

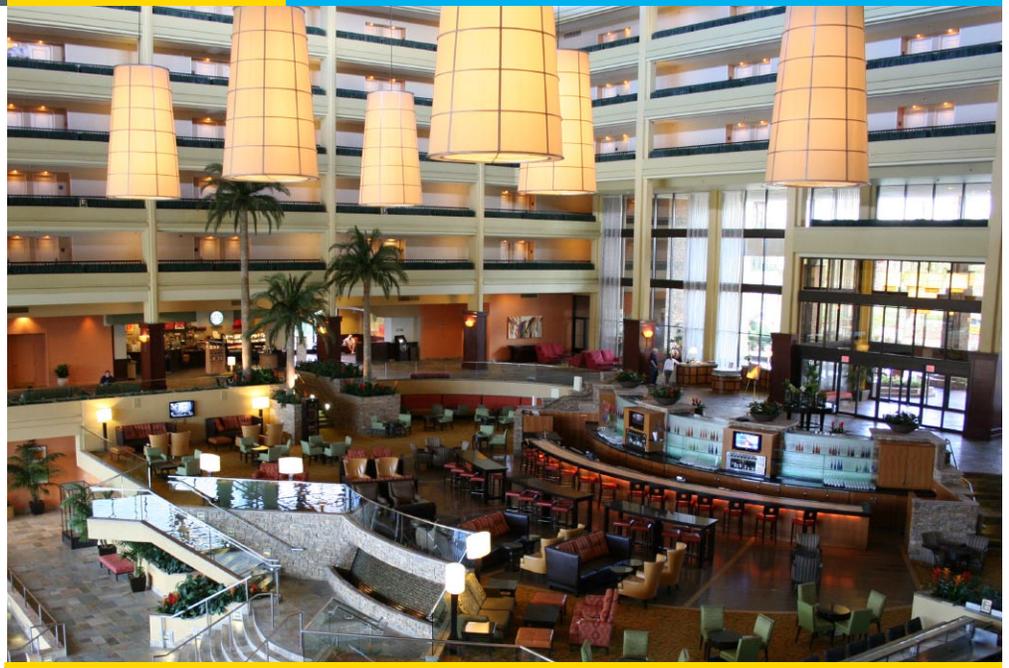
## SOLID-STATE LIGHTING: **L Prize® Drives Technology Innovation, Energy Savings**

The L Prize competition challenges manufacturers to develop high-quality lighting products that set leading-edge performance benchmarks for the industry.

Lighting accounts for one-fifth of all the electricity consumed in the U.S., and most lighting products are far from energy efficient. That's why, at the behest of Congress, the U.S. Department of Energy launched the L Prize competition in 2008. The goal is to challenge industry to develop high-quality, high-efficiency solid-state lighting (SSL) products to replace two of the most widely used and inefficient kinds of light bulb: the 60W incandescent and the PAR 38 halogen. (A third L Prize category, the 21st Century Lamp, has not yet been fully defined.)

DOE recognizes that rewarding innovation without regard to practicality won't have an impact on the country's energy use. So to win the L Prize, it's not enough for an entry to meet the competition's ultra-high standards for energy efficiency, output, light quality, distribution, and lifetime—its manufacturer must also demonstrate the capacity for mass production. And in order to encourage U.S. technology leadership and create U.S. jobs, the competition requires that a substantial amount of the manufacturing must be done in the U.S.

But in order for the L Prize winner to actually realize its massive potential to save energy, people have to buy it.



L Prize partner Southern California Edison put the Philips 60W replacement lamp through extensive field testing at this Palm Desert resort (including in table and floor lamps in this lobby). *Photo courtesy of Southern California Edison.*

That's where the L Prize partners come in. Those 31 utilities and energy efficiency organizations from across North America have signed on to establish rebates, incentives, and other promotions for the purchase of the winning lamp, thus helping to ensure that it gets into the hands of consumers.

### **The First Winner**

In late 2009, the L Prize competition received its first entry—a product from Philips Lighting North America intended to replace the 60W incandescent bulb. The 2,000 samples submitted by Philips went through a rigorous 18-month evaluation that included industry-standard photometric testing, stress tests under extreme conditions, and long-term lumen maintenance testing at elevated temperatures. In addition, field assessments were conducted by L Prize partners to see how the product performed in real-world settings.

