



**BSR/ASHRAE/IES Addendum al
to ANSI/ASHRAE/IES Standard 90.1-2019**

Public Review Draft

Proposed Addendum al to Standard 90.1-2019, Energy Standard for Buildings Except Low-Rise Residential Buildings

**First Public Review (August 2021)
(Draft Shows Proposed Changes to Current Standard)**

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(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

This addendum allows for an alternate compliance method. Currently users can opt to use one of three prescription options or a modeling-based method to demonstrate lighting compliance. This would be an alternate option that uses elements of the space-by-space method as a reference case, but users could comply with the design via a performance method and not use all of the prescriptive requirements within Chapter 9.

This addendum creates an optional performance path in the standard designed to provide increased flexibility and therefore was not subjected to cost effectiveness analysis.

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]

Addendum al to 90.1-2019

Modify the standard as follows (IP and SI Units)

3. Definitions

[...]

lighting control zone: A designation, used when calculating the proposed lighting system performance in accordance with Normative Appendix L, of one or more luminaires within a single interior space or subspace controlled by one or more lighting controls or one or more luminaires lighting an exterior area or surface controlled by one or more lighting controls.

[...]

proposed lighting system: The combination of luminaires and lighting controls included in the construction documents.

proposed lighting system performance: The annual lighting site energy in kWh of lighting systems calculated for a proposed lighting system in accordance with Section 9.6 and Normative Appendix L.

[...]

reference lighting system performance: The annual lighting site energy in kWh of a lighting system design intended for use as a reference case when using Lighting System Performance as an alternate path for minimum standard

compliance of *lighting systems* in accordance with Section 4.2.2.2.

[...]

Note to Reviewers: The numbering of Section 9.6 assumes that the current Section 9.6 in 90.1-2019 has been moved into Section 9.5.2 as a Prescriptive Requirement. That change has been proposed under a separate ASHRAE change proposal – Addendum ad. The Space by Space Lighting Table reference to Table 9.6.1 changes to Table 9.5.2.1 under that proposal.

9.6 Alternate Compliance Path

9.6.1 Lighting System Performance

The proposed lighting system complies with the standard if a

- a. the proposed lighting system satisfies the provisions of Sections 9.1, 9.4, 9.7, 9.8, and 9.9 and
- b. the proposed lighting system performance is less than or equal to the reference lighting system performance.

9.1.6.1 Existing Buildings

All components of the proposed lighting system shown on architectural drawings or installed in existing buildings shall be modeled when calculating the proposed lighting system performance.

9.1.6.2 Trade-Offs Limited to Building Permit

When the building permit being sought applies to less than the whole building, parameters relating to unmodified existing conditions or to future building components shall be identical for both the proposed lighting system performance and the reference lighting system performance. Future building components shall meet the prescriptive requirements of Section 9.5.2.

9.1.6.3 Performance and Reference Designs

The proposed lighting system performance and reference lighting system performance shall be calculated in accordance with Section 9.6.2 using the procedures of Normative Appendix L.

9.6.2 Proposed Lighting System Performance

Use the following steps to determine the proposed lighting system performance, in accordance with the procedures of Normative Appendix L.

9.6.2.1 Interior Lighting

- a. Determine the appropriate building type(s) of the proposed lighting system from Table 9.5.1 and the gross lighted floor area in ft² (m²) of each building type. For building types not listed, selection of a reasonably equivalent type shall be permitted.
- b. Identify all of the spaces and or subspaces in proposed lighting system based on the requirements of Section 9.5.2(a) and Section 9.5.2(b).
- c. For space types not listed, selection of the closest similar category shall be permitted.
- d. Each identified space or subspace shall be assigned to one of the building types identified in Section 9.6.2.1(a).
- e. For each lighting control zone within a space or subspace allocate the type, quantity and wattage of each installed luminaire and the associated lighting control types. The wattage of all lighting equipment shall be determined in accordance with Sections 9.1.3 and 9.1.4. Lighting controls types shall be based on Table L3.3.3-2.

9.6.2.2 Exterior Lighting

- a. Determine the exterior lighting zone from Table 9.4.2-1
- b. Identify the applicable tradable and/or nontradable surface type of each exterior building area that is design to be illuminated as permitted in Table 9.4.2-2 and determine the applicable unit (e.g., area (square feet) (square meters), length (linear feet) (linear meters), number of ATMs, etc.) of each surface. Include any exterior areas or surfaces listed as an

exception to Section 9.4.2 and indicate that those areas or surfaces are exempt.

- c. For each exterior *building* area or surface that is designed to be illuminated determine the type, quantity and wattage of each installed *luminaire* lighting that area or surface. The wattage of all lighting *equipment* shall be determined in accordance with Sections 9.1.3 and 9.1.4.

[...]

Normative Appendix L – Lighting System Performance

L1 MINIMUM INFORMATION

The following minimum information shall be specified to calculate the *proposed lighting system performance* and the *reference lighting system performance*.

L1.1 Building Information

The *building* area type and the associated *gross lighted floor area* in ft²m² of each *building* area type shall be specified. Each *building* area type shall be chosen from Table 9.5.1. The appropriate exterior lighting zone from Table 9.4.2-1 shall be specified.

L1.2 Interior Space Information

The *space* type, *gross lighted floor area* in ft² (m²) and ceiling height of shall be specified for each *space* or subspace identified in accordance with Section 9.6.2.1. Each *space* type shall be chosen from Table 9.5.2.1.

L1.2.1 For Sidelighting

The number of windows, *fenestration* head height in ft (m), total horizontal exterior *wall* length in ft (m) and total *fenestration* horizontal length in ft (m) of each *space* or subspace shall be specified. The user shall also be permitted to enter *primary sidelighted area* and *secondary sidelighted area* calculated in accordance with Section 3.

L1.2.2 For Toplighting with Skylights

The number of *skylights*, *skylight* area in ft² (m²), *skylight well* factor in ft (m) and *visible transmittance* shall be specified. The user shall also be permitted to enter the *daylighted area under skylights* calculated in accordance with Section 3.

L1.2.3 For Toplighting with Monitors

The number of rows, width in ft (m) and sill height in ft (m) of roof monitors shall be specified. The user shall also be permitted to enter the *daylighted area under roof monitors* calculated in accordance with Section 3.

L1.3 Luminaire Schedule

The *lamp* type, wattage per *luminaire*, name and description of each unique *luminaire* in the *proposed lighting system* shall be specified. Interior *luminaires* and exterior *luminaries* shall be specified in separate tables. The total watts, length, voltage, breaker amps and whether a current limiter is installed shall be specified for *luminaires* designated as line-voltage lighting track.

L1.4 Interior Space Lighting Luminaires and Controls

For each *lighting control zone* in a *space* or subspace the zone name, *luminaire* type, *luminaire* quantity and lighting control types shall be specified. Users shall specify one of the allowable interior lighting control configurations listed in Table L3.4-1.

