

**TABLE 9.6.1 Lighting Power Densities Using the Space-by-Space Method**

Common Space Types <sup>a</sup>	LPD, W/ft <sup>2</sup>	RCR Threshold
Atrium		
First 40 ft in height	0.03 per ft (height)	NA
Height above 40 ft	0.02 per ft (height)	NA
Audience/Seating Area—Permanent		
For auditorium	0.79	6
For Performing Arts Theater	2.43	8
For Motion Picture Theater	1.14	4
Classroom/Lecture/Training	1.24	4
Conference/Meeting/Multipurpose	1.23	6
Corridor/Transition	0.66	Width<8 ft
Dining Area	0.65	4
For Bar Lounge/Leisure Dining	1.31	4
For Family Dining	0.89	4
Dressing/Fitting Room for Performing Arts Theater	0.40	6
Electrical/Mechanical	0.95	6
Food Preparation	0.99	6
Laboratory		
For Classrooms	1.28	6
For Medical/Industrial/Research	1.81	6
Lobby	0.90	4
For Elevator	0.64	6
For Performing Arts Theater	2.00	6
For Motion Picture Theater	0.52	4
Locker Room	0.75	6
Lounge/Recreation	0.73	4
Office		
Enclosed	1.11	8
Open Plan	0.98	4
Restrooms	0.98	8
Sales Area (for accent lighting, see Section 9.6.2(b))	1.68	6
Stairway	0.69	10
Storage	0.63	6
Workshop	1.59	6
Building-Specific Space Types	LPD, W/ft <sup>2</sup>	RCR Threshold
Automotive		
Service/Repair	0.67	4
Bank/Office		
Banking Activity Area	1.38	6
Convention Center		

**TABLE 9.6.1 Lighting Power Densities Using the Space-by-Space Method (continued)**

Building-Specific Space Types	LPD, W/ft <sup>2</sup>	RCR Threshold
Audience Seating	0.82	4
Exhibit Space	1.45	4
Courthouse/Police Station/Penitentiary		
Courtroom	1.72	6
Confinement Cells	1.10	6
Judges' Chambers	1.17	8
Penitentiary Audience Seating	0.43	4
Penitentiary Classroom	1.34	4
Penitentiary Dining	1.07	6
Dormitory		
Living Quarters	0.38	8
Fire Stations		
Engine Room	0.56	4
Sleeping Quarters	0.25	6
Gymnasium/Fitness Center		
Fitness Area	0.72	4
Gymnasium Audience Seating	0.43	6
Playing Area	1.20	4
Hospital		
Corridor/Transition	0.89	Width < 8 ft
Emergency	2.26	6
Exam/Treatment	1.66	8
Laundry/Washing	0.60	4
Lounge/Recreation	1.07	6
Medical Supply	1.27	6
Nursery	0.88	6
Nurses' Station	0.87	6
Operating Room	1.89	6
Patient Room	0.62	6
Pharmacy	1.14	6
Physical Therapy	0.91	6
Radiology/Imaging	1.32	6
Recovery	1.15	6
Hotel/Highway Lodging		
Hotel Dining	0.82	4
Hotel Guest Rooms	1.11	6
Hotel Lobby	1.06	4
Highway Lodging Dining	0.88	4
Highway Lodging Guest Rooms	0.75	6
Library		
Card File and Cataloging	0.72	4
Reading Area	0.93	4
Stacks	1.71	4

**TABLE 9.6.1 Lighting Power Densities Using the Space-by-Space Method (continued)**

Building-Specific Space Types	LPD, W/ft <sup>2</sup>	RCR Threshold
<b>Manufacturing</b>		
Corridor/Transition	0.41	Width < 8 ft
Detailed Manufacturing	1.29	4
Equipment Room	0.95	6
Extra High Bay (>50 ft Floor to Ceiling Height)	1.05	4
High Bay (25–50 ft Floor to Ceiling Height)	1.23	4
Low Bay (<25 ft Floor to Ceiling Height)	1.19	4
<b>Museum</b>		
General Exhibition	1.05	6
Restoration	1.02	6
<b>Parking Garage</b>		
Garage Area	0.19	4
<b>Post Office</b>		
Sorting Area	0.94	4
<b>Religious Buildings</b>		
Audience Seating	1.53	4
Fellowship Hall	0.64	4
Worship Pulpit, Choir	1.53	4

