ANSI/ASHRAE/IES Addendum b to
ANSI/ASHRAE/IES Standard 90.1-2022

Energy Standard for
Sites and Buildings
Except Low-Rise Residential Buildings


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Addendum b addresses several topics. First, it moves the exterior lighting power section (currently Section 9.4.2) from Section 9.4 to a new subparagraph (9.5.3) in Section 9.5. The existing Section 9.2.2, “Prescriptive Requirements,” already includes exterior lighting power. The move from Section 9.4 to 9.5.3 is an alignment of the prescriptive requirements into a single section.

Second, the addendum makes an additional clarification by removing the incorrect terms “lighting power density allowance” and “LPD allowance.” This editorial change will reduce confusion. The following terms are defined “exterior lighting power allowance”; “interior lighting power allowance”; “lighting power allowance, exterior”; “lighting power allowance, interior”; and “lighting power density (LPD).”

There is a misconception that projects must meet the LPD. This is incorrect. The area is multiplied by the applicable LPD value in the applicable table to determine the lighting power allowance (lighting power budget). For example, a retail building using the Building Area Method has an LPD of 0.84 W/ft². If the retail store is 1000 ft², the interior lighting power allowance is 840 W under the Building Area Method.

This is a clarification and formatting change. This addendum does not affect the cost of a project.

Informative Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and strikethrough (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum b to Standard 90.1-2022

Modify Section 3 as shown (I-P and SI).

3.2 Definitions

[ ... ]

**exterior lighting power allowance:** see **lighting power allowance, exterior**, the maximum lighting power permitted for a building, site, or exterior application, expressed in W.

[ ... ]

**interior lighting power allowance:** see **lighting power allowance, interior**, the maximum lighting power permitted for the interior of a building, expressed in W.

[ ... ]

**lighting power allowance (LPA), exterior:** the maximum lighting power in watts allowed for the exterior of a property.

**lighting power allowance (LPA), interior:** the maximum lighting power in watts allowed for the interior of a building.

**lighting power allowance (LPA):** the maximum lighting power permitted for a building, space, site, or exterior application, expressed in W.

**lighting power density (LPD):** the lighting power per unit area of a building, space, site, or exterior application, outdoor area expressed in W/ft² (W/m²).

[ ... ]

3.3 Abbreviations and Acronyms

*LPA* maximum lighting power allowance in watts (W)

Modify Section 9 as shown (I-P and SI).

9.1 General

9.1.1 Scope

[ ... ]

9.1.1.3.1 Lighting Alterations for Interior Building Spaces. The alteration of a lighting system in an interior space shall meet one of the following requirements:
a. The alteration shall comply with Section 9.2 when the total number of new and retrofitted luminaires is greater than 2000 W.

b. When the total wattage of all new and retrofitted luminaires is 2000 W or less, each altered space shall comply with the LPD determined by the LPD values in or Tables 9.5.2-1 and 9.5.2-2 and Section 9.5.2.2, or the alteration shall result in a new wattage at least 50% below the original wattage of each altered lighting system. Additionally, the new and retrofitted lighting shall comply with the control requirements of Section 9.4.1.1(a), 9.4.1.1(h), 9.4.1.1(i) as applicable to each altered space as shown in Tables 9.5.2.1-1 and 9.5.21-2 and Section 9.5.2.2.

9.1.1.3.2 Lighting Alterations for Exterior Building Areas. The alteration of a lighting system for an exterior area shall use only the area-specific LPD values allowances in Table 9.4.2-2 Table 9.5.3-2 and shall not use the base site allowances to determine the LPA. Additionally, the exterior alteration shall meet one of the following:

a. The alteration shall comply with Section 9.2 when the total number of new and retrofitted luminaires is greater than 10, or where the combined length of new and retrofitted linear luminaires is greater than 20 linear feet.

b. Where the total number of new and retrofitted luminaires is not greater than 10 or where the combined length of new and retrofitted linear luminaires is not greater than 20 linear feet of linear luminaires, the total wattage of the alteration shall be no greater than the LPD determined by multiplying the area by the LPD values in the maximum LPD permitted by Table 9.4.2-2 Table 9.5.3-2, or the total new wattage shall be at least 50% below the total original wattage of that lighting system. Additionally, the new and retrofitted lighting shall comply with the control requirements of Section 9.4.1.4(a).

