U.S. Department of Energy
Commercial Building Energy Asset Score 2013 Pilot

Data Collection Form

Version: 6/14/2013

ALL SHADED FIELDS ARE REQUIRED

Building Name:	
Data collected by:	
Email, phone:	
Date of Data Collection:	

HOW TO USE THIS DATA COLLECTION FORM

This form is intended to facilitate your data collection. The Energy Asset Scoring Tool uses the "block" concept to simplify your building geometry. Most buildings can be scored as one block unless at least one of the follow situations applies:

a. The building has sections with different numbers of floors

   Example: A portion of the building is 3 story and the other portion is 10 story.

b. Different parts of the building are served by different HVAC systems

   Example: A portion of the building uses a local chiller, the other portion uses packaged DX units.

c. The building is mixed-use

   Example: A portion of the building is retail, the other portion is office.

d. The building footprint cannot be simplified by the basic footprint shapes, such as rectangular, L-, T-, or U-shapes.

If your building contains more than one block, some data may need to be collected and recorded for each block. Make additional copies of the related sections of this data collection form as needed. See each section for detailed instructions.

REQUIRED DATA:
In order to generate a score for the building, all fields shaded in green are required. Users are encouraged to provide information where available for the other data fields as well.

OPTIONAL DATA:
The asset scoring tool can estimate a building's thermal properties based on other information provided (e.g., roof type, floor type, wall type, building location, and year of construction). If the roof, floor, or walls have been altered since the year of construction, it is preferable to provide additional relevant information in order to get credit for potentially improved envelope thermal performance.

The asset scoring tool can also estimate equipment capacity and efficiency (heating, cooling, fans, service hot water) based on other information provided (e.g. equipment type, year of manufacture, number of pieces of equipment, and building location). If year of manufacture is not specified by users, it is assumed that the vintage of the equipment is the same as that of the building.

General Building Information

ALL SHADED FIELDS ARE REQUIRED

Building type

For mixed-use buildings, choose as many fields as apply.

If this building includes use types not listed here, exclude that portion of the building when entering data.

Choose "Office" for a college/university building containing mostly offices. Choose "Library" for a college/university

- ☐ City Hall
- ☐ Community Center
- ☐ Courthouse
- ☐ Education (K-12 School, College/ University, Training Facilities)
- ☐ Library
- ☐ Lodging
- ☐ Medical Office
- ☐ Multi-family (4 stories +)
- ☐ Office
- ☐ Post Office
- ☐ Retail
- ☐ Senior Center
- ☐ Warehouse — Non-refrigerated

Year completed

YEAR IN WHICH THE BUILDING WAS COMPLETED

Building location

STREET

CITY	STATE	POSTAL CODE

Gross floor area

ft²

This refers to the total square footage of the building, with the exception of parking areas which should be excluded. To calculate gross floor area, use the external dimensions of the enclosing fixed walls of the buildings, including structures, partitions, corridors, stairs, and conditioned below-grade spaces. Atriums should only include the base floor area that it occupies.

For mixed-use buildings that include a space not listed above, exclude the square footage of that space.

Footprint shape

Select one or more of the following options in combination to approximate the shape of the building's footprint.

- ☐ Rectangular or square
- ☐ L-Shape
- ☐ H-Shape
- ☐ T-Shape
- ☐ U-Shape

Footprint dimensions

See attached Footprint and Window Layout sheet to assist in recording data.

Orientation

CLOCKWISE DEGREE FROM NORTH

Orientation of the main long axis. North=0, North East=45, East=90, South East=120, South=180, South West=225, West=270, North West=315.

Number of floors *(above ground)*

For mixed-use buildings that include a use type not listed above (e.g., restaurant, cafeteria), exclude any floors that are used exclusively for that purpose.

Number of floors *(below ground)*

Average floor-to-ceiling height

ft

Average floor-to-floor height

ft

Construction Properties

ALL SHADED FIELDS ARE REQUIRED

Make additional copies of this page if your building has more than one type of roof or floor.

