

§ 434.515

power shall not be adjusted by the Power Adjustment Factors listed in Table 514.1.

TABLE 514.1—POWER ADJUSTMENT FACTOR (PAF)

Automatic control device(s)	Standard PAF
(1) Occupancy Sensor	0.30
(2) Daylight Sensing Continuous Dimming	0.30
(3) Daylight Sensing Multiple Step Dimming	0.20
(4) Daylight Sensing On/Off	0.10
(5) Lumen Maintenance	0.10

514.2 Table 513.2.b establishes default assumptions for the percentage of the lighting load switched-on in each Prototype or Reference Building by hour of the day. These default assumptions can be changed when calculating the Energy Cost Budget to provide, for example, a 12-hour rather than an 8-hour workday.

§ 434.515 Receptacles.

515.1 Receptacle loads and profiles are default assumptions. The same assumptions shall be made in calculating Design Energy Consumption as were used in calculating the Energy Cost Budget.

515.2 Receptacle loads include all general service loads that are typical in a building. These loads exclude any process electrical usage and HVAC primary or auxiliary electrical usage. Table 515.2, Receptacle Power Densities, establishes the density, in W/ft², to be used for each building type. The receptacle energy profiles shall be the same as the lighting energy profiles in Table 513.2.b. This profile establishes the percentage of the receptacle load that is switched on by hour of the day and by building type.

TABLE 515.2—RECEPTACLE POWER DENSITIES

Building type	W/ft ² of conditioned floor area
Assembly	0.25
Office	0.75
Retail	0.25
Warehouse	0.1
School	0.5
Hotel/Motel	0.25
Restaurant	0.1
Health	1.0
Multi-family High Rise Residential.	

Included in Lights and Equipment portions of Tables 512.2 a and b.

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§ 434.516 Building exterior envelope.

516.1 *Insulation and Glazing.* The insulation and glazing characteristics of the Prototype and Reference Building envelope shall be determined by using the first column under “Base Case”, with no assumed overhangs, for the appropriate Alternate Component Tables (ACP) in Table 402.4.1.2, as defined by climate range. The insulation and glazing characteristics from this ACP are prescribed assumptions for Prototype and Reference Buildings for calculating the Energy Cost Budget. In calculating the Design Energy Consumption of the Proposed Design, the envelope characteristics of the Proposed Design shall be used.

516.2 *Infiltration.* For Prototype and Reference Buildings, the infiltration assumptions in subsection 516.2.1 shall be prescribed assumptions for calculating the Energy Cost Budget and default assumptions for the Design Energy Consumption. Infiltration shall impact perimeter zones only.

516.2.1 When the HVAC system is switched “on,” no infiltration shall be assumed. When the HVAC system is switched “off,” the infiltration rate for buildings with or without operable windows shall be assumed to be 0.038 cfm/ft² of gross exterior wall. Hotels/motels and multi-family high-rise residential buildings shall have infiltration rates of 0.038 cfm/ft² of gross exterior wall area at all times.

516.3 *Envelope and Ground Absorptivities.* For Prototype and Reference Buildings, absorptivity assumptions shall be prescribed assumptions for computing the Energy Cost Budget and default assumptions for computing the Design Energy Consumption. The solar absorptivity of opaque elements of the building envelope is assumed to be 70%. The solar absorptivity of ground surfaces is assumed to be 80% (20% reflectivity).

516.4 *Window Management.* For the Prototype and Reference Building, window management drapery assumptions shall be prescribed assumptions for setting the Energy Cost Budget. No draperies shall be the default assumption for computing the Design Energy Consumption. Glazing is assumed to be internally shaded by medium-weight draperies, closed one-half time. The

draperies shall be modeled by assuming that one-half the area in each zone is draped and one-half is not. If manually-operated draperies, shades, or blinds are to be used in the Proposed Design, the Design Energy Consumption shall be calculated by assuming they are effective over one-half the glazing area in each zone.

516.5 *Shading.* For Prototype and Reference buildings and the Proposed Design, shading by permanent structures, terrain, and vegetation shall be taken into account for computing energy consumption, whether or not these features are located on the building site. A permanent fixture is one that is likely to remain for the life of the Proposed Design.

§434.517 HVAC systems and equipment.

517.1 The specifications and requirements for the HVAC systems of the Prototype and Reference Buildings shall be those in Table 517.1.1, HVAC Systems for Prototype and Reference Buildings. For the calculation of the Design Energy Consumption, the HVAC systems and equipment of the Proposed Design shall be used.

517.2 The systems and types of energy presented in Table 517.1.1 are assumptions for calculating the Energy Cost Budget. They are not requirements for either systems or the type of energy to be used in the Proposed Building or for the calculation of the Design Energy Cost.

TABLE 517.1.1—HVAC SYSTEMS OF PROTOTYPE AND REFERENCE BUILDINGS^{1,2}

Building/space occupancy	System No. (Table 517.4.1)	Remarks (Table 517.4.1)
Assembly:		
a. Churches (any size)	1	
b. ≤50,000 ft ² or ≤3 floors	1 or 3	Note 1.
c. >50,000 ft ² or >3 floors	3	
Office:		
a. ≤20,000 ft ²	1	
b. ≤50,000 ft ² and either ≤3 floors or ≤75,000 ft ²	4	
c. >75,000 ft ² or >3 floors	5	
Retail:		
a. ≤50,000 ft ²	1 or 3	Note 1.
b. >50,000 ft ²	4 or 5	Note 1.
Warehouse	1	Note 1.
School:		
a. ≤75,000 ft ² or ≤3 floors	1	
b. >75,000 ft ² or >3 floors	3	
Hotel/Motel:		
a. ≤3 stories	2 or 7	Note 5, 7.
b. >3 stories	6	Note 6.
Restaurant	1 or 3	Note 1.
Health:		
a. Nursing Home (any size)	2 or 7	Note 7.
b. ≤15,000 ft ²	1	
c. <15,000 ft ² or ≤50,000 ft ²	4	Note 2.
d. >50,000 ft ²	5	Note 2, 3.
Multi-family High Rise Residential >3 stories	7	

¹ Space and Service Water Heating budget calculations shall be made using both electricity and natural gas. The Energy Cost Budget shall be the lower of these two calculations. If natural gas is not available at the rate, electricity and #2 fuel oil shall be used for the budget calculations.

² The system and energy types presented in this Table are not intended as requirements or recommendations for the proposed design. Floor areas below are the total conditioned floor areas for the listed occupancy type in the building. The number of floors indicated below is the total number of occupied floors for the listed occupancy type.

517.3 *HVAC Zones.* HVAC zones for calculating the Energy Cost Budget of the Prototype or Reference Building shall consist of at least four perimeter and one interior zones per floor. Prototype Buildings shall have one perimeter zone facing each cardinal direction. The perimeter zones of Prototype and Reference Buildings shall be 15 ft

in width, or one-third the narrow dimension of the building, when this dimension is between 30 ft and 45 ft inclusive, or one-half the narrow dimension of the building when this dimension is less than 30 ft. Zoning requirements shall be a default assumption for calculating the Energy Cost Budget. For multi-family high-rise residential