

**ANSI/ASHRAE/ICC/USGBC/IES Addendum aj to
ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1-2023**

Standard for the Design of High-Performance Green Buildings

**Except Low-Rise
Residential Buildings**

The Complete Technical Content of the International Green Construction Code®

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FOREWORD

Addendum aj revises lighting power density values based primarily on the ANSI/ASHRAE/IES Standard 90.1-2025 model with luminaire efficacy that is one standard deviation higher than the mean efficacy values used in Standard 90.1. Results are also compared against the model used to develop 2028 Title 24. The primary technical changes reflect increases in luminaire efficacy and the Standard 90.1-2025 use of a lamp lumen depreciation (LLD) of 0.90 for all LED fixtures. This update to the LLD resulted from a review of design practices by lighting practitioners within the lighting industry.

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

Addendum aj to Standard 189.1-2023

Revise Tables 7.4.6.1B and 7.4.6.1C as follows.

Table 7.4.6.1B Lighting Power Density (LPD) Allowances and Room Cavity Ratio (RCR) Thresholds and Additional Lighting Power Allowances for Common Space Types Using the Space-by-Space Method

Informative Note: This table covers space types that can be commonly found in multiple building types. Table 7.4.6.1C covers space types that are typically found in a single building type.

Common Space Types ^a	LPD W/ft ²	LPD W/m ²	RCR Threshold	Additional Lighting Power		
				Qualified Lighting System ^f	Additional Allowance (W/ft ²)	Additional Allowance (W/m ²)
Atrium						
<20 ft (6.1 m) in height	0.39 <u>0.28</u>	4.2 <u>3.0</u>	NA	Decorative/Display	0.30 <u>0.10</u>	3.2 <u>1.1</u>
≥20 ft (6.1m) and ≤40 ft (12.2 m) in height	0.48 <u>0.36</u>	5.2 <u>3.9</u>	NA	Decorative/Display	0.30 <u>0.15</u>	3.2 <u>1.6</u>
>40 ft (12.2 m) in height	0.60 <u>0.47</u>	6.5 <u>5.3</u>	NA	Decorative/Display	0.30 <u>0.25</u>	3.2 <u>2.7</u>
Audience Seating Area						
Auditorium	0.44	4.7	6	Decorative/Display	0.25	2.7
Convention center	0.23	2.5	4	Decorative/Display	0.25	2.7
Gymnasium	0.23	2.5	6			
Motion picture theater	0.30 <u>0.23</u>	3.2 <u>2.5</u>	4	Decorative/Display	0.25	2.7
Performing arts theater	0.75 <u>0.62</u>	8.1 <u>6.7</u>	8	Decorative/Display	0.40	4.3
Religious building	0.65 <u>0.60</u>	7.0 <u>6.5</u>	4	Decorative/Display	0.40	4.3

a. In cases where a space type appears in both Table 7.4.6.1B and Table 7.4.6.1C, the building-specific space type in Table 7.4.6.1C shall apply.

b. In corridors, the extra lighting power density allowance is permitted when the width of the corridor is less than 8 ft (2.4 m) and is not based on the RCR, see Section 7.4.6.1(c).

c. For lighting in daylight transition zone with an additional lighting power allowance ≤0.90 W/ft² (9.7 W/m²) times the area of parking garage daylight transition zone for lighting separately controlled by a daylight adaptation compensation control and occupant sensing control, see Section 7.4.6.1.1(c)

d. For accent lighting, see Section 7.4.6.1.1(b)

e. For specialized task lighting see Section 7.4.6.1.1(e)

f. See Section 7.4.6.1.1 for criteria of qualified lighting systems

Table 7.4.6.1B Lighting Power Density (LPD) Allowances and Room Cavity Ratio (RCR) Thresholds and Additional Lighting Power Allowances for Common Space Types Using the Space-by-Space Method (Continued)

Informative Note: This table covers space types that can be commonly found in multiple building types. Table 7.4.6.1C covers space types that are typically found in a single building type.

