW_default Sensible fract sched	12/31	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
SHW_Bath Hot Supply Temp Sched	12/31	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
SHW_Bath Temp Sched	12/31	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
SHW_Kitchen Hot Supply Temp Sched	12/31	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
SHW_Kitchen Temp Sched	12/31	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
SWHSys1 Water Heater Ambient Temperature Schedule Name	12/31	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1 Water Heater Setpoint Temperature Schedule Name	12/31	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	12/31	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-9 Retail Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BLDG_EQUIP_SCH	WD	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.4	0.2	0.2
	Sat	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.3	0.5	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.5	0.5	0.3	0.15	0.15
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.3	0.3	0.6	0.6	0.8	0.8	0.8	0.8	0.8	0.6	0.4	0.15	0.15	0.15	0.15	0.15
BLDG_LIGHT_SCH	WD	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.6	0.6	0.5	0.2	0.05	0.05
	Sat	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.3	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.5	0.3	0.3	0.1	0.05	0.05
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.4	0.2	0.05	0.05	0.05	0.05	0.05
BLDG_OCC_SCH	WD	0	0	0	0	0	0	0	0.1	0.2	0.5	0.5	0.7	0.7	0.7	0.7	0.8	0.7	0.5	0.5	0.3	0.3	0	0	0
	SummerDesign, WinterDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sat	0	0	0	0	0	0	0	0.1	0.2	0.5	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.2	0.2	0.2	0.1	0	0
	Other	0	0	0	0	0	0	0	0	0	0.1	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.2	0.1	0	0	0	0	0
INFIL_HALF_ON_SCH	WD, SummerDesign	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1
	Sat	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1
	WinterDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Other	1	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1
INFIL_FRONT_SCH	WD, SummerDesign	0.25	0.25	0.25	0.25	0.25	0.25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.25	0.25	0.25
	Sat	0.25	0.25	0.25	0.25	0.25	0.25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.25	0.25
	WinterDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Other	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	1	1	1	1	1	1	1	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CLGSETP_SCH	WD, SummerDesign	30	30	30	30	30	30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	30	30	30
	Sat	30	30	30	30	30	30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	30	30
	WinterDesign	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Sun, Hol, Other	30	30	30	30	30	30	30	30	24	24	24	24	24	24	24	24	24	24	24	30	30	30	30	30
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
FRONT_ENTRY_COOLING	All	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90
HTGSETP_SCH	WD	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6	15.6
	SummerDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Sat	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6
	Sun, Hol, Other	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6	15.6	15.6	15.6
HVACOperationSchd	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
	Sat, WinterDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
	Other	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0

Table B-10 Secondary School Hourly Operation Schedules

Schedule	Through	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	12/31	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kitchen_Exhaust_SCH	12/31	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_ELEVATORS	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.15	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_EQUIP_SCH	6/30	WD, SummerDesign	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.35	0.35	0.35	0.35	0.35	0.35	0.35
		Other	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
	9/1	WD, SummerDesign	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.25	0.25	0.25	0.25	0.25	0.25	0.25
		Other	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	12/31	WD, SummerDesign	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.35	0.35	0.35	0.35	0.35	0.35	0.35
		Other	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
BLDG_LIGHT_SCH	6/30	WD, SummerDesign	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.18	0.18	0.18
		Other	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	9/1	WD, SummerDesign	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.18	0.18	0.18	0.18
		Other	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
	12/31	WD, SummerDesign	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.18	0.18	0.18
		Other	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
