



Lighting Update: What's new with fluorescents and LEDs

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E Source

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Fluorescent Lighting Trends

Linear

- Longer life

- Spectrally enhanced lighting

- Reduced wattage

CFL

- Smaller

- Less mercury

- Better dimming (?)

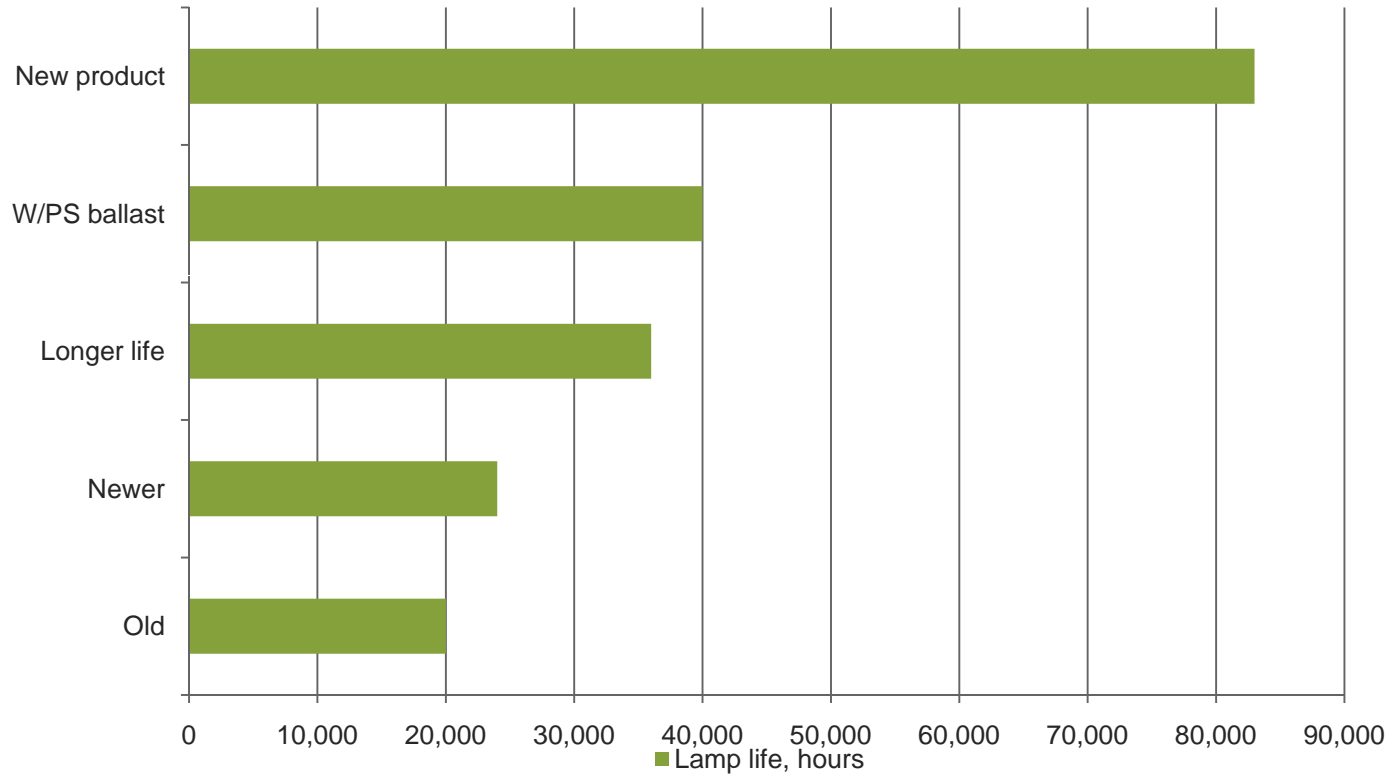
Cold cathode fluorescent

- Dimmable, long life

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Lamp life

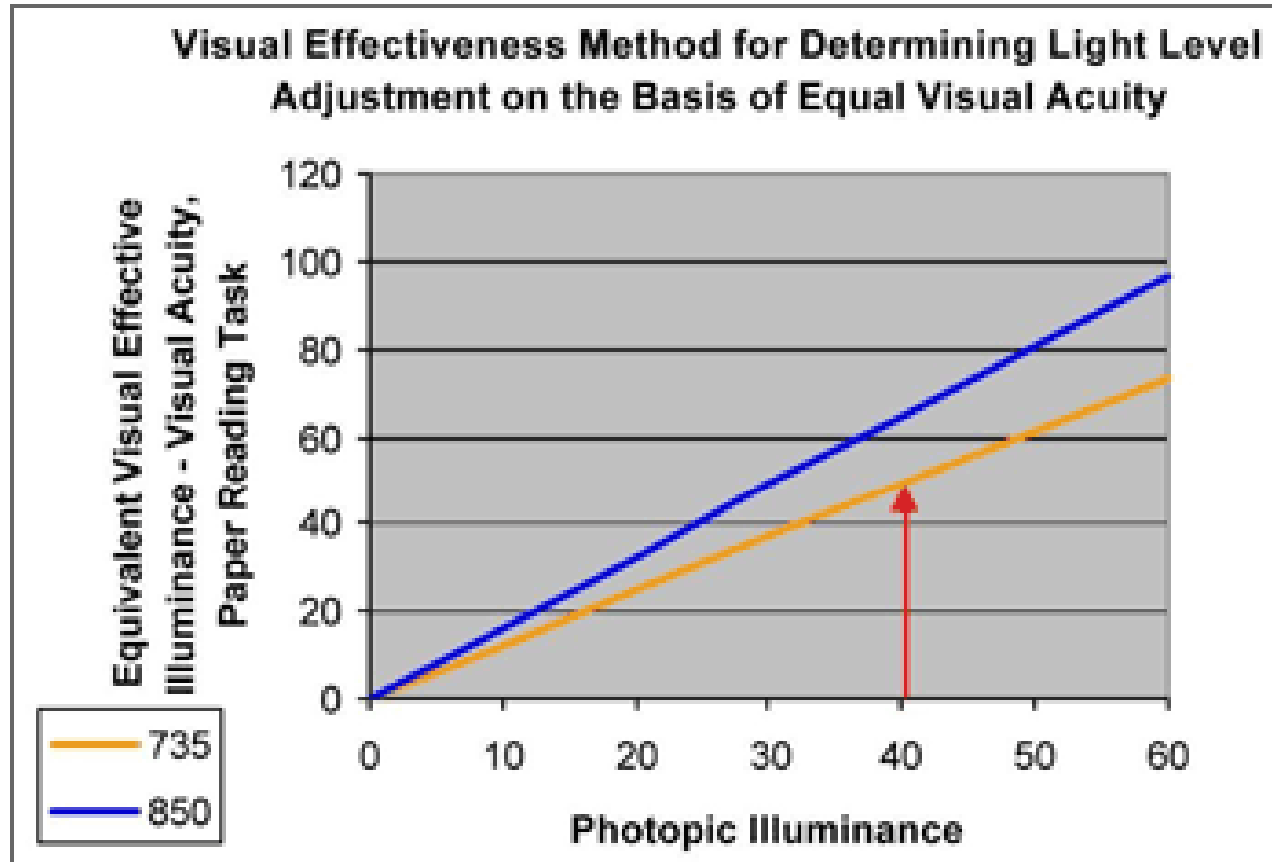
Lamp life gets longer



Note: Longer life with cycles > 3 hours

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Spectrally Enhanced Lighting



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Spectrally Enhanced Lighting

- SEL: bluer light (5000 + K)
 - Benefits:
 - Improved visual acuity
 - Increases brightness perception
 - Up to 30% savings compared to standard T8s
 - DOE studies
 - Less energy
 - Occupant satisfaction
- New website:
http://www1.eere.energy.gov/buildings/spectrally_enhanced.html

