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SMUD puts solar highway project in gear

Stimulus money covers \$5M of utility's \$19.5M renewable plans

Sacramento Business Journal - by [Melanie Turner](#) Staff writer

Inspired by a trailblazing project in Oregon, Sacramento Municipal Utility District aims to build solar arrays along state highways, starting with a 1.5-megawatt project along Highway 50.

The solar energy systems on state Department of Transportation property would be seen by more than 10,000 motorists a day along the Highway 50 corridor between Stockton Boulevard and Mather Field Road.

"Caltrans is supporting the idea of investigating this and seeing if we can work this out," said Andrew Brandt, chief of traffic operations for Caltrans District 3. "We think that it could be a good way to use right-of-way."

While solar panels have no harmful emissions and don't use water, they do use a lot of land for the amount of electricity they produce. They also potentially affect plant or animal habitats, and might conflict with other land uses.

"A great thing about solar photovoltaics is you can put it on rooftops, but we started thinking: Where else can we have double-use purposes?" said Mike DeAngelis, program manager for SMUD's advanced renewable energy department.

SMUD's solar highways project is one of five renewable energy projects that received \$5 million in federal funding last week, as authorized by the American Recovery and Reinvestment Act of 2009.

The federal grant does not fully fund SMUD's \$6.8 million request for the projects. Other projects include:

- A co-digestion project, which would use food waste and sewage to produce biogas at the Sacramento Regional Wastewater Treatment Plant. SMUD funded a successful pilot project last year. Now the partners want to create a permanent facility for accepting restaurant grease and food waste that would generate electricity. Restaurant grease often is trucked long distances and dumped illegally, DeAngelis said.



Photo courtesy of Portland General Electric

The Oregon Department of Transportation has lined some freeway off-ramps with solar panels.

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- Anaerobic digesters at two dairies in Sacramento County near Galt to convert manure and urine from dairy cows to energy. SMUD already has helped establish similar facilities at two local dairies. Individual cows create 125 pounds of manure and urine a day, DeAngelis said.
- An anaerobic digester, which produces biogas, at a local food-processing facility.

Together, the five projects would cost an estimated \$19.5 million. The projects also would tap state funding of \$500,000 and matching funds from SMUD and its partners of \$12.1 million. The \$5 million “brings us a long way to see that these five green-energy projects do get built,” DeAngelis said. But it will be several weeks before the project partners understand all the implications of the \$1.9 million funding gap, adding that one project might need to be dropped.

Inspired by PBS

The solar highways project would cost an estimated \$2.6 million.

It calls for at least two sites for photovoltaic systems on Highway 50 — one at the Mather Field Road exit and another in sections between SMUD’s headquarters near 59th Street and Stockton Boulevard — generating about 1.5 megawatts.

SMUD engineering supervisor Harlan Coomes came up with the idea to partner with Caltrans to install solar systems along public highway right-of-ways while watching a public television special, “Saved by the Sun,” that showed solar arrays alongside the autobahn in Germany.

“I thought if Germany can do it on the autobahn why can’t we do it here?” said Coomes, a supervisor with SMUD’s Design Resource Center.

Coomes drafted a business plan that night and sent it to some colleagues. That was September 2007.

“I don’t think anybody was ready to pursue it,” at first, he said.

He later heard the Oregon Department of Transportation had conducted a pilot project and called to get some feedback. By summer 2008, SMUD management supported the idea.

SMUD has since been working with Caltrans to figure out how to make it safe, maximize its energy potential and make it aesthetically pleasing.

“We’re real excited about it,” Coomes said. “I hope we can work through the project details and have a great project.”

SMUD hopes to help Caltrans create a blueprint so the project could be recreated in other parts of the state.

Oregon officials believe their 104-kilowatt ground-mounted solar array, at the interchange of Interstate 5 and I-205, is the nation’s first solar project along a state highway.

Allison Hamilton, project director for the Oregon Solar Highway Program, said she got the idea for the project after watching the very same Public Broadcasting Service special

that Coomes had seen. The model has been in place for 20 years, and solar systems are lining highways in Switzerland, Spain and Austria, too, she said.

“The fact that we had none of them in the U.S. on operating right-of-way was a real shock to me,” said Hamilton, who said she researched it thoroughly. “The federal government did a search of state DOTs and said there’s nobody out there.”

Hamilton said she has since received calls from 16 other states and six countries interested in developing their own solar highway projects.

If it works in rainy Oregon ...

The \$1.3 million project in Oregon started feeding renewable energy to the electricity grid Dec. 19, 2008. It supplies about a third of the energy needed to illuminate the interchange, or about 112,000 kilowatt hours a year. It covers about 8,000 square feet, or about the length of two football fields.

SunWay 1 LLC, a company managed by Portland General Electric (NYSE: POR), owns and operates the solar power plant, according to the Oregon Department of Transportation.

Portland General Electric has about 6.5 megawatts of solar capacity in its service area and is striving to bring online between three and five additional megawatts a year, PGE spokeswoman Elaina Medina said.

“The Oregon solar highway demonstration project is performing very well,” she said. “It’s proving that solar power has great potential as an energy resource in Oregon. A lot of people think, ‘Oh, rainy Oregon.’ But solar is actually the most abundant renewable resource in Oregon.”

The electric utility is looking now to expand its solar highway project, Medina said.

“As energy demands increase, we’re going to need every tool in the toolbox to help us meet customer demands and achieve the state’s renewable energy standard,” she said.

Oregon law requires utilities to get 25 percent of their energy from renewable sources by 2025, she said. California law requires public utilities to get 20 percent of their energy from renewable sources, such as solar or wind, by this year.

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