

# Advanced LED interior lighting

## DESCRIPTION

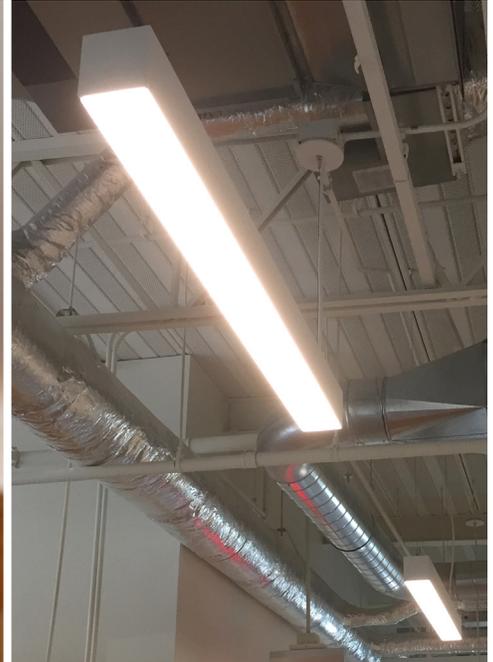
Light emitting diodes (LED) are a solid-state lighting technology that emits light when direct current passes through a semiconductor. LEDs are significantly more efficient than standard fluorescent fixtures and have a pleasing light quality. LED bulbs start instantaneously unlike fluorescent bulbs and have less impact on the environment because they do not contain mercury. LED bulbs last significantly longer than fluorescent fixtures—25,000 hours versus 8,000 hours so despite their higher initial cost they save money and energy over the long term.

LED bulbs provide the same amount of light using less power: an 8 Watt LED may be used in place of a 15 Watt CFL (or 60 Watt incandescent bulb). And unlike fluorescent fixtures, LED performance is not affected by low temperatures, humidity or on/off cycling.

## DEMONSTRATING THE TECHNOLOGY

Nearly all lighting in commercial buildings can be retrofitted with LEDs. LEDs are particularly suited to high-bay overhead applications such as big box retail stores, warehouses and manufacturing facilities. In homes, LED lamps can replace 40, 60, and even 75 Watt incandescent bulbs, as well as equivalent CFLs.

Participants in commercial or residential lighting programs, small business programs and commercial or residential direct install programs could be good candidates for testing and demonstrating this technology.



CRITERIA	VALUE
Electricity savings	0.43 kWh/ft <sup>2</sup>
Cost savings	\$0.05/ft <sup>2</sup>
Measure life	10 years
2017 simple payback	5 years
Carbon emissions avoided	3.0E-04 MT equivalent CO <sub>2</sub>
How it saves energy	LEDs use less power to generate light (fewer watts to generate lumens) than do incandescent or fluorescent fixtures.
Non-energy benefits	Reduced maintenance; dimmable, not sensitive to low temperatures, contain no harmful elements such as mercury.
Barriers to adoption	High first cost; new products being developed at a rapid rate causing hesitation to purchase now when something better might be available next year.

## FOR MORE INFORMATION

Scott Hackel | 608-210-7129 | [seventhwave.org](http://seventhwave.org)  
 Hardik Shah | 847-275-1201 | [gastechnology.org](http://gastechnology.org)