[...]

9.1.3 Installed Lighting Power. The luminaire wattage for all interior and exterior applications shall include all power used by the luminaires, including lamps, ballasts/drivers, transformers, and control devices, except as specifically exempted in Section 9.1.1, 9.2.2.1, or 9.4.29.53.

[...]

9.2.2 Prescriptive Requirements

[...]

9.2.2.1 Interior Lighting Power Allowance. The interior lighting power allowance for a building or a separately metered or permitted portion of a building shall be determined by either Simplified Building Method described in Section 9.3, the Building Area Method described in Section 9.5.1, or the Space-by-Space Method described in Section 9.5.2.

Trade-offs of interior lighting power allowance among portions of the building for which a different calculation method has been used for compliance are not permitted.

9.2.2.2 Exterior Lighting Power Allowance. The exterior lighting power allowance shall be determined by

a. Section 9.3.2, “Simplified Building Method of Calculating Exterior Lighting Power Allowance,” when using Section 9.3 to determine the interior lighting power allowance, or

b. Section 9.4.2 Section 9.5.3, “Exterior Building Lighting Power.”

[...]

9.3 Simplified Building Method Compliance Path

9.3.1 Simplified Building Method of Calculating Interior Lighting Power Allowance. Buildings (new and alterations) shall comply with the interior lighting power allowance and control requirements of Table 9.3.1-1, Table 9.3.1-2, or Table 9.3.1-3.

The interior lighting allowance using the Simplified Building Method shall be determined as follows:

a. Determine the applicable simplified building type from Table 9.3.1-1, Table 9.3.1-2, or Table 9.3.1-3 and corresponding LPD value for each space type.

b. Determine the gross lighted floor area in ft² (m²) of the building interior space.

c. Multiply the gross lighted floor area in ft² (m²) of the building interior space times the LPD value to determine the interior lighting power allowance for the building interior space.

d. Multiply the gross lighted floor area in ft² (m²) of the parking garage times the LPD value to determine the interior lighting power allowance for the parking garage.

e. Building interior space and parking garage interior lighting power allowances shall not be combined or traded between space types.
### Table 9.3.1-1 Simplified Building Method for Office Buildings

<table>
<thead>
<tr>
<th>Interior Space Type and LPA</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior office LPD: 0.56 W/ft² (6.0 W/m²)</td>
<td>All lighting shall be automatically controlled to turn off when individual spaces are either unoccupied or scheduled to be unoccupied. <em>(Exception:</em> Lighting load not exceeding 0.02 W/ft² multiplied by the gross lighted area of the space shall be permitted to operate at all times.) Each space shall have a manual control device that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.</td>
</tr>
<tr>
<td>All spaces in office buildings other than parking garages</td>
<td>All lighting shall be automatically controlled to turn off when individual spaces are either unoccupied or scheduled to be unoccupied. <em>(Exception:</em> Lighting load not exceeding 0.02 W/ft² multiplied by the gross lighted area of the space shall be permitted to operate at all times.) Each space shall have a manual control device that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.</td>
</tr>
<tr>
<td>The total LPD for the building other than parking garages shall not exceed 0.56 W/ft².</td>
<td>These spaces shall also be controlled by manual-ON occupant sensors.</td>
</tr>
<tr>
<td>Office spaces ≤150 ft², classrooms, conference rooms, meeting rooms, training rooms, storage rooms, and break rooms</td>
<td>These spaces shall also be controlled by manual-ON occupant sensors.</td>
</tr>
<tr>
<td>Office spaces &gt;150 ft² and restrooms</td>
<td>These spaces shall also be controlled by occupant sensors.</td>
</tr>
<tr>
<td>Stairwells and corridors in office buildings</td>
<td>These spaces shall also be controlled by occupant sensors that reduce the lighting power by a minimum of 50% when no activity is detected for not longer than 15 minutes and be controlled to turn off when the building is either unoccupied or scheduled to be unoccupied.</td>
</tr>
<tr>
<td>All other spaces in office buildings</td>
<td>Each space shall have a manual control device that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.</td>
</tr>
<tr>
<td>Parking garages LPD: The LPD shall not exceed 0.14 W/ft² for the interior parking floors.</td>
<td>All lighting shall be controlled by occupant sensors. Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall control more than 3600 ft² (334 m²).</td>
</tr>
<tr>
<td>Uncovered floors of a garage shall comply with the requirements of Table 9.3.2 for parking lots.</td>
<td>All lighting shall be controlled by occupant sensors. Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall control more than 3600 ft² (334 m²).</td>
</tr>
</tbody>
</table>

