

LIGHTING *for* tomorrow

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Pacific Northwest National Laboratory

DOE Transformations in Lighting Workshop

31 Jan 2008

2007

Organizers

- American Lighting Association
- Consortium for Energy Efficiency
- U.S. Department of Energy
 - Represented by PNNL

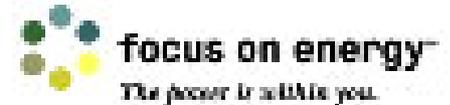
american
lighting
association



*Working Together,
Advancing Efficiency*



Sponsors



Objectives

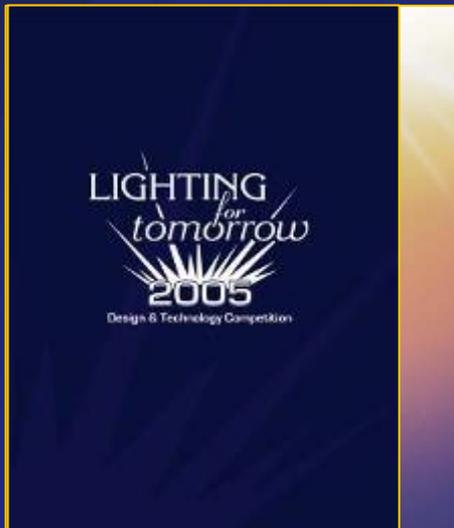
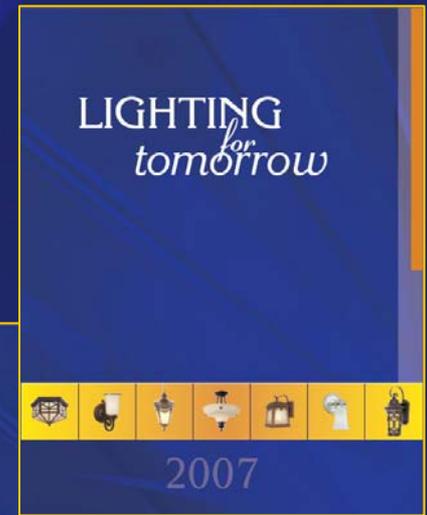
- Encourage and recognize attractive, energy-efficient residential lighting fixtures.
- Build demand for energy-efficient lighting by demonstrating that it can be highly attractive and functional.
- Encourage technical innovation in energy-efficient lighting.

2004



Competitions to Date

2007



2005

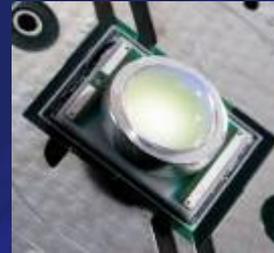


2006



LIGHTING for tomorrow 2007

2007 SSL Competition



- Objectives
 - Explore use of LEDs in niche applications
 - Evaluate fixtures employing LEDs
 - Facilitate learning by lighting fixture industry
- Advocate high-quality, energy-efficient use of LEDs
- Publicize within lighting community rather than mass market



2007 SSL Competition (cont.)

- Niche applications
 - Undercabinet and in-cabinet
 - Portable desk/task
 - Outdoor porch, path, step
 - Recessed downlights
- LED luminous efficacy – min requirements
 - 40 lm/W for < 5000K
 - 50 lm/W for 5000K +

2007 Grand Prize Winner

- **LR6 by LLF Inc**
 - 12 watts, 650 lumens, 61 lm/W
 - 2700 K, 92 CRI



Winner – Portable Desk/Task

- **PLS Task by Finelite**
 - 10 watts, 430 lumens, 43 lm/W
 - 3500 K, 71 CRI



Winner – Undercabinet

- **PLS Undercabinet by Finelite**
 - 8 watts, 344 lumens, 43 lm/W
 - 3500 K, 71 CRI



Winner – Outdoor

- **Strata by Progress Lighting**
 - 5 watts, 125 lumens
 - 25 lm/W
 - 3200 K, 70 CRI



Honorable Mention

- **Wall sconces by Justice Design Group**



2008 Competition

One competition, two categories

- CFL fixture families
 - Indoor and outdoor
 - Meet ENERGY STAR



- LED-based fixtures
 - Near term applications (Energy Star SSL)
 - Other lighting applications
 - Future LED showcase



SSL Entry Categories

- Near term applications (Energy Star 1.0)
 - Undercabinet for kitchens
 - Portable desk/task
 - Recessed downlights
 - Outdoor porch, path, step
- Other applications
 - Other fixture types including but not limited to wall sconces, table/floor lamps, pendants, chandeliers
- Future LED showcase
 - Most energy efficient pre-production LEDs
 - Highlights the future of the LED industry



Minimum Requirements

- Near term applications (Energy Star 1.0 Criteria)
 - Efficacy:
 - Kitchen Undercabinet – 24 lm/W
 - Portable Desk/Task - 29 lm/W
 - Downlights – 35 lm/W
 - Outdoor porch – 24 lm/W
 - Outdoor step – 20 lm/W
 - Outdoor path – 25 lm/W
 - Allowable CCT: 2700 K, 3000 K, 3500K
 - Minimum CRI: 75



Minimum Requirements (cont.)

- Other applications
 - Efficacy: 50 lm/W
 - Allowable CCT: 2700 K, 3000 K, 3500K
 - Minimum CRI: 80
- Future LED showcase
 - Efficacy: 90 lm/W
 - Allowable CCT: 2700 K, 3000 K, 3500K
 - Minimum CRI: 80

Judging criteria

- Lighting quality
 - Color appearance
 - Color rendering
 - Illuminance levels and distribution
- Application efficiency
- Thermal management
- Aesthetic appearance



Bonus points for:

- Innovation
 - Designs that take advantage of unique LED attributes
- Dimmability
 - 100% light output to at least 20% of full output
- No off-state power consumption
- Outdoor - dark sky friendly



Verification Testing of Finalists

- Total luminous flux emitted by luminaire
- Total wattage drawn by entire luminaire
- Luminous intensity distribution
- CCT
- CRI
- Steady state operating temp. for LED array(s) & power supply/driver
- Power factor



Timeline

- April 30 – Entries due
- May – Judging
- Sep 14 – Announce winners
 - ALA conference in Washington DC



For more information:

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