

HOT TOPICS! LED LIGHTING IN THE RESIDENCE HALL ENVIRONMENT

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Lighting is a key component for energy reduction and sustainability. Lighting frequently accounts for 25 to 30% of a building's energy use. Highly efficient LED technology has been available for years, but cost and quality of light have been obstacles to using them in many residence hall projects. Gladly, the technology is evolving to make LED lighting a more viable option.

Definition. LEDs are solid-state semiconductor devices that convert electrical energy into visible light. Compared to other common interior light fixtures, LED lamps typically enjoy a long service life. LED replacement bulbs (lamps) commonly last as long as 25,000 to 30,000 hours, while the typical incandescent and compact fluorescent bulbs will expire after 1,000 and 8,000 hours respectively. Commercial LED fixtures such as down lights, troffers, and exterior site fixtures can last 50,000 to 100,000 hours. Like fluorescent bulbs, LEDs are remarkably efficient. Energy costs of an LED fixture can use as little as 10% to 25% the amount of electricity that an incandescent bulb uses.

Cost. Manufacturers are continuing to develop more efficient and longer lasting LED fixtures while the costs keep going down. Less than 2 years ago, a standard LED fixture could cost as much as 3 to 4 times more than a standard fluorescent fixture. Now, the cost of commercial LED fixtures is dropping by almost 50 percent.

LED downlight fixtures are now frequently in line with the cost of compact fluorescent. An example of how LED pricing has been falling, within the last few months, a partnership between Home Depot and lighting manufacturer CREE has cut costs of a specific LED bulb dramatically. Their 40 and 60 watt A19 screw-in LED replacement lamp has dropped from an average of \$40 down to \$10 dollars. An added benefit is that these replacement lamps do not have the mercury or temperature sensitivities as the screw-in compact fluorescent replacement lamps.

Not only are costs decreasing, but LED manufacturers are making it easier to compare one fixture to another by participating in such programs as LED Lighting Facts® (<http://www.lightingfacts.com/>). Developed by the US Department of Energy, LED Lighting Facts is a voluntary program for manufacturers to report performances according to industry standards.

Quality of Light. For years, designers have recognized the effect of lighting color on mood. Brighter light with a higher, cooler color temperature (meaning that the light color appears more blue than red) has shown to help with alertness when studying and test-taking. Dimmer light with a warmer color temperature can create a relaxing sensation. LED fixtures have long had a reputation for producing a light that appeared too cool, providing an unnatural blue-ish hue to its environment. Evolution in the technology has begun to address this concern. Standard LED fixtures are available in the same color temperatures as fluorescent fixtures.

The technology is even evolving to allow occupants to adjust the color temperature of a light fixture. Color-changing LED lamps are on the market that allow users to change the color and intensity of the lighting. LED's in the near future will be able to be adjusted from your smart device. While changing the lighting color in the room may give roommates another thing to fight over it can enhance the residence hall life by adjusting the lighting to occupants' mood or task.

Given their falling cost, high efficiency, low service requirements, and advances in color temperatures, LED light fixtures are a great option. Whether you are replacing existing lamps or planning for a new building, LED lighting could be a great option for your next residence hall project!

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