BLDG_OCC_SCH	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.15	0.15	0.15	0.15	0.15	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.15	0.15	0.15	0.15	0.15	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_OCC_SCH_Auditorium	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.95	0.95	0.1	0.1	0.1	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.35	0.35	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.95	0.95	0.1	0.1	0.1	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_OCC_SCH_Cafeteria	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0.15	0.15	0.05	0.05	0.95	0.95	0.15	0.15	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0	0.25	0.25	0.25	0.25	0.25	0.25	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0.15	0.15	0.05	0.05	0.95	0.95	0.15	0.15	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_OCC_SCH_Extend	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_OCC_SCH_Gym	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.95	0.95	0.95	0.95	0.95	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Schedule	Through	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.95	0.95	0.95	0.95	0.95	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_OCC_SCH_Offices	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.15	0.15	0.15	0.15	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.15	0.15	0.15	0.15	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KITCHEN_ELEC_EQUIP_SCH	6/30	WD, SummerDesign	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.15	0.15	0.25	0.25	0.25	0.15	0.15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	9/1	WD, SummerDesign	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.13	0.13	0.2	0.2	0.2	0.13	0.13	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	12/31	WD, SummerDesign	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.15	0.15	0.25	0.25	0.25	0.15	0.15	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
KITCHEN_GAS_EQUIP_SCH	6/30	WD, SummerDesign	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.15	0.15	0.2	0.2	0.2	0.1	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		Other	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	9/1	WD, SummerDesign	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.1	0.15	0.15	0.15	0.1	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		WE, WinterDesign, Hol, Other	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	12/31	WD, SummerDesign	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.15	0.15	0.2	0.2	0.2	0.1	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
		WE, WinterDesign, Hol, Other	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
INFIL_SCH	12/31	All	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1
ACTIVITY_SCH	12/31	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	12/31	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CLOTHING_SCH	04/30	All	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	09/30	All	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	12/31	All	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
WORK_EFF_SCH	12/31	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLGSETP_SCH	6/30	SummerDesign	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
		WE, Hol, WinterDesign	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
		Other	27	27	27	27	27	27	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	27	27	27
	9/1	SummerDesign	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
		WE, Hol, WinterDesign	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
		Other	27	27	27	27	27	27	27	24	24	24	24	24	24	24	24	24	24	24	27	27	27	27	27	27
	12/31	SummerDesign	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
		WE, Hol, WinterDesign	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
		Other	27	27	27	27	27	27	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	27	27	27
CLGSETP_SCH_BathCorrMechKitchen	12/31	SummerDesign	27	27	27	27	27	27	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	27	27	27
		Other	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
HTGSETP_SCH	6/30	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
		WE, Hol, SummerDesign	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
		Other	16	16	16	16	16	16	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	16	16	16
	9/1	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
		WE, Hol, SummerDesign	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
		Other	16	16	16	16	16	16	16	21	21	21	21	21	21	21	21	21	21	21	16	16	16	16	16	16

Schedule	Through	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	12/31	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
		WE, Hol, SummerDesign	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
		Other	16	16	16	16	16	16	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	16	16	16
HTGSETP_SCH_BathCorrMechKitchen	12/31	WinterDesign	16	16	16	16	16	16	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	16	16	16
		Other	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
HVACOperationSchd	12/31	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MinOA_Sched	12/31	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Seasonal-Reset-Supply-Air-Temp-Sch	12/31	All	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8
Dual Zone Control Type Sched	12/31	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
CW-Loop-Temp-Schedule	12/31	All	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
HW-Loop-Temp-Schedule	12/31	All	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67
PlantOnSched	12/31	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kitchen_ZN_1_FLR_1_Case:1_WALKINFREEZER_CaseCreditReduxSched	12/31	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Kitchen_ZN_1_FLR_1_Case:1_WALKINFREEZER_CaseDefrost2aDaySched	12/31	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_ZN_1_FLR_1_Case:1_WALKINFREEZER_CaseDripDown2aDaySched	12/31	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_ZN_1_FLR_1_Case:1_WALKINFREEZER_WalkInStockingSched	12/31	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
