

Energy Usage In Commercial Buildings



Did you know?

- 94% of all U.S. commercial buildings are 50,000 sq. ft. or less.
- Commercial buildings are responsible for consuming approximately 16% of the energy within Pennsylvania.
- In 2019, lighting and climate control accounted for 56% of total energy usage.
- Due to the variety of types of buildings within the commercial sector, the overall energy usage will vary by subsector.

Energy-Saving Tips

General Recommendations

- Replace hot water heaters with tankless or on-demand hot water heaters to reduce hot water costs by 27% - 50%.
- Check thermostats in the refrigeration units, dishwashers, and hot water heaters to be sure they are calibrated and functioning correctly. Reset as needed.
- Set computers to enter sleep mode when not in use.
- Unplug office appliances such as the coffee maker or microwave when not in use to prevent draw.

Heating and Cooling

- Heat each room for its intended purpose. For example, heavily occupied spaces require less heat to keep customers warm than larger, more open spaces.
- Check and replace filters in heating and air conditioning units regularly.
- Have heating and cooling systems serviced annually.
- Install programmable thermostats.

2nd bullet: <https://www.eia.gov/consumption/commercial/reports/2012/lighting/>; 1st bullet and graph: <https://www.eia.gov/outlooks/aeo/data/browser/#/?id=5-AEO2020®ion=0-0&cases=ref2020&start=2018&end=2050&f=A&linechart=ref2020-d112119a.63-5-AEO2020~ref2020-d112119a.64-5-AEO2020~ref2020-d112119a.65-5-AEO2020~ref2020-d112119a.66-5-AEO2020~ref2020-d112119a.67-5-AEO2020~ref2020-d112119a.68-5-AEO2020~ref2020-d112119a.69-5-AEO2020~ref2020-d112119a.70-5-AEO2020~ref2020-d112119a.71-5-AEO2020&ctype=linechart&sourcekey=0>; <https://www.eia.gov/state/?sid=PA#tabs-2> – Pennsylvania statistic



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Energy Usage In Commercial Buildings



Energy-Saving Tips (continued...)

Refrigeration

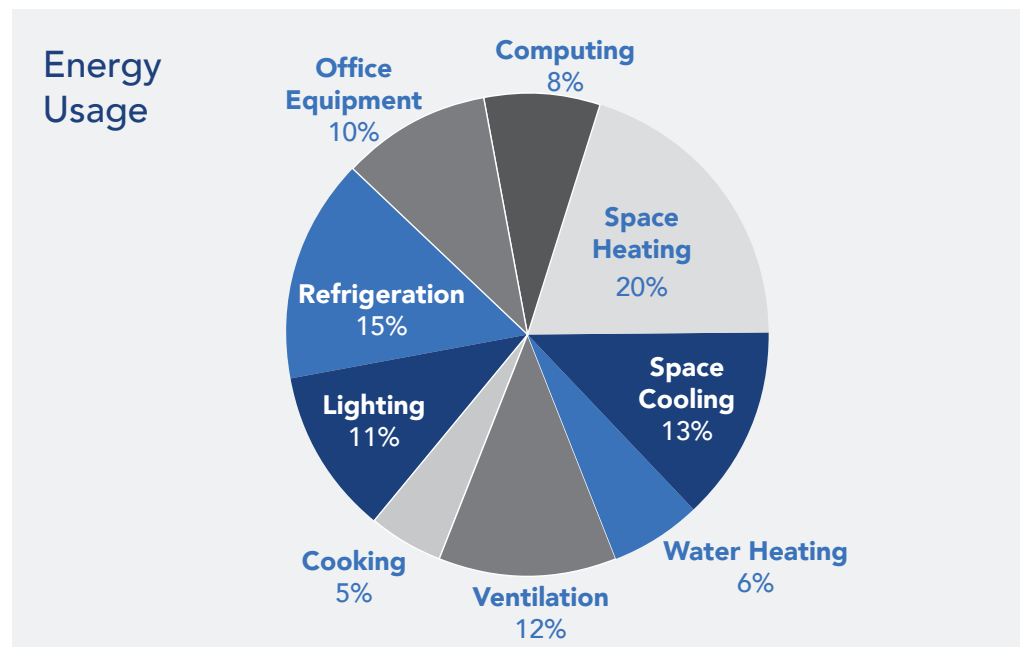
- Check seals and gaskets on all refrigeration units and walk-in coolers, replace if worn.
- Clean the coils on the backs of all refrigeration units regularly.
- Ensure adequate space around all refrigeration units to allow for air flow/circulation.