L1.5 Exterior Area Lighting

L1.5.1 For Tradable Exterior Lighting Surfaces

The name, surface area type and area in ft² (m²) or length in ft (m) shall be specified.

L1.5.2 For Nontradable Exterior Lighting Surfaces

The name, surface area type and area in ft² (m²) or length in ft (m) shall be specified.

L1.6 Exterior Lighting Luminaires and Controls

For each tradable or nontradable exterior surface, the surface name, *luminaire* type, *luminaire* quantity or length in linear ft (m), fixture mounting height and lighting control types shall be specified. Applicable exterior lighting control types are listed in Table L3.3-2.

L2 REPORTING REQUIREMENTS

A report detailing the calculation of the *proposed lighting system performance* and *reference lighting system performance* shall contain the following information.

L2.1

Name and contact information of the entity executing the Lighting System Performance and date of report.

L2.2

Location of the *building*, including street address, climate zone, and exterior lighting zone.

L2.3

Tables summarizing the minimum information described in Section L1.

L2.4

Simulation program used to perform the simulation

L2.5

Table summarizing the calculated *proposed lighting system performance* and *reference lighting system performance* differentiated by exterior lighting and interior lighting annual lighting energy in kWh.

L3 CALCULATION GENERAL REQUIREMENTS

L3.1 Calculation Tool

The calculation tool shall be a computer-based software program. The calculation tool shall be capable of providing the calculations described in this appendix.

Informative Note

Examples of calculation tools include, but are not limited to, Microsoft Excel, Google Sheets, or custom-built software that can perform the calculations.

L3.1.1

The calculation tool shall be approved by the *authority having jurisdiction* and shall, at a minimum, have the ability to explicitly calculate the *reference lighting system performance* for interior and exterior *lighting systems* based only on the inputs for the *proposed lighting system performance*.

L3.1.2

The calculation tool shall have the ability to explicitly calculate the *proposed lighting system performance* and *reference lighting system performance* of a *proposed lighting system*.

Informative Note

Neither the *proposed lighting system performance* nor the *reference lighting system performance* are predictions of actual *energy* consumption for the *proposed lighting system* after construction. Actual experience will differ from these calculations because of variations such as occupancy and building operation.

L3.2 Compliance Calculations

The *proposed lighting system performance* and *reference lighting system performance* shall be calculated using the same

- a. Calculation tool,
- b. hours of operation, and
- c. exterior lighting zone from Table 9.4.2-1.

L3.3 General Project Requirements

L3.3.1 Building and Space Types

- a. *Building* types shall be selected from Table 9.5.1 and the associated area of each applicable type shall be determined.
- b. All interior *spaces* and subspaces, in the *proposed design*, determined in accordance with Section 9.6.2.1 shall be included in the Lighting System Performance calculation. The appropriate *space* type for each space and sub-space shall be determined from Table 9.5.2.1.
- c. Each *space* or subspace shall be assigned one of the *building* types determined in accordance with Section 9.6.2.1(a). The sum of the areas of *spaces* and/or subspaces assigned to a *building* type shall not exceed the user-defined area of that *building* type.
- d. For each *space* or subspace users shall enter the required information in Section L1.2 for each applicable daylighting type: sidelighting, toplighting with skylights and toplighting with roof monitors.
- e. For each *space* or subspace with *toplighting* via *skylights* users shall enter the required information for the *skylight effective aperture*

L3.3.2 Daylight Area

For each *space* or subspace the *daylight area* of each applicable daylighting type shall be the smaller of:

- a. The maximum *daylight area* determined in accordance with Section L3.3.2.1, or
- b. The user defined value for *daylight area* determined in accordance with Section 3, or
- c. The user-defined floor area of a *space* or subspace.

L3.3.2.1 Calculated Daylight Area

The maximum *daylight area* of each applicable daylighting type in a *space* or subspace shall be determined using Equations L3.3.2-1 through L3.3.2-6 and the following requirements:

- a. The maximum *primary sidelighted area* shall be the smaller of the values calculated using Equations L3.3.2-1 and L3.3.2-2.
- b. The maximum *secondary sidelighted area* shall be the smaller of the values calculated using Equations L3.3.2-3 and L3.3.2-4.
- c. The calculated *daylight area under skylights* shall be determined by Equation L3.3.2-5 and shall assume that there are no interior obstructions.
- d. The calculated *daylight area under roof monitors* shall be determined by Equation L3.3.2-6 and shall assume that there are no interior obstructions.

$$\underline{PSA_{MAX}} = (FL_{HOR} + NumWin \times HH) \times HH \quad (L3.3.2-1)$$

$$\underline{PSA_{MAX}} = (EWL_{HOR} + NumWin \times HH) \times HH \quad (L3.3.2-2)$$

$$\underline{SSA_{MAX}} = (FL_{HOR} + NumWin \times HH) \times HH \quad (L3.3.2-3)$$

$$\underline{SSA_{MAX}} = (EWL_{HOR} + NumWin \times HH) \times HH \quad (L3.3.2-4)$$

$$\underline{TDS_{max}} = SkyNum \times \pi \times [(0.7 \times CH) + \text{average}(\sqrt{(\frac{ASky}{\pi})}, \frac{\sqrt{2} \times \sqrt{ASky}}{2})]^2 \quad (L3.3.2-5)$$

$$\underline{TDM_{max}} = NumMon \times MonWidth \times SH \quad (L3.3.2-6)$$

Where:

$\underline{PSA_{MAX}}$ = Maximum *primary sidelighted area* in ft² (m²)

$\underline{SSA_{MAX}}$ = Maximum *secondary sidelighted area* in ft² (m²)

$\underline{FL_{HR}}$ = The user-defined total *fenestration horizontal length* in ft (m) in a space or subspace

$\underline{EWL_{HOR}}$ = The user-defined exterior *wall horizontal length* in ft (m) a space or subspace

\underline{HH} = The user-defined head height in ft (m) of fenestration in a space or subspace

\underline{NumWin} = The user-defined number of windows in a space or subspace. Fenestration separated by an opaque exterior wall assembly shall be considered separate windows.

\underline{TSDmax} = Maximum *toplighted area from skylight area* in ft² (m²)

\underline{SkyNum} = The user-defined number of *skylights* in a space or subspace

\underline{ASky} = The user-defined area of a single *skylight* ft² (m²) in a space or subspace

\underline{CH} = The user-defined ceiling height in ft (m) of a space or subspace

\underline{TDMmax} = Maximum *toplighted area from roof monitors* in ft² (m²)

\underline{NumMon} = The user-defined number of *roof monitors* in a space or subspace

$\underline{MonWidth}$ = The user-defined width of the *roof monitors* in a space or subspace

\underline{SH} = The user-defined sill height of the *roof monitors* in a space or subspace

L3.3.3 Operating hours

- a. The annual operating hours of each space, subspace, or lighting control zone shall be determined using Table L3.3-1 and the corresponding building type in the proposed lighting system assigned to that space, subspace or lighting control zone.
- b. The identified building type in the proposed lighting system with the largest number of nighttime operating hours shall be selected as the basis for all exterior lighting calculations in Sections L3.4.2 and L3.5.2. The nighttime operating hours for each building type shall be the sum of the

before midnight operating hours (BMOH) and the after midnight operating hours (AMOH) from Table L3.3-1.

