

**BETTER BUILDINGS ALLIANCE LIGHTING DEMONSTRATION OPPORTUNITIES:
APPLICATIONS OF NEXT-GENERATION LED DOWNLIGHTS**

The U.S. Department of Energy (DOE) is offering commercial building owners the opportunity to partner in lighting technology demonstrations featuring high-performance LED downlight luminaires. Host site partners will be announced in January 2014, with preference given to Better Buildings Alliance member facilities. Results will provide real-world data on product performance and cost effectiveness. Up to four host sites will be selected, with each site involving one or more suitable applications for LED downlights. The downlight luminaires will be selected from manufacturers whose products were recognized in recent Next Generation Luminaires (NGL) competitions.

Project benefits

As of 2012, DOE estimated that there were roughly 700 million downlight luminaires installed in residential and commercial buildings, with LEDs representing less than 1% of this installed base. Downlight luminaires using conventional incandescent, halogen, and compact fluorescent lamps have efficacies that generally range from 10 to 40 lumens per watt. LED downlight luminaires offer 50 to 75 lumens per watt based on information collected through NGL competitions. And LED luminaires continue to increase in efficacy. This higher efficacy translates directly to substantial energy savings. If LEDs were to saturate the downlight market, DOE estimates that about 278 tBtu of energy could be saved annually, equating to an annual energy cost savings of \$2.6 billion.¹

This project intends to speed the adoption of high-quality LED downlight luminaires by showcasing their performance in demonstration projects conducted by a non-commercial third party--DOE. Projected and actual energy savings of each demonstration site will be measured and reported, as will lessons learned and projections for maintenance savings and user satisfaction when available. Broader energy savings will occur based on the energy and cost savings results of these demonstrations. By participating in these projects, host organizations and lighting manufacturers will gain visibility for their roles in supporting the adoption of energy-efficient LED lighting products.

¹ "Adoption of Light-Emitting Diodes in Common Lighting Applications". May 2013. Prepared for DOE by Navigant.



Photo credit: Amerlux®

"Evoke 4.75 G2 LED" by Amerlux Global Lighting Solutions: 2012 NGL indoor winner recognized for recessed downlighting

Participant roles

These demonstration projects involve a host organization, one or more luminaire manufacturers, and staff from the Pacific Northwest National Laboratory representing the DOE.

- ▶ Host organizations provide locations for demonstrations, assistance with installation and evaluation, and a willingness to participate in activities related to the demonstrations, such as site visits, photography, and publicity. The host organization will share relevant cost and energy data to inform technical analysis and develop case study or other market-facing materials. The host organization arranges and pays for the purchase and installation of the products. In many cases, utility rebates are available to help offset some of the costs.
- ▶ Manufacturers provide products for demonstrations and may assist in site evaluation and other aspects of planning and installation. In some cases, manufacturers may provide discounted pricing for the demonstration project; these terms are negotiated between the manufacturer and the host organization.
- ▶ DOE provides technical support for analyzing site needs, comparing potential products for demonstration prior to selection, conducting onsite measurements, and performing post-measurement evaluation of the data. DOE also writes and publishes reports on each demonstration, and often offers webinars and other educational programs based on the demonstration results. DOE does not contribute funding toward the purchase or installation of the products evaluated in the demonstrations.



“Generation 3, 6-inch IC LED” by Juno Lighting Group: 2012 NGL indoor winner recognized for recessed downlighting

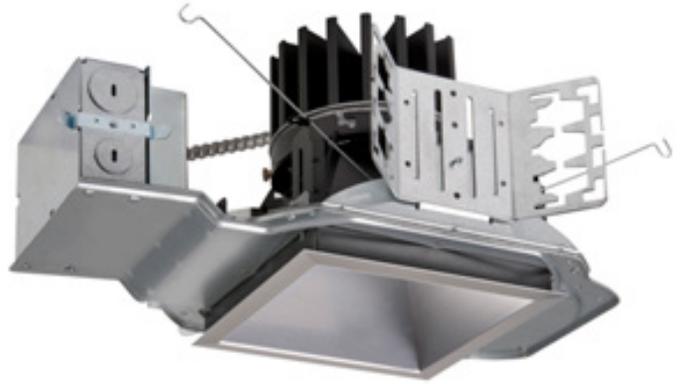
DOE will collaborate with the Alliance members to evaluate projects meeting the general criteria of saving energy, matching or improving lighting system performance and lighting quality, and offering cost-effectiveness relative to the standard competing light source. Ultimately, each project will be judged on its own merits by all members of the team prior to full implementation, and a “go/no-go” decision will be made based on the preliminary assessment of the opportunity.

Communication of results

The results from these demonstrations will enable Better Building Alliance members and other organizations to better understand available high-efficiency lighting technologies before making large-scale purchasing decisions. Results will be shared through the Alliance member communications, on the DOE Solid-State Lighting website, through workshops, webcasts, articles in trade publications, and other related activities. Team members may be invited to participate in subsequent DOE conferences and workshops to convey lessons-learned, benefits obtained, and other aspects of the project.

Project timing

Oct. 2013 - Dec. 2013	Identify potential demonstration sites and partners.
Jan. 2014 - Oct. 2014	Conduct up to four demonstration projects and complete final reports on each project. Reports will be published as each project is completed.
Nov. 2014 - Jan. 2015	Complete a case study report that consolidates the findings from the demonstration projects and summarizes related data from other DOE programs such as CALIPER, GATEWAY, and LED Lighting Facts.



“Portfolio 6-inch Square LED” by Cooper Lighting: 2012 NGL indoor winner recognized for recessed downlighting

Further information

If your organization has suitable applications for LED downlight luminaires, and is interested in exploring the possibility of serving as a host site for a demonstration project, please contact Linda Sandahl at Pacific Northwest National Laboratory: linda.sandahl@pnnl.gov.



“BeveLED 2.0 Downlight” by USAI Lighting: 2012 NGL indoor winner recognized for recessed downlighting