CALIFORNIA COMMERCIAL END-USE SURVEY

APPENDICES A-B

CONSULTANT REPORT

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This report is dedicated to the memory of Alan Fields, who served as the project manager until his death on February 3, 2004. Alan was a valued colleague and dear friend. He will be missed by his associates at Itron, the California Energy Commission, and the energy industry.

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APPENDIX A: BASIC SURVEY INSTRUMENT

Site ID Number

CALIFORNIA COMMERCIAL END-USE SURVEY (CCEUS) 2002/2003

Rev. 10/17/02

Site Contact Information:

Business Name: _____

Street Address: _____

City, State: _____ , ___

Zip Code: _____ - _____

Contact Name: _____

Contact Title: _____

Contact Phone #: (___) ___ - _____ ext. _____

Contact Name 2: _____

Contact Title 2: _____

Contact Phone 2: (___) ___ - _____ ext. _____

Email Address: _____

FAX #: (___) ___ - _____

Survey Tracking Information:

Survey Team (circle one) **ADM Xen VT**

	Date:	Initials
Field suvey completed:	__ __ / __ __ / __ __	__ __ __
Survey received from surveyor:	__ __ / __ __ / __ __	__ __ __
Quality Control check completed:	__ __ / __ __ / __ __	__ __ __
Data entry completed:	__ __ / __ __ / __ __	__ __ __
Survey received at RER:	__ __ / __ __ / __ __	__ __ __

☐ QC

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Premise-Level General Information

PRIMARY BUSINESS TYPE CODE: _ _ _ *(Use codes from the Business Type table, Form BT)*

Premise Business Type Description

Uniqueness: Give a brief description about the type of work and/or primary product/service. What makes this premise unique from other businesses of this type? _____

Recent Survey Area Changes: Give a brief description about any changes made to this site since Jan. 2001 that significantly impacted energy usage. _____

Premise General Information

What kind of premise is this?: **P** = Part of a bldg **B** = 1 building, single footprint **MF** = 1 building w/multiple footprints **SM** = Small multi-building (all bldgs surveyed) **CM** = Campus (multi-bldg, subsampled bldgs) **OT** = Other _____	P B MF SM CM OT
What is the total occupied floor area of this premise (excluding enclosed parking garage area)?	_____ ft^2
-- If the premise has an enclosed parking garage, what is the floor area?	_____ ft^2
How many buildings are part of this premise?	_____
Is this premise owner-occupied (**O**) or leased (**L**)?	O L
What year was this business established at this location?	__ __ __ __
What year was the majority of the facility built?	__ __ __ __
How many full-time equivalent employees work at this premise?	_____
Sample segment identifier (2-digit code)	__ __
Sample frame SIC Code (4-digit)	__ __ __ __
Is interval metered (load research) electric data available for this premise?	Y N
Was short-term metering performed for this premise (see Form 39)?	Y N

Business-Type Specific Information

Lodging:	Total number of usable rooms/residential units	_____
	Average % of rooms occupied	_____ %
Office:	Average % of occupied (non-vacant) space	_____ %
Hospital:	Number of beds in hospital	_____
	Average % of beds occupied	_____ %
Education:	Average number of enrolled students (e.g. ADA)	_____

Business/Building Type Codes

Business Type	Code	Business Type	Code	Business Type	Code
Offices (Non-Medical):		**Retail Store:**		**Lodging:**	
Administration and management	011	Department / Variety Store	041	Hotel	081
Financial / Legal	012	Retail Warehouse/Clubs	042	Motel	082
Insurance/Real Estate	013	Shop in Enclosed Mall	043	Resort	083
Data Processing/Computer Center	014	Shop in Strip Mall	044	Other Lodging	084
Mixed-Use/Multi-tenant	015	Auto Sales	045	**Public Assembly:**	
Lab/R&D Facility	016	Other Retail Store	046	Religious Assembly (worship only)	091
Software Development	017	**Warehouse:**		Religious Assembly (mixed use)	092
Government Services	018	Refrigerated Warehouse	051	Health/Fitness Center	093
Other Office	019	Unconditioned Warehouse, High Bay	052	Movie Theaters	094
Restaurant/Food Service*:		Unconditioned Warehouse, Low Bay	053	Theater / Performing Arts	095
Fast Food or Self Service	021	Conditioned Warehouse, High Bay	054	Library / Museum	096
Specialty/Novelty Food Service	022	Conditioned Warehouse, Low Bay	055	Conference/Convention Center	097
Table Service	023	**Health Care:**		Community Center	098
Bar/Tavern/Nightclub/Other	024	Hospital	061	Other Recreational/Public Assembly	099
Other Food Service	025	Nursing Home	062	**Services:**	
Food Stores :		Medical/Dental Office	063	Gas Station / Auto Repair	101
Supermarkets	031	Clinic/Outpatient Care	064	Gas Station w/Convenience Store**	102
Small General Grocery	032	Medical/Dental Lab	065	Repair (Non-Auto)	103
Specialty/Ethnic Grocery	033	**Education:**		Other Service Shop	104
Convenience Store**	034	Daycare or Preschool	071	**Miscellaneous:**	
Liquor Store	035	Elementary School	072	Assembly / Light Mfg.	111
Other Food Store	036	Middle / Secondary School	073	Police / Fire Stations	112
		College or University	074	Post Office	113
		Vocational or Trade School	075	**Other** *Describe on Form 1*	130

* *For Restaurant/Food Service businesses, be sure to complete # of meals (Breakfast/Lunch/Dinner) on Form 25.*

** *Convenience stores that do not sell gasoline should be coded as 034; convenience stores that do sell gasoline should be coded as 102.*

Electric Accounts and Meters

Utility/Provider	SDG&E PG&E SCE SMUD LADWP Other _____

Item #	Meter Number:	Account Number:	Meter Status Code
E1	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
E2	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
E3	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
E4	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
E5	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
E6	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
E7	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
E8	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
E9	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
E10	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT

Natural Gas Accounts and Meters

Utility/Provider	SDG&E PG&E SCG Other _____

Item #	Meter Number:	Account Number:	Meter Status Code
G1	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
G2	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
G3	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
G4	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
G5	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
G6	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
G7	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
G8	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
G9	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT
G10	__ __ __ __ __ __ __ __ __ __ __ __	__ __ __ __ __ __ __ __ __ __ __ __	V A D NI ND OT

Meter Status Codes

V	Verified: Meter is listed on the Customer Contact sheet and was verified during the onsite visit
A	Add this meter: It was found onsite but was not listed on the Customer Contact sheet
D	Delete this meter: It was listed on the Customer Contact sheet but does not exist or does not service the surveyed area
NI	Meter not verified, Inaccessible: Explain why in comments
ND	Meter not verified, Access Denied: Explain why in comments
OT	Other situation: describe in comments block

Electric/Gas Account Notes:

Other Energy Service Accounts ☐ N/A

(If bills are available, attach copy to survey form)

Item #	Fuel Type	Bills Available?	Meter/Account /Identification Number:	Utility / Provider	AvgAnnual Usage&Units*
O1	Bottled Gas (LPG)	Y N	__ __ __ __ __ __ __ __ __		
O2	Purchased Chilled Water	Y N	__ __ __ __ __ __ __ __ __		
O3	Purchased Steam	Y N	__ __ __ __ __ __ __ __ __		
O4	Other _____	Y N	__ __ __ __ __ __ __ __ __		

* Units of usage should be whatever appears on the bill, for example therms, ft^3, gallons, etc.

On-Site Power Generation ☐ N/A

Cogeneration, self-generation, solar cell/photovoltaic system, and emergency generators.

Item #	#__	#__
Type: **I** = Internal Combustion Engine **G** = Gas Turbine **M** = Micro-turbine **C** = Combined Cycle **S** = Solar array/Photovoltaic **O** = Other _____	I G M C S O	I G M C S O
Is this an emergency generator (check box if yes)?	☐	☐
-- How often is it tested? (then skip to Manufacturer)		
What is the plant generation capacity? (kW)		
Fossil Fuel Type (if applicable): **G** = Natural Gas **D** = Diesel Fuel **F** = Fuel Oil **O** = Other _____	G D F O	G D F O
Use for generated power: **P** = Peak Shaving **B** = Base load **O** = Other_____	P B O	P B O
What percent of generated electricity is sold back to the utility?	%	%
Average operating hours per day (If seasonal, describe operation below)		
Number of operating days per year		
Use of waste heat: **S** = Space ht **W** = Water ht **P** = Pool **N** = None **O** = Other_____	S W P O	S W P O
Average heat output (kBtu/hr)		
What fraction of the waste heat is utilized?	%	%
Manufacturer:		
Model:		
Location (Component and Area ID)		
Components Served		

Other Energy Services/Generation Notes:

Shared Services and/or Electric/Gas Meters ☐ N/A

Off-Site Central Equipment Providing Service to Surveyed Premise ☐ N/A

Complete this table when the premise is receiving heating or cooling from a central system which is not part of the premise being surveyed (i.e. the heating/cooling equipment - boilers and chillers - are connected to a utility service meter other than those serving the premise).

Item #	# ___	# ___	# ___
Equipment Type: **C** = Chiller **B** = Boiler **O** = Other _____	C B O	C B O	C B O
Equipment Fuel Type: **E** = Electricity **G** = Natural Gas **F** = Fuel Oil **L** = LPG	E G F L	E G F L	E G F L
Total Capacity -7			
Units for Capacity **T** = Tons **B** = kBtuh **W**=kW **H**=HP	T B W H	T B W H	T B W H
Percent of total capacity utilized by survey area -7	%	%	%

Surveyed Premise Central Equipment Serving Non-Surveyed Areas ☐ N/A

Complete this table when equipment that predominantly serves the surveyed premise provides services to an area that is not part of the surveyed premise. Provide some basic information about the non-surveyed area that will be used to estimate its impact on the survey areas shared equipment.

#	Bldg Type Code (Form BT)	Elec/Gas Meter Item # (E,G)	Non-Surveyed Area Floor Area (Sq. Ft.)	% Heated	% Cooled	Shared Equipment/Comments
1				%	%	
2				%	%	
3				%	%	
4				%	%	
5				%	%	

Shared Meters ☐ N/A

For shared electric and gas meters (i.e. also serve non-surveyed areas), estimate the % of metered energy used by the surveyed site.

#	Elec/Gas Meter Item # (E,G)	Percent used by Surveyed Premise	Non-Surveyed Area Bldg Type Code	End Uses Shared/Comments
1		%		
2		%		
3		%		
4		%		
5		%		
6		%		

Recent Energy-Efficiency Measures ☐ N/A

Ask your site contact about energy efficiency measures installed after January 2001. Provide a brief description of the measure, an Enduse Code, and any additional relevant comments (building/space where installed, why installed, etc.). Before leaving the premise, ask your contact about any additional measures observed during the onsite survey. For reference, a table of typical energy-efficiency measures by end use is presented on the facing page.

Item #	Measure Description	Enduse Code	Comments (where, why, when?)

Recent Energy Efficiency Measures (cont.)

Energy-Efficiency Measures - Reference Table

LIGHTING EQUIPMENT (EnduseCode=LT)	**BOILERS (EndUseCode=BO)**
T-8, T-5, or equivalent high-efficiency fluorescent lamps	High efficiency boilers
Super T-8 lamps	VSD on feedwater pumps
Hard-wired 1 or 2 lamp Compact Fluorescent fixtures	VSD on draft fans w/auto pressure control
Low-power electronic ballasts	**MOTORS (EndUseCode=MO)**
Specular reflectors	High efficiency process (non-HVAC) motors
Pulse-start metal halide lamps/ballasts	VSD process (non-HVAC) motors
Other non-fluorescent high-efficiency lighting systems	**COMMERCIAL REFRIG. (EndUseCode=RF)**
Timeclocks	Multiplex rack systems to replace conventional system
Daylighting controls	High-efficiency (T8s) case lighting
Occupancy controlled hi-low switching	Ambient or mechanical subcooling
Programmable controllers	Evaporative and/or oversized condensers
Delamping	VSD condenser fan
LED exit signs	Scroll compressors
HVAC EQUIPMENT (EnduseCode=HV)	Heaterless doors (triple pane)
High efficiency unitary/package equipment	Heat pipe on HVAC unit with coil bypass
High efficiency chiller(s)	Low temperature air distribution
VSD/ASD chillers, pumps, or fans	Electronically controlled Thermal Expansion Valves
High Efficiency HVAC pumps	Distributed refrigeration systems
High Efficiency fan motors	**MISCELLANEOUS EQUIPMENT (EndUseCode=MI)**
Ground-source heat pumps	Ultrasonic Humidifiers
Water-cooled unitary/package equipment	VSD Fume hoods
Economizers (air-side or water-side)	Fume hood measures other than VSD
Evaporative condensers	CO sensors for garage exhaust fans
Thermal storage system	**WHOLE-BUILDING (EndUseCode=WB)**
Low temperature air distribution system	Optimized building system design
Conversion to VAV from CV system	Energy management/control system
HVAC CONTROLS (EnduseCode=HC)	**BUILDING ENVELOPE (EndUseCode=BE)**
Energy Management/Control system	Low-e windows
Optimal start/stop	Low-e^2 (spectral LowE) windows
Chiller sequencing/optimization	Tinted/Reflective windows
Static pressure reset on HVAC system demand	Dual Pane windows
Outside air intake control (CO2, VOC, or other sensor)	Gas-filled windows
Chilled water / hot water reset	Above-code roof or wall insulation
Night ventilation	**OTHER (EndUseCode=OT)**
Demand controlled ventilation	

Premise/Site-Plan Sketch

This sketch should provide a high-level view of the premise and it's surroundings as it is actually configured. Attach site plans and floor plans available from other sources. Sketch all buildings and the closest streets/roadways in both directions. Mark the orientation of True North. For multiple building sites, indicate where meters are located, and the boundaries of different Component Survey areas. Indicate any significant shading provided by adjacent trees or buildings. Use multiple sheets/drawings if necessary. Also indicate the "front" or primary entrance for each building.

Premise/Site-Plan sketch comments:

Premise/Component-Plan Sketch

This sketch should provide a view of the premise as represented by components. Sketch the components and their orientation to other components. Reference the previous sketch and indicate which buildings have been modeled as components. Indicate Plan North (PN) for each component as well as the orientation of True North. Use multiple sheets/drawings if necessary. Also indicate the "front" or primary entrance for each building/component.

Premise/Component sketch comments:

Premise/Component Survey Planning Worksheet ☐ N/A

Complete this worksheet for every component on the premise. Identify all components, provide a brief description, record Total Surveyed Floor Area, the Total Floor Area represented by the survey area, the Component Weight, assign a Schedule Set # (from Form 10), and provide any additional comments.

Item #	Component ID (A – Z)	Surveyor's Description of Business / Activity Type	Total Surveyed Floor Area, ft^2 (A)	Total Floor Area Represented, ft^2 (B)*	Component Weight (B/A)	Form 10 Schedule Set #
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
		Totals				

* Total Floor Area Represented will not be equal to Total Surveyed Floor Area only in a subsampling situation.

Comments:

Component Location within Premise ☐ N/A

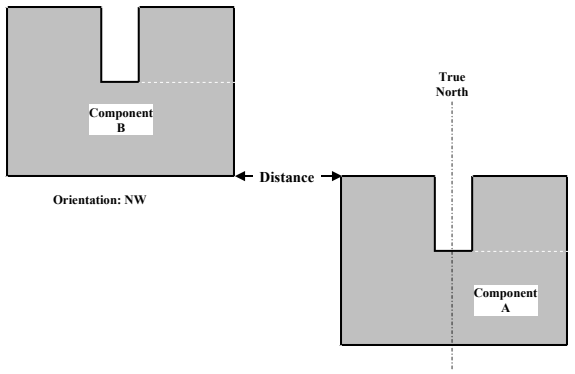
Choose one of the two methods (Orientation & Distance or Exact Coordinates) to indicate a component's location within the premise, with respect to another component.

Item #	Component ID (A – Z)	Position this Component relative to Component….	Orientation & Distance: Orientation *	Orientation & Distance: Distance (ft)	Exact Coordinates: x (ft)	Exact Coordinates: y (ft)	Exact Coordinates: z (ft)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

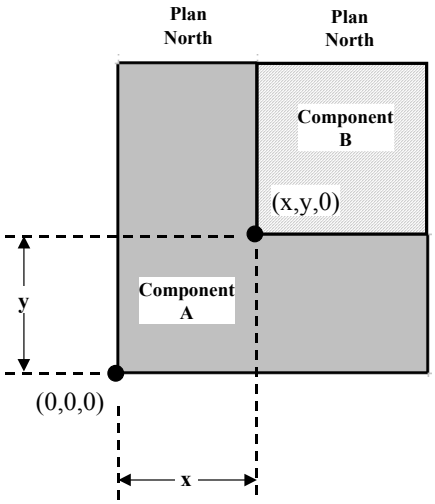
* Orientation here is with respect to True North, not Plan North, e.g. **N**, **S**, **E**, **W**, **ENE**, **NE**, **SSE**, etc. Other options: Use "**A**" to position a component directly above or "**B**" to position a component directly below the reference component, or "**ST**" to represent a stand-alone building distant from other buildings (i.e. a default Distance will be used).

Component Location Methods

Orientation and Distance Method



Exact Coordinate Method



Premise-Level Schedule Definitions

Standard Holidays *(check all that apply)* ☐ N/A

Indicate below which, if any, standard holidays that the business is closed or operation deviates drastically from normal/typical operations, and indicate on Form 10a and 10b what the holiday operation hours are. Indicate any additional holidays in the comment block.

New Year's Eve	☐	July 4th Celebrated	☐
New Year's Day	☐	Labor Day	☐
New Year's Day Celebrated	☐	Columbus Day	☐
Martin Luther King Day	☐	Veterans' Day	☐
Presidents' Day	☐	Thanksgiving	☐
St. Patrick's Day	☐	Thanksgiving Friday	☐
Easter Sunday	☐	Christmas Eve	☐
Memorial Day	☐	Christmas Day	☐
Flag Day	☐	Christmas Day Celebrated	☐
July 4th	☐	Caesar Chavez Day*	☐

** Not currently included in building simulations.*

Seasonal Operation Periods ☐ N/A

Define seasonal operation periods for significant periods of time where business hours and/or equipment operation differs significantly from normal or typical business hours and/or equipment operation. To indicate seasonal operation periods, provide a brief description of the period (e.g. "spring break", "winter break", "summer break", "extended holiday hours"), and list the beginning/ending months (1-12) and days for up to three time periods.

TIME PERIOD 1			TIME PERIOD 2			TIME PERIOD 3		
Description _____			Description _____			Description _____		
Begin Month/Day			Begin Month/Day			Begin Month/Day		
End Month/Day			End Month/Day			End Month/Day		

Holiday and Seasonal Operation Comments:

Schedule Set #: ____ Primary Schedules (1/5)

Description _____

Specify up to 3 schedule sets (i.e. Forms 10a through 10e as needed) per premise. Schedule sets are assigned to components on the Premise/Component Survey Planning Worksheet.

Primary Business Hours

Define typical operation for <u>all</u> Day Types listed below and specify hours in military time (00 to 24). For partial (i.e. not full) operation days, also indicate the approximate % of full operation as Partial Op %.

Day Type	Business Hours	Closed All Day?	Open 24 hrs?	PartialOp%
Monday	from __ __ to __ __	☐	☐	
Tuesday	from __ __ to __ __	☐	☐	
Wednesday	from __ __ to __ __	☐	☐	
Thursday	from __ __ to __ __	☐	☐	
Friday	from __ __ to __ __	☐	☐	
Saturday	from __ __ to __ __	☐	☐	
Sunday	from __ __ to __ __	☐	☐	
Holidays	from __ __ to __ __	☐	☐	

Primary Occupancy and Equipment Operation Schedules

Define operation schedules as listed below for all schedule types applicable to the surveyed area. Draw a line through those schedules that do not apply to the surveyed area. If equipment operation varies significantly from business hours, then check "Hrly Sched" box and specify equipment operation using the optional hourly schedules on Form 10d.

Schedule Type	Parameter	Value <u>during</u> Bus. Hours	Value <u>outside</u> of Bus. Hours*	<u>OR</u> Hrly Sched
Occupancy (applied to occupants on Form 15)	**% of typical max hourly occup.**	__ __ %	__ __ %	☐
Indoor Lighting* **	**% of Equip On**	__ __ %	__ __ %	☐
Office Equipment	**% of Equip On**	__ __ %	__ __ %	☐
Miscellaneous Equipment	**% of Equip On**	__ __ %	__ __ %	☐
Cooking Equipment	**% of Equip On**	__ __ %	__ __ %	☐
Motors/Air Compressors/Process Equipment	**% of Equip On**	__ __ %	__ __ %	☐
Outdoor Lighting** **PHOTOCELL** ☐ <u>OR</u> Specify typical operating hours	**Hour (1-24) that lights….**	**go off:**** hr __ __	**come on:**** hr __ __	☐
HVAC Schedule => Complete Form 10c				

* Do not use a value of zero (0) unless ALL equipment is really off as verified by site contact.
** If <u>all</u> outdoor lighting is photocell controlled, check the photocell block and leave the on/off hours blank.
*** Use the hourly schedule option for lighting whenever it is possible to obtain detailed operation information.

Schedule Set #: ____ Seasonal Schedules (2/5)

If seasonal operation is indicated on Form 9, specify the corresponding seasonal business hours, occupancy, HVAC, and equipment operation for each schedule set.

☐ **Check box if seasonal periods indicated on Form 9 are <u>not</u> applicable to this schedule set**

Seasonal Operation Business Hours

Define typical operation for <u>all</u> Day Types listed below and specify hours in military time (00 to 24). For partial (i.e. not full) operation days, also indicate the approximate % of full operation as Partial Op %.

Day Type	Business Hours	Closed All Day?	Open 24 hrs?	PartialOp%
Monday	from __ __ to __ __	☐	☐	
Tuesday	from __ __ to __ __	☐	☐	
Wednesday	from __ __ to __ __	☐	☐	
Thursday	from __ __ to __ __	☐	☐	
Friday	from __ __ to __ __	☐	☐	
Saturday	from __ __ to __ __	☐	☐	
Sunday	from __ __ to __ __	☐	☐	
Holidays	from __ __ to __ __	☐	☐	

Seasonal Occupancy and Equipment Operation Schedules

Define operation schedules as listed below for all schedule types applicable to the surveyed area. Draw a line through those schedules that do not apply to the surveyed area. Use hourly schedules if indicated on Form 10a.

Schedule Type	Parameter	Value <u>during</u> Bus. Hours	Value <u>outside</u> of Bus. Hours*
Occupancy (applied to occupants on Form 15)	**% of typical max hourly occup.**	__ __ %	__ __ %
Indoor Lighting	**% of Equip On**	__ __ %	__ __ %
Office Equipment	**% of Equip On**	__ __ %	__ __ %
Miscellaneous Equipment	**% of Equip On**	__ __ %	__ __ %
Cooking Equipment	**% of Equip On**	__ __ %	__ __ %
Motors/Air Compressors/Process Equipment	**% of Equip On**	__ __ %	__ __ %
Outdoor Lighting** **PHOTOCELL** ☐ <u>OR</u> Specify typical operating hours	**Hour (1-24) that lights….**	**go off:**** hr __ __	**come on:**** hr __ __

* Do not use a value of zero (0) unless ALL equipment is really off as verified by site contact.

** If <u>all</u> outdoor lighting is photocell controlled, check the photocell block and leave the on/off hours blank.

Schedule Set #: ____ HVAC Schedules (3/5)

Specify at least 1 HVAC schedule for each schedule set, and assign these schedules at the HVAC system level. Use additional pages if more than 2 schedules are needed. For 100% unconditioned components, this form may be left blank. ***Note:*** *Unless 7/24 operation is indicated, values for all fields must be entered in both the "Occupied" and "Unoccupied (setback/setup)" columns.*

HVAC Schedule #: ___ Description _____

Primary Schedule

Description	Occupied	Unoccupied (setback/setup)
Cooling Setpoints (90 = Off)	__ __ °F	__ __ °F
Heating Setpoints (50 = Off)	__ __ °F	__ __ °F
Fan Operation (on/off): Occupied temps apply	__ **# of hours before opening***	__ **# of hours after closing****
Fan Control: **A** = Always on/continuous **C** = Cycles w/HeatCool **O** = Off **M** = Manual/as-needed **N** = Night cycling	A C M	A C O M N

Seasonal Operation Schedule

Description	Occupied	Unoccupied (setback/setup)
Cooling Setpoints (90 = Off)	__ __ °F	__ __ °F
Heating Setpoints (50 = Off)	__ __ °F	__ __ °F
Fan Operation (on/off): Occupied temps apply	__ **# of hours before opening***	__ **# of hours after closing****
Fan Control: **A** = Always on/continuous **C** = Cycles w/HeatCool **O** = Off **M** = Manual/as-needed **N** = Night cycling	A C M	A C O M N

* Use a value of 24 to indicate 7/24 operation.

** Use a negative value to indicate # of hours before close.

HVAC Schedule #: ___ Description _____

Primary Schedule

Description	Occupied	Unoccupied (setback/setup)
Cooling Setpoints (90 = Off)	__ __ °F	__ __ °F
Heating Setpoints (50 = Off)	__ __ °F	__ __ °F
Fan Operation (on/off): Occupied temps apply	__ **# of hours before opening***	__ **# of hours after closing****
Fan Control: **A** = Always on/continuous **C** = Cycles w/HeatCool **O** = Off **M** = Manual/as-needed **N** = Night cycling	A C M	A C O M N

Seasonal Operation Schedule

Description	Occupied	Unoccupied (setback/setup)
Cooling Setpoints (90 = Off)	__ __ °F	__ __ °F
Heating Setpoints (50 = Off)	__ __ °F	__ __ °F
Fan Operation (on/off): Occupied temps apply	__ **# of hours before opening***	__ **# of hours after closing****
Fan Control: **A** = Always on/continuous **C** = Cycles w/HeatCool **O** = Off **M** = Manual/as-needed **N** = Night cycling	A C M	A C O M N

Schedule Set #: ____ Hourly Primary Schedules (4/5)

Use this form if equipment operation is independent of Business Hours as indicated on Form 10a/b. Use one block for each end use. Indicate the applicable daytypes for each day type schedule, and account for all day types including holidays. Specify the % of max. occupancy or equipment-on for all time periods, and be sure to accurately capture transition periods.

Hour		12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Schedule Set #: ____ Hourly Seasonal Schedules (5/5)

Use this form if equipment operation is independent of Business Hours as indicated on Form 10a/b and seasonal operation is used. Use one block for each end use. Indicate the applicable daytypes for each day type schedule, and account for all day types including holidays. Specify the % of max. occupancy or equipment-on for all time periods, and be sure to accurately capture transition periods.

Hour		12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Building Shell Construction Codes

Roof & Ceiling Construction

		Roof /Ceiling Code	# ___	# ___	# ___
Roof Construction type	*From Roof/Wall Construction Codes table*		WF MF CWC CNO ADB	WF MF CWC CNO ADB	WF MF CWC CNO ADB
-- Attic / No Attic/ Mixed?	**A** = Attic **N** = No Attic **M** = Mixed		A N M	A N M	A N M
-- Sloped / Flat / Mixed Roof?	**S** = Sloped **F** = Flat **M** = Mixed		S F M	S F M	S F M
Exterior Insulation: R-Value	**0** = Uninsulated/None	-7			
External Surface Finish/ Material	*From Roof/Wall Construction Codes table*				
Roof Color	**C**=CoolRoof **D**=Dark **M**=Medium **L**=Light		C D M L	C D M L	C D M L
-- If cool/white roof, describe material					
Interior Insulation: R-Value	**0** = Uninsulated/None	-7			
Radiant barrier present?	**Y** = Yes **N** = No	-7			
Suspended Ceiling?	**Y** = Yes **N** = No		Y N	Y N	Y N
Ceiling Insulation: R-Value	**0** = Uninsulated/None	-7			
OR Matl. Type	*From Roof/Wall Construction Codes table*				

Exterior Wall Construction

		Exterior Wall Code	# ___	# ___
External Wall Construction type	*From Roof/Wall Construction Codes table*	-7		
Exterior Wall dimension(s) in inches	Example: 2X4, 2X6, 4, 6, 12, etc			
-- For masonry walls: Furred Interior type	**W** = Wood **M** = Metal **N** = None		W M N	W M N
Wall Color	**D** = Dark **M** = Medium **L** = Light		D M L	D M L
External Surface finish type	*From Roof/Wall Construction Codes table*			
Exterior Insulation: R-value	**0** = Uninsulated/None	-7		
Material	*From Roof/Wall Construction Codes table*			
Cavity Insulation: R-value	**0** = Uninsulated/None	-7		
Material	*From Roof/Wall Construction Codes table*			
Interior Insulation: R-value	**0** = Uninsulated/None	-7		
Material	*From Roof/Wall Construction Codes table*			

Below-Grade Wall Construction ☐ N/A

		Below-Grade Wall Code	# __	# __
Below-grade Wall Construction type	*From Roof/Wall Construction Codes table*	-7		
-- For masonry walls: Furred Interior type	**W** = Wood **M** = Metal **N** = None		W M N	W M N
Exterior Insulation: R-value	**0** = Uninsulated/None	-7		
Material	*From Roof/Wall Construction Codes table*			
Cavity Insulation: R-value	**0** = Uninsulated/None	-7		
Material	*From Roof/Wall Construction Codes table*			
Interior Insulation: R-value	**0** = Uninsulated/None	-7		
Material	*From Roof/Wall Construction Codes table*			

Building Shell Construction Codes (cont'd)

Roof/Wall Construction Codes

Code	Roof/Wall Const Types	Code	Exterior Surface Types	Code	Insulation Types	(R/in)
WF	Wood Frame	BU	Built-up surface	BAT	Batt or Blanket	3.3
MF	Metal Frame	AS	Asphalt Roll/shingle	LSF	Loose fill	2.7
CON	Solid Concrete	CT	Clay/cement tile	XPE	Expanded perlite	2.8
CWC	Concrete w/ Cap	RB	Rubber (urethane, etc.)	XPS	Expanded polystyrene	3.8-5.0
CNO	Concrete w/o Cap	WS	Wood/fiberglass shingle	RDG	Rigid board	2.8-4.0
BLOC	Concrete Block/CMU	MT	Metal/Steel	N	None	0
BRIC	Brick	BF	Bituminous felt	OT	Other _____	_____
AIR	Air	ST	Stucco/Gunite			
ADB	Adiabatic	RK	Rock/Stone/Marble			
OT	_____	SF	Surface finish (Paint, etc.)			
		UN	Unfinished/None			
		BR	Brick façade			
		GLS	Glass Curtain/Spandral			
		OT	Other _____			

Floor Construction

		Floor Code	# ___	# ___
Floor construction type	**S** = Slab-on-grade **G** = Slab above open garage **C** = Crawlspace **U** = Uncond. basement **ADB** = Adiabatic **OT** = Other _____			
Primary Finish Type:	**V** = Vinyl **C** = Carpet **S** = Stone/Ceramic **W** = Wood **N** = None **OT** = Other _____			
Perimeter Insulation: R-value	**0** = Uninsulated/None	-7		
Under-floor Insulation: R-value	**0** = Uninsulated/None	-7		
Material	*From Insulation Type table*			

External Doors

		Door Code	# __	# __	# __	# __	# __
Door design	**H** = Hinged **O** = Overhead/Rollup **S** = Sliding **R** = Revolving **A** = Air Lock Entry **OT** = Other _____		**H O S R A OT**	**H O S R A OT**	**H O S R A OT**	**H O S R A OT**	**H O S R A OT**
Material type	**G** = Glass** **S** = Steel **W** = Wood **O** = Other _____		**G S W O**	**G S W O**	**G S W O**	**G S W O**	**G S W O**
** For **G**lass doors, indicate Window Code							
Typical height, ft							
Typical width, ft							

Building Shell Construction Codes (cont'd):

Windows/Fenestration

Window Code		# __	# __	# __	# __	# __
Operable window?		**Y N**	**Y N**	**Y N**	**Y N**	**Y N**
Assembly type	**S**=SiteAssembled **M**=ManufacturedUnit	**S M**	**S M**	**S M**	**S M**	**S M**
Layers of glazing (1,2,3)						
Type of glazing	**C** = Clear **T** = Tinted **R** = Reflective **O** = Opaque **L** = LowE **S** = Spectral LowE **E** = Electrochromic **A** = Acrylic **P** = Polycarbonate	**C T R O L S E A P**	**C T R O L S E A P**	**C T R O L S E A P**	**C T R O L S E A P**	**C T R O L S E A P**
Window frame type	**M**=Metal **W**=Wood **V**=Vinyl **O**=Other_____	**M W V O**	**M W V O**	**M W V O**	**M W V O**	**M W V O**
-- Thermal break?		**Y N**	**Y N**	**Y N**	**Y N**	**Y N**
Typ. sill height, ft						
Typ. window height, ft						
Typ. window width, ft	(reference only, not used in simulations)					
Interior shading type	**F** = Fixed **M** = Moveable **N** = None	**F M N**	**F M N**	**F M N**	**F M N**	**F M N**

Skylights ☐ N/A

Skylight Code		# __	# __
Skylight shape	**D** = Domed **F** = Flat/Pyramid	**D F**	**D F**
Glazing Type	**G** = Glass **P** = Plastic	**G P**	**G P**
Color	**C** = Clear **W** = White **O** = Other _____	**C W O**	**C W O**
Edge Type	**C** = With a Curb **N** = Without a Curb	**C N**	**C N**
Typical Dimensions, ft	Diameter/Width 1		
	Width 2		
If applicable, Light well depth, ft			

Component ID ___ General Information

Component = Building, part of a building, one footprint of a multi-footprint building, etc.

Component Business/Building Type Code: __ __ __
(See Form BT. NOTE: Use the same business type/building type code for components within the same building)

Description: Briefly describe this component (e.g. Admin Office building of a large campus, kitchen for a fast-food restaurant, etc.). _____

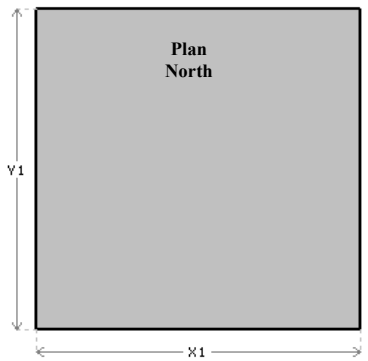
Recent Survey Area Changes: Give a brief description about any changes made to the surveyed area since Jan. 2001 that significantly impacted energy usage. _____

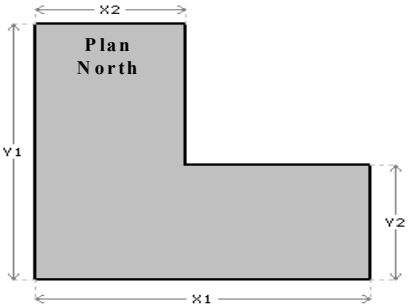
General Component Survey Information

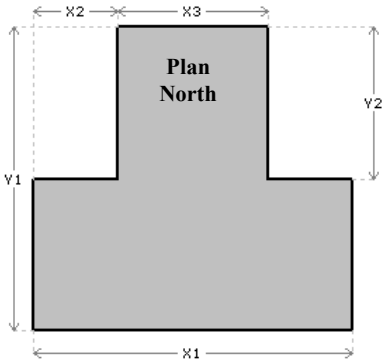
Component Type: **B** = Stand-alone building **P** = Part of a building **F** = 1 footprint of a multi-footprint bldg **OT** = Other_____	B P F OT
What year was the majority of the component survey area built?	_____
Total surveyed floor area, ft^2	_____ ft^2
Number of floors *above grade*	_____
Number of floors *below grade*	_____
Is there a parking garage below the bottom floor?	Y N
Floor-to-floor (or floor-to-roof) height, ft (*do not leave blank*)	_____ ft
Floor-to-ceiling height, ft (*do not leave blank*)	_____ ft
Predominant HVAC Thermal Zoning Scheme: **PC** = Perimeter/Core **1F** = One Zone per Floor **ZA** = Zone by Actvity Area **MP** = MultiPerimeter/Core **UC** = Unconditioned	**PC 1F ZA MP UC**
-- If Perimeter/Core zoning, perimeter zone depth, ft **-7**	_____ ft
-- For **MP**, average number of rooms per floor	
Construction: Roof/Ceiling Code	
External Wall Code	
Below-Grade Wall Code	
Floor Code	
Skylight Code	
-- Number of Skylights	
-- Skylit Rooftop Zones: **A** = All **P** = Perimeter only **C** = Core only **O** = Other _____	**A P C O**
Daylighting?	**Y N**

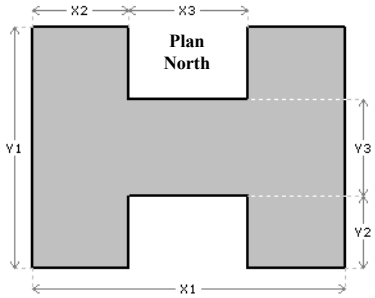
Component Survey Footprint Shapes

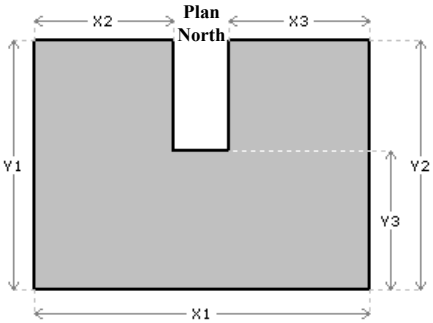
Footprint X/Y Dimensions

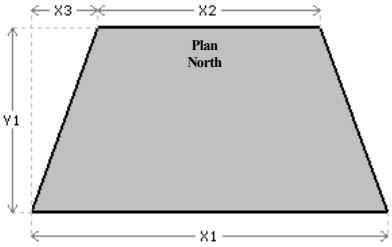


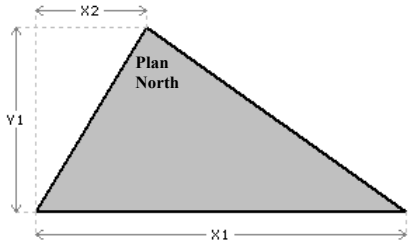


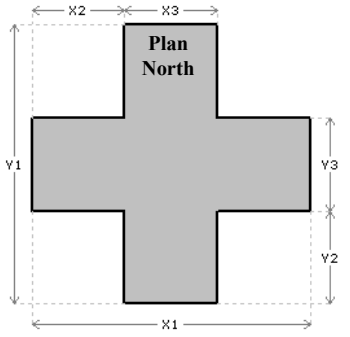


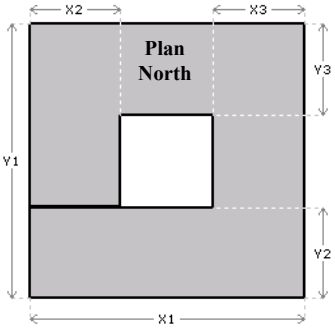










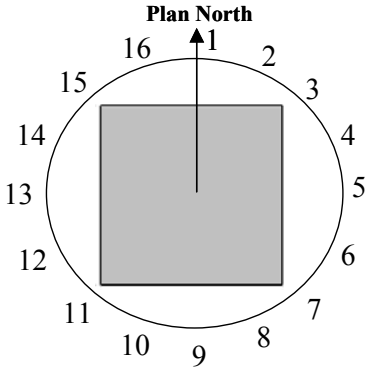


Component ID ___ Footprint, Adiabatic Walls, and Windows/Doors

Footprint/Shell Geometry *(see Form FP)*

Footprint Type Code: **R** = Rectangle **L** = L-shaped **T** = T-shaped **H** = H-shaped **U** = U-shaped **W** = Wedge/trapezoid **TR** = Triangular **P** = + plus sign **C** = Courtyard (atrium)	**R** **L** **T** **H** **U** **W** **TR** **P** **C**			
-- Is this an exact match (X) or a simplification (S) of actual shape?	**X** **S**			
Footprint Orientation: Direction of True North vs. Plan North	**1 2 3 4 5 6 7 8** **9 10 11 12 13 14 15 16**			
Footprint "X" dimensions (X1, X2, X3), ft (##.#)	X1 ft	X2 ft	X3 ft	
Footprint "Y" dimensions (Y1, Y2, Y3), ft (##.#)	Y1 ft	Y2 ft	Y3 ft	

Footprint Orientation: Sketch arrow to indicate True North



Adiabatic Walls

Indicate the percent of external wall area in each orientation that is adiabatic.

Orientation	Above	Below	Plan N	Plan S	Plan E	Plan W
Adiabatic Surface (% of exterior wall area)						

Exterior Window Shading (Overhangs and Sidefins)

Indicate the dimensions of any overhangs or sidefins for each orientation .

Orientation		Plan N	Plan S	Plan E	Plan W
Shade type	**Top Floor only?**	**Shade depths, ft**			
Overhangs	☐				
Fins	☐				

Window Percentages & Number of External Doors

For windows, indicate the window code (Form 11) and corresponding wall area percentages. For doors, indicate the door code (Form 11) and # of doors on each wall. No more than three window types and three door types can be specified.

Orientation		Plan N	Plan S	Plan E	Plan W
Type: Window or Door	**Window Code**	**% of Wall Area Covered by Windows**			
W					
W					
W					
	Door Code	**Number of Doors**			
D					
D					
D					

Component ID ___ Actual Floor Plan/Elevation Sketch

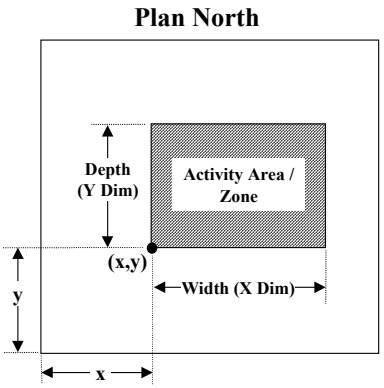
Sketch the plan and elevation views for the component as it is actually configured. Each floor of the surveyed area should have a representative plan sketch. Include building dimensions and show Plan North as well as the orientation of True North. Indicate on the drawing the boundaries of different activity areas and meters, windows, and doors. On the elevation sketch, indicate ceiling height and building height. Attach site plan and floor plan if available. Use multiple sheets/drawings if necessary.

Comments:

Component ID ___ Thermal Zoning/Building Simulation Sketch

Sketch the plan and elevation views for the component as it will be simulated, i.e. all dimensions needed for modeling components should be available from this sketch. Sketch the footprint and indicate Plan North, True North, and all X and Y dimensions. Floor plan sketches should show thermal zone boundaries and indicate applicable floor types (i.e. Bottom, Ground, Middle, Top). If the Zone-by-Activity-Area approach is used, also indicate dimensions needed to determine (x,y), Width, and Depth values (as indicated in figure below). Use multiple sheets/drawings if necessary.

Zone-by-Activity-Area Example



Component ID ___ Activity Area and Thermal Zone Definitions

Activity Area ID# Assignments *Identify an Area ID# for each distinct Activity Area type within the surveyed area. A maximum of eight Activity Area types can be specified. Use the codes on Form AA.*

Area ID#	Activity Area Code (Form AA)	Activity Area Survey Reference Description	Typical hourly max # of occupants	Activity Area Floor Area, ft^2	% of Total Surveyed Floor Area	% Cooled	% Heated	% Uncnd	% Refgd
1									
2									
3									
4									
5									
6									
7									
8									
		Totals (ref. only)							

Thermal Zone Assignments *Assign both a Floor Type and a Thermal Zoning Scheme Zone Type for the areas with the most restrictive locations. That is, the default assumption is that Activity Areas are distributed evenly throughout the floor types and thermal zones unless specified otherwise.*

Floor Type	**Area ID#:**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Below Grade	(B)	☐	☐	☐	☐	☐	☐	☐	☐
1st Floor	(G)	☐	☐	☐	☐	☐	☐	☐	☐
Middle Floors	(M)	☐	☐	☐	☐	☐	☐	☐	☐
Top Floor	(T)	☐	☐	☐	☐	☐	☐	☐	☐

Thermal Zoning Scheme Zone Types								
*If Form 12 Thermal Zoning Scheme=**PC or MP:***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Perimeter	☐	☐	☐	☐	☐	☐	☐	☐
Core	☐	☐	☐	☐	☐	☐	☐	☐
*If Form 12 Thermal Zoning Scheme=**ZA:***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Lower left corner (x,y) x-coord, ft								
Lower left corner (x,y) y-coord, ft								
Activity Area Width (X dimension), ft								
Activity Area Depth (Y dimension), ft								

Activity Area Notes/Comments:

Activity Area Type Codes

Activity Area Type Description	Activity Area Code
Auditorium	1
Auto Repair Workshop	2
Bank/Financial	3
Bar Cocktail Lounge	4
Barber/Beauty Shop	5
Casino/Gaming	6
Classroom/Lecture	7
Clean Room	8
Computer Room/Data Processing	9
Comm/Ind Work (General High Bay)	10
Comm/Ind Work (General Low Bay)	11
Comm/Ind Work (Precision)	12
Conference Room	13
Convention and Meeting Center	14
Copy Room	15
Corridor / Hallways	16
Courtrooms	17
Dining Area	18
Dry Cleaning	19
Exercise Centers/Gymnasium	20
Exhibit Display Area / Museum	21
Guest Rooms (Hotel/Motel)	22
Kitchen/Break room and Food Preparation	23
Laboratory	24
Laundry	25
Library	26
Loading Dock	27
Lobby (Hotel)	28
Lobby (Main Entry and Assembly)	29
Lobby (Office Reception/Waiting)	30
Locker and Dressing Room	31
Mall Arcade and Atrium	32
Mechanical/Electrical Room	33
Medical Offices and Exam Rooms	34
Office (Executive/Private)	35
Office (General)	36
Office (Open Plan)	37
Patient Rooms	38
Patio Area	39
Pool/Spa Area	40
Police/Fire Station	41
Religious Worship	42
Residential	43
Restrooms	44
Retail Sales/Showroom	45
Smoking Lounge	46
Storage (Conditioned)	47
Storage (Unconditioned)	48
Storage (Refrigerated/Freezer), Walk-in	49
Storage (Refrigerated/Freezer), Building	50
Surgery Rooms	51
Theater (Motion Picture)	52
Theater (Performance)	53
Unknown	54
Vacant (Conditioned)	55
Vacant (Unconditioned)	56
Vocational Areas	57
Other Unlisted Activity Types	**99**
Outside/Outdoor Area	**0**
Reference only, not used as an Activity Area	

Component ID ___ Daylighting ☐ N/A

Daylit Areas and Controls

Specify daylit areas and control types for up to 2 photosensors per control area.

Daylit Area Item #	__	__	__
Daylit Floors (circle one only) **G** = 1st floor **M** = Middle floors **T** = Top floor	G M T	G M T	G M T
Daylit from: **T** = Top **S** = Side/perimeter **B** = Both **O** = Other _____	T S B O	T S B O	T S B O
Control type: **C** = Continuous **CO** = Continuous/Off **S** = Stepped	C CO S	C CO S	C CO S
Maximum glare index			
For control type = **C** or **CO**:			
-- Minimum power, %	%	%	%
-- Minumum light, %	%	%	%
For control type = **S**:			
-- # of light control steps			
-- Light control probability			
# of photosensors per control zone	1 2	1 2	1 2
Photosensor #1 (1 photosensor per control zone)			
-- % of lights controlled	%	%	%
-- Design light level (footcandles)	fc	fc	fc
-- Height above floor, ft	ft	ft	ft
-- % of zone depth	%	%	%
Photosensor #2 (use only if 2 photosensors per control zone)			
-- % of lights controlled	%	%	%
-- Design light level (footcandles)	fc	fc	fc
-- Height above floor, ft	ft	ft	ft
-- % of zone depth	%	%	%

Daylighting Notes/Comments *(provide sketch or copy of control plan if available)**:***

HVAC – Single Zone Systems

Component ID	___	___	___
Single-Zone Item Ltr	Ltr ___	Ltr ___	Ltr ___
HVAC Schedule # from Form 10	# __	# __	# __
Activity Areas/Thermal Zones Served:			
Enter Area ID #(s) or A for all areas			
Floor type served *(Circle all that apply)*	B G M T	B G M T	B G M T
If perimeter/core, enter zones served *(Circle all that apply)*	P C	P C	P C
Distribution System Type:	SZ PSZ SSZ PTU UV 2PFC 4PFC BR ASHP GSHP WLHP	SZ PSZ SSZ PTU UV 2PFC 4PFC BR ASHP GSHP WLHP	SZ PSZ SSZ PTU UV 2PFC 4PFC BR ASHP GSHP WLHP
Number of units of this type			
Average Age (years) -7			
Temperature control type:	M A T E P	M A T E P	M A T E P
Optimal start/stop? (Y / N)	Y N	Y N	Y N
Indoor/Supply fan (hp/unit)			
-- Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium			
-- Quantity of Indoor Fans			
-- Supply air rate (CFM/fan) -7			
Return air path: **DI**=Direct **DU**=Ducted **P**=Plenum -7	DI DU P	DI DU P	DI DU P
% Outside air (minimum)			
Economizer Type: Other_____	N T E O	N T E O	N T E O
Return fan motor (hp/unit)			
-- Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium			
-- Quantity of Return Fans			
-- Return air rate (CFM) -7			
Cooling Equipment Type:	N D C E P	N D C E P	N D C E P
-- *If cooling type* **D** *and not air-cooled: water (W) or evap (E) cooled?*	W E	W E	W E
-- *If cooling type* **C,** *enter chilled water loop # and skip to heating equip.*	CWL # ___	CWL # ___	CWL # ___
Compressor rating: volts / amps (RLA) / phase (*circle one*)	/ / **1 3**	/ / **1 3**	/ / **1 3**
Number of compressors per unit			
Capacity output (nominal tons per unit)			
Equipment manufacturer/brand:			
-- Model number for unitary or split-system outdoor unit -7			
-- Model number for split-system coil -7			
Efficiency: **EER** -7			
Or **SEER** -7			
Heating Equipment Type or Other _____	N F HP B ER RH BB P OT	N F HP B ER RH BB P OT	N F HP B ER RH BB P OT
-- *If heating type* **B,** *enter hot water loop # and stop.*	HWL # ___	HWL # ___	HWL # ___
Fuel type	E G F L W	E G F L W	E G F L W
Input Rating			
Units of Input Rating (k**W** / k**B**tuh)	W B	W B	W B
Equipment manufacturer (if different from cooling equip)			
-- Model number			
Efficiency: (enter as % for AFUE and η) -7			
-- Efficiency units: **A**=AFUE **T**=Thermal η **H**=HSPF **C**=COP	A T H C	A T H C	A T H C
HP only: Supplemental heating capacity (kW)			
Soft start? (Y/N)	Y N	Y N	Y N

HVAC – Multiple Zone Systems *(enter make/model numbers for unitary systems on Form 22)*

Component ID	__	__	__
Multi-Zone Item #	# __	# __	# __
HVAC Schedule # from Form 10	__	__	__
Activity Areas/Thermal Zones Served:			
Enter Area ID #(s) or A for all areas			
Floor type served *(circle all that apply)*	B G M T	B G M T	B G M T
If perimeter/core, enter zones served *(circle all that apply)*	P C	P C	P C
Distribution System Type: or Other _____	CV MZ VAV DD DF OT	CV MZ VAV DD DF OT	CV MZ VAV DD DF OT
Average Age (years) -7			
Number of units of this type			
Temperature control type:	M A T E P	M A T E P	M A T E P
Optimum Start/Stop? (Y/N)	Y N	Y N	Y N
Hot deck temperature (°F)			
Hot deck supply air temp. control:	C O D	C O D	C O D
Cold deck temperature (°F)			
Cold deck supply air temp. control:	C O D	C O D	C O D
Supply Fans: (hp/fan)			
-- Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium			
-- Quantity of supply fans			
-- Supply fan type and control: (VAV only)	IA IF DF VA VS FC NC	IA IF DF VA VS FC NC	IA IF DF VA VS FC NC
-- Supply air rate (CFM/fan) -7			
Return air path: **DI**=Direct **DU**=Ducted **P**=Plenum	DI DU P	DI DU P	DI DU P
% Outside air (minimum)			
Return fans: (hp/fan)			
-- Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium			
-- Quantity of return fans:			
-- Return fan type and control: (VAV only)	IA IF DF VA VS FC NC	IA IF DF VA VS FC NC	IA IF DF VA VS FC NC
-- Return air rate (CFM/return fan) -7			
Economizer type Other_____	N T E O	N T E O	N T E O
Cooling Equipment Type:	N D C E P	N D C E P	N D C E P
-- *If cooling type* **D** *and not air-cooled: water (W) or evap (E) cooled?*	W E	W E	W E
-- *If cooling type* **C,** *enter chilled water loop # and skip to heating eq.*	CWL # ___	CWL # ___	CWL # ___
Number of compressors per unit			
Compressor rating: volts / amps (RLA) / phase (*circle one*)	/ / **1 3**	/ / **1 3**	/ / **1 3**
Capacity (*nominal tons per unit*)			
Efficiency: **EER** -7			
Cooling Lockout: Outside air temperature			
-- On in month (1-12) / Off in month (1-12)	/	/	/
Heating Equipment Type:	F B ER P OT	F B ER P OT	F B ER P OT
-- *If heating type* **B,** *enter hot water loop # and stop.*	HWL # ___	HWL # ___	HWL # ___
Fuel type	E G F L W	E G F L W	E G F L W
Input Rating			
Units of Input Rating (k**W**/k**B**tuh)	W B	W B	W B
Efficiency: (enter as %) -7			
-- Efficiency units: **T**=Thermal η **A**=AFUE	T A	T A	T A
Heating lockout: Outside air temperature			
-- On in month (1-12) / Off in month (1-12)	/	/	/

HVAC – Multiple Zone System Controls

Complete this table for all systems entered on Form 18a.