L3.4 Calculation of Proposed Lighting System Performance

The proposed lighting system performance shall be calculated in accordance with Sections L3.4.1 through L3.4.3

L3.4.1 Annual Interior Lighting Energy

- a. The annual interior lighting energy in kWh of the proposed lighting system shall be calculated by summing the annual interior lighting energy of each lighting control zone.
- b. Each lighting control zone in the proposed lighting system shall be assigned to a space or subspace and one or more of the interior lighting control types from Table L3.3-2. Users shall only be able to select one of the approved interior lighting control code combinations from Table L3.4-1.
- c. Calculate the lighting control savings factor for each lighting control zone. The lighting control savings factor shall be calculated by summing the weighted lighting control savings value of each lighting control type in the assigned lighting control code. The weighted lighting control savings value shall be calculated using Equation L3.3.1.

$$\underline{WLCSV = LCSV \times WF} \quad (L3.4-1)$$

where

WLCSV = Weighted Lighting Control Savings Value. WLCSV is calculated for each lighting control type in an approved lighting control code.

LCSV = Lighting Control Savings Value selected from Table L3.4.2 based on space type and lighting control type

WF = Weighting Factor from Table L3.4-1 based on the lighting control type in an approved lighting control code.

- d. The annual interior lighting energy of each lighting control zone in the proposed lighting system shall be calculated using Equation L3.4-2. Each calculation shall only include one space/subspace and one luminaire type. Additional calculations shall be created for each luminaire type when a lighting control zone serves includes more than one luminaire type. All calculations created for the same lighting control zone shall use the same lighting control code from Table L3.4-1 when calculating the lighting control savings factor.

$$\underline{AILE_{LCZ} = \frac{LumQty \times LumPwr \times (1 - LCSF_{INT}) \times AOH}{1000}} \quad (L3.4-2)$$

Where

AILE_{LCZ} = Annual interior lighting energy of a lighting control zone in kWh

LumQty = Luminaire quantity

LumPwr = Luminaire power in watts (W)

LCSF_{INT} = Interior lighting control savings factor calculated in accordance with L3.4.1(c)

AOH = Annual operating hours from Table L3.3-1 determined in accordance with Section L3.3.3(a)

- e. Decorative Lighting Allowance: Section 9.5.2.2 and the related *LPD* allowance for those *spaces* shall not be used in the *reference lighting system performance* nor in the *proposed lighting system performance*.
- f. Nonmandatory Controls: Section 9.5.2.3 and the related *LPD* allowance for those *spaces* shall not be used in the *reference lighting system performance* nor in the *proposed lighting system performance*.
- g. Room Geometry Adjustment: Section 9.5.2.4 and the related *LPD* allowance for those *spaces* shall not be used in the *reference lighting system performance* nor in the *proposed lighting system performance*.

L3.4.2 Annual Exterior Lighting Energy

- a. The annual exterior lighting energy of the *proposed lighting system* shall be calculated by summing the annual exterior lighting energy in kWh of each exterior *building* area or surface designed to be illuminated.

Exception to L3.4.2

Exterior lighting meeting the exception to Section 9.4.2 or the exception to Section 9.4.1.4 shall not be included in the calculation of the *proposed lighting system performance*.

- b. Each exterior *building* area or surface designed to be illuminated in the *proposed lighting system* shall be assigned one or more of the exterior lighting control types from Table L3.3-2. Users shall only be able to select one of the approved exterior lighting control code combinations from Table L3.4-3.
- c. The annual exterior lighting energy shall be calculated using Equation L3.4-3 for each exterior *building* area or surface designed to be illuminated in the *proposed lighting system*. Each calculation shall only include one luminaire type. Additional calculations shall be created for each *luminaire* type when an exterior *building* area or surface is illuminated by more than one *luminaire* type.

$$AELE_{EBA} = \frac{\text{LumQty} \times \text{LumPwr} \times (1 - LCS_{EXT}) \times 8,760}{1,000} \quad (L3.4-3)$$

Where

$AELE_{EBA}$ = Annual exterior lighting energy in kWh of an exterior *building* area or surface designed to be illuminated

$LumQty$ = *Luminaire* quantity

$LumPwr$ = *Luminaire* power in watts (W)

$LCSF_{EXT}$ = Exterior lighting control savings factor from Table L3.3-5 based on the proposed exterior lighting control code

L3.4.3 Proposed Lighting System Performance

The *proposed lighting system performance* shall be calculated by summing the annual interior lighting energy and the annual exterior lighting energy of the *proposed design*.

L3.5 Calculation of Reference Lighting System Performance

Reference lighting system performance shall be calculated by summing the total reference annual interior lighting energy determined in accordance with Section L3.5.1 and the total reference exterior lighting energy determined in accordance with L3.5.2.

L3.5.1 Annual Interior Lighting Energy

- a. The total reference annual interior lighting energy shall be the sum of the reference annual interior lighting energy (AILE_{REF}) of each space or subspace. The reference annual interior lighting energy (AILE_{REF}) of each space or subspace shall be calculated using Equation L3.5-1.

$$AILE_{REF} = \frac{[(LP - LP_{DA}) \times (1 - CSF_{NDL}) + LP_{DA} \times (1 - CSF_{DL})] \times AOH}{1000} \quad (L3.5-1)$$

Where:

AILE_{REF} = Reference design case annual internal lighting energy in kWh of a space or subspace

LP = reference lighting power of a space or subspace

LP_{DA} = reference *daylight area lighting power* of a space or subspace determined in accordance with Section L3.5.1

CSF_{NDL} = non-daylighting *control savings factor* of a space or subspace from Table L3.5-1

CSF_{DL} = daylighting *control savings factor* of a space or subspace from Table L3.5-1

AOH = Annual operating hours from Table L3.3-1 determined in accordance with Section L3.3.3(a)

If a lighting control is not selected for the *lighting control zone*, the AOH defaults to 8,760 hours.

