When Linear LEDS are Cost Effective Cheat Sheet

by [deleted] via cheatography.com/2754/cs/10762/

Introduction

LED retrofits are efficient and effective replacements for linear fluorescent lamps in troffer fixtures, but may not be cost-effective for FMs who need a short payback period, the GSA notes in a recent field test of linear LED retrofit products.

Energy Efficiency

Installed technologies and conditions varied widely at the project sites, the GSA notes in its project findings. Mixes of nominal and reduced wattage lamps, two- and three-lamp fixtures and varying ballast technologies and manufacturers were common, making it difficult to compare the LED replacements against the old fixtures. The readings were normalized for analysis by assuming the high end of the industry-accepted range in wattage for two-lamp T8 fixtures with electronic ballasts (60W) as the pre-retrofit condition..

http://www.buildings.com/article-details/articleid/20894/title/are-linear-led-retrofits-worth-the-investment-

When Linear LEDs Make Sense

- **Product efficacy:** Refer to existing lighting program requirements to set minimum efficacy criteria, then screen product options against those needs.
- **Light delivery:** Ensure that the replacement will provide appropriate lighting for the tasks in each space. You may have to measure the existing conditions or conduct modeling exercises to make sure post-retrofit light levels are reasonable.
- **Light distribution:** LEDs are directional, unlike fluorescent lamps, which can create uneven, unappealing light patterns.
- **Product useful life:** The replacement should last as long or longer than the existing lamp. Many LEDs have the potential to last longer than fluorescent lamps and are typically rated with high lifetimes, but before you take the plunge, consider whether that long life will actually be used. If the space may be reconfigured soon or has a low lighting use time, a very long-life product may not be worth it.
- **Lighting color:** LEDs come in color temperatures similar to fluorescent lamps. The GSA recommends choosing LED lamps with the same color temperature as the previous fluorescent lamps.
- **Installation time and cost:** LED direct lamp replacements cost more than fluorescent lamps and the labor costs can vary widely. Depending on how much rewiring is needed, a new LED fixture might be just as affordable as a replacement kit.
- **Installation capability:** Make sure the existing system has the right ballast type to operate the LEDs – usually an electronic instant-start. Determine whether the existing optical system is easily removable, how the ballast is accessible and how difficult it is to access, what type of ballast is required and how many sockets are installed.
- **Maintenance:** Longer lifetimes mean significant savings from fewer replacements, so include reduced maintenance in cost & budget proposals.

LED Economic Assessment

Tips for Hig-Bay Lighting

If you have a warehouse, meeting space or supermarket in your portfolio, you're probably aware of the cost and complexity of high bay lighting applications. Finding the right fit for these spaces is a challenge, but the long life and low maintenance needs of LED lighting may be a good match for your facility. Ensure a successful LED retrofit with these tips.

1) Use the same base configuration

Before you start weighing any other product specifications, make sure you're only looking at lamps with the same base (such as metal halide base E39 or incandescent base E26 medium), as well as the same aesthetic effect, the Department of Energy recommends. This will ensure that your new LED lamps produce roughly the same amount of light while consuming less energy.

2) Consider control strategies

LEDs dim easily and work well with lighting control systems, which can be very useful in tricky lighting situations where a couple of light switches won't cut it.

3) Know your usage patterns

Understand where and how each space uses lighting to find additional opportunities for your LED lighting to save money.

Linear LED Economic Assessment

PROPERTIES	LIGHT SOURCE BASELINE 2-LAMP T8 + ELECTRONIC BALLAST	LIGHT SOURCE LED-A	LIGHT SOURCE LED-B
Equipment Cost	Not Applicable	$50, $60 and $70	$50, $60 and $70
Installation	Not Applicable	$34.19 and $68.38	$34.19 and $68.38
Maintenance	$110.14	$0	$0
Energy Rate	$0.1062/kWh	$0.1062/kWh	$0.1062/kWh
Energy Consumption Before	240 kWh/yr	Not Applicable	Not Applicable
Energy Consumption After	Not Applicable	176 kWh/yr	172 kWh/yr
Energy Consumption Savings	Not Applicable	64 kWh/yr	68 kWh/yr
Energy Cost Before	$25.49/yr	Not Applicable	Not Applicable
Energy Cost After	Not Applicable	$18.69/yr	$18.27/yr
Energy Cost Savings	Not Applicable	$6.80/yr	$7.22/yr
Simple Payback	Not Applicable	6.5 to 8.9 yrs	6.3 to 8.6 yrs
Net-Present Value	Not Applicable	2.3 to 1.4	2.4 to 1.5

GSA

LED-A and B used 44W and 42.9W respectively, indicating a savings of 26.7% and 28.5% over the assumed 60W baseline