**TABLE 9.6.1 Lighting Power Densities Using the Space-by-Space Method (continued)**

Building-Specific Space Types	LPD, W/ft <sup>2</sup>	RCR Threshold
<b>Retail</b>		
Dressing/Fitting Room	0.87	8
Mall Concourse	1.10	4
Sales Area (for accent lighting, see Section 9.6.3(c))	1.68	6
<b>Sports Arena</b>		
Audience Seating	0.43	4
Court Sports Arena—Class 4	0.72	4
Court Sports Arena—Class 3	1.20	4
Court Sports Arena—Class 2	1.92	4
Court Sports Arena—Class 1	3.01	4
Ring Sports Arena	2.68	4
<b>Transportation</b>		
Air/Train/Bus—Baggage Area	0.76	4
Airport—Concourse	0.36	4
Audience Seating	0.54	4
Terminal—Ticket Counter	1.08	4
<b>Warehouse</b>		
Fine Material Storage	0.95	6
Medium/Bulky Material Storage	0.58	4

<sup>a</sup> In cases where both a common *space* type and a building-specific type are listed, the building specific *space* type shall apply.

**TABLE 9.6.2 Control Factors Used in Calculating Additional Interior Lighting Power Allowance**

Additional Control Method (in Addition to Mandatory Requirements).	Space Type				
	Open Office	Private Office	Conference Room, Meeting Room, Classroom (Lecture/ Training)	Retail Sales Area	Lobby, Atrium, Dining Area, Corridors/ Stairways, Gym/ Pool, Mall Concourse, Parking Garage
<i>Manual</i> , continuous dimming control or Programmable multi-level dimming control	0.05	0.05	0.10 <sup>1</sup>	0.10	0
Programmable multi-level dimming control using programmable time scheduling	0.05	0.05	0.10 <sup>1</sup>	0.10	0.10
<i>Multi-level occupancy sensors</i>	0.05	0.05	0.05	0	0
Occupancy sensors controlling the downlight component of workstation specific luminaires with continuous dimming to off capabilities.	0.25 <sup>2</sup>	0	0	0	0
Occupancy sensors controlling the downlight component of workstation specific luminaires with continuous dimming to off operation, in combination with personal continuous dimming control of downlight illumination by workstation occupant.	0.30 <sup>2,3</sup>	0	0	0	0
<i>Automatic</i> bi-level or multi-level switching in <i>primary sidelighted areas</i> when <i>sidelighting effective aperture</i> is greater than 0.15	0	0	0	0.10 <sup>4</sup>	0
<i>Automatic</i> bi-level or multi-level switching in <i>primary sidelighted areas</i> when <i>sidelighting effective aperture</i> is greater than 0.15 and when <i>primary sidelighted area</i> is less than 250 ft <sup>2</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>
<i>Automatic continuous daylight dimming</i> in <i>primary sidelighted areas</i> when <i>sidelighting effective aperture</i> is greater than 0.15 and when <i>primary sidelighted area</i> is less than 250 ft <sup>2</sup>	0.20 <sup>4</sup>	0.20 <sup>4</sup>	0.20 <sup>4</sup>	0.20 <sup>4</sup>	0.20 <sup>4</sup>
<i>Automatic continuous daylight dimming</i> in <i>primary sidelighted areas</i> when <i>sidelighting effective aperture</i> is greater than 0.15 and when <i>primary sidelighted area</i> is greater than 250 ft <sup>2</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>
<i>Automatic continuous daylight dimming</i> in <i>secondary sidelighted areas</i> when <i>sidelighting effective aperture</i> is greater than 0.3	0.10 <sup>4</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>	0.10 <sup>4</sup>
<i>Automatic continuous daylight dimming</i> in <i>daylighted areas under skylights</i> when the total of those areas is less than 900 ft <sup>2</sup> and when <i>skylight effective aperture</i> is greater than 0.01	0.20	0.20	0.20	0.20	0.20
<i>Automatic continuous daylight dimming</i> in <i>daylighted areas under skylights</i> when the total of those areas is greater than 900 ft <sup>2</sup> and when <i>skylight effective aperture</i> is greater than 0.01	0.10	0.10	0.10	0.10	0.10

<sup>1</sup>These control factors may only be used if the requirements of section 9.4.1.2 are met using an *occupancy sensor*.

<sup>2</sup>Control factor is limited to the wattage of workstation-specific *luminaires* in partitioned single occupant workspaces contained within an open office environment (i.e. direct-indirect *luminaires* with separately controlled downlight and uplight components, with the downward component providing illumination to a single occupant in an open plan workstation). Within 30 minutes of the occupant leaving the *space*, the downward component shall continuously dim to off over a minimum of 2 minutes. Upon the occupant entering the *space*, the downward component shall turn on at the minimum level and continuously raise the illumination to a *preset* level over a minimum of 30 seconds. The uplight component of workstation specific luminaire shall comply with section 9.4.1.1 (*automatic* shutoff).