- b. For each space or subspace:

1. The reference lighting power (LP) is determined by multiplying the user-provided area by the *lighting power density* from Table 9.5.2.1(L3.5-1) for the given space type.
2. The non-daylighting *control savings factor* (CSF_{NDL}) and the daylighting *control savings factor* (CSF_{DL}) shall be determined from Table L3.5-1 for the given space type.
3. The *daylight area lighting power* (LP_{DA}) shall be the largest of the following:
 - (1) **Primary sidelighted area lighting power:** Equals the product of the *primary sidelight area* in ft² (m²) and the *lighting power density* in W/ft² (W/m²) for the given space type. If the product is less than or equal to 150W the *primary sidelighted area lighting power* shall be set to 0W.
 - (2) **Sidelighted area lighting power:** Equals the product of the *lighting power density* in W/ft² (W/m²) for the given space type and the sum of the *primary sidelighted area* and the *secondary sidelight area* in ft² (m²). If the product is less than or equal to 300W the *Sidelighted area lighting power* shall be set to 0W.
 - (3) **Daylight area under skylight lighting power:** Equals the product of the *daylight area under skylights* in ft² (m²) and the *lighting power density* in W/ft² (W/m²) for the given space type. If the product is less than or equal to 150W the *daylight area under skylight lighting power* shall be set to 0W.
 - (4) **Daylight area under roof monitors lighting power:** Equals the product of the *daylight area under roof monitors* in ft² (m²) and the *lighting power density* in W/ft² (W/m²) for the given space type. If the product is less than or equal to 150W the *daylight area under skylight lighting power* shall be set to 0W.

L3.5.2 Annual Exterior Lighting Energy

- a. Total reference exterior lighting power shall be the sum of the annual site

lighting power plus the reference annual exterior lighting energy (AELE_{REF}) for each exterior *building* area or surface designed to be illuminated in the *ref* and as permitted in Table 9.4.2-2 for the applicable lighting zone in Table 9.4.2-1.

- b. AELE_{REF} shall be calculated using Equations L3.5-2 through L3.5-5 based on the applicable exterior lighting control strategy from Table L3.5-2 for each exterior *building* area and for the site.

Exception to L3.5.2(b)

Luminaires, in the *proposed design*, assigned to uncovered parking areas with a rated input wattage of greater than 78W and a mounting height of 24ft (7.3m) or less above the ground shall be assigned exterior control strategy D and use Equation L3.5-5 when calculating AELE_{REF}

Control Strategy A:

$$\underline{AELE_{REF}} = \frac{4,380 \times LP}{1000} \quad (\underline{L3.5-2})$$

Control Strategy B:

$$\underline{AELE_{REF}} = \frac{(2,196 + AMOH) \times LP}{1000} \quad (\underline{L3.5-3})$$

Control Strategy C:

$$\underline{AELE_{REF}} = \frac{[(2,196 + AMOH) \times LP + (2,184 - AMOH) \times 0.5 \times LP]}{1000} \quad (\underline{L3.5-4})$$

Control Strategy D:

$$\underline{AELE_{REF}} = \frac{[(4,380 \times 0.5 \times LP)]}{1000} \quad (\underline{L3.5-5})$$

Where:

AELE_{REF} = Reference design case annual external lighting energy in kWh of a *space* or subspace

LP = reference lighting power of the site allowance, or any tradable or nontradable exterior *building* area or surface determined by multiplying the user-provided units (e.g., area, length, or quantity) of an exterior *building* area or surface by the corresponding *lighting power allowance* from Table 9.4.2-2 (L3.5-3)

AMOH = after midnight operating hours from Table L3.3-1 as determined by Section L3.3.3(b).

BMOH = before midnight operating hours from Table L3.3-1 as determined by Section L3.3.3(b).

Table L3.3-1 Interior and Exterior Lighting Annual Operating Hours

<u>Building Type</u>	<u>Annual Interior Building Operating Hours</u>	<u>Before Midnight Operating Hours (BMOH)</u>	<u>After Midnight Operating Hours (AMOH)</u>
<u>Automotive Facility</u>	<u>3,289</u>	<u>0</u>	<u>0</u>
<u>Convention Center</u>	<u>3,357</u>	<u>1,508</u>	
<u>Courthouse</u>	<u>2,938</u>	<u>0</u>	<u>0</u>
<u>Dining: Bar Lounge/Leisure</u>	<u>5,073</u>	<u>2,184</u>	<u>0</u>
<u>Dining: Cafeteria / fast food</u>	<u>5,073</u>	<u>2,184</u>	<u>0</u>

<u>Building Type</u>	<u>Annual Interior Building Operating Hours</u>	<u>Before Midnight Operating Hours (BMOH)</u>	<u>After Midnight Operating Hours (AMOH)</u>
Dining: Family	5,073	2,184	0
Dormitory	2,876	2,196	2,184
Exercise Center	3,357	1,508	0
Fire station	5,439	2,196	2,184
Gymnasium	4,193	780	0
Healthcare Clinic	5,439	2,196	2,184
Hospital	5,439	2,196	2,184
Hotel	3,589	2,196	2,184
Library	3,585	1,300	0
Manufacturing Facility	3,289	0	0
Motel	3,589	2,196	2,184
Motion Picture Theater	3,357	1,508	0
Multifamily	2,876	2,196	2,184
Museum	3,585	1,300	0
Office	2,938	0	0
Parking Garage	6,734	0	0
Penitentiary	3,589	2,196	2,184
Performing Arts Theater	3,357	1,508	0
Police Station	5,439	2,196	2,184
Post Office	2,938	0	0
Religious Building	3,357	1,508	0
Retail	3,585	1,300	0
School / University	4,193	0	0
Sports Arena	3,357	1,508	0
Town Hall	2,938	0	0
Transportation	5,439	2,196	2,184
Warehouse	2,837	0	0
Workshop	3,289	0	0

Table L3.3-2 Interior and Exterior Lighting Control Types

<u>Code</u>	<u>Name</u>	<u>Description</u>
<u>Interior Lighting Control Types</u>		
NC	No Control	
MS	Manual Switch	
MD	Manual Dimmer	
VS	Vacancy Sensor	
OS	Occupancy Sensor	
DD	Daylight Dimming	
IT	Institutional Tuning	
Sch	Schedule	
<u>Exterior Lighting Control Types</u>		
NC	No Control	No exterior lighting control
PC	Photocell	Dusk to dawn photocell with full off control
ES	Exterior Occupancy Sensor	
TS _{PWRRED}	Timeswitch - 50% Power Reduction	Timeswitch that reduces fixture power by 50% between the hours of 12AM and 6AM.
TS _{ALLOFF}	Timeswitch - full off	Timeswitch that turns fixtures off between the hours of 12AM and 6AM.
TC	Timeclock	Astronomical time clock