Common Space Types ^a	LPD W/ft ²	LPD W/m ²	RCR Threshold	Additional Lighting Power		
				Qualified Lighting System ^f	Additional Allowance (W/ft ²)	Additional Allowance (W/m ²)
Sports arena	0.30 0.26	3.2 2.8	4	Decorative/Display	0.25	2.7
All other audience seating areas	0.23	2.5	4	Decorative/Display	0.25	2.7
Banking Activity Area	0.55 0.51	6.0 6.5	6	Decorative/Display	0.25 0.20	2.7 2.2
Breakroom (See Lounge/Breakroom)				Decorative/Display		
Beauty and Personal Care Services						
Hair Care/Barber	0.70 0.51	7.5 5.5	6	Specialized Task Decorative/Display Ext Illum Mirror Int Illum Mirror	0.30 0.20 40 W/ea 120 W/ea	3.2 2.2 40 W/ea 120 W/ea
Nail Care	0.70 0.51	7.5 5.5	6	Specialized Task Decorative/Display	0.30 0.20	3.2 2.2
Massage	0.70 0.56	7.5 6.0	8	Specialized Task Decorative/Display	0.30 0.20	3.2 2.2
Classroom/Lecture Hall/Training Room	0.60 0.55	6.5 5.9	4	Decorative/Display	0.25	2.7
Conference/Meeting/Education/Civic; Multipurpose Room (including art, music)	0.88 0.65	9.5 7.0	6	Decorative/Display	0.25	2.7
Copy/Print Room	0.40	4.3	6			
Corridor ^b	0.37 0.35	4.0 3.8	width <8 ft (2.4 m)	Decorative/Display	0.25 0.30	2.7 3.2
Courtroom	0.90 0.87	9.7 9.4	6	Decorative/Display	0.30	3.2
Computer Room	0.40	4.3	4	Specialized Task	0.20	2.2
Dining Area						
Bar/lounge or leisure dining	0.45	4.8	4	Decorative/Display	0.40	4.3
Cafeteria or fast food dining	0.40	4.3	4	Decorative/Display	0.25	2.7
Family dining	0.40	4.3	4	Decorative/Display	0.25	2.7
All other dining areas	0.39	4.2	4	Decorative/Display	0.25	2.7
Electrical/Mechanical Room	0.39	4.2	6	Specialized Task	0.20	2.2
Emergency Vehicle Garage	0.47 0.43	5.1 4.6	4			
Equipment Control Room	0.73 0.60	7.9 6.5	8			

a. In cases where a space type appears in both Table 7.4.6.1B and Table 7.4.6.1C, the building-specific space type in Table 7.4.6.1C shall apply.

b. In corridors, the extra lighting power density allowance is permitted when the width of the corridor is less than 8 ft (2.4 m) and is not based on the RCR, see Section 7.4.6.1(c).

c. For lighting in daylight transition zone with an additional lighting power allowance ≤0.90 W/ft² (9.7 W/m²) times the area of parking garage daylight transition zone for lighting separately controlled by a daylight adaptation compensation control and occupant sensing control, see Section 7.4.6.1.1(c)

d. For accent lighting, see Section 7.4.6.1.1(b)

e. For specialized task lighting see Section 7.4.6.1.1(e)

f. See Section 7.4.6.1.1 for criteria of qualified lighting systems

Table 7.4.6.1B Lighting Power Density (LPD) Allowances and Room Cavity Ratio (RCR) Thresholds and Additional Lighting Power Allowances for Common Space Types Using the Space-by-Space Method (Continued)

Informative Note: This table covers space types that can be commonly found in multiple building types. Table 7.4.6.1C covers space types that are typically found in a single building type.

