ENERGY-EFFICIENT TRAFFIC SIGNALS

CEE

Although CEE is no longer actively promoting energy-efficient traffic signals, CEE's prior work in this area is detailed in a section of its Web site. The Web pages include links to resources, case studies, manufacturers and a specification for energy-efficient traffic signals.

CEE's Energy-Efficient Traffic Signal Initiative was launched in January 2000 to increase installations of energy-saving traffic signal replacements and expand awareness of light-emitting diode (LED) technology as a high-efficiency lighting source. In helping to establish an industry accepted definition of high efficiency, CEE has adopted the ENERGY STAR® traffic signal specification.

When CEE was promoting energy-efficient traffic signals, colored LEDs represented the only available light source that can achieve the level of energy savings targeted by the initiative. The CEE initiative is supportive of other technologies that can meet or exceed this level as long as such technologies comply with traffic safety standards. LED signals – which produce colored light that doesn't need to be filtered – save 80-90 percent of the energy typically consumed by incandescent traffic signals and generally last 5-10 times longer. Since traffic signals operate 24 hours a day, 365 days a year, the opportunity for energy savings is significant.

Public and Environmental Benefits: LED traffic signals have the potential to save local governments a tremendous amount of energy and money. A 12-inch LED signal uses 25 watts or less, compared to 150 watts for an incandescent bulb in a comparable application. If all traffic signals in America were converted to LEDs, 3 billion kWh of electricity would be saved annually.

LED traffic signals also offer significant peak demand savings since they operate 24 hours a day. If all signals in the U.S. were converted to LED signals, it is estimated that 340 MW would be saved.

In addition to saving energy, there are monetary and potential safety benefits for traffic departments installing LED traffic signals. LED traffic signals typically last an average of 5-7 years, compared to a year or less for signals with incandescent bulbs. Not only are maintenance costs reduced, but fewer crews out on the road can mean added safety. Longer signal life also means fewer opportunities for accidents caused by traffic signal failure.

Increased installation of LED traffic signals is likely to lead to price reductions for LEDs and may open the door for additional LED lighting applications (producing additional energy savings).

Specification: CEE adopted the ENERGY STAR traffic signal specification for this initiative. ENERGY STAR utilizes the Institute of Transportation Engineers (ITE) specification with an added wattage requirement. A specification is important because it can assuage the concerns of some state and local governments, paving the way for more rapid adoption of energy-efficient traffic signals. Having a specification can also provide assurance to traffic departments of safety and reliability of the signals. In addition, municipalities that may not have the resources of a state organization save the added cost of developing a specification of their own. CEE's Energy-Efficient Traffic Signal Initiative supports the ENERGY STAR traffic signal specification for this initiative.

CONSORTIUM FOR ENERGY EFFICIENCY
98 North Washington Street, Suite 101 Boston, MA 02114-1918 617-589-3949 www.cee1.org

FACT SHEET

About This Market: There are approximately 260,000 signalized intersections in the United States, translating into more than 3 million traffic signals. Traffic signals are typically purchased by local governments for use within their jurisdictions. When discussing the market for LEDs, it is important to consider stakeholders as well as the economics of the signals.

There are several stakeholders involved in selecting traffic equipment, including equipment specifiers and purchasers, state department of transportation personnel, county and municipal staff, traffic engineers, equipment installers and maintenance staff. Utilities that run local incentive programs and the energy service companies are also stakeholders.

CEE groups manufacturers into two groups. Component manufacturers produce light source material or material packages, controls and traffic signal housing. The second group, LED traffic signal manufacturers, assembles packages of LEDs (produced by diode manufacturers) into traffic signal retrofit kits. These kits are designed to easily fit into the housing for incandescent signals.

The economics of energy-efficient traffic signals differ from the incandescent bulbs they replace. Prices vary by signal head size and color, but an LED signal typically costs more than a standard, incandescent signal head. Since 1998, the prices for LED signals have dropped more than 50 percent and manufacturers have stated that they believe costs will continue to decrease over time. A major reason is the constantly improving technology and design, which has reduced the number of diodes for each color signal. Red and green signals have typically been more financially feasible than yellow signals, which operate only about 3 percent of time.

Contact: Additional information about CEE's Energy-Efficient Traffic Signals Initiative is available at www.cee1.org or by contacting Susan Loucks at 617-589-3949, ext. 205, or sloucks@cee1.org.