



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

Public Review Draft

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

**Second Public Review (November 2024)
(Draft Shows Proposed Independent Substantive
Changes to Previous Public Review Draft)**

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FOREWORD

This ISC addresses two comments received related to the PPR.

The PPR revised the definitions of lighting zones (LZ). The Illuminating Engineering Society has revised the definitions and names of lighting zones. This addendum changes the names and definitions of the lighting zones to match new definitions/terms to match the new forthcoming definitions from the IES (not yet published). This ISC revises the definitions to further reflect changes by the IES.

This ISC adds LZ0 values for pedestrian tunnels and loading docks.

This proposal also reduces the wattage threshold from 78 Watts to 40 Watts for motion controlled parking lot lighting mounted less than 24 feet above the ground.

[Note to Reviewers: This public review draft makes proposed independent substantive changes to the previous public review draft. These changes are indicated in the text by underlining (for additions) and ~~striketrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the previous draft 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 substantive changes.]

Addendum ab to 90.1-2022

Modify the definitions of Exterior Lighting Zones in Table 9.5.3-1 and modify threshold wattage for motion sensing of parking lighting to 40 Watts

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 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:

[...]

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~~ 600 W of lighting power shall be controlled together.

[...]

9.5.3 Exterior Lighting Power. The total *exterior lighting power allowance* for all exterior applications is the sum of the base *site* allowance and all the individual allowances that are designed to be illuminated and are permitted in Table 9.5.3-2 for the applicable lighting zone in 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 9.5.3-2 “Tradable Surfaces” section. The lighting zone for exterior applications is determined from Table 9.5.3-1 unless otherwise specified by the local jurisdiction.

Table 9.5.3-1 Exterior Lighting Zones

Lighting Zone	Description
0	<p>Agricultural and residential uses in rural areas.</p> <p>Amenity areas such as visitor centers or lodges within or adjacent to wilderness, natural parks, protected wildlife areas, and areas surrounding observatories. Municipal parks within or adjacent to LZ1.</p> <ol style="list-style-type: none"> 1. <u>Agricultural and rural residential areas</u> 2. <u>Visitor centers or lodges within or adjacent to wilderness, natural parks, protected wildlife areas</u> 3. <u>Areas surrounding astronomical observatories</u> 4. <u>Municipal parks in rural areas</u> 5. <u>All other similar areas</u>
1	<p>Rural town centers.</p> <p>Moderate density single family and multi-family residential in suburban or urban areas. Low-activity institutional, commercial, and light industrial areas. Municipal parks within or adjacent to LZ2.</p> <ol style="list-style-type: none"> 1. <u>Rural town centers</u> 2. <u>Single-family, mobile home, and low-rise multi-family in low pedestrian activity areas</u> 3. <u>Low-activity institutional, commercial, campus, and light industrial areas</u> 4. <u>Municipal parks in low and moderate pedestrian activity areas</u> 5. <u>All other similar areas</u>
2	<p>Moderate activity commercial corridors and suburban town centers.</p> <p>Moderate activity institutional and industrial uses in suburban or urban areas. Urban parks and university campuses within or adjacent to LZ3.</p> <p>High density single family and multi-family residential areas adjacent to LZ3.</p> <ol style="list-style-type: none"> 1. <u>Moderate-activity commercial corridors and suburban town centers</u> 2. <u>Single and multi-family residential areas in moderate an high-pedestrian activity areas</u> 3. <u>Moderate-activity institutional and industrial uses in suburban or urban areas</u>

	<ol style="list-style-type: none"> 4. <u>Urban parks and campuses in high pedestrian activity areas</u> 5. <u>All other similar areas</u>
3	<p>High activity urban commercial corridors and central business districts.</p> <p>Urban hospitality and entertainment districts, convention centers, and sports arenas. Heavy industrial areas and visitor sides of large volume airport and transportation facilities.</p> <ol style="list-style-type: none"> 1. <u>Commercial corridors and central business districts in urban areas with high pedestrian activity</u> 2. <u>Urban hospitality and entertainment districts</u> 3. <u>Urban areas with convention centers, sports arenas, and public transportation facilities</u> 4. <u>Heavy industrial areas</u> 5. <u>All others similar areas</u>
4	<p>Very high activity urban entertainment, hospitality and retail areas.</p> <p>Designated by the local land use planning authority.</p> <ol style="list-style-type: none"> 1. <u>Very high-activity urban entertainment, hospitality and retail areas, specifically designated as LZ4 by the local land use planning authority</u>

