



**SSL Design Competition  
2010 Entrant Guide**

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### Competition Partners

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Next Generation Luminaires is jointly organized by the Illuminating Engineering Society (IES), the International Association of Lighting Designers (IALD), and the U.S. Department of Energy (DOE), represented by Pacific Northwest National Laboratory (PNNL).

**IES** is the recognized technical authority on illumination. For over 100 years, its objective has been to communicate information on all aspects of good lighting practice to its members, to the lighting community, and to consumers, through a variety of programs, publications, and services.

**IALD** is an internationally recognized organization dedicated solely to the concerns of independent, professional lighting designers. The IALD strives to set the global standard for lighting design excellence by promoting the advancement and recognition of professional lighting designers.

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

### Purpose

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The Next Generation Luminaires™ (NGL) Solid State Lighting (SSL) Design Competition seeks to encourage technical innovation and recognize and promote excellence in the design of energy-efficient LED commercial lighting luminaires.

Next Generation Luminaires encourages manufacturers to develop innovative commercial luminaires that are energy-efficient and provide high lighting quality and consistency, glare control, lumen maintenance, and luminaire appearance needed to meet specification lighting requirements.

### Background

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The Department of Energy (DOE) administers federal investment in SSL research and development to advance the technology and realize its projected energy efficiency, lighting service, and economic benefits. DOE has developed a comprehensive program to support the effective commercialization and

application of SSL in the general illumination market. This program includes technology demonstrations, product testing, development of industry performance standards and test procedures, information dissemination, and design competitions, to recognize and reward excellence in application of this emerging technology.

On-going advances in SSL technology and the growing number of product introductions signal an opportunity to encourage, recognize, and promote LED luminaires suitable for the commercial specification market, implicitly differentiating them from LED products that will not meet the needs of lighting designers, specifiers, and users. DOE has partnered with the Illuminating Engineering Society (IES) and the International Association of Lighting Designers (IALD) to organize this competition.

### **Past Competitions**

In its first year, 2008, the competition recognized 22 products from among a total of 68 entries. In 2009, as the number of commercial LED lighting products on the market increased, the number of NGL entries nearly doubled – to 126, coming from 60 different lighting companies. Of these entries, 43 were chosen as “recognized” winners and four of were chosen as “best in class.”

### **Participants**

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The competition is open to LED, lighting, lighting system, and luminaire manufacturers, including LED device and system manufacturers in conjunction with their luminaire manufacturing partners.

### **Product Criteria**

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- The 2010 NGL competition will only accept luminaires that are in or near production and **ready for specification**. Emphasis will be on quality and practicality of the luminaire for real-world lighting applications in the commercial specification market.
- Products must be primarily applicable to the **commercial, institutional, or public sector**. Designs that would be appropriate exclusively in residential settings are outside the scope of the competition and should refer to the Lighting for Tomorrow ([www.lightingfortomorrow.org](http://www.lightingfortomorrow.org)) residential competition.
- White light, **general illumination applications** only will be evaluated. Participating LED products must provide useful illumination for a task, space, or object. Holiday lights, light sculpture, lighted fabrics, lighted signs, color changing lights, and other products not designed for general illumination are outside the scope of the NGL program and competition.
- Entries must be **complete luminaires ready for specification**. Judges will not evaluate replacement lamp products or modules that must be combined with other products before they can be specified.
- Products are not limited to any particular lighting application. **Indoor and outdoor applications** are both eligible for submission.
- Entrants must submit **two production-quality luminaires**. Entries must be wired with a ‘Cord and Plug’ for 120v operation.
- For entries listed in the final submission form as ‘dimmable’, the second ‘table top’ fixture must be sent with the manufacturer **preferred dimming equipment and local dimming control** and be ‘plug and play’ so the entire dimming system can be reviewed by the judging panel.

