Lighting for Tomorrow 2007

Entrant Guide- REVISED

Purpose

The purpose of Lighting for Tomorrow is to increase the market availability of energy-efficient residential lighting fixtures and to increase the marketing, promotion, and sales of such fixtures through primary distribution channels for the new construction and renovation markets. In 2007, the program's specific objectives are the following:

1) Stimulate the development of new, energy-efficient, decorative lighting fixture families.
2) Encourage innovation in the use of new light sources by recognizing lighting fixture and application designs that use solid-state lighting (SSL) technology (i.e., light-emitting diodes or LEDs) to achieve lighting quality and energy efficiency.

To meet these objectives, the Lighting for Tomorrow 2007 Competition includes two entry categories: 1) decorative residential light fixture families using linear fluorescent or pin-based compact fluorescent lamps (the term "CFLs" is used in this document to represent all eligible fluorescent sources) and meeting the requirements of the ENERGY STAR Residential Light Fixture program; and 2) solid-state lighting (SSL) fixtures using high efficiency white light-emitting diodes (LEDs) and meeting minimum requirements defined in this document.

General requirements, minimum technical requirements, and evaluation criteria for CFL-based and LED-based fixtures are provided in the sections below.

Organizing Sponsors

Lighting for Tomorrow is jointly sponsored and organized by the American Lighting Association (ALA), the Consortium for Energy Efficiency (CEE), and the U.S. Department of Energy (DOE), represented by Pacific Northwest National Laboratory (PNNL).

ALA is the only trade association uniting lighting manufacturers, showrooms/distributors, manufacturer representatives, component manufacturers, and industry-related companies dedicated to providing the public with quality residential lighting. ALA has over 1,200 corporate members across the U.S., Canada and the Caribbean.

CEE is a non-profit public benefits corporation, working in the US and Canada, that promotes the manufacture and purchase of energy-efficient products and services. CEE's goal is to induce lasting structural and behavioral changes in the marketplace, resulting in the increased adoption of energy-efficient technologies.

DOE's Building Technologies Program conducts research and development on technologies and practices for energy efficiency, working closely with the building industry and manufacturers. **PNNL** is a DOE multi-program national laboratory that delivers breakthrough science and technology to meet key national needs.

Co-Sponsors

Lighting for Tomorrow is co-sponsored by energy efficiency program administrators such as electric utilities, nonprofit groups, and state energy offices that have a significant interest in promoting energy-efficient residential lighting. These sponsors have provided both financial and in-kind support to the competition. For the complete list of sponsors, visit the Lighting for Tomorrow web site at www.lightingfortomorrow.com.

Timeline

	Event	Location	Dates
2007 competition announced	International Lighting & Accessories Market	Dallas, TX	Jan 19-21, 2007
	DOE Annual SSL Workshop	Phoenix, AZ	Jan 31-Feb 2, 2007
Intent-to-submit forms due	www.lightingfortomorrow.com		Mar 31, 2007
All entries due	To be announced		May 31, 2007
Judging session	To be announced		June 2007
Winners notified	Via phone and email		July 2007
Winners announced	ALA Annual Conference	San Antonio, TX	Sep 9-11, 2007

Awards

Cash awards may be made in both the CFL and LED categories. In addition, all winners and finalists will have the opportunity for recognition and promotion through full color publications (i.e., the Lighting for Tomorrow Yearbook for ENERGY STAR qualified CFL-based fixtures, and a similar publication for LED-based fixtures), the Lighting for Tomorrow website, articles and press releases, exhibit materials, and an awards ceremony at the ALA Annual Conference.

Judging Panel

The judging panel for the 2007 competition will consist of approximately 10 individuals, including lighting retailers, lighting designers, home builders, LED researchers, energy efficiency program sponsors, and lighting and design media representatives.

Requirements and Evaluation Criteria

Eligibility and general requirements, minimum technical requirements, and evaluation criteria are listed separately below for CFL-based fixture families and LED-based fixtures.