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Reduced wattage lamps

- Four-foot lamps: 32W → 30, 28, 25
- Now:
 - 2 and 3 ft lamps (17W → 15; 25W → 22)
 - T5HO lamps (54W → 51W, 49W)
- Cautions:
 - Sensitive to cold temperatures
 - No dimming
 - Limited use with occupancy sensors
 - Need to maintain multiple lamp types
 - T5HO not sensitive to cold

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CFL trends

- At LightFair:
 - Several lamps with 1.5 mg of mercury
 - 13 W CFL shorter than an A-lamp
 - Promises of better dimming
 - Dimmable at the base



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Cold Cathode Fluorescents

Now available up to 18 W

	CCFL	CFL	Incandescent
Power (W)	5	5	25
Lumens	230	200-220	235
Overall length (inches)	4.0	4.8-4.9	4.4
Rated Life (hours)	25,000	6,000-8,000	3,000
Dimmable?	Yes	No	Yes



Courtesy: Technical Consumer Products [34]

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LEDs

- Quick review
 - Key properties: like the cold, directional, no IR, no UV, no mercury (but...)
 - Efficiency--great for replacing filtered incandescents, and...
 - Expanding niches: holiday lights, retail accent lighting, refrigerated display cases etc
 - Making progress for general illumination



Courtesy: Philips

What's The Problem?

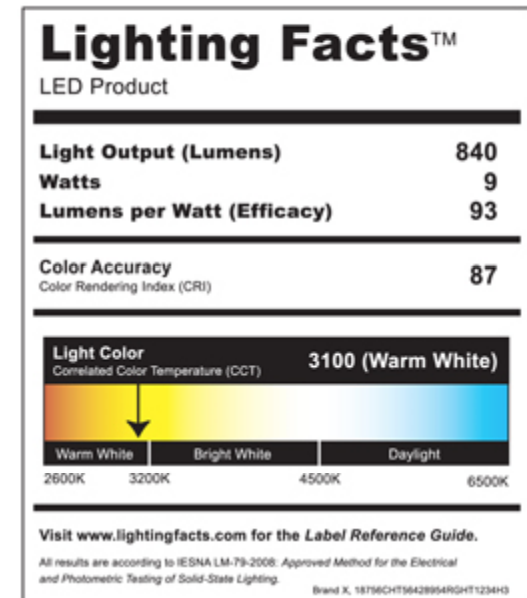
- Performance varies widely
- Lots of pressure and misleading info from manufacturers and reps
- Latest round of DOE tests showed:
 - Efficacy: 14 to 53 lm/W
 - >half of the products came with misleading or inaccurate literature
 - Equivalency claims (wattage) for replacement lamps almost always false
 - Source: CALiPER program:
http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/caliper_round_8_summary_final.pdf

What's Being Done

- CALiPER testing: tests a wide array of products available for general illumination, see <http://www1.eere.energy.gov/buildings/ssl/caliper.html>

What's Being Done

- Lighting Facts: a voluntary program to report data in a uniform, useful, honest way, based on established standards, see <http://www1.eere.energy.gov/buildings/ssl/advocates.html>



What's Being Done

- Energy Star: now available, see http://www.energystar.gov/index.cfm?c=ssl.pr_commercial
- Categories:
 - Recessed, Surface, and Pendant Downlights; Portable Desk Task Lights; Fan/Light Kits; Track/Rail Lights; Cove Lighting; Outdoor Porch Lights; Outdoor Step Lights; Outdoor Pathway Lights; Undercabinet Kitchen Lights; Others on the way

Energy Star Products

- Residential:
 - 6 manufacturers
 - 20 recessed downlights
 - 5 surface-mounted downlights
 - 4 under-cabinet kitchen
 - 1 outdoor porch
- Commercial:
 - 4 manufacturers
 - 30 recessed downlights
 - 1 Surface-mounted downlights

What About Other Applications?