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

	<u>Lighting Zone 0</u> (Agriculture/ Rural)	<u>Lighting Zone 1</u> (Rural Center)	<u>Lighting Zone 2</u> (Moderate Commercial)	<u>Lighting Zone 3</u> (High Activity Urban Corridor)	<u>Lighting Zone 4</u> (Very high activity urban)	Section 9.4.1.4 Required Controls
Base Site Allowance (Base allowance may be used in tradable or non-tradable surfaces.)						
[...]						
Tradable Surfaces (LPD for uncovered parking areas, <i>building grounds, building entrances, exits and loading docks, canopies and overhangs, and outdoor sales areas</i> may be traded.)						
Exterior Parking Areas (Including areas under canopies)						
Parking areas and drives	0.006 W/ft ²	0.013 W/ft ²	0.022 W/ft ²	0.031 W/ft ²	0.042 W/ft ²	(b) and either (d) or (e)
Parking areas and drives with <i>luminaires >78 40 W</i> and mounting height <24 ft	0.006 W/ft ²	0.013 W/ft ²	0.022 W/ft ²	0.031 W/ft ²	0.042 W/ft ²	(b) and (e)
Grounds						
Pedestrian tunnels	<u>0.022 W/ft²</u>	0.054 W/ft ²	0.094 W/ft ²	0.133 W/ft ²	0.187 W/ft ²	(d) or (e)
Building Entrances, Exits, and Loading Docks						
Loading docks	<u>0.033 W/ft²</u>	0.088 W/ft ²	0.155 W/ft ²	0.221 W/ft ²	0.309 W/ft ²	(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)

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

	<u>Lighting Zone 0</u> (Agriculture/ Rural)	<u>Lighting Zone 1</u> (Rural Center)	<u>Lighting Zone 2</u> (Moderate Commercial)	<u>Lighting Zone 3</u> (High Activity Urban Corridor)	<u>Lighting Zone 4</u> (Very high activity urban)	Section 9.4.1.4 Required Controls
<i>Building facades</i> (The allowance for each illuminated facade <i>orientation</i> shall be calculated by multiplying the allowable value by the entire <i>facade area</i> or <i>facades length</i> for that <i>orientation</i> .)	—	0.048 /ft ² of <i>facade area</i> or 1.19 W/linear ft of <i>facade length</i>	0.083 W/ft ² of <i>facade area</i> or 2.04 W/linear ft of <i>facade length</i>	0.119 W/ft ² of <i>facade area</i> or 2.89 W/linear ft of <i>facade length</i>	0.167 W/ft ² of <i>facade area</i> or 4.08 W/linear ft of <i>facade length</i>	(b) and (c)

SI VALUES

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

	Lighting Zone 0 (Agriculture/Rural)	Lighting Zone 1 (Rural Center)	Lighting Zone 2 (Moderate Commercial)	Lighting Zone 3 (High-Activity Urban Corridor)	Lighting Zone 4 (Very-high activity urban)	Section 9.4.1.4 Required Controls
Base Site Allowance (Base allowance may be used in tradable or non-tradable surfaces.)						
[...]						
Tradable Surfaces (LPD for uncovered parking areas, <i>building grounds</i> , <i>building entrances</i> , exits and loading docks, canopies and overhangs, and outdoor sales areas may be traded.)						
Exterior Parking Areas (Including areas under canopies)						
Parking areas and drives	0.046 W/m ²	0.140 W/m ²	0.237 W/m ²	0.334 W/m ²	0.473 W/m ²	(b) and either (d) or (e)
Parking areas and drives with <i>luminaires</i> >78 40 W and mounting height < 7.3 m	0.046 W/m ²	0.140 W/m ²	0.237 W/m ²	0.334 W/m ²	0.473 W/m ²	(b) and (e)
Grounds						
Pedestrian tunnels	<u>0.22</u> W/m ²	0.576 W/m ²	1.01 W/m ²	1.43 W/m ²	2.01 W/m ²	(d) or (e)
Building Entrances, Exits, and Loading Docks						
Loading docks	<u>0.34</u> W/m ²	0.951 W/m ²	1.67 W/m ²	2.38 W/m ²	3.32 W/m ²	(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)

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

	Lighting Zone 0 (Agriculture/Rural)	Lighting Zone 1 (Rural Center)	Lighting Zone 2 (Moderate Commercial)	Lighting Zone 3 (High-Activity Urban Corridor)	Lighting Zone 4 (Very-high activity urban)	Section 9.4.1.4 Required Controls
<i>Building facades</i> (The allowance for each illuminated facade <i>orientation</i> shall be calculated by multiplying the allowable value by the entire <i>facade area</i> or facades length for that <i>orientation</i> .)	—	0.512 /m ² of <i>facade area</i> or 3.9 W/linear m of facade length	0.896 W/ m ² of <i>facade area</i> or 6.7 W/linear m of facade length	1.28 W/ m ² of <i>facade area</i> or 9.5 W/ linear m of facade length	1.79 W/ m ² of <i>facade area</i> or 13.4 W/linear m of facade length	(b) and (c)