



**SSL Design Competition
2008 Entrant Guide**

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Competition Partners

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

IESNA 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, 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.

Purpose

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

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 of North America (IESNA) and the International Association of Lighting Designers (IALD) to organize this new competition.

Participants

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.

Submission Categories

The 2008 Next Generation Luminaires (NGL) SSL competition recognizes the on-going rapid changes and advancements in white LED technology for general illumination. LEDs, when incorporated into well-designed luminaires, are now appropriate for a growing number of lighting applications. Full competition rules, guidelines, and required documentation can be found on this website. The NGL competition will accept entries in the following categories:

Market-Ready Luminaires

This category is for 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. Applications are not restricted but sponsors are particularly interested in the following:

- Luminaires capable of meeting DOE's ENERGY STAR® criteria for solid-state lighting: under-cabinet shelf-mounted lights, portable desk/task lights, and recessed downlights. For full ENERGY STAR® requirements, see www.netl.doe.gov/ssl/energy_star.html.
- Luminaires for other general illumination applications, including but not limited to: cove lighting, valence lighting, pendants, wall washers, wall sconces, accent lighting, refrigerated and non-refrigerated retail display case lighting, exterior architectural lights, facade lighting, street and area lighting, and pedestrian pathway lighting.

Emerging Products

This category encourages new, innovative ideas for application of white LEDs to solve lighting design problems. The Emerging Products category is open to products that are not yet market-ready, but a working prototype must be provided. Luminaires as well as LEDs and LED systems designed for integration into furniture, equipment, or architectural or structural elements are eligible.

Product Criteria

- 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](#) 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.
- Products are not limited to any particular lighting application. Indoor and outdoor applications are eligible for submission.
- Entrants to the Market-ready category must submit **three (3)** production-quality luminaires or prototypes. Paper designs, computer renderings, and/or product photographs may be submitted as supplementary material, but three (3) working luminaires must be submitted in fully operable condition, including LEDs, drivers, and necessary controls.
 - A production luminaire is defined as a luminaire with the same composition and materials as luminaires currently in production.
 - A prototype is defined as a fully functional representative of the luminaire design that will serve as the basis for evaluation, demonstration, and further development.

Emerging Product entries are only required to include one prototype, see above definitions.

Technical Requirements

Market-Ready Luminaires

ENERGY STAR Category A Applications:

Market-ready luminaires covered by the ENERGY STAR SSL criteria under Category A must meet all minimum technical requirements set forth in the ENERGY STAR SSL document. For full ENERGY STAR® requirements, see www.netl.doe.gov/ssl/energy_star.html. The luminaire efficacy requirements for Category A applications included in the NGL competition are listed below:

Application	Minimum luminaire efficacy (lm/W)
Under-cabinet shelf-mounted task lighting	29 lm/W
Portable desk/task lights	29 lm/W
Recessed downlights	35 lm/W

NGL competition requirements for color appearance and color rendering differ slightly from the ENERGY STAR criteria. They are as follows:

Allowable CCTs (all applications)	2700 K, 3000 K, 3500 K, 4000 K ¹
CRI	Interior: 80 Exterior: 75

Other General Illumination Applications:

Market-ready luminaires not covered by ENERGY STAR Category A are not subject to a minimum luminaire efficacy requirement. However, required photometric testing documentation (based on the IESNA LM-79008 test procedure) will be reviewed by judges. Further, the luminaire efficacy of all luminaires selected as finalists will be verified, including independent testing as needed. Photometric test results will be considered in final selection of winners. Entries in the Other General Illumination Applications category are subject the following minimum requirements:

Allowable CCTs	2700 K, 3000 K, 3500 K, 4000 K ¹
CRI	Interior: 80 Exterior: 75

Emerging Products

Entries in the Emerging Products category are not subject to a minimum luminaire efficacy requirement. However, all products selected as finalists will be tested by an independent testing laboratory according to IESNA LM-79-08 to determine luminaire efficacy. The results of this testing will be considered in final selection of winners. Entries in the Emerging Products category are subject the following minimum requirements:

Allowable CCTs	2700 K, 3000 K, 3500 K, 4000 K ¹
CRI	Interior: 80 Exterior: 75

Required Documents

- An [Intent-to-Submit form](#) must be submitted to competition organizers by July 31, 2008.
- A **Final Submission form** must be submitted online, printed, and sent with each set of luminaires entered in the competition by September 30, 2008. (three production quality luminaires for the Market-ready category and one prototype for the Emerging Products category) Any proprietary information should be marked as such. Entries arriving without a completed submission form will not be considered. The following documentation must be included with each entry:
 1. Full **published LED data sheets** (or at a minimum, luminous flux, forward voltage, drive current, and color data for pre-production devices) and available information on drivers used in submitted luminaires must be submitted with each entry are required for entries in all categories.
 2. For the market-ready category, **luminaire photometric reports** conducted according to LM-79-08 must be submitted with set of luminaires. Reports should include at least the following information:

¹ Competition CCT requirements will follow the chromaticity specification and tolerance quadrangles as described in the ENERGY STAR® requirements (www.nrel.gov/ssl/energy_star.html).

- Total luminous flux
- Wattage
- Luminous intensity distribution
- Luminance
- CCT
- Spectral power distribution (SPD)
- CRI
- Power factor

Photometric reports are not required for emerging product entries but should be provided if available. Photometric performance of all products selected as finalists will be verified, including additional testing by independent testing laboratories according to IESNA LM-79-08, as needed. This information will be considered in the final selection of winners.

Evaluation Procedure

Evaluation of NGL entries will take place in 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.

In-person judging

The judging panel will meet in-person to evaluate the entries (see evaluation criteria). Luminaires will be installed and connected to power.

Performance Verification of Finalists

Photometric performance of entries selected as finalists by the judging panel will be verified through review of photometric reports submitted by the entrant and , as necessary, supplementary testing (according to IESNA LM-79-08). Testing will be conducted by independent testing laboratories qualified by the US Department of Energy. Entrants will not be charged fees for this testing.

Photometric information for finalists 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

Judges will score each entry according to the following criteria:

- **Color appearance** - Evaluation of this criterion will be based on the judging panel's evaluation of the color appearance of the installed luminaire. Manufacturer data about CCT of the LED sources must be provided. CCT of all finalists will be verified through IESNA LM-79-08 testing.
- **Color rendering** - Evaluation of this criterion will be based on the judging panel's evaluation of the color appearance of objects illuminated by the installed luminaire. Manufacturer data about

CRI of the LED sources must be provided. CRI of all finalists will be verified through IESNA LM-79-08 testing.

- **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 surface. Judges will evaluate luminaire brightness in conditions as similar as possible to the intended application to assess glare and contrast. Photometric luminance of the luminaire will be verified through LM-79-08 testing of finalists.
- **Application efficiency** - The luminaire must deliver appropriate light levels to the task with lower wattage than comparable traditional light sources for that task. Evaluation of this criterion will be based on assessment by the NGL judging panel. Luminaire input watts and volt-amps will be verified.
- **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.
- **Serviceability and replacement** - Entries must demonstrate attention to specifier and user concerns about follow-on service and replacement in the event of component failure.

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.

- **No off-state power use** - luminaire designs that do not draw power when the luminaire is turned off. Consistent with ENERGY STAR SSL requirements, up to 0.5 W of off-state power draw is allowed for luminaires with integral occupancy, motion, or photo-controls, or individually addressable luminaires with external control and intelligence.
- **Dark-sky friendly** - outdoor luminaires that are shielded to limit upward light emission, and minimize sky glow and light trespass.³ Especially useful information in evaluating outdoor luminaires includes ratings by lighting zone for backlight, uplight, and glare (BUG rating).
- **Adjustability/Flexibility**: products which demonstrate white light and beam spread adjustability.
- Other bonus points may be awarded at the discretion of the judging panel.

³ Please see IESNA TM-15-07 (revised), Luminaire Classification System for Outdoor Luminaires. www.iesna.org

Judging Panel

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

Because the quality and availability of LED products can still vary greatly, the competition will not only recognize best in class winners but will also recognize multiple merit worthy products in each category. 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 2009 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

	Event	Location	Dates
2008 competition announced	LightFair International	Las Vegas, NV	May 28, 2008
Intent-to-submit forms due	online submission form		July 31, 2008
All entries due			Oct. 15, 2008
Judging Session		Underwriters Laboratories	Nov. 6-7, 2008
Winners notified	Via phone and email		December 2008
Winners announced	TBD		February 2009
