

### DEFAULT OCCUPANCY COUNTS

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

Core & Shell projects that do not have final occupancy counts must utilize the default occupancy counts provided in this appendix. Projects that 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 is required gross square foot per occupant is less than those in the table, this is also acceptable. Default occupancy counts are provided for typical core and shell project types. If the buildings and circumstances are not covered in this appendix, provide documentation for comparable buildings demonstrating average gross square foot per occupant when estimating the core and shell’s building occupancy.

**Table 1.** Default Occupancy Numbers

|   | Gross Square Feet per Occupant |            |
|---|--------------------------------|------------|
|   | Employees                      | Transients |
| General office                            | 250                            | 0          |
| Retail, general                           | 550                            | 130        |
| Retail or service (e.g., financial, auto) | 600                            | 130        |
| Restaurant                                | 435                            | 95         |
| Grocery store                             | 550                            | 115        |
| Medical office                            | 225                            | 330        |
| R&D or laboratory                         | 400                            | 0          |
| Warehouse, distribution                   | 2,500                          | 0          |
| Warehouse, storage                        | 20,000                         | 0          |
| Hotel                                     | 1,500                          | 700        |
| Educational, daycare                      | 630                            | 105        |
| Educational, K–12                         | 1,300                          | 140        |
| Educational, postsecondary                | 2,100                          | 150        |

Sources:

- ANSI/ASHRAE/IESNA Standard 90.1–2004 (Atlanta, GA, 2004).
- 2001 Uniform Plumbing Code (Los Angeles, CA)
- California Public Utilities Commission, 2004–2005 Database for Energy Efficiency Resources (DEER) Update Study (2008).
- California State University, Capital Planning, Design and Construction Section VI, Standards for Campus Development Programs ( Long Beach, CA, 2002).
- City of Boulder Planning Department, Projecting Future Employment—How Much Space per Person (Boulder, 2002).
- Metro, 1999 Employment Density Study (Portland, OR 1999).
- American Hotel and Lodging Association, Lodging Industry Profile Washington, DC, 2008.
- LEED for Core & Shell Core Committee, personal communication (2003 - 2006).
- LEED for Retail Core Committee, personal communication (2007)
- OWP/P, Medical Office Building Project Averages (Chicago, 2008).
- OWP/P, University Master Plan Projects (Chicago, 2008).
- U.S. General Services Administration, Childcare Center Design Guide (Washington, DC,2003).

## CS APPENDIX 1

The figures above may be used to determine occupancy for the following credits:

- SS Credit 4.2: Alternative Transportation, Bicycle Storage and Changing Rooms
- SS Credit 4.4: Alternative Transportation—Parking Capacity
- WE Prerequisite 1: Water Use Reduction
- WE Credit 2: Innovative Wastewater Technologies
- WE Credit 3: Water Use Reduction
- EA Prerequisite 2: Minimum Energy Performance
- EA Credit 1: Optimized Energy Performance
- IEQ Prerequisite 1: Minimum Indoor Air Quality Performance
- IEQ Credit 1: Outdoor Air Delivery Monitoring
- IEQ Credit 2: Increased Ventilation
- IEQ Credit 6: Controllability of Systems—Thermal Comfort
- IEQ Credit 7: Thermal Comfort—Design
- IEQ Credit 8: Daylight and Views

The defaults provided above are based on gross square foot per occupant and not net or leasable square foot per occupant. Gross square footage is defined as the sum of all areas on all floors of a building included within the outside faces of the exterior wall including all floor penetrations that connect one floor to another. This can be determined by taking the building foot print and multiplying it by the number of floors in the building. Projects which contain underground and/or structured parking, may exclude that area from the gross square footage used for the calculation. Other spaces such as common areas, mechanical spaces, and circulation should be included in the gross square footage of the building.

### Determining FTE Occupants

If the occupancy count for full-time equivalents (FTEs) is not known, calculate the default occupancy using Equation 1. If the tenant occupancy is known, calculate the FTE for both full- and part-time employees, assuming that an 8-hour occupant has a FTE value of 1.0; part-time occupants have a FTE value based on their hours per day divided by the standard occupancy period (typically 8 hours; other durations may be used if appropriate). Use Equation 2.

#### Equation 1

$$\text{FTE Occupants} = \frac{\text{Building Gross Square Feet}}{\text{Gross Square Feet per FTE}}$$

#### Equation 2

$$\text{FTE Occupants} = \frac{\text{Occupant Hours}}{8 \text{ Hours}}$$

### EXAMPLE

A mixed-used retail and commercial office building of 620,000 gross square feet has a single-shift occupancy. The transient occupant numbers used below are taken from the default data in Table 1.

Step 1. Determine the area for each occupancy type in the building, and then the gross square feet per FTE and transient occupants.

**Table 2.** Sample Calculations for Area per Occupancy Type

| Occupancy Type    | Area (sf) |         |                        |
|-------------------|-----------|---------|------------------------|
|                   | Total     | Per FTE | Per Transient Occupant |
| Commercial office | 550,000   | 250     | 0                      |
| Retail space      | 50,000    | 550     | 130                    |
| Restaurant        | 20,000    | 225     | 95                     |
| Total Building    | 620,000   |         |                        |

**STEP 2**

Calculate the FTE occupancy and transient occupancy for each occupancy type.

**FTE Occupants**

Commercial:  $\frac{550,000}{250} = 2,200$

Retail space:  $\frac{50,000}{550} = 90.9, \text{ or } 91$

Restaurant:  $\frac{20,000}{225} = 88.8, \text{ or } 89$

**Transient Occupants**

Retail space:  $\frac{50,000}{130} = 384.6, \text{ or } 385$

Restaurant:  $\frac{20,000}{95} = 211$

**STEP 3**

Add the FTE and transient occupants for each space to determine whole building occupancy.

|               |       |   |     |        |
|---------------|-------|---|-----|--------|
| Commercial:   | 2,200 | + | 0   |        |
| Retail space: | 91    | + | 385 |        |
| Restaurant:   | 89    | + | 211 |        |
| Total         | 2,380 | + | 596 | = 2976 |