Common Space Types ^a	LPD W/ft ²	LPD W/m ²	RCR Threshold	Additional Lighting Power		
				Qualified Lighting System ^f	Additional Allowance (W/ft ²)	Additional Allowance (W/m ²)
Food Preparation Area	0.92 <u>0.86</u>	9.9 <u>9.3</u>	6			
Guest Room	0.35	3.8	6	Decorative/Display	0.25	2.7
Laboratory						
In or as a classroom ^e	0.90	9.7	6	Specialized Task	0.30	3.2
All other laboratories ^e	0.90	9.7	6	Specialized Task	0.30	3.2
Laundry/Washing Area	0.43	4.6	4			
Loading Dock, Interior	0.51	5.5	6			
Lobby						
Elevator	0.52	5.6	6	Decorative/Display	0.30 <u>0.40</u>	3.2 <u>4.3</u>
Hotel	0.46 <u>0.42</u>	5.0 <u>4.5</u>	4	Decorative/Display	0.40	4.3
Motion picture theater	0.30 <u>0.25</u>	3.2 <u>2.7</u>	4	Decorative/Display	0.30	3.2
Performing arts theater	0.80 <u>0.75</u>	8.6 <u>8.1</u>	6	Decorative/Display	0.40	4.3
All other lobbies	0.66	7.1	4	Decorative/Display	0.25 <u>0.30</u>	2.7 <u>3.2</u>
Locker Room	0.42 <u>0.36</u>	4.5 <u>3.9</u>	6			
Lounge/Breakroom including mother's room and wellness room	0.44	4.7	4	Decorative/Display	0.25 <u>0.30</u>	2.7 <u>3.2</u>
Office						
Area ≤ 150 ft ² (14 m ²)	0.67 <u>0.62</u>	7.2 <u>6.7</u>	8	Decorative/Display	0.20	2.2
50 ft ² (14 m ²) ≤ Area ≤ 300 ft ² (28 m ²)	0.60 <u>0.56</u>	6.5 <u>6.0</u>	8	Decorative/Display	0.20	2.2
Area > 300 ft ² (28 m ²)	0.55 <u>0.50</u>	6.0 <u>5.4</u>	4	Decorative/Display	0.20	2.2
Conference Room	<u>0.55</u>	<u>6.0</u>		<u>Decorative/Display</u>	<u>0.25</u>	<u>2.7</u>
Parking Area, Interior ^c	0.11 <u>0.08</u>	1.2 <u>0.86</u>	4			
Parking Area, Interior: Daylight Transition Zone ^c	0.11 <u>0.08</u>	1.2 <u>0.86</u>	4	Daylight Transition Zone	0.90 <u>0.70</u>	9.7 <u>7.5</u>
Pharmacy Area ^e	1.00	10.8	6	Specialized task	0.30	3.2

a. In cases where a space type appears in both Table 7.4.6.1B and Table 7.4.6.1C, the building-specific space type in Table 7.4.6.1C shall apply.

b. In corridors, the extra lighting power density allowance is permitted when the width of the corridor is less than 8 ft (2.4 m) and is not based on the RCR, see Section 7.4.6.1(c).

c. For lighting in daylight transition zone with an additional lighting power allowance ≤ 0.90 W/ft² (9.7 W/m²) times the area of parking garage daylight transition zone for lighting separately controlled by a daylight adaptation compensation control and occupant sensing control, see Section 7.4.6.1.1(c)

d. For accent lighting, see Section 7.4.6.1.1(b)

e. For specialized task lighting see Section 7.4.6.1.1(e)

f. See Section 7.4.6.1.1 for criteria of qualified lighting systems

Table 7.4.6.1B Lighting Power Density (LPD) Allowances and Room Cavity Ratio (RCR) Thresholds and Additional Lighting Power Allowances for Common Space Types Using the Space-by-Space Method (Continued)

Informative Note: This table covers space types that can be commonly found in multiple building types. Table 7.4.6.1C covers space types that are typically found in a single building type.

Common Space Types ^a	LPD W/ft ²	LPD W/m ²	RCR Threshold	Additional Lighting Power		
				Qualified Lighting System ^f	Additional Allowance (W/ft ²)	Additional Allowance (W/m ²)
Restroom	0.57	6.2	8	Decorative/Display	0.30	3.2
Sales Area ^d	0.85 0.77	9.1 8.3	6	Decorative/Display Retail display lighting	0.25 See §7.4.6.1.1(b)	2.7 See §7.4.6.1.1(b)
Seating Area, General	0.23	2.5	4	Decorative/Display	0.25	2.7
Stairway	The space containing the stairway shall determine the LPD requirements for the stairway					
Stairwell	0.45	4.8	10	Decorative/Display	0.25	2.7
Storage Room						
<50 ft ² (4.6m ²)	0.49 0.46	5.3 5.0	6			
≥50 ft ² (4.6m ²) and <1000 ft ² (93 m ²)	0.35 0.33	3.7 3.6	6			
Vehicular Maintenance Area	0.53	5.7	4			
Workshop						
Classroom workshop ^e	1.00	10.8	6	Specialized task	0.30	3.2
All other workshop ^e	1.00	10.8	6	Specialized task	0.30	3.2

a. In cases where a space type appears in both Table 7.4.6.1B and Table 7.4.6.1C, the building-specific space type in Table 7.4.6.1C shall apply.

b. In corridors, the extra lighting power density allowance is permitted when the width of the corridor is less than 8 ft (2.4 m) and is not based on the RCR, see Section 7.4.6.1(c).