Kitchen_ZN_1_FLR_1_Case:2_SELFCONTAINEDDISPLAYCASE_CaseStockingSched	12/31	All	0	0	0	0	0	0	50	70	70	80	70	50	50	80	90	80	0	0	0	0	0	0	0	0
BLDG_SWH_SCH	6/15	WD, SummerDesign	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.34	0.6	0.63	0.72	0.79	0.83	0.61	0.65	0.1	0.1	0.19	0.25	0.22	0.22	0.12	0.09
		Sat, WinterDesign	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
		Sun, Hol, Other	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	9/15	WD, SummerDesign	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.19	0.25	0.22	0.22	0.12	0.09
		Sat, WinterDesign	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
		Sun, Hol, Other	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	12/31	WD, SummerDesign	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.34	0.6	0.63	0.72	0.79	0.83	0.61	0.65	0.1	0.1	0.19	0.25	0.22	0.22	0.12	0.09
		Sat, WinterDesign	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
		Sun, Hol, Other	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Showers_SWH_SCH	6/30	WD, SummerDesign	0	0	0	0	0	0	0	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	0	0	0	0	0
		WE	0	0	0	0	0	0	0	0	0	0	0.4	0.14	0.14	0.14	0.14	0.14	0	0	0	0	0	0.8	0	0
		WinterDesign, Hol, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9/1	WD, SummerDesign	0	0	0	0	0	0	0	0	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0
		WE, WinterDesign, Hol, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12/31	WD, SummerDesign	0	0	0	0	0	0	0	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	0	0	0	0	0
		WE	0	0	0	0	0	0	0	0	0	0	0.4	0.14	0.14	0.14	0.14	0.14	0	0	0	0	0	0.8	0	0
		WinterDesign, Hol, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Latent fract sched	12/31	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Sensible fract sched	12/31	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hot Supply Temp Sched	12/31	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
SHW_default Temp Sched	12/31	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
Kitchen Hot Supply Temp Sched	12/31	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49

Schedule	Through	Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
SHW_Kitchen Temp Sched	12/31	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
SWHSys1 Water Heater Ambient Temperature Schedule Name	12/31	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1 Water Heater Setpoint Temperature Schedule Name	12/31	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	12/31	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-11 Full Service Restaurant Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BLDG_EQUIP_SCH	Weekday	0.1	0.1	0.1	0.1	0.1	0.1	0.25	0.35	0.35	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25	0.25
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.25	0.35	0.35	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25	0.25
	SummerDesign	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.1	0.1	0.1	0.1	0.1	0.1	0.25	0.35	0.35	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.35	0.35	0.35	0.25	0.25	0.25	0.25	0.25
BLDG_LIGHT_SCH	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Weekday, Sat, Sun, Hol, Other	0.45	0.15	0.15	0.15	0.15	0.45	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
BLDG_OCC_SCH	WD	0.05	0	0	0	0	0.05	0.1	0.4	0.4	0.4	0.2	0.5	0.8	0.7	0.4	0.2	0.25	0.5	0.8	0.8	0.8	0.5	0.35	0.2
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sat	0.05	0	0	0	0	0	0.05	0.5	0.5	0.4	0.2	0.45	0.5	0.5	0.35	0.3	0.3	0.3	0.7	0.9	0.7	0.65	0.55	0.35
	Sun, Hol, Other	0.05	0	0	0	0	0	0.05	0.5	0.5	0.2	0.2	0.3	0.5	0.5	0.3	0.2	0.25	0.35	0.55	0.65	0.7	0.35	0.2	0.2
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GAS_EQUIP_SCH	WD, Sat	0.02	0.02	0.02	0.02	0.02	0.05	0.1	0.15	0.2	0.15	0.25	0.25	0.25	0.2	0.15	0.2	0.3	0.3	0.3	0.2	0.2	0.15	0.1	0.05
	SummerDesign	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.02	0.02	0.02	0.02	0.02	0.05	0.1	0.15	0.2	0.15	0.25	0.25	0.25	0.2	0.15	0.2	0.3	0.3	0.3	0.2	0.2	0.15	0.1	0.05
Kitchen_Exhaust_SCH	All	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INFIL_HALF_ON_SCH	WD, SummerDesign	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Sat, WinterDesign	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Sun, Hol, Other	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
CLGSETP_KITCHEN_SCH	WinterDesign	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Other	26	30	30	30	30	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
HTGSETP_KITCHEN_SCH	SummerDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	WinterDesign	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
	Other	19	15.6	15.6	15.6	15.6	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
CLGSETP_SCH	WinterDesign	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Other	24	30	30	30	30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
HTGSETP_SCH	SummerDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Other	21	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
