

# IES Recommended Light Levels

## Quick Reference Guide

A footcandle (fc), the most common unit of measure used for quantifying light levels, is a measure of illuminance with one footcandle being equal to one lumen per square foot. The Illuminating Engineering Society (IES) has established recommended average maintained footcandle levels for a broad range of applications to ensure adequate illumination and safety for occupants. An important strategy in maximizing energy savings with lighting upgrade projects is to identify overlit spaces and use IES recommendations to establish new light levels that are both appropriate and desirable. Consult with a lighting energy professional to learn the proper way to establish appropriate light levels in your facility and reduce energy waste.

Application and Task	Maintained Horizontal		Maintained Vertical		Comments
	Average (fc) <sup>1</sup>	Range (fc) <sup>2</sup>	Average (fc) <sup>1</sup>	Range (fc) <sup>2</sup>	
<b>COMMON AREAS</b>					
ATM or Service Kiosk	20	10-40	10	5 - 20	Vertical at face of ATM
Circulation/Corridor	5	2.5 - 10	3	1.5 - 6	Independent Passageway
Conference Room	See Commercial Office				
Filing (Intermittent)	15	7.5 - 30	10	5 - 20	
Restroom (General)	5	2.5 - 10	3	1.5 - 6	
Restroom (Vanities)	15	7.5 - 30	20	10 - 40	See also Fixtures/Lockers/Showers
Lunch & Break Room	10	5 - 20	3	1.5 - 6	
Stairs	5	2.5 - 10	3	1.5 - 6	Not High Activity or Surveillance
<b>COMMERCIAL OFFICE</b>					
Open Office (Desk)	40	30 - 50	-	-	Measured at desk height
Private Office (Desk)	40	30 - 50	-	-	Measured at desk height
Conference Room (Table)	30	15 - 60	-	-	
Whiteboard (Reading)	-	-	15	7.5 - 30	
Whiteboard (Presenting)	-	-	30	15 - 60	
Presentation Screen (Projector)	-	-	1.5	1.5 - 6	
Lunch & Break Room	15	5 - 20	-	-	
<b>EDUCATIONAL (SCHOOLS)</b>					
Classroom (Challenging Applications) <sup>3</sup>	25	25 - 100	3.75	3.75 - 15	Arts, Blueprints, Lab Bench; Measured at desk height
Classroom (Typical Applications) <sup>3</sup>	15	15 - 60	2.5	2.5 - 10	Reading, Writing; Measured at desk height
Auditorium/Lecture Hall (AV, Notes)	5	2.5 - 10	5	2.5 - 10	
Auditorium/Lecture Hall (AV)	1	0.5 - 2	5	2.5 - 10	
Auditorium/Lecture Hall (no AV)	10	5 - 20	5	2.5 - 10	
Gymnasium-Class I (Pro or Div. 1 College)	100	-	30	-	See NCAA & professional guides; > 5000 spectators
Gymnasium-Class II (Div. 2 or 3 College)	75	-	20	-	Competition; ≤ 5000 spectators
Gymnasium-Class III (High School)	50	-	150	-	Competition; Some spectators
Gymnasium-Class IV (Elementary)	30	-	100	-	Competition or Recreational Play; No provision for spectators

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	Average (fc) <sup>1</sup>	Range (fc) <sup>2</sup>	Average (fc) <sup>1</sup>	Range (fc) <sup>2</sup>	
<b>EXTERIOR</b>					
Parking (Covered)	5	-	-	-	1 Min; 10:1 Max-Min Uniformity
Parking (Uncovered) Zone 3 (Urban)	1.5	0.75 - 3	0.8	0.4 - 1.6	
Parking (Uncovered) Zone 2 (Suburban)	1	0.5 - 2	0.6	0.3 - 1.2	
Gas Station Canopy	12.5	10 - 15	-	-	
Safety (Building Exterior)	1	0.5 - 2	-	-	For security issues, raise Avg to 3
<b>INDUSTRIAL/MANUFACTURING</b>					
Assembly & Inspection (Simple) Component Manufacture (Large Part)	30	15 - 60	30	15 - 60	
Component Manufacture (Med. Part)	50	25 - 100	50	25 - 100	
Assembly & Inspection (Difficult) Component Manufacture (Fine Part)	100	50 - 200	100	50 - 200	
Assembly & Inspection (Exacting)	300	150 - 600	-	-	
<b>RETAIL</b>					
Discount/Warehouse/Drug/ Convenience (Ambient)	50	25 - 100	20	10 - 40	
Discount/Warehouse/Drug/ Convenience (Perimeter)	-	-	50	25 - 100	
Department Store (Ambient)	40	20 - 80	15	7.5 - 30	
Department Store (Perimeter)	-	-	75	25 - 150	
Accent Lighting (Displays)	-	-	-	-	3-10 times more than ambient
<b>RETAIL (AUTOMOTIVE SALES)</b>					
Showroom	50	25 - 100	10	5 - 20	
Service Area	50	25 - 100	30	15 - 60	
Sales Lot (Exterior) Zone 3 (Urban)	20	10 - 40	20	10 - 40	
Sales Lot (Exterior) Zone 2 (Suburban)	15	7.5 - 30	15	7.5 - 30	
<b>RETAIL (GROCERY)</b>					
Circulation	20	10 - 40	7.5	3.5 - 15	
General Retail	50	25 - 100	20	10 - 40	
Perimeter	-	-	50	25 - 100	
<b>WAREHOUSING &amp; STORAGE</b>					
Bulky Items - Large Labels	10	5 - 20	5	2.5 - 10	
Small Items - Small Labels	30	15 - 60	15	7.5 - 30	
Receiving/Shipping Dock	10	5 - 20	3	1.5 - 6	
Receiving/Staging	30	15 - 60	10	5 - 20	

**Source:** Compiled by CleaResult Consulting from the 'The Lighting Handbook' 10th Edition from the Illuminating Engineering Society (IES); Adapted from Foot Candle Light Guide produced by Energy Trust of Oregon and Lighting Design

- Use a professional lighting specifier to determine and provide appropriate light levels as defined by the IES.
- Horizontal - Average maintained foot-candles are measured at horizontal plane.
- Vertical - Average maintained foot-candles are measured at vertical plane.

<sup>1</sup> At least half of users (occupants) are in the 25 - 65 age range

<sup>2</sup> Ranges are based on situations where at least half of users are < 25 years of age (Low value) and > 65 years of age (High value)

<sup>3</sup> Recommendation for Classrooms assume at least half of users are < 25 years of age (Low range value); When designing the space for students, allowances should be made for the instructor (e.g. task lighting or downlight over desk)