### Table 9.3.1-2 Simplified Building Method for Retail Buildings

<table>
<thead>
<tr>
<th>Interior Space Type</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior Retail LPD: 0.70 W/ft² (7.5 W/m²)</td>
<td>All lighting shall be automatically controlled to turn off when individual spaces are either unoccupied or scheduled to be unoccupied. <em>(Exception:</em> Lighting load not exceeding 0.02 W/ft² multiplied by the gross lighted area of the space shall be permitted to operate at all times.) Each space shall have a manual control device that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.</td>
</tr>
<tr>
<td>All spaces in retail buildings other than parking garages</td>
<td>All lighting shall be automatically controlled to turn off when individual spaces are either unoccupied or scheduled to be unoccupied. <em>(Exception:</em> Lighting load not exceeding 0.02 W/ft² multiplied by the gross lighted area of the space shall be permitted to operate at all times.) Each space shall have a manual control device that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.</td>
</tr>
<tr>
<td>The total LPD for the building other than parking garages shall not exceed 0.70 W/ft².</td>
<td>These spaces shall also be automatically controlled to</td>
</tr>
</tbody>
</table>
| Sales area | • reduce the general lighting power by a minimum of 75% during nonbusiness hours,  
• to turn off all lighting other than general lighting during nonbusiness hours, and  
• by continuous daylight dimming controls in spaces with toplighting. |
| Stock rooms, dressing/fitting rooms, locker rooms, and restrooms | These spaces shall also be controlled by: auto-ON or manual-ON occupant sensors, and continuous daylight dimming controls in spaces with toplighting. |
| Office spaces, conference rooms, meeting rooms, training rooms, storage rooms, break rooms, and utility spaces | These spaces shall also be controlled by: manual-ON occupant sensors, and continuous daylight dimming controls in spaces with toplighting. |
| Stairwells and corridors in retail buildings | These spaces shall also be controlled by occupant sensors that reduce the lighting power by a minimum of 50% when no activity is detected for not longer than 15 minutes and be controlled to turn off when the building is either unoccupied or scheduled to be unoccupied. |
9.3.2 Simplified Building Method of Calculating Exterior Lighting Power Allowance. For all building types listed in Section 9.3, exterior areas (new and alterations) shall comply with the exterior lighting power allowance and control requirements of Table 9.3.2.

The exterior lighting power allowance using the Simplified Building Method shall be determined as follows:

a. Determine the applicable simplified exterior area(s) type from Table 9.3.2 and corresponding LPD value.

b. The exterior area in ft² (m²) is the area designed to be illuminated.

c. Multiply each exterior area in ft² times the LPD value to determine the exterior lighting power allowance of each area.

d. The total exterior lighting power allowance for all exterior building applications is the sum of the base allowance and all individual area lighting power allowances.

9.4 Mandatory Provisions

9.4.1 Lighting Control. Lighting controls shall be installed to meet the provisions of Sections 9.4.1.1, 9.4.1.2, 9.4.1.3, and 9.4.1.4.
9.4.1.4 Exterior Lighting Control. For each surface or area, all of the lighting control functions indicated in Table 9.4.2-2 Table 9.5.3-2 shall be implemented. Lighting for exterior applications not exempted in Section 9.1 shall meet the requirements defined here and listed in Table 9.4.2-2 Table 9.5.3-2:

a. OFF control: There shall be one or more lighting control(s) that turns off all of the lighting in the area or surface.

b. Daylight OFF control: Lighting shall automatically turn off when sufficient daylight is available or within 30 minutes of sunrise.