HVACOperationSchd	All	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MinOA_Sched	All	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Kitchen_Case:1_WALKINFREEZER_CaseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Kitchen_Case:1_WALKINFREEZER_CaseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_Case:1_WALKINFREEZER_CaseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kitchen_Case:1_WALKINFREEZER_WalkInStockingSched	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
Kitchen_Case:2_SELFCONTAINEDDISPLAYCASE_CaseStockingSched	All	0	0	0	0	0	0	50	70	70	80	70	50	50	80	90	80	0	0	0	0	0	0	0	0
BLDG_SWH_SCH	WD, SummerDesign	0.2	0	0	0	0	0	0.15	0.6	0.55	0.45	0.4	0.45	0.4	0.35	0.3	0.3	0.3	0.4	0.55	0.6	0.5	0.55	0.45	0.25
	Sat, WinterDesign	0.2	0	0	0	0	0	0.15	0.15	0.15	0.5	0.45	0.5	0.5	0.45	0.4	0.4	0.35	0.4	0.55	0.55	0.5	0.55	0.4	0.3
	Sun, Hol, Other	0.25	0	0	0	0	0	0.15	0.15	0.15	0.15	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.5	0.4	0.5	0.4	0.2
Kitchen Water Equipment Hot Supply Temp Sched	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Kitchen Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Kitchen Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Kitchen Water Equipment Temp Sched	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
PlantOnSched	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1 Water Heater Setpoint Temperature Schedule Name	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-12 Small Hotel Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BLDG_ELEVATORS	All	0.05	0.05	0.05	0.05	0.1	0.2	0.4	0.5	0.5	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.35	0.5	0.5	0.4	0.4	0.3	0.2	0.1
BLDG_EQUIP_SCH	WD	0.3	0.25	0.2	0.2	0.2	0.3	0.5	0.6	0.5	0.5	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.7	0.9	0.95	0.9	0.7	0.4
	Sat	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.5	0.5	0.4	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.7	0.8	0.8	0.8	0.7	0.4
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.6	0.8	0.9	0.7	0.6	0.4
BLDG_LIGHT_SCH	WD	0.2	0.15	0.1	0.1	0.1	0.2	0.4	0.5	0.4	0.4	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.6	0.8	0.9	0.8	0.6	0.3
	Sat	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.4	0.3	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.6	0.7	0.7	0.7	0.6	0.3
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.5	0.7	0.8	0.6	0.5	0.3
BLDG_OCC_SCH	WD	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.5	0.5	0.7	0.7	0.8	0.9	0.9
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sat	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.6	0.6	0.6	0.7	0.7	0.7
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.4	0.6	0.6	0.8	0.8	0.8
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Corridor_Ltg_Sch	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EmployeeLounge_Eqp_Sch	WD	0.11	0.11	0.11	0.11	0.11	0.19	0.19	0.25	1	1	0.86	0.86	1	0.86	0.86	0.86	0.86	0.86	0.25	0.19	0.11	0.11	0.11	0.11
	Sat, Sun, Hol	0.11	0.11	0.11	0.11	0.11	0.19	0.19	0.25	1	1	0.86	0.86	1	0.86	0.86	0.86	0.86	0.86	0.25	0.19	0.11	0.11	0.11	0.11
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EmployeeLounge_Ltg_Sch	WD	0.05	0.05	0.05	0.05	0.05	0.15	0.4	0.5	1	1	1	1	1	1	1	1	1	1	0.5	0.4	0.15	0.15	0.05	0.05
	Sat, Sun, Hol	0.05	0.05	0.05	0.05	0.05	0.15	0.3	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.3	0.15	0.15	0.05	0.05
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EmployeeLounge_Occ_Sch	WD	0	0	0	0	0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.7	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0	0	0	0
	Sat, Sun, Hol	0	0	0	0	0	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0	0	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ExerciseRoom_Eqp_Sch	All	0	0	0	0	0	0	0.5	1	1	0.5	0.5	0.5	0	0.5	0.5	0.5	1	0.5	0.5	1	1	0.5	0.5	0
ExerciseRoom_Ltg_Sch_Base	All	0	0	0	0	0	0	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.5	0
ExerciseRoom_Occ_Sch	All	0	0	0	0	0	0	0.5	1	1	1	1	0.5	0	1	1	1	1	1	1	1	1	1	0.5	0

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
GuestRoom_Eqp_Sch	WD	0.2	0.2	0.2	0.2	0.2	0.2	0.62	0.9	0.43	0.43	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.51	0.51	0.49	0.66	0.7	0.35	0.2
	Sat, Sun, Hol	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.62	0.9	0.62	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.43	0.51	0.49	0.66	0.7	0.35	0.2
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GuestRoom_Ltg_Sch_Base	WD	0.22	0.17	0.11	0.11	0.11	0.22	0.44	0.56	0.44	0.44	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.67	0.89	1	0.89	0.67	0.33
	Sat, Sun, Hol	0.26	0.26	0.11	0.11	0.11	0.11	0.41	0.41	0.56	0.56	0.41	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.85	1	1	1	0.85	0.41
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GuestRoom_Occ_Sch	WD	0.65	0.65	0.65	0.65	0.65	0.65	0.5	0.28	0.28	0.13	0.13	0.13	0.13	0.13	0.13	0.2	0.35	0.35	0.35	0.5	0.5	0.58	0.65	0.65
	Sat, Sun, Hol	0.65	0.65	0.65	0.65	0.65	0.65	0.5	0.34	0.34	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.34	0.35	0.65	0.65	0.5	0.5	0.5
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INFIL_HALF_ON_SCH	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
INFIL_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LaundryRoom_Eqp_Elec_Sch	WD, Sat, Sun, Hol	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LaundryRoom_Eqp_Gas_Sch	WD, Sat, Sun, Hol	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
LaundryRoom_Ltg_Sch	All	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
LaundryRoom_Occ_Sch	WD	0	0	0	0	0	0	0	0	0.09	0.09	0.18	0.18	0	0.18	0.18	0.18	0.09	0	0	0	0	0	0	0