Table L3.4-1 Allowable Interior Lighting Control configurations

<u>Lighting Control Code</u>	<u>Weighting Factor by Control Type</u>	<u>Lighting Control Code</u>	<u>Weighting Factor by Control Type</u>
1 Interior Lighting Control			
<u>MS</u>	<u>MS: 100%</u>	<u>DD</u>	<u>DD: 100%</u>
<u>MD</u>	<u>MD: 100%</u>	<u>IT</u>	<u>IT: 100%</u>
<u>VS</u>	<u>VS: 100%</u>	<u>SCH</u>	<u>Sch: 100%</u>
<u>OS</u>	<u>OS: 100%</u>	<u>NC</u>	<u>NC: 0%</u>
Allowable combinations of 2 different Interior Lighting Controls			
<u>MS-VS</u>	<u>MS:0%, VS:100%</u>	<u>VS-IT</u>	<u>VS:83%, IT:100%</u>
<u>MS-DD</u>	<u>MS:100%, DD:95%</u>	<u>VS-SCH</u>	<u>VS:100%, SCH:100%</u>
<u>MS- SCH</u>	<u>MS:100%, Sch:100%</u>	<u>OD-DD</u>	<u>OS:75%, DD:65%</u>
<u>MD-VS</u>	<u>MD:100%, VS:83%</u>	<u>OS-IT</u>	<u>OS:83%, IT:100%</u>
<u>MD-DD</u>	<u>MD:100%, DD:71%</u>	<u>OS-SCH</u>	<u>OS:100%, SCH:100%</u>
<u>MD-IT</u>	<u>MD:80%, IT:100%</u>	<u>DD-IT</u>	<u>DD:78%, IT:100%</u>
<u>MD-SCH</u>	<u>MD:100%, Sch:100%</u>	<u>DD-SCH</u>	<u>DD:100%, SCH:100%</u>
<u>VS-DD</u>	<u>VS:70%, DD:65%</u>	<u>IT-SCH</u>	<u>IT:100%, SCH:100%</u>
Allowable combinations of 3 different Interior Lighting Controls			
<u>MS-VS-DD</u>	<u>MS: 0%, VS: 70%, DD: 65%</u>	<u>MD-DD-SCH</u>	<u>MD: 100%, DD: 71%, SCH: 100%</u>
<u>MS-VS-IT</u>	<u>MS: 0%, VS: 83%, IT: 100%</u>	<u>MD-IT- SCH</u>	<u>MD: 80%, IT: 100%, SCH: 100%</u>
<u>MS-VS- SCH</u>	<u>MS: 0%, VS: 100%, SCH: 100%</u>	<u>VS-DD-IT</u>	<u>VS: 56%, DD: 52%, IT: 100%</u>
<u>MS-DD-IT</u>	<u>MS: 100%, DD: 78%, IT: 100%</u>	<u>VS-DD- SCH</u>	<u>VS: 70%, DD: 65%, SCH: 100%</u>
<u>MS-DD- SCH</u>	<u>MS: 100%, DD: 95%, SCH: 100%</u>	<u>VS-IT- SCH</u>	<u>VS: 83%, IT: 100%, SCH: 100%</u>
<u>MS-IT- SCH</u>	<u>MS: 80%, IT: 100%, SCH: 100%</u>	<u>OS-DD-IT</u>	<u>OS: 65%, DD: 56%, IT: 100%</u>
<u>MD-VS-DD</u>	<u>MD: 80%, VS: 70%, DD: 65%</u>	<u>OS-DD- SCH</u>	<u>OS: 75%, DD: 65%, SCH: 100%</u>
<u>MD-VS-IT</u>	<u>MD: 80%, VS: 63%, IT: 100%</u>	<u>OS-IT- SCH</u>	<u>OS: 83%, IT: 100%, SCH: 100%</u>
<u>MD-VS- SCH</u>	<u>MD: 100%, VS: 83%, SCH: 100%</u>	<u>DD-IT- SCH</u>	<u>DD: 78%, IT: 100%, SCH: 100%</u>
<u>MD-DD-IT</u>	<u>MD: 65%, DD: 55%, IT: 100%</u>		
Allowable combinations of 4 different Interior Lighting Controls			
<u>MS-VS-DD-IT</u>	<u>MS: 0%, VS: 56%, DD: 52%, SCH: 100%</u>		
<u>MS-VS-DD- SCH</u>	<u>MS: 0%, VS: 70%, DD: 65%, SCH: 100%</u>		
<u>MS-VS-IT- SCH</u>	<u>MS: 0%, VS: 83%, IT: 100%, SCH: 100%</u>		
<u>MS-DD-IT- SCH</u>	<u>MS: 100%, DD: 78%, IT: 100%, SCH: 100%</u>		
<u>MD-VS-DD-IT</u>	<u>MD: 68%, VS: 59%, DD: 55%, IT: 100%</u>		
<u>MD-VS-DD- SCH</u>	<u>MD: 80%, VS: 70%, DD: 65%, SCH: 100%</u>		
<u>MD-DD-IT- SCH</u>	<u>DD: 65%, DD: 55%, IT: 100%, SCH: 100%</u>		
<u>VS-DD-IT- SCH</u>	<u>VS: 56%, DD: 52%, IT: 100%, SCH: 100%</u>		
<u>OS-DD-IT- SCH</u>	<u>OS: 65%OS, DD: 56%, IT: 100%, SCH: 100%</u>		
Allowable combinations of 5 different Interior Lighting Controls			
<u>MS-VS-DD-IT- SCH</u>	<u>MS: 0%, VS: 56%, DD: 52%, IT: 100%, SCH: 100%</u>		
<u>MD-VS-DD-IT- SCH</u>	<u>MD: 68%, VS: 59% DD: 55%, IT: 100%, SCH: 100%</u>		

Table L.3.4-2 Lighting Controls Savings Value by Lighting Control Type and Space Type

<u>Common Space Types</u>	<u>Lighting Control Types</u>						
	<u>MS</u>	<u>MD</u>	<u>VS</u>	<u>OS</u>	<u>DD</u>	<u>IT</u>	<u>SCH</u>
Lighting Control Savings Values							
<u>Atrium: <20 ft in height</u>	<u>2%</u>	<u>20%</u>	<u>24%</u>	<u>24%</u>	<u>28%</u>	<u>20%</u>	<u>0%</u>
<u>Atrium: ≥20 ft and ≤40 ft in height</u>	<u>2%</u>	<u>20%</u>	<u>24%</u>	<u>24%</u>	<u>28%</u>	<u>20%</u>	<u>0%</u>
<u>Atrium: >40 ft in height</u>	<u>2%</u>	<u>20%</u>	<u>24%</u>	<u>24%</u>	<u>28%</u>	<u>20%</u>	<u>0%</u>
Audience Seating Area							
<u>Auditorium</u>	<u>50%</u>	<u>50%</u>	<u>6%</u>	<u>6%</u>	<u>28%</u>	<u>20%</u>	<u>0%</u>
<u>Gymnasium</u>	<u>50%</u>	<u>50%</u>	<u>6%</u>	<u>6%</u>	<u>28%</u>	<u>20%</u>	<u>0%</u>
<u>Motion picture theater</u>	<u>50%</u>	<u>50%</u>	<u>6%</u>	<u>6%</u>	<u>28%</u>	<u>20%</u>	<u>0%</u>
<u>Penitentiary</u>	<u>50%</u>	<u>50%</u>	<u>6%</u>	<u>6%</u>	<u>28%</u>	<u>20%</u>	<u>0%</u>
<u>Performing arts theater</u>	<u>50%</u>	<u>50%</u>	<u>6%</u>	<u>6%</u>	<u>28%</u>	<u>20%</u>	<u>0%</u>
<u>Religious facility</u>	<u>50%</u>	<u>50%</u>	<u>6%</u>	<u>6%</u>	<u>28%</u>	<u>20%</u>	<u>0%</u>