c. Scheduled OFF control: Lighting shall be automatically shut off between midnight or business closing, whichever is later, and 6 a.m. or business opening, whichever comes first, or between times established by the authority having jurisdiction.

d. Scheduled light reduction control: Lighting and signage shall be controlled to automatically reduce the connected lighting power by at least 50% from midnight or within one hour of the end of business operations, whichever is later, until 6 a.m. or the beginning of business operations, whichever is earlier.

e. Occupancy-sensing light reduction control: Lighting shall be controlled to automatically reduce the connected lighting power by a minimum of 50% when no activity has been detected in the area illuminated by the controlled luminaires for a time of no longer than 15 minutes. No more than 1500 W of lighting power shall be controlled together.

All time switches shall be capable of retaining programming and the time setting during loss of power for a period of at least ten hours.

Renumber existing Section 9.4.2 and revise as shown (I-P and SI).

9.4.2 Exterior Lighting Power. The total exterior lighting power allowance for all exterior building applications is the sum of the base site allowance plus all the individual area lighting power allowances.
for areas that are designed to be illuminated and are permitted in Table 9.4.2-2 Table 9.5.3-2 for the applicable lighting zone in Table 9.4.2-1 Table 9.5.3-1. The installed exterior lighting power identified in accordance with Section 9.1.3 shall not exceed the exterior lighting power allowance developed in accordance with this section. Trade-offs are allowed only among exterior lighting applications listed in the Table 9.4.2-2 Table 9.5.3-2 “Tradable Surfaces” section. The lighting zone for exterior applications is determined from Table 9.4.2-1 Table 9.5.3-1 unless otherwise specified by the local jurisdiction.

Table 9.4.2-1 Table 9.5.3-1 Exterior Lighting Zones

<table>
<thead>
<tr>
<th>Lighting Zone</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Undeveloped areas within national parks, state parks, forest land, rural areas, and other undeveloped areas as defined by the authority having jurisdiction</td>
</tr>
<tr>
<td>1</td>
<td>Developed areas of national parks, state parks, forest land, and rural areas</td>
</tr>
<tr>
<td>2</td>
<td>Areas predominantly consisting of residential zoning, neighborhood business districts, light industrial with limited nighttime use and residential mixed use areas</td>
</tr>
<tr>
<td>3</td>
<td>All other areas</td>
</tr>
<tr>
<td>4</td>
<td>High-activity commercial districts in major metropolitan areas as designated by the local jurisdiction</td>
</tr>
</tbody>
</table>

Table 9.4.2-2 Table 9.5.3-2 Individual Lighting Power Allowances-Densities for Building Exteriors Applications