	Sat, Sun, Hol	0	0	0	0	0	0	0	0	0.09	0.09	0.18	0.18	0	0.18	0.18	0.18	0.09	0	0	0	0	0	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MeetingRoom_Eqp_Sch	All	0	0	0	0	0	0	0	0.05	0.54	0.54	0.26	0.26	0.05	0.54	0.54	0.26	0.26	0.26	0.05	0.05	0	0	0	0
MeetingRoom_Ltg_Sch_Base	WD, Sat, Sun, Hol	0	0	0	0	0	0.2	0.3	0.5	1	1	1	1	1	1	1	1	1	1	0.5	0.3	0.2	0.05	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MeetingRoom_Occ_Sch	WD	0	0	0	0	0	0	0	0.05	0.5	0.5	0.2	0.2	0.05	0.5	0.5	0.2	0.2	0.2	0.05	0.05	0	0	0	0
	Sat, Sun, Hol	0	0	0	0	0	0	0	0.05	0.5	0.5	0.2	0.2	0.05	0.5	0.5	0.2	0.2	0.2	0.05	0.05	0	0	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Office_Eqp_Sch	WD	0.33	0.33	0.33	0.33	0.33	0.38	0.38	0.43	0.43	0.43	1	1	0.94	1	1	1	1	0.75	0.63	0.63	0.48	0.48	0.33	0.33

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	Sat, Sun, Hol	0.33	0.33	0.33	0.33	0.33	0.38	0.38	0.43	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.48	0.48	0.48	0.48	0.33	0.33
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Office_Ltg_Sch_Base	WD, Sat, Sun, Hol	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.61	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.61	0.5	0.5	0.5	0.5	0.5	0.5
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Office_Occ_Sch	WD	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	1	1	1	1	0.5	1	1	1	1	0.4	0.3	0.2	0.2	0.2	0.2	0.2
	Sat, Sun, Hol	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Storage_Ltg_Sch	WD	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.1	0.1
	Sat, Sun, Hol	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.1	0.1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	SummerDesign, CustomDay1, CustomDay2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALWAYS_OFF	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLGSETP_SCH	All	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HTGSETP_SCH	All	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
HVACOperationSchd	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
MinOA_Sched	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
UnitHeater_ClgSP_Sch	All	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
UnitHeater_HtgSP_Sch	All	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
GuestRoom_SWH_Sch	WD	0.2	0.15	0.15	0.15	0.2	0.35	0.6	0.8	0.55	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.55	0.4	0.4	0.6	0.45	0.25
	Other	0.2	0.15	0.15	0.15	0.2	0.25	0.35	0.6	0.8	0.55	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.25	0.3	0.4	0.4	0.4	0.6	0.35
LaundryRoom_SWH_Sch	All	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Water Equipment Hot Supply Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
Water Equipment Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
Laundry Water Equipment Hot Supply Temp Sched	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Laundry Water Equipment Temp Sched	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1 Water Heater Setpoint Temperature Schedule Name	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-13 Small Office Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
INFIL_QUARTER_ON_SCH	WD, SummerDesign	1	1	1	1	1	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	1
	Sat, WinterDesign	1	1	1	1	1	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	1	1	1	1	1
	Sun, Hol, Other	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BLDG_OCC_SCH	SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.05	0.05
	WD	0	0	0	0	0	0	0.1	0.2	0.95	0.95	0.95	0.95	0.5	0.95	0.95	0.95	0.95	0.3	0.1	0.1	0.05	0.05	0.05	0.05
	Sat	0	0	0	0	0	0	0.1	0.1	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_LIGHT_SCH	WD	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.5	0.3	0.3	0.2	0.2	0.1	0.05
	Sat	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.3	0.3	0.3	0.3	0.15	0.15	0.15	0.15	0.15	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
BLDG_EQUIP_SCH	WD	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.5	0.4	0.4	0.4	0.4	0.4	0.4
	Sat	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.35	0.35	0.35	0.35	0.35	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CLGSETP_SCH	WD, SummerDesign	26.7	26.7	26.7	26.7	26.7	26.7	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	26.7	26.7
	Sat	26.7	26.7	26.7	26.7	26.7	26.7	24	24	24	24	24	24	24	24	24	24	24	24	26.7	26.7	26.7	26.7	26.7	26.7
	Other	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7
HTGSETP_SCH	WD	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6
	Sat	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6	15.6	15.6	15.6	15.6
	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Other	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
MinOA_Sched	WD, SummerDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
	Sat, WinterDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HVACOperationSchd	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
	Sat, WinterDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLDG_SWH_SCH	WD, SummerDesign	0.05	0.05	0.05	0.05	0.05	0.08	0.07	0.19	0.35	0.38	0.39	0.47	0.57	0.54	0.34	0.33	0.44	0.26	0.21	0.15	0.17	0.08	0.05	0.05
	Sat, WinterDesign	0.05	0.05	0.05	0.05	0.05	0.08	0.07	0.11	0.15	0.21	0.19	0.23	0.2	0.19	0.15	0.13	0.14	0.07	0.07	0.07	0.07	0.09	0.05	0.05
	Other	0.04	0.04	0.04	0.04	0.04	0.07	0.04	0.04	0.04	0.04	0.04	0.06	0.06	0.09	0.06	0.04	0.04	0.04	0.04	0.04	0.04	0.07	0.04	0.04
Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Water Equipment Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
Water Equipment Hot Supply Temp Sched	All	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3	43.3
SWHSys1 Water Heater Setpoint Temperature Schedule Name	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-14 Strip Mall Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BLDG_EQUIP_SCH	WD	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.4	0.2	0.2
	Sat	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.3	0.5	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.5	0.5	0.3	0.15	0.15
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.3	0.3	0.6	0.6	0.8	0.8	0.8	0.8	0.8	0.6	0.4	0.15	0.15	0.15	0.15	0.15
BLDG_LIGHT_SCH	WD	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.6	0.6	0.5	0.2	0.05	0.05
	Sat	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.3	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.5	0.3	0.3	0.1	0.05	0.05
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.4	0.2	0.05	0.05	0.05	0.05	0.05
BLDG_OCC_SCH	WD	0	0	0	0	0	0	0	0.1	0.2	0.5	0.5	0.7	0.7	0.7	0.7	0.8	0.7	0.5	0.5	0.3	0.3	0	0	0
	SummerDesign, WinterDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sat	0	0	0	0	0	0	0	0.1	0.2	0.5	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.2	0.2	0.2	0.1	0	0
	Other	0	0	0	0	0	0	0	0	0	0.1	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.2	0.1	0	0	0	0	0
INFIL_HALF_ON_SCH	WD, SummerDesign	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1
	Sat	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1
	WinterDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sun, Hol, Other	1	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLGSETP_SCH	WD, SummerDesign	30	30	30	30	30	30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	30	30	30
	Sat	30	30	30	30	30	30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	30	30
	WinterDesign	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Sun, Hol, Other	30	30	30	30	30	30	30	30	24	24	24	24	24	24	24	24	24	24	24	30	30	30	30	30
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HTGSETP_SCH	WD	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6	15.6
	SummerDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Sat	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6
	Other	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6	15.6	15.6	15.6
HVACOperationSchd	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
	Sat, WinterDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
	Other	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
MinOA_Sched	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
	Sat, WinterDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
	Other	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0

Table B-15 Supermarket Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Deli_Exhaust_SCH	WinterDesign, SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Other	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
BLDG_EQUIP_SCH	WD	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.4	0.2	0.2
	Sat	0.15	0.15	0.15	0.15	0.15	0.15	0.3	0.3	0.5	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.5	0.5	0.3	0.15	0.15
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.15	0.15	0.15	0.15	0.15	0.15	0.3	0.3	0.3	0.3	0.6	0.6	0.8	0.8	0.8	0.8	0.8	0.6	0.4	0.4	0.4	0.4	0.15	0.15
BLDG_LIGHT_SCH	WD	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.2	0.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.6	0.6	0.5	0.2	0.05	0.05
	Sat	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.3	0.6	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.5	0.3	0.3	0.1	0.05	0.05
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.4	0.2	0.2	0.2	0.2	0.05	0.05
BLDG_OCC_SCH	WD	0	0	0	0	0	0	0.1	0.1	0.2	0.5	0.5	0.7	0.7	0.7	0.7	0.8	0.7	0.5	0.5	0.3	0.3	0.3	0	0
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sat	0	0	0	0	0	0	0.1	0.1	0.2	0.5	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.6	0.2	0.2	0.2	0.1	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0	0	0	0	0	0	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.2	0.1	0.1	0.1	0.1	0	0
INFIL_HALF_ON_SCH	WD, SummerDesign	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1
	Sat	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1
	WinterDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sun, Hol, Other	1	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	1	1	1	1	1
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CLGSETP_SCH	WinterDesign	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	Other	30	30	30	30	30	30	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	30	30
HTGSETP_SCH	SummerDesign	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
	Other	15.6	15.6	15.6	15.6	15.6	15.6	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	15.6	15.6
HVACOperationSchd	All	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
MinOA_Sched	All	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Bakery_Case:1_WALKINFREEZER _CaseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Bakery_Case:1_WALKINFREEZER _CaseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bakery_Case:1_WALKINFREEZER _CaseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bakery_Case:1_WALKINFREEZER _WalkInStockingSched	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
