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The Search Begins Here...

Test your chops.
If you get stumped, let us know at marcom@lightingdesignlab.com. Have fun!



BONNEVILLE POWER CANDLEPOWER CONTROLS DESIGN EFFICACY	ENERGY EFFICIENT ETO FLUORESCENT FOOT CANDLE IDAHO POWER IES	ILLUMINATION KILOWATT LAMP LED LIGHTS LIGHTING CODE LIGHTING D LAB LUMEN	REFLECTIVITY RETROFIT SEA CITY LIGHT SNOHOMISH PUD TACOMA POWER WSU
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Yes We Can

Upgrading existing CFL Recessed Cans to LED.

by Eric Strandberg, LC

When considering light sources for recessed can luminaires, LEDs offer a strong set of attributes like good optics, long life and high efficacy, while compact fluorescent is relatively weak in these areas. As technology continues to improve, we have a landscape ripe for change.

There are many ways to upgrade an existing CFL. Probably the best would be to replace it with a new LED fixture. This can be expensive and not always practical. There are a lot of good retrofit kits that contain drivers and optics. But, wouldn't it be great if we could simply change the lamp to LED?

A few months ago, the Lighting Design Lab received a sample of a 13W LED designed to install directly into an existing socket and replace a pin-based 26W CFL. Similar products have been around

for years, but they seemed low-quality and suspect. This one was different. It felt solid and looked well designed, so we thought it might warrant closer inspection.

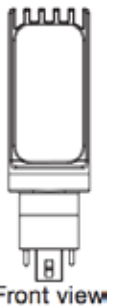
First of all, does the product deliver the same quality and quantity of light as the current technology? In this case, CFLs and LEDs are both generally high quality. As to the quantity of light, the 13W LED, with 900 lumens, claimed to replace a 26W CFL with about 1500 lumens. This seemed like a lot less light, but a CFL recessed can isn't very efficient optically, and 40% or more lumens never make it out of the luminaire. This LED product was directional, thus sending most of the lumens out of the fixture. One can't judge a product by lamp lumens alone. Delivered lumens also needed to be measured. We mocked up the product and it performed about the same as the 26W CFL.

Secondly, products using an existing

ballast raised questions like:

- What are their age and condition?
- How much wattage will it use?
- Will it affect the LED's operation?

So, we tested the 13W LED and determined it had a system wattage of 14.5. When an LED product rated for 50,000 hours is used, how long will it really last on that ballast?



There are dozens of possible ballasts in the field, and it's a safe bet they've been operating for a number of years.

Lastly, we have on-going concerns for the fact that these products weigh more than a CFL. Whether mounted horizontally or vertically, there is stress placed on the socket, resulting in the lamp potentially falling out or the socket being pulled out of position.

Are there strategies for upgrading CFL fixtures? Yes! Is it as simple as changing the lamp? Maybe not.

In this issue...

- Yes We Can
- Spring '14 Class Schedule
- Code Resources-Where to go
- The Search Begins Here

Did You Know

Switching entirely to LED over the next two decades could save the United States \$250 BILLION in energy costs.*

The fine print. *Source, U.S. Dept. of Energy.



The A to Zs of LED

Instructor: Eric Strandberg, LC

Morning Class: 10:00 a.m. - Noon

This **intermediate class** will be a snapshot of state of the art technology. Showcasing all aspects of LED developments, from monolithic chips and packages, to luminaires and lensing. LED technology is a natural for controls, and we will look at how LEDs fit into the trend toward adaptive lighting and dynamic color control. Other technologies such as Plasma and OLED will be examined. Attendees of this class will come away with a strong sense of how LEDs work and where they can be applied successfully.

Eric has over 30 years of lighting industry experience. He joined the Lab in 1995 to promote energy efficiency and quality lighting design. His work includes evaluating new technology, developing and teaching industry courses, writing articles, and conducting project consultations on almost every aspect of lighting design and conservation.

Lunch: Noon - 1:00 p.m. (included in registration)

Understanding Lighting Controls

Instructor: Jeff Robbins, LC, MIES

Afternoon Class 1:00 p.m. - 3:00 p.m.

Other than LEDs, lighting controls represent the fastest growing segment of the lighting market. In an attempt to capture the most energy savings, lighting codes throughout the country require the use of controls in almost every application. Although recent advances in technology make compliance easier, it's not always clear how to employ them. Using (4) typical commercial settings, this **intermediate level class** will demonstrate how to design controls in these applications, and the devices and techniques used to control them.

Jeff is a commercial Lighting Specialist who has worked in the industry for over 25 years. He is the Director of Education for the Western District of IES, and Chairman of the Testing Committee for the National Council on Qualifications for Lighting Professions (NCQLP). Jeff owned and operated his own lighting design firm, which served both national and international clients.

Class Locations and Dates

Bellevue, WA	Wed., April 16th	Residence Inn-Marriott: 605 114th Ave. SE, Bellevue, WA 98004
Tacoma, WA	Wed., April 23rd	Courtyard Marriott Downtown: 1515 Commerce Street, Tacoma WA 98402
Seattle, WA	Wed., May 7th	Lighting Design Lab: 2915 4th Ave. S, Seattle, WA 98134
Everett, WA	Tues., May 13th	Snohomish PUD: 2320 California Street, Everett, WA 98201
Portland, OR	Thurs., May 15th	Marriott-Downtown Waterfront: 1401 SW Naito Parkway, Portland, OR 97201
Boise, ID	Thurs., May 22nd	Idaho AGC Training Ctr: 1649 West Shoreline Drive, Boise, ID 83702

Fees

Through the generosity of our partners in conservation, we are able to keep course fees to a minimum.

Standard Registration	\$30 per class (lunch included)
Employees of Sponsor Organizations	\$10 per class (lunch included)
Students (with valid university/college ID)	\$10 per class (lunch included)

Registration and payment are required in advance. Register online at www.lightingdesignlab.com. For assistance, contact Elizabeth Lyon at Beth@lightingdesignlab.com

ENERGY CODE RESOURCES - WHERE TO GO

Tools to help find the hard to find.

As the northwest region's local and state governments review and implement changes to their energy codes, it's important to remain vigilant in knowing when those changes occur, when their mandates take effect, and how those updates will impact your lighting projects.

Over the past several months, the Lighting Design Lab, in partnership with Seattle Department of Planning and Development, held standing room only code workshops to review the most recent updates to the lighting controls portion of the Seattle and Washington Energy Code. As other code updates come about, we hope to continue this effort within our service areas throughout the region. In the meantime, we want to ensure that you have quick access to the most current information as it relates to lighting.

We have created a category in the Resources section on our website titled **Energy Code Resources**.

What You'll Find at www.lightingdesignlab.com/resources

Who	Current Energy Code	How	Most Recent/ Next Update*
WA State	2012 Washington State Energy Code - Commercial	PDF for download	July 2013
Seattle	2012 Seattle Commercial Energy Code	PDF for download	December 2013
Oregon	2010 OEESC (Oregon Energy Efficiency Specialty Code)	Link to Oregon web page	July 2014
Idaho	2009 IECC (International Energy Conservation Code)	PDF for download	January 2015
Montana	2009 IECC (International Energy Conservation Code)	PDF for download	June 2014
British Columbia	2012 National Energy Code of Canada for Buildings	PDF for download	December 2013

*Effective dates are subject to change by respective agencies. We will update our website as information becomes available. Check back often.