<sup>3</sup>In addition to the requirements described in footnote 2, the control shall allow the occupant to select their preferred light level via a personal computer, handheld device, or similarly accessible device located within the workstation.

<sup>4</sup>Control factors may not be used if controls are used to satisfy exceptions to Section 5.5.4.2.3

# Lighting Compliance Documentation

Project Name: Sample (Part 11 TI): Office - Space by Space Method		
Project Address:		Date:
Designer of Record:	Email:	Telephone:
Contact Person:	Email:	Telephone:
City:		Exterior Lighting Zone:

## Mandatory Provisions Checklist

- Lighting Control (9.4.1)
  - Automatic lighting shutoff controls are provided based on either a scheduling device or an occupant sensor (9.4.1.1)
  - Each enclosed space has its own control including bilevel or occupancy based where required (9.4.1.2)
  - Controls for parking garages, including bilevel, transition and perimeter control as required (9.4.1.3)
  - Automatic daylighting controls for primary sidelighted areas (9.4.1.4)
  - Automatic daylighting controls for toplighting (9.4.1.5)
  - Additional controls for display/accent, case, guest room, task, nonvisual and demonstration lighting applications (9.4.1.6)
  - Exterior lighting controls including automatic shutoff and bilevel as required (9.4.1.7)
- Exit signs do not exceed 5 W per face (9.4.2)
- Exterior lighting power (9.4.3) — See worksheet
- Functional testing completed on specified controls (9.4.4)

## Interior Lighting Power Allowance (Building Area Method – 9.5)

Building ID	Building Type (9.5.1)	Lighting Power Density, W/ft <sup>2</sup> (W/m <sup>2</sup> )	Building Area, ft <sup>2</sup> (m <sup>2</sup> )	Lighting Power Allowance (W)
Total				

## Interior Lighting Power Allowance (Space-by-Space Method – 9.6)

Space ID	Building Type/Space Type (9.6.1)	Lighting Power Density, W/ft <sup>2</sup> (W/m <sup>2</sup> )	Room Cavity Ratio	Space Area, ft <sup>2</sup> (m <sup>2</sup> )	Lighting Power Allowance (W)
	Enclosed Offices	1.11 W/sqft		400 sqft	444
	Open Offices	0.98 W/sqft		1,500 sqft	1,470
	Meeting Rooms	1.23 W/sqft		500 sqft	615
	Elevator Lobby	0.64 W/sqft		400 sqft	256
Subtotal					2,785
Controls Allowance (9.6.2c)					117.9
Total					2,903



Project Name:	Sample (Part 11 TI):	Office - Space by Space Method
Contact Person:	Email:	Telephone:

### Additional Interior Connected Lighting Power

Space ID	Luminaire ID	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Type						Number of Luminaires	Watts/ Luminaire	Total Watts
			Incandescent	Fluorescent	HID	Line-Voltage Track	Low-Voltage Track	Other			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			

## Exterior Building Lighting Power Allowance (Tradable Lighting Applications)

Application	Allowance	Area or Length, ft <sup>2</sup> or ft (m <sup>2</sup> or m)	Tradable Power Allowance
Tradable Power Allowance			

## Exterior Building Lighting Power Allowance (Non-Tradable Lighting Applications)

ID	Application	Allowance per Unit	Area or Length or Quantity	Non-Tradable Power Allowance
Non-Tradable Power Allowance				

## Exterior Connected Lighting Power (Tradable Applications)

ID	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Number of Luminaires	Watts/Luminaire	Total Watts
Total				

## Exterior Connected Lighting Power (Non-Tradable Applications)

ID	Non-Tradable Application	Luminaire Description (including number of lamps per fixture, watts per lamp, type of ballast, type of fixture)	Number of Luminaires	Watts/Luminaire	Total Watts
Total					

## Exterior Lighting Compliance Test

	Tradable Power Allowance (Watts)	+	Base site allowance	≥	Tradable Connected Lighting Power (Watts)
Non-Tradable Application	Non-Tradable Power Allowance (Watts)				Non-Tradable Connected Lighting Power (Watts)
		+		≥	
		+		≥	
		+		≥	
			Allocated base site allowance		Unallocated base site allowance
				≤	