Deli_Case:1_ MULTIDECKDIARYANDDELICASE _CaseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.2	0.2	0.2
Deli_Case:1_ MULTIDECKDIARYANDDELICASE _CaseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deli_Case:1_ MULTIDECKDIARYANDDELICASE _CaseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deli_Case:1_ MULTIDECKDIARYANDDELICASE _CaseStockingSched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	50	35	0	0	0	0	0	0	0	0	0
Deli_Case:2_WALKINFREEZER_C aseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Deli_Case:2_WALKINFREEZER_C aseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deli_Case:2_WALKINFREEZER_C aseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deli_Case:2_WALKINFREEZER_W alkInStockingSched	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
Produce_Case:1_ MULTIDECKDIARYANDDELICASE_ CaseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.2	0.2	0.2
Produce_Case:1_ MULTIDECKDIARYANDDELICASE_ CaseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Produce_Case:1_ MULTIDECKDIARYANDDELICASE_ CaseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Produce_Case:1_ MULTIDECKDIARYANDDELICASE_ CaseStockingSched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	50	35	0	0	0	0	0	0	0	0	0
Sales_Case:1_MEATDISPLAYCASE _CaseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:1_MEATDISPLAYCASE _CaseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:1_MEATDISPLAYCASE _CaseStockingSched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	50	35	0	0	0	0	0	0	0	0	0
Sales_Case:2_ MULTIDECKDIARYANDDELICASE_ CaseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.2	0.2	0.2
Sales_Case:2_ MULTIDECKDIARYANDDELICASE_ CaseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:2_ MULTIDECKDIARYANDDELICASE_ CaseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Sales_Case:2_ MULTIDECKDIARYANDDELICASE_ CaseStockingSched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	50	35	0	0	0	0	0	0	0	0	0
Sales_Case:3_GLASSDOORFROZE NFOOD_CaseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.2	0.2	0.2
Sales_Case:3_GLASSDOORFROZE NFOOD_CaseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:3_GLASSDOORFROZE NFOOD_CaseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:3_GLASSDOORFROZE NFOOD_CaseStockingSched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	50	35	0	0	0	0	0	0	0	0	0
Sales_Case:4_OPENWELLICECRE AMDISPLAYCASE_CaseCreditRedu xSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.2	0.2	0.2
Sales_Case:4_OPENWELLICECRE AMDISPLAYCASE_CaseDefrost2aD aySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:4_OPENWELLICECRE AMDISPLAYCASE_CaseDripDown2 aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:4_OPENWELLICECRE AMDISPLAYCASE_CaseStockingSc hed	All	0	0	0	0	0	0	0	0	0	0	0	0	0	50	35	0	0	0	0	0	0	0	0	0
Sales_Case:5_WALKINFREEZER_C aseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Sales_Case:5_WALKINFREEZER_C aseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:5_WALKINFREEZER_C aseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:5_WALKINFREEZER_ WalkInStockingSched	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
Sales_Case:6_WALKINFREEZER_C aseCreditReduxSched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2
Sales_Case:6_WALKINFREEZER_C aseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:6_WALKINFREEZER_C aseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:6_WALKINFREEZER_ WalkInStockingSched	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
Sales_Case:7_WALKINFREEZER_C aseCreditReduxSched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:7_WALKINFREEZER_C aseDefrost2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:7_WALKINFREEZER_C aseDripDown2aDaySched	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sales_Case:7_WALKINFREEZER_ WalkInStockingSched	Tue, Fri	0	0	0	0	725	417	290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	125	117	90	0	0	0	0	0	0	0	0	0	0	0	0	125	117	90	0	0
BLDG_SWH_SCH	WD, SummerDesign	0.04	0.05	0.05	0.04	0.04	0.04	0.04	0.15	0.23	0.32	0.41	0.57	0.62	0.61	0.5	0.45	0.46	0.47	0.42	0.34	0.33	0.23	0.13	0.08

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	Sat, WinterDesign	0.11	0.1	0.08	0.06	0.06	0.06	0.07	0.2	0.24	0.27	0.42	0.54	0.59	0.6	0.49	0.48	0.47	0.46	0.44	0.36	0.29	0.22	0.16	0.13
	Sun, Hol, Other	0.07	0.07	0.07	0.06	0.06	0.06	0.07	0.1	0.12	0.14	0.29	0.31	0.36	0.36	0.34	0.35	0.37	0.34	0.25	0.27	0.21	0.16	0.1	0.06
Water Equipment Latent fract sched	All	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Water Equipment Sensible fract sched	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Water Equipment Hot Supply Temp Sched	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Water Equipment Temp Sched	All	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
PlantOnSched	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SWHSys1 Water Heater Ambient Temperature Schedule Name	All	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
SWHSys1 Water Heater Setpoint Temperature Schedule Name	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
SWHSys1-Loop-Temp-Schedule	All	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60

Table B-16 Warehouse Hourly Operation Schedules

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BLDG_EQUIP_SCH	WD	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.8	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.4	0.1	0.1	0.1	0.1	0.1	0.1