The Philips entry met all requirements and, in August 2011, was declared the

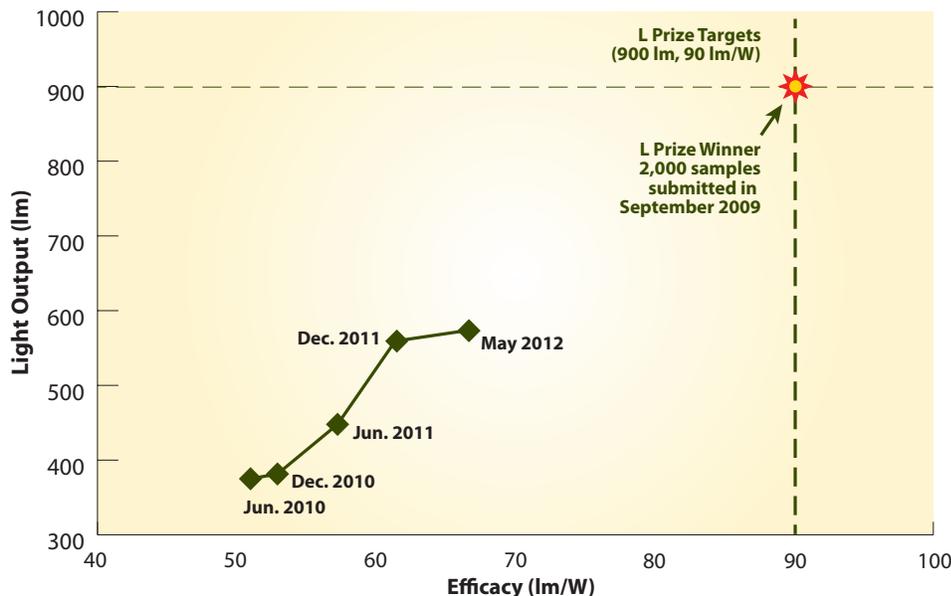
L Prize winner in the 60W replacement category, which is now closed. The product hit retail shelves on Earth Day 2012 and is listed on the U.S. General Services Administration schedule of products approved for federal purchases. Utilities and energy efficiency organizations nationwide are establishing rebates and incentives for the purchase of this energy-saving lamp, which is comparable to a 60W incandescent in color quality (CRI = 93, CCT = 2727 K), light distribution, and light output (940 lumens)—but consumes less than 10W (a savings of 83 percent) and has a projected lumen maintenance of 98 percent at 25,000 hours.

DOE estimates that converting all 970 million of this country's installed 60W A-19 lamps to the L Prize winner would save almost \$4 billion worth of electricity in one year—enough to power the lights of nearly 18 million households.

## A Rising Tide

Ed Crawford, head of Lamps and Lighting Electronics at Philips Lighting North America, credits the L Prize with pushing his company to focus their research efforts on LED bulbs—accelerating their efforts 3-5 years ahead of where they would have been without the competition. But the L Prize has also had an impact on the market as a whole, because competitions help drive innovation, which in turn helps drive market competition. The significant overall improvement in LED replacement lamps since 2008 has been influenced, at least in part, by the high-performance targets established by the L Prize. While a few bulbs feature very high output or very high efficacy, only one bulb displays both at this point in time.

Average Light Output and Efficacy of LED A-Lamps



Source: LED Lighting Facts analysis

## PAR 38 Replacement

DOE reopened the PAR 38 replacement category in March 2012, after suspending it in January 2011 for retooling to incorporate lessons learned from the 60W replacement competition as well as input from industry experts. The changes made will streamline and improve the L Prize competition process, to keep pace with the speed of innovation in the industry and move winning products into American homes, businesses, and government buildings sooner.

All of the original high-performance requirements have been retained, and there won't be any let-up in the testing of

entries. But to reduce the cost of testing and the time it takes to complete the judging, some of the requirements have been modified. For example, each entrant will now bear the cost of the initial photometric testing, and the number of test lamps required has been reduced from 2,000 to 1,000. In all, these changes will trim the total evaluation time by about 30 percent.

PAR 38s, commonly known as “spot” or “flood” lamps, are in widespread use in the U.S., where an estimated 90 million of them are installed, mainly in retail businesses and as track and outdoor security lights. DOE estimates that

switching all of these with lamps efficient enough to win the L Prize would save the country \$1 billion worth of electricity per year.

## “Great” vs. “Good Enough”

The L Prize competition has set the bar extremely high, so that only products that are truly great can qualify. The aim is to deliver those great products to the market as quickly as possible, rather than just settle for products that are “good enough.” The winning products will save consumers and businesses on energy costs and will help boost the efficiency and quality of the other products on the market.

### For More Information

For more information on the L Prize competition, see [lightingprize.org](http://lightingprize.org).