## Submission Categories

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Entries will be judged by application category. Some categories may be combined for judging depending on the number of entries. Not all categories receive recognition or awards. Application categories include but are not limited to the following:

### Indoor Applications:

- Recessed downlighting (less than 12" aperture)
- Surface mounted downlighting
- Surface mounted general illumination
- Valance lighting
- Pendant lighting
- Wall sconces
- Cove lighting
- Wall grazing
- Wall washing
- Recessed accent lighting
- Track accent lighting
- Undercabinet shelf-mounted task lighting
- Portable desk task lighting
- Refrigerated display case lighting
- Retail display case lighting
- Industrial lighting
- Decorative luminaires for non-residential applications

### Outdoor Applications:

- Wall mounted area lighting
- Pedestrian scale area lighting
- Street and area lighting
- Parking lot lighting
- Utility canopy lighting
- Parking garage lighting
- Pedestrian pathway lighting
- Bollards
- In-grade lighting
- Landscape lighting

## Technical Requirements

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The following entry categories are subject to the listed minimum efficacy requirements. Efficacies must be substantiated by independent LM-79-08 testing for the *exact* product submitted. **Entries submitted in the listed categories below that do not meet the listed minimum efficacy requirements will not be judged.**

<b>Application</b>	<b>Minimum luminaire efficacy (lm/W)</b>
Under-cabinet lighting	30 lm/W
Portable desk/task lights	30 lm/W
Recessed, surface and pendant mounted downlights	35 lm/W
Cove lighting	40 lm/W
Wall washing	30 lm/W
Street/roadway	50 lm/W
Outdoor wall packs	50 lm/W
Parking garage	50 lm/W
Outdoor pathway	25 lm/W
Outdoor step light	20 lm/W

Entries in categories not listed above are not required to meet minimum luminaire efficacy requirements by application, but LM-79-08 testing data will be carefully reviewed by judges. Energy efficiency is a strong component of the judging criteria.

All entries are subject to the following minimum color quality requirements:

Indoor Entries:

Allowable CCTs: 2700K - 4200K

Allowable minimum CRI: 75

Outdoor Entries:

Allowable CCTs: 2700K - 5500K (for consistent judging, +/- 4000K is preferred)

Allowable minimum CRI: 50

## **Submission Requirements**

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- An **Intent-to-Submit form** must be submitted online by September 13, 2010.
- A **Final Submission form** must be submitted online by October 15, 2010. The final page of the submission form must be printed, signed, and sent with each entry. See Appendix A for the final submission form questions.
- All required **documentation** must be submitted electronically for each entry by October 15, 2010. See Appendix A for a complete list of documentation requirements.
- **Sample luminaires** (must *exactly* match documentation submitted) must arrive at the judging location no later than November 1, 2010. Entries must be wired with a 'Cord and Plug' for 120v operation. For entries listed in the final submission form as 'dimnable', the second 'table top' fixture must be sent with the manufacturer **preferred dimming equipment and local dimming control** and be 'plug and play' so the entire dimming system can be reviewed by the judging panel.

## Shipping Requirements

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- For your product to be returned after the competition, you **MUST** include a pre-paid mailing label (or label with current account number for billing) with each entry. Expect your product to be returned within 3 months after the competition judging date.
- Specific mailing instructions (including judging location address) will be provided on the final page of the final online submission form.

## Evaluation Procedure

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Evaluation of NGL entries will take place in the following stages:

### **Initial screening**

NGL organizers will screen entries by reviewing each submittal to verify that all required documents are included (see required documents section). The product will also be evaluated to make sure all parts necessary to mount the luminaire in its intended application are included and that the luminaire functions properly. Attempts will be made to resolve installation issues but it is the responsibility of the entrant to provide a working product with proper installation instructions.

### **In-person judging**

The judging panel will meet in-person to evaluate the entries (see evaluation criteria). Luminaires will be installed and illuminated. Judges will also evaluate duplicate 'table top' samples for serviceability and replacement features, as well as dimming capabilities for dimming entries. Judges are not given manufacturer names for this stage of the judging.

