

The National Lighting Product Information Program (NLPIP) invites you to join the initiative to rapidly measure, update, and disseminate system performance information of emerging solid-state lighting (SSL) products through **SSL FACTS**.

Executive Summary

SSL FACTS offers rapid evaluation of SSL products by Lighting Research Center experts to verify product performance and debunk exaggerated claims and takes full advantage of NLPIP's proven publication and reporting process to help transform the market. A *Quick Peeks* option provides on-demand evaluations of SSL products within one to two weeks of product procurement, as well as customized interpretation of the test results for sponsors.

NLPIP sponsors have agreed to dedicate 50-100 percent of the annual NLPIP budget to this SSL initiative. Funds from **SSL FACTS**

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will be pooled for SSL product testing. So, for a modest investment, program participants can leverage up to \$800,000 in SSL testing annually.

Further, NLPIP will collaborate with the Alliance for Solid-State Illumination Systems and Technology (ASSIST), an international resource for recommendations and guidelines on LED lighting performance, metrics and testing procedures. ASSIST has agreed to provide \$300,000-\$500,000 per year in research and industry review activities to develop metrics and test protocols to better predict how SSL products will perform in the field.

Levels of participation

- **SSL FACTS Contributor:** \$10,000 to \$45,000 per year. Benefits include input to NLPIP on prioritizing testing topics and products, one *Quick Peeks* evaluation per year at the \$10,000 level, plus additional *Quick Peeks* for each additional \$5,000 per year, and confidential access to all *Quick Peeks* produced by the program.
- **NLPIP Sponsor:** \$50,000 per year for level one; \$100,000 per year for level two.



Read on for more information about NLPIP and **SSL FACTS**, and learn how the initiative is designed to help transform the SSL market, paving the way for reliable energy saving products that add value to the marketplace.

Current LED Performance and Reliability Issues

Solid-state lighting has the potential to revolutionize the market for lighting products. The light-emitting diode (LED), one of the most promising solid-state lighting technologies, has several unique properties that have the potential to make it an ideal source for many lighting applications, reducing lighting energy use by up to 80 percent over conventional technologies. Currently, white LEDs are commercially available with efficacies surpassing 60 lumens per watt, more than five times that of traditional incandescent light sources and equivalent to or exceeding the efficacies of most compact fluorescent lamps (CFLs).

However, lighting decision makers are apprehensive about the performance and reliability of new LED products, and with good reason. Unlike conventional lighting technologies, which have strict guidelines on how products should be tested and performance data reported, the lighting industry has yet to standardize the testing procedures for LED-based lighting systems. As new LED-based lighting products are rapidly introduced into the market, there is little

or no verification of product claims. As a result, depending on the application, there are major variations between manufacturer claims and actual product performance. For example, a manufacturer will generally test a downlight in open air. However,

Manufacturers generally test downlights in open air. However, when installed in an insulated ceiling, a downlight's output may decrease by more than 20 percent.

when that same downlight is installed in an insulated ceiling, the light output may decrease by more than 20 percent.

LEDs are also particularly sensitive to changes in electrical and thermal conditions, which can impact performance and life. The end user has no way of knowing how the LED-based lamp, lighting fixture, or system they purchase is operating the LEDs within it.

In order to take advantage of the potential energy savings of LED-based lighting systems, lighting decision makers need a program that will rapidly test newly introduced LED lighting products and report their performance in a knowledgeable and unbiased manner. This will help ensure that poorly performing products are "weeded-out" before hindering the long-term sustainability of the LED-lighting market.

NLPIP: A Tested Solution

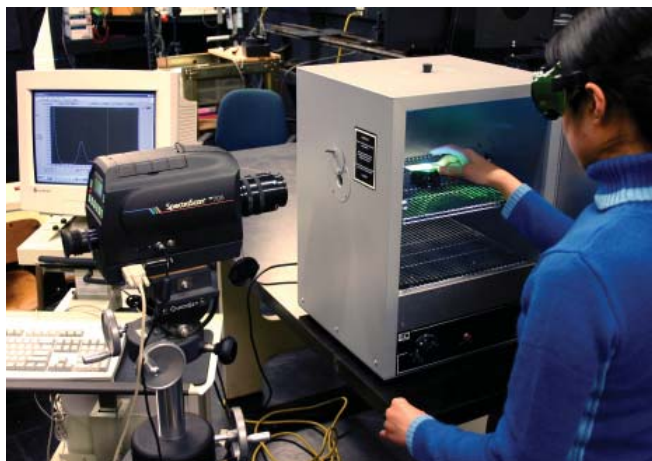
The Lighting Research Center's (LRC's) award-winning National Lighting Product Information Program (NLPIP) provides objective testing and evaluation of energy-efficient lighting products and disseminates testing results among consumers and lighting decision makers throughout North America. NLPIP's mission is to rapidly provide the best information available on efficient lighting products—information not readily available from other sources and formatted for easy product comparisons.

