



LEED Pilot Credit Library

Pilot Credit 22: Interior Lighting – Quality

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Applicable Rating Systems

This credit is available for pilot testing by the following LEED project types:

- New Construction
- Core and Shell
- Schools
- Healthcare
- Retail: New Construction
- Retail: Commercial Interiors
- Commercial Interiors
- Existing Buildings: Operations + Maintenance

Intent

Provide for occupant comfort by establishing quality criteria for interior lighting within a space.

Requirements

Meet the requirements of Section 9.5, Building Area Method; or Section 9.6 Space-by-Space Method; of ANSI/ASHRAE/IES Standard 90.1-2010 (with errata but without addenda).

AND

For at least 90% of the regularly occupied¹ floor area, incorporate at least four of the following interior lighting features. There are two categories: hardware and design.

Hardware

- Use light fixtures with a luminance of less than 12,500cd/m² above 45 degrees from nadir. Exceptions include:
 - a) Wallwash fixtures properly aimed at walls, as specified by manufacturer's data

¹ **Regularly occupied spaces** are places where one or more individuals normally spend time (more than one hour per person per day on average) seated or standing as they work, study, or perform other focused activities inside a building.



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- b) Indirect uplighting fixtures, provided there is no view down into these uplights from a regularly occupied space above.
- Use light sources with a CRI of 80 or higher for at least 95% of the associated connected lighting load. Exceptions include: Lamps or fixtures specifically included in the design to provide colored lighting for effect.
- Use lamps that last a minimum of 24,000 hours for at least 60% of the connected lighting load
AND,
Use lamps that last a minimum of 6,000 hours for at least 90% of the connected lighting load.

Design:

- Provide suspended, wall-mounted, free-standing or partition-mounted indirect or direct/indirect ambient lighting for up to 75% of the connected lighting load.
- Provide a lighting design that meets the following thresholds for average surface brightness (weighted average of surface reflectances):
 - Ceilings- 85%:
 - Walls- 60%:
 - Floors- 30%:
- If furniture is included in the scope of work, provide a lighting design that meets the following thresholds for average surface brightness (weighted average of surface reflectances):
 - Work surfaces-50%:
 - Movable Partitions-50%:
- Provide a lighting design that has an average wall surface illuminance to average work plane (or surface if defined) illuminance ratio that does not exceed 1:10.
- Provide an electric lighting design that has an average ceiling² illuminance to work-surface illuminance ratio (excluding fenestration) that does not exceed 1:10

EB: O+M ESTABLISHMENT

For at least 50% of the regularly occupied³ floor area, have in place at least four of the following interior lighting features. There are two categories, hardware and design.

Hardware:

- Use light fixtures have a luminance of less than 12,500cd/m² above 45 degrees from nadir. Exceptions include:
 - a) Wallwash fixtures properly aimed at walls, as specified by manufacturer's data
 - b) Indirect uplighting fixtures, provided there is no view down into these uplights from a regularly occupied space above.

² The area of the ceiling that shall affect a workstation in an open plan environment shall extend 2x the ceiling height from the center of the workstation (may be drawn and calculated as a rectangle, square, or circle in plan)

³ **Regularly occupied spaces** are places where one or more individuals normally spend time (more than one hour per person per day on average) seated or standing as they work, study, or perform other focused activities inside a building.



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- Use light sources with a CRI of 80 or higher for at least 95% of the associated connected lighting load. Exceptions include: Lamps or fixtures specifically included in the design to provide colored lighting for effect.
- Use lamps last a minimum of 24,000 hours for at least 60% of the connected lighting load
AND
Use lamps that last a minimum of 6,000 hours for at least 90% of the connected lighting load..

Design:

- Suspended, wall-mounted, free-standing or partition-mounted indirect or direct/indirect ambient lighting is in place for up to 75% of the connected lighting load.
- Meet the following thresholds for average surface brightness (weighted average of surface reflectances):
 - Ceilings (85%):
 - Walls (60%):
 - Floors (30%):
- Meet the following thresholds for average surface brightness (weighted average of surface reflectances):
 - Work surfaces (50%):
 - Movable Partitions (50%):
- The average wall surface illuminance to average work plane (or surface if defined) illuminance ratio does not exceed 1:10.
- The average ceiling⁴ illuminance to work-surface illuminance ratio (excluding fenestration) does not exceed 1:10

PERFORMANCE

Demonstrate that the interior lighting features have been maintained.

⁴ The area of the ceiling that shall affect a workstation in an open plan environment shall extend 2x the ceiling height from the center of the workstation (may be drawn and calculated as a rectangle, square, or circle in plan)



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Credit Submittals

General:

1. [Register for Pilot Credit\(s\) here.](#)
2. Register a username at LEEDuser.com, and participate in online forum
3. [Submit feedback survey](#); supply PDF of your survey/confirmation of completion with credit documentation

Credit Specific:

1. For suspended, wall-mounted, freestanding or partition mounted direct/indirect ambient lighting provide manufacturer's product information and cutsheet.
2. For task-ambient lighting solutions that achieve recommended IESNA illuminance levels with the combination of both systems provide manufacturer's product information and cutsheet.
3. To demonstrate an efficiency of greater than 50% for all luminaires provide manufacturer's product information and cutsheet.
4. To demonstrate sources with more than 50 lumens / Watt for 95% of the demand power, provide a comparison to IESNA/ASHRAE and manufacturer's product information and cutsheet.
5. To demonstrate a surface brightness of less than 10,000cd/m² for all luminaires with luminous parts within an 11-degree field of view from 4 feet above finished floor, provide on-site measurements or product data for finishes
6. To demonstrate an average wall-surface-to-work-surface illuminance ratio that does not exceed 3:1, provide on-site measurements or product data for finishes
7. To demonstrate a ceiling-surface-to-work-surface illuminance ratio that does not exceed 10:1, provide on-site measurements or product data for finishes
8. To demonstrate that dimmable fixtures are used for 90% of the luminaires, provide cutsheets and lighting schedule
9. To demonstrate a CRI of 80 or higher for 100% of lamps, provide cutsheet
10. To demonstrate automated shade controls provide electrical switching plans or an electric schedule
11. To demonstrate automated or fixed shade control for top-lighting daylight systems provide electrical switching plans or an electric schedule.

Additional Questions

1. Do the criteria associated with quality interior lighting align with your project's and occupants comfort and productivity needs?
2. How difficult was it to document this credit?



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Background Information

This pilot credit is proposed to expand on the current lighting requirements, in order to address the quality of the lighting in a space. Quality criteria focus on illuminance and reflectance to attempt to maximize occupant comfort and productivity.

Changes

Changes made for 2nd Public Comment (08/01/2011):

- Added energy efficiency requirement
- Broke out bullet points into hardware and design categories
- Clarified equations

Changes made for 3rd Public Comment (03/01/2012):

- Copyedited language
- Added EB: O+M path to the Pilot Library