

Next Generation Lighting INDUSTRY ALLIANCE

ALLIANCE MEMBERS

Corning Inc. ❖ Cree Inc. ❖ Eastman Kodak Company ❖ General Electric Company ❖ GELcore LLC ❖
LumiLeds Lighting LLC ❖ OSRAM Opto Semiconductors Inc. ❖ Philips Electronics North America Corporation

Some facts about the lighting industry today and its potential for change in the future.

- Today, the domestic market for lamps (light bulbs), ballasts, lighting fixtures, and lighting controls is about \$12 billion. Globally, this market is about \$40 billion.
- Today, about 22% of our nation's electrical energy is used for lighting.
- Today, the total electrical energy used for lighting equals the output of about 100 large power plants*. (More than 3X this amount is needed to produce the electricity.) The cost of this electricity is about \$55 billion.
- Today, incandescent lamps, by far the least efficient of the common lamp types, consume electrical energy equal to the output of more than 40 large power plants.

Solid state lighting (SSL) systems, using white LEDs (light emitting diodes) or white OLEDs (organic light emitting diodes), are new technologies that represent a huge break with current lighting paradigms. These technologies will result in the creation of new lighting fixtures, controls, and power supplies, in addition to new application and installation practices and codes.

While there are many technical unknowns today, the results of the past few years suggest that there are no fundamental reasons why these light sources can't achieve efficiencies 10-12X that of incandescent lamps, and 2X that of fluorescent lamps. The energy saving prospect is huge:

- When SSL reaches these efficiencies, the U.S. will save annually the output of about 30 large power plants, or about 6-7% of our country's total electrical energy usage. This will result in a savings of \$17 billion in annual electrical costs (at today's rates).**
- Accompanying environmental benefits are large, and include a reduction in carbon dioxide emissions of 155 million tons, and about a million tons in combined nitrous oxides and sulfur dioxide.**
- The main attractive features of SSL are:
 - High efficiencies theoretically possible (both LEDs and OLEDs)
 - Much greater design freedom (color flexibility – including many “whites” – without the use of filters, fully dimmable, new form factors for fixture designs)
 - Rugged, long lifetimes, no catastrophic failures (LEDs)
 - Intrinsically diffuse (OLED) or “point” (LED) light sources
 - Very thin devices (OLEDs)
- A few of the biggest technical barriers to be overcome are:
 - Efficiency breakthrough needed for white light
 - Cost breakthroughs needed
 - Lifetime at high brightness (OLED)
 - Heat management (LED)

The NGL Industry Alliance is formed to foster a government-industry partnership to accelerate the technical foundation, and ultimate commercialization, of solid state lighting systems.

* A large power plant is one with an output of 1000 MW of electrical energy.

** This assumes: (1) with this efficiency SSL will replace half of all incandescent and fluorescent lamps; and (2) the total energy used for lighting, and the pattern of lighting applications, are unchanged from 2001.

For the supporting data and calculations for this fact sheet, see: www.NEMA.org/solidstatelighting