Multi-Zone Item # (match to Form 18a)	# _____	# _____	# _____
Are perimeter/interior controls the same? *(If yes, only complete Perimeter Zone Controls section.)*	Y N	Y N	Y N
Perimeter Zone Controls			
Terminal type:	CDD CRH VRH CO VVT PF SF I VDD	CDD CRH VRH CO VVT PF SF I VDD	CDD CRH VRH CO VVT PF SF I VDD
Reheat source fuel type:	N E HW ST	N E HW ST	N E HW ST
Supplemental Heat Source:	N EBB ERH HWRH HWBB	N EBB ERH HWRH HWBB	N EBB ERH HWRH HWBB
Capacity of Supplemental Heat Source (input)			
Units for Capacity (k**W**/k**B**tuh)	W B	W B	W B
VAV minimum CFM ratio (% of peak)			
Interior Zone Controls			
Terminal type	CDD CRH VRH CO VVT PF SF I VDD	CDD CRH VRH CO VVT PF SF I VDD	CDD CRH VRH CO VVT PF SF I VDD
Reheat source fuel type:	N E HW ST	N E HW ST	N E HW ST
VAV minimum CFM ratio (% of peak)			

HVAC – Code Descriptions

Single-Zone Distribution System Types	Temperature Control	Heating Equipment
SZ = Single Zone (built-up) PSZ = Pckg. Single Zone (Unitary) SSZ = Split-System Single Zone PTU = Pckg. Term. Unit (wall mounted) UV = Unit Ventilator or Heater 2PFC = 2-Pipe Fan Coil 4PFC = 4-Pipe Fan Coil BR = Baseboard or Radiant Heater ASHP = Air-Source Heat Pump GSHP = Ground Source Heat Pump WLHP = Water Loop/Source Heat Pump	M = Manual (heat/cool On only as needed) A = Always on, constant temperature T = Time Clock E = EMS P = Programmable Thermostat	N = None F = Furnace HP = Heat Pump B = Boiler (fan coil) ER = Electric Resistance RH = Radiant Heater BB = Baseboard Heater P = Purchased Steam OT = Other BX = Boiler (radiant/baseboard)

Cooling Equipment Types	Fuel Type	
N = None D = Direct Expansion C = Chilled Water E = Evaporative Cooler P = Purchased Chilled Water	E = Electricity G = Natural Gas F = Fuel Oil L = LPG HW = Hot Water W = Wood C = Coal/Coke WO = Waste Oil	D = Diesel Fuel GA = Gasoline ST = Steam SO = Solar SG = Solar w/gas backup HR = Heat Recovery O = Other

Multi-Zone Distribution System Types	Fan type and Control (VAV Only)	Terminal Type
CV = Constant Volume Reheat MZ = Multi Zone VAV = Variable Air Volume DD = Dual Duct DF = Dual Fan Dual Duct OT = Other _____	IA = inlet guide vanes, air foil fan/bkwd incln. IF = inlet guide vanes, forward curved fan DF = discharge damper, forward curved fan VA = vane axial fan w/ variable pitch VS = variable speed drive FC = forward curve NC = no control	CDD = dual duct or MZ dampers, CV CRH = constant volume reheat VRH = VAV reheat CO = cooling-only, VAV VVT = variable air volume and temp PF = parallel fan-powered SF = series fan-powered I = induction (non-powered) VDD = dual duct or MZ dampers, VAV

Supplemental Heat Source	Supply Air Temperature Control	Economizer Types
N = None EBB = Elec. Baseboard HWRH = Hot Water Radiant Heater ERH = Electric Radiant Heater HWBB = Hot Water Baseboard	C = Constant O = Reset OAT D = Reset Demand	N = None T = Temperature E = Enthalpy O = Other

HVAC Comments (Indicate deck temperature setpoints/reset schedules, or any other significant details such as high pressure air distribution.):

Chillers *(enter make/model/serial numbers on Form 22)* ☐ N/A

Chilled water loop (CWL) #	# ____	# ____	# ____
Component ID			
Chiller Item #	# ____	# ____	# ____
Site Equipment ID (*reference only*)			
Location, Area ID# (reference only)			
Component IDs of all components served			
Chiller type: **CENT** = Centrifugal **REC** = Reciprocating **SCRW** = Screw **SCRL** = Scroll **SABS** = Absorption steam **GABS** = Absorption, direct fired gas **OT** = Other _____	**CENT REC SCRW SCRL SABS GABS OT**	**CENT REC SCRW SCRL SABS GABS OT**	**CENT REC SCRW SCRL SABS GABS OT**
-- If steam absorption, one or two stage?	**1 2**	**1 2**	**1 2**
-- If direct-fired gas absorption, kBtuh input			
Fuel type**:** **E** = Elect **G** = Natural Gas **S** =Steam	**E G S**	**E G S**	**E G S**
Heat rejection type: **W** = Water-cooled **A** = Air-cooled	**W A**	**W A**	**W A**
Average Age (years) **-7**			
Number of units			
Number of units in backup mode			
VSD compressor control? (Y/N)	**Y N**	**Y N**	**Y N**
Chilled water setpoint temperature			
Chilled water reset (Y/N)	**Y N**	**Y N**	**Y N**
-- If Yes, chilled water reset temperature			
Compressor: Volts			
Amps (RLA)			
Phase (circle one)	**1 3**	**1 3**	**1 3**
Number of Compressors			
Capacity (nominal tons/unit)			
Efficiency – Full Load kW/ton, IPLV, or COP -7			
Efficiency Units	**kW COP IPLV**	**kW COP IPLV**	**kW COP IPLV**
Is chiller sequencing used? (If yes, explain in Comments)	**Y N**	**Y N**	**Y N**
Water-side economizer in use? (Free Cooling)	**Y N**	**Y N**	**Y N**
Cooling lockout: Outside air temperature			
On in month (1-12) Off in month (1-12)			
Serves Thermal Storage System Item #s			

Circulation Pumps – Chillers ☐ N/A

Component ID	__	__	__	__
Circulation pump Item #	# __	# __	# __	# __
Site Equipment ID (optional)				
Use type**:** **CHW** = Chilled Water **SCHW** = Secondary ChilledWater **CHHW** = Chilled/Hot Water (2-pipe system)	**CHW SCHW CHHW**	**CHW SCHW CHHW**	**CHW SCHW CHHW**	**CHW SCHW CHHW**
Average Age (years)				
Number of units				
Number of units in backup mode				
Pump power (hp)				
Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium				
Motor type**:** **O** = One Speed **T** = Two Speed **V** = Variable	**O T V**	**O T V**	**O T V**	**O T V**
Gallons per minute (-7)				
Feet of head (-7)				
Serves chilled water loop (CWL) #				

Heat Rejection (Built-Up) *(enter make/model numbers for cooling towers on Form 22)* ☐ N/A

Component ID			
Heat rejection device Item #	# ___	# ___	# ___
Site Equipment ID (optional)			
Type: **CW** = CondWater **AC** = AirCooledCond **EC** = Evap Condenser **ACP** = Air Cooled w/pre-cooler **CT** = Cooling Tower	**CW AC EC ACP CT**	**CW AC EC ACP CT**	**CW AC EC ACP CT**
Temperature control: **F** = Fixed Temperature **R** = Reset **S** = Setpoint	**F R S**	**F R S**	**F R S**
Condenser water setpoint temperature (°F)			
Cooling tower water setpoint temperature (°F)			
Cooling tower approach temperature (°F)			
Age of cooling tower (years) **-7**			
Fan motor size/power (hp/fan)			
-- Fan Type: **C** = Centrifugal **A** = Axial	**C A**	**C A**	**C A**
-- Number of fans			
-- Motor eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium			
-- Fan control: **O** = One Speed **T** = Two Speed **V** = Variable	**O T V**	**O T V**	**O T V**
Pump power (hp/pump)			
-- Number of pumps			
-- Motor eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium			
-- Pump control: **O** = One Speed **T** = Two Speed **V** = Variable	**O T V**	**O T V**	**O T V**
-- Gallons per minute (-7)			
-- Feet of head (-7)			
Chillers Served (Chiller Item#)			
Systems Served (SZ/MZ System Letter or Item#)			

Thermal (Cool) Storage Systems ☐ N/A

Comp ID	__	__	
Thermal storage system Item #	#__	#__	#__
Location, Area ID# (reference only)			
Serves chilled water loop (CWL) #	#__	#__	#__
Storage type **C** = Chilled Water **I** = Ice **O** = Other _____	**C I O**	**C I O**	**C I O**
Thermal storage total capacity (Ton-Hours)			
Total Number of Storage Units/Tanks			
System Design type **F** = Full storage **P** = Partial storage	**F P**	**F P**	**F P**
-- Storage provides what % of hottest day peak cooling load (of max. hour)			
Manufacturer			
Model #			
Storage is charged: from . . . . Use 24 hour (military time) to designate			
to . . . . . time period. (eg., 1 pm would be 13)			
Storage is discharged: from			
to			
Chiller serves BldgLoad: from			
to			

Boilers *(enter make/model/serial numbers on Form 22)* ☐ N/A

Hot water loop (HWL) #		# ___	# ___	# ___
Component ID				
Boiler Item #		# ____	# ____	# ____
Site Equipment ID (optional)				
Location, Area ID# (reference only)				
Component IDs of all components served				
Type: **W** = Water **S** = Steam **OT** = Other _____		**W S OT**	**W S OT**	**W S OT**
-- If steam, enter steam pressure (PSIG setpoint)				
-- If water, enter water temperature (setpoint)				
Primary fuel type: *(see codes on Form HC)* Other_____				
Secondary fuel (*use codes on Form HC*)				
Estimated year of installation (*specify year or category)*				
Number of units				
Number of units in backup mode				
Input Capacity (kBtu/hr/unit)				
Efficiency: (%) -7				
% of Boiler output to each end use:	Space Heat	%	%	%
	Water Heat	%	%	%
	Pool Heat	%	%	%
	Process	%	%	%
	Sum	***100%***	***100%***	***100%***
Space heat lockout:	Outside air temperature			
	On in Month (1-12)			
	Off in Month (1-12)			
Is HW temp reset? (Y / N)		**Y N**	**Y N**	**Y N**

Hot Water Circulation Pumps ☐ N/A

Component ID					
Circulation pump Item #	# __	# __	# __	# __	# __
Site Equipment ID (optional)					
Average Age (years)					
Number of units					
Number of units in backup mode					
Pump power (hp)					
-- Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium					
Motor type**:** **O** = One Speed **T** = Two Speed **V** = Variable	**O T V**	**O T V**	**O T V**	**O T V**	**O T V**
Gallons per minute					
Feet of head					
Serves hot water loop (HWL) #					

HVAC Equipment Manufacturer and Model Number Information

Manufacturer and Model Numbers for Unitary/Package Multizone Equipment ☐ N/A

Equip Type	Comp ID	Item #	Manufacturer	Model Number for Unitary or Split-system outdoor unit	Model Number for Split-System Coil	Heating System Model Number
MZ						
MZ						
MZ						
MZ						
MZ						
MZ						
MZ						
MZ						
MZ						

Manufacturer and Model Numbers for Built-Up HVAC Equipment ☐ N/A

Equip Type*	Comp ID	Item #	Manufacturer	Model Number	Serial Number
C B CT					
C B CT					
C B CT					
C B CT					
C B CT					
C B CT					
C B CT					

* C = Chiller (Form 19), B=Boiler (Form 21) CT=Cooling tower (Form 20)

Comments *Indicate any unique features of built-up equipment that would assist in modeling energy use such as: operating characteristics, configuration, etc.*

Exhaust Fans ☐ N/A

Comp ID				
Exhaust fan Item #	#__	#__	#__	#__
Site Equipment ID (optional)				
Type: **K** = Kitchen exhaust hoods **F** = Fume hoods	**K F**	**K F**	**K F**	**K F**
Number of units				
Fan motor size/power (hp / unit)				
-- Motor Eff: **Nom.%** OR **S**=Std. **H**=HiEff **P**=Prem				
Fan capacity (CFM / unit) -7				
Schedule: **C** = Continuous **D** = Demand controlled ventilation **W** = With air handler **M** = Manual **O** = Other _____	**C** **D** **W M** **O**	**C** **D** **W M** **O**	**C** **D** **W M** **O**	**C** **D** **W M** **O**
-- If **W**, then HVAC system # or Ltr				
Hours per week				
Activity Areas/Thermal Zones Served:				
Enter Area ID #(s) or A for all areas				
Floor type served	**B G M T**	**B G M T**	**B G M T**	**B G M T**
If Perimeter/Core, enter zones served	**P C**	**P C**	**P C**	**P C**

Make-Up Air Units *(supply non-conditioned air)* ☐ N/A

Comp ID				
Make-up air unit Item #	#__	#__	#__	#__
Site Equipment ID				
Number of units				
Fan motor size/power (hp / unit)				
-- Motor Eff: **Nom.%** OR **S**=Std. **H**=HiEff **P**=Prem				
Fan capacity (CFM / unit) -7				
Schedule: **C** = Continuous **D** = Demand controlled ventilation **W** = With air handler **M** = Manual **O** = Other _____	**C** **D** **W M** **O**	**C** **D** **W M** **O**	**C** **D** **W M** **O**	**C** **D** **W M** **O**
-- If **W** then HVAC system # or Ltr				
Hours per week				
Activity Areas/Thermal Zones Served:				
Enter Area ID #(s) or A for all areas				
Floor type served	**B G M T**	**B G M T**	**B G M T**	**B G M T**
If Perimeter/Core, enter zones served	**P C**	**P C**	**P C**	**P C**

Water Heating Equipment

Comp ID			
Water heating Item #	# ____	# ____	# ____
Location, Area ID# (reference only)			
Equipment type: **S** = Standard/Storage water heater **I** = Instantaneous (tankless) **B** = Boiler **DWB** = Dishwasher booster heater **PHW** = Purchased hot water **PS** = Purchased steam **HP** = Heat pump water heater **OT** = Other _____	**S** **I** **B** **DWB** **PHW** **PS** **HP** **OT**	**S** **I** **B** **DWB** **PHW** **PS** **HP** **OT**	**S** **I** **B** **DWB** **PHW** **PS** **HP** **OT**
-- *If boiler, enter boiler # (from Form 21) and skip to tank capacity*			
Fuel type: (If not boiler) **E** = Electricity **G** = Natural Gas **F** = Fuel Oil **L** = LPG **W** = Wood **SO** = Solar **SG** = Solar w/gas backup **HR** = Heat Recovery **OT** = Other_____	**E** **G** **F** **L** **W** **S** **SG** **HR** **OT**	**E** **G** **F** **L** **W** **S** **SG** **HR** **OT**	**E** **G** **F** **L** **W** **S** **SG** **HR** **OT**
Number of units			
Make			
Model			
Age of water heater (years) -7			
Tank capacity/volume (*gallons*) -7			
Rated input capacity -7			
-- Units of rated input capacity: **B** = kBtuh **W** = kW	**B W**	**B W**	**B W**
Efficiency rating -7			
Efficiency units: **E** = Energy Factor **T** = Thermal efficiency **A** = AFUE **C** = COP	**E T A C**	**E T A C**	**E T A C**
Tank internal insulation R-value (enter 0 if uninsulated)			
Does the hot water tank have an external insulation jacket?	**Y N**	**Y N**	**Y N**
Average hot water temperature (°F) -7			
Are hot water pipes insulated?	**Y N**	**Y N**	**Y N**
Recirculation pump (Y/N)	**Y N**	**Y N**	**Y N**
-- Recirc pump control type (circle all that apply): **C** = Continous **TP** = Temperature **TM** = Timer **D** = Demand **OT** = Other _____	**C TP TM** **D OT**	**C TP TM** **D OT**	**C TP TM** **D OT**
-- Pump operations (*hours per week*)			

Service Hot Water Use (General and Building-Type Specific)

If service water heating equipment is present on Form 21 or Form 24, then at least one of the usage fields below must have a value. Building-type specific usage values must be completed for the building types indicated. For food service businesses, an estimate of the number of meals served is required.

			Component ID	__	__	__
Other Hot Water Uses? (Gals/Day)						
All Activity Types:	Number of lavatories with hot water:					
	Pounds of laundry washed per day? (lb)					
	Number of showers per day *(except for lodging and hospitals)*					
If both electric and gas water heating equipment are used on site, estimate the % of water heated by gas equipment.				___%	___%	___%
ACTIVITY-TYPE-SPECIFIC HOT WATER USE						
Food service:	Number of meals prepared per day:	Breakfast				
		Lunch				
		Dinner				
	Number of seats in the food service area:					
	Disposable Dishes?			Y N	Y N	Y N
Lodging:	Number of usable rooms *(in hotels, motels, dorms, etc.)*					
	Average # of rooms occupied					
	Number of Apartments					
Office:	Average % of occupied (Non-vacant) space in office buildings			___%	___%	___%
Hospital:	Number of actual beds in hospital					
	Average % of beds occupied in hospital (avg. from census)			___%	___%	___%
Education:	Average number of enrolled students in schools (e.g., ADA)					
Nursing Home:	Number of beds					
	Average % of beds occupied			___%	___%	___%
Prisons:	Number of inmates					

Service Hot Water Use Notes:

Swimming Pool/Spa ☐ N/A

Comp ID			
Pool/Spa Item #	# 1	# 2	# 3
Location (Activity Area ID or if Outdoors = 0)			
Type: **P** = Swimming Pool **S** = Spa/Hot Tub **O** = Other_____	**P S O**	**P S O**	**P S O**
Estimated year of installation *(specify year or category)*			
What is the size of the pool (sq. ft.)?			
What is the average depth of the pool (ft.)?			
If heated by a boiler, specify boiler # from Form 21			
Fuel Type: **N** = Not Heated **E** = Electricity **G** = Natural Gas **L** = LPG **SO** = Solar **SG** = Solar w/backup fuel **O** = Other _____	**N E G L SO SG O**	**N E G L SO SG O**	**N E G L SO SG O**
Heater Capacity (kBtu/hr or kW)			
-- Units of capacity: W = kW B = kBtu/hr	**W B**	**W B**	**W B**
Solar Backup Fuel Type: **N** = None **E** = Electricity **G** = Natural Gas **L** = LPG **O** = Other _____	**N E G L O**	**N E G L O**	**N E G L O**
Solar collector area in use (ft^2)			
Pool Cover in use?	**Y N**	**Y N**	**Y N**
Circulation Pump power (hp)			
-- Average pump run-hours per day			
-- Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium			
Motor type**:** **O** = One Speed **T** = Two Speed **V** = Variable	**O T V**	**O T V**	**O T V**
Months heated: Start... (1…12)			
Stop... (1…12)			

Swimming Pool Notes (If installed recently then comment):

Outdoor Lighting

Comp ID							
Item #	#____	#____	#____	#____	#____	#____	#____
Use type: **S** = General/Security **A** = Advertising **P** = Parking lot **G** = Parking garage **F** = Bldg façade **L** = Landscape **OT** = Other_____	S A P G F L OT	S A P G F L OT	S A P G F L OT	S A P G F L OT	S A P G F L OT	S A P G F L OT	S A P G F L OT
Mount type: **A** = Attached to bldg **P** = Pole **O**=Other	A P O	A P O	A P O	A P O	A P O	A P O	A P O
Control type: **PC** = Photocell **S** = Manual on/off-switch **TC** = Timeclock **E** = EMS **TW** = Twist-timer **PT** = Photocell/Timelock **MS** = Motion Sensor	PC S TC E TW PT MS	PC S TC E TW PT MS	PC S TC E TW PT MS	PC S TC E TW PT MS	PC S TC E TW PT MS	PC S TC E TW PT MS	PC S TC E TW PT MS
Total number of fixtures (Total length if Neon)							
Number of lamps per fixture (Enter 1 if Neon)							
Watts per lamp (Enter 10 if Neon)							
-- *Check box if lamp watts were estimated**	☐	☐	☐	☐	☐	☐	☐
Hours per week							
Lamp Type and Lamp-Specific Details							
LED = LEDs	LED	LED	LED	LED	LED	LED	LED
E = Electrodless/Induction	E	E	E	E	E	E	E
Q = Quartz/Halogen	Q	Q	Q	Q	Q	Q	Q
IP = Incandescent PAR	IP	IP	IP	IP	IP	IP	IP
IR = Incandescent Reflector/Flood	IR	IR	IR	IR	IR	IR	IR
I = Incandescent	I	I	I	I	I	I	I
CFs applicable?(medium/screw base)	Y N	Y N	Y N	Y N	Y N	Y N	Y N
F = Fluorescent Tube	F	F	F	F	F	F	F
UT = Fluorescent U-tube	UT	UT	UT	UT	UT	UT	UT
OF = Other Fluorescent	OF	OF	OF	OF	OF	OF	OF
For Fluor. tubes: Length in ft. (e.g., 1.5, 2, 4, 8)							
Diameter (T5 T8 T10 T12)							
CF = Compact Fluorescent	CF	CF	CF	CF	CF	CF	CF
CIR = Circline Fluorescent	CIR	CIR	CIR	CIR	CIR	CIR	CIR
CF/CIR base type: P=Pin-base S=Screw-base	P S	P S	P S	P S	P S	P S	P S
MV = Mercury Vapor	MV	MV	MV	MV	MV	MV	MV
MH = Standard Metal Halide	MH	MH	MH	MH	MH	MH	MH
PS = Pulse-start Metal Halide	PS	PS	PS	PS	PS	PS	PS
H = High Pressure Sodium Vapor	H	H	H	H	H	H	H
L = Low Pressure Sodium Vapor	L	L	L	L	L	L	L
N = Neon	N	N	N	N	N	N	N
For ballasted lamp types:							
Ballast type: **M** = Std Magnetic **H** = HighEff magnetic **E** = Std Electronic **A** = Advanced Electronic	M H E A	M H E A	M H E A	M H E A	M H E A	M H E A	M H E A
-- Number of ballasts per fixture							
Field notes: (*Count/comments*)							

* Do not estimate lamp watts until all other methods of establishing wattage have been exhausted, and then explain in comments why lamp wattage could not be obtained.

Comments:

Indoor Lighting

Component ID							
Item #	# ___	# ___	# ___	# ___	# ___	# ___	# ___
Area ID #							
Use Type: **A** = Area **T** = Task **X**= Exit **K** = Track **D** = Display/Advertising **O**= Other _____	A T X K D O	A T X K D O	A T X K D O	A T X K D O	A T X K D O	A T X K D O	A T X K D O
Mounting: **R** = Recessed **H** = Hanging/Suspended **S** = Surface-mount **O** =Other _____	R H S O	R H S O	R H S O	R H S O	R H S O	R H S O	R H S O
Specular (**S**) or White (**W**) reflector?	S W	S W	S W	S W	S W	S W	S W
Control type: **N** = None/Continuous **B** = Bi-level **S** = Manual on/off-switch **TC** = Timeclock **E** = EMS **PC** = Photocell **PT** = Photocell/Timelock **MS** = Motion Sensor **DM** = Dimmer **DL** = Daylighting controls	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL
Total number of fixtures (Total length if **N**eon)							
Number of lamps per fixture (Enter 1 if **N**eon)							
Watts per lamp (Enter 10 if **N**eon)							
Hours per week							
Lamp Type and Lamp-Specific Details:							
LED = LEDs	LED	LED	LED	LED	LED	LED	LED
ER = Self/battery powered exit signs	ER	ER	ER	ER	ER	ER	ER
Q = Quartz/Halogen	Q	Q	Q	Q	Q	Q	Q
E = Electrodeless/Induction	E	E	E	E	E	E	E
IP = Incandescent PAR	IP	IP	IP	IP	IP	IP	IP
IR = Incandescent Reflector/Flood	IR	IR	IR	IR	IR	IR	IR
I = Incandescent	I	I	I	I	I	I	I
CFs applicable? (medium/screw base)	Y N	Y N	Y N	Y N	Y N	Y N	Y N
F = Fluorescent Tube **UT** = Fluorescent U-tube **OF** = Other Fluorescent	F UT OF	F UT OF	F UT OF	F UT OF	F UT OF	F UT OF	F UT OF
For Fluorescent tubes: Length in ft. (e.g. 1.5 2 4 8)							
Diameter (T5 T8 T10 T12)							
CF = Compact Fluorescent **CIR** = Circline Fluorescent	CF CIR	CF CIR	CF CIR	CF CIR	CF CIR	CF CIR	CF CIR
CF/CIR Base type: P=Pin-base S=Screw-base	P S	P S	P S	P S	P S	P S	P S
MV = Mercury Vapor **MH** = Standard Metal halide **PS** = Pulse-Start Metal Halide **H** = High Pressure Sodium Vapor **L** = Low Pressure Sodium Vapor	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L
N = Neon	N	N	N	N	N	N	N
For ballasted lamp types: Ballast type: **M** = Magnetic **H** = High Eff Magnetic **E** = Std Electronic **A** = Advanced Electronic	M H E A	M H E A	M H E A	M H E A	M H E A	M H E A	M H E A
-- Number of ballasts per fixture							
Field Notes: (Counts)							

Indoor Lighting

Component ID							
Item #	# ___	# ___	# ___	# ___	# ___	# ___	# ___
Area ID #							
Use Type: **A** = Area **T** = Task **X**= Exit **K** = Track **D** = Display/Advertising **O**= Other _____	A T X K D O	A T X K D O	A T X K D O	A T X K D O	A T X K D O	A T X K D O	A T X K D O
Mounting: **R** = Recessed **H** = Hanging/Suspended **S** = Surface-mount **O** =Other _____	R H S O	R H S O	R H S O	R H S O	R H S O	R H S O	R H S O
Specular (**S**) or White (**W**) reflector?	S W	S W	S W	S W	S W	S W	S W
Control type: **N** = None/Continuous **B** = Bi-level **S** = Manual on/off-switch **TC** = Timeclock **E** = EMS **PC** = Photocell **PT** = Photocell/Timelock **MS** = Motion Sensor **DM** = Dimmer **DL** = Daylighting controls	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL
Total number of fixtures (Total length if **N**eon)							
Number of lamps per fixture (Enter 1 if **N**eon)							
Watts per lamp (Enter 10 if **N**eon)							
Hours per week							
Lamp Type and Lamp-Specific Details:							
LED = LEDs	LED	LED	LED	LED	LED	LED	LED
ER = Self/battery powered exit signs	ER	ER	ER	ER	ER	ER	ER
Q = Quartz/Halogen	Q	Q	Q	Q	Q	Q	Q
E = Electrodeless/Induction	E	E	E	E	E	E	E
IP = Incandescent PAR	IP	IP	IP	IP	IP	IP	IP
IR = Incandescent Reflector/Flood	IR	IR	IR	IR	IR	IR	IR
I = Incandescent	I	I	I	I	I	I	I
CFs applicable? (medium/screw base)	Y N	Y N	Y N	Y N	Y N	Y N	Y N
F = Fluorescent Tube **UT** = Fluorescent U-tube **OF** = Other Fluorescent	F UT OF	F UT OF	F UT OF	F UT OF	F UT OF	F UT OF	F UT OF
For Fluorescent tubes: Length in ft. (e.g. 1.5 2 4 8)							
Diameter (T5 T8 T10 T12)							
CF = Compact Fluorescent **CIR** = Circline Fluorescent	CF CIR	CF CIR	CF CIR	CF CIR	CF CIR	CF CIR	CF CIR
CF/CIR Base type: P=Pin-base S=Screw-base	P S	P S	P S	P S	P S	P S	P S
MV = Mercury Vapor **MH** = Standard Metal halide **PS** = Pulse-Start Metal Halide **H** = High Pressure Sodium Vapor **L** = Low Pressure Sodium Vapor	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L
N = Neon	N	N	N	N	N	N	N
For ballasted lamp types: Ballast type: **M** = Magnetic **H** = High Eff Magnetic **E** = Std Electronic **A** = Advanced Electronic	M H E A	M H E A	M H E A	M H E A	M H E A	M H E A	M H E A
-- Number of ballasts per fixture							
Field Notes: (Counts)							

Office Equipment

Comp ID	Item #	Area ID	Equipment Code	Equipment Description	kW	ENERGY STAR?	Total # of units	Avg hrs per week*
						☐		
						☐		
						☐		
						☐		
						☐		
						☐		
						☐		
						☐		
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						☐		
						☐		
						☐		
						☐		
						☐		
						☐		

* "Avg hrs per week" must be completed only if equipment operation differs drastically from that shown on schedule.

Equip Code	Equipment Description	Equip Code	Equipment Description	Equip Code	Equipment Description
PCD	Personal Computer – Desktop	MON	Monitor/Terminal	TYP	Typewriter
PCL	Personal Computer – Laptop	MAIN	Computer – Mainframe	HOLE	Hole Punch
JET	Printer – Ink Jet	VAX	Computer – Minicomputer (VAX)	SHRD	Shredder
LSR	Printer – Laser	WORK	Workstation	PROJ	Video Projector/Projection System
PDOT	Printer – Dot Matrix	SERV	Servers	OT	Other (describe)
UPS	Uninterruptible Power Supply	SWEQ	Switching Equipment		
SC	Small Copier	FAX	FAX machine		
MC	Medium Copier	TEL	Telephone System		
LC	Large Copier	POS	Point-of-sale terminals		
BP	Blueprint Machine	REG	Cash Registers		

Cooking/Food Service Equipment

Comp ID	Item #	Area ID	Equip Code	Equipment Description	Total # Electric Units	kW	Total # of Gas Units	kBtuh	Avg hrs per Week

* "Avg hrs per week" must be completed only if equipment operation differs drastically from that shown on schedule.