- Check for DOE test data.
- Look for luminaire data, not bare LED
- Look for data that follows accepted procedures, eg photometric data and lumen maintenance data following LM-79 and LM-80
- Make the right comparisons (eg compare the LED system to a new state-of-the-art HPS or metal halide fixture, not just the degraded old fixture being replaced)
- Look for performance data from independent laboratories
- Participate in demonstration programs
- Commission you own tests

What About Other Applications

- Northeast Energy Efficiency Partnerships (NEEP) to the rescue: Design Lights Consortium Qualified Products List

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NEWS
DesignLights Consortium's revised version of the "Office Lighting knowhow" guide was featured in the Jan/Feb 2009 issue of "Architectural Lighting". . . [Read more >>](#)

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Courtesy: NEEP

NEEP's QLP

- Similar to Energy Star but different applications
- Commercial applications only
- List available only to sponsoring utilities.
- 17 utility sponsors in the Northeast, Midwest, Northwest and California, negotiations underway with four other California utilities
- For more info: Sarah Eckstein (seckstein@NEEP.org) or Jon Linn (jlinn@NEEP.org).

Utility Efforts

- Efficiency Vermont:
www.encyvermont.com/led
- PG&E: www.pge.com/led
- Oncor: www.takealoadoftexas.com
- All have eligible products lists based on Energy Star and other vetting
- Lower light levels, better uniformity
- Color temperature questions

For more information

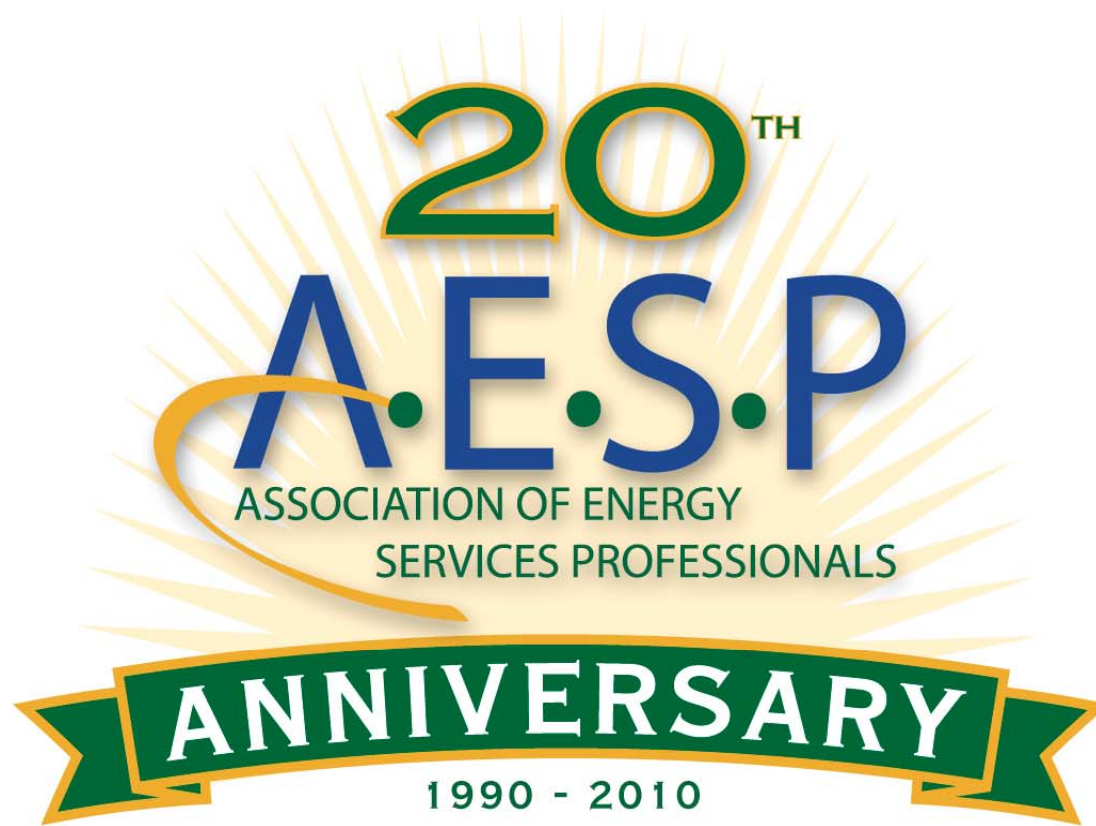
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