Commercial Kitchens (Restaurants, Grocery Stores, Hotels)

- Clean the exhaust hoods regularly to maintain efficiency.
- Check the dishwasher for lime, calcium, or other mineral build up. Descale as needed to maintain efficiency.

Hotels

- Set back temperatures in unoccupied hotel rooms.
- Cover the pool when not in use.



<https://bit.ly/2To9tDF>



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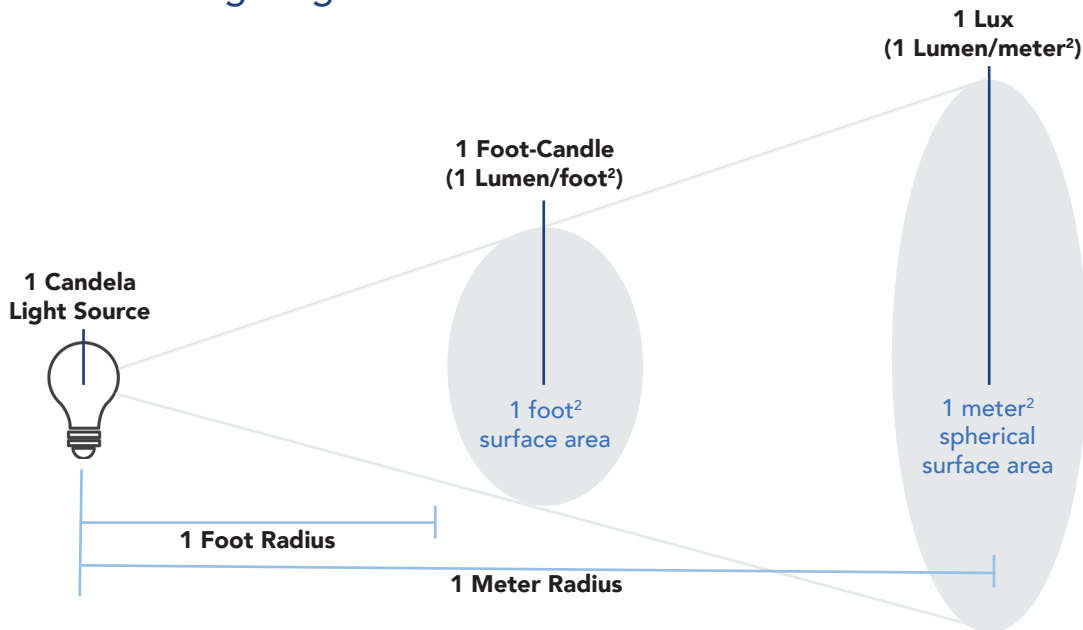
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Foot-Candle Lighting Guide

Foot-candles are the most common unit of measure used to calculate light levels. A foot-candle is defined as the illuminance on a one square-foot surface from a uniform source of light. The Illuminating Engineering Society (IES) recommends the following foot-candle levels to ensure adequate illumination and safety for occupants. The foot-candles should be measured where activities will be occurring. For example, in an office, the foot-candles should be monitored at the desk.

Space Type	Lighting Level Range (fc)
Office - Open/Private	30 - 50
Conference Rooms	30 - 50
Restrooms	7.5 - 30
Lunch and Breakroom	5 - 20
Parking Garage - Covered	1 - 5
Parking Garage - Open	0.5 - 3

Visual Explanation of Lighting Terms



This is based on information gathered from the IES 'The Lighting Handbook' 10th Edition



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Occupancy Sensors



Occupancy sensors automatically turn lights on when a room becomes occupied and turn the lights off within a preset time period after the space has been vacated. The types of occupancy sensors include passive infrared, ultrasonic, and dual technology sensors.

- Lighting accounts for 29% of the total electrical energy costs incurred by most offices.
- With emerging technology, various configurations and control-options are available for customizing sensors.

Energy-Saving Tips for Lighting

- Replace bulbs with LEDs to provide up to 30% energy savings on lighting costs.
- Use occupancy sensors in hallways, restrooms, conference rooms, and storage areas.
- Utilize daylight whenever possible to save at least 10% on lighting costs.
- Consider using dimmer switches or bi-level lighting for restaurants, stairways, hallways, and conference rooms.
- Replace exit signs with LED exit signs for improved safety.

Potential Energy Savings from Occupancy Sensors

Space Type	Energy Usage Reduction
Office - Open/Private	13 - 50%
Conference Rooms	22 - 65%
Restrooms	30 - 90%
Hallways	30 - 80%
Storage	45 - 80%

Source: North Carolina State Energy Office



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