Common Space Types	Lighting Control Types							
	MS	MD	VS	OS	DD	IT	SCH	
Lighting Control Savings Values								
Sports arena	50%	50%	6%	6%	28%	20%	0%	
All other audience seating areas	50%	50%	6%	6%	28%	20%	0%	
Banking Activity Area	10%	20%	34%	24%	28%	20%	0%	
Breakroom (See Lounge/Breakroom)								
Classroom/Lecture Hall/Training Room								
Penitentiary	5%	20%	29%	24%	28%	20%	0%	
All other classrooms/lecture halls/training rooms	5%	20%	29%	24%	28%	20%	0%	
Conference/Meeting/ Multipurpose Room	20%	20%	50%	40%	28%	20%	0%	
Confinement Cells	10%	20%	0%	0%	28%	20%	0%	
Copy/Print Room	5%	20%	29%	24%	28%	20%	0%	
Corridor								
Facility for the visually impaired (and not used primarily by the staff) ¹	0%	20%	30%	30%	28%	20%	0%	
Hospital	0%	20%	30%	30%	28%	20%	0%	
All other corridors	0%	20%	40%	40%	28%	20%	0%	
Courtroom	0%	20%	24%	24%	28%	20%	0%	
Computer Room	0%	20%	24%	24%	28%	20%	0%	
Dining Area								
Penitentiary	0%	20%	6%	6%	28%	20%	0%	
Facility for the visually impaired (and not used primarily by the staff) ¹	0%	20%	6%	6%	28%	20%	0%	
Bar/lounge or leisure dining	0%	20%	6%	6%	28%	20%	0%	
Cafeteria or fast food dining	0%	20%	6%	6%	28%	20%	0%	
Family dining	0%	20%	6%	6%	28%	20%	0%	
All other dining areas	0%	20%	6%	6%	28%	20%	0%	
Electrical/Mechanical Room	50%	20%	49%	40%	28%	20%	0%	
Emergency Vehicle Garage	5%	20%	29%	24%	28%	20%	0%	
Food Preparation Area	0%	20%	24%	24%	28%	20%	0%	
Guest Room			See Section 9.4.1.3(b).					
Laboratory								
In or as a classroom	0%	20%	24%	24%	28%	20%	0%	
All other laboratories	0%	20%	24%	24%	28%	20%	0%	
Laundry/Washing Area	0%	20%	24%	24%	28%	20%	0%	
Loading Dock, Interior	0%	20%	24%	24%	28%	20%	0%	
Lobby								
Facility for the visually impaired (and not used primarily by the staff) ¹	0%	20%	24%	24%	28%	20%	0%	
Elevator	0%	20%	24%	24%	28%	20%	0%	
Hotel	0%	20%	24%	24%	28%	20%	0%	
Motion picture theater	0%	20%	24%	24%	28%	20%	0%	
Performing arts theater	0%	20%	24%	24%	28%	20%	0%	
All other lobbies	0%	20%	24%	24%	28%	20%	0%	
Locker Room	5%	20%	29%	24%	28%	20%	0%	
Lounge/Breakroom								
Healthcare facility	0%	20%	24%	24%	28%	20%	0%	
All other lounges/breakrooms	0%	20%	24%	24%	28%	20%	0%	
Office								
Enclosed and ≤250 ft ²	5%	20%	29%	24%	28%	20%	0%	
Enclosed and >250 ft ²	5%	20%	29%	24%	28%	20%	0%	
Open plan	0%	20%	24%	24%	28%	20%	0%	
Parking Area, Interior	0%	20%	0%	50%	28%	20%	0%	
Pharmacy Area	0%	20%	24%	24%	28%	20%	0%	
Restroom								
Facility for the visually impaired (and not used primarily by the staff) ¹	0%	20%	73%	73%	28%	20%	0%	
All other restrooms	0%	20%	73%	73%	28%	20%	0%	
Sales Area	0%	20%	24%	24%	28%	20%	0%	
Seating Area, General	50%	20%	6%	6%	28%	20%	0%	
Stairwell	0%	20%	30%	30%	28%	20%	0%	

Common Space Types	Lighting Control Types						
	MS	MD	VS	OS	DD	IT	SCH
Lighting Control Savings Values							
Storage Room							
<50 ft ²	40%	20%	52%	24%	28%	20%	0%
≥50 ft ²	10%	20%	34%	24%	28%	20%	0%
Vehicular Maintenance Area							
Workshop	0%	20%	24%	24%	28%	20%	0%
Facility for the visually impaired¹							
Recreation room/common living room (and not used primarily by staff)	0%	20%	24%	24%	28%	20%	0%
Automotive (See "Vehicular Maintenance Area")							
Convention Center—Exhibit Space	0%	20%	24%	24%	28%	20%	0%
Dormitory—Living Quarters	80%	20%	80%	24%	28%	20%	0%
Fire Station—Sleeping Quarters	80%	20%	80%	24%	28%	20%	0%
Gymnasium/Fitness Center							
Exercise area	0%	20%	24%	24%	28%	20%	0%
Playing area	0%	20%	24%	24%	28%	20%	0%
Healthcare Facility							
Exam/treatment room	2%	20%	24%	24%	28%	20%	0%
Imaging room	2%	20%	24%	24%	28%	20%	0%
Medical supply room	10%	20%	34%	24%	28%	20%	0%
Nursery	2%	20%	24%	24%	28%	20%	0%
Nurse's station	2%	20%	24%	24%	28%	20%	0%
Operating room	2%	20%	24%	24%	28%	20%	0%
Patient room	2%	20%	24%	24%	28%	20%	0%
Physical therapy room	2%	20%	24%	24%	28%	20%	0%
Recovery room	2%	20%	24%	24%	28%	20%	0%
Library							
Reading area	0%	20%	24%	24%	28%	20%	0%
Stacks	0%	20%	24%	24%	28%	20%	0%
Manufacturing Facility							
Detailed manufacturing area	0%	20%	24%	24%	28%	20%	0%
Equipment room	0%	20%	24%	24%	28%	20%	0%
Extra high bay area							
(>50 ft floor-to-ceiling height)	0%	20%	24%	24%	28%	20%	0%
High bay area							
(>25 to 50 ft floor-to-ceiling height)	0%	20%	24%	24%	28%	20%	0%
Low bay area							
(<25 ft floor-to-ceiling height)	0%	20%	24%	24%	28%	20%	0%
Museum							
General exhibition area	0%	20%	24%	24%	28%	20%	0%
Restoration room	0%	20%	24%	24%	28%	20%	0%
Performing Arts Theater—Dressing Room	10%	20%	34%	24%	28%	20%	0%
Post Office—Sorting Area	0%	20%	24%	24%	28%	20%	0%
Religious Facility							
Fellowship hall	10%	20%	24%	24%	28%	20%	0%
Worship/pulpit/choir area	20%	20%	24%	24%	28%	20%	0%
Retail Facilities							
Dressing/fitting room	0%	20%	24%	24%	28%	20%	0%
Mall concourse	0%	20%	0%	24%	28%	20%	0%
Sports Arena—Playing Area²							
Class I facility	20%	20%	0%	0%	28%	20%	0%
Class II facility	20%	20%	0%	0%	28%	20%	0%
Class III facility	20%	20%	0%	0%	28%	20%	0%
Class IV facility	20%	20%	0%	0%	28%	20%	0%
Transportation Facility							
Baggage/carousel area	0%	20%	24%	24%	28%	20%	0%
Airport concourse	0%	20%	24%	24%	28%	20%	0%
Ticket counter	0%	20%	24%	24%	28%	20%	0%
Warehouse—Storage Area							

