



Energy Efficiency & Customer Research & Development *Technology Brief...LED Hybrid Entry Light*

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Researchers from the California Lighting Technology Center (CLTC) partnered with Shaper Lighting and the Sacramento Municipal Utility District (SMUD) to develop the LED Hybrid Entry Light. It combines cutting edge LED (light emitting diode) technology with an occupancy sensor and incandescent lighting to cut operating costs.

Technology Description

At this point, some of you may be thinking: Why use incandescent lamps in a product touted as being energy efficient? To help answer this question, let's take a closer look at the light in question.

The LED Hybrid Entry Light is designed for low traffic areas such as porches or entryways. The 4-watt LED array provides enough illumination to safely guide a person to the doorway until they come within range of the built-in occupancy sensor. The sensor will switch on a 60-Watt incandescent lamp to provide enough light to unlock the door. After the person enters the building, the fixture switches back to the LED-only mode.



LED Hybrid Fixture

Although incandescent lamps are indeed inefficient, they are small, inexpensive and readily available. Furthermore, monitoring data from a local demonstration project showed that the occupancy sensor limited operation of the incandescent lamps to just 4 percent of the time. The end result is energy savings comparable or better than those offered by compact fluorescent fixtures.

Showcase Project

The Woodburn Townhouse development in Carmichael, California was retrofitted with 25 LED Hybrid Entry Lights in April 2005. The original fixtures were simple

white plastic globes with 60-watt incandescent lamps. Average nightly use was 6 hours.

Monitoring Results

Monitoring data showed that a 4-watt LED array ran continuously at night (as designed), while the main lamp cycled on only when needed. The average total run time for the main lamp was only 30 minutes per night – a reduction of over 90 percent compared to the base case scenario.

Financial Summary

Cost: The Shaper fixtures used in this retrofit were a first-run product that cost approximately \$200 per unit. Since Woodburn used its own staff and the fixtures were easy to install, installation cost was only about \$13 per fixture. Total installed cost = \$213 per fixture.

Savings: The annual savings for the Woodburn site is estimated to be around \$9 per fixture (103 kWh @ \$0.085/kWh).

Financial Payback: The relatively high installed cost of this fixture and the low energy rate made for a long financial payback (22 years). However Hunter Lighting plans to produce a version of this technology that is expected to cost less than \$100. This should result in paybacks approaching 6 to 11 years in retrofit and 4 to 7 years in new construction applications.

"Our residents like that the fixtures are automatically controlled in addition to the safety of always having light on their porches."

Jennifer Wyandt,
Manager
Woodburn Townhouses

Acknowledgements

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To learn more about the Customer Advanced Technologies program, visit www.smud.org/education/cat/index.html

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