

ORNL spin-off beta tests hybrid solar lighting

[R. Colin Johnson](#)

(08/21/2006 9:00 AM EDT)

URL: <http://www.eetimes.com/showArticle.jhtml?articleID=192200152>

Portland, Ore. -- The Department of Energy's Oak Ridge National Laboratory has transferred its hybrid solar/artificial-light technology to Sunlight Direct LLC (Oak Ridge, Tenn.), a company spun off from ORNL to commercialize the approach. Now in beta testing at five locations, with 20 more slated to be installed this fall, the technology could save utility customers \$1 per square foot yearly on lighting costs, its inventors say.

The adaptive, full-spectrum, solar collection and distribution platform, developed over a 10-year period with millions in Energy Department grants, collects sunlight via a mirrored dish on the roof that tracks the sun as it passes overhead each day. The mirror concentrates the resultant beam onto more than 120 fiber-optic cables, each measuring 3 mm in diameter, and distributes the fibers to 12 light fixtures covering 1,000 square feet in the building.

The fixtures house two diffusion tubes (for dispersing the light from the fibers) alongside a high-temperature fluorescent tube. An electronic tracker adjusts the fluorescent tube's output so that the illumination level in the building does not vary with the strength of the sunlight.

The system costs about \$12 per square foot to install, but Sunlight Direct aims to reduce that to about \$4. At the lower installed cost, the system would take only a few years to pay for itself.

Besides the savings to the utility customer, hybrid solar lighting should ease overtaxed power grids during peak demand periods. "You get peak [solar] light output at the same time there's the greatest demand for electricity, from everybody turning their air conditioners on," said Sunlight CEO and CTO Duncan Earl, who co-developed the technology at ORNL with David Beshears.

Test sites

Current beta sites for the hybrid Sunlight system are the Sacramento (Calif.) Municipal Utility District customer service headquarters; San Diego State University; the University of Nevada, Las Vegas; Aveda Corp. in Minneapolis; and a Wal-Mart in McKinney, Texas. Beta installations at Pacific Northwest National Laboratory and a Staples store on Long Island, N.Y., are expected to be completed this fall.

"We are also designing systems into new buildings certified by LEED," the Leadership in Energy and Environmental Design program, Earl said.