c. For lighting in daylight transition zone with an additional lighting power allowance ≤0.90 W/ft² (9.7 W/m²) times the area of parking garage daylight transition zone for lighting separately controlled by a daylight adaptation compensation control and occupant sensing control, see Section 7.4.6.1.1(c)

d. For accent lighting, see Section 7.4.6.1.1(b)

e. For specialized task lighting see Section 7.4.6.1.1(e)

f. See Section 7.4.6.1.1 for criteria of qualified lighting systems

Table 7.4.6.1C Lighting Power Density (LPD) Allowances, and Room Cavity Ratio (RCR) Thresholds, and Additional Lighting Power Allowances for Building-Specific Space Types Using the Space-by-Space Method

Building Specific Space Types ^a	LPD W/ft ²	LPD W/m ²	RCR Threshold	Additional Lighting Power		
				Qualified Lighting System ^f	Additional Allowance (W/ft ²)	Additional Allowance (W/m ²)
Automotive (See “Vehicular Maintenance Area” under common space types)						
Casino—Gaming Buildings						
Betting/sportsbook/keno/bingo area	0.60	6.5	7	Decorative/Display	0.40	4.3
High limit game area	0.80	8.6	4	Decorative/Display	0.40	4.3
Slot machine/digital gaming area	0.54 <u>0.46</u>	5.8 <u>5.0</u>	5	Decorative/Display	0.40	4.3
Table games area	0.60	6.5	5	Decorative/Display	0.40	4.3
Convention Center/Hospitality						
<u>Ballroom</u>	<u>0.45</u>	<u>4.8</u>	<u>6</u>	<u>Decorative/Display</u>	<u>0.40</u>	<u>4.3</u>
Convention Center—Exhibit Space	0.55 <u>0.42</u>	6.0 <u>4.5</u>	4	Decorative/Display	0.30	3.2
<u>Meeting Room</u>	<u>0.63</u>	<u>6.8</u>	<u>8</u>	<u>Decorative/Display</u>	<u>0.25</u>	<u>2.7</u>
Correctional Facilities (See “Prison/Penitentiary Buildings” under building specific space types)						
Dormitory—Living Quarters	0.35	3.8	8			
Fire Station—Sleeping Quarters	0.19	2.05	6			
Gymnasium/Fitness Center						
Exercise area	0.50 <u>0.60</u>	5.4 <u>6.5</u>	4			
Playing area	0.70 <u>0.60</u>	7.5 <u>6.5</u>	4			
Healthcare Facility						
Corridor ^b	0.65 <u>0.55</u>	6.9 <u>6.5</u>	width <8 ft (2.4 m)	Decorative/Display	0.25	2.7
Exam/treatment room	1.16 <u>1.10</u>	12.5 <u>11.8</u>	8			
Imaging room	0.60	7.0	6	Decorative/Display	0.20	2.3 <u>2.2</u>
Lounge	0.44	4.7	6	Decorative/Display	0.25 <u>0.30</u>	2.7 <u>3.2</u>
Medical supply room	0.54 <u>0.48</u>	5.8 5.2	6			
Nursery	0.80	8.6	6			
Nurse’s station	0.70	7.5	6	Specialized task	0.30	3.2
Operating room	1.87	20.1	6			

a. In cases where a space type appears in both Table 7.4.6.1B and Table 7.4.6.1C, the building-specific space type in Table 7.4.6.1C shall apply.

b. For lighting within 30 ft (9 m) of an exit in facilities for the visually impaired that is separately controlled by a daylight adaptation compensation control, with an additional lighting power allowance ≤ 0.50 W/ft² (5.4 W/m²) times the area within 30 ft (9 m) of an exit, see Section 7.4.6.1.1(d).

c. In corridors, the extra lighting power density allowance is permitted when the width of the corridor is less than 8 ft (2.4 m) and is not based on the RCR, see Section 7.4.6.1(c).

d. Class of play as defined by IES RP-6.

e. For specialized task lighting see Section 7.4.6.1.1(e).

f. See Section 7.4.6.1.1 for criteria of qualified lighting systems.

g. To use additional lighting power allowance, space must be a videoconferencing space and have controls described in Section 7.4.6.1.1(f).

h. Museum display lighting is exempt.