Roof type

Choose all applicable roof types.

- ☐ Built-up/EPDM with Concrete Deck
- ☐ Built-up/EPDM with Metal Deck
- ☐ Built-up/EPDM with Wood Deck
- ☐ Metal Surfacing
- ☐ Shingles/Shakes

Roof insulation and assembly

If the roof has been altered since the year of building construction, users are encouraged to provide one of the following data points to get credit for improved envelope thermal performance. ***Fill in ONLY ONE*** *of the following three data fields. If the building has multiple roof types, record each type separately.*

ROOF INSULATION R-VALUE °F•ft²•h/Btu

OR

ROOF INSULATION THICKNESS in

OR

ROOF ASSEMBLY U-VALUE Btu/°F•ft²•h

Floor

Choose all applicable floor types.

- ☐ Concrete (over Unconditioned Space)
- ☐ Slab on Grade
- ☐ Steel Joist
- ☐ Wood Frame

Floor insulation and assembly

If the floor insulation or assembly has been altered since the year of building construction, users are encouraged to provide one of the following data points to get credit for improved envelope thermal performance. ***Fill in ONLY ONE*** *of the following three fields.*

FLOOR INSULATION R-VALUE °F•ft²•h/Btu

OR

FLOOR INSULATION THICKNESS in

OR

FLOOR ASSEMBLY U-VALUE Btu/°F•ft²•h

Applicable for slab on grade ONLY

SLAB ON GRADE INSULATION TYPE

- ☐ No insulation
- ☐ Vertical (Perimeter) insulation

The scoring tool allows you to edit wall and window properties by each wall surface. Make additional copies of the following section for the wall surface that has a very different construction type, window type, or window-to-wall ratio from other walls.

Exterior wall type

Choose all applicable wall types.

- ☐ Brick/stone on Masonry
- ☐ Brick/stone on Steel Frame
- ☐ Brick/stone on Wood Frame
- ☐ Metal Panel/Curtain Wall
- ☐ Siding on Steel Frame
- ☐ Siding on Wood Frame

Wall insulation and assembly

If the wall insulation or assembly has been altered since the year of building construction, users are encouraged to provide one of the following data points to get credit for improved envelope thermal performance. ***Fill in ONLY ONE*** *of the following three data fields If the building has multiple wall types, record each type separately.*

WALL INSULATION R-VALUE _____ °F•ft²•h/Btu

OR

WALL INSULATION THICKNESS _____ in

OR

WALL ASSEMBLY U-VALUE _____ Btu/°F•ft²•h

Window framing type

If a wall surface has various window framing types, choose predominant type in that wall.

- ☐ Wood/Vinyl/Fiberglass
- ☐ Metal
- ☐ Metal with Thermal Breaks

Window glass type

If a wall surface has various window glass types, choose predominant type in that wall.

- ☐ Single-pane
- ☐ Double-pane
- ☐ Double-pane w/ Low-E
- ☐ Triple-pane
- ☐ Triple-pane w/ Low-E

Window gas fill type

- ☐ Air
- ☐ Other

Window U-value

_____ Btu/°F•ft²•h

Window solar heat gain coefficient (SHGC)

_____ (range 0-1)

Window layout

If your building has both Continuous and Discrete windows, Choose "Various."

- ☐ Continuous
- ☐ Discrete
- ☐ Various

Window to wall ratio

Select one of the following two approaches to calculate window-to-wall ratio for the building. If the window-to-wall ratio varies by orientation, you can use the attached Footprint and Window Layout sheet to assist in recording data.