I. CFL-Based Fixture Families – Yearbook Competition

A. CFL Eligibility and General Requirements

1. The Yearbook competition is open to lighting fixture manufacturers. Independent lighting designers and students may participate if partnered with a manufacturer who has committed to build a prototype and produce the fixture should it be selected as a winner.
2. The Yearbook is intended to provide a snapshot of decorative, efficient fixture families that are available for purchase during the time in which the Yearbook is distributed. As such, products introduced (or planned for introduction) to the market between January 1, 2007 and January 31, 2008 are eligible to participate in the competition.
3. Submittal of a full family of fixtures is required. The intent of the competition is to showcase new, energy-efficient fixture families that can provide a “whole house” solution to builders and consumers.
    a. Indoor families may be organized by type (surface mount, pendant, chandelier, sconce, table, floor) or by application (kitchen, bath, dining room, living room, bedroom, hallway). Families must include at least three matching fixtures for different indoor lighting applications. Families of hardwired fixtures (including ceiling fans), as well as portable fixtures, are sought. If ceiling fans are submitted, they must include lighting and comply with the ENERGY STAR ceiling fan specification.

b. Outdoor families may include canopy mount, pole mount, wall mount, porch, and landscape/pathway fixtures. Outdoor families must include at least two matching fixtures for different outdoor lighting applications.

4. Entrants must submit one working prototype or production-quality fixture representing each fixture family entered in the competition. Shipping instructions will be posted on the Lighting for Tomorrow website.
5. In addition, entrants must submit electronic photos or high-quality renderings in portable document format (PDF) of each fixture family member.
6. Proposed fixtures must be suitable for sale by lighting showrooms and other retailers that service the residential new construction and major renovation markets.
7. Submittals must be accompanied by suggested retail price information.
8. Submittals of outdoor fixture families must comply with the "Compliance through efficient light source" category within the ENERGY STAR fixture specification, version 4.0. Incandescent fixtures with photocells or sensors will not be allowed.

B. CFL Minimum Technical Requirements

1. Lighting for Tomorrow seeks products and technologies that support dedicated energy-efficient lighting fixtures for the home and surrounding outdoors. To serve this objective, fixtures and components must not readily enable retrofit with a screw-based lamp.
2. Proposed fixtures must be designed and produced consistent with the eligibility criteria of the ENERGY STAR program. Please refer to the ENERGY STAR Residential Light Fixtures Eligibility Criteria, version 4.0. www.energystar.gov. Participating manufacturers must commit to earning ENERGY STAR qualification for fixtures featured in the Yearbook within 1 year of award.
3. System Efficacy Requirements: At a minimum, light sources used in participating fixtures must meet the efficacy requirements contained in the ENERGY STAR Program Requirements for Residential Light Fixtures, version 4.0 (www.energystar.gov). These requirements are shown in Table 1 below:

Table 1. System Efficacy per Lamp Ballast Platform
ENERGY STAR Residential Light Fixture Eligibility Criteria, Version 4.0

Lamp Size and Wattage	Requirement
Less than 30 listed lamp watts	Minimum 50 lumens/watt
Less than or equal to 24 inches long and greater than or equal to 30 listed lamp watts	Minimum 60 lumens/watt
Greater than 24 inches long and greater than 30 listed lamp watts	Minimum 70 lumens/watt

The onus is on the entrant to prove the efficacy of the lamp-ballast combinations. Some lamp-ballast combinations have received an ENERGY STAR Platform Letter of Qualification. Using these lamp-ballast combinations or those in the NEMA/ALA database (www.nema.org/lampballastmatrix) will be sufficient to show efficacy. Use of these lamp-ballast combinations is not a requirement of the competition.

Please note that the ENERGY STAR Eligibility Criteria version 4.0 excludes use of magnetic ballasts for all indoor fixtures and all outdoor fixtures except for those using high-intensity discharge (HID) sources. Lamp types known to be capable of meeting the efficacy requirements listed above include the following:

- Pin-based compact fluorescent (CFL) (including circline)
- Linear fluorescent (T8, T5, T2, etc.)
- Induction lamp (i.e., electrodeless fluorescent lamps)
- Cold cathode fluorescent
- Metal halide

C. CFL Evaluation Criteria

Fixture family designs will be evaluated on the basis of the following criteria:

1. Potential market impact, based on the judges' assessment of the design's
    a. Attractiveness
    b. Value
    c. Marketability
2. Innovation in design and use of materials and components
3. Functionality: providing high-quality illumination for the intended application
4. Entries in the yearbook competition may earn bonus points by incorporating features that address key technical barriers. The judges will award bonus points for the following features:
    a. Dimming capability in the indoor fixture category
    b. Ballasts that are easily replaceable by a consumer without damage to the fixture and without an electrician
    c. Ballasts that have the capability to power lamps of varying wattages
    d. Fixtures that are priced competitively with incandescent alternatives
    e. Outdoor fixtures that are fully-shielded to eliminate upward light emission.
    f. Other bonus points may be awarded at the discretion of the judging panel.

II. LED-Based Fixtures – SSL Competition

A. SSL Eligibility and General Requirements

1. Niche Applications

A. The SSL competition is open to LED, lighting, and lighting fixture manufacturers. Independent lighting designers and students may participate if partnered with a manufacturer who has committed to build a prototype and produce the fixture should it be selected as a winner. An additional opportunity for designers and students exists in the special "cutting edge" design category detailed in section II.A.2 below.

B. Entries are invited in specific niche applications, including:
    i. Under-cabinet and in-cabinet lighting for kitchens.
    ii. Portable desk/task lights (EXCLUDING flashlights, headlamps, and camping lights).
    iii. Recessed downlights appropriate for residential use.
    iv. Outdoor lighting including porch, step, and pathway lights, grid-connected or powered by photovoltaic cells.

C. Entrants must submit prototypes or production-quality fixtures. Paper designs, computer renderings, and/or product photographs may be submitted as supplementary material, but at least one working prototype or production-quality fixture must be submitted in fully operable condition, including LEDs, drivers, and necessary controls.
    i. A prototype is defined as a fully functional representative of the fixture design that will serve as the basis for evaluation, demonstration, and further development.
    ii. A production-quality fixture is defined as a fixture with the same composition and materials as fixtures currently in production.

D. As part of their entry materials, entrants will be required to submit full published data sheets from the manufacturers of both the LEDs and drivers used in submitted fixtures.

E. Submittals must be accompanied by suggested retail price information.

2. Cutting Edge Design Category

A. The cutting edge design category is open to lighting fixture manufacturers, independent lighting and product designers, and students.

B. Consistent with the Lighting for Tomorrow program in general, the cutting edge design category is open to designs with primary applicability in the residential sector, or in residential-style applications such as hospitality and assisted living environments. Designs that would be appropriate exclusively in commercial, industrial, or institutional settings are outside the scope of the competition.

C. General illumination applications only.
    i. Participating LED products must provide useful illumination for a task, space, or object.
    ii. Purely decorative applications such as holiday lights, light sculpture, lighted fabrics, sparkle elements, and lighted signs are outside the scope of the LFT program and competition.

D. The cutting edge design category is not limited to any particular lighting applications. Innovative designs that incorporate LEDs into furniture, architectural elements, or non-traditional forms are encouraged.

E. Entrants must submit prototypes or models. Paper designs, computer renderings, and/or product photographs may be submitted as supplementary material, but a working prototype or model must be submitted in fully operable condition, including LEDs, drivers, and necessary controls.
    i. A prototype is defined as a fully functional representative of the fixture design that will serve as the basis for evaluation, demonstration, and further development.
    ii. A model is defined as a smaller scale, but still fully functional, version of the proposed product.

F. As part of their entry materials, entrants will be required to submit full published data sheets from the manufacturers of both the LEDs and drivers used in submitted fixtures.

B. SSL Minimum Technical Requirements – for BOTH LED Niche Applications and LED Cutting Edge Design Category

The minimum technical requirements represent minimum performance to participate in the competition. Required documentation consists of information readily available from LED and driver manufacturers. This documentation will be reviewed in a technical screening process conducted by Lighting for Tomorrow. Entries that do not meet these minimum requirements, or for which documentation is not provided, will not be considered in the evaluation process conducted by the full judging panel.