Table 7.4.6.1C Lighting Power Density (LPD) Allowances, and Room Cavity Ratio (RCR) Thresholds, and Additional Lighting Power Allowances for Building-Specific Space Types Using the Space-by-Space Method (Continued)

Building Specific Space Types ^a	LPD W/ft ²	LPD W/m ²	RCR Threshold	Additional Lighting Power		
				Qualified Lighting System ^f	Additional Allowance (W/ft ²)	Additional Allowance (W/m ²)
Patient room—critical care	<u>0.90</u>	<u>9.7</u>	<u>6</u>	<u>Decorative/Display</u>	<u>0.25</u>	<u>2.7</u>
Patient room—general	0.70 <u>0.60</u>	7.5	6	Decorative/Display	0.25	2.7
Physical therapy room	0.75 <u>0.65</u>	8.1 <u>7.0</u>	6	Decorative/Display	0.25	2.7
Recovery room	0.89	9.6	6	Specialized task	0.30	3.2
Telemedicine	0.83	8.9	8	Videoconferencing ^g	0.50	5.4
Library						
Reading area	0.77 <u>0.70</u>	8.3 <u>7.5</u>	4	<u>Decorative/Display</u>	<u>0.25</u>	<u>2.7</u>
Stacks	1.08	11.6	4			
Manufacturing Facility						
Control room	<u>0.59</u>	<u>6.4</u>	<u>8</u>			
Corridor ^b	0.28 <u>0.40</u>	3.0 <u>4.3</u>	width <8 ft (2.4 m)			
Detailed manufacturing area	0.80	8.6	4	<u>Specialized task</u>	<u>0.30</u>	<u>3.2</u>
Equipment room	0.40	4.3	6	<u>Specialized task</u>	<u>0.20</u>	<u>2.3</u>
Extra high bay area (> 50 ft [15.2 m] floor-to-ceiling height)	0.73	7.9	4	<u>Specialized task</u>	<u>0.30</u>	<u>3.2</u>
High bay area (25 ft [7.6 m] to 50 ft [15.2 m] floor-to-ceiling height)	0.65	7.0	4	<u>Specialized task</u>	<u>0.30</u>	<u>3.2</u>
Low bay area (<25 ft [7.6 m] floor-to-ceiling height)	0.61	6.6	4	<u>Specialized task</u>	<u>0.30</u>	<u>3.2</u>
Museum						
General exhibition area ^h	0.31 <u>0.21</u>	3.3 <u>2.3</u>	6	Decorative/display	<u>0.25</u>	<u>2.7</u>
Restoration room	0.70	7.5	6			
Performing Arts Theater—Dressing Room	0.35 <u>0.33</u>	3.8 <u>3.6</u>	6	<u>Externally Illum Mirror</u> <u>Internally Illum Mirror</u>	<u>40 W/ea</u> <u>120 W/ea</u>	
Post Office Sorting Area	0.50	5.4	4			
Prison/Penitentiary Buildings						
Audience Seating	0.50	5.4	4			
Classroom/Lecture Hall/Training Room ^b	0.65	7.0	4	Decorative/Display	0.25	2.7
Confinement Cells	0.52	5.6	6			

a. In cases where a space type appears in both Table 7.4.6.1B and Table 7.4.6.1C, the building-specific space type in Table 7.4.6.1C shall apply.

b. For lighting within 30 ft (9 m) of an exit in facilities for the visually impaired that is separately controlled by a daylight adaptation compensation control, with an additional lighting power allowance ≤ 0.50 W/ft² (5.4 W/m²) times the area within 30 ft (9 m) of an exit, see Section 7.4.6.1.1(d).

c. In corridors, the extra lighting power density allowance is permitted when the width of the corridor is less than 8 ft (2.4 m) and is not based on the RCR, see Section 7.4.6.1(c).

d. Class of play as defined by IES RP-6.

e. For specialized task lighting see Section 7.4.6.1.1(e).

f. See Section 7.4.6.1.1 for criteria of qualified lighting systems.

g. To use additional lighting power allowance, space must be a videoconferencing space and have controls described in Section 7.4.6.1.1(f).

h. Museum display lighting is exempt.

