

ASSESSMENT – LIGHTING

SEM INTERN PROJECT BRIEF



Purpose

The Indoor Lighting Assessment project tasks the intern with evaluating lighting conditions across various areas of a commercial building. **Lighting assessments** are designed to identify areas where lighting may be inadequate, excessive or poorly distributed.

Lighting that is not optimal can impact occupant comfort and productivity, cause eye strain and compromise occupant safety and wellbeing. Lighting assessments can result in decreased energy use by identifying opportunities to reduce unnecessary lighting use, upgrade to more efficient fixtures or implement lighting controls.

Project overview

Interns will measure the current lighting levels (brightness, illuminance) in various spaces within commercial buildings. Using a light meter, they will collect and analyze data to identify opportunities for optimizing lighting levels. This involves measuring light levels in lux (lumens per square meter) or foot-candles (lumens per square foot) and comparing them to recommended standards for different spaces and tasks. After evaluating the lighting throughout the building, interns can identify areas that may need adjustments. Interns will develop a clear and actionable summary of the findings to guide adjustments to indoor lighting to improve occupant comfort, safety and energy efficiency.

The tasks outlined on page three detail the process for completing the project.

Learning outcomes

- Measure lighting levels in commercial buildings using a light meter
- Understand how to use spreadsheets for data collection and analysis
- Analyze how indoor lighting levels are related to building electricity usage and affect an organization's operation costs over time
- Practice communicating findings to relevant stakeholders with recommendations for reducing electricity usage (e.g., fixture or controls upgrades)

Approximate length of time

- Research / background reading: 1-2 hours
- Obtaining equipment: 1-2 weeks*
- Data gathering and calculations: 2-6 hours
- Analyzing and reporting: 3-6 hours
- Actions / follow-up: 4-6 hours

The time estimates will vary based on the size of the building and number of areas measured.

*If you are using the Smart Building Center's (SBC) Tool Library, confirm availability of the tool before ordering. SBC typically responds to tool availability requests in 1-3 business days. Allow **up to two weeks** to receive your equipment after placing your order.

Equipment needed

- Light meter
- Measuring tape
- Grid layout template (if needed)

References & additional resources

The following resources have been included to help you complete your project.

Please note that access to any of the resources linked below is subject to the host website's availability and may change at any time.

1. Light meters can be borrowed for free from the Smart Building Center's Tool Lending Library (<https://smartbuildingscenter.org/tool-library/>). The Smart Building Center hosts a library of tools that organizations can borrow to collect different types of data about energy in their buildings.
Most tools can be borrowed for one week, and SBC will accept extension requests on a case-by-case basis. Review the [Tool Lending Library Policy](#) to confirm any additional requirements for borrowing specific tools.
2. Lighting principles and terms. This succinct overview provides definitions and context for this project: <https://www.energy.gov/energysaver/lighting-principles-and-terms>
3. Measuring light levels. A more thorough resource explaining what light levels are and how to measure them: <https://sustainabilityworkshop.venturewell.org/buildings/measuring-light-levels.html>
4. Overview of commercial building lighting requirements in the US for 2025: <https://sunbrightled.com/blog/commercial-building-lighting-requirements-2025/>
5. Illuminating Engineering Society lighting levels by space type: https://www.lightingdesignlab.com/sites/default/files/pdf/Footcandle_Lighting%20Guide_Rev.072013.pdf
6. Example [spreadsheet template](#) for recording lighting assessment findings (see tab titled "Light levels (lux)"), but note that the references are from Australia, so refer to a [U.S. lighting level chart](#) for recommended values

Task List

Coordination:

- Coordinate with appropriate staff; for example, to measure light levels, you will need to walk through occupied spaces and take readings throughout different space types. You may also need to meet with building management personnel who can describe lighting controls that are in use in different spaces of the building
- Identify the communication channel(s) you will use to share your findings and recommended solutions
- List all internal stakeholders who will be informed of your findings

Preparation:

- Review references and understand the basic concept of measuring lighting levels
- Obtain and learn how to use a light meter
- Create a spreadsheet workbook to record your findings
- Create a plan for your lighting assessment. Choose the area(s) where you want to measure lighting levels

Assessment and Analysis:

- Set up a grid or specific spots in the chosen area(s) to measure light levels
- Measure the average illumination for each area
- Compare measured values to recommended lighting standards for different tasks (e.g., office work, reading, indoor sports)
- Make note of areas where the light is too dim or too bright and needs to be adjusted; remember to check automatic lighting controls in places like hallways and bathrooms to assess if these areas are properly lit
- Record data in a standardized format, including location, measurement value and time of day (see template example linked above)
- Analyze potential energy impacts by calculating the estimated current and proposed energy usage of lighting fixtures at optimal lighting levels
- Compile your findings into an accessible format

Communication and Documentation:

- Present the findings of your assessment and recommended actions to stakeholders within the organization (e.g., SEM Energy Champion, energy team) and discuss potential next steps for optimizing lighting levels
- Work with the energy team to develop an action plan to address identified lighting issues
- Support efforts to address lighting issues as appropriate
- Communicate completion and results of your project to your SEM coach and suggest adding a record of the completed project to your organization's Energy Performance Platform (Gazebo)
- Determine how often this assessment will be performed within your organization in the future
- Work with the SEM energy team to create a schedule for future project completion and add the schedule to the Energy Performance Platform (Gazebo)