### **Performance Verification of Finalists**

If necessary, photometric performance of entries selected as finalists will be verified through independent testing (according to IES LM-79-08).

Additional photometric evaluation for finalists (if performed) will be used to evaluate luminaire efficacy, to verify color characteristics, and to identify potential problems such as unexpectedly high luminaire losses, excessive operating temperatures, low light output, and noticeable color shifts. Test results will be provided to the manufacturer.

Product submission information will be kept confidential until the publication of the NGL results.

## Evaluation Criteria

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Judges will score each entry according to the following criteria:

- **Color appearance** - Evaluation of this criterion will be based on the judging panel's visual evaluation of the color appearance of the installed luminaire. CCT data must be provided through LM-79-08 testing reports. Judges will also review the manufacturer's stated color consistency specification.
- **Color rendering** - Evaluation of this criterion will be based on the judging panel's visual evaluation of the color appearance of objects illuminated by the installed luminaire. CRI data must be provided through LM-79-08 testing reports.

- **Appropriate illuminance** - Horizontal and/or vertical illuminance for the application must be appropriate according to accepted lighting practice. Evaluation of this criterion will be based on the judging panel's evaluation of the light levels and distribution (uniformity and contrast) provided by the luminaire, and may also include measurement of light levels using a standard illuminance meter.
- **Appropriate luminance** – This criterion addresses luminance of the luminaire surfaces. Judges will evaluate luminaire brightness in conditions as similar as possible to the intended application to assess discomfort glare and contrast. Photometric luminance of the luminaire must be provided by LM-79-08 testing data.
- **Serviceability and replacement** - Entries must demonstrate attention to specifier and user concerns about follow-on service and replacement in the event of component failure and replacement of LED modules at end of life.
- **Energy efficiency** – The efficacy (lumens/watt) of the entry will be evaluated and compared to other traditional sources for the intended application. The luminaire must deliver appropriate light levels to the task with lower wattage than comparable traditional luminaires for that task. Evaluation of this criterion will be based on assessment by the NGL judging panel and submitted luminaire performance data.
- **Product depreciation data** - Information provided on product depreciation (luminaire depreciation test data/LM-80-08 data from the chip manufacturer, temperature measurement and TMP location) will be evaluated by the judges. Other documentation to substantiate life claims will be accepted and reviewed by the judging panel.
- **Dimmability** – If the entry is intended to dim, the second 'table top' sample (with dimming equipment and local dimming control provided) will be evaluated for color constancy, dimming range, dimming smoothness, start conditions, and other criteria deemed appropriate by the judges. If product literature indicates that a product is dimmable, but no dimmable sample is provided, the evaluation will indicate that dimming could not be verified.
- **Cost** – The judging panel will evaluate the cost of the entry compared to other traditional sources for the intended application. Contractor pricing for 1000 luminaires will be seen by judges for comparison but not published in NGL literature.
- **Aesthetic appearance and style** - Evaluation of this criterion will be based on the judging panel's subjective evaluation of the aesthetic appearance of the installed luminaire.

The judging panel may award bonus points for entries exhibiting desirable characteristics. Bonus points will be available for the attributes listed below; additional bonus points may be identified by the judges.

- **Adjustability/Flexibility** - products that demonstrate adjustability of beam spread and color temperature.
- **Innovation** - entries that demonstrate innovation in taking advantage of the unique LED characteristics. The judges will evaluate products for innovative features (performance or construction) that offer additional benefits or suggest new approaches to delivering effective lighting. Such features might include adjustable beam spread or color temperature, life indicators or other feedback systems, solutions to physical space or installation limitations, or altogether new ideas.

- **Dark-sky friendly** - outdoor luminaires that are shielded to limit upward light emission, and minimize sky glow and light trespass.<sup>2</sup> Especially useful information in evaluating outdoor luminaires includes ratings by lighting zone for backlight, uplight, and glare (BUG rating).
- Other bonus points may be awarded at the discretion of the judging panel.

