

# Appendix 1 – Default Occupancy Counts

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Appendix 1					

Due to the speculative nature of LEED for core and shell projects, the project team may not know the occupant count during the LEED certification process. Because of this, determining and demonstrating compliance with some of the credits can prove challenging and complex. For projects that do not know the final occupant count, a default table has been developed.

The issue of occupant counts is applicable to a number of credits. There are three general areas where it is relevant:

- 1) The requirements for Alternative Transportation including bike racks, and parking requirements
- 2) Default numbers needed to determine water use reduction
- 3) Default numbers needed for Mechanical System Design and Energy Modeling

Core and shell projects that do not have final occupancy counts must utilize the default occupancy counts provided in this Appendix. Projects that DO know the tenant occupancy must use the actual numbers, as long as the gross square foot per employee is not greater than that in the default occupancy count table. If code requirements are less than those in the table, this is acceptable. Default occupancy counts are provided for typical core and shell project types. Project types and circumstances not covered in this Appendix may be considered on a case-by-case basis.

	Gross sf per full time employee			
	General Office	Retail	Medical Office Bldg	R&D -Lab Bldg
SSc 4.2 For bike racks	250	550	225	400
SSc 4.3 For parking requirement	250	550	225	400
SSc 4.4 For car pool requirement	250	550	225	400
WEc 3.1 For water use	(1)*	(1)*	(1)*	(1)*
WEc 3.2 For water use	(1)*	(1)*	(1)*	(1)*
EAc 1 For energy model	250	550	225	400
EQc 1 For ventilation requirements	250	550	225	400
EQc 1 For ventilation requirements	250	550	225	400
EQc 2 For ventilation requirements	250	550	225	400
EQc 6 For individual controls	250	550	225	400
EQc 7 For human contribution to humidity	250	550	225	400

\*(1) Code or actual, whichever is less

## Appendix 2 – Core and Shell Energy Modeling Guidelines

These guidelines are intended to ensure that projects in different markets with different project teams are approaching the energy modeling requirements in a similar manner, and that a minimum benchmark for energy optimization is established.

### 1. Create the ASHRAE 90.1-2004 Proposed Building model and Baseline Building model

- 1.1 Follow the ASHRAE 90.1-2004 Building Performance Rating Method. This is a whole building model inclusive of both core and shell, and tenant space scope. The following describes the prescriptive requirements for developing the whole building modeling of both the known core and shell work and unknown tenant space development.
- 1.2 Tenant spaces are defined as meeting all the following conditions:
  - 1.2.1 Components exclusively serve the tenant space;
  - 1.2.2 Components specifically designed for the tenant space;
  - 1.2.3 Energy using components are metered and apportioned and/or billed to the tenant;
  - 1.2.4 The tenant will pay for the components.
- 1.3 The Core and Shell building is defined as parts of the building that are not tenant space.

### 2. Proposed Building Model

- 2.1 Core and Shell Building
  - 2.1.1 HVAC Systems
    - 2.1.1.1 Model the building system as described in the design documents.
      - If the HVAC system is not yet designed, use the same HVAC system as the baseline model.
  - 2.1.2 Building Envelope
    - 2.1.2.1 Model the building envelope as shown on the architectural drawings.
  - 2.1.3 Lighting
    - 2.1.3.1 Model the lighting power as shown in the design documents for the core and shell spaces.
- 2.2 Tenant Spaces
  - 2.2.1 Lighting
    - 2.2.1.1 Model separate electric meters for the lighting in the core building and the tenant spaces.
    - 2.2.1.2 Choose a space type classification for the building spaces. Use lighting levels shown in chart 9.3.1.2 of ASHRAE 90.1-2004 for the space type use classification.

- If the tenant lighting is designed and installed as part of the core and shell work, the project team may model the designed or installed lighting systems.