Common Space Types	Lighting Control Types						
	MS	MD	VS	OS	DD	IT	SCH
Lighting Control Savings Values							
Medium to bulky, palletized items	0%	20%	24%	24%	28%	20%	0%
Smaller, hand-carried items ³	0%	20%	24%	24%	28%	20%	0%

Table L3.4-3 Allowable Exterior Lighting Control configurations and Control Savings Factors

Exterior Lighting Control Codes	Exterior Lighting Control Savings Factors	Exterior Lighting Control Codes	Exterior Lighting Control Savings Factors
Single Exterior Lighting Control			
NC	0%	TS ^{PWRRED}	12%
PC	50%	TS ^{ALLOFF}	25%
		TC	50%
Allowable combinations of multiple exterior lighting controls			
PC-ES	75%	TC-ES	75%
PC-TS ^{PWRRED}	62%	TC-TS ^{PWRRED}	62%
PC-TS ^{ALLOFF}	75%	TC-TS ^{ALLOFF}	75%
PC-ES-TS ^{PWRRED}	80%	ES-TS ^{PWRRED}	56%
PC-ES-TS ^{ALLOFF}	85%	ES-TS ^{ALLOFF}	62%

Table L3.5-1 Reference Lighting Control Strategies for Building Interiors

Common Space Types	LPD	CFNDL	CFDL	Common Space Types	LPD	CFNDL	CFDL
Atrium				Sales Area	1.05	0%	28%
<20 ft in height	0.39	2%	30%	Seating Area, General	0.23	0%	28%
≥20 ft and ≤40 ft in height	0.48	2%	30%	Stairwell	0.49	30%	30%
>40 ft in height	0.60	2%	30%	Storage Room			
Audience Seating Area				<50 ft ²	0.51	40%	40%
Auditorium	0.61	50%	64%	≥50 ft ²	0.38	70%	84%
Gymnasium	0.23	50%	64%	Vehicular Maintenance Area	0.60	0%	28%
Motion picture theater	0.27	50%	50%	Workshop	1.26	0%	28%
Penitentiary	0.67	50%	64%	Facility for the visually impaired ¹			
Performing arts theater	1.16	50%	50%	Chapel (used primarily by residents)	0.70	0%	28%
Religious facility	0.72	50%	64%	Recreation room/common living room (used primarily by residents)	1.77	0%	28%
Sports arena	0.33	50%	64%	Automotive (See "Vehicular Maintenance Area")	0.60	0%	28%
All other audience seating areas	0.23	50%	64%	Convention Center—Exhibit Space	0.61	0%	28%
Banking Activity Area	0.61	10%	38%	Dormitory—Living Quarters	0.50	80%	80%
Breakroom (See Lounge/Breakroom)				Fire Station—Sleeping Quarters	0.23	80%	80%
Classroom/Lecture Hall/Training Room				Gymnasium/Fitness Center			
Penitentiary	0.89	29%	43%	Exercise area	0.90	0%	28%
All other classrooms/lecture halls/training rooms	0.71	29%	43%	Playing area	0.85	0%	28%
Conference/Meeting/ Multipurpose Room	0.97	30%	44%	Healthcare Facility			
Confinement Cells	0.70	10%	10%	Exam/treatment room	1.40	2%	30%
Copy/Print Room	0.31	29%	43%	Imaging room	0.94	2%	2%
Corridor				Medical supply room	0.51	40%	40%
Facility for the visually impaired (and not used primarily by the staff)	0.71	20%	34%	Nursery	0.92	2%	30%
Hospital	0.71	0%	28%	Nurse's station	1.17	2%	30%
All other corridors	0.41	20%	34%	Operating room	2.26	2%	2%
Courtroom	1.20	0%	28%	Patient room	0.68	2%	30%
Computer Room	0.94	0%	28%	Physical therapy room	0.91	2%	30%
Dining Area				Recovery room	1.25	2%	30%
Penitentiary	0.42	0%	28%	Library			
Facility for the visually impaired (and not used primarily by the staff)	1.27	0%	28%	Reading area	0.96	0%	28%

