



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

Public Review Draft

Proposed Addendum b to Standard 90.1-2022, Energy Standard for Sites and Buildings Except Low- Rise Residential Buildings

**First Public Review (March 2023)
(Draft Shows Proposed Changes to Current Standard)**

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FOREWORD

This addendum addresses several topics. First, it moves the exterior lighting power section (currently 9.4.2) from Section 9.4 to a new subparagraph (9.5.3) in Section 9.5. The existing subparagraph 9.2.2, Prescriptive Requirements, already includes exterior lighting power. The move from 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 1,000 ft², the interior lighting power allowance is 840 W under the Building Area Method.

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

[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 b to 90.1-2022

Modify the standard as follows for IP (and SI) Units:

3.2 Definitions

[...]

exterior lighting power allowance: ~~see lighting power allowance, exterior.~~ the maximum lighting power permitted for a building, site, or exterior application.

[...]

interior lighting power allowance: ~~see lighting power allowance, interior.~~ the maximum lighting power permitted for the interior of a building.

[...]

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

[...]

lin ft linear foot

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

LPD lighting power density

[...]

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 *LPA* determined by the *LPD* values in ~~of~~ 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 9.5.2.1-2 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 *LPA* determined by multiplying the area by the *LPD* values in ~~the maximum *LPA* 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 ~~9.4.2~~9.5.3.

Exception to 9.1.3

If two or more independently operating *lighting systems* in a *space* are capable of being controlled to prevent simultaneous user operation, the *installed interior lighting power* or the *installed exterior lighting power* shall be based solely on the *lighting system* with the highest wattage.

[...]

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

Interior Space Type and LPA	Controls
<u>Interior office LPD: 0.56 W/ft² (6.0 W/m²)</u>	
<p>All <i>spaces</i> in office <i>buildings</i> other than parking garages.</p> <p>The total <i>LPA</i> for the <i>building</i> other than parking garages shall not exceed 0.56 W/ft².</p>	<p>All lighting shall be <i>automatically</i> controlled to turn off when individual <i>spaces</i> are either unoccupied or scheduled to be unoccupied. (Exception: Lighting load not exceeding 0.02 W/ft² (0.2 W/m²) multiplied by the gross lighted area of the <i>space</i> shall be permitted to operate at all times.)</p> <p>Each <i>space</i> shall have a <i>manual control device</i> that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.</p>
Office <i>spaces</i> ≤ 150 ft ² (14 m ²), classrooms, conference rooms, meeting rooms, training rooms, storage rooms, and break rooms	These <i>spaces</i> shall also be controlled by <i>manual-ON occupant sensors</i> .
Office <i>spaces</i> >150 ft ² (14 m ²) and restrooms	These <i>spaces</i> shall also be controlled by <i>occupant sensors</i> .
Stairwells and corridors in office <i>buildings</i>	These <i>spaces</i> shall also be controlled by <i>occupant sensors</i> 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 <i>building</i> is either unoccupied or scheduled to be unoccupied.
<u>All other <i>spaces</i> in office <i>buildings</i></u>	<u>Each <i>space</i> shall have a <i>manual control device</i> that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.</u>
<p>Parking garages <u>LPD</u>: The <i>LPA</i> shall not exceed 0.14 W/ft² (1.5 W/m²) for the interior parking floors.</p> <p>Uncovered floors of a garage shall <u>follow the requirements use <i>LPA</i> and control requirements in of</u> Table 9.3.2 for parking lots</p>	<p>All lighting shall be controlled by <i>occupant sensors</i>. Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall <i>control</i> more than 3600 ft².</p>

Table 9.3.1-2 Simplified Building Method for Retail Buildings

Interior Space Type and LPA	Controls
<u>Interior Retail LPD: 0.70 W/ft² (7.5 W/m²)</u>	
<p>All <i>spaces</i> in retail <i>buildings</i> other than parking garages</p> <p>The total <i>LPA</i> for the <i>building</i> other than parking garages shall not exceed 0.70 W/ft².</p>	<p>All lighting shall be <i>automatically</i> controlled to turn off when individual <i>spaces</i> are either unoccupied or scheduled to be unoccupied. (Exception: Lighting load not exceeding 0.02 W/ft² multiplied by the gross lighted area of the <i>space</i> shall be permitted to operate at all times.)</p> <p>Each <i>space</i> shall have a <i>manual control device</i> that allows the occupant to reduce lighting power by a minimum of 50% and to turn the lighting off.</p>
Sales area	<p>These <i>spaces</i> shall also be <i>automatically</i> controlled to</p> <ul style="list-style-type: none"> reduce the <i>general lighting</i> power by a minimum of 75% during

