



High-performance commercial lighting offers big savings

System performance can be improved by 70-81 percent

The Consortium for Energy Efficiency (CEE) has launched the first North American initiative for energy-efficient commercial lighting. CEE's High-Performance Commercial Lighting Systems Initiative includes a specification that defines high-performance commercial lighting and a list of qualifying products posted on the CEE Web site (www.cee1.org).

Eight lamp and ballast manufacturers have qualified products for the CEE list. Other manufacturers are encouraged to submit qualifying products.

As a first step, CEE has decided to promote **high-performance "higher-lumen" 32-Watt T8 systems**. These fluorescent fixture systems are used in many commercial applications and represent an excellent opportunity for electricity savings. CEE is now researching other product categories to be added to the initiative.

This is the first time consensus has been reached on establishing a North American specification for commercial lighting. CEE developed the specification, utilizing input from lighting manufacturers and distributors, energy-efficiency organizations, utilities and ENERGY STAR[®] representatives.

LOCAL PROGRAMS PROMOTE EFFICIENT LIGHTING

With a widely-accepted specification in place, energy-efficiency organizations can run commercial lighting programs that are consistent across North America. This sends a clear signal to manufacturers about what types of products are being promoted and also encourages distributors to stock (rather than special-order) these products.

Nine CEE members are currently using the CEE specification to promote commercial lighting and many other energy-efficiency organizations have expressed interest in running similar programs.

MAJOR SAVINGS OPPORTUNITY

Lighting represents roughly 40 percent of the energy consumption in the commercial building sector yet only about 5 percent of commercial lighting systems utilize a high-performance lamp-ballast combination.

A high-performance T8 lamp and ballast combination can improve system performance by 70-81 percent over standard T12 systems. Antiquated T12 systems, which are less expensive but very inefficient, account for more than half of the current fluorescent lighting applications in the commercial sector.

High-performance T8 systems are also **23-31 percent more efficient** than 700 series T8 systems, the predecessor to high-performance T8 systems.

Paybacks generally range from 1-3 years.

ABOUT CEE

Based in Boston, CEE is a nonprofit public benefits corporation that promotes energy-efficient products, technologies and services. CEE has 79 members in the United States and Canada, including utilities, energy-efficiency organizations, state energy offices, environmental groups and research organizations.

For further information about CEE's High-Performance Commercial Lighting Systems Initiative, visit the CEE Web site (www.cee1.org) or contact Communications Director Howard Newman at hnewman@cee1.org or 617-589-3949, ext. 209.

High-Performance Commercial Lighting

High-performance T8 systems vs. generic T8s and T12s

As you can see from the chart below, high-performance T8 systems (lamp and ballast) provide greater light output and higher efficacy

Technology	Light output (mean lumens/watt)	Percentage improvement in efficacy	
		Over standard T12	Over generic T8
Standard T12	54		
Generic T8 (32-watt 700 series)	75	39	
Super T8 (32-watt 800+ series) with programmed-start ballast*	92	70	23
Super T8 (32-watt 800+ series) with programmed-start ballast*	98	81	31

*High-performance system defined by CEE specification

Energy analysis and payback periods

The chart below compares the incremental cost of high-performance T8 systems to projected energy savings, producing the payback period needed to recover these added costs. Two base cases are considered: a retrofit from standard T12 systems and a retrofit from generic (700 series) T8 systems. Installation and labor costs are not included in this analysis since they are dependent on location and contractor.

	Base Case	Retrofit #1	Retrofit #2	Base Case	Retrofit #1	Retrofit #2
Lamp	T12	T8 800 series*	T8 "Super"*	T8 700 series	T8 800 series*	T8 "Super"*
Ballast	ES Magnetic	Instant Start	Program Start	Instant Start	Instant Start	Program Start
Wattage (kW)	0.072	0.051	0.046	0.056	0.051	0.046
Ballast Factor (BF)	0.88	0.77	0.71	0.88	0.77	0.71
Energy use (kWh/yr)	263	186	168	212	186	168
Lamp + ballast cost (\$)	\$14	\$20	\$26	\$16	\$20	\$26
Incremental cost (\$)	–	\$6.00	\$12.00		\$4.00	\$10.00
Annual energy cost per fixture (\$)	\$21.04	\$14.88	\$13.44	\$16.96	\$14.88	\$13.44
Annual energy savings potential (\$)	–	\$6.16	\$7.60	–	\$2.08	\$3.52
Payback Period (yrs.)	–	0.97	1.57	–	1.92	2.84

*High-performance system defined by CEE specification



High-Performance Commercial Lighting Systems Initiative

PARTICIPATING MANUFACTURERS

The manufacturers listed below have submitted documentation that their products meet the specifications included in CEE's commercial lighting initiative. The qualifying products list can be found on the CEE Web site (www.cee1.org).

Lamp manufacturers

General Electric
Maxlite
Osram-Sylvania
Philips Lighting
Radiant Lamp Company

Ballast manufacturers

Advance Transformer Company
General Electric
Howard Industries
Maxlite
Osram-Sylvania
Universal Lighting Technologies

PARTICIPATING CEE MEMBERS

The organizations listed below are using the CEE specification and qualifying products list to run programs that promote high-efficiency commercial lighting systems.

Bonneville Power Administration
Efficiency Vermont
Energy Trust of Oregon
Eugene Water and Electric Board
National Grid
NSTAR
NYSERDA
United Illuminating
Wisconsin Dept. of Administration

Oregon
Vermont
Oregon
Oregon
Massachusetts, Rhode Island New Hampshire
Massachusetts
New York
Connecticut
Wisconsin