

High-energy project in high desert

May 25 2010, By Tiffany Hsu

The sprawling solar installations gobbling up California's deserts have a new competitor, one that claims to generate more energy at lower costs while using less open space. Known as concentrator photovoltaics, or CPV, the technology is featured in an installation that will be revealed Tuesday at Victor Valley College.

The school's new 1-megawatt plant, on a six-acre dirt plot in Victorville, Calif., will provide around 30 percent of the campus' power.

The \$4.5-million facility will be the largest of its kind in North America. The system is expected to pay for itself within five years through [energy](#) savings and government incentives, school officials said.

"Economically and educationally, it all makes sense," said Christopher C. O'Hearn, the college's president. "We intend to stay on the cutting edge, and we're in the perfect location for this kind of technology."

Concentrator [photovoltaics](#) convert sunlight into electrical energy using the same process as conventional [crystalline silicon](#) or thin-film panels. But CPV uses mirrors to concentrate the sun onto tiny high-efficiency [solar cells](#).

The technology is gaining converts, said Monique Hanis, a spokeswoman for the Solar Energy Industries Association.

"We're beginning to see more widespread use," she said. "You're getting more power concentrated in a smaller area and using less land space."

The Victorville installation's 122 photovoltaic arrays, each of which features 28 panels of 20 curved mirrors, were manufactured by SolFocus Inc. of Mountain View, Calif. Each of the mirrors focuses the sun onto a smaller mirror attached to a sheet of glass, concentrating the light onto a 1-square-centimeter photovoltaic cell.

To maximize sun exposure, the arrays are mounted on mechanical trackers, which follow the sun throughout the day. Each array produces enough electricity at peak hours to power three average homes.

"It's the future of California -- it's where all the technology, all the tax incentives, are going," said California Lt. Gov. Abel Maldonado, who will speak at the unveiling ceremony Tuesday. "It's the frontier that California's going to be working on to fuel our economic recovery."

The concentrator photovoltaics industry is growing, with dozens of companies developing systems, according to a report released last fall from the National Renewable Energy Laboratory. The technology doesn't require as much semiconductor material as conventional photovoltaics, which is making CPV cheaper and increasingly attractive to investors. CPV technology is also extremely efficient and relatively compact, in some cases using half the surface area of other large solar installations to generate the same amount of energy, the report said.

SolFocus is pitching its technology as less disruptive to the environment. The Victorville facility took just two months to build compared with years for other large solar installations. The system also requires relatively little water to keep the panels clean, and 97 percent of the materials can be recycled, said Nancy Hartsoch, the company's vice president of marketing and sales.

The company has spent years running reliability tests in difficult environments such as Hawaii, Hartsoch said. But the global financial

crisis has slowed growth in green technology.

"The biggest challenge for the technology today is bankability," Hartsoch said. "That's all that stops the technology from moving faster. A lot of the companies are small start-ups, and 2009 wasn't a fun time to go commercial."

In addition to generating power for the campus, the Victorville installation will be used to train college students who are interested in renewable energy. The school also hopes to build a sustainability center in five or six years that will feature more photovoltaics, as well as wind turbines and wastewater treatment facilities.

"It's a natural outgrowth of what the college has been working on for years," O'Hearn said. "We would be remiss if we weren't pursuing these kinds of technology."

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