	<p>nonbusiness hours,</p> <ul style="list-style-type: none"> • to turn off all lighting other than <i>general lighting</i> during nonbusiness hours, and • by <i>continuous daylight dimming</i> controls in spaces with <i>toplighting</i>.
Stock rooms, dressing/fitting rooms, locker rooms, and restrooms	These spaces shall also be controlled by; auto-ON or manual-ON occupant sensors, and <i>continuous daylight dimming</i> controls in spaces with <i>toplighting</i> .
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 <i>continuous daylight dimming</i> controls in spaces with <i>toplighting</i> .
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.
<u>All other spaces in retail buildings</u>	<u>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.</u>
Parking garages LPD: The LPA shall not exceed 0.14 W/ft ² (1.5 W/m ²) for the interior parking floors.	All lighting shall be controlled by <i>occupant sensors</i> . Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall <i>control</i> a more than 3600 ft ² (336 m ²)
Uncovered floors of a garage shall use LPA and control requirements in follow the requirements of Table 9.3.2 for parking lots.	

Table 9.3.1-3 Simplified Building Method for School Buildings

Interior Space Type and LPA	Controls
<u>Interior School LPD: 0.63 W/ft² (6.8 W/m²)</u>	
<p>All spaces in school buildings other than parking garages</p> <p>The total LPA for the building other than parking garages shall not exceed 0.63 W/ft².</p>	<p>All lighting shall be <i>automatically</i> controlled to turn off when individual spaces are either unoccupied or scheduled to be unoccupied. (Exception: Lighting load not exceeding 0.02 W/ft² (0.2 W/m²) multiplied by the gross lighted area of the space shall be permitted to operate at all times.)</p> <p>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.</p>
Classrooms, offices spaces, conference rooms, meeting rooms, library, storage rooms, and break rooms	These spaces shall also be controlled by manual-ON occupant sensors.
Gymnasiums and cafeterias	These spaces shall also be controlled by occupant sensors.
Restrooms	These spaces shall also be controlled by occupant sensors.
Stairwells and corridors in school buildings and parking garages	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.
<u>All other spaces in school buildings</u>	<u>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.</u>

Parking garages LPD: The LPA shall not exceed: 0.14 W/ft² (1.5 W/m²) for the interior parking floors.	All lighting shall be controlled by <i>occupant sensors</i> . Controls shall reduce the power by a minimum of 50% when no activity is detected for not longer than 15 minutes. No device shall <i>control</i> a more than 3600 ft ² (336 m ² .)
Uncovered floors of a garage shall use LPA and control requirements in follow the requirements of Table 9.3.2 for parking lots.	

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:

- Determine the applicable simplified exterior area(s) type from Table 9.3.2 and corresponding LPD value.
- The exterior area in ft² (m²) is the area designed to be illuminated.
- Multiply each exterior area in ft² times the LPD value to determine the exterior lighting power allowance of each area.
- 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.

Table 9.3.2 Simplified Building Method for Building Exteriors

[Note: only the IP table is shown as no LPD values are impacted. The same changes to text would take effect for the SI version]

Exterior Area Type	Exterior Lighting Power Allowance ^{a,b} Density ^{a,b}	Controls
All exterior areas		All lighting shall be <i>automatically</i> controlled to shut off the lighting when daylight is available.
<u>Base allowance of 200 W which may be used in any exterior area in addition to the exterior lighting power allowance</u>	200 W	<i>Luminaires</i> shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Façade lighting	0.10 W/ft ²	<i>Luminaires</i> shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Roof Terraces, special feature areas, walkways, plazas and ramps	0.07 W/ft ²	<i>Luminaires</i> shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Landscape	0.036 W/ft ²	<i>Luminaires</i> shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Entry doors	14 W/lin ft	<i>Luminaires</i> shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.
Stairs	Exempt	No additional <i>controls</i> required.
Parking lots and drives	0.037 W/ft ²	<i>Luminaires</i> mounted 25 ft or less above grade shall be controlled to reduce the power by at least 50% when no activity is detected for not longer than 15 minutes.
All other areas not listed	0.20 W/ft ²	<i>Luminaires</i> shall be turned off or the power reduced by a minimum of 75% during nonoperating hours.

