



Placing solar panels on just 1 percent of Oregon's right-of-way could provide all the kilowatt hours needed annually by the state transportation system, ODOT said.



Making Solar Inroads

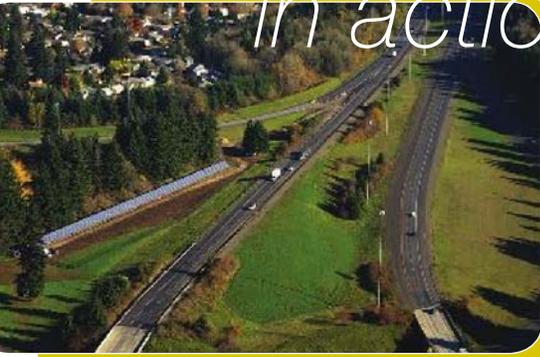
Oregon DOT lights roadways with solar panels

U.S. highways include more than 8 million lane-miles of right-of-way. In many cases these areas sit empty with no other planned use. Now, thanks to the Oregon DOT, one section of highway has become a source of clean, renewable energy.

green FACTS

The Solar Highway project currently powers about 28 percent of the I-5/I-205 interchange.

The Solar Highway in action



Visit www.deckmonitoring.com to see up-to-date solar generation information, including current generation, kilowatt hours generated and project details.

The Oregon Department of Transportation (ODOT) has begun placing solar panels in these right-of-way to provide renewable electricity to light the roadways. Through a public/private partnership with power utility Portland General Electric (PGE), ODOT has access to clean energy without paying additional energy costs.

Demonstration project

ODOT's first demonstration project placed 8,000 square feet of solar panels alongside the busy I-5/I-205 interchange south of Portland. Since it began producing energy in December 2008, the 594 panels making up the Solar Highway have produced more than 141,000 kilowatt

hours of renewable electricity.

Oregon's Solar Highway is the nation's first solar photovoltaic project in the highway right-of-way. Other systems exist, along the Autobahn in Germany, and in Switzerland, Austria and Spain.

"I saw a public broadcasting special called *Saved by the Sun* and it showed all the solar panels by the Autobahn in Germany, and I said if they can do that over there, we can do it over here," said Allison Hamilton, project director for the Oregon Solar Highway Program in ODOT's Office of Innovative Partnerships.

"It seems like we're reaching a critical mass here in terms of needing to go to renewable energy," Hamilton said. "We have to start moving to renewable energy, to get the infrastructure in place because fossil fuels are limited."

Right-of-way as resource

A main benefit of using the public right-of-way for solar projects is that the land is often unused.

The power transmission and distribution systems are often located next to highways, making interconnection very easy. ODOT said

that placing solar panels on just 1 percent of Oregon's right-of-way could provide all the kilowatt hours needed annually by the state's transportation system.

Leadership and incentives

Oregon was uniquely positioned to enable ODOT to complete the project. Oregon has a renewable portfolio standard (RPS) that requires PGE to source 25 percent of electricity from renewable sources by 2025.

Oregon Governor Ted Kulongoski has directed state agencies to meet their electric needs entirely from renewable resources. Constitutional limitations, however, meant that ODOT couldn't use state transportation funds to buy green energy to offset ODOT's carbon footprint.

Creative funding agreements

Using the available right-of-way as a starting point, ODOT approached PGE, the main power utility in the Portland Metro area. ODOT and PGE were able to develop a unique public/private partnership, whereby PGE could take advantage of a state business energy tax credit, a federal investment tax credit and utility incentives to finance the \$1.28 million project.

"Using the tax structure, you can do these projects at a limited cost to taxpayers and to rate payers," Hamilton said.

Sharing power day and night

The Solar Highway produces



The first ODOT demonstration project involved placing 8,000 square feet of solar panels alongside a busy highway.

green FACTS

Based on U.S. Federal Highway Administration data, despite the seemingly expansive road system, public roads occupy less than 1 percent of the total U.S. land area, leaving a majority of land open for other uses.

electricity during the day. The electricity is sent to the grid for PGE's use. At night, when the solar panels are not producing electricity, PGE returns an equal amount of power to ODOT to light the highway. Since renewable energy is initially more expensive to produce than non-renewable, the net metering partnership with PGE allows ODOT to get renewable energy without additional costs.

