LED lighting becoming a game changer

November 25, 2013 - Green Buildings

The benefits of energy efficiency are numerous and compelling, but the question of what upgrades and what lighting to use is where it gets complex.

That decision is becoming even more challenging as LEDs (light-emitting diodes) are quickly becoming a game changing energy source for commercial buildings.

We're all familiar with LEDs because they have been a staple as indicator lights in electronics for years. Only recently have LED technologies evolved, including the ability to produce white light as opposed to red, green and blue which is most recognizable to consumers, to become an important trend in commercial lighting.

LEDs use at least 75% less energy than incandescent lighting and last up to 50 times longer (two to five times longer than fluorescents). LEDs are more energy efficient because they emit light in specific directions, with heat drawn away via a heat sink, while incandescent and compact fluorescent bulbs emit heat in all directions, releasing a tremendous amount of energy as heat. Thus, LEDs reduce cooling and maintenance costs. With LED's longer life span, there are fewer bulbs to change, lowering replacement costs. LEDs do not burn out. They dim over time- a long time - with a life cycle determined by a decrease of 30% in "lumen depreciation."

How does that translate in real dollars? In April, the U.S. Dept. of Energy released a report about LEDs vs. traditional lighting sources. Their findings were that if nine U.S. markets made the switch to LEDs overnight, annual energy savings could approach 3,873 tBtu, or about 3.9 quadrillion Btu (quads), saving nearly $37 billion in annual energy costs. This amount represents approximately half of the total national lighting energy consumption in 2012.

What then are the perceived downsides of LEDs? For one, they are more expensive. Property owners must make a significant investment on the front end to achieve significantly lower costs in the long-term. For another, poorly designed and manufactured LED lighting can result in flickering, color change, poor light distribution, delays in response or produce heat when turned off. LEDs should carry the UL or ETL certificate to demonstrate quality control. Additionally, as LEDs are new to commercial building usage, a poor design lighting plan can greatly impact its benefits.

As LED lighting technology continues to evolve, quality is also improving. Costs are decreasing as demand skyrockets. Competition is fierce and with good reason: because LEDs last much longer than traditional lighting products, on-going labor and material expense is lower.

In addition to their tangible benefits, LEDs are adaptable for retro-fit of existing fixtures and easily incorporated into contextual design ideas. They are cool, literally and figuratively, and, as such, capable of attracting tenants lured by upscale technologies that offer environmentally-friendly, energy efficient "cutting-edge" features.

The smart money is on LEDs replacing incandescent and fluorescent lighting as costs decline in tandem with the continuing ascendance of the desire to live and work in green buildings.

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