a. ~~To calculate the exterior allowance~~ total exterior lighting power allowance, multiply the ~~space or area~~ square footage by

~~the LPD-allowed W/ft². The total exterior lighting power allowance is the sum of all the calculated values and the base power allowance, and sum the exterior allowance exterior lighting power allowances and the base allowance. Façade lighting shall be calculated separately by multiplying the façade area by the LPD value allowed W/ft². Façade allowance shall not be traded with other exterior areas or between separate façade areas.~~

- b. ~~a.~~ For buildings in Lighting Zone 2, as defined in Table 9.4.2-4 Table 9.5.3-1, multiply exterior allowance exterior lighting power allowance by 0.7. For buildings in Lighting Zone 4, as defined in Table 9.4.2-4 Table 9.5.3-1, multiply exterior allowance exterior lighting power allowance by 1.4.

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 mid- night 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 and revise as shown below:

~~9.4.2~~ 9.5.3 Exterior Lighting Power

The total exterior lighting power allowance for all exterior building applications is the sum of the base site allowance ~~plus~~ and 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 9.4.2-4~~ 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 9.4.2-4~~ 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

Lighting Zone	Description
	[...]

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

[Note: only the IP table is shown as no LPD values are impacted. The same changes to text would take effect for the SI version]

	Zone 0	Zone 1	Zone 2	Zone 3	Zone 4	Section 9.4.1.4 Required Controls
Base Site Allowance (Base allowance may be used in tradable or nontradable surfaces.)						
	No allowance	160 W	280 W	400 W	560 W	

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.)						
Uncovered Parking Areas						
Parking areas and drives	No allowance	0.015 W/ft ²	0.026 W/ft ²	0.037 W/ft ²	0.052 W/ft ²	(b) and either (d) or (e)

Parking area and drives with luminaires >78 W and mounting height < 24 ft	No allowance	0.015 W/ft ²	0.026 W/ft ²	0.037 W/ft ²	0.052 W/ft ²	(b) and (e)

Grounds						
Walkways/ramps	No allowance	0.5 W/linear ft	0.5 W/linear ft	0.6 W/linear ft	0.7 W/linear ft	(b) and either (d) and (e)

Plaza areas	No allowance	0.028W/ft ²	0.049W/ft ²	0.070W/ft ²	0.098 W/ft ²	(b) and either (d) or (e)

Roof terraces and special features	No allowance	0.04 W/ft ²	0.07 W/ft ²	0.10 W/ft ²	0.140 W/ft ²	(b) and either (d) or (e)

Dining areas	No allowance	0.156 W/ft ²	0.273 W/ft ²	0.390W/ft ²	0.546 W/ft ²	(b) and either (d) or (e)

Pedestrian tunnels	No allowance	0.063 W/ft ²	0.110 W/ft ²	0.157W/ft ²	0.220 W/ft ²	(d) or (e)

Landscaping	No allowance	0.014 W/ft ²	0.025 W/ft ²	0.036 W/ft ²	0.050 W/ft ²	(b) and (c)

Building Entrances, Exits, and Loading Docks						
Pedestrian and vehicular entrances and exits	No allowance	5.6 W/linear ft of opening	9.8 W/linear ft of opening	14.0 W/linear ft of opening	19.6 W/linear ft of opening	(b) and either (d) or (e)

Entry canopies	No allowance ---	0.72 W/ft ²	0.126W/ft ²	0.18 W/ft ²	0.252W/ft ²	(b) and either (d) or (e)
Loading docks	No allowance ---	0.104W/ft ²	0.182W/ft ²	0.260W/ft ²	0.364W/ft ²	(b) and either (d) or (e)
Sales Canopies						
Free standing and attached	No allowance ---	0.20W/ft ²	0.35W/ft ²	0.50 W/ft ²	0.70 W/ft ²	(b) and either (d) or (e)
Outdoor Sales						
Open areas (including vehicle sales lots)	No allowance ---	0.072W/ft ²	0.126 W/ft ²	0.180 W/ft ²	0.252W/ft ²	(b) and either (d) or (e)
Street frontage for vehicle sales lots in addition to "open area" allowance	No allowance ---	No allowance ---	7.2 W/linear foot	10.3 W/linear foot	14.4 W/linear foot	(b) and either (d) or (e)
Nontradable Surfaces (LPD for the following applications can be used only for the specific application and cannot be traded between surfaces or with other exterior lighting. The following allowances are in addition to any allowance otherwise permitted in the "Tradable Surfaces" section of this table.)						
Stairways	Exempt	Exempt	Exempt	Exempt	Exempt	(b)
<i>Building facades</i> (The allowance for each illuminated facade <i>orientation</i> shall be calculated by multiplying the allowable value by the entire facade area or <i>façade length</i> for that <i>orientation</i> .)	No allowance ---	0.056 ft ² of <i>façade area</i> or 1.4 W/linear ft of <i>façade length</i>	0.098 W/ft ² of <i>façade area</i> or 2.4 W/linear ft of <i>façade length</i>	0.14 W/ft ² of <i>façade area</i> or 3.4 W/ linear ft of <i>façade length</i>	0.196 W/ft ² of <i>façade area</i> or 4.8 W/linear ft of <i>façade length</i>	(b) and (c)
Automated teller machines and night depositories	No allowance ---	90 W per location plus 35 W per additional ATM per location	90 W per location plus 35 W per additional ATM per location	90 W per location plus 35 W per additional ATM per location	90 W per location plus 35 W per additional ATM per location	(b)