ID	Equipment Type	ID	Equipment Type	ID	Equipment Type	ID	Equipment Type
BR	Broiler, Conventional	GD	Garbage Disposal	MW	Oven, Microwave	SP	Soup Pots
BI	Broiler, Infrared	GR	Griddle	PC	Oven, Pizza, Counter-top	SK	Steam Kettle
CB	Charbroiler (32" x 36" ref)	HT	Hot Food Table (4 holes ref)	PL	Oven, Pizza, Large	TC	Toaster, Conveyor-type
CM	Coffee Maker	HP	Hot Plates (2 burners ref)	PM	Popcorn Maker	TS	Toaster, Slotted-type
DW	Dishwasher	IN	Induction Cooktop (2 burner ref)	PF	Proofers/Holding Cabinet	TR	Trash Compacter
FS	Food Steamer	MX	Mixer, Large	RL	Range, Large (6 burners)	OT	Other (describe)
FW	Food Warmer/Well/Lamp	OV	Oven (in Range or standalone)	RM	Range, Medium (4 burners)		
FC	Fryer, Counter-type	CO	Oven, Convection	RS	Range, Small (2 burners)		
FF	Fryer, Floor-type	FO	Oven, Finishing/Toaster	RO	Rotisserie (3 spits reference)		
FI	Fryer, Induction (1 vat ref)	FB	Oven, FlashBake	SL	Slicer (Meat, Cheese, etc)		

Self-Contained Refrigeration Equipment

Non-Commercial/Residential-Type Refrigerator/Freezers ☐ N/A

Comp ID	Item #	Area ID	Equip Code	Equipment Description	Temp. Service	kW per unit	Energy Star	Total # of Units	Average Age (years)
			1D	Single-door	R/F R		☐		
			2D	Two-door	R/F R		☐		
			3D	Three-door	R/F R		☐		
			UC	Undercounter/Compact	R/F R		☐		
			CH	Chest	R/F R		☐		
			OT	*(describe)*_____	R/F R		☐		
					R/F R		☐		

Commercial Refrigeration Equipment ☐ N/A

Comp ID	Item #	Area ID	Equip Code	Open/ Closed	Temp. Service Type	Length, ft	# of Doors	Remote Cond Unit	*Amps @ 120V	*Amps @ 208V	Total # of units
				O C	R F			☐			
				O C	R F			☐			
				O C	R F			☐			
				O C	R F			☐			
				O C	R F			☐			
				O C	R F			☐			
				O C	R F			☐			
				O C	R F			☐			

*Note: Amps listed should not include defrost heater amperage.

Self-Contained Commercial Refrigeration Equipment Codes

Equip Code	Equipment Description	Size of Default	Default Amps@ 120V	208V
ID	Ice cream/frozen yogurt dispenser	1 unit	12	7
DD	Refrigerated drink dispenser (soda, slushees, etc.)	1 unit	17	10
CT	Cold/chilled food table	1 unit	13	8
WC	Refrigerated water cooler	1 unit	4	2
RV	Refrigerated vending machine	1 unit	8	4
GD	Glass door beverage merchandiser (e.g. vendor supplied) from 2 to 4 doors	3 doors	9	5
OU	Open upright display case (pizza, juice, etc.) usually 4,5,6 ft lengths	5 ft	15	9
IC	Island case (cheese, sometimes produce or juice) from 8 to 16 ft long	12 ft	16	9
SC	Service case (bakery, sometimes deli) from 4 to 8 ft long	6 ft	7	4
CD	Closed/solid door storage case, one to three doors	2 doors	7	4
UG	Upright glass door freezer cases from one to three doors	2 doors	10	6
CF	Coffin type glass top freezer cases (usually ice cream) typically 6 or 8 ft	7 ft	8	5
IB	Ice storage boxes	1 unit	8	5
IS	Ice maker, Small (< 10 amps)	1 unit	7	4
IM	Ice maker, Medium (10 to 15 amps)	1 unit	12	7
IL	Ice maker, Large (>15 amps)	1 unit	17	10
OT	Other: self-contained refrigeration not listed above	1 unit	12	7

Remote Refrigeration Equipment – Display Cases and Walk-Ins

Display Cases ☐ N/A

Component ID					
Display case Item #	# __	# __	# __	# __	# __
Fixture Reference ID (from Refg Sched)					
Served by Compressor System Item #					
Area ID					
Type/Suction Temperature: IC = Ice Cream/Frozen Juices (-35 °F) FF = Frozen Food/Meat/Bakery (-25 °F) MD = Fresh Meat/Deli-Meat (+10 °F) DP = Dairy/Produce/Beverage (+20 °F)	**IC** **FF** **MD** **DP**	**IC** **FF** **MD** **DP**	**IC** **FF** **MD** **DP**	**IC** **FF** **MD** **DP**	**IC** **FF** **MD** **DP**
Defrost control type *(req'd for all)*: E = Electric G = Hot Gas T = Timed-off N = None	**E G** **T N**	**E G** **T N**	**E G** **T N**	**E G** **T N**	**E G** **T N**
Anti-sweat heater control?	**Y N**	**Y N**	**Y N**	**Y N**	**Y N**
-- Control type: **C**=Cycling **H**=Humidistat	**C H**	**C H**	**C H**	**C H**	**C H**
External liquid-suction heat exchangers?	**Y N**	**Y N**	**Y N**	**Y N**	**Y N**
High-efficiency evaporator fan motors?	**Y N**	**Y N**	**Y N**	**Y N**	**Y N**
T-8 case lighting?	**Y N**	**Y N**	**Y N**	**Y N**	**Y N**
Size (length or # of doors)					
Single-Deck display cases:					
Open single-deck Lin. ft.					
Closed service case Lin. ft.					
Island coffin/tub (shop-around) Lin. ft.					
Coffin/tub (one-side shopping) Lin. ft.					
Multi-Deck (vertical) display cases:					
Open/reach-in multi-deck Lin. ft.					
Glass-door cases # of doors					
-- High-performance glass doors?	**Y N**	**Y N**	**Y N**	**Y N**	**Y N**

Walk-Ins and Preparation Areas ☐ N/A

Component ID					
Walk-in/Prep Area Item #	# __	# __	# __	# __	# __
Fixture Reference ID (from Refg Sched)					
Served by Compressor System Item #					
Area ID					
Suction temp. range: **F** = Freezer (0 to -10 °F) **C** = Cooler (30 to 40 °F) **P** = PrepArea (50 to 55 °F)	**F** **C P**	**F** **C P**	**F** **C P**	**F** **C P**	**F** **C P**
Floor area (ft^2)					
Ceiling height (ft)					
Defrost control type: **E** = Electric **G** = Hot Gas **T** = Timed-off **N** = None	**E G** **T N**	**E G** **T N**	**E G** **T N**	**E G** **T N**	**E G** **T N**
Strip curtains?	**Y N**	**Y N**	**Y N**	**Y N**	**Y N**
High-efficiency evaporator fan motors?	**Y N**	**Y N**	**Y N**	**Y N**	**Y N**
Display case type: **N** = None, storage only **G** = Glass Doors **R** = Rear-load Roll-In	**N** **G R**	**N** **G R**	**N** **G R**	**N** **G R**	**N** **G R**
-- For G or R types, display case Item #					

Remote Refrigeration Equipment – Compressors and Condensers

Compressor Systems ☐ N/A

Component ID					
Compressor System Item #	# __	# __	# __	# __	# __
System Reference ID (from Refg Sched)					
Served by Condenser Item #					
Area ID					
Type: **C** = Conventional **S** = Two-stage multiplex **T** = Twins **M** = Multiplex **R** = Remote Cond. Unit **O** = Other _____	C S T M R O	C S T M R O	C S T M R O	C S T M R O	C S T M R O
ManufCode: **C** = Carlyle **S** = Copeland Std. **D** = Copeland Discus **O** = Other _____	C S D O	C S D O	C S D O	C S D O	C S D O
Number of compressors in rack/system					
-- Total rack/system hp					
-- Size of all compressors hp (#-#-#…)					
High-efficiency (scroll) compressors?	Y N	Y N	Y N	Y N	Y N
Control Type: **C** = Conventional **S** = SolidState **E** = EMS **O** = Other _____	C S E O	C S E O	C S E O	C S E O	C S E O
Unloader or VSD compressors?	U V	U V	U V	U V	U V
Subcooling Type: **A** = Ambient **M** = Mechanical **N** = None	A M N	A M N	A M N	A M N	A M N
Floating head pressure (FHP) control?	Y N	Y N	Y N	Y N	Y N
-- Very low head pressure (VLHP) control?	Y N	Y N	Y N	Y N	Y N
Heat recovery type: **N** = None **S** = Space heating/Reheat **W** = Water heating **O** = Other _____	N S W O	N S W O	N S W O	N S W O	N S W O

Condensers ☐ N/A

Component ID					
Condenser Item #	# __	# __	# __	# __	# __
Area ID					
Type: A = Air-cooled W = Water-cooled P = Air-cooled w/precooler C = Close-approach/Oversized	A W P C	A W P C	A W P C	A W P C	A W P C
Total fan horsepower (all types)					
-- Motor Eff.: Nom. % OR S=Std. H=HiEff P=Premium					
-- VSD fan?	Y N	Y N	Y N	Y N	Y N
Pump motor hp (water-cooled units only)					
-- Motor Eff.: Nom. % OR S=Std. H=HiEff P=Premium					
-- VSD fan?	Y N	Y N	Y N	Y N	Y N

Miscellaneous Equipment

Comp ID	Item #	Area ID	Equip Code	Equipment Description (*Required only if Equip Code = OT*)	Fuel Type	Survey kW/kBtuh	Avg hrs per week	Total # of units
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			

ID	Equipment Type	Ref. kW (kBtuh)	ID	Equipment Type	Ref. kW (kBtuh)	ID	Equipment Type	Ref. kW (kBtuh)
	Other/Unlisted			**Electronics**			**Shop Equipment**	
OT	Describe in Equip. Desc.	1.0 (10)	E1	Broadcasting Equipment	0.7	S1	Forklifts	7.5 (50)
			E2	Stereo System	0.25	S2	Hand Truck/Pallet Lifts	2.5 (15)
			E3	Television	0.28	S3	Non-Forklift Elec. Vehicles	10
	Building Equipment		E4	Video Recorder (VCR) or DVD	0.5	S4	Other Electric Transport	10
B1	Air Hand Dryers	2.3				S5	Battery Chargers	1.5
B2	Alarm System	2.0		**Service/Retail**		S6	Electric Crane	3.4
B3	Automatic Door	0.5	R1	ATM Machine	1.0	S7	Portable Shop Tools	0.9
B4	Battery Charger	3.2	R2	Change Machine	0.4	S8	Shop Equipment	0.7
B5	Janitorial Equipment	1.2	R3	Conveyor (check-out)	0.1	S9	Soldering Gun or Iron	0.1
B6	Vacuum Cleaner	0.7	R4	Film Processing	3.0	S10	Welder	30 (120)
			R5	Photo Equipment	1.7			
	Medical/Hospital		R6	Pinball or Video Game	0.5		**Laundry**	
M1	Autoclave	1.2	R7	Hair Dryers	1.0	L1	Clothes Dryer, Residl.	1.4 (15)
M2	CAT Scan Machine	75	R8	Exercise Equipment	1.0	L2	Clothes Washer, Residl.	0.9
M3	Centrifuge	4.2	R9	Industrial Compactor	2.8	L3	Clothes Dryer, Commcl.	5 (28)
M4	Chromatograph, analyzer	1.5	R10	Vending Machine, Hot Food	0.8	L4	Clother Washer, Commcl	8.5
M5	Cytometer, blood analyzer	2.0	R11	Vending Machine, Non-Refrig.	0.4	L5	Dry Cleaning Unit	14
M6	Dentist Chair	0.5	R12	Water Vending Machine	0.6	L6	Sewing Machine	0.1
M7	EKG Machine	0.3						
M8	Hot Plate, Lab Equipment	2.5 (20)					**Space Comfort**	
M9	Incubator	1.5				C1	Air Cleaner	0.5
M10	Laboratory Oven	1.5 (15)				C2	Ceiling or Portable Fan	0.2
M11	Laboratory, other equip.	1 (10)				C3	Dehumidifier	0.6
M12	Sterilizer	1.0 (10)				C4	Humidifier	0.5
M13	X-Ray Machine	4.6				C5	Portable Heater	1.4 (10)

Motors/Engines

								Nameplate Data						
Comp ID	**Item #**	**Area ID**	**Process/Application Type**	**Service Type**	**Control Type**	**Drive Type**	**# of motors**	**Size (hp)**	**RPM**	**NEMA Encl. Type**	**NEMA Nom. Eff.****	**Load Type**	**Avg Age (yrs)**	**Avg run hrs per week***

* "Avg run hrs per week" estimate is required for each motor item.

** Enter Nominal Efficiency as a % or if not available, use: **S**=Standard **H**=High-efficiency **P**=Premium-eff.

*** Avg run hrs per week for escalators\elevators is the approx # of hours that the system is being used to transport people. Estimate from business hours and approx. usage type (high/medium/low) or absolute # of hours used.

Motor Codes

Service Type	Control Type	Drive Type	NEMA Encl. Type	Load Type
P : Pump	**T** : Throttled	**AC** : AC	**O** =Open drip-proof	**C** : Constant
F : Fan/Blower	**D** : Outlet damper	**DCS** : DC w/ SCR	**T** =Totally enclosed	**V** : Variable
M: Material Handling/conveyor	**M** : Mechanical VSD	**DCM** : DC w/ MGS	fan-cooled	**I** : Intermittent
T : Machine Tool	**E** : Electronic VSD	**EG** : Nat gas driven	**OT** = Other	
G : Grinding/milling	**C** : Constant Speed	**FG** : Fossil driven		
E : Escalator***	**I** : Inlet vane	**SD** : Steam driven		
PE : Passenger Elevator***	**O** : Other _____			
FE : Freight Elevator***				
S : Separation				
O : Other _____				

Air Compressors

Does the facility have a Leak Reduction Maintenance Program? ☐ YES ☐ NO

									Nameplate Data					
Comp ID	**Item #**	**Area ID**	**Description**	**Comp Type**	**Appl Type**	**Control Type**	**Drive Type**	**# of units**	**Size (hp)**	**RPM**	**NEMA Encl. Type**	**NEMA Nom. Eff.****	**Avg Age (yrs)**	**Avg run hrs per week***

* "Avg run hrs per week" estimate is required for each air compressor item
** Enter Nominal Efficiency as a % or if not available, use: **S**=Standard **H**=High-efficiency **P**=Premium-efficiency

Air Compressor Codes

Compressor Type	Application Types	Control Type	Drive Type
RTD: Reciprocating (Two-stage, Double-acting)	**C**: Cleaning	**S**: Start/Stop	**AC**
RSD: Reciprocating (Single-stage, Double-acting)	**T**: Drives tools	**L**: Load/Unload	**DCS**: DC w/ SCR
RTS: Reciprocating (Two-stage, Single-acting)	**H**: HVAC Pneumatic	**V**: VSD Throttling	**DCM:** DC w/ MGS
RSS: Reciprocating (Single-stage, Single-acting)	**O**: Other _____	**T**: Throttling	**EG**: Nat gas driven
ST: Rotary Screw, Two-stage		**O**: Other _____	**FG**: Fossil driven
SS: Rotary Screw, Single-stage			**SD**: Steam driven
C: Centrifugal			
O: Other _____			

Process Equipment (Non-Motor)

								Primary Fuel		Secondary Fuel			
Comp ID	Item #	Area ID	Process Equip Code	Product Produced	Boiler #	# of units	Avg Unit Capacity** kW/kBtuh	Fuel	% of Annual Btu	Fuel	% of Annual Btu	Avg Age (yrs)	Avg hrs per week*
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		

* "Avg hrs per week" estimate is required for each process equipment item.
** Specify kW for electric equipment, kBtuh for all others.

Process Equipment Codes

Heat Processing:		**Pulping:**		**Drying/Curing/Baking:**	
Direct Fired Gas Heating	DFGH	Batch Digesters	DIGST	Ovens	OVENDCB
Direct Fired Oil Heating	DFOH	Stock Refiners	STKREF	Microwave	MICRODCB
Blanchers	BLNCH	**Paper Preparation:**		Infrared	IR
Microwave	MICROHP	Pulpers	PULP	Electric Resistance	ELRES
Sterilizers	STER	Refiners	REFNR	Steam from Process Boiler	STM
Pasteurizers	PAST	Stock Mixers	STKMXR	Ultraviolet	UV
Induction Heating	INDCTHTG	**Separation and Distillation:**		Kiln	KILN
Induction Melting	INDCTMLT	Thermal Distillation Column	THRMDC	Radio Frequency	RFDCB
Radio Frequency	RFHP	Freeze Concentration	FRZCON	Electron Beam	EBDCB
Indirect Resistance	INDIRES	Vacuum Condensation	VACCON	**Refrigeration/Freezing:**	
Direct Resistance	DIRRES	Membrane Separation	MEMSEP	Forced Air Cooling	FORAIR
Encased Resistance	ENCRES	Pressure Swing Absorption	PSA	Blast Freezing	BLSTFRZ
Plasma Processing	PLSMHP	Vacuum Concentration	VACCNTR	Hydrocooling	HYDRCL
Electric Arc Furnace	ELARCFRN	Ultra Filtration	ULTRAFLT	Belt Freezing	BLTFRZ
Ion Nitriding	IONNIT	Reverse Osmosis	REVOS	Plate Freezing	PLTFRZ
Laser Hardening	LASER	Evaporators	EVAP	Vacuum Cooling	VACCL
Cupola	CUPOLA	**Solid-Liquid Extraction:**		Immersion Freezing	IMMFRZ
Dehydration:		Single Stage Extractors	SSEXT	**Mixing and Emulsification:**	
Convection Dryer	CONVDR	Multi-Stage, Static Bed Extractors	MLTEXT	Pressure Homogenizers	PRSHOM
Infrared Dryer	IRDR	Continuous Moving-Bed Extractors	CONBED	Ultrasonic Emulsification Devices	ULTRAEMD
ElectricResistanceDrying	ELRESDH	**Plastic Molding:**		**Fiber Preparation:**	
Microwave Dryer	MICRODH	Injection Molding	INJMLD	Dye Tanks	DYE
Material Preparation:		Extrusion Molding	EXTMLD	**Crystallization:**	
Arc Welding	ARCWLD	Blow Molding	BLWMLD	Oil Winterization	OILWNTR
Laser Cutting	LASERCT	Rotational Molding	ROTMLD	Freeze Concentration	FRZCONC
Water Jet Cutting	WTRJET	Compression Molding	COMPMLD	Ice Crystallization	ICECRYS
Electron Beam Welding	EBWMP	Thermoforming	THRMFRM	Lactose Crystallization	LACCRYS
Laser Welding	LASERWLD			Fat Crystallization	FATCRYS
Plasma Cutting	PLSMMP	**Washing and Drying:**		**Screening and Separation:**	
Filtration:		Rotary Kilns	ROTKLN	Froth Floatation Baths	FRTH
Pressure Filters	PRESFLT	Cascade Dryer	CASCDR	**Exploration and Drilling:**	
Vacuum Filters	VACFLTR	Fluidized Bed Dryer	FBD	Engine Driven Boring Equipment	ENGBOR
Finishing:		Suspension Dryer	SUSPDR	**Emission Reduction Equipment:**	
Ovens	OVENF			Standard Thermal Oxidizer	STHOX
Electroplating	ELPLT			Recuperative Thermal Oxidizer	RTHOX
Hot Dip Galvanizing	HDG			OTHER	OT

General Comments

CompID	Form #	Item #	Comments

Site Photo Log

Record site photo information here including the PhotoID (i.e. digital file name) and a brief description of the photo where needed. Refer to the training manual for protocols on what photos to take and photo/file naming conventions.

Item #	PhotoID	Description/Comments
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
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18		
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20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

Short-Term Metered Data

Installation date/time _____ **Extraction date/time** _____ **Duration (days)** _____

Item #	End Use / Type L=Ltg F=Fan	Logger ID#	Survey Form System Reference		# of Contrld Fixtures – or – % Cond	Location / Notes / Comments
			Comp ID	Item#'s – or – System Ltr / #		
1	L F					
2	L F					
3	L F					
4	L F					
5	L F					
6	L F					

Additional Comments:

APPENDIX B: ANNOTATED SURVEY INSTRUMENT

Site ID Number
SiteID

CALIFORNIA COMMERCIAL END-USE SURVEY (CCEUS) 2002/2003

Rev. 10/17/02

Site Contact Information: tblSITEINFO

Business Name: __*BusName*__ __

Street Address: __ *Street*__ __

City, State: __ *City*__ , *State*

Zip Code: __ *Zip*__ __ __ __ - *Zip4*__ __ __ __

Contact Name: __ *Contact*__ __ __ __ __ __ __ __ *ContactLast*__ __ __ __ __ __ __ __ __

Contact Title: __ *Title*__ __

Contact Phone #: *(Phone)* __ __ - __ __ __ __ ext. *PhoneExt*__

Contact Name 2: __ *Contact2*__ __ __ __ __ __ __ __ __ *ContactLast2*__ __ __ __ __ __ __ __ __

Contact Title 2: __ *Title2*__ __

Contact Phone 2: *(Phone2)*_ __ - __ __ __ __ ext. *PhoneExt2*__

Email Address: __ *email*__ __

FAX #: (*Fax*) __ __ __- __ __ __ __

Blue Text = Data incorporated into the building simulation model
Red Text = Data not used in the building simulation model

Survey Tracking Information: tblTRACK

Survey Team (circle one) **ADM** **Xen** **VT** *survcomp*

	Date:	**Initials**
Field survey completed:	*SurveyD*	*SurveyI*
Survey received from surveyor:	*SurRecD*	*SurRecI*
Quality Control check completed:	*QualityD*	*QualityI*
Data entry completed:	*RERDataD*	*RERDataI*
Survey received at RER:	*RERSurvD*	*RERSurvI*

☐ QC

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tblSITEINFO

Premise-Level General Information

PRIMARY BUSINESS TYPE CODE: SiteCode *(Use codes from the Business Type table, Form BT)*

Premise Business Type Description

Uniqueness: Give a brief description about the type of work and/or primary product/service. What makes this premise unique from other businesses of this type?

___SiteBTDesc_____

Recent Survey Area Changes: Give a brief description about any changes made to this site since Jan. 2001 that significantly impacted energy usage.

____SurveyAreaChgs_____

Premise General Information

What kind of premise is this?: **P** = Part of a bldg **B** = 1 building, single footprint **MF** = 1 building w/multiple footprints **SM** = Small multi-building (all bldgs surveyed) **CM** = Campus (multi-bldg, subsampled bldgs) **OT** = Other __SiteTypeOther_____	SiteType
What is the total occupied floor area of this premise (excluding enclosed parking garage area)?	sqft* ft^2
-- If the premise has an enclosed parking garage, what is the floor area?	parkarea ft^2
How many buildings are part of this premise?	NumBuild
Is this premise owner-occupied (**O**) or leased (**L**)?	OwnOcc_Lease
What year was this business established at this location? (MM/YY)	YrEstab
What year was the majority of the facility built? (MM/YY)	YrBuilt
How many full-time equivalent employees work at this premise?	Employees
Sample segment identifier (2-digit code)	stratum
Sample frame SIC Code (4-digit)	SIC4
Is interval metered (load research) electric data available for this premise?	LR_Site
Was short-term metering performed for this premise (see Form 39)?	St_Meter

** Total premise floor area is computed from component-level totals, but is compared to this number.*

Business-Type Specific Information

Lodging:	Total number of usable rooms/residential units	*NumUnits*
	Average % of rooms occupied	*PctOcc* %
Office:	Average % of occupied (non-vacant) space	*PctOcc* %
Hospital:	Number of beds in hospital	*NumUnits*
	Average % of beds occupied	*PctOcc* %
Education:	Average number of enrolled students (e.g. ADA)	*NumUnits*

Business/Building Type Codes

Business Type	Code	Business Type	Code	Business Type	Code
Offices (Non-Medical):		**Retail Store:**		**Lodging:**	
Administration and management	011	Department / Variety Store	041	Hotel	081
Financial / Legal	012	Retail Warehouse/Clubs	042	Motel	082
Insurance/Real Estate	013	Shop in Enclosed Mall	043	Resort	083
Data Processing/Computer Center	014	Shop in Strip Mall	044	Other Lodging	084
Mixed-Use/Multi-tenant	015	Auto Sales	045	**Public Assembly:**	
Lab/R&D Facility	016	Other Retail Store	046	Religious Assembly (worship only)	091
Software Development	017	**Warehouse:**		Religious Assembly (mixed use)	092
Government Services	018	Refrigerated Warehouse	051	Health/Fitness Center	093
Other Office	019	Unconditioned Warehouse, High Bay	052	Movie Theaters	094
Restaurant/Food Service*:		Unconditioned Warehouse, Low Bay	053	Theater / Performing Arts	095
Fast Food or Self Service	021	Conditioned Warehouse, High Bay	054	Library / Museum	096
Specialty/Novelty Food Service	022	Conditioned Warehouse, Low Bay	055	Conference/Convention Center	097
Table Service	023	**Health Care:**		Community Center	098
Bar/Tavern/Nightclub/Other	024	Hospital	061	Other Recreational/Public Assembly	099
Other Food Service	025	Nursing Home	062	**Services:**	
Food Stores:		Medical/Dental Office	063	Gas Station / Auto Repair	101
Supermarkets	031	Clinic/Outpatient Care	064	Gas Station w/Convenience Store**	102
Small General Grocery	032	Medical/Dental Lab	065	Repair (Non-Auto)	103
Specialty/Ethnic Grocery	033	**Education:**		Other Service Shop	104
Convenience Store**	034	Daycare or Preschool	071	**Miscellaneous:**	
Liquor Store	035	Elementary School	072	Assembly / Light Mfg.	111
Other Food Store	036	Middle / Secondary School	073	Police / Fire Stations	112
		College or University	074	Post Office	113
		Vocational or Trade School	075	**Other** *Describe on Form 1*	130

* *For Restaurant/Food Service businesses, be sure to complete # of meals (Breakfast/Lunch/Dinner) on Form 25.*

** *Convenience stores that do not sell gasoline should be coded as 034; convenience stores that do sell gasoline should be coded as 102.*

Electric Accounts and Meters tblEACCOUNTS

Utility/Provider Eutility	SDG&E	PG&E	SCE	SMUD	LADWP	Other *EUtility_other*

Item # Item	**Meter Number:**	**Account Number:**	**Meter Status Code**
E1	MeterNum	AcctNum	mtr_stat_cd
E2	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
E3	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
E4	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
E5	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
E6	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
E7	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
E8	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
E9	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
E10	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT

Natural Gas Accounts and Meters tblGACCOUNTS

Utility/Provider gutility	SDG&E	PG&E	SCG	Other gutility_other

Item # Item	**Meter Number:**	**Account Number:**	**Meter Status Code**
G1	MeterNum	AcctNum	mtr_stat_cd
G2	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
G3	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
G4	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
G5	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
G6	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
G7	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
G8	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
G9	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT
G10	_ _ _ _ _ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ _ _ _ _	V A D NI ND OT

Meter Status Codes

V	Verified: Meter is listed on the Customer Contact sheet and was verified during the onsite visit
A	Add this meter: It was found onsite but was not listed on the Customer Contact sheet
D	Delete this meter: It was listed on the Customer Contact sheet but does not exist or does not service the surveyed area
NI	Meter not verified, Inaccessible: Explain why in comments
ND	Meter not verified, Access Denied: Explain why in comments
OT	Other situation: describe in comments block

Electric/Gas Account Notes: tblComment2.Form2

Other Energy Service Accounts tblOTHERACCTS ☐ N/A

(If bills are available, attach copy to survey form)

Item #	Fuel Type	Bills Available?	Meter/Account /Identification Number:	Utility / Provider	AvgAnnual Usage&Units*
Item	FuelType	BillsAvailable	MeterNum	Utility	AvgUsage
O1	Bottled Gas (LPG)	Y N	__ __ __ __ __ __ __ __ __		
O2	Purchased Chilled Water	Y N	__ __ __ __ __ __ __ __ __		
O3	Purchased Steam	Y N	__ __ __ __ __ __ __ __ __		
O4	Other _____	Y N	__ __ __ __ __ __ __ __ __		

* Units of usage should be whatever appears on the bill, for example therms, ft^3, gallons, etc.

On-Site Power Generation tblONSITGEN ☐ N/A

Cogeneration, self-generation, solar cell/photovoltaic system, and emergency generators.