FOR "CONTINUOUS" OR "VARIOUS" WINDOW LAYOUT

WINDOW-TO-WALL RATIO _____ %

OR

FOR "DISCRETE" WINDOW LAYOUT

WIDTH OF A TYPICAL WINDOW _____ ft

HEIGHT OF A TYPICAL WINDOW _____ ft

NUMBER OF WINDOWS _____

Exterior shading type *Choose all applicable shading types. See attached Shading Diagrams for shading types and dimensions.*	☐ No shading ☐ External overhangs ☐ Vertical fins ☐ Light shelves
Overhang: Height above window	ft
Overhang: Projection	ft
Vertical fins: Fin depth	ft
Vertical fins: Distance between fins	ft
Vertical fins: Edge fin only	☐ Yes ☐ No
Light shelves: Distance from top	ft
Light shelves: Exterior protrusion	ft
Light shelves: Interior protrusion	ft
Skylight U-value	Btu/°F•ft²•h
Skylight glazing type	☐ Plastic ☐ Glass
Skylight solar heat gain coefficient (SHGC)	(range 0-1)
Skylight layout	☐ All Zones ☐ Core Only
Percent of roof area *Estimate the percent of the roof area covered in skylights.*	%

Lighting

ALL SHADED FIELDS ARE REQUIRED

Make additional copies of this page if your building has more than one type of lighting.

Lighting type

Choose all applicable lighting types.

- ☐ Compact fluorescent
- ☐ Fluorescent T5
- ☐ Fluorescent T5 - High Output
- ☐ Fluorescent T8
- ☐ Fluorescent T8 - High Efficiency
- ☐ Fluorescent T12
- ☐ High-pressure sodium
- ☐ Incandescent/Halogen
- ☐ LED
- ☐ Mercury vapor
- ☐ Metal halide

Mounting type

- ☐ Recessed
- ☐ Surface
- ☐ Pendant

Lighting power density

Select one of the following two approaches to calculate lighting power density.

OPTION 1: PERCENTAGE OF TOTAL FLOOR AREA SERVED

%

OR

OPTION 2: NUMBER OF LAMPS PER FIXTURE

OPTION 2: LAMP WATTAGE

W

OPTION 2: TOTAL NUMBER OF FIXTURES

Occupancy sensors

- ☐ Yes
- ☐ No

Daylighting sensors

- ☐ Yes
- ☐ No

HVAC

ALL SHADED FIELDS ARE REQUIRED

Thermal zone layout

- ☐ Perimeter
- ☐ Perimeter and core
- ☐ Single zone

Plant Equipment: Heating*

ALL SHADED FIELDS ARE REQUIRED

This section is ONLY for buildings with a heating plant.

Heating fuel	☐ Electricity ☐ Gas
Heating plant type	☐ District Hot Water ☐ Boiler
Boiler draft type	☐ Mechanical ☐ Other draft
Boiler distribution type	☐ Fan coil ☐ Single-zone AHU ☐ Multi-zone AHU
Number of pieces of heating equipment *Total number of equipment regardless of size.*	
Heating equipment efficiency *For multiple pieces of equipment with various efficiencies, enter the efficiency of the predominant equipment or the weighted average based on equipment size.*	INCLUDE EFFICIENCY LEVEL AND SELECT THE APPLICABLE UNIT ☐ COP ☐ % ***OR***
Year of manufacture	YEAR

If any heating equipment was installed or replaced after the building was constructed, indicate the year of manufacture. Otherwise, the asset scoring tool will assume that the year of manufacture is the same as the year in which the building was constructed. If you specify the equipment's efficiency, the year of manufacture will not be used.

Heating equipment capacity *For multiple pieces of equipment, enter the total capacity.*	KBtu/hr

* If your building has district heating or cooling, a boiler, or a chiller, you need to fill out the relevant "Plant Equipment" section(s) as well as the sections on conventional "Air-Side Equipment". Otherwise, skip the "Plant Equipment" sections and go directly to the "Air-Side Equipment" that cover conventional heating and cooling systems.

Plant Equipment: Cooling

ALL SHADED FIELDS ARE REQUIRED

This section is ONLY for buildings with a cooling plant.

Cooling plant type

Required only for buildings with a cooling plant.

- ☐ Chiller
- ☐ District Chilled Water

Chiller compressor type

- ☐ Reciprocating
- ☐ Screw/scroll
- ☐ Centrifugal

Chiller distribution type

- ☐ Single Zone AHU
- ☐ Multi Zone AHU
- ☐ Fan coil

Chiller condenser type

- ☐ Air
- ☐ Water

Number of pieces of cooling equipment

Total number of equipment regardless of size.

Cooling equipment efficiency

For multiple pieces of equipment with various efficiencies, enter the efficiency of the predominant equipment or the weighted average based on equipment size.

INCLUDE EFFICIENCY LEVEL AND SELECT THE APPLICABLE UNIT

☐ COP ☐ EER ☐ kW/ton

OR

Year of manufacture

YEAR

If any cooling plant equipment was installed or replaced after the building was constructed, indicate the year of manufacture. Otherwise, the asset scoring tool will assume that the year of manufacture is the same as the year in which the building was constructed. If you specify the equipment's efficiency, the year of manufacture will not be used.

Cooling equipment capacity

For multiple pieces of equipment, enter the total capacity.

tons

Equipment: Heating

ALL SHADED FIELDS ARE REQUIRED

Heating fuel

- ☐ Electricity
- ☐ Gas

Heating type

Choose all applicable heating types.

- ☐ No heating
- ☐ Central furnace
- ☐ Heat pump

Distribution type

- ☐ Radiators
- ☐ Single-zone AHU
- ☐ Multi-zone AHU

Heat pump sink/source type

- ☐ Air

Number of pieces of heating equipment

Total number of equipment regardless of size.

Heating equipment efficiency

For multiple pieces of equipment with various efficiencies, enter the efficiency of the predominant equipment or the weighted average based on equipment size.

INCLUDE EFFICIENCY LEVEL AND SELECT THE APPLICABLE UNIT

☐ COP ☐ %

OR

Year of manufacture

YEAR

If any heating equipment was installed or replaced after the building was constructed, indicate the year of manufacture. Otherwise, the asset scoring tool will assume that the year of manufacture is the same as the year in which the building was constructed. If you specify the equipment's efficiency, the year of manufacture will not be used.

Heating equipment capacity

For multiple pieces of equipment, enter the total capacity.

MMBtu/hr

Equipment: Cooling

ALL SHADED FIELDS ARE REQUIRED

Cooling type

Choose all applicable heating types.

- ☐ No cooling
- ☐ Terminal DX
- ☐ Central DX

Number of pieces of cooling equipment

Total number of equipment regardless of size.

Cooling equipment efficiency

For multiple pieces of equipment with various efficiencies, enter the efficiency of the predominant equipment or the weighted average based on equipment size.

SELECT THE APPLICABLE UNIT

☐ COP ☐ EER ☐ kW/ton

OR

Year of manufacture

YEAR

If any cooling equipment was installed or replaced after the building was constructed, indicate the year of manufacture. Otherwise, the asset scoring tool will assume that the year of manufacture is the same as the year in which the building was constructed. If you specify the equipment's efficiency, the year of manufacture will not be used.

Cooling equipment capacity

For multiple pieces of equipment, enter the total capacity.

tons

Fan Systems

ALL SHADED FIELDS ARE REQUIRED

Fan motor efficiency

%

Fan efficiency

%

Fan control

- ☐ Constant Air Volume
- ☐ Variable Air Volume

Economizer

- ☐ Yes
- ☐ No

Terminal Systems

ALL SHADED FIELDS ARE REQUIRED

Terminal type

Applicable ONLY for systems with Multi-zone AHU

- ☐ VAV with Reheat
- ☐ Powered Induction Unit

Service Hot Water

ALL SHADED FIELDS ARE REQUIRED

Fuel type	☐ Electric ☐ Gas
Use of heat pump equipment	☐ Yes ☐ No
Distribution type	☐ Looped ☐ Distributed ☐ Instantaneous
Water heater efficiency	%
Tank volume	gallons
Tank insulation thickness	in
Tank insulation R-value	°F•ft²•h/Btu

Building Operation

ALL SHADED FIELDS ARE REQUIRED

Information about your building's operation can help inform the Scoring Tool's recommendations for energy efficiency upgrades; however, this information will not be used to calculate your building's current asset score.