Table 9.4.2-2 Table 9.5.3-2 Individual Lighting Power Allowances for Building Exteriors Applications (Continued)

[Note: only the IP table is shown as no LPD values are impacted. The same changes to text would take effect for the SI version]

	Zone 0	Zone 1	Zone 2	Zone 3	Zone 4	Section 9.4.1.4 Required Controls
Uncovered entrances and gatehouse inspection stations at guarded facilities	No allowance ---	0.144 W/ft ²	0.252 W/ft ²	0.36 W/ft ²	0.504 W/ft ²	(b) and either (d) or (e)

Uncovered loading areas for law enforcement, fire, ambulance, and other emergency service vehicles	No allowance ---	0.35 W/ft ²	0.35 W/ft ²	0.35 W/ft ²	0.35 W/ft ²	(b) and either (d) or (e)
Drive-through windows/doors	No allowance ---	53 W per drive-through	92 W per drive-through	132 W per drive-through	185 W per drive-through	(b) and either (d) or (e)
Parking near 24-hour retail entrances	No allowance ---	80 W per main entry	140 W per main entry	200 W per main entry	280 W per main entry	(b) and either (d) or (e)
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 Table 9.5.2.1 as modified by factors in this row.	No allowance ---	22% of the interior lighting power allowance density value	39% of the interior lighting power allowance density value	55% of the interior lighting power allowance density value	77% of the interior lighting power allowance density value	(b) and either (d) or (e)
Roadway/parking entry, trail head, and toilet facility, or other locations approved by the authority having jurisdiction.	A single luminaire of 10 W or less	No additional allowance ---	No additional allowance ---	No additional allowance ---	No additional allowance ---	No additional allowance ---

9.4.3 9.4.2 Dwelling Units

Not less than 75% of the *permanently installed lighting fixtures* shall use *lamps* with an *efficacy* of at least 55 lm/W or have a total *luminaire efficacy* of at least 45 lm/W. No other provisions of Section 9 apply to dwelling units.

Exception to 9.4.3-9.4.2:

1. Lighting that is controlled with *dimmers* or controlled in accordance with Section 9.4.1.1(h).
2. Hotel/motel guest rooms. The requirements for hotel/motel guest rooms are covered in Table 9.5.2.1 and Section 9.4.1.3(b).

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~~ *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~~ *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

[Note: only the IP table is shown as no LPD values are impacted. The same changes to the title would take effect for the SI version]

Building Area Type ^a	LPD, W/ft ²
Automotive facility	0.73
[...]	
Workshop	0.86

[...]

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 Table 9.5.2.1. 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 Table 9.5.2.1. 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~~ *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~~ *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*.

Modify Table titles as shown below

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* ~~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:

[...]

9.5.2.4 Room Geometry Adjustment

When using the Space-by-Space Method, an adjustment of the *space LPD value allowance* ~~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 Table 9.5.2.1.

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

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* ~~allowance~~ for these *spaces* may be increased by the following amount:

$$LPD \text{ Increase} = \text{Base Space LPD} \times 0.20$$

where Base *Space LPD* = the applicable *LPD value allowance* ~~allowance~~ from Table 9.5.2.1.

[...]

G1.2 Performance Rating

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.
- e-d. Energy efficiency levels of installed components and *systems* that meet or exceed the efficiency levels used to calculate the *proposed building performance*.

...