Item #	# Item	#
Type: **I** = Internal Combustion Engine **G** = Gas Turbine **M** = Micro-turbine **C** = Combined Cycle **S** = Solar array/Photovoltaic **O** = Other PlntType_oth	PlntType	I G M C S O
Is this an emergency generator (check box if yes)?	EmerGen	☐
-- How often is it tested? (then skip to Manufacturer)	TestInterval	
What is the plant generation capacity? (kW)	PlntCap	
Fossil Fuel Type (if applicable): **G** = Natural Gas **F** = Fuel Oil **O** = Other Fuel_Oth	FuelType	G F O
Use for generated power: **P** = Peak Shaving **B** = Base load **O** = Other UseOther	Use	P B O
What percent of generated electricity is sold back to the utility?	SoldBack	%
Average operating hours per day (If seasonal, describe operation below)	AveHrs	
Number of operating days per year	NoOfDays	
Use of waste heat: **S** = Space ht **W** = Water ht **P** = Pool **N** = None **O** = Other WasteOth	WasteHt	S W P O
Average heat output (kBtu/hr)	HeatOut	
What fraction of the waste heat is utilized?	FracUtil	%
Manufacturer:	Manuf	
Model:	Model	
Location (Component and Area ID)	Loc_Area	
Components Served	CompServ	

Other Energy Services/Generation Notes: tblComment2.Form3

Shared Services and/or Electric/Gas Meters ☐ N/A

Off-Site Central Equipment Providing Service to Surveyed Premise ☐ N/A

Complete this table when the premise is receiving heating or cooling from a central system which is not part of the premise being surveyed (i.e. the heating/cooling equipment - boilers and chillers - are connected to a utility service meter other than those serving the premise).

tblSHARCNTR	Item #	# *Item*	# ___	# ___
Equipment Type: **C** = Chiller **B** = Boiler **O** = Other *EqDesc*		EquipTyp	C B O	C B O
Equipment Fuel Type: **E** = Electricity **G** = Natural Gas **F** = Fuel Oil **L** = LPG		FuelType	E G F L	E G F L
Total Capacity	-7	Cap		
Units for Capacity **T** = Tons **B** = kBtuh **W**=kW **H**=HP		CapUnit	T B W H	T B W H
Percent of total capacity utilized by survey area	-7	CapPer	%	%

Surveyed Premise Central Equipment Serving Non-Surveyed Areas ☐ N/A

Complete this table when equipment that predominantly serves the surveyed premise provides services to an area that is not part of the surveyed premise. Provide some basic information about the non-surveyed area that will be used to estimate its impact on the survey areas shared equipment.

tblSHARCOMM

#	Bldg Type Code (Form BT)	Elec/Gas Meter Item # (E,G)	Non-Surveyed Area Floor Area (Sq. Ft.)	% Heated	% Cooled	Shared Equipment/Comments
Item	ActCode	AcctItem	FlrArea	PctHeat	PctCool	Comment
2				%	%	
3				%	%	
4				%	%	
5				%	%	

Shared Meters ☐ N/A

For shared electric and gas meters (i.e. also serve non-surveyed areas), estimate the % of metered energy used by the surveyed site.

tblSHAREMTR

#	Elec/Gas Meter Item # (E,G)	Percent used by Surveyed Premise	Non-Surveyed Area Bldg Type Code	End Uses Shared/Comments
Item	MtrItemNum	Pct_used	NonSurvBTCode	EUShar_Cmt
2		%		
3		%		
4		%		
5		%		
6		%		

Recent Energy-Efficiency Measures tblEE_MEASURE ☐ N/A

Ask your site contact about energy efficiency measures installed after January 2002. Provide a brief description of the measure, an Enduse Code, and any additional relevant comments (building/space where installed, why installed, etc.). Before leaving the premise, ask your contact about any additional measures observed during the onsite survey. For reference, a table of typical energy-efficiency measures by end use is presented on the facing page.

Item #	Measure Description	Enduse Code	Comments (where, why, when?)
Item	measure	EndUseCode	Comments

Recent Energy Efficiency Measures (cont.)

Energy-Efficiency Measures - Reference Table

LIGHTING EQUIPMENT (EnduseCode=LT)
- T-8, T-5, or equivalent high-efficiency fluorescent lamps
- Super T-8 lamps
- Hard-wired 1 or 2 lamp Compact Fluorescent fixtures
- Low-power electronic ballasts
- Specular reflectors
- Pulse-start metal halide lamps/ballasts
- Other non-fluorescent high-efficiency lighting systems
- Timeclocks
- Daylighting controls
- Occupancy controlled hi-low switching
- Programmable controllers
- Delamping
- LED exit signs

HVAC EQUIPMENT (EnduseCode=HV)
- High efficiency unitary/package equipment
- High efficiency chiller(s)
- VSD/ASD chillers, pumps, or fans
- High Efficiency HVAC pumps
- High Efficiency fan motors
- Ground-source heat pumps
- Water-cooled unitary/package equipment
- Economizers (air-side or water-side)
- Evaporative condensers
- Thermal storage system
- Low temperature air distribution system
- Conversion to VAV from CV system

HVAC CONTROLS (EnduseCode=HC)
- Energy Management/Control system
- Optimal start/stop
- Chiller sequencing/optimization
- Static pressure reset on HVAC system demand
- Outside air intake control (CO2, VOC, or other sensor)
- Chilled water / hot water reset
- Night ventilation
- Demand controlled ventilation

BOILERS (EndUseCode=BO)
- High efficiency boilers
- VSD on feedwater pumps
- VSD on draft fans w/auto pressure control

MOTORS (EndUseCode=MO)
- High efficiency process (non-HVAC) motors
- VSD process (non-HVAC) motors

COMMERCIAL REFRIG. (EndUseCode=RF)
- Multiplex rack systems to replace conventional system
- High-efficiency (T8s) case lighting
- Ambient or mechanical subcooling
- Evaporative and/or oversized condensers
- VSD condenser fan
- Scroll compressors
- Heaterless doors (triple pane)
- Heat pipe on HVAC unit with coil bypass
- Low temperature air distribution
- Electronically controlled Thermal Expansion Valves
- Distributed refrigeration systems

MISCELLANEOUS EQUIPMENT (EndUseCode=MI)
- Ultrasonic Humidifiers
- VSD Fume hoods
- Fume hood measures other than VSD
- CO sensors for garage exhaust fans

WHOLE-BUILDING (EndUseCode=WB)
- Optimized building system design
- Energy management/control system

BUILDING ENVELOPE (EndUseCode=BE)
- Low-e windows
- Low-e^2 (spectral LowE) windows
- Tinted/Reflective windows
- Dual Pane windows
- Gas-filled windows
- Above-code roof or wall insulation

OTHER (EndUseCode=OT)

Premise/Site-Plan Sketch

This sketch should provide a high-level view of the premise and its surroundings as it is actually configured. Attach site plans and floor plans available from other sources. Sketch all buildings and the closest streets/roadways in both directions. Mark the orientation of True North. For multiple building sites, indicate where meters are located, and the boundaries of different Component Survey areas. Indicate any significant shading provided by adjacent trees or buildings. Use multiple sheets/drawings if necessary. Also indicate the "front" or primary entrance for each building.

Premise/Site-Plan sketch comments: tblCOMMENT2.Form6a

Premise/Component-Plan Sketch

This sketch should provide a view of the premise as represented by components. Sketch the components and their orientation to other components. Reference the previous sketch and indicate which buildings have been modeled as components. Indicate Plan North (PN) for each component as well as the orientation of True North. Use multiple sheets/drawings if necessary. Also indicate the "front" or primary entrance for each building/component.

Premise/Component sketch comments: tblCOMMENT2.Form6b

Premise/Component Survey Planning Worksheet * ☐ N/A

Complete this worksheet for every component on the premise. Identify all components, provide a brief description, record Total Surveyed Floor Area, the Total FloorArea represented by the survey area, the Component Weight, assign a Schedule Set # (from Form 10), and provide any additional comments.

tblSHELLCMPINFO

Item #	Component ID (A – Z)	Surveyor's Description of Business / Activity Type	Total Surveyed Floor Area, (ft^2) (A)	Total Floor Area Represented, (ft^2) (B)*	Component Weight (B/A)	Form 10 Schedule Set #
1	ShellCmpID	Actvty_typ	** SCTotSurvFlrArea	SCTotFlrArea	CmpMult	SchdSetNumber
2						
3						
4						
5						
6						
7						
8						
9						
10						
		Totals				

* Total Floor Area Represented will not be equal to Total Surveyed Floor Area only in a subsampling situation.

Comments: tblComment2.Form7

** The data here is the same as the corresponding data on Form 12; they are linked via the data entry system.*

*** SCTotSurvFlrArea is used in eQ as component Floor Area*

Component Location within Premise

Choose one of the two methods (Orientation & Distance or Exact Coordinates) to indicate a component's location within the premise, with respect to another component.

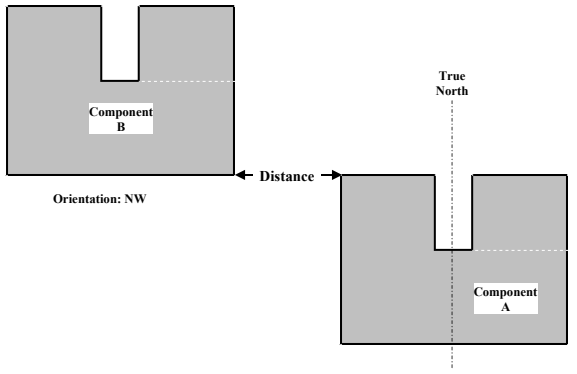
tblSHELLCMPINFO

Item #	Component ID (A – Z)	Position this Component relative to Component….	Orientation & Distance: Specify orientation and the closest distance between these components		Exact Coordinates: Specify the xyz coordinates of the left-most points with respect to Plan North		
			Orientation*	Distance (ft)	x (ft)	y (ft)	z (ft)
	ShellCmpID	RelPos	RelOrient	Distance	ExactX	ExactY	ExactZ
1		*RelatedComponent*					
2							
3					↑[If using these then don't need RelOrient and Distance]		
4							
5							
6							
7	A	A or --	--	--	--	--	--
8	B	(A)	N	100	--	--	--
9	C	(B)	--	--	10	200	50
10					↑[E > 0]		

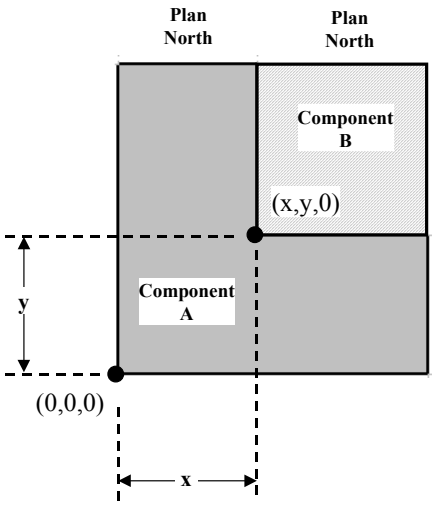
* Orientation here is with respect to True North, not Plan North, e.g. **N**, **S**, **E**, **W**, **ENE**, **NE**, **SSE**, etc. Other options: Use "**A**" to position a component directly above or "**B**" to position a component directly below the reference component, or ("**ST**") to represent a stand-alone building distant from other buildings (i.e. a default Distance will be used).

Component Location Methods

Orientation and Distance Method



Exact Coordinate Method



Premise-Level Schedule Definitions

Standard Holidays *(check all that apply)* tblHolidays ☐ N/A

Indicate below which, if any, standard holidays that the business is closed or operation deviates drastically from normal/typical operations, and indicate on Form 10a and 10b what the holiday operation hours are. Indicate any additional holidays in the comment block.

New Year's Eve Hol20		☐	July 4th Celebrated Hol11		☐
New Year's Day	Hol1	☐	Labor Day	Hol12	☐
New Year's Day Celebrated	Hol2	☐	Columbus Day Hol13		☐
Martin Luther King Day	Hol3	☐	Veterans' Day	Hol14	☐
Presidents' Day	Hol4	☐	Thanksgiving Hol15		☐
St. Patrick's Day	Hol5	☐	Thanksgiving Friday	Hol16	☐
Easter Sunday	Hol7	☐	Christmas Eve	Hol17	☐
Memorial Day	Hol8	☐	Christmas Day	Hol18	☐
Flag Day	Hol9	☐	Christmas Day Celebrated Hol19		☐
July 4th	Hol10	☐	Caesar Chavez Day*	Hol6	☐

** Not currently included in building simulations.*

Seasonal Operation Periods tblSITEINFO ☐ N/A

Define seasonal operation periods for significant periods of time where business hours and/or equipment operation differs significantly from normal or typical business hours and/or equipment operation. To indicate seasonal operation periods, provide a brief description of the period (e.g., "spring break", "winter break", "summer break", "extended holiday hours"), and list the beginning/ending months (1-12) and days for up to three time periods.

TIME PERIOD 1			TIME PERIOD 2			TIME PERIOD 3		
Description (SeasOpDesc1)			Description (SeasOpDesc2)			Description (SeasOpDesc3)		
Begin Month/Day	BegMo1	BegDay1	Begin Month/Day	BegMo2	BegDay2	Begin Month/Day	BegMo3	BegDay3
End Month/Day	EndMo1	EndDay1	End Month/Day	EndMo2	EndDay2	End Month/Day	EndMo3	EndDay3

Holiday and Seasonal Operation Comments: Comment2.Form9

Schedule Set #: *tblSCHEDSET.SchdSetNumber* Primary Schedules (1/5)

Description _____ *tblSCHEDSET.SS_Desc*_____

Specify up to 3 schedule sets (i.e. Forms 10a through 10e as needed) per premise. Schedule sets are assigned to components on the Premise/Component Survey Planning Worksheet.

Primary Business Hours *tblOPERSCHD.Season = 1 (for primary schedule)*

Define typical operation for <u>all</u> Day Types listed below and specify hours in military time (00 to 24). For partial (i.e. not full) operation days, also indicate the approximate % of full operation as Partial Op %.

Day Type DayType	Business Hours	Closed All Day?	Open 24 hrs?	PartialOp%
Monday *(1)*	from *FromHour* to *ToHour*	*IsClosed* ☐	*Open24* ☐	*PartOpPct*
Tuesday *(2)*	from __ __ to __ __	☐	☐	
Wednesday *(3)*	from __ __ to __ __	☐	☐	
Thursday *(4)*	from __ __ to __ __	☐	☐	
Friday *(5)*	from __ __ to __ __	☐	☐	
Saturday *(6)*	from __ __ to __ __	☐	☐	
Sunday *(7)*	from __ __ to __ __	☐	☐	
Holidays *(8)*	from __ __ to __ __	☐	☐	

Primary Occupancy and Equipment Operation Schedules *tblSCHEDULE.Season = 1*

Define operation schedules as listed below for all schedule types applicable to the surveyed area. Draw a line through those schedules that do not apply to the surveyed area. If equipment operation varies significantly from business hours, then check "Hrly Sched" box and specify equipment operation using the optional hourly schedules on Form 10d.

Schedule Type	Parameter	Value <u>during</u> Bus. Hours	Value <u>outside</u> of Bus. Hours*	<u>OR</u> Hrly Sched
Occupancy (applied to occupants on Form 15)	% of typical max hourly occup.	*AvgHrOccPct*	*AvgHrUnoccPct*	*AvgHrOcc_Hrly*
Indoor Lighting* **	% of Equip On	*ILightOccPct*	*ILightUnoccPct*	*ILight_Hrly*
Office Equipment	% of Equip On	*OffEquipOccPct*	*OffEquipUnoccPct*	*OffEquip_Hrly*
Miscellaneous Equipment	% of Equip On	*MiscOccPct*	*MiscUnoccPct*	*Misc_Hrly*
Cooking Equipment	% of Equip On	*CookOccPct*	*CookUnoccPct*	*Cook_Hrly*
Motors/Air Compressors/Process Equipment	% of Equip On	*ProcessOccPct*	*ProcessUnoccPct*	*Process_Hrly*
Outdoor Lighting** PHOTOCELL ☐ <u>OR</u> Specify typical operating hours	Hour (1-24) that lights….	go off:** *OlightHrOff*	come on:** *OlightHrOn*	*Olight_Hrly*
HVAC Schedule => Complete Form 10c				

* Do not use a value of zero (0) unless ALL equipment is really off as verified by site contact.

** If <u>all</u> outdoor lighting is photocell controlled, check the photocell block and leave the on/off hours blank.

*** Use the hourly schedule option for lighting whenever it is possible to obtain detailed operation information.

SeeForm10a

Schedule Set #: tblSCHEDSET.*SchedSetNumber* Seasonal Schedules (2/5)

If seasonal operation is indicated on Form 9, specify the corresponding seasonal business hours, occupancy, HVAC, and equipment operation for each schedule set.

Sec_NA ☐ **Check box if seasonal periods indicated on Form 9 are <u>not</u> applicable to this schedule set**

Seasonal Operation Business Hours tblOPERSCHD.*Season = 2 (for seasonal schedule)*

Define typical operation for <u>all</u> Day Types listed below and specify hours in military time (00 to 24). For partial (i.e. not full) operation days, also indicate the approximate % of full operation as Partial Op %.

Day Type	Business Hours	Closed All Day?	Open 24 hrs?	PartialOp%
Monday	from __ __ to __ __	☐	☐	
Tuesday	from __ __ to __ __	☐	☐	
Wednesday	from __ __ to __ __	☐	☐	
Thursday	from __ __ to __ __	☐	☐	
Friday	from __ __ to __ __	☐	☐	
Saturday	from __ __ to __ __	☐	☐	
Sunday	from __ __ to __ __	☐	☐	
Holidays	from __ __ to __ __	☐	☐	

Seasonal Occupancy and Equipment Operation Schedules tblSCHEDULE.*Season = 2*

Define operation schedules as listed below for all schedule types applicable to the surveyed area. Draw a line through those schedules that do not apply to the surveyed area. Use hourly schedules if indicated on Form 10a.

Schedule Type	Parameter	Value <u>during</u> Bus. Hours	Value <u>outside</u> of Bus. Hours*
Occupancy (applied to occupants on Form 15)	**% of typical max hourly occup.**	__ __ %	__ __ %
Indoor Lighting	**% of Equip On**	__ __ %	__ __ %
Office Equipment	**% of Equip On**	__ __ %	__ __ %
Miscellaneous Equipment	**% of Equip On**	__ __ %	__ __ %
Cooking Equipment	**% of Equip On**	__ __ %	__ __ %
Motors/Air Compressors/Process Equipment	**% of Equip On**	__ __ %	__ __ %
Outdoor Lighting** **PHOTOCELL** ☐ <u>OR</u> Specify typical operating hours	**Hour (1-24) that lights….**	**go off:**** hr __ __	**come on:**** hr __ __

* Do not use a value of zero (0) unless ALL equipment is really off as verified by site contact.

** If <u>all</u> outdoor lighting is photocell controlled, check the photocell block and leave the on/off hours blank.

Schedule Set #: *SchdSetNumber* HVAC Schedules (3/5)

Specify at least 1 HVAC schedule for each schedule set, and assign these schedules at the HVAC system level. Use additional pages if more than 2 schedules are needed. For 100% unconditioned components, this form may be left blank. ***Note:*** *Unless 7/24 operation is indicated, values for all fields must be entered in both the "Occupied" and "Unoccupied (setback/setup)" columns.*

tblSCHDHVAC

HVAC Schedule #: *HVACSched* **Description** *HVACSchedDesc*_____

Primary Schedule (*Season = 1*)

Description	Occupied Condition	Unoccupied (setback/setup)
Cooling Setpoints (90 = Off)	*CoolOccTemp* °F	*CoolUnoccTemp* °F
Heating Setpoints (50 = Off)	*HeatOccTemp* °F	*HeatUnoccTemp* °F
Fan Operation (on/off): Occupied temps apply	*FanOnBefore* __ **# of hours before opening***	*FanOffAfter* __ **# of hours after closing****
Fan Control: **A** = Always on/continuous **C** = Cycles w/HeatCool **O** = Off **M** = Manual/as-needed **N** = Night cycling	*Fan_Ctrl_Occ* A C M	*Fan_Ctrl_Unocc* A C O M N

Seasonal Operation Schedule (*Season=2*)

Description	Occupied Condition	Unoccupied (setback/setup)
Cooling Setpoints (90 = Off)	__ __ °F	__ __ °F
Heating Setpoints (50 = Off)	__ __ °F	__ __ °F
Fan Operation (on/off): Occupied temps apply	**# of ___ hours before opening***	**# of ___ hours after closing****
Fan Control: **A** = Always on/continuous **C** = Cycles w/HeatCool **O** = Off **M** = Manual/as-needed **N** = Night cycling	A C M	A C O M N

* Use a value of 24 to indicate 7/24 operation

** Use a negative value to indicate # of hours before close.

HVAC Schedule #: ___ **Description** _____

Primary Schedule

Description	Occupied Condition	Unoccupied (setback/setup)
Cooling Setpoints (90 = Off)	__ __ °F	__ __ °F
Heating Setpoints (50 = Off)	__ __ °F	__ __ °F
Fan Operation (on/off): Occupied temps apply	**# of ___ hours before opening***	**# of ___ hours after closing****
Fan Control: **A** = Always on/continuous **C** = Cycles w/HeatCool **O** = Off **M** = Manual/as-needed **N** = Night cycling	A C M	A C O M N

Seasonal Operation Schedule

Description	Occupied Condition	Unoccupied (setback/setup)
Cooling Setpoints (90 = Off)	__ __ °F	__ __ °F
Heating Setpoints (50 = Off)	__ __ °F	__ __ °F
Fan Operation (on/off): Occupied temps apply	**# of ___ hours before opening***	**# of ___ hours after closing****
Fan Control: **A** = Always on/continuous **C** = Cycles w/HeatCool **O** = Off **M** = Manual/as-needed **N** = Night cycling	A C M	A C O M N

tblSCHDENDUSE Season=1

Schedule Set #: *SchedSetNumber* Hourly Primary Schedules (4/5)

Use this form if equipment operation is independent of Business Hours as indicated on Form 10a/b. Use one block for each end use. Indicate the applicable daytypes for each day type schedule, and account for all day types including holidays. Specify the % of max. occupancy or equipment-on for all time periods, and be sure to accurately capture transition periods.

Hour		12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT *EndUse*

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM	*pct_1*	*pct_2*	*pct_3*	*pct_4*	*pct_5*	*pct_6*	*pct_7*	*pct_8*	*pct_9*	*pct_10*	*pct_11*	*pct_12*
	PM	*pct_13*	*pct_14*	*pct_15*	*pct_16*	*pct_17*	*pct_18*	*pct_19*	*pct_20*	*pct_21*	*pct_22*	*pct_23*	*pct_24*
M T W T F S S H	AM	←[checkboxes for each spelled out]											
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

tblSCHDENDUSE Season=2

Schedule Set #: ____ Hourly Seasonal Schedules (5/5)

Use this form if equipment operation is independent of Business Hours as indicated on Form 10a/b and seasonal operation is used. Use one block for each end use. Indicate the applicable daytypes for each day type schedule, and account for all day types including holidays. Specify the % of max. occupancy or equipment-on for all time periods, and be sure to accurately capture transition periods.

Hour		12-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

End Use (circle one): OCC ILIT OFFC MISC COOK PROC OLIT

Applicable DayTypes		% of MaxOccupancy or Equipment On											
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												
M T W T F S S H	AM												
	PM												

Building Shell Construction Codes

Roof & Ceiling Construction

tblROOF

		Roof /Ceiling Code	Item	# ___	# ___
Roof Construction type	*From Roof/Wall Construction Codes table*		*RfType*	WF MF CWC CNO ADB	WF MF CWC CNO ADB
-- Attic / No Attic/ Mixed?	**A** = Attic **N** = No Attic **M** = Mixed		*AtType*	A N M	A N M
-- Sloped / Flat / Mixed Roof?	**S** = Sloped **F** = Flat **M** = Mixed		*RfSlope*	S F M	S F M
Exterior Insulation: R-Value	**0** = Uninsulated/None	-7	*RfExtInsRVal*		
External Surface Finish/ Material	*From Roof/Wall Construction Codes table*		*RfSurface*		
Roof Color	**C**=CoolRoof **D**=Dark **M**=Medium **L**=Light		*RfColor*	C D M L	C D M L
-- If cool/white roof, describe material			*RfCoolMat1*		
Interior Insulation R-Value	**0** = Uninsulated/None	-7	*RfIntInsRVal*		
Radiant barrier present?	**Y** = Yes **N** = No	-7	*RfRadBar*		
Suspended Ceiling?	**Y** = Yes **N** = No		*RfCeil*	Y N	Y N
Ceiling Insulation: R-Value	**0** = Uninsulated/None	-7	*RfCeilInsRVal*		
OR Matl. Type	*From Roof/Wall Construction Codes table*		*RfMType*		

Exterior Wall Construction

tblEXTWALL

		Exterior Wall Code	Item	# ___
External Wall Construction type	*From Roof/Wall Construction Codes table*	-7	*ExtType*	
Exterior Wall Dimension(s) in inches	Example: 2X4, 2X6, 4, 6, 12, etc		*FrameDim*	
-- For masonry walls: Furred Interior type	**W** = Wood **M** = Metal **N** = None		*FurredIntType*	W M N
Wall Color	**D** = Dark **M** = Medium **L** = Light		*ExtColor*	D M L
External Surface finish type	*From Roof/Wall Construction Codes table*		*ExtFinish*	
Exterior Insulation: R-value	**0** = Uninsulated/None	-7	*ExtRVal*	
Material	*From Roof/Wall Construction Codes table*		*ExtMType*	
Cavity Insulation: R-value	**0** = Uninsulated/None	-7	*ExtCavityRVal*	
Material	*From Roof/Wall Construction Codes table*		*ExtCavMType*	
Interior Insulation: R-value	**0** = Uninsulated/None	-7	*ExtIntRVal*	
Material	*From Roof/Wall Construction Codes table*		*ExtIntMType*	

Below-Grade Wall Construction

tblBGWall

		Below-Grade Wall Code	Item	# __
Below-grade Wall Construction type	*From Roof/Wall Construction Codes table*	-7	BgType	
-- For masonry walls: Furred Interior type	**W** = Wood **M** = Metal **N** = None		BgFIType	W M N
Exterior Insulation: R-value	**0** = Uninsulated/None	-7	BgExtRval	
Material	*From Roof/Wall Construction Codes table*		BgExtMType	
Cavity Insulation: R-value	**0** = Uninsulated/None	-7	BgCavRVal	
Material	*From Roof/Wall Construction Codes table*		BgCavMType	
Interior Insulation: R-value	**0** = Uninsulated/None	-7	BgIntRVal	
Material	*From Roof/Wall Construction Codes table*		BgIntMType	

Building Shell Construction Codes (cont'd)

Roof/Wall Construction Codes

Code	Roof/Wall Const Types	Code	Exterior Surface Types	Code	Insulation Types	(R/in)
WF	Wood Frame	BU	Built-up surface	BAT	Batt or Blanket	3.3
MF	Metal Frame	AS	Asphalt Roll/shingle	LSF	Loose fill	2.7
CON	Solid Concrete	CT	Clay/cement tile	XPE	Expanded perlite	2.8
CWC	Concrete w/ Cap [roof only]	RB	Rubber (urethane, etc.)	XPS	Expanded polystyrene	3.8-5.0
CNO	Concrete w/o Cap [roof only]	WS	Wood/fiberglass shingle	RDG	Rigid board	2.8-4.0
BLOC	Concrete Block/CMU	MT	Metal/Steel	N	None	0
BRIC	Brick	BF	Bituminous felt	OT	Other _____	_____
AIR	Air	ST	Stucco/Gunite			
ADB	Adiabatic	RK	Rock/Stone/Marble			
OT	_____	SF	Surface finish (Paint, etc.)			
		UN	Unfinished/None			
		BR	Brick façade			
		GLS	Glass Curtain/Spandral			
		OT	Other _____			

Floor Construction tblFLOOR

	Floor Code	Item	# ___
Floor construction type	**S** = Slab-on-grade **G** = Slab above open garage **C** = Crawlspace **U** = Uncond. basement **ADB** = Adiabatic **OT** = Other _ FlrTypeDesc_	FlrType	
Primary Finish Type:	**V** = Vinyl **C** = Carpet **S** = Stone/Ceramic **W** = Wood **N** = None **OT** = Other ___FlrFtypDesc_____	FlrFTyp	
Perimeter Insulation: R-value **S** = Slab-on-grade [ConsType = 6" concrete]	**0** = Uninsulated/None -7	FlrPRVal	
Under-floor Insulation: R-value	**0** = Uninsulated/None -7 **G** = Slab above open garage **C** = Crawlspace **U** = Unconditioned **ADB** = Adiabatic **OT** = Other _ FlrTypeDesc_	FlrMRVal	
Material	*From Insulation Type table*	FlrMTyp	

External Door tblDOORS

	Door Code	Item	# __	# __	# __
Door design	**H** = Hinged **O** = Overhead/Rollup **S** = Sliding **R** = Revolving **A** = Air Lock Entry **OT** = Other __ DoorTypeOth_____	DoorType		**H O S R A OT**	**H O S R A OT**
Material type	**G** = Glass** **S** = Steel **W** = Wood **O** = Other ___ DoorMaterialOth _____	DoorMaterial		**G S W O**	**G S W O**
** For **G**lass door, indicate Window Code		GlazingItem			
Typical height, (ft)		DoorHeight			
Typical width, (ft)		DoorWidth			

Building Shell Construction Codes (cont'd):

Windows/Fenestration tblGLAZING

Window Code		Item	# __	# __	# __	# __
Operable window?		GOpen	Y N	Y N	Y N	Y N
Assembly type	**S**=SiteAssembled **M**=ManufacturedUnit	GSiteOrManuf	S M	S M	S M	S M
Layers of glazing (1,2,3)		GLayer				
Type of glazing	**C** = Clear **T** = Tinted **R** = Reflective **O** = Opaque **L** = LowE **S** = Spectral LowE **E** = Electrochromic (A) = Acrylic (P) = Polycarbonate	GType	C T R O L S E A P	C T R O L S E A P	C T R O L S E A P	C T R O L S E A P
Window frame type	**M**=Metal **W**=Wood **V**=Vinyl **O**=Other_____ GFrameOth _____	GFrame	M W V O	M W V O	M W V O	M W V O
-- Thermal break?		GThermBrk	Y N	Y N	Y N	Y N
Typ. sill height, (ft)		GSillHeight				
Typ. window height, (ft)		GHeight				
Typ. window width, (ft)	(reference only, not used in simulations)	GWidth				
Interior shading type	**F** = Fixed **M** = Moveable **N** = None	GShade	F M N	F M N	F M N	F M N

Skylights tblSKYLT

Skylight Code		Item	
Skylight Shape	**D** = Domed **F** = Flat/Pyramid	SkyLtShape	
Glazing Type	**G** = Glass **P** = Plastic	SkyLtType	
Color * SkyltColorDesc	**C** = Clear **W** = White **O** = Other ___ *____	SkyLtColor	
Edge Type	**C** = With a Curb **N** = Without a Curb	SkyLtEdge	
Typical Dimensions (ft):	Diameter/Width 1	SkyLtW1	
	Width 2	SkyLtW2	
If applicable, Light well depth, ft		SkyLtDepth	

Component ID _ ShellCmpID ___ tblSHELLCMPINFO General Information

Component = Building, part of a building, one footprint of a multi-footprint building, etc.

