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THE DOE'S TRUTH ABOUT LED LINEAR REPLACEMENT TUBES



A recent article about replacing traditional fluorescent lamps with LED linear replacements tubes shows several revealing facts (based on the DOE's CALiPER Benchmark Report).

- "...overall performance levels that were significantly below fluorescent systems."
- "...CALiPER testing showed that the linear replacement LED lamps tested fell short of T8 fluorescent lamps in terms of both light output and efficacy."
- "...LED T8 replacement lamps cost much more than fluorescent lamps."
- "...The problem is compounded by inaccurate performance claims on the part of manufacturers. Most of the manufacturers of SSL linear replacement lamps tested in Round 9 provided incorrect data, with some promising as much as 50% more lumens than their products actually delivered."

[Click here for the full article](#)

CAN LEDs BE PHOTOMETRICALLY MEASURED WITH A "REGULAR" LIGHT METER?

There has been so many different answers to this question recently. So what is the real answer?!

The purpose of photometric measurement is to gather a reading that mimics the human eye as accurate as possible. Since an LED is a technology all in its own category, this photometric device must be equipped for this special source. LEDs have unique characteristics as compared to other traditional light sources - such as its directional nature, and unique spectral content and distribution.

For the purpose of this article, we are talking about white phosphor converted LEDs, excluding colored LEDs or color changing luminaries.

The best way to check if your light meter is equipped to measure LEDs is to check the $f1'$ value in the specifications provided. The $f1'$ value has to be as low as possible, and needs to have photopic correction, therefore allowing for the least error. The lower the $f1'$ value, the closer it will mimic the human eye response. Michael Reibling, Manager of SSL and R&D at Philips Hadco, states "...you should use a meter that matches the the V_{\bullet} (called V_{λ}) photopic visual sensitivity curve (sensitivity versus wavelength). Thus the goal is to have the detector and filter combination match the V_{\bullet} curve as closely as possible; a per-

fect match would mean $f1'=0\%$."

The IESNA TPC SSL subcommittee is currently working on writing a new LM specifically for electrical and photometric measurement of LEDs to include these special considerations for this newer source. On a side note, induction sources may require special considerations and updating as required as well. This subcommittee is also working on updating *LM-28 IESNA Guide for the Selection, Care and Use of Electrical Instruments in the Photometric Laboratory*. This publication, and the *IESNA LM-28 IESNA Guide for the Selection, Care and Use of Electrical Instruments in the Photometric Laboratory* can be purchased [here](#).

If your light meter does not have specifications, simply contact the meter manufacturer. Indicate to them that you will be using this meter to measure LED, and you need to know if it is equipped (low $f1'$ value, match V_{\bullet} curve, etc.) to do so. Also indicate you will be using this meter for MH, HPS, etc, so the meter is not too specialized.

-Valerie Harmon, LC, LEED AP, Lightolier

ENERGY SECRETARY ANNOUNCES AMERICAN RECOVERY AND REINVESTMENT ACT FUNDING FOR L.E.D.'S

As part of the Recovery and Reinvestment Act Energy Secretary Steven Chu has announce that more than \$37 million in funding will be made available for the development and production of solid state lighting (SSL), also referred to as L.E.D.'s. Currently the United States utilizes approximately 24 percent of its total electricity production for lighting. The development and implementation of L.E.D.'s in a wide range of areas could reduce the need for electricity nationwide by as much as one-third.

The Recovery and Reinvestment Act funds are being leveraged with almost \$29 million in private industry investment for a total of more than \$66 million worth of investments. The monies will be

used to improve SSL's in 17 different areas. Three projects will focus on Core Technology Research (\$4 million); six will support Product Development (\$10.3 million), and eight will focus on SSL Manufacturing (\$23.5 million).

With this latest program into the development of L.E.D.'s and SSL the DOE has provided funding six times for technology research and product development but the first time they have provided funding for actual manufacturing. The addition of manufacturing to DOE's list of SSL funded projects is hoped to encourage US-based manufacturing of solid-state lighting technologies. You can read more in the following article in the Industry News section of [Light Directory](#).

-John Sundy, LC, CJL Engineering

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Presented by Michael Myer, PNNL



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