<table>
<thead>
<tr>
<th>Section 9.4.1.4 Required Controls</th>
<th>Zone 0</th>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
<th>Zone 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Site Allowance</strong> (Base allowance may be used in tradable or non-tradable surfaces.)</td>
<td>No allowance</td>
<td>160 W</td>
<td>280 W</td>
<td>400 W</td>
<td>560 W</td>
</tr>
<tr>
<td>** Tradable Surfaces** (LPD for uncovered parking areas, building grounds, building entrances, exits and loading docks, canopies and overhangs, and outdoor sales areas may be traded.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Uncovered Parking Areas</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parking areas and drives</td>
<td>No allowance</td>
<td>0.015 W/ft²</td>
<td>0.026 W/ft²</td>
<td>0.037 W/ft²</td>
<td>0.052 W/ft²</td>
</tr>
<tr>
<td>Parking areas and drives with luminaires &gt;78W and mounting height &lt;24 ft</td>
<td>No allowance</td>
<td>0.015 W/ft²</td>
<td>0.026 W/ft²</td>
<td>0.037 W/ft²</td>
<td>0.052 W/ft²</td>
</tr>
<tr>
<td><strong>Grounds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walkways/ramps</td>
<td>No allowance</td>
<td>0.5 W/linear ft</td>
<td>0.5 W/linear ft</td>
<td>0.55 W/linear ft</td>
<td>0.60 W/linear ft</td>
</tr>
<tr>
<td>Plaza areas</td>
<td>No allowance</td>
<td>0.028 W/ft²</td>
<td>0.049 W/ft²</td>
<td>0.070 W/ft²</td>
<td>0.098 W/ft²</td>
</tr>
<tr>
<td>Roof terraces and special features</td>
<td>No allowance</td>
<td>0.04 W/ft²</td>
<td>0.07 W/ft²</td>
<td>0.10 W/ft²</td>
<td>0.140 W/ft²</td>
</tr>
<tr>
<td>Dining areas</td>
<td>No allowance</td>
<td>0.156 W/ft²</td>
<td>0.273 W/ft²</td>
<td>0.390 W/ft²</td>
<td>0.546 W/ft²</td>
</tr>
<tr>
<td>Pedestrian tunnels</td>
<td>No allowance</td>
<td>0.063 W/ft²</td>
<td>0.110 W/ft²</td>
<td>0.157 W/ft²</td>
<td>0.220 W/ft²</td>
</tr>
<tr>
<td>Landscaping</td>
<td>No allowance</td>
<td>0.014 W/ft²</td>
<td>0.025 W/ft²</td>
<td>0.036 W/ft²</td>
<td>0.050 W/ft²</td>
</tr>
<tr>
<td><strong>Building Entrances, Exits, and Loading Docks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pedestrian and vehicular entrances and exits</td>
<td>No allowance</td>
<td>5.6 W/linear ft of opening</td>
<td>9.8 W/linear ft of opening</td>
<td>14.0 W/linear ft of opening</td>
<td>19.6 W/linear ft of opening</td>
</tr>
</tbody>
</table>
### Table 9.4.2-2 Table 9.5.3-2 Individual Lighting Power Allowances-Densities for Building Exteriors Applications