Table 7.4.6.1C Lighting Power Density (LPD) Allowances, and Room Cavity Ratio (RCR) Thresholds, and Additional Lighting Power Allowances for Building-Specific Space Types Using the Space-by-Space Method (Continued)

Building Specific Space Types ^a	LPD W/ft ²	LPD W/m ²	RCR Threshold	Additional Lighting Power		
				Qualified Lighting System ^f	Additional Allowance (W/ft ²)	Additional Allowance (W/m ²)
Dining Area	0.42	4.5	6			
Religious Buildings						
Audience seating area	0.65 0.60	7.0 6.5	4	Decorative/Display	0.40	4.3
Fellowship hall	0.48	5.2	4	Decorative/Display	0.40	4.3
Worship/pulpit/choir area	0.77 0.64	8.3 6.9	4	Decorative/Display	0.40	4.3
Retail Facilities						
Dressing/fitting room	0.49	5.3	8	<u>Externally Illum Mirror</u> <u>Internally Illum Mirror</u>	<u>40 W/ea</u> <u>120 W/ea</u>	
Mall concourse	0.35	3.8	4	Decorative/Display	0.25	2.7
Sports Arena—Playing Area ^d						
Class I facility	2.26	24.3	4			
Class II facility	1.45	15.6	4			
Class III facility	1.08	11.6	4			
Class IV facility	0.72	7.8	4			
Swimming Pools ^d						
Class I facility	2.35 1.72	25.2 18.5	4			
Class II facility	1.47 1.14	15.8 12.3	4			
Class III facility	0.88 0.82	9.5 8.8	4			
Class IV facility	0.40 0.49	4.3 5.3	4			
Transportation Facility						
Airport hangar	1.00	10.8	4			
Baggage/carousel area	0.35 0.26	3.8 2.8	4			
Airport concourse	0.32	3.4	4	Decorative/Display	0.25	2.7
Passenger loading area	0.32 0.40	3.4 4.3	4	Decorative/Display	0.25	2.7
Terminal ticket counter	0.40	4.3	4	Decorative/Display	0.25	2.7
Facility for the Visually Impaired						

- a. In cases where a space type appears in both Table 7.4.6.1B and Table 7.4.6.1C, the building-specific space type in Table 7.4.6.1C shall apply.
- b. For lighting within 30 ft (9 m) of an exit in facilities for the visually impaired that is separately controlled by a daylight adaptation compensation control, with an additional lighting power allowance ≤ 0.50 W/ft² (5.4 W/m²) times the area within 30 ft (9 m) of an exit, see Section 7.4.6.1.1(d).
- c. In corridors, the extra lighting power density allowance is permitted when the width of the corridor is less than 8 ft (2.4 m) and is not based on the RCR, see Section 7.4.6.1(c).
- d. Class of play as defined by IES RP-6.
- e. For specialized task lighting see Section 7.4.6.1.1(e).
- f. See Section 7.4.6.1.1 for criteria of qualified lighting systems.
- g. To use additional lighting power allowance, space must be a videoconferencing space and have controls described in Section 7.4.6.1.1(f).
- h. Museum display lighting is exempt.

Table 7.4.6.1C Lighting Power Density (LPD) Allowances, and Room Cavity Ratio (RCR) Thresholds, and Additional Lighting Power Allowances for Building-Specific Space Types Using the Space-by-Space Method (Continued)

Building Specific Space Types ^a	LPD W/ft ²	LPD W/m ²	RCR Threshold	Additional Lighting Power		
				Qualified Lighting System ^f	Additional Allowance (W/ft ²)	Additional Allowance (W/m ²)
Chapel (used primarily by residents)	0.70 0.62	7.5 6.7	4	Decorative/Display	0.25	2.7
Corridor	0.71 0.60	7.6 6.5	width <8 ft (2.4 m)	Decorative/Display	0.25	2.7
Dining (and not used primarily by staff)	0.90	9.7	4	Decorative/Display	0.25	2.7
Lobby ^b	0.85	9.1	4	Decorative/Display Daylight Transition Zone	0.25 0.50	2.7 5.4
Recreation room/common living room (and not used primarily by staff)	0.95	10.2	6	Decorative/Display	0.25	2.7
Restroom (and not used primarily by staff)	0.90	9.7	8	Decorative/Display	0.25	2.7
Warehouse—Storage Area Buildings						
Warehouse and storage areas	0.27 0.40	2.9 4.3	4			
Shipping and handling	0.60	6.5	6			

- a. In cases where a space type appears in both Table 7.4.6.1B and Table 7.4.6.1C, the building-specific space type in Table 7.4.6.1C shall apply.
- b. For lighting within 30 ft (9 m) of an exit in facilities for the visually impaired that is separately controlled by a daylight adaptation compensation control, with an additional lighting power allowance ≤ 0.50 W/ft² (5.4 W/m²) times the area within 30 ft (9 m) of an exit, see Section 7.4.6.1.1(d).
- c. In corridors, the extra lighting power density allowance is permitted when the width of the corridor is less than 8 ft (2.4 m) and is not based on the RCR, see Section 7.4.6.1(c).
- d. Class of play as defined by IES RP-6.
- e. For specialized task lighting see Section 7.4.6.1.1(e).
- f. See Section 7.4.6.1.1 for criteria of qualified lighting systems.
- g. To use additional lighting power allowance, space must be a videoconferencing space and have controls described in Section 7.4.6.1.1(f).
- h. Museum display lighting is exempt.