<u>Common Space Types</u>	<u>LPD</u>	<u>CFNDL</u>	<u>CFDL</u>	<u>Common Space Types</u>	<u>LPD</u>	<u>CFNDL</u>	<u>CFDL</u>
<u>Bar/lounge or leisure dining</u>	<u>0.86</u>	<u>10%</u>	<u>38%</u>	<u>Stacks</u>	<u>1.18</u>	<u>12%</u>	<u>34%</u>
<u>Cafeteria or fast food dining</u>	<u>0.40</u>	<u>0%</u>	<u>28%</u>	<u>Manufacturing Facility</u>			
<u>Family dining</u>	<u>0.60</u>	<u>0%</u>	<u>28%</u>	<u>Detailed manufacturing area</u>	<u>0.80</u>	<u>0%</u>	<u>28%</u>
<u>All other dining areas</u>	<u>0.43</u>	<u>0%</u>	<u>28%</u>	<u>Equipment room</u>	<u>0.76</u>	<u>50%</u>	<u>64%</u>
<u>Electrical/Mechanical Room</u>	<u>0.43</u>	<u>50%</u>	<u>50%</u>	<u>Extra high bay area (>50 ft floor-to-ceiling height)</u>	<u>1.42</u>	<u>0%</u>	<u>28%</u>
<u>Emergency Vehicle Garage</u>	<u>0.52</u>	<u>5%</u>	<u>33%</u>	<u>High bay area (>25 to 50 ft floor-to-ceiling height)</u>	<u>1.24</u>	<u>0%</u>	<u>28%</u>
<u>Food Preparation Area</u>	<u>1.09</u>	<u>0%</u>	<u>28%</u>	<u>Low bay area (<25 ft floor-to-ceiling height)</u>	<u>0.86</u>	<u>0%</u>	<u>28%</u>
<u>Guest Room</u>	<u>0.41</u>	<u>0.41</u>		<u>Museum</u>			
<u>Laboratory</u>				<u>General exhibition area</u>	<u>0.31</u>	<u>0%</u>	<u>28%</u>
<u>In or as a classroom</u>	<u>1.11</u>	<u>12%</u>	<u>34%</u>	<u>Restoration room</u>	<u>1.10</u>	<u>0%</u>	<u>28%</u>
<u>All other laboratories</u>	<u>1.33</u>	<u>0%</u>	<u>28%</u>	<u>Performing Arts Theater—Dressing Room</u>	<u>0.41</u>	<u>10%</u>	<u>33%</u>
<u>Laundry/Washing Area</u>	<u>0.53</u>	<u>0%</u>	<u>28%</u>	<u>Post Office—Sorting Area</u>	<u>0.76</u>	<u>12%</u>	<u>32%</u>
<u>Loading Dock, Interior</u>	<u>0.88</u>	<u>0%</u>	<u>28%</u>	<u>Religious Facility</u>			
<u>Lobby</u>				<u>Fellowship hall</u>	<u>0.54</u>	<u>10%</u>	<u>33%</u>
<u>Facility for the visually impaired (and not used primarily by the staff)¹</u>	<u>1.69</u>	<u>12%</u>	<u>26%</u>	<u>Worship/pulpit/choir area</u>	<u>0.85</u>	<u>20%</u>	<u>38%</u>
<u>Elevator</u>	<u>0.65</u>	<u>0%</u>	<u>28%</u>	<u>Retail Facilities</u>			
<u>Hotel</u>	<u>0.51</u>	<u>0%</u>	<u>28%</u>	<u>Dressing/fitting room</u>	<u>0.51</u>	<u>24%</u>	<u>24%</u>
<u>Motion picture theater</u>	<u>0.23</u>	<u>0%</u>	<u>28%</u>	<u>Mall concourse</u>	<u>0.82</u>	<u>0%</u>	<u>28%</u>
<u>Performing arts theater</u>	<u>1.25</u>	<u>12%</u>	<u>32%</u>	<u>Sports Arena—Playing Area²</u>			
<u>All other lobbies</u>	<u>0.84</u>	<u>12%</u>	<u>32%</u>	<u>Class I facility</u>	<u>2.94</u>	<u>0%</u>	<u>28%</u>
<u>Locker Room</u>	<u>0.52</u>	<u>24%</u>	<u>24%</u>	<u>Class II facility</u>	<u>2.01</u>	<u>0%</u>	<u>28%</u>
<u>Lounge/Breakroom</u>				<u>Class III facility</u>	<u>1.30</u>	<u>0%</u>	<u>28%</u>
<u>Healthcare facility</u>	<u>0.42</u>	<u>24%</u>	<u>38%</u>	<u>Class IV facility</u>	<u>0.86</u>	<u>0%</u>	<u>28%</u>
<u>All other lounges/breakrooms</u>	<u>0.59</u>	<u>24%</u>	<u>38%</u>	<u>Transportation Facility</u>			
<u>Office</u>				<u>Baggage/carousel area</u>	<u>0.39</u>	<u>0%</u>	<u>28%</u>
<u>Enclosed and ≤250 ft²</u>	<u>0.74</u>	<u>29%</u>	<u>43%</u>	<u>Airport concourse</u>	<u>0.25</u>	<u>0%</u>	<u>28%</u>
<u>Enclosed and >250 ft²</u>	<u>0.66</u>	<u>5%</u>	<u>33%</u>	<u>Ticket counter</u>	<u>0.51</u>	<u>0%</u>	<u>28%</u>
<u>Open plan</u>	<u>0.61</u>	<u>5%</u>	<u>33%</u>	<u>Warehouse—Storage Area</u>			
<u>Parking Area, Interior</u>	<u>0.15</u>	<u>40%</u>	<u>58%</u>	<u>Medium to bulky, palletized items</u>	<u>0.33</u>	<u>12%</u>	<u>34%</u>
<u>Pharmacy Area</u>	<u>1.66</u>	<u>0%</u>	<u>0%</u>	<u>Smaller, hand-carried items³</u>	<u>0.69</u>	<u>12%</u>	<u>34%</u>
<u>Restroom</u>							
<u>Facility for the visually impaired (and not used primarily by the staff)¹</u>	<u>1.26</u>	<u>73%</u>	<u>73%</u>				
<u>All other restrooms</u>	<u>0.63</u>	<u>73%</u>	<u>73%</u>				

Table L.3.5-2 Reference Lighting Control Strategies for Building Exteriors

<u>Tradable Exterior Surfaces</u>	<u>Exterior Lighting Control Strategy</u>	<u>Nontradable Exterior Surfaces</u>	<u>Exterior Lighting Control Strategy</u>
<u>Base Site Allowance</u>	<u>A</u>	<u>Building façade (linear)</u>	<u>B</u>
<u>Uncovered Parking</u>	<u>C</u>	<u>Building façade (area)</u>	<u>B</u>
<u>Walkway <10'</u>	<u>C</u>	<u>ATM and night depository</u>	<u>A</u>
<u>Walkway >10'</u>	<u>C</u>	<u>Additional ATM</u>	<u>A</u>
<u>Plaza Area</u>	<u>C</u>	<u>Uncovered entrances and gatehouse inspection facilities</u>	<u>A</u>
<u>Special Feature</u>	<u>C</u>	<u>Uncovered loading areas for law enforcement, fire, and other emergency</u>	<u>C</u>
<u>Dining Areas</u>	<u>C</u>	<u>Drive-through windows / doors</u>	<u>C</u>
<u>Stairways</u>	<u>A</u>	<u>Parking near 24-hour retail entrance</u>	<u>A</u>
<u>Pedestrian Tunnels</u>	<u>A</u>	<u>Roadway / parking entry, trail head, and toilet facility</u>	<u>A</u>
<u>Landscaping</u>	<u>B</u>	<u>Audience seating area</u>	<u>C</u>
<u>Pedestrian and Vehicle Entrance / Exit</u>	<u>C</u>	<u>Exterior lobby</u>	<u>C</u>
<u>Entry Canopies</u>	<u>C</u>	<u>Retail – mall concourse</u>	<u>C</u>
<u>Loading Docks</u>	<u>C</u>	<u>Sports lighting</u>	<u>C</u>

<u>Free-Standing Canopy</u>	<u>C</u>	-
<u>Open Area Sales</u>	<u>C</u>	-
<u>Street Frontage</u>	<u>C</u>	-