<table>
<thead>
<tr>
<th></th>
<th>Zone 0</th>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
<th>Zone 4</th>
<th>Section 9.4.1.4 Required Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry canopies</td>
<td>No allowance</td>
<td>0.072 W/ft²</td>
<td>0.126 W/ft²</td>
<td>0.180 W/ft²</td>
<td>0.252 W/ft²</td>
<td>(b) and either (d) or (e)</td>
</tr>
<tr>
<td>Loading docks</td>
<td>No allowance</td>
<td>0.104 W/ft²</td>
<td>0.182 W/ft²</td>
<td>0.260 W/ft²</td>
<td>0.364 W/ft²</td>
<td>(b) and either (d) or (e)</td>
</tr>
<tr>
<td>Sales Canopies</td>
<td>Free standing and attached</td>
<td>No allowance</td>
<td>0.20 W/ft²</td>
<td>0.35 W/ft²</td>
<td>0.50 W/ft²</td>
<td>0.70 W/ft²</td>
</tr>
<tr>
<td>Outdoor Sales</td>
<td>Open areas (including vehicle sales lots)</td>
<td>No allowance</td>
<td>0.072 W/ft²</td>
<td>0.126 W/ft²</td>
<td>0.180 W/ft²</td>
<td>0.252 W/ft²</td>
</tr>
<tr>
<td></td>
<td>Street frontage for vehicle sales lots in addition to “open area” allowance</td>
<td>No allowance</td>
<td>No allowance</td>
<td>7.2 W/linear ft</td>
<td>10.3 W/linear ft</td>
<td>14.4 W/linear ft</td>
</tr>
<tr>
<td>Nontradable Surfaces</td>
<td>Stairways Exempt</td>
<td>Exempt</td>
<td>Exempt</td>
<td>Exempt</td>
<td>Exempt</td>
<td>(b)</td>
</tr>
<tr>
<td></td>
<td>Building facades (The allowance for each illuminated facade orientation shall be calculated by multiplying the allowable value by the entire facade area or facades length for that orientation.)</td>
<td>No allowance</td>
<td>0.056 /ft² of facade area or 1.4 W/linear ft of facade length</td>
<td>0.098 W/ft² of facade area or 2.4 W/linear ft of facade length</td>
<td>0.140 W/ft² of facade area or 3.4 W/linear ft of facade length</td>
<td>0.196 W/ft² of facade area or 4.8 W/linear ft of facade length</td>
</tr>
<tr>
<td></td>
<td>Automated teller machines and night depositories</td>
<td>No allowance</td>
<td>90 W per location plus 35 W per additional ATM per location</td>
<td>90 W per location plus 35 W per additional ATM per location</td>
<td>90 W per location plus 35 W per additional ATM per location</td>
<td>90 W per location plus 35 W per additional ATM per location</td>
</tr>
<tr>
<td></td>
<td>Uncovered entrances and gatehouse inspection stations at guarded facilities</td>
<td>No allowance</td>
<td>0.144 W/ft²</td>
<td>0.252 W/ft²</td>
<td>0.360 W/ft²</td>
<td>0.504 W/ft²</td>
</tr>
<tr>
<td></td>
<td>Uncovered loading areas for law enforcement, fire, ambulance, and other emergency service vehicles</td>
<td>No allowance</td>
<td>0.104 W/ft²</td>
<td>0.182 W/ft²</td>
<td>0.260 W/ft²</td>
<td>0.364 W/ft²</td>
</tr>
<tr>
<td></td>
<td>Drive-through windows/doors</td>
<td>No allowance</td>
<td>53 W per drive-through</td>
<td>92 W per drive-through</td>
<td>132 W per drive-through</td>
<td>185 W per drive-through</td>
</tr>
<tr>
<td></td>
<td>Parking near 24-hour retail entrances</td>
<td>No allowance</td>
<td>80 W per main entry</td>
<td>140 W per main entry</td>
<td>200 W per main entry</td>
<td>280 W per main entry</td>
</tr>
<tr>
<td></td>
<td>For areas that are not listed in this table or are not comparable to areas listed in this table, use the comparable interior space type from Tables 9.5.2.1-1 and 9.5.2.1-2 as modified by factors in this row.</td>
<td>No allowance</td>
<td>22% of the interior lighting power allowance density value</td>
<td>39% of the interior lighting power allowance density value</td>
<td>55% of the interior lighting power allowance density value</td>
<td>77% of the interior lighting power allowance density value</td>
</tr>
<tr>
<td></td>
<td>Roadway/parking entry, trail head, and toilet facility, or other locations approved by the authority having jurisdiction.</td>
<td>No additional allowance</td>
<td>No additional allowance</td>
<td>No additional allowance</td>
<td>No additional allowance</td>
<td>(b) and either (d) or (e)</td>
</tr>
</tbody>
</table>
9.4.3-9.4.2 Dwelling Units. Dwelling unit lamps, luminaires, and lighting controls shall be installed to meet the provisions of Sections 9.4.3.1, 9.4.3.2, and 9.4.3.3. No other provisions of Section 9 apply to dwelling units.

9.5 Prescriptive Compliance Path. Interior lighting power. Interior lighting power shall comply with either Section 9.5.1 or Section 9.5.2. Lighting control requirements shall comply with Section 9.4.1 and Table 9.5.2.1.

Exterior lighting power shall comply with Section 9.5.3. Trade-offs between the installed interior lighting power and installed exterior lighting power are not allowed.

9.5.1 Building Area Method Compliance Path. Use the following steps to determine the interior lighting power allowance by the Building Area Method:

a. Determine the appropriate building area type from Table 9.5.1 and the corresponding LPD value allowance. For building area types not listed, selection of a reasonably equivalent type shall be permitted.

b. Determine the gross lighted floor area in ft² (m²) of the building area type.

c. Multiply the gross lighted floor areas of the building area types times the LPD value.

d. The interior lighting power allowance for the building is the sum of the lighting power allowances of all building area types. Trade-offs among building area types are permitted, provided that the total installed interior lighting power does not exceed the interior lighting power allowance.

Table 9.5.1 Lighting Power Density Allowances Using the Building Area Method

<table>
<thead>
<tr>
<th>Building Area Type</th>
<th>LPD, W/ft²</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ . . . ]</td>
<td>[ . . . ]</td>
</tr>
</tbody>
</table>

[a. In cases where both a general building area type and a specific building area type are listed, the specific building area type shall apply.]