Component Business/Building Type Code: SiteCode
(See Form BT. NOTE: Use the same business type/building type code for components within the same building)

Description: Briefly describe this component (e.g. Admin Office building of a large campus, kitchen for a fast-food restaurant, etc.). _____SCBTDesc_____

Recent Survey Area Changes: Give a brief description about any changes made to the surveyed area since Jan. 2002 that significantly impacted energy usage. _____SCSurvAreaChgs_____

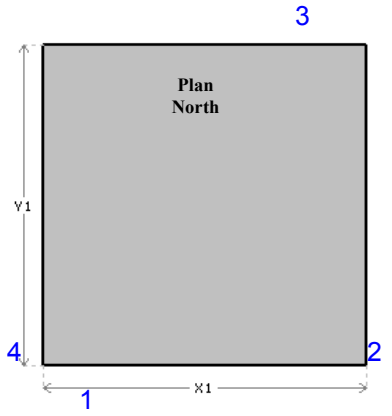
General Component Survey Information tblSHELLCMPINFO

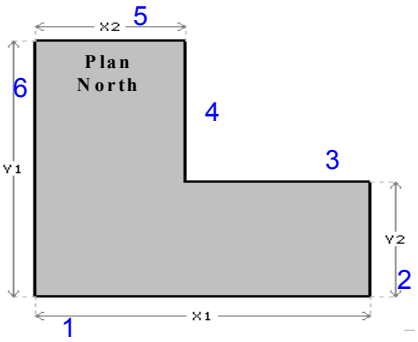
Component Type: **B** = Stand-alone building **P** = Part of a building **F** = 1 footprint of a multi-footprint bldg **OT** = Other_ SCTypeDesc	*SCType*
What year was the majority of the component survey area built?	*YrBuilt*
Total surveyed floor area, ft^2	*FlrArea*
Number of floors *above grade*	*FlrAbove*
Number of floors *below grade*	*FlrBelow*
Is there a parking garage below the bottom floor?	*GarBelow*
Floor-to-floor (or floor-to-roof) height, ft (*do not leave blank*)	*FlrToFlr*
Floor-to-ceiling height, ft (*do not leave blank*)	*FlrToCeil*
Predominant HVAC Thermal Zoning Pattern: **PC** = Perimeter/Core **1F** = One Zone per Floor **ZA** = Zone by Activity Area **MP** = MultiPerimeter/Core **UC** = Unconditioned SCHVACZoneDesc	*SCHVACZone*
-- If Perimeter/Core zoning, perimeter zone depth, ft **-7**	*PZDepth*
-- For **MP**, average number of rooms per floor	*MPRoomPerFlr*
Construction: Roof/Ceiling Code [(only pick one)]	*# RoofCode*
External Wall Code	*# ExtWallCode*
Below-Grade Wall Code	*# BGWallCode*
Floor Code	*# FlrCode*
Skylight Code	*SkyLtCode [from tblSkyLt Item]*
-- Number of Skylights	*SkyLtNum*
-- Skylit Rooftop Zones: **A** = All **P** = Perimeter only **C** = Core only **O** = Other __ SkyLtZonesDesc _____	*SkyLtZones*
Daylighting?	*Daylight**

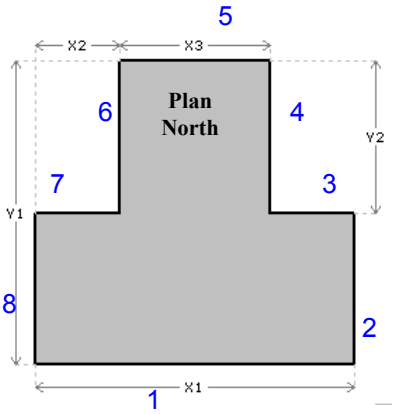
**Daylighting simulation keys off of a record being present in tblDAYLIGHT, not the value of this field.*

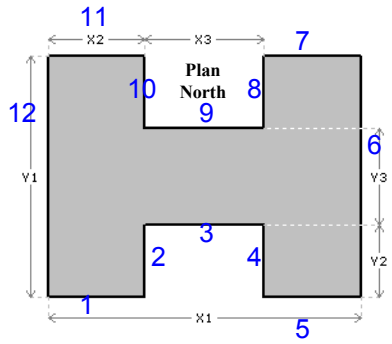
Component Survey Footprint Shapes

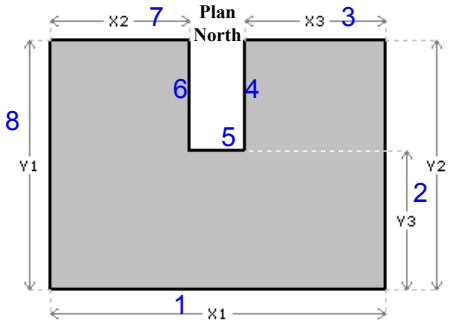
Footprint X/Y Dimensions

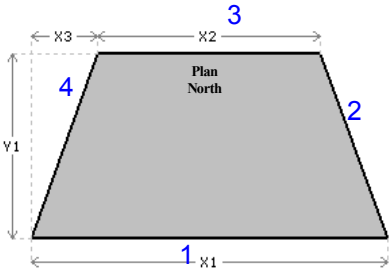


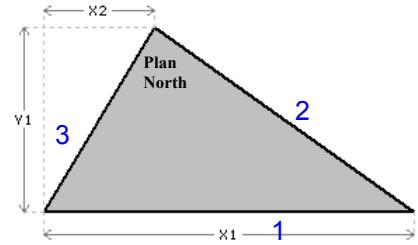


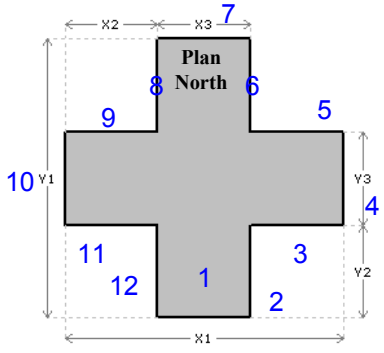


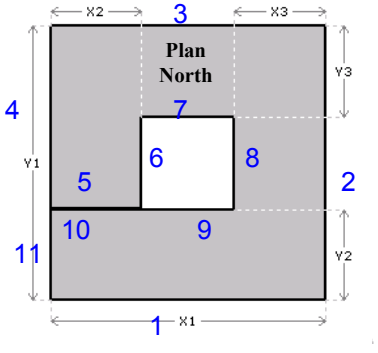










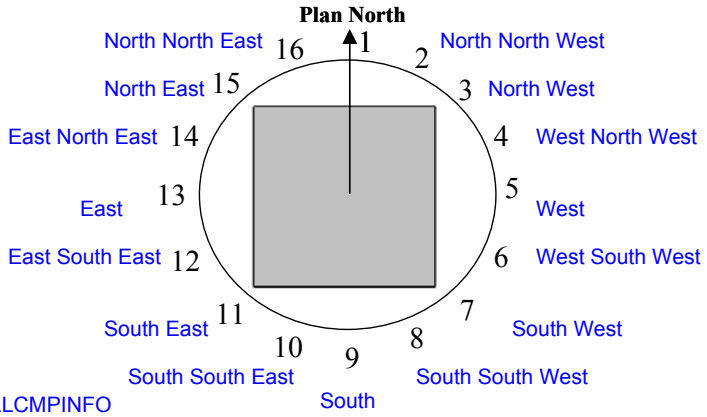


Component ID ShellCmpID____ Footprint, Adiabatic Walls, and Windows/Doors

Footprint/Shell Geometry *(see Form FP)* tblSHELLCMPINFO

Footprint Type Code: **R** = Rectangle **L** = L-shaped **T** = T-shaped **H** = H-shaped **U** = U-shaped **W** = Wedge/trapezoid **TR** = Triangular **P** = + plus sign **C** = Courtyard (atrium)		Footprint				
-- Is this an exact match (X) or a simplification (S) of actual shape?		MatchType				
Footprint Orientation: Direction of True North vs. Plan North		Orientation				
Footprint "X" dimensions (X1, X2, X3), ft	(##,#)	*X1*	ft	*X2*	ft	*X3*	ft
Footprint "Y" dimensions (Y1, Y2, Y3), ft	(##,#)	*Y1*	ft	*Y2*	ft	*Y3*	ft

Footprint Orientation: Sketch arrow to indicate True North



[Answers the question where is Plan North pointing when True North is pointing in a given direction]

Adiabatic Walls tblSHELLCMPINFO

Indicate the percent of external wall area in each orientation that is adiabatic.

Orientation	Above	Below	Plan N	Plan S	Plan E	Plan W
Adiabatic Surface (% of exterior wall area)	AdiabAbove	AdiabBelow	AdiabN	AdiabS	AdiabE	AdiabW

Exterior Window Shading (Overhangs and Sidefins)

Indicate the dimensions of any overhangs or sidefins for each orientation. tblOVERHANG

Orientation		Plan N	Plan S	Plan E	Plan W
Shade Type	**Top Floor only?**	**Shade depths, ft**			
Type **Overhangs**	*Toponly* ☐	*PlanN*	*PlanS*	*PlanE*	*PlanW*
Fins	☐				

Window Percentages & Number of External Doors tblWALLCONS

For windows, Indicate the window code(Form 11) and corresponding wall area percentages. For doors, indicate the door code (Form 11) and # of doors on each wall. No more than three window types and three door types can be specified.

Orientation		Plan N	Plan S	Plan E	Plan W
Type: Window or **D**oor	**Window Code**	**% of Wall Area or # of Doors**			
Type **W**	*Item 1*	*PlanN*	*PlanS*	*PlanE*	*PlanW*
W	*2*				
W	*3*				
	Door Code	**Number of Doors**			
D	*1*				
D	*2*				
D	*3*				

Component ID ___ Actual Floor Plan/Elevation Sketch

Sketch the plan and elevation views for the component as it is actually configured. Each floor of the surveyed area should have a representative plan sketch. Include building dimensions and show Plan North was well as the orientation of True North. Indicate on the drawing the boundaries of different activity areas and meters, windows, and doors. On the elevation sketch, indicate ceiling height and building height. Attach site plan and floor plan if available. Use multiple sheets/drawings if necessary.

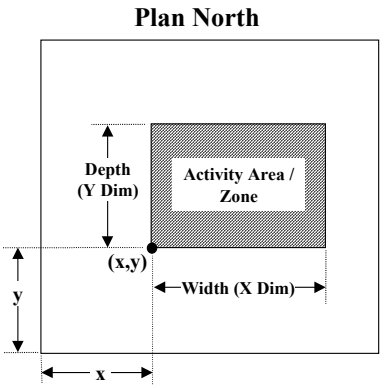
Comments:

tblCOMMENT3.Form14a

Component ID ___ Thermal Zoning/Building Simulation Sketch

Sketch the plan and elevation views for the component as it will be simulated, i.e. all dimensions needed for modeling components should be available from this sketch. Sketch the footprint and indicate Plan North, True North, and all X and Y dimensions. Floor plan sketches should show thermal zone boundaries and indicate applicable floor types (i.e. Bottom, Ground, Middle, Top). If the Zone-by-Activity-Area approach is used, also indicate dimensions needed to determine (x,y), Width, and Depth values (as indicated in figure below). Use multiple sheets/drawings if necessary.

Zone-by-Activity-Area Example



tblSPACEUT
Component ID __ShellCmpID

Activity Area and Thermal Zone Definitions

Activity Area ID# Assignments *Identify an Area ID# for each distinct Activity Area type within the surveyed area. A maximum of eight Activity Area types can be specified. Use the codes on Form AA.*

Area ID#	Activity Area Code (Form AA)	Activity Area Survey Reference Description	Typical hourly max # of occupants	Activity Area Floor Area, ft^2	% of Total Surveyed Floor Area	% Cooled	% Heated	% Uncnd	% Refgd
AreaID	ActCode	SpActvty	MaxOcc	ActAreaSqFt	SpEstPct	SpClPct	SpHtPct	SpUcPct	SpRfPct
2									
3									
4									
5									
6									
7									
8									
Totals (ref. only)									

Thermal Zone Assignments *Assign both a Floor Type and a Thermal Zoning Scheme Zone Type for the areas with the most restrictive locations. That is, the default assumption is that Activity Areas are distributed evenly throughout the floor types and thermal zones unless specified otherwise. [Boxes checked below depend on tblSHELLCMPINFO.SCHVACZone]*

Floor Type		Area ID#:	1	2	3	4	5	6	7	8
Below Grade	(B)		BelowGrade	☐	☐	☐	☐	☐	☐	☐
Ground Floor	(G)		GroundFloor	☐	☐	☐	☐	☐	☐	☐
Middle Floors	(M)		MiddleFloors	☐	☐	☐	☐	☐	☐	☐
Top Floor	(T)		TopFloor	☐	☐	☐	☐	☐	☐	☐

Thermal Zoning Scheme Zone Types									
*If Form 12 Thermal Zoning Scheme=**PC or MP:***	1	2	3	4	5	6	7	8
Perimeter	Perimeter	☐	☐	☐	☐	☐	☐	☐
Core	Core	☐	☐	☐	☐	☐	☐	☐
*If Form 12 Thermal Zoning Scheme=**ZA:***								
Lower left corner (x,y) x-coord, ft	X							
Lower left corner (x,y) y-coord, ft	Y							
Activity Area Width (X dimension), ft	WidthX							
Activity Area Depth (Y dimension), ft	WidthY							

Activity Area Notes/Comments:

tblCOMMENT3.Form15

Activity Area Type Codes

Activity Area Type Description	Activity Area Code
Auditorium	1
Auto Repair Workshop	2
Bank/Financial	3
Bar Cocktail Lounge	4
Barber/Beauty Shop	5
Casino/Gaming	6
Classroom/Lecture	7
Clean Room	8
Computer Room/Data Processing	9
Comm/Ind Work (General High Bay)	10
Comm/Ind Work (General Low Bay)	11
Comm/Ind Work (Precision)	12
Conference Room	13
Convention and Meeting Center	14
Copy Room	15
Corridor / Hallways	16
Courtrooms	17
Dining Area	18
Dry Cleaning	19
Exercise Centers/Gymnasium	20
Exhibit Display Area / Museum	21
Guest Rooms (Hotel/Motel)	22
Kitchen/Break Room and Food Preparation	23
Laboratory	24
Laundry	25
Library	26
Loading Dock	27
Lobby (Hotel)	28
Lobby (Main Entry and Assembly)	29
Lobby (Office Reception/Waiting)	30
Locker and Dressing Room	31
Mall Arcade and Atrium	32
Mechanical/Electrical Room	33
Medical Offices and Exam Rooms	34
Office (Executive/Private)	35
Office (General)	36
Office (Open Plan)	37
Patient Rooms	38
Patio Area	39
Pool/Spa Area	40
Police/Fire Station	41
Religious Worship	42
Residential	43
Restrooms	44
Retail Sales/Showroom	45
Smoking Lounge	46
Storage (Conditioned)	47
Storage (Unconditioned)	48
Storage (Refrigerated/Freezer), Walk-in	49
Storage (Refrigerated/Freezer), Building	50
Surgery Rooms	51
Theater (Motion Picture)	52
Theater (Performance)	53
Unknown	54
Vacant (Conditioned)	55
Vacant (Unconditioned)	56
Vocational Areas	57
Other Unlisted Activity Types	**99**
Outside/Outdoor Area Reference only, not used as an Activity Area	**0**

Component ID __ *ShellCmpID* _ Daylighting ☐ N/A

Daylit Areas and Controls tblDAYLT

Specify daylit areas and control types for up to 2 photosensors per control area.

Daylit Area Item #	*Item*	__	__
Daylit Floors (circle one only *[per Item]*) **G** = 1st floor **M** = Middle floors **T** = Top floor	*DayltFlrs**	G M T	G M T
Daylit from: **T** = Top 3 **S** = Side/perimeter 2 **B** = Both 3 **O** = Other __DayltFromDesc_	*DayltFrom*	T S B O	T S B O
Control type: **C** = Continuous **CO** = Continuous/Off **S** = Stepped	*DayltCntrl*	C CO S	C CO S
Maximum glare index	*DayltMaxGlare*		
For control type = **C** or **CO**:			
-- Minimum power, %	*DayltMinPwrPct*	%	%
-- Minumum light, %	*DayltMinLtPct*	%	%
For control type = **S**:			
-- # of light control steps	*DayltNumSteps*		
-- Light control probability	*DayltCntrlProb*		
# of photosensors per control zone	*DayltNum*	1 2	1 2 **
C1 Photosensor #1 (1 photosensor per control zone)			
C1 -- % of lights controlled	*DayltPctCntrld1*	%	%
C1 -- Design light level (footcandles)	*DayltDesign1*	fc	fc
C1 -- Height above floor, ft	*DayltHeight1*	ft	*[Control height]*
C1 -- % of zone depth	*DayltPctDpth1*	%	%
C2 Photosensor #2 *(use only if 2 photosensors per control zone)*			
C2 -- % of lights controlled	*DayltPctCntrld2*	%	%
C2 -- Design light level (footcandles)	*DayltDesign2*	fc	fc
C2 -- Height above floor, ft	*DayltHeight2*	ft	ft
C2 -- % of zone depth	*DayltPctDpth2*	%	%

C1 = column 1; C2 = column 2 denotes columns in eQUEST DD Wizard

Daylighting Notes/Comments *(provide sketch or copy of control plan if available)**:***

tblCOMMENT3.Form16

* Daylit Floors options are a function of # of floor types for the component, as follows:

Ground, Middle, Top only available w/ 3 or more floors

Ground, Top 2 floors

Top 1 floor

*** [Have Second Ctrl] Need to set this in eQUEST Wizard*

HVAC – Single Zone Systems tblSNGLZONE

Component ID	ShellCmpID	___	___
Single-Zone Item Ltr	Item	Ltr___	Ltr___
HVAC Schedule # from Form 10	HVACSchdNum	# __	# __
Activity Areas/Thermal Zones Served:			
Enter Area ID #(s) or A for all areas	AreaID1-8		
Floor type served *(Circle all that apply)*	FlrTyp_B_G_M_T	B G M T	B G M T
If perimeter/core, enter zones served *(Circle all that apply)*	ZoneServed_P_C	P C	P C
Distribution System Type:	DistType	SZ PSZ SSZ PTU UV 2PFC 4PFC BR ASHP GSHP WLHP	SZ PSZ SSZ PTU UV 2PFC 4PFC BR ASHP GSHP WLHP
Number of units of this type	DistUnit		
Average Age (years) -7	AvgAge		
Temperature control type:	TempControl	M A T E P	M A T E P
Optimal start/stop? (Y / N)	OptStart	Y N	Y N
Indoor/Supply fan (hp/unit)	SpHPUnit	[Missing FanonBefore FanonAfter (See Form 10c)]	
-- Motor Eff.: **(Nom. %)** OR **(S**=Std. **H**=HiEff **P**=Premium)	SpMtrEffStr		
-- Quantity of Indoor Fans	SpFanQty		
-- Supply air rate (CFM/fan) -7	SuppCFM		
Return air path: **DI**=Direct **DU**=Ducted **P**=Plenum -7	RtAirPath	DI DU P	DI DU P
% Outside air (minimum)	PctOA		
Economizer Type: Other__ EconoTypeOther _____	EconoType	N (T E) O	N T E O
Return fan motor (hp/unit)	RtHPUnit		
-- Motor Eff.: **(Nom. %)** OR **(S**=Std. **H**=HiEff **P**=Premium)	RtMtrEffStr		
-- Quantity of Return Fans	RtFanQty		
-- Return air rate (CFM) -7	RtCFM		
Cooling Equipment Type:	CoolType	N D C E P	N D C E P
-- *If cooling type* **D** *and not air-cooled: water (W) or evap (E) cooled?*	EvapType	W E	W E
-- *If cooling type* = **C,** *enter chilled water loop # and skip to heating equip.*	ChWLNum	CWL # ___	CWL # ___
Compressor rating: volts / amps (RLA) / phase (*circle one*)	CompVolt	CompAmps	CompPhase
Number of compressors per unit	NumComp	[Purchased Cool & Heat]	
Capacity output (nominal tons per unit)	CoolTons		
Equipment manufacturer/brand:	Make		
-- Model number for unitary or split-system outdoor unit -7	Model		
-- Model number for split-system coil -7	Model_Coil		
Efficiency: **EER** -7	CoolEER		
Or **SEER** -7	CoolSEER		
Heating Equipment Type or Other _____	HeatType HeatTypeDesc	N F HP B ER RH BB P OT	N F HP B ER RH BB P OT
-- *If heating type* = **B,** *enter hot water loop # and stop.*	HWLNum	HWL # ___	HWL # ___
Fuel type	HeatFuel	E G F L W	E G F L W
Input Rating	HeatkBtuh		
Units of Input Rating (k**W** / k**B**tuh)	HeatUnit	W B	W B
Equipment manufacturer (if different from cooling equip)	HeatMake		
-- Model number	HeatModel		
Efficiency: (enter as % for AFUE and η) -7	HeatEff		
-- Efficiency units: **A**=AFUE **T**=Thermal η **H**=HSPF **C**=COP	HeatEffType	A T H C	A T H C
HP only: Supplemental heating capacity (kW)	HpSuppHt		
Soft start? (Y/N)	HpSoftStart	Y N	Y N

tblMULTZONE

HVAC – Multiple Zone Systems *(enter make/model numbers for unitary systems on Form 22)*

Component ID	ShellCmpID	__	__
Multi-Zone Item #	Item	# __	# __
HVAC Schedule # from Form 10	HVACSchdNum	__	__
Activity Areas/Thermal Zones Served:			
Enter Area ID #(s) or A for all areas	AreaID1-8		
Floor type served *(circle all that apply)*	FloorType_B_G_M_T	B G M T	B G M T
If perimeter/core, enter zones served *(circle all that apply)*	ZoneServed_P_C	P C	P C
Distribution System Type: or Other _____	DistType DistTypeOther	CV MZ VAV DD DF OT	CV MZ VAV DD DF OT
Average Age (years) -7	AvgAge		
Number of units of this type	DistUnit		
Temperature control type:	TempControl	M A T E P	M A T E P
Optimum Start/Stop? (Y/N)	OptStart	Y N	Y N
Hot deck temperature (°F)	HotDeckTemp		
Hot deck supply air temp. control:	HotDeck	C O D	C O D
Cold deck temperature (°F)	ColdDeckTemp		
Cold deck supply air temp. control:	ColdDeck	C O D	C O D
Supply Fans: (hp/fan)	SpHpUnit		
-- Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium	SpMtrEffStr		
-- Quantity of supply fans	SpFanQty		
-- Supply fan type and control: (VAV only)	SpFanTyp	IA IF DF VA VS FC NC	IA IF DF VA VS FC NC
-- Supply air rate (CFM/fan) -7	SuppCFM		
Return air path: **DI**=Direct **DU**=Ducted **P**=Plenum	RtAirPath	DI DU P	DI DU P
% Outside air (minimum)	PctOA		
Return fans: (hp/fan)	RtHPUnit		
-- Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium	RtMtrEffStr		
-- Quantity of return fans:	RtFanQty		
-- Return fan type and control: (VAV only)	RtFanTyp	IA IF DF VA VS FC NC	IA IF DF VA VS FC NC
-- Return air rate (CFM/return fan) -7	RtCFM		
Economizer type Other__EconoOther_____	EconoType	N T E O	N T E O
Cooling Equipment Type:	CoolType	N D C E P	N D C E P
-- *If cooling type* **D** ***and not air-cooled:*** *water (W) or evap (E) cooled?*	EvapType	W E	W E
-- *If cooling type* **C,** *enter chilled water loop # and skip to heating eq.*	ChWLNum	CWL # ___	CWL # ___
Number of compressors per unit	CoolQty		
Compressor rating: volts / amps (RLA) / phase (*circle one*)	CompVolt	CompAmps	CompPhase
Capacity (*nominal tons per unit*)	CoolTons		
Efficiency: **EER** -7	CoolEER		
Cooling Lockout: Outside air temperature	ClkTemp		
-- On in month (1-12) / Off in month (1-12)	CLkOn / CLkOff	/	/
Heating Equipment Type:	HeatType	F B ER P OT	F B ER P OT
-- *If heating type*=**B,** *enter hot water loop # and stop.*	HWLNum	HWL # ___	HWL # ___
Fuel type	HeatFuel	E G F L W	E G F L W
Input Rating	HeatkBtu		
Units of Input Rating (k**W**/k**B**tuh)	HeatUnit	W B	W B
Efficiency: (enter as %) -7	HeatEff		
-- Efficiency units: **T**=Thermal η **A**=AFUE	HeatEffType	T A	T A
Heating lockout: Outside air temperature	HLKTemp		
-- On in month (1-12) / Off in month (1-12)	HLKOn / HLKOff	/	/

HVAC – Multiple Zone System Controls tblMULTZONE

Complete this table for all systems entered on Form 18a.

Multi-Zone Item # (match to Form 18a)		# _____	# _____
Are perimeter/interior controls the same? *(If yes, only complete Perimeter Zone Controls section.)*	*PISame*	Y N	Y N
Perimeter Zone Controls			
Terminal type:	*PTrmType*	CDD CRH VRH CO VVT PF SF I VDD	CDD CRH VRH CO VVT PF SF I VDD
Reheat source fuel type:	*PReheat*	N E HW ST	N E HW ST
Supplemental Heat Source:	*PSuppHT*	N EBB ERH HWRH HWBB	N EBB ERH HWRH HWBB
Capacity of Supplemental Heat Source (input)	*PSuppCap*		
Units for Capacity (k**W**/k**B**tuh)	*PCapUnit*	W B	W B
VAV minimum CFM ratio (% of peak)	*PPctPeak*		
Interior Zone Controls			
Terminal type	*ITrmType*	CDD CRH VRH CO VVT PF SF I VDD	CDD CRH VRH CO VVT PF SF I VDD
Reheat source fuel type:	*IReheat*	N E HW ST	N E HW ST
VAV minimum CFM ratio (% of peak)	*IPctPeak*		

HVAC – Code Descriptions

Single-Zone Distribution System Types	Temperature Control	Heating Equipment
SZ = Single Zone (built-up) PSZ = Pckg. Single Zone (Unitary) SSZ = Split-System Single Zone PTU = Pckg. Term. Unit (wall mounted) UV = Unit Ventilator or Heater 2PFC = 2-Pipe Fan Coil 4PFC = 4-Pipe Fan Coil BR = Baseboard or Radiant Heater ASHP = Air-Source Heat Pump GSHP = Ground Source Heat Pump WLHP = Water Loop/Source Heat Pump	M = Manual (heat/cool On only as needed) A = Always on, constant temperature T = Time Clock E = EMS P = Programmable Thermostat	N = None F = Furnace HP = Heat Pump B = Boiler (fan coil) ER = Electric Resistance RH = Radiant Heater BB = Baseboard Heater P = Purchased Steam OT = Other BX = Boiler (radiant/baseboard)

Cooling Equipment Types	Fuel Type	
N = None D = Direct Expansion C = Chilled Water E = Evaporative Cooler P = Purchased Chilled Water	E = Electricity G = Natural Gas F = Fuel Oil L = LPG HW = Hot Water W = Wood C = Coal/Coke WO = Waste Oil	D = Diesel GA = Gasoline ST = Steam SO = Solar SG = Solar w/gas backup HR = Heat Recovery O = Other

Multi-Zone Distribution System Types	Fan type and Control (VAV Only)	Terminal Type
CV = Constant Volume Reheat MZ = Multi Zone VAV = Variable Air Volume DD = Dual Duct DF = Dual Fan Dual Duct OT = Other _____	IA = inlet guide vanes, air foil fan/bkwd incln. IF = inlet guide vanes, forward curved fan DF = discharge damper, forward curved fan VA = vane axial fan w/ variable pitch VS = variable speed drive FC = forward curve NC = no control	CDD = dual duct or MZ dampers, CV CRH = constant volume reheat VRH = VAV reheat CO = cooling-only, VAV VVT = variable air volume and temp PF = parallel fan-powered SF = series fan-powered I = induction (non-powered) VDD = dual duct or MZ dampers, VAV

Supplemental Heat Source	Supply Air Temperature Control	Economizer Types
N = None EBB = Elec. Baseboard HWRH = Hot Water Radiant Heater ERH = Electric Radiant Heater HWBB = Hot Water Baseboard	C = Constant O = Reset OAT D = Reset Demand	N = None T = Temperature E = Enthalpy O = Other

HVAC Comments (Indicate deck temperature setpoints/reset schedules, or any other significant details such as high pressure air distribution.):

tblCOMMENT2.FormHC

Chillers *(enter make/model/serial numbers on Form 22)*

tblCHILLERS ☐ N/A

Chilled water loop (CWL) #	ChWLNum	# ____	# ____
Component ID	ShellCmpID		
Chiller Item #	Item	# ____	# ____
Site Equipment ID (*reference only*)	EquipID		
Location, Area ID# (reference only)	AreaID		
Component IDs of all components served	OthCmpServed	↓ [SCRL FPLU Dist 1-3]	
Chiller type: **CENT** = Centrifugal **REC** = Reciprocating **SCRW** = Screw **SCRL** = Scroll **SABS** = Absorption steam **GABS** = Absorption, direct fired gas **OT** = Other _*CoolTypeOther*	CoolType*	**CENT REC SCRW SCRL SABS GABS OT**	**CENT REC SCRW SCRL SABS GABS OT**
-- If steam absorption, one or two stage?	Stage	**1 2**	**1 2**
-- If direct-fired gas absorption, kBtuh input	DFBtuIn		
Fuel type: **E** = Elect **G** = Natural Gas **S** =Steam	FuelType	**E G S**	**E G S**
Heat rejection type: **W** = Water-cooled **A** = Air-cooled	HtRjType	**W A**	**W A**
Average Age (years) -7	AvgAge		
Number of units	CoolQty		
Number of units in backup mode	CoolQtyBU		
VSD compressor control? (Y/N)	VSD_Comp	**Y N**	**Y N**
Chilled water setpoint temperature	ChWSetPt		
Chilled water reset (Y/N)	Reset	**Y N**	**Y N**
-- If Yes, chilled water reset temperature	ChWResetTemp		
Compressor: Volts	CompVolt		
Amps (RLA)	CompAmps		
Phase (circle one)	CompPhase	**1 3**	**1 3**
Number of Compressors	Num_Comp		
Capacity (nominal tons/unit)	CoolTons		
Efficiency – Full Load kW/ton, IPLV, or COP -7	Efficiency	*KWTon*	
Efficiency Units	EffUnits	**kW COP IPLV**	**kW COP IPLV**
Is chiller sequencing used? (If yes, explain in Comments)	Sequencing	**Y N**	**Y N**
Water-side economizer in use? (Free Cooling)	Econ	**Y N**	**Y N**
Cooling lockout: Outside air temperature	ClkTemp		
On in month (1-12) Off in month (1-12)	ClkOn ClkOff		
Serves Thermal Storage System Item #s	Serv_TES		

Circulation Pumps – Chillers

tblCHILLPUMP ☐ N/A

Component ID	*ShellCmpID*	__	__	__
Circulation pump Item #	*Item*	# __	# __	# __
Site Equipment ID (optional)	*EquipID*			
Use type: **CHW** = Chilled Water **SCHW** = Secondary ChilledWater **CHHW** = Chilled/Hot Water (2-pipe system)	*PUse*	**CHW SCHW CHHW**	**CHW SCHW CHHW**	**CHW SCHW CHHW**
Average Age (years)	*AvgAge*			
Number of units	*PQty*			
Number of units in backup mode	*PNumBackup*			
Pump power (hp)	*PHP*			
Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium	*PMotorEff*			
Motor type: **O** = One Speed **T** = Two Speed **V** = Variable	*PMotor*	**O T V**	**O T V**	**O T V**
Gallons per minute (-7)	*PGPM*			
Feet of head (-7)	*PHead*			
Serves chilled water loop (CWL) #	*CHWLNum*			

* *ChillerType code "PCHW" added to simulate purchased chiller water systems*

tblHTREJECT

Heat Rejection (Built-Up) *(enter make/model numbers for cooling towers on Form 22)*

☐ N/A

Component ID	ShellCmpID		
Heat rejection device Item #	Item	# ____	# ____
Site Equipment ID (optional)	EquipID		
Type: **CW** = CondWater **AC** = AirCooledCond **EC** = Evap Condenser **ACP** = Air Cooled w/pre-cooler **CT** = Cooling Tower	RjType	CW AC EC ACP CT	CW AC EC ACP CT
Temperature control: **F** = Fixed Temperature **R** = Reset **S** = Setpoint	RjTempCtrl	F R S	F R S
Condenser water setpoint temperature (°F)	CondWtrSetptTemp		
Cooling tower water setpoint temperature (°F)	TowerWtrSetptTemp		
Cooling tower approach temperature (°F)	Approach		
Age of cooling tower (years) -7	AvgAge		
Fan motor size/power (hp/fan)	RjFanHP		
-- Fan Type: **C** = Centrifugal **A** = Axial	RjFanTyp	C A	C A
-- Number of fans	RjFanQty		
-- Motor eff:: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium	RjFanEff		
-- Fan control: **O** = One Speed **T** = Two Speed **V** = Variable	RjFanCtr	O T V	O T V
Pump power (hp)	PumpHP		
-- Number of pumps	PumpQty		
-- Motor eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium	PumpEff		
-- Pump control: **O** = One Speed **T** = Two Speed **V** = Variable	PumpCtr	O T V	O T V
-- Gallons per minute (-7)	Pump_gpm		
-- Feet of head (-7)	Pump_head		
Chillers Served (Chiller Item#)	Chiller1		
	Chiller2		
	Chiller3		
Systems Served (SZ/MZ System Letter or Item#)	Dist1		
	Dist2		
	Dist3		

Thermal (Cool) Storage Systems

tblTES *[TBD, anticipated fields to use are marked]* ☐ N/A

Comp ID	ShellCmpID	__	
Thermal storage system Item #	Item	#__	#__
Location, Area ID# (reference only)	AreaID		
Serves chilled water loop (CWL) #	ChWLNum	#__	#__
Storage type **C** = Chilled Water **I** = Ice **O** = Other ___ TESStorOther _	TESStorType		C I O
Thermal storage total capacity (Ton-Hours)	TESCapacity		
Total Number of Storage Units/Tanks	TESSNumTanks		
System Design type **F** = Full storage **P** = Partial storage	TESType	F P	F P
-- Storage provides what % of hottest day peak cooling load (of max. hour)	TESPctLoad		
Manufacturer	TESManuf		
Model #	TESModel		
Storage is charged: from . . . . Use 24 hour (military time) to designate	TESChgFrom		
to . . . . . time period. (eg., 1 pm would be 13)	TESChgTo		
Storage is discharged: from	TESDisFrom		
to	TESDisTo		
Chiller serves BldgLoad: from	ChilServFrom		
to	ChilServTo		

Boilers *(enter make/model/serial numbers on Form 22)*

tblBOILERS

☐ N/A

Hot water loop (HWL) #		HWLNum	# ___	# ___
Component ID		ShellCmpID		
Boiler Item #		Item	# ____	# ____
Site Equipment ID (optional)		EquipID		
Location, Area ID# (reference only)		AreaID		
Component IDs of all components served		OthComps		
Type: **W** = Water **S** = Steam **OT** = Other ___ BtypeOther		Btype*		**W S OT**
-- If steam, enter steam pressure (PSIG setpoint)		SetPoint		
-- If water, enter water temperature (setpoint)				
Primary fuel type: (see codes on Form HC) Other__ PFuelOther _		PFuel		
Secondary fuel (*use codes from Primary Fuel Type*)		SFuel		
Estimated year of installation (*specify year or category*)		yr_install		
Number of units		Qty		
Number of units in backup mode		Qty_BU		
Input Capacity (kBtu/hr/unit)		CapkBtu		
Efficiency: (%) -7		EffPct		
% of Boiler output to each end use:	Space Heat	PctSpcHt	%	%
	Water Heat	PctDHW	%	%
	Pool Heat	PctPoolHt	%	%
	Process	PctProcs	%	%
	Sum	***100%***	***100%***	***100%***
Space heat lockout:	Outside air temperature	BLKTemp		
	On in Month (1-12)	BLKOn		
	Off in Month (1-12)	BLKOff		
Is HW temp reset? (Y / N)		HW_reset	**Y N**	**Y N**

** Type code "P" added to simulate purchased hot water used for space heating.*

Hot Water Circulation Pumps

tblHWTRPUMP

☐ N/A

Component ID	ShellCmpID				
Circulation pump Item #	Item	# __	# __	# __	# __
Site Equipment ID (optional)	EquipID				
Average Age (years)	AvgAge				
Number of units	PQty				
Number of units in backup mode	PNumBackup				
Pump power (hp)	PHp				
-- Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium	PMotorEff				
Motor type: **O** = One Speed **T** = Two Speed **V** = Variable	PMotor	**O T V**	**O T V**	**O T V**	**O T V**
Gallons per minute	PGPM				
Feet of head	PHead				
Serves hot water loop (HWL) #	HWLNum				

HVAC Equipment Manufacturer and Model Number Information

tblMAKEMODEL_MZ

Manufacturer and Model Numbers for Unitary/Package Multizone Equipment ☐ N/A

Equip Type	Comp ID	Item #	Manufacturer	Model Number for Unitary or Split-system outdoor unit	Model Number for Split-System Coil	Heating System Model Number
MZ	ShellCmpID	Item	Manufacturer	Model_Outdoor	Model_Coil	Model_Heat
MZ						
MZ						
MZ						
MZ						
MZ						
MZ						

Manufacturer and Model Numbers for Built-Up HVAC Equipment tblMAKEMODEL_BU N/A

Equip Type*	Comp ID	Item #	Manufacturer	Model Number	Serial Number
EquipType	ShellCmpID	Item	Manufacturer	Model	SerialNum
C B CT					
C B CT					
C B CT					
C B CT					
C B CT					

* C = Chiller (Form 19), B=Boiler (Form 21) CT=Cooling tower (Form 20)

Comments *Indicate any unique features of built-up equipment that would assist in modeling energy use such as: operating characteristics, configuration, etc.*

tblCOMMENT2.Form22

Exhaust Fans tblFANS ☐ N/A

Comp ID	*ShellCmpID*			
Exhaust fan Item #	*Item*	#__	#__	#__
Site Equipment ID (optional)	*EquipID*			
Type: **K** = Kitchen exhaust hoods **F** = Fume hoods	*FnType*	**K F**	**K F**	**K F**
Number of units	*FnQty*			
Fan motor size/power (hp / unit)	*FnHP*			
-- Motor Eff: **Nom.%** OR **S**=Std. **H**=HiEff **P**=Prem	*FnEff*			
Fan capacity (CFM / unit) -7	*FnCFM*			
Schedule: **C** = Continuous **D** = Demand controlled ventilation **W** = With air handler **O** = Other ____ *FnSchedOther* __	*FnSched*		**C** **D** **W** **O**	**C** **D** **W** **O**
-- If **W**, then system # or Ltr	*FnSystem*			
Hours per week	*FnHours*			
Activity Areas/Thermal Zones Served:				
Enter Area ID #(s) or A for all areas	AreaID1-8			
Floor type served	FlrTypSrv_B, _G, _M, _T		**B G M T**	**B G M T**
If Perimeter/Core, enter zones served	ZoneTypSrv_P_C		**P C**	**P C**

Make-Up Air Units *(supply non-conditioned air)* tblMAKEUP ☐ N/A

Comp ID	ShellCmpID			
Make-up air unit Item #	Item	#__	#__	#__
Site Equipment ID	EquipID			
Number of units	FnQty			
Fan motor size/power (hp / unit)	FnHp			
-- Motor Eff: **Nom.%** OR **S**=Std. **H**=HiEff **P**=Prem	FnEff			
Fan capacity (CFM / unit) -7	FnCFM			
Schedule: **C** = Continuous **D** = Demand controlled ventilation **W** = With air handler **O** = Other ___ *FnSchedOther*	FnSched		**C** **D** **W** **O**	**C** **D** **W** **O**
-- If **W** then HVAC system # or Ltr	FnSystem			
Hours per week	FnHours			
Activity Areas/Thermal Zones Served:				
Enter Area ID #(s) or A for all areas	AreaID1-8			
Floor type served	FlrTypSrv_B_G_M_T		**B G M T**	**B G M T**
If Perimeter/Core, enter zones served	ZoneTypSrv_P_C		**P C**	**P C**

Water Heating Equipment tblWATER

Comp ID	*ShellCmpID*		
Water heating Item #	*Item*	# ____	# ____
Location, Area ID# (reference only)	*AreaID*		
Equipment type: **S** = Standard/Storage water heater **I** = Instantaneous (tankless) **B** = Boiler **DWB** = Dishwasher booster heater **PHW** = Purchased hot water **PS** = Purchased steam **HP** = Heat pump water heater **OT** = Other _____ *Code_Other* ___	*Code*		**S** **I** **B** **DWB** **PHW** **PS** **HP** **OT**
-- *If boiler, enter boiler # (from Form 21) and skip to tank capacity*	*Boiler*		
Fuel type: (If not boiler) (**E** = Electricity **G** = Natural Gas) only in eQ **F** = Fuel Oil **L** = LPG **W** = Wood **SO** = Solar **SG** = Solar w/gas backup **HR** = Heat Recovery **OT** = Other_____ *Fuel_Other* _____	*Fuel*		**E** **G** **F** **L** **W** **S** **SG** **HR** **OT**
Number of units	*Qty*		
Make	*Make*		
Model	*Model*		
Age of water heater (years) -7	*Age*		
Tank capacity/volume (*gallons*) -7	*WtTank*		
Rated input capacity -7	*Capacity*		
-- Units of rated input capacity: **B** = kBtuh **W** = kW	*WtCapUnit*	**B W**	**B W**
Efficiency rating -7	*WtEF*		
Efficiency units: **E** = Energy Factor **T** = Thermal efficiency **A** = AFUE **C** = COP	*WtEFUnits*	**E T A C**	**E T A C**
Tank internal insulation R-value (enter ~~0~~ if uninsulated)	*WtRVal*		
Does the hot water tank have an external insulation jacket?	*WtExtIns*	**Y N**	**Y N**
Average hot water temperature (°F) -7	*WtTemp*		
Are hot water pipes insulated?	*WtPipeIns*	**Y N**	**Y N**
Recirculation pump (Y/N)	*WtRPump*	**Y N**	**Y N**
-- Recirc pump control type (circle all that apply): **C** = Continuous **TP** = Temperature **TM** = Timer **D** = Demand **OT** = Other ___*WtRPumpCtrlOth*	*WtRPumpCtrl*	**C TP TM D OT**	**C TP TM D OT**
-- Pump operations (*hours per week*)	*WtHours*		

Service Hot Water Use (General and Building-Type Specific) tblWATERUSE

If service water heating equipment is present on Form 21 or Form 24, then at least one of the usage fields below must have a value. Building-type specific usage values must be completed for the building types indicated. For food service businesses, an estimate of the number of meals served is required.

			Component ID	ShellCmpID	__
Other Hot Water Uses? (Gals/Day)				ODHWUse	
All Activity Types:	Number of lavatories with hot water:			Lavatory	
	Pounds of laundry washed per day? (lb)			Laundry	
	Number of showers per day *(except for lodging and hospitals)*			Showers	
If both electric and gas water heating equipment are used on site, estimate the % of water heated by gas equipment.				PctGas	___%
ACTIVITY-TYPE-SPECIFIC HOT WATER USE					
Food service:	Number of meals prepared per day:	Breakfast		Brkfast	
		Lunch		Lunch	
		Dinner		Dinner	
	Number of seats in the food service area:			SeatsNum	
	Disposable Dishes?			DispDish	Y N
Lodging:	Number of usable rooms *(in hotels, motels, dorms, etc.)*			UsableRm	
	Average # of rooms occupied			OccupRm	
	Number of Apartments			AptNum	
Office:	Average % of occupied (Non-vacant) space in office buildings			OccuPct	___%
Hospital:	Number of actual beds in hospital			HNumBeds	
	Average % of beds occupied in hospital (avg. from census)			HPctBeds	___%
Education:	Average number of enrolled students in schools (e.g., ADA)			Students	
Nursing Home:	Number of beds			NNumBeds	
	Average % of beds occupied			NPctBeds	___%
Prisons:	Number of inmates			Inmates	

Service Hot Water Use Notes:

tblCOMMENT2.Form25

Swimming Pool/Spa tblPOOL

na_flag ☐ **N/A**

Comp ID	*ShellCmpID*		
Pool/Spa Item #	*Item*	# 2	# 3
Location (Activity Area ID or if Outdoors = 0)	*AreaID*		
Type: **P** = Swimming Pool **S** = Spa/Hot Tub **O** = Other___ *STypeOther*	*SType*	**P S O**	**P S O**
Estimated year of installation *(specify year or category)*	*Yr_Install*		
What is the size of the pool (sq. ft.)?	*SSize*		
What is the average depth of the pool (ft.)?	*SDepth*		
If heated by a boiler, specify boiler # from Form 21	*Boiler*		
Fuel Type: **N** = Not Heated **E** = Electricity **G** = Natural Gas **L** = LPG **SO** = Solar **SG** = Solar w/backup fuel **O** = Other ___ *SFuelOther*	*SFuel*	**N E G L SO SG O**	**N E G L SO SG O**
Heater Capacity (kBtu/hr or kW)	*SHtCap*		
Units of capacity: W = kW B = kBtu/hr	*SHtUnits*	**W B**	**W B**
Solar Backup Fuel Type: **N** = None **E** = Electricity **G** = Natural Gas **L** = LPG **O** = Other _ *SFuel_BUOther* _	*SFuel_BU*	**N E G L O**	**N E G L O**
Solar collector area in use (ft^2)	*Solar*		
Pool Cover in use?	*Cover*	**Y N**	**Y N**
Circulation Pump power (hp)	*SPump*		
-- Average pump run-hours per day	*SHrPerDay*		
-- Motor Eff.: **Nom. %** OR **S**=Std. **H**=HiEff **P**=Premium	*SPumpEff*		
Motor type: **O** = One Speed **T** = Two Speed **V** = Variable	*SMotorType*	**O T V**	**O T V**
Months heated: Start... (1…12)	*HtStart*		
Stop... (1…12)	*HtStop*		

Swimming Pool Notes (If installed recently then comment):

tblCOMMENT2.Form26

Outdoor Lighting tblOUTLIGHT

Comp ID	*ShellCmpID*				
Item #	*Item*	#____	#____	#____	#____
Use type: **S** = General/Security **A** = Advertising **P** = Parking lot **G** = Parking garage **F** = Bldg façade **L** = Landscape **OT** = Other____ *UseTypeOth*	*UseType*	S A P G F L OT	S A P G F L OT	S A P G F L OT	S A P G F L OT
Mount type: **A** = Attached to bldg **P** = Pole **O**=Other (*MountType_Other*)	*MountType*	A P O	A P O	A P O	A P O
Control type: **PC** = Photocell **S** = Manual on/off-switch **TC** = Timeclock **E** = EMS **TW** = Twist-timer **PT** = Photocell/Timelock **MS** = Motion Sensor	*CtrlType*	PC S TC E TW PT MS	PC S TC E TW PT MS	PC S TC E TW PT MS	PC S TC E TW PT MS
Total number of fixtures (Total length if Neon)	*Qty*				
Number of lamps per fixture (Enter 1 if Neon)	*LampFix*				
Watts per lamp (Enter 10 if Neon)	*WattLamp*				
-- *Check box if lamp watts were estimated**	*EstWatts*	☐	☐	☐	☐
Hours per week	*HourWeek*				
Lamp Type and Lamp-Specific Details	*LampType*				
LED = LEDs		LED	LED	LED	LED
E = Electrodless/Induction		E	E	E	E
Q = Quartz/Halogen		Q	Q	Q	Q
IP = Incandescent PAR		IP	IP	IP	IP
IR = Incandescent Reflector		IR	IR	IR	IR
I = Incandescent		I	I	I	I
CFs applicable?(medium/screw base)	*CFApplic*	Y N	Y N	Y N	Y N
F = Fluorescent Tube **UT** = Fluorescent U-tube **OF** = Other Fluorescent		F UT OF	F UT OF	F UT OF	F UT OF
For Fluor. tubes: Length in ft. (e.g., 1.5, 2, 4, 8)	*TubeLgth*				
Diameter (T5 T8 T10 T12)	*TubeDiam*				
CF = Compact Fluorescent **CIR** = Circline Fluorescent		CF CIR	CF CIR	CF CIR	CF CIR
CF/CIR base type: P=Pin-base S=Screw-base	*BaseType*	P S	P S	P S	P S
MV = Mercury Vapor **MH** = Standard Metal Halide **PS** = Pulse-start Metal Halide **H** = High Pressure Sodium Vapor **L** = Low Pressure Sodium Vapor **N** = Neon		MV MH PS H L N	MV MH PS H L N	MV MH PS H L N	MV MH PS H L N
For ballasted lamp types: Ballast type: **M** = Std Magnetic **H** = HighEff magnetic **E** = Std Electronic **A** = Advanced Electronic	*BallastType*	M H E A	M H E A	M H E A	M H E A
-- Number of ballasts per fixture	*BlstFix*				
Field notes: (*Count/comments*)					

* Do not estimate lamp watts until all other methods of establishing wattage have been exhausted, and then explain in comments why lamp wattage could not be obtained.

Comments:

tblCOMMENT2.Form27

Indoor Lighting

tblINLIGHT

Component ID	*ShellCmpID*				
Item #	*Item*	#___	#___	#___	#___
Area ID #	*AreaID*				
Use Type: **A** = Area **T** = Task **X**= Exit **K** = Track **D** = Display/Advertising **O**= Other_____	*UseType* *UseTypeOth*	**A T X K D O**	**A T X K D O**	**A T X K D O**	**A T X K D O**
Mounting: **R** = Recessed **H** = Hanging/Suspended **S** = Surface-mount **O** =Other _____	*MountType* *MountType_Other*	**R H S O**	**R H S O**	**R H S O**	**R H S O**
Specular (**S**) or White (**W**) reflector?	*SpecReflec*	**S W**	**S W**	**S W**	**S W**
Control type: **N** = None/Continuous **B** = Bi-level **S** = Manual on/off-switch **TC** = Timeclock **E** = EMS **PC** = Photocell **PT** = Photocell/Timelock **MS** = Motion Sensor **DM** = Dimmer **DL** = Daylighting controls	*CtrlType*	**N B S TC E PC PT MS DM DL**	**N B S TC E PC PT MS DM DL**	**N B S TC E PC PT MS DM DL**	**N B S TC E PC PT MS DM DL**
Total number of fixtures (Total length if **N**eon)	*Qty*				
Number of lamps per fixture (Enter 1 if **N**eon)	*LampFix*				
Watts per lamp (Enter 10 if **N**eon)	*WattLamp*				
Hours per week	*HourWeek*				
Lamp Type and Lamp-Specific Details:	*LampType*				
LED = LEDs		**LED**	**LED**	**LED**	**LED**
ER = Self/battery powered exit signs		**ER**	**ER**	**ER**	**ER**
Q = Quartz/Halogen		**Q**	**Q**	**Q**	**Q**
E = Electrodeless/Induction		**E**	**E**	**E**	**E**
IP = Incandescent PAR		**IP**	**IP**	**IP**	**IP**
IR = Incandescent Reflector		**IR**	**IR**	**IR**	**IR**
I = Incandescent		**I**	**I**	**I**	**I**
CFs applicable? (medium/screw base)	*CFApplic*	**Y N**	**Y N**	**Y N**	**Y N**
F = Fluorescent Tube **UT** = Fluorescent U-tube **OF** = Other Fluorescent		**F UT OF**	**F UT OF**	**F UT OF**	**F UT OF**
For Fluorescent tubes: Length in ft. (e.g. 1.5 2 4 8)	*TubeLgth*				
Diameter (T5 T8 T10 T12)	*TubeDiam*				
CF = Compact Fluorescent **CIR** = Circline Fluorescent		**CF CIR**	**CF CIR**	**CF CIR**	**CF CIR**
CF/CIR Base type: P=Pin-base S=Screw-base	*BaseType*	**P S**	**P S**	**P S**	**P S**
MV = Mercury Vapor **MH** = Standard Metal halide **PS** = Pulse-Start Metal Halide **H** = High Pressure Sodium Vapor **L** = Low Pressure Sodium Vapor		**MV MH PS H L**	**MV MH PS H L**	**MV MH PS H L**	**MV MH PS H L**
N = Neon		**N**	**N**	**N**	**N**
For ballasted lamp types: Ballast type: **M** = Magnetic **H** = High Eff Magnetic **E** = Std Electronic **A** = Advanced Electronic	*BallastType*	**M H E A**	**M H E A**	**M H E A**	**M H E A**
-- Number of ballasts per fixture					
Field Notes: (Counts)					

Indoor Lighting

Component ID							
Item #	# ___	# ___	# ___	# ___	# ___	# ___	# ___
Area ID #							
Use Type: **A** = Area **T** = Task **X**= Exit **K** = Track **D** = Display/Advertising **O**= Other _____	A T X K D O	A T X K D O	A T X K D O	A T X K D O	A T X K D O	A T X K D O	A T X K D O
Mounting: **R** = Recessed **H** = Hanging/Suspended **S** = Surface-mount **O** =Other _____	R H S O	R H S O	R H S O	R H S O	R H S O	R H S O	R H S O
Specular (**S**) or White (**W**) reflector?	S W	S W	S W	S W	S W	S W	S W
Control type: **N** = None/Continuous **B** = Bi-level **S** = Manual on/off-switch **TC** = Timeclock **E** = EMS **PC** = Photocell **PT** = Photocell/Timelock **MS** = Motion Sensor **DM** = Dimmer **DL** = Daylighting controls	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL	N B S TC E PC PT MS DM DL
Total number of fixtures (Total length if **N**eon)							
Number of lamps per fixture (Enter 1 if **N**eon)							
Watts per lamp (Enter 10 if **N**eon)							
Hours per week							
Lamp Type and Lamp-Specific Details:							
LED = LEDs	LED	LED	LED	LED	LED	LED	LED
ER = Self/battery powered exit signs	ER	ER	ER	ER	ER	ER	ER
Q = Quartz/Halogen	Q	Q	Q	Q	Q	Q	Q
E = Electrodeless/Induction	E	E	E	E	E	E	E
IP = Incandescent PAR	IP	IP	IP	IP	IP	IP	IP
IR = Incandescent Reflector	IR	IR	IR	IR	IR	IR	IR
I = Incandescent	I	I	I	I	I	I	I
CFs applicable? (medium/screw base)	Y N	Y N	Y N	Y N	Y N	Y N	Y N
F = Fluorescent Tube **UT** = Fluorescent U-tube **OF** = Other Fluorescent	F UT OF	F UT OF	F UT OF	F UT OF	F UT OF	F UT OF	F UT OF
For Fluorescent tubes: Length in ft. (e.g. 1.5 2 4 8)							
Diameter (T5 T8 T10 T12)							
CF = Compact Fluorescent **CIR** = Circline Fluorescent	CF CIR	CF CIR	CF CIR	CF CIR	CF CIR	CF CIR	CF CIR
CF/CIR Base type: P=Pin-base S=Screw-base	P S	P S	P S	P S	P S	P S	P S
MV = Mercury Vapor **MH** = Standard Metal halide **PS** = Pulse-Start Metal Halide **H** = High Pressure Sodium Vapor **L** = Low Pressure Sodium Vapor	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L	MV MH PS H L
N = Neon	N	N	N	N	N	N	N
For ballasted lamp types: Ballast type: **M** = Magnetic **H** = High Eff Magnetic **E** = Std Electronic **A** = Advanced Electronic	M H E A	M H E A	M H E A	M H E A	M H E A	M H E A	M H E A
-- Number of ballasts per fixture							
Field Notes: (Counts)							

Office Equipment tblOFFEQUIP

Comp ID	Item #	Area ID	Equipment Code	Equipment Description	kW	ENERGY STAR?	Total # of units	Avg hrs per week*
ShellCmpID	*Item*	*AreaID*	*Code*	*Descrip*	*Capacity*	*EnergyStar*	*Qty*	*HourWeek*
						☐		
						☐		
						☐		
						☐		
						☐		
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						☐		
						☐		

* "Avg hrs per week" must be completed only if equipment operation differs drastically from that shown on schedule.

Equip Code	Equipment Description	Equip Code	Equipment Description	Equip Code	Equipment Description
PCD	Personal Computer – Desktop	MON	Monitor/Terminal	TYP	Typewriter
PCL	Personal Computer – Laptop	MAIN	Computer – Mainframe	HOLE	Hole Punch
JET	Printer – Ink Jet	VAX	Computer – Minicomputer (VAX)	SHRD	Shredder
LSR	Printer – Laser	WORK	Workstation	PROJ	Video Projector/Projection System
PDOT	Printer – Dot Matrix	SERV	Servers	OT	Other (describe)
UPS	Uninterruptible Power Supply	SWEQ	Switching Equipment		
SC	Small Copier	FAX	FAX machine		
MC	Medium Copier	TEL	Telephone System		
LC	Large Copier	POS	Point-of-sale terminals		
BP	Blueprint Machine	REG	Cash Registers		

Cooking/Food Service Equipment tblCOOK

Comp ID	Item #	Area ID	Equip Code	Equipment Description	Total # Electric Units	kW	Total # of Gas Units	kBtuh	Avg hrs per Week
ShellCmpID	*Item*	*AreaID*	*Code*	*Descrip*	*EQty*	*kW*	*GQty*	*kBtuh*	*HourWeek*

* "Avg hrs per week" must be completed only if equipment operation differs drastically from that shown on schedule.

ID	Equipment Type	ID	Equipment Type	ID	Equipment Type	ID	Equipment Type
BR	Broiler, Conventional	GD	Garbage Disposal	MW	Oven, Microwave	SP	Soup Pots
BI	Broiler, Infrared	GR	Griddle	PC	Oven, Pizza, Counter-top	SK	Steam Kettle
CB	Charbroiler (32" x 36" ref)	HT	Hot Food Table (4 holes ref)	PL	Oven, Pizza, Large	TC	Toaster, Conveyor-type
CM	Coffee Maker	HP	Hot Plates (2 burners ref)	PM	Popcorn Maker	TS	Toaster, Slotted-type
DW	Dishwasher	IN	Induction Cooktop (2 burner ref)	PF	Proofers/Holding Cabinet	TR	Trash Compacter
FS	Food Steamer	MX	Mixer, Large	RL	Range, Large (6 burners)	OT	Other (describe)
FW	Food Warmer/Well/Lamp	OV	Oven (in Range or standalone)	RM	Range, Medium (4 burners)		
FC	Fryer, Counter-type	CO	Oven, Convection	RS	Range, Small (2 burners)		
FF	Fryer, Floor-type	FO	Oven, Finishing/Toaster	RO	Rotisserie (3 spits reference)		
FI	Fryer, Induction (1 vat ref)	FB	Oven, FlashBake	SL	Slicer (Meat, Cheese, etc)		

Self-Contained Refrigeration Equipment

Non-Commercial/Residential-Type Refrigerator/Freezers tblREFRIGEQ ☐ N/A

Comp ID	Item #	Area ID	Equip Code	Equipment Description	Temp. Service	kW per unit	Energy Star	Total # of Units	Average Age (years)
ShellCmpID		*AreaID*	*Code*	*Descrip*	*TempSvc*	*Capacity*	*EnergyStar*	*Qty*	*AvgAge*
	Item		1D	Single-door	R/F R		☐		
			2D	Two-door	R/F R		☐		
			3D	Three-door	R/F R		☐		
			UC	Undercounter/Compact	R/F R		☐		
			CH	Chest	R/F R		☐		
			OT	*(describe)*_____	R/F R		☐		

Commercial Refrigeration Equipment tblSCREFRIG ☐ N/A

Comp ID	Item #	Area ID	Equip Code	Open/ Closed	Temp. Service Type	Length, ft	# of Doors	Remote Cond Unit	*Amps @ 120V	*Amps @ 208V	Total # of units
ShellCmpID		*AreaID*	*Code*	*OpenClosed*		*ScLength*	*ScGlass*		*ScA120*	*ScA208*	*Qty*
	Item			*O C*	*TempSv*			*RCU*			
				O C	R F			☐			
				O C	R F			☐			
				O C	R F			☐			
				O C	R F			☐			

*Note: Amps listed should not include defrost heater amperage.

Self-Contained Commercial Refrigeration Equipment Codes

Equip Code	Equipment Description	Size of Default	Default Amps@ 120V	208V
ID	Ice cream/frozen yogurt dispenser	1 unit	12	7
DD	Refrigerated drink dispenser (soda, slushees, etc.)	1 unit	17	10
CF	Cold/chilled food table	1 unit	13	8
WC	Refrigerated water cooler	1 unit	4	2
RV	Refrigerated vending machine	1 unit	8	4
GD	Glass door beverage merchandiser (e.g. vendor-supplied) from 2 to 4 doors	3 doors	9	5
OU	Open upright display case (pizza, juice, etc.) usually 4,5,6 ft lengths	5 ft	15	9
IC	Island case (cheese, sometimes produce or juice) from 8 to 16 ft long	12 ft	16	9
SC	Service case (bakery, sometimes deli) from 4 to 8 ft long	6 ft	7	4
CD	Closed/solid door storage case, one to three doors	2 doors	7	4
UG	Upright glass door freezer cases from one to three doors	2 doors	10	6
CF	Coffin type glass top freezer cases (usually ice cream) typically 6 or 8 ft	7 ft	8	5
IB	Ice storage boxes	1 unit	8	5
IS	Ice maker, Small (< 10 amps)	1 unit	7	4
IM	Ice maker, Medium (10 to 15 amps)	1 unit	12	7
IL	Ice maker, Large (>15 amps)	1 unit	17	10
OT	Other: self-contained refrigeration not listed above	1 unit	12	7

Remote Refrigeration Equipment – Display Cases and Walk-Ins

Display Cases tblREMOTE ☐ N/A

Component ID	*ShellCmpID*				
Display case Item #	*Item*	# __	# __	# __	# __
Fixture Reference ID (from Refg Sched)	*FixRefID*				
Served by Compressor System Item #	*CompNum*				
Area ID	*AreaID*				
Type/Suction Temperature: IC = Ice Cream/Frozen Juices (-35 °F) FF = Frozen Food/Meat/Bakery (-25 °F) MD = Fresh Meat/Deli-Meat (+10 °F) DP = Dairy/Produce/Beverage (+20 °F)	*CaseTemp*	**IC FF MD DP**	**IC FF MD DP**	**IC FF MD DP**	**IC FF MD DP**
Defrost control type *(req'd for all)*: E = Electric G = Hot Gas T = Timed-off N = None	*Control*	**E G T N**	**E G T N**	**E G T N**	**E G T N**
Anti-sweat heater control?	*AntiSweat*	**Y N**	**Y N**	**Y N**	**Y N**
-- Control type: **C**=Cycling **H**=Humidistat	*AntiSweatType*	**C H**	**C H**	**C H**	**C H**
External liquid-suction heat exchangers?	*ExtLSHX*	**Y N**	**Y N**	**Y N**	**Y N**
High-efficiency evaporator fan motors?	*HEEvapFan*	**Y N**	**Y N**	**Y N**	**Y N**
T-8 case lighting?	*T8CaseLtg*	**Y N**	**Y N**	**Y N**	**Y N**
Size (length or # of doors)					
Single-Deck display cases:					
Open single-deck Lin. ft.	*SLength*				
Closed service case Lin. ft.	*CSLength*				
Island coffin/tub (shop-around) Lin. ft.	*DLength*				
Coffin/tub (one-side shopping) Lin. ft.	*CLength*				
Multi-Deck (vertical) display cases:					
Open/reach-in multi-deck Lin. ft.	*MLength*				
Glass-door cases # of doors	*GDoors*				
-- High-performance glass doors?	*EEGlass*	**Y N**	**Y N**	**Y N**	**Y N**

Walk-Ins and Preparation Areas tblWALKIN ☐ N/A

Component ID	*ShellCmpID*				
Walk-in/Prep Area Item #	*Item*	# __	# __	# __	# __
Fixture Reference ID (from Refg Sched)	*FixRefID*				
Served by Compressor System Item #	*CompNum*				
Area ID	*AreaID*				
Suction temp. range: **F** = Freezer (0 to -10 °F) **C** = Cooler (30 to 40 °F) **P** = PrepArea (50 to 55 °F)	*WkTemp*	**F C P**	**F C P**	**F C P**	**F C P**
Floor area (ft^2)	*FlrArea*				
Ceiling height (ft)	*Ceiling*				
Defrost control type: **E** = Electric **G** = Hot Gas **T** = Timed-off **N** = None	*Control*	**E G T N**	**E G T N**	**E G T N**	**E G T N**
Strip curtains?	*Strip*	**Y N**	**Y N**	**Y N**	**Y N**
High-efficiency evaporator fan motors?	*HEEvapFan*	**Y N**	**Y N**	**Y N**	**Y N**
Display case type: **N** = None, storage only **G** = Glass Doors **R** = Rear-load Roll-In	*DispCase*	**N G R**	**N G R**	**N G R**	**N G R**
-- For G or R types, display case Item #	*DispCaseItemNum*				

Remote Refrigeration Equipment – Compressors and Condensers

Compressor Systems

tblCOMPRESS

☐ N/A

Component ID	*ShellCmpID*				
Compressor System Item #	*Item*	# __	# __	# __	# __
System Reference ID (from Refg Sched)	*FixRefID*				
Served by Condenser Item #	*ServedBy*				
Area ID	*AreaID*				
Type: **C** = Conventional (**S** = Two-stage multiplex **T** = Twins **M** = Multiplex **R** = Remote Cond. Unit **O** = Other ____ *CompDesc* _____)	*CompType*	C S T M R O	C S T M R O	C S T M R O	C S T M R O
ManufCode: **C** = Carlyle **S** = Copeland Std. **D** = Copeland Discus **O** = Other ___ *Manuf* ___	*ManufCode*	C S D O	C S D O	C S D O	C S D O
Number of compressors in rack/system	*CompQty*				
-- Total rack/system hp	*CompHP*				
-- Size of all compressors hp (#-#-#…)	*CompSize*				
High-efficiency (scroll) compressors?	*HEScrollComp*	Y N	Y N	Y N	Y N
Control Type: **C** = Conventional **S** = SolidState **E** = EMS **O** = Other __*CtrlTypeOth* _	*CtrlType*	C S E O	C S E O	C S E O	C S E O
Unloader or VSD compressors?	*CompVSD*	U V	U V	U V	U V
Subcooling Type: **A** = Ambient **M** = Mechanical **N** = None	*SubCool*	A M N	A M N	A M N	A M N
Floating head pressure (FHP) control?	*SFloat*	[Y="FL" N=" "]	Y N	Y N	Y N
-- Very low head pressure (VLHP) control?	*VLHPC*	Y N	Y N	Y N	Y N
Heat recovery type: **N** = None **S** = Space heating/Reheat **W** = Water heating **O** = Other ___ *HtRcDesc* _	*HtRecov*	N S W O	N S W O	N S W O	N S W O

Condensers

tblCONDENSE

☐ N/A

Component ID	*ShellCmpID*			
Condenser Item #	*Item*	# __	# __	# __
Area ID	*AreaID*			
Type: A = Air-cooled (*W = Water-cooled P = Air-cooled w/precooler C = Close-approach/Oversized)	*CdType*	A W P C	A W P C	A W P C
Total fan horsepower (all types)	*CdFanHP*			
-- Motor Eff.: Nom. % OR S=Std. H=HiEff P=Premium	*CdFanEff*			
-- VSD fan?	*CdFanVSD*	Y N	Y N	Y N
Pump motor hp (water-cooled units only)	*CdPumpHp*			
-- Motor Eff.: Nom. % OR S=Std. H=HiEff P=Premium	*CdPumpEff*			
-- VSD fan?	*CdPumpVSD*	Y N	Y N	Y N

** Modeled as "Evap"*

Miscellaneous Equipment tblMISCEQ

Comp ID	Item #	Area ID	Equip Code	Equipment Description (*Required only if Equip Code = OT*)	Fuel Type	Survey kW/kBtuh	Avg hrs per week	Total # of units
ShellCmpID	*Item*	*AreaID*	*Code*	*Descrip*	*Fuel*	*Capacity*	*HourWeek*	*Qty*
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			
					E G O			

ID	Equipment Type	Ref. kW (kBtuh)	ID	Equipment Type	Ref. kW (kBtuh)	ID	Equipment Type	Ref. kW (kBtuh)
	Other/Unlisted			**Electronics**			**Shop Equipment**	
OT	Describe in Equip. Desc.	1.0 (10)	E1	Broadcasting Equipment	0.7	S1	Forklifts	7.5 (50)
			E2	Stereo System	0.25	S2	Hand Truck/Pallet Lifts	2.5 (15)
			E3	Television	0.28	S3	Non-Forklift Elec. Vehicles	10
	Building Equipment		E4	Video Recorder (VCR)	0.5	S4	Other Electric Transport	10
B1	Air Hand Dryers	2.3				S5	Battery Chargers	1.5
B2	Alarm System	2.0		**Service/Retail**		S6	Electric Crane	3.4
B3	Automatic Door	0.5	R1	ATM Machine	1.0	S7	Portable Shop Tools	0.9
B4	Battery Charger	3.2	R2	Change Machine	0.4	S8	Shop Equipment	0.7
B5	Janitorial Equipment	1.2	R3	Conveyor (check-out)	0.1	S9	Soldering Gun or Iron	0.1
B6	Vacuum Cleaner	0.7	R4	Film Processing	3.0	S10	Welder	30 (120)
			R5	Photo Equipment	1.7			
	Medical/Hospital		R6	Pinball or Video Game	0.5		**Laundry**	
M1	Autoclave	1.2	R7	Hair Dryers	1.0	L1	Clothes Dryer, Residl.	1.4 (15)
M2	CAT Scan Machine	75	R8	Exercise Equipment	1.0	L2	Clothes Washer, Residl.	0.9
M3	Centrifuge	4.2	R9	Industrial Compactor	2.8	L3	Clothes Dryer, Commcl.	5 (28)
M4	Chromatograph, analyzer	1.5	R10	Vending Machine, Hot Food	0.8	L4	Clother Washer, Commcl	8.5
M5	Cytometer, blood analyzer	2.0	R11	Vending Machine, Non-Refrig.	0.4	L5	Dry Cleaning Unit	14
M6	Dentist Chair	0.5	R12	Water Vending Machine	0.6	L6	Sewing Machine	0.1
M7	EKG Machine	0.3						
M8	Hot Plate, Lab Equipment	2.5 (20)					**Space Comfort**	
M9	Incubator	1.5				C1	Air Cleaner	0.5
M10	Laboratory Oven	1.5 (15)				C2	Ceiling or Portable Fan	0.2
M11	Laboratory, other equip.	1 (10)				C3	Dehumidifier	0.6
M12	Sterilizer	1.0 (10)				C4	Humidifier	0.5
M13	X-Ray Machine	4.6				C5	Portable Heater	1.4 (10)

Motors/Engines tblMOTORS

								Nameplate Data						
Comp ID	Item #	Area ID	Process/Application Type	Service Type	Control Type	Drive Type	# of motors	Size (hp)	RPM	NEMA Encl. Type	NEMA Nom. Eff.**	Load Type	Avg Age (yrs)	Avg run hrs per week*
ShellCmpID	*Item*	*Area*	*MSDesc*	*Servic*	*Control*	*MDrive*	*Qty*	*HpSize*	*RPM*	*NEMAType*	*MEff*	*MLoad*	*Mage*	*HourWeek*

* "Avg run hrs per week" estimate is required for each motor item.

** Enter Nominal Efficiency as a % or if not available, use: **S**=Standard **H**=High-efficiency **P**=Premium-eff.

*** Avg run hrs per week for escalators\elevators is the approx # of hours that the system is being used to transport people. Estimate from business hours and approx. usage type (high/medium/low) or absolute # of hours used.

Motor Codes

Service Type	Control Type	Drive Type	NEMA Encl. Type	Load Type
P : Pump	**T** : Throttled	**AC** : AC	**O** =Open drip-proof	**C** : Constant
F : Fan/Blower	**D** : Outlet damper	**DCS** : DC w/ SCR	**T** =Totally enclosed	**V** : Variable
M: Material Handling/conveyor	**M** : Mechanical VSD	**DCM** : DC w/ MGS	fan-cooled	**I** : Intermittent
T : Machine Tool	**E** : Electronic VSD	**EG** : Nat gas driven	**OT** = Other	
G : Grinding/milling	**C** : Constant Speed	**FG** : Fossil driven		
E : Escalator***	**I** : Inlet vane	**SD** : Steam driven		
PE : Passenger Elevator***	**O** : Other _*ControlOther*			
FE : Freight Elevator***				
S : Separation				
O : Other __*ServiceOther*___				

Air Compressors tblAIRCOMP

Does the facility have a Leak Reduction Maintenance Program? ☐ YES ☐ NO *tblSITEINFO.ACLeakProg*

									Nameplate Data					
Comp ID	**Item #**	**Area ID**	**Description**	**Comp Type**	**Appl Type**	**Control Type**	**Drive Type**	**# of units**	**Size (hp)**	**RPM**	**NEMA Encl. Type**	**NEMA Nom. Eff.****	**Avg Age (yrs)**	**Avg run hrs per week***
ShellCmpID	*Item*	*AreaID*	*AcDesc*	*AcComp*	*AcAppl*	*Control*	*AcDrive*	*Qty*	*HPSize*	*RPM*	*NEMAType*	*AcEff*	*AcAge*	*HourWeek*

* "Avg run hrs per week" estimate is required for each air compressor item
** Enter Nominal Efficiency as a % or if not available, use: **S**=Standard **H**=High-efficiency **P**=Premium-efficiency

Air Compressor Codes

Compressor Type	Application Types	Control Type	Drive Type
RTD: Reciprocating (Two-stage, Double-acting)	**C**: Cleaning	**S**: Start/Stop	**AC**
RSD: Reciprocating (Single-stage, Double-acting)	**T**: Drives tools	**L**: Load/Unload	**DCS**: DC w/ SCR
RTS: Reciprocating (Two-stage, Single-acting)	**H**: HVAC Pneumatic	**V**: VSD Throttling	**DCM:** DC w/ MGS
RSS: Reciprocating (Single-stage, Single-acting)	**O**: Other *AcApplDesc*	**T**: Throttling	**EG**: Nat gas driven
ST: Rotary Screw, Two-stage		**O**: Other *AcCtrlDesc*	**FG**: Fossil driven
SS: Rotary Screw, Single-stage			**SD**: Steam driven
C: Centrifugal			
O: Other __*AcCompDesc*_____			

Process Equipment (Non-Motor) tblPROCESS

								Primary Fuel		Secondary Fuel			
Comp ID	Item #	Area ID	Process Equip Code	Product Produced	Boiler #	# of units	Avg Unit Capacity** kW/kBtuh	Fuel	% of Annual Btu	Fuel	% of Annual Btu	Avg Age (yrs)	Avg hrs per week*
ShellCmpID	*Item*	*AreaID*	*PProc*	*PProduct*	*PBoiler*	*Qty*	*Capacity*	*PFuel1*	*PBtu1*	*PFuel2*	*PBtu2*	*AvgAge*	*HourWeek*
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		
								E G O	%	E G O	%		

* "Avg hrs per week" estimate is required for each process equipment item.
** Specify kW for electric equipment, kBtuh for all others.

Process Equipment Codes

Heat Processing:		**Pulping:**		**Drying/Curing/Baking:**	
Direct Fired Gas Heating	DFGH	Batch Digesters	DIGST	Ovens	OVENDCB
Direct Fired Oil Heating	DFOH	Stock Refiners	STKREF	Microwave	MICRODCB
Blanchers	BLNCH	**Paper Preparation:**		Infrared	IR
Microwave	MICROHP	Pulpers	PULP	Electric Resistance	ELRES
Sterilizers	STER	Refiners	REFNR	Steam from Process Boiler	STM
Pasteurizers	PAST	Stock Mixers	STKMXR	Ultraviolet	UV
Induction Heating	INDCTHTG	**Separation and Distillation:**		Kiln	KILN
Induction Melting	INDCTMLT	Thermal Distillation Column	THRMDC	Radio Frequency	RFDCB
Radio Frequency	RFHP	Freeze Concentration	FRZCON	Electron Beam	EBDCB
Indirect Resistance	INDIRES	Vacuum Condensation	VACCON	**Refrigeration/Freezing:**	
Direct Resistance	DIRRES	Membrane Separation	MEMSEP	Forced Air Cooling	FORAIR
Encased Resistance	ENCRES	Pressure Swing Absorption	PSA	Blast Freezing	BLSTFRZ
Plasma Processing	PLSMHP	Vacuum Concentration	VACCNTR	Hydrocooling	HYDRCL
Electric Arc Furnace	ELARCFRN	Ultra Filtration	ULTRAFLT	Belt Freezing	BLTFRZ
Ion Nitriding	IONNIT	Reverse Osmosis	REVOS	Plate Freezing	PLTFRZ
Laser Hardening	LASER	Evaporators	EVAP	Vacuum Cooling	VACCL
Cupola	CUPOLA	**Solid-Liquid Extraction:**		Immersion Freezing	IMMFRZ
Dehydration:		Single Stage Extractors	SSEXT	**Mixing and Emulsification:**	
Convection Dryer	CONVDR	Multi-Stage, Static Bed Extractors	MLTEXT	Pressure Homogenizers	PRSHOM
Infrared Dryer	IRDR	Continuous Moving-Bed Extractors	CONBED	Ultrasonic Emulsification Devices	ULTRAEMD
ElectricResistanceDrying	ELRESDH	**Plastic Molding:**		**Fiber Preparation:**	
Microwave Dryer	MICRODH	Injection Molding	INJMLD	Dye Tanks	DYE
Material Preparation:		Extrusion Molding	EXTMLD	**Crystallization:**	
Arc Welding	ARCWLD	Blow Molding	BLWMLD	Oil Winterization	OILWNTR
Laser Cutting	LASERCT	Rotational Molding	ROTMLD	Freeze Concentration	FRZCONC
Water Jet Cutting	WTRJET	Compression Molding	COMPMLD	Ice Crystallization	ICECRYS
Electron Beam Welding	EBWMP	Thermoforming	THRMFRM	Lactose Crystallization	LACCRYS
Laser Welding	LASERWLD			Fat Crystallization	FATCRYS
Plasma Cutting	PLSMMP	**Washing and Drying:**		**Screening and Separation:**	
Filtration:		Rotary Kilns	ROTKLN	Froth Floatation Baths	FRTH
Pressure Filters	PRESFLT	Cascade Dryer	CASCDR	**Exploration and Drilling:**	
Vacuum Filters	VACFLTR	Fluidized Bed Dryer	FBD	Engine Driven Boring Equipment	ENGBOR
Finishing:		Suspension Dryer	SUSPDR	**Emission Reduction Equipment:**	
Ovens	OVENF			Standard Thermal Oxidizer	STHOX
Electroplating	ELPLT			Recuperative Thermal Oxidizer	RTHOX
Hot Dip Galvanizing	HDG			OTHER	OT

General Comments tblCOMMENTS

CompID	Form #	Item #	Comments
ShellCmpID	*FormNum*	*ItemNum*	*Comments*

Site Photo Log

tblPHOTOLOG*

Record site photo information here, including the PhotoID (ie., digital file name) and a brief description of the photo where needed. Refer to the training manual for protocols on what photos to take and photo/file naming conventions..

Item #	PhotoID	Description/Comments
Item	*PhotoID*	*Description*
2		
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8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
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30		

* *"Path" is an additional field included in this table, the value of which provides the path to where the photos are located.*

Short-Term Metered Data tblSTMETER

Installation date/time __*InstDate*____ **Extraction date/time** ____*ExtrDate*____**Duration (days)** ___*DaysMetered*__

Item #	End Use / Type L=Ltg F=Fan	Logger ID#	Survey Form System Reference		# of Contrid Fixtures – or - % Cond	Location / Notes / Comments
			Comp ID	Item#s - or – System Ltr / #		
ItemNum	*MtrEndUse*	*LoggerID*	*CompID*	*EquipItem*	*NumControl*	*Location*
1	L F					
2	L F					
3	L F					
4	L F					
5	L F					
6	L F					

Additional Comments:

tblCOMMENT2.Form39