



## Light-Emitting Diode (LED) Lighting

### Save energy and enjoy better performance with lighting upgrades

Highly efficient and durable, LED lighting performs well and can save a significant amount of energy.

LEDs have a long-rated life—typically between 25,000 to 50,000 hours—compared to traditional light sources such as incandescent, which generally last 1,000 to 3,000 hours.

#### LED applications

Some of the best potential applications for LEDs are areas where directional light is needed, such as floodlights or spotlights for artwork or architectural elements. Conventional incandescent and fluorescent lamps emit light in a 270- to 360-degree pattern and require additional reflectors to direct light where it is needed.

Because the light produced by an LED is typically emitted in a single direction, performance is improved by aiming light exactly where it is needed, such as on merchandise, artwork or tabletops—without losing light inside the fixture.

#### LED benefits

LED fixtures offer several benefits over incandescent fixtures:

- Lower energy consumption (three to six times less)
- Longer life with lower maintenance costs
- Wider color range
- Increased impact/vibration resistance
- Instant on/off functionality
- Better lighting control options (dimmable)
- Less heat generation, resulting in decreased cooling costs

#### LED fixtures

Fixtures specifically designed for use with LED light sources operate more efficiently and provide better optical control. They may last longer than a replacement lamp because the entire system is designed to work with the LED light source. Because LED fixtures are tested as a complete unit, designers can create systems for optimal performance in the space. Purpose designed fixtures that are ENERGY STAR® listed are available in many styles, including outdoor porch lights, track lighting, pendant lamps and recessed down lights.



#### Best applications include:

- Down lighting
- Retail displays
- Task lighting
- Restaurant and hospitality signage
- Outdoor area lighting
- Small, confined spaces
- Refrigerated display cases

#### Start saving now

Call 877.287.2250 or email [XcelSBL@clearesult.com](mailto:XcelSBL@clearesult.com) to schedule your FREE lighting assessment.

Learn more about the available rebates at [xcelenergy.com/LightingEfficiency](http://xcelenergy.com/LightingEfficiency).

### LEDs in retail applications

LEDs are great for retail use because unlike conventional lighting, most LEDs do not emit ultraviolet or infrared radiation from the front of the lamp, preventing damage to fabrics and facilitating a longer shelf life for produce.

Also, since LED light is directional, it is a great replacement for halogen lamps used in merchandising displays where higher intensity light is needed.

Because of their compact point source, LEDs can fit well into display cases where they make faceted glassware and jewelry sparkle brilliantly.

They also operate more efficiently in cold temperatures found in freezer and cooler display cases, with better color quality to make product packaging more noticeable.

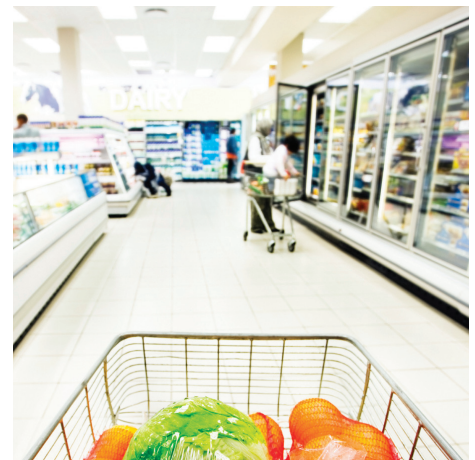
Refrigerated display cases with LEDs can also be used in conjunction with occupancy sensors that turn lights on when a shopper enters an aisle and turn them off when no one is present, saving additional energy.

### LEDs outdoors

LED lighting can work well for outdoor applications, especially in cold climates, and is commonly used for landscape lighting, street and area lighting, garage lighting, wall-mounted security lights, decorative pole-mounted lights, and porch lights.

### LEDs do best in cooler temperatures

It is essential to keep LEDs cool, which manufacturers typically accomplish by incorporating a heat sink or even an internal fan. Because of the added size of some heat sinks, certain bulbs may be too large or heavy for use in existing fixtures that were designed for lighter incandescent sources.



	Average annual savings per fixture*	Xcel Energy rebate per unit**
ENERGY STAR LED lamp replacing incandescent or halogen lamp	\$20	\$7–\$15
ENERGY STAR LED fixture replacing incandescent fixture	\$22	\$15–\$50

\*Energy savings figures are based on Xcel Energy rates and technical assumptions for Small Business Lighting program LED lighting measures.

\*\*Rebates are subject to full program eligibility and participation requirements available at [xcelenergy.com/Rebates..](http://xcelenergy.com/Rebates..)

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