

Efficient Lighting



Technology Description:

Lighting systems that provide energy efficiency while maintaining or improving the quality of the lighted environment.



Application:

Recommendations for commercial interior spaces:

- 1) Use high quality fluorescent lighting systems with electronic ballasts for general area lighting.
- 2) Use compact fluorescents or ceramic metal halide products wherever possible for downlighting, track lighting, and spotlighting applications.
- 3) Include daylighting where reasonable and practical in building design.

Recommendations for industrial interior spaces:

- 1) Use pulse start metal halides and high quality fluorescent lighting systems (T-5's and T-8's) with electronic ballasts.
- 2) Integrate multi-level HID and fluorescent switching systems into the lighting design especially in warehouse aisles.
- 3) Select fluorescent lighting products for emergency lighting whenever practical and consistent with safety concerns.
- 4) Include daylighting in the building design where reasonable and practical.



Potential Energy Savings:

System comparison for replacing one 400 Watt metal halide lamp with one T-5 fixture (4 lamps per fixture).
Electrical cost taken as \$0.12/kWh.

Lamp type	Input Watts	Hours of Operation	Energy Usage (kWh/yr)	Operating Cost (\$/yr)	Annual Savings (\$/yr)
400 Watt Metal Halide	460	8,760	4,030	484	n.a.
Four T5HOs	234	8,760	2,050	246	238



Case Study:

A large office facility in San Diego replaced their 34 Watt T-12 fluorescent light fixtures with 32 Watt T-8 light fixtures with electronic ballasts. The old lamps with magnetic ballasts consumed about 38 Watts per lamp. The new lamps with electronic ballasts consume about 29 Watts per lamp. The energy savings from a complete facility lighting retrofit was calculated at 468,614 kWh per year (not including A/C savings). The simple payback was 2.2 years. The new T-8 lamps also increased the light output by 10%.



Additional Information:


Rebates are available for compact fluorescent lamps, induction lamps, interior HID fixtures, exterior HID fixtures, interior high output T-5 fixtures, electronic ballasts, and T-8 and T-5 lamps through San Diego Gas and Electric's Express Efficiency Program at www.sdge.com.

For more information on efficient lighting see: Conserving America at www.conservingamerica.com



Considerations:

For a successful lighting system, the following factors must be taken into account: safety, adequate illumination, worker satisfaction, efficiency of lamp, CRI, a well conceived control system, initial costs, shadows, glare, maintenance costs, possibilities of task lighting, line voltage, warm-up and re-strike times, and ambient temperatures.



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