9.5.2 Space-by-Space Method Compliance Path

9.5.2.1 Space-by-Space Method of Calculating Interior Lighting Power Allowance. Use the following steps to determine the interior lighting power allowance by the Space-by-Space Method:

a. For each space enclosed by partitions that are 80% of the ceiling height or taller, determine the appropriate space type and the corresponding LPD value allowance from Tables 9.5.2.1-1 and 9.5.2.1-2. If a space has multiple functions, where more than one space type is applicable, that space shall be broken up into smaller subspaces, each using its own space type from Tables 9.5.2.1-1 and 9.5.2.1-2. Any of these subspaces that are smaller in floor area than 20% of the original space and less than 1000 ft² (300 m²) need not be broken out. Include the floor area of balconies and other projections in this calculation.

b. In calculating the area of each space and subspace, the limits of the area are defined by the centerline of interior walls, the dividing line between subspaces, and the outside surface of exterior walls or semiexterior walls. For the purposes of this section, semiexterior walls that separate semiheated space from conditioned space shall be considered interior walls.

c. Based on the space type selected for each space or subspace, determine the lighting power allowance of each space or subspace by multiplying the calculated area of the space or subspace by the appropriate LPD value allowance determined in Section 9.5.2.1(a). For space types not listed, selection of a reasonable equivalent category shall be permitted.

d. The interior lighting power allowance is the sum of lighting power allowances of all spaces and subspaces. Trade-offs among spaces and subspaces are permitted, provided that the total installed interior lighting power does not exceed the interior lighting power allowance.

Table 9.5.2.1-1 Maximum Space-by-Space Lighting Power Density Allowances Using the Space-by-Space Method and Minimum Control Requirements Using Either Method

Table 9.5.2.1-2 Maximum Space-by-Space Lighting Power Density Allowances Using the Space-by-Space Method and Minimum Control Requirements Using Either Method

[ . . . ]

9.5.2.3 Additional Interior Lighting Power Using Nonmandatory Controls. An additional interior lighting power allowance shall be permitted for space types with nonmandatory
controls installed as identified in Table 9.5.2.3 when all mandatory controls are used according to Section 9.4. This allowance is added to the interior lighting power allowance and is calculated as follows:

[p. . . .]

**9.5.2.4 Room Geometry Adjustment.** When using the Space-by-Space Method, an adjustment of the space LPD value allowance is permitted for individual spaces where room cavity ratio (RCR) calculated for the empty room is documented to be greater than the RCR threshold for that space type shown in Tables 9.5.2.1-1 and 9.5.2.1-2.

\[
\text{RCR} = 2.5 \times \text{Room Cavity Height} \times \text{Room Perimeter Length}/\text{Room Area}
\]

where Room Cavity Height = Luminaire Mounting Height – Workplane.

For corridor/transition spaces, this adjustment is allowed when the corridor is less than 8 ft wide, regardless of the RCR.

The LPD value allowance for these spaces may be increased by the following amount:

\[
\text{LPD Increase} = \text{Base Space LPD} \times 0.20
\]

where Base Space LPD = the applicable LPD value allowance from Tables 9.5.2.1-1 and 9.5.2.1-2.

[p. . . .]

**Modify Section G1.2.1 as shown.**

**G1.2.1 Mandatory Provisions.** The proposed building design shall comply with all of the following:

a. Sections 5.2.1, 6.2.1, 7.2.1, 8.2.1, 9.2.1, and 10.2.1.

b. Interior lighting power shall not exceed the interior lighting power allowance determined using either
   1. Table G3.7 and the methodology described in Section 9.5.2, or
   2. Table G3.8 and the methodology described in Section 9.5.1.

c. The installed exterior lighting power shall not exceed the exterior lighting power allowance determined using Table G3.6 and the methodology described in Section 9.5.3.

d. Energy efficiency levels of installed components and systems that meet or exceed the efficiency levels used to calculate the proposed building performance.
ASHRAE is concerned with the impact of its members’ activities on both the indoor and outdoor environment. ASHRAE’s members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

ASHRAE’s short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its Handbook, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating Standards and Guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system’s intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE’s primary concern for environmental impact will be at the site where equipment within ASHRAE’s scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.
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