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
BLDG_LIGHT_SCH	WD	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.7	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.3	0.1	0.1	0.1	0.1	0.1	0.1
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.24	0.24	0.24	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
BLDG_OCC_SCH	WD	0	0	0	0	0	0	0	0.15	0.7	0.9	0.9	0.9	0.5	0.85	0.85	0.85	0.2	0	0	0	0	0	0	0
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sat	0	0	0	0	0	0	0	0	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLGSETP_FineStorage_SCH	All	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7
CLGSETP_SCH	WD, SummerDesign	30	30	30	30	30	30	30	24	24	24	24	24	24	24	24	24	24	30	30	30	30	30	30	30
	Sat	30	30	30	30	30	30	30	30	24	24	24	24	24	24	24	24	30	30	30	30	30	30	30	30
	Other	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HTGSETP_BulkStorage_SCH	All	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
HTGSETP_FineStorage_SCH	All	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
HTGSETP_SCH	WD	15.5	15.5	15.5	15.5	15.5	15.5	21	21	21	21	21	21	21	21	21	21	21	15.5	15.5	15.5	15.5	15.5	15.5	15.5
	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Sat	15.5	15.5	15.5	15.5	15.5	15.5	15.5	21	21	21	21	21	21	21	21	21	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
	Other	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
HVACOperationSchd	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	Sat, WinterDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MinOA_Sched	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	Sat, WinterDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
BLDG_EQUIP_SCH	WD	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.8	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.4	0.1	0.1	0.1	0.1	0.1	0.1
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.4	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Schedule	Day of Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
BLDG_LIGHT_SCH	WD	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.7	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.3	0.1	0.1	0.1	0.1	0.1	0.1
	Sat	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.24	0.24	0.24	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
BLDG_OCC_SCH	WD	0	0	0	0	0	0	0	0.15	0.7	0.9	0.9	0.9	0.5	0.85	0.85	0.85	0.2	0	0	0	0	0	0	0
	SummerDesign	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Sat	0	0	0	0	0	0	0	0	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0
	WinterDesign	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sun, Hol, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLOTHING_SCH	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	All	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
WORK_EFF_SCH	All	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLGSETP_FineStorage_SCH	All	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7	26.7
CLGSETP_SCH	WD, SummerDesign	30	30	30	30	30	30	30	24	24	24	24	24	24	24	24	24	24	30	30	30	30	30	30	30
	Sat	30	30	30	30	30	30	30	30	24	24	24	24	24	24	24	24	30	30	30	30	30	30	30	30
	Other	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Dual Zone Control Type Sched	All	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
HTGSETP_BulkStorage_SCH	All	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
HTGSETP_FineStorage_SCH	All	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
HTGSETP_SCH	WD	15.5	15.5	15.5	15.5	15.5	15.5	21	21	21	21	21	21	21	21	21	21	21	15.5	15.5	15.5	15.5	15.5	15.5	15.5
	WinterDesign	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	Sat	15.5	15.5	15.5	15.5	15.5	15.5	15.5	21	21	21	21	21	21	21	21	21	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
	Other	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
HVACOperationSchd	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	Sat, WinterDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MinOA_Sched	WD, SummerDesign	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	Sat, WinterDesign	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALWAYS_ON	All	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ACTIVITY_SCH	All	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
AIR_VELO_SCH	All	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

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14. ABSTRACT *(Maximum 200 Words)*
The U.S. Department of Energy (DOE) Building Technologies Program has set the aggressive goal of producing marketable net-zero energy buildings by 2025. This goal will require collaboration between the DOE laboratories and the building industry. We developed standard or reference energy models for the most common commercial buildings to serve as starting points for energy efficiency research. These models represent fairly realistic buildings and typical construction practices. Fifteen commercial building types and one multifamily residential building were determined by consensus between DOE, the National Renewable Energy Laboratory, Pacific Northwest National Laboratory, and Lawrence Berkeley National Laboratory, and represent approximately two-thirds of the commercial building stock.

15. SUBJECT TERMS
net-zero energy; reference building; energy efficiency; energy simulation

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