## Judging Panel

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Next Generation Luminaires judges will be drawn from across the architectural lighting design community, creating a diverse panel of experts who design, specify, evaluate, research, and write about commercial SSL luminaires.

## Awards

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Recognizing the diversity of applications and design approaches, the competition will acknowledge all products that the judges consider merit worthy, as well as those selected as Best in Class. The resulting competition marketing materials will be an excellent resource for lighting specifiers seeking quality LED products currently ready for specification.

Winners will be announced in early 2011 and winning products will be promoted throughout the ensuing year in a full color catalogue of competition winners, the [Next Generation Luminaires website](#), articles and press releases, and a traveling exhibit.

## Timeline

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2010 competition announced	LightFair International	May 12, 2010
Intent-to-submit form due	See <a href="http://www.ngldc.org">www.ngldc.org</a>	Sept. 13, 2010
Final online submission form due	See <a href="http://www.ngldc.org">www.ngldc.org</a>	Oct. 15, 2010
Final entries shipped to judging location	Underwriters Laboratories	Nov. 1, 2010
Judging session	Underwriters Laboratories	Dec. 2-3, 2010
Winners notified	Via phone and email	Jan. 2011
Winners announced	Strategies in Light	Feb. 22-24, 2011

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<sup>2</sup> Please see IES TM-15-07 (revised), Luminaire Classification System for Outdoor Luminaires. [www.iesna.org](http://www.iesna.org)

## **Appendix A: Final Submission Form Questions and Required Documentation**

### General information:

Provisional name of luminaire:

Entry category:

Brief description of luminaire (150 words):

Price range (contractor pricing for 1000 luminaires):

UL, CSA, ETL Listing:

Patents or patents pending on product:

#### *Related document/product requirements:*

- Product photos
- Luminaire specification sheet
- Marketing materials
- 2 product samples (same CCT for each sample)

### Product replacement/warranty information:

LED module replacement information:

Driver replacement information:

Product recycling information or end of life policy statement:

Product warranty with explanation:

#### *Related document requirements:*

- Installation/serviceability instruction sheet
- Product warranty statement
- End-of-life policy statement

### LED information:

LED chip/module manufacturer:

LED chip/module model number:

Number of LEDs used in the product:

LED drive current (mA):

#### *Related document requirements:*

- Full published LED data sheet

### Luminaire Depreciation Information:

LED manufacturer estimated LED life (L70):

Estimated life rating explanation:

In situ temperature measurement in UL 1598 environment for 7 hours:

Location of temperature measurement point (TMP):

See the SSL ENERGY STAR® [Manufacturer Guidelines for Submitting Qualified Products](#) document for more information on temperature measurements.

*Related document requirements:*

- Luminaire depreciation test data or LM-80 data from chip manufacturer
- Photo or schematic of temperature measurement point
- Other documentation substantiating life claims as deemed appropriate by the entrant will also be accepted

Driver Information:

Driver brand:

Driver model number:

*Related document requirements:*

- Driver specification sheet
- Dimming interface specification sheet (dimming entries) could be included in luminaire spec sheet

Luminaire Performance Information:

Total light output of luminaire (lumens):

Measured total input power of luminaire (watts):

Luminaire Efficacy (lumens/watt):

Power factor:

Correlated color temperature (CCT) of luminaire:

Color rendering index (CRI) of luminaire:

Color consistency specification explanation: (from the luminaire manufacturer):

*Related document requirements:*

- IES LM-63-03 formatted test report following IES LM-79-08 (.ies format) and PDF of testing report provided by independent testing lab)
- Integrating sphere output report showing luminaire CRI, CCT, and spectral power distribution (PDF report provided by independent testing lab)

For product judging installations:

Voltage/current requirements:

Approximate weight:

Approximate overall dimensions (inches):

Installation Instructions: