

CONSORTIUM FOR ENERGY EFFICIENCY, INC.Expanding Markets for Super-Efficient TechnologiessmOne State Street Suite 1400 Boston, MA 02109-3507 Phone: 617-589-3949 Fax: 617-589-3948 Web: www.CEEforMT.org Email: CEE@CEEforMT.org

January 17, 2000

FOR IMMEDIATE RELEASE

Contact: [Melissa Lucas](#), Program Associate, 617-589-3949, ext. 205
[Howard Newman](#), Communications Director, 617-589-3949, ext. 209**LED traffic signals provide dramatic savings, last far longer
CEE's national initiative is promoting this new technology**

Light-emitting diode (LED) traffic signals use **80-90 percent less energy** than comparable incandescent lamps and **last 5-10 years** (compared to about one year for an incandescent). Although the first cost for an LED signal is significantly higher than a comparable incandescent, LEDs pay for themselves in about three years and save an enormous amount of money over the long haul.

The **Consortium for Energy Efficiency** (CEE) is promoting this new technology through its **LED Traffic Signal Initiative**, a program launched in December 1999. There are currently 15 CEE members (and an undetermined number of non-members) running **regional LED traffic signal programs**. CEE's role is to provide information, support and a national forum for these individual programs. Additional program participants will be recruited.

"By aligning our efforts nationally, we can make a bigger impact," said CEE Program Associate **Melissa Lucas**, who is running the initiative.

The primary goal of the initiative is to increase the installations of LED traffic signal replacements. Toward this end, CEE is spreading the word about LEDs.

CEE's strategy includes:

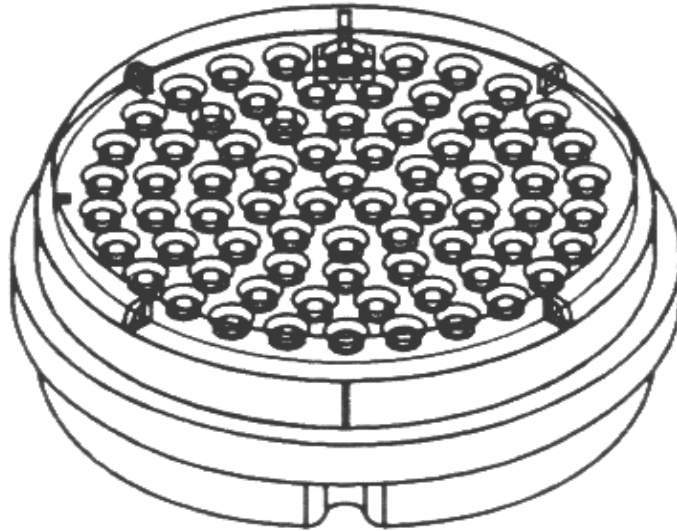
- Improving the level, quality and availability of information addressing the benefits of LED signals
- Raising the decision-makers awareness of LED traffic signals and their benefits
- Adopting and supporting the uniform LED specification, set by the **Institute of Transportation Engineers** (ITE).

Education of traffic signal purchasers is a key component of the initiative. CEE will also work with LED component and traffic signal manufacturers to improve communications between the supplier industry and program implementers. When a greater demand for LED traffic signals exists, prices will drop and product availability will increase.

Unlike incandescent bulbs, light-emitting diodes produce colored light that doesn't require red, green or amber filters. Traditionally used in alarm clocks – and most recently for exit signs – LEDs are far more efficient and save staggering amounts of energy in high-use applications. Since traffic signals operate 24 hours a day, 365 days a year, the opportunity for savings is enormous.

Incandescent bulbs need to be replaced at least once a year and burn out unpredictably. The longer life of LEDs can reduce the frequency of maintenance, thereby decreasing the cost to the town, city, county or state.

What is an LED and how does it work?



LED traffic signal head

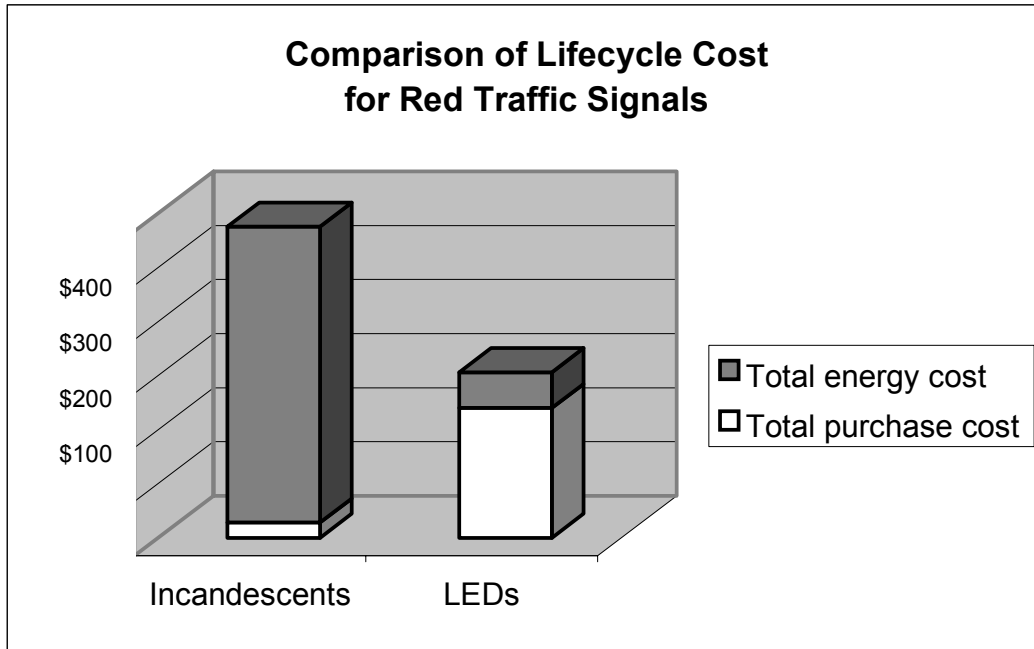
A light-emitting diode (LED) is a semiconductor device that uses solid-state electronics to create light. An LED light source (or diode) consists of a layer of electron rich material separated – by a junction – from a layer of electron deficient material. Both sit on a semiconductor base. Power applied in the junction excites the electrons, which in turn emit photons of light. The color composition of the light depends on the chemical composition of the layers.

These diodes are then packaged in a form suitable for use in traffic signals. A single diode may be combined with a reflector (to focus the light) and a clear protective epoxy lens. Anywhere from 18 to 300 or more of these "lamps" can be packaged in an array for use in a signal head (shown above).

In contrast, incandescent lamps produce only white light, which must be filtered for use in traffic signals. Incandescent lamps also produce a considerable amount of light outside the visible spectrum, which is emitted in the signal head as heat. All of the above factors make incandescent lamps an inefficient method of producing light for traffic signals.

The above material was excerpted from *A Market Transformation Opportunity Assessment for LED Traffic Signals* by Margaret Suozzo of ACEEE (1998).

LED traffic signals provide dramatic energy savings



Red LED traffic signals are far more cost-effective than signals using incandescent lamps. A red LED traffic signal costs about \$75, compared to \$3 for an incandescent signal. The LED signal, however, consumes approximately 88 percent less energy than a comparable incandescent signal in the same application. Over an estimated seven-year life, LED traffic signals cost 70 percent less (\$290) than signals that use incandescent lamps (based on 10 cents/kWh). These economics are becoming even more attractive as LED traffic signal prices decline.

Cost comparison

	Incandescent signal	Red LED signal
Annual energy use (kWh)	559	67
Energy use for 7 years (kWh)	3,912	472
Energy cost (10 cents/kWh)	\$391.20	\$47.20
Lamp cost	\$3	\$75
Lamp cost over 7 years	\$21	\$75
Total cost over 7 years	\$412.20	\$122.20

Source: CEE calculations based on data from *A Market Transformation Opportunity for LED Traffic Signals* (Suozzo 1998) and 2002 manufacturer-submitted price information

Note: The above comparison does not include maintenance costs. Incandescent signals require annual relamping at a cost of about \$150/installation. Thus, over seven years, the incandescent signal would generate approximately \$1,050 in maintenance costs. Over the same time period, the LED signal would generally require no maintenance.