The Solar Highway project currently powers about 28 percent of the I-5/I-205 interchange. A planned build-out of the current project would triple the initial size and generate 214,000 kilowatt hours per year.

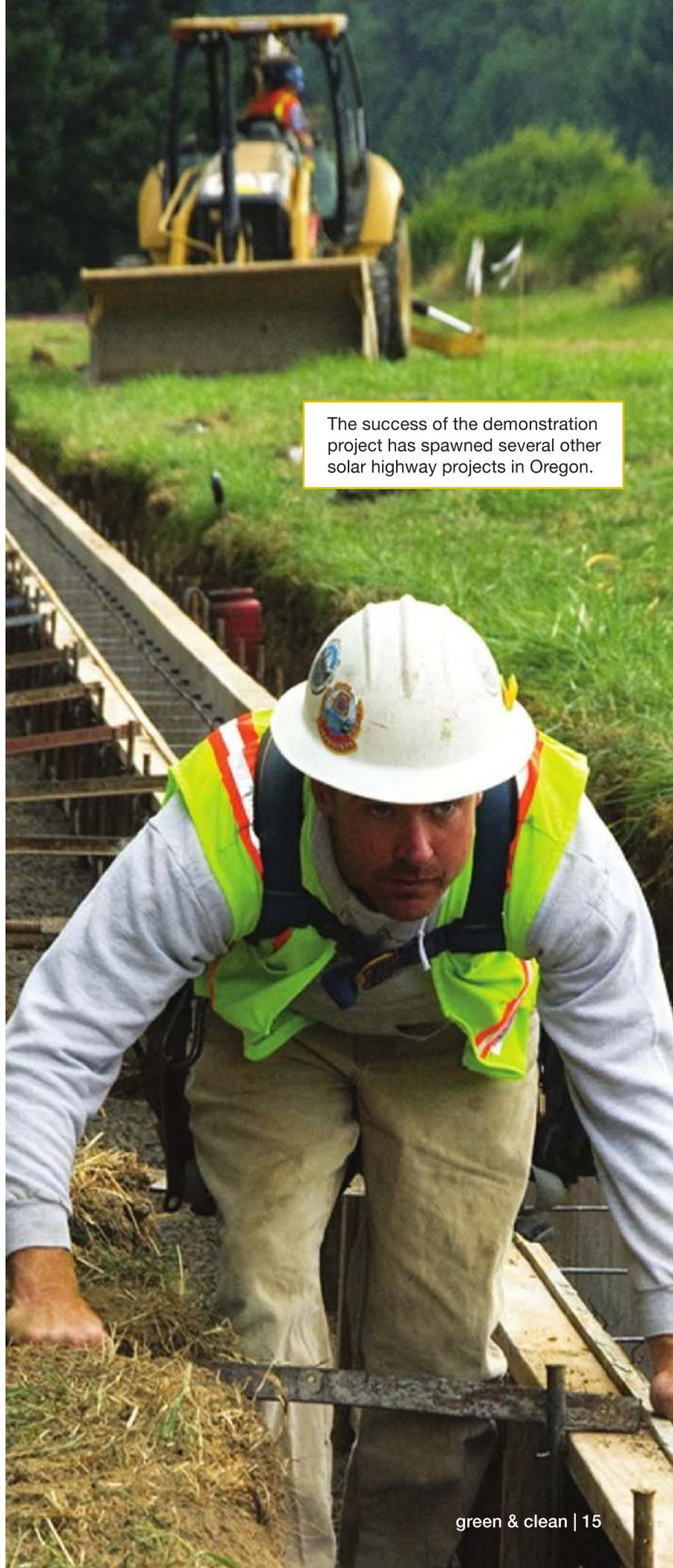
The future of the Solar Highway

Because of the demonstration project's success, ODOT has several other solar highway projects in the works. The \$20 million West Linn Solar Highway project would be the largest solar highway project in the world. The project is expected to generate 3.2 million kilowatt hours per year, or about one-sixth of ODOT's needs within PGE's service area.

A planned 1.6-megawatt project at the Baldock Rest Area between Salem and Portland would generate 1.8 million kilowatt hours each year. And Hamilton