Revise Section 7.4.6.1.1 as follows.

7.4.6.1.1 Additional Interior Lighting Power. For those areas where the Space-by-Space Method is used, the additional increase in the interior lighting power allowed by ANSI/ASHRAE/IES Standard 90.1, Section 9.5.2.2, for specific lighting functions shall be replaced by the requirements and allowances of this section. Additional power shall be allowed only if the specified lighting is installed and automatically controlled separately from the *general lighting* and is designed and installed to be turned off during nonbusiness hours. This additional power shall be used only for the specified *luminaires* and shall not be used for any other purpose. An increase in the interior *lighting power allowance* is permitted in the following cases and shall not be traded between different *spaces*:

[. . .]

- c. For lighting in the parking garage daylight transition zone that is separately controlled by a daylight adaptation compensation control that automatically turns off the additional lighting power from sunset to sunrise, the allowed additional lighting power shall not be greater than ~~0.70 W/ft² (7.5 W/m²)~~ ~~0.90 W/ft² (9.7 W/m²)~~ times the area of parking garage daylight transition zone. Lighting power of each luminaire shall be automatically reduced by not less than 50% when there is no activity detected for ten minutes in the surrounding zone, and lighting controlled together as a single control zone shall serve an area no greater than 3500 ft² (350 m²).

[. . .]

- f. For specialized *task lighting* in beauty and personal care service spaces, pharmacy areas, workshops, laboratories, nurse stations, recovery rooms, mechanical rooms, equipment rooms, computer rooms, and spaces in manufacturing facilities the additional lighting power shall not be greater than the W/ft² (W/m²) value in the additional allowance column of Table 7.4.6.1B or Table 7.4.6.1C times the area of the space.

This ends the changes made by Addendum aj to Standard 189.1-2023. The information presented below is for informational purposes only.

7.4.7 Lighting. The lighting shall comply with ANSI/ASHRAE/IES Standard 90.1, Section 9, with the following modifications and additions.

7.4.7.1 Interior Lighting Power Allowance. The interior *lighting power allowance* shall be determined using ANSI/ASHRAE/IES Standard 90.1, Section 9.5, with the following modifications:

- a. For those areas where the Building Area Method is used, the LPD from ANSI/ASHRAE/IES Standard 90.1, Table 9.5.1, shall be replaced with the corresponding LPD in Table 7.4.6.1A.
- b. For those areas where the Space-by-Space Method is used, the LPD from ANSI/ASHRAE/IES Standard 90.1, Tables 9.5.2.1-1 and 9.5.2.1-2, shall be replaced with the corresponding LPD in Tables 7.4.6.1B and 7.4.6.1C.
- c. Room geometry adjustment when using the Space-by-Space Method: ANSI/ASHRAE/IES Standard 90.1, Section 9.5.2, shall be replaced with the following. For corridor/transition *spaces* less than 8 ft (2.4 m) wide, or 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 7.4.6.1B and 7.4.6.1C, the allowed LPD shall be 1.2 times the LPD in Tables 7.4.6.1B and 7.4.6.1C. RCR shall be calculated as described in ANSI/ASHRAE/IES Standard 90.1, Section 9.5.2.4.
- d. Where the Space-by-Space Method is used, the additional increase in the interior lighting power allowed by ANSI/ASHRAE/IES Standard 90.1, Section 9.5.2.2, for specific lighting functions shall be replaced by the requirements and allowances of Section 7.4.6.1.1.
- e. Where the Building Area Method or Space-by-Space Method is used, the additional increase in the interior lighting power allowed by ANSI/ASHRAE/IES Standard 90.1, Section 9.5.2.3, for the use of non-mandatory controls shall be replaced by the requirements and allowances of Section 7.4.6.1.2.