NLPIP was launched in 1990 by electric utilities, state and federal energy agencies and organizations recognizing the need for timely, unbiased information on energy-efficient lighting products. NLPIP does not accept funding from manufacturers. NLPIP has been a major force in upgrading the quality, reliability, and energy-efficiency of lighting products, and is the only program of its type dedicated to providing manufacturer specific lighting product evaluation results in such an easy to use format. Since inception, NLPIP has distributed more than one million copies of its publications to energy program managers and lighting specifiers.

More than one million copies of NLPIP publications have been distributed.

Market impact

Manufacturer response to NLPIP includes the removal of poorly performing products from the market and the introduction of new and improved lighting products. Some manufacturers even refer their customers to NLPIP publica-



tions as a reliable source of objective information. The LRC and others have conducted evaluation studies that document the positive impact of NLPIP on the lighting market; without it, specifiers and customers would have to rely on hearsay and manufacturers' literature for information.

New focus and testing regimen to meet SSL demand

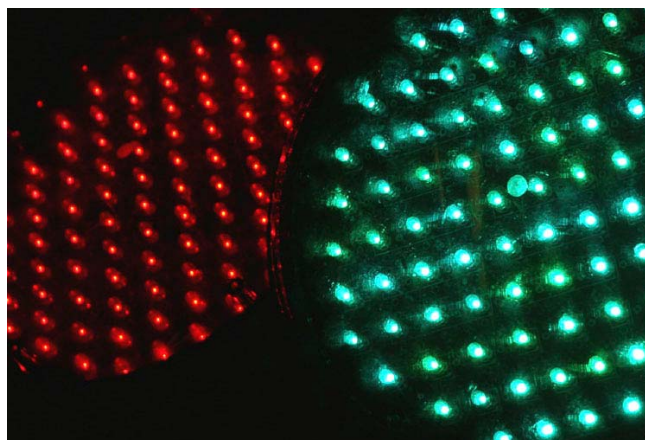
NLPIP is embarking on a new focus and testing regimen—**SSL FACTS**—that will rapidly respond to the evolving nature of the solid-state lighting market. NLPIP will work with program sponsors to continuously identify new LED lighting products as they enter the market. As products are identified, they will be selected, purchased, and tested using an appropriate statistical sampling method.



Testing facilities

NLPIP, located and administered by the LRC, is fully equipped to perform the responsibilities of this important initiative. **SSL FACTS** highlights and resources include:

- World-class facilities, expertise, and experience needed to undertake ongoing, unbiased, and continuous testing of LED-based lighting products
- Manufacturers are not allowed to participate or provide funding
- Risk-management procedures in place to promote fairness and to avoid legal action from manufacturers whose products do not perform well in testing
- Capacity and infrastructure available to quickly bring testing results to the marketplace and make them instantly available to sponsors and their constituents
- Access to the lighting research laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP, lab code 200480-0) to test lamp and lighting equipment



About SSL FACTS

SSL FACTS is designed to rapidly measure system performance of emerging SSL products and disseminate the results. Testing includes performance evaluation under simulated field conditions to account for the impact of temperature on product performance. The goal is to give lighting decision makers realistic information to encourage adoption of products that provide sustainable value and to help decision makers avoid products that perform poorly in the field.

SSL FACTS sponsorship details

The initiative is designed to:

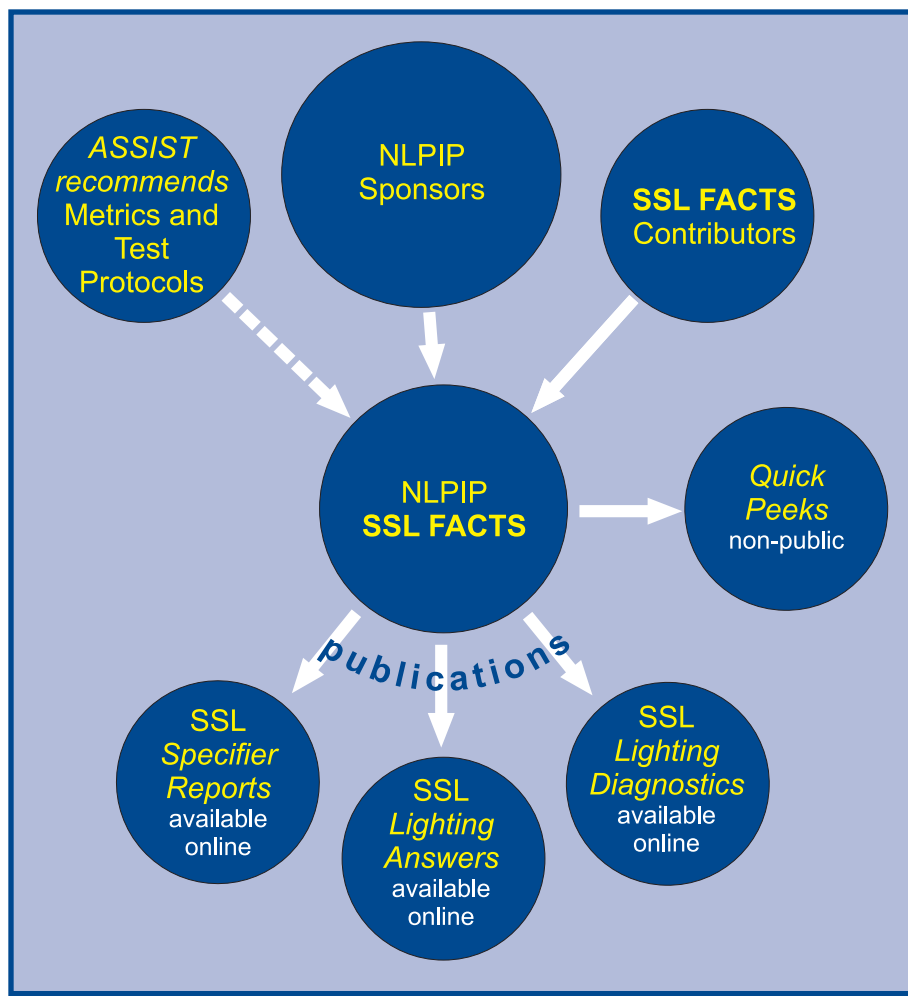
- Allow sponsors to leverage funding to benefit their own stakeholders and customers. Sponsorship is open to utilities, government agencies, and regional and state non-government organizations. Sponsorship is *not* available to manufacturers;
- Provide input to NLPPI Advisory Board, assisting to direct the program to meet specific energy saving or environmental goals and objectives;
- Assure continuous testing of LED lighting products crucial to a sponsor's energy-efficiency initiatives;
- Increase information and education outreach to targeted audiences;
- Allow free Internet-based information to sponsors and their constituents; and
- Positively affect solid-state lighting market transformation by debunking myths and encouraging improved product performance.

SSL FACTS testing options

SSL FACTS will offer two forms of testing: traditional NLPPI testing of solid-state lighting and *Quick Peeks* testing.

The traditional NLPPI testing will expand to include substantial testing of solid-state lighting products and systems and will be published in *Specifier Reports*, *Lighting Answers*, and *Lighting Diagnostics*. Topic and product selection will be directed by NLPPI's Advisory Board, with the advice of LRC experts and **SSL FACTS** Contributors. Results will be publicly available and widely distributed. *Specifier Reports* will identify the manufacturer and be published in formats conducive to comparing products.

Quick Peeks testing will be at the request of an **SSL FACTS** Contributor and have a turn-around time of one to two weeks from product procurement. The Contributor chooses the product to be tested. The results will be available to all **SSL FACTS** Contributors, but they will *not* be



distributed publicly. Due to the rapid turn-around time, *Quick Peeks* testing will not include long-term performance testing, but researchers will use predictive methods, such as LED temperature measurements, to project the long-term performance of the LED product.

SSL FACTS testing process

Reports on product performance including photometric, electrical, and thermal testing results will be available to NLPPI Sponsors and **SSL FACTS** Contributors immediately following each cycle of testing. It is expected that the products will rapidly change as newer technologies become available, and as the cost of components are reduced. Products will be retested periodically to see how the products evolve, and to see whether performance has improved.

The program will use standard industry testing methods where available, while also relying on testing methods developed by *ASSIST recommends*. *ASSIST recommends* test methods have been rigorously researched and verified and provide critical information about product performance not available from current industry testing procedures.

Project teams will be comprised of LRC researchers, including many of the world's leading experts on LED lighting, photometry, human factors, and technology transfer. Project teams will use rigorous internal and external peer review of test protocols and follow the time-tested NLPPI risk management procedures for all publications.

SSL FACTS sponsorship options

1. **SSL FACTS Contributors:** Contributors include state and regional energy efficiency program managers, electric utilities, and government agencies concerned with the selection and/or specification of SSL products. The minimum contribution to become an **SSL FACTS Contributor** is \$10,000, which allows for the Contributor to specify one product per year for *Quick Peeks* testing and to have confidential access to all *Quick Peeks* results produced by **SSL FACTS**. With each additional \$5,000 contribution, the participant can specify another *Quick Peeks* test.

2. **NLPIP Sponsorship:** Sponsorship of NLPIP is \$50,000 per year. Sponsors who fund the program at \$50,000 have a seat and a vote on the Advisory Board. NLPIP Sponsors may choose to double their contribution to \$100,000 per year in return for two votes on the Advisory Board, providing greater influence to direct the program's testing priorities. NLPIP Sponsors may also allocate additional funding toward *Quick Peeks* testing. Current NLPIP Sponsors include the California Energy Commission, the New York State Energy Research and Development Authority, the Iowa Energy Center, and the United States Environmental Protection Agency.

NLPIP Sponsors



Lighting Research Center

For more information about this exciting opportunity, please contact:

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