Miscellaneous electric load	W/ft²		
Miscellaneous gas load	kBtu/ft²		
Opening time - closing time (weekdays)		to	
Opening time - closing time (Saturday)		to	
Opening time - closing time (Sunday)		to	
Total occupants			

Provide weighted average of full-time equivalent occupants. If this building includes use types not listed in the current version of the tool, EXCLUDE occupants associated with that portion of the building.

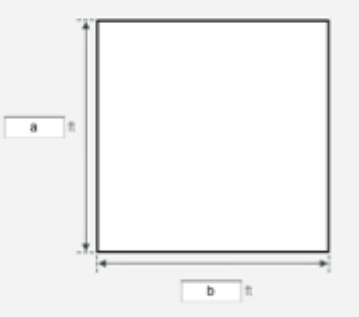
Setpoint, heating	°F
Setpoint, cooling	°F
Operating season *For "Education" use type only.*	☐ 10-Month Occupancy ☐ 12-Month Occupancy

Footprint and Window Layout

Instructions: (1) Choose applicable footprint shape and indicate footprint dimentions. (2) Mark the North orientation next to the sketch of the shape selected. (3) Record window-to-wall ratio for each wall on each wall of the shapes selected. If window-to-wall ratios are equivalent on all sides, you only need to record this information once.

If your building contains more than one block, make additional copies as needed.

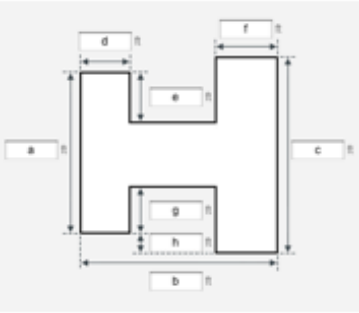
Rectangular



Footprint dimensions

a =	ft
b =	ft

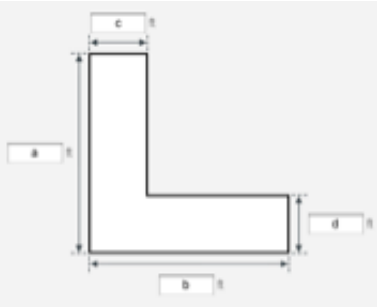
'H' Shape



Footprint dimensions

a =	ft
b =	ft
c =	ft
d =	ft
e =	ft
f =	ft
g =	ft
h =	ft

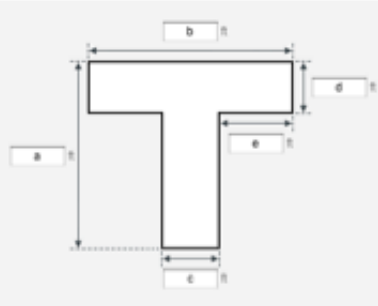
L-Shape



Footprint dimensions

a =	ft
b =	ft
c =	ft
d =	ft

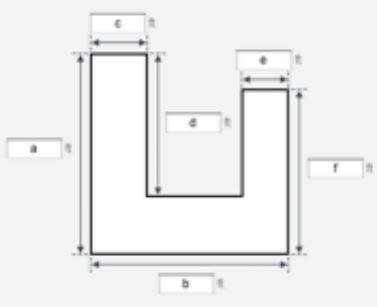
T-Shape



Footprint dimensions

a =	ft
b =	ft
c =	ft
d =	ft
e =	ft

U-Shape



Footprint dimensions

a =	ft
b =	ft
c =	ft
d =	ft
e =	ft
f =	ft

Shading Diagrams

External Overhang	Vertical Fins	Light Shelves