7.4.7.1.1 7.4.6.1.1 Additional Interior Lighting Power. For those areas where the Space-by-Space Method is used, the additional increase in the interior lighting power allowed by ANSI/ASHRAE/IES Standard 90.1, Section 9.5.2.2, for specific lighting functions shall be replaced by the requirements and allowances of this section. Additional power shall be allowed only if the specified lighting is installed and automatically controlled separately from the *general lighting* and is designed and installed to be turned off during nonbusiness hours. This additional power shall be used only for the specified *luminaires* and shall not be used for any other purpose. An increase in the interior *lighting power allowance* is permitted in the following cases and shall not be traded between different *spaces*:

- a. For *spaces* in which lighting is specified to be installed in addition to the *general lighting* for the purpose of decorative appearance or for highlighting art or exhibits, provided that the additional lighting power shall be greater than the W/ft^2 (W/m^2) value in the "Additional Allowance" column of Table 7.4.6.1B or Table 7.4.6.1C times the area of the *space*.
- b. For lighting equipment installed in sales areas and specifically designed and directed to highlight merchandise, the additional lighting power shall not be greater than the allowance calculated as follows:

$$\begin{aligned} \text{Additional interior lighting power allowance} = \\ & [\text{Retail Area 1} \times 0.40 \text{ W/ft}^2 (4.3 \text{ W/m}^2)] + [\text{Retail Area 2} \times 0.40 \text{ W/ft}^2 (4.3 \text{ W/m}^2)] \\ & + [\text{Retail Area 3} \times 0.70 \text{ W/ft}^2 (7.5 \text{ W/m}^2)] + [\text{Retail Area 4} \times 1.00 \text{ W/ft}^2 (10.8 \text{ W/m}^2)] \end{aligned}$$

where

Retail Area 1 = the floor area for all products not listed in Retail Areas 2, 3, or 4

Retail Area 2 = the floor area used for the sale of vehicles, sporting goods, and small *electronics*

Retail Area 3 = the floor area used for the sale of furniture, clothing, cosmetics, and artwork

Retail Area 4 = the floor area used for the sale of jewelry, crystal, and china

Exception to (b): Other merchandise categories included in Retail Areas 2 through 4 where the documented need for additional lighting power based on visual inspection, contrast, or other critical display has been *approved*.

- c. For lighting in the *parking garage daylight transition zone* that is separately controlled by a *daylight adaptation compensation control* that automatically turns off the additional lighting power from sunset to sunrise, the allowed additional lighting power shall not be greater than 0.90 W/ft^2 (9.7 W/m^2) times the area of *parking garage daylight transition zone*. Lighting power of each *luminaire* shall be *automatically* reduced by not less than 50% when there is no activity detected for ten minutes in the surrounding zone, and lighting controlled together as a single control zone shall serve an area no greater than 3500 ft^2 (350 m^2).

- d. For transition lighting within 30 ft (9 m) of an exit in *facilities for the visually impaired* that is separately controlled by a *daylight adaptation compensation control* that automatically turns off the additional lighting power from sunset to sunrise, and is not part of a daylit zone, the allowed additional lighting power shall not be greater than 0.50 W/ft^2 (5.4 W/m^2) times the area within 30 ft (9 m) of the exit.
- e. For specialized *task lighting* in beauty and personal care service spaces, pharmacy areas, workshops, laboratories, nurse stations, recovery rooms, the additional lighting power shall not be greater than the W/ft^2 (W/m^2) value in the additional allowance column of Table 7.4.6.1B or Table 7.4.6.1C times the area of the space.
- f. In *videoconferencing spaces* where the lighting is designed in accordance with ANSI/IES/AVIXA RP-38 and all lighting in the *space* is controlled by a *multiscene lighting control*, the allowed additional lighting power shall not be greater than 0.50 W/ft^2 (5.4 W/m^2) times the area of the videoconferencing portion of the *space*.

**POLICY STATEMENT DEFINING ASHRAE'S CONCERN
FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES**

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.

Standard 189.1 and the International Green Construction Code

Standard 189.1 serves as the complete technical content of the International Green Construction Code® (IgCC). The IgCC creates a regulatory framework for new and existing buildings, establishing minimum green requirements for buildings and complementing voluntary rating systems. For more information, visit www.iccsafe.org.

About ASHRAE

Founded in 1894, ASHRAE is a global professional society committed to serve humanity by advancing the arts and sciences of heating, ventilation, air conditioning, refrigeration, and their allied fields.

As an industry leader in research, standards writing, publishing, certification, and continuing education, ASHRAE and its members are dedicated to promoting a healthy and sustainable built environment for all, through strategic partnerships with organizations in the HVAC&R community and across related industries.

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