

## Lighting Innovation - A Lighting Designer's Perspective

As a lighting designer and participant for February's IFMA panel discussion entitled "Lighting Innovation - LED's or Fluorescents? I'd like to bring the perspective of a lighting designer to the discussion.

As lighting designers, our goal is to merge the most energy efficient technology with innovation and quality lighting in a space. While doing so, some things to consider are the occupant's comfort, appropriate light levels, energy code requirements, energy saving goals and any specific client needs. If you are a perspective tenant or building owner, you will most likely work with designers to decide on the lighting for your space. Our panel discussion focused on LEDs and fluorescents and whether it was time to switch. With that in mind, I would like to discuss four things to consider when deciding on your new lighting system:

### 1. What is your budget?

Understand the budget for lighting in the space. An LED fixture will tend to have a greater upfront cost than compact fluorescent, fluorescent, or halogen sources of equal quality. The payback over a lifetime will frequently make the LED product cheaper in the end due to savings in energy usage and maintenance (cost of lamps & cost of changing the lamps). Use LEDs in areas where they are best suited and save the greatest amount of energy to get the highest return on investment.

### 2. What is the efficacy of the fixture?

Efficacy refers to lumens per watt.

- Linear fluorescent: 92 – 104 lumens per watt
- Compact fluorescent: 60 – 72 lumens per watt
- LED: 30 – 60 lumens per watt average (varies greatly, can be >100 or <30)
- Halogen: 13 to 18 lumens per watt

The efficacy for traditional lamps refers to the lumens per watt of the lamp only; fixture efficiency is not taken into account. The efficacy of the LED typically refers to the efficacy of the entire fixture. So the list above is not exactly comparing apples to apples.

LEDs bring a substantial energy reduction when replacing halogen and incandescent sources. When replacing linear and compact fluorescent products, you must compare the statistics of the individual products to determine which will save more energy.

### 3. How will the fixture be used?

LEDs and fluorescents are by nature two very different types of sources. An LED is a point source, while a fluorescent emits light in all directions. This distinction lends LEDs to be better at directing all of their lumens into a single general direction, but not as good at providing a more ambient light effect without proper lensing. Manufacturers have been using this to their advantage creating lenses that put the light exactly where it is needed. As this technology is further developed, it could greatly change the fixtures we see today.

Some common uses for LEDs:

- Downlights
- Wallwashers
- Retrofits for incandescent PAR lamps
- Small cove uplights
- Undercabinet lights
- Small details where a fluorescent or any other source would not fit

At this point, it is still more common to use linear fluorescents for linear office pendants, recessed 2x4s, 2x2s, and 1x4s. These types of fixtures tend to be the main light source in a space, requiring them to provide a high light level. Linear fluorescents tend to be capable of producing more lumens or higher amounts of light than LEDs. As LED manufacturers produce higher wattage LEDs and fixture manufacturers further develop technologies to direct the light, we will be seeing more fixtures ready to compete with the fluorescent fixtures. There are some great ones on the market today, but the selection is limited.

#### 4. See a Sample!

The point I can most stress is that not all LED products are created equal. Whenever considering an LED product, make sure to review a sample first so you know what you are getting.

When reviewing a sample, look for the following qualities:

- Color of the light - is it acceptable? It can vary greatly from product to product.
- Color consistency – do all LEDs in a fixture appear to be the same?
- Color comparison with other fixtures in the space. Are you using multiple fixtures that all have a 3000K color temperature? Does the light look similar between each fixture?

Lighting Designers use both LEDs and fluorescents on a daily basis, and typically end up with a combination of fluorescent and LED lighting in commercial spaces. LEDs have been improving by leaps and bounds and we are continuously seeing new and exciting products that are changing the field of lighting. However, don't think fluorescents are sitting on the sidelines waiting for LEDs to surpass them. New technologies for distributing and controlling fluorescent light are being further developed creating fixtures that are 90 - 95% efficient; that is hard to beat from an energy standpoint. LEDs are changing the way people think about lighting and they are forcing other aspects of the lighting community to keep developing their technologies as well. It's an interesting time in the lighting community. I hope the list above helps you make some decisions when developing a new space or deciding to retrofit an old one. I wish you luck on any future ventures!

Lisa Kramer  
Senior Lighting Designer  
h.e. banks + associates Lighting Design  
[www.hebanks.com](http://www.hebanks.com)