### 2.2.2 Receptacle and Other Loads

- 2.2.2.1 Model separate meters for tenant plug loads and process loads.
- 2.2.2.2 Use the following values to model tenant plug loads or provide documentation for the modeled loads (see the Process Energy section of EA Credit 1):
  - 2.2.2.3 Computer intensive offices
    - 2.0 W/sq.ft.
  - 2.2.2.4 General office areas
    - 1.5 W/sq.ft.
  - 2.2.2.5 Large conference areas
    - 1.0 W/sq.ft.
  - 2.2.2.6 Corridors
    - 0 W/sq.ft.
  - 2.2.2.7 Server/computer rooms
    - 50 W/sq.ft.
  - 2.2.2.8 Other uses
    - Use diversity in calculations

## 3. Baseline Building Model

### 3.1 Core and Shell Building

- 3.1.1 HVAC System
  - 3.1.1.1 Model the baseline building HVAC system determined from Table G3.1.1A in ASHRAE 90.1-2004.
- 3.1.2 Building Envelope
  - 3.1.2.1 Comply with the prescriptive requirements of ASHRAE 90.1-2004.
- 3.1.3 Lighting
  - 3.1.3.1 Model the lighting power in the core and shell areas as determined by the space type classification in chart 9.6.1 of ASHRAE 90.1-2004.

### 3.2 Tenant Spaces

- 3.2.1 Lighting
  - 3.2.1.1 Model separate electric meters for the lighting in the core building and the tenant spaces.
  - 3.2.1.2 Use the same lighting power as modeled in the proposed building.
- 3.2.2 Receptacle and Other Loads

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3.2.2.1 Model separate meters for tenant receptacle loads and process loads.

3.2.2.2 Use the same values for receptacle loads as used in the proposed building.

#### **4. Perform Energy Simulation of Proposed Building and Baseline Building**

3.1 Simulate building performance for an entire year.

#### **5. Compare Annual Energy Costs of Proposed Building and Baseline Building**

5.1 From the simulation, determine the annual energy costs of the budget building and design building.

5.2 Verify that 25% of the overall energy cost is process load.

5.3 Determine the percentage savings for annual energy costs.

# Appendix 3 – LEED-CS Project Scope Checklist

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The LEED-CS Project Scope Checklist is intended as a tool for projects to identify and document the core and shell project scope. This document must be submitted with the project certification submittal.

Project Name \_\_\_\_\_  
Project Size (Gross sf) \_\_\_\_\_

Use Type	Occupancy (Gross sf Per Employee)	Percentage of Total Bldg.
General Office		
Retail		
Medical Office Bldg.		
R & D – Lab Bldg.		

Building Space	Building System	Core and Shell Scope
Main Lobby	Floor finishes	
	Wall finishes	
	Ceiling finishes	
	Air terminal equipment	
	Air inlets and outlets	
	Light fixtures	
Secondary Lobby	Lighting controls	
	Floor finishes	
	Wall finishes	
	Ceiling finishes	
	Air terminal equipment	
	Air inlets and outlets	
Main Corridor	Light fixtures	
	Lighting controls	
	Floor finishes	
	Wall finishes	
	Ceiling finishes	
	Air terminal equipment	
Elevator Lobbies	Air inlets and outlets	
	Light fixtures	
	Lighting controls	
	Floor finishes	
	Wall finishes	
	Ceiling finishes	
Secondary Corridors	Air terminal equipment	
	Air inlets and outlets	
	Light fixtures	
	Lighting controls	
	Floor finishes	
	Wall finishes	

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<b>Building Space</b>	<b>Building System</b>	<b>Core and Shell Scope</b>
Interior Build outs	Floor finishes	
	Wall finishes	
	Ceiling finishes	
	Air terminal equipment Air inlets and outlets	
	Light fixtures	
	Lighting controls	
HVAC	AHUs/RTUs/Air supply equipment	
	Chillers	
	Cooling tower	
	Boilers	
	Primary ductwork	
Electrical	Electrical panels	
	Switchgear	
	Bus duct	