1. Lighting for Tomorrow seeks products and technologies that support dedicated energy-efficient lighting fixtures for the home and surrounding outdoors. To serve this objective, fixtures and components must not readily enable retrofit with a screw-based lamp.
2. Minimum LED Efficacy
    a. For LEDs with correlated color temperature (CCT) less than 5000 Kelvin, luminous efficacy must be at least 40 lumens per watt (lm/W). For LEDs with CCT of 5000 K or higher, luminous efficacy must be at least 50 lm/W.
    b. Evaluation of this requirement will be based on LED datasheet information for the specific LEDs used in the fixture. It will be calculated as typical luminous flux (lumens)/(test current (amps)*typical forward voltage).
3. Driver efficiency: drivers used in participating LED-based fixtures must be at least 85% efficient. Evaluation of this requirement will be based on product specifications for the driver used in the fixture.
4. Lumen depreciation/useful life
    a. LEDs used in the fixture must be able to maintain at least 70 percent of initial lumens for at least 35,000 hours of operation.
    b. Evaluation of this requirement will be based on the LED manufacturer datasheet for the LEDs used in the fixture.

C. SSL Evaluation Criteria – for BOTH LED Niche Applications and LED Cutting Edge Design Category

Entries meeting the Minimum Technical Requirements listed above will be evaluated by the full judging panel. The criteria by which entries will be evaluated are listed below.

1. Lighting Quality – Color Appearance
    a. Evaluation of this criterion will be based on the judging panel's subjective evaluation of the color appearance of the installed fixture. Manufacturer data about CCT of the LED sources must be provided.
2. Lighting Quality - Color Rendering Ability

   a. Evaluation of this criterion will be based on the judging panel's subjective evaluation of the color appearance of objects illuminated by the installed fixture. Manufacturer data about CRI of the LED sources must be provided.
3. Lighting Quality - Appropriate Illuminance
   a. Horizontal and/or vertical illuminance for the application must be appropriate according to accepted lighting practice.
   b. Evaluation of this criterion will be based on the judging panel's subjective evaluation of the light levels provided by the fixture, and may also include measurement of light levels using a standard illuminance meter, with results compared to IES recommended practice for the application.
4. Application Efficiency
   a. The fixture must deliver appropriate light levels to the task with lower wattage than comparable traditional light sources for that task.
   b. Evaluation of this criterion will be based on assessment by the SSL judging panel. Fixture input watts will be verified with a watt meter.
5. Thermal Characteristics
   a. Appropriate thermal design is critical to LED performance and longevity. Entrants are expected to follow the guidelines provided by the LED and driver manufacturers regarding appropriate application of the light source and driver in the fixture.
   b. Evaluation of this criterion will be based on the judging panel's evaluation of the fixture's thermal characteristics, aided by the component manufacturer information sheets submitted by the entrant.
6. Aesthetic Appearance and Style
   a. Evaluation of this criterion will be based on the judging panel's subjective evaluation of the aesthetic appearance of the installed fixture.
7. Innovation
   a. Entries that demonstrate innovation in taking advantage of the unique characteristics of LEDs (form factor, durability, weight, beam characteristics, etc.) will be eligible for bonus points.
   b. Evaluation of this criterion will be based on the judging panel's subjective evaluation of the fixture's innovative qualities.
8. Off State Power Consumption
   a. Lighting for Tomorrow encourages manufacturers to design LED fixtures such that they do not consume power in the "off" state. Fixture designs that place the on-off and dimming controls downstream of the power supply continue to draw power even when the fixture is turned off. Fixture designs that do not have off state power consumption will be awarded a bonus point.
9. Dark-Sky Friendly
   a. Outdoor fixtures that are fully-shielded to eliminate upward light emission will be eligible for a bonus point.

NOTE: Luminaire Testing

If deemed necessary by the judges or organizers of Lighting for Tomorrow, limited short term testing of luminaires entered in the SSL Competition (e.g., electrical and/or photometric testing) may be conducted by a qualified testing laboratory. Necessary testing will be conducted by independent testing laboratories that have been pre-qualified under the Department of Energy's SSL Commercial Product Testing Program, following published or available draft IESNA test procedures. See www.netl.doe.gov/ssl/comm_testing.htm for information on the SSL Commercial Product Testing Program.