

Energy Department Provides \$7 Million for Solid-State Lighting Product Development

Funding to total \$10 million with industry contribution

WASHINGTON, DC - U.S. Department of Energy (DOE) Secretary Samuel W. Bodman today announced that DOE will provide a total of \$7 million for five cost-shared projects for solid-state lighting (SSL) product development. Solid-state lighting has the potential to more than double the efficiency of general lighting systems, reducing overall U.S. energy consumption and saving consumers money. Companies selected are from California, Massachusetts, and New York. They will provide a 30 percent average cost-share, demonstrating a strong industry commitment to the technology.

"Solid-state lighting is a key part of President Bush's energy policy and the Department of Energy's overall strategy to increase energy efficiency," Secretary Bodman said. "Not only does this technology have the potential to greatly reduce lighting energy consumption in U.S. buildings, but it will also enhance our energy security."

Secretary Bodman made the announcement while offering remarks at the Community Power Alliance's (CPA) Reliability Leadership Conference. While there, he discussed the importance of electric reliability and the important role that the Energy Policy Act of 2005, is playing to ensure America has an affordable, reliable electricity supply.

These projects continue DOE's public/private partnership on high-priority activities that will advance state-of-the-art SSL used for general lighting applications. Unlike incandescent and fluorescent lamps, solid-state lighting creates light without producing heat. A semi-conducting material converts electricity directly into light, which maximizes the light's energy efficiency. Solid-state lighting includes a variety of light-producing semiconductor devices. SSL includes light-emitting diodes (LEDs) and organic light-emitting diodes (OLEDs). LEDs are found in all kinds of devices; they form numbers on digital clocks, light up watches, and transmit information from remote controls. Consumers would also see LEDs in brake lights, traffic signals and exit signs. OLED technology is more commonly used commercially, for example in small screens for mobile phones, portable digital music players, and digital cameras.

The unique attributes of SSL drive a need for a coordinated federal approach that encompasses research, development and commercialization support. DOE's commercialization support strategy includes the use of design competitions such as Lighting for Tomorrow and the development of ENERGY STAR? criteria for SSL products. The Department is also working closely with key standards-generating organizations to coordinate and accelerate the development of test procedures and standards for SSL.

The SSL product development selections announced today are:

Color Kinetics Incorporated (Boston, MA): An Integrated Solid-State LED Luminaire for General Lighting. This proposal seeks to develop replacement lamps for 60-watt incandescent light sources with a 4x increase in efficacy to 80-lumens per watt. The proposal targets package and system integration technology through the development of a novel hybrid-LED source which combines direct emission sources with phosphor down converted emissions. A luminaire "houses" the lamp (source - incandescent bulb - possibly several bulbs) and other electrical parts; and distributes the light to where it is needed.

Project value: \$1,125,452 Applicant cost share: 25 percent Duration: 18 months

Eastman Kodak Company (Rochester, NY): OLED Lighting Device Architecture. The objective of the proposal is to increase performance in OLED devices to 50-lumens per watt. This will be accomplished by focusing on light extraction efficiency enhancement, low-operating voltage materials and structures, create longer-life, high efficiency OLEDs with novel layering techniques.

Project value: \$1,945,473 Applicant cost share: 40 percent General Electric Global Research (Niskayuna, NY): Phosphor Systems for Illumination Quality Solid State Lighting Products. The proposal seeks to build upon previous successful work that incorporates the use of novel nanophosphors to create white light from violet LEDs. The project goal is create a LED lamp to replace incandescent bulbs. This lamp will be about as efficient as present fluorescent lamps, with comparable color quality of the light.

Project value: \$3,718,430 Applicant cost share: 35 percent Duration: 36 months

OSRAM SYLVANIA Development Inc. (Beverly, MA): Phosphor White LED with High Package Extraction Efficiency. Light is created inside of the LED lamp, but has a difficult time escaping from the LED lamp and other optical parts. The goal is to have as much of the generated light escape as possible, and be put to good use. There are several methods to enhance the amount of light that escapes. This proposal seeks to increase the external quantum efficiency using remote phosphors and employing a multi-layer thin film coating technique to increase the probability that scattered light will escape out of the device. The team targets 80 lumens per watt in the bulbs.

Project value: \$603,705 Applicant cost share: 20 percent Duration: 24 months

SRI International (Menlo Park, CA): Cavity Light-Emitting Diode for Durable, High-Brightness and High-Efficiency Lighting Applications. This proposal seeks to develop a surface-cavity-injection process to increase the efficiency of OLEDs. The result is an increase in efficiency by channeling light out of the device thereby reducing optical loss. The team goal is a 5x increase in the external quantum efficiency over standard OLEDs at twice the brightness.

Project value: \$2,607,966 Applicant cost share: 20 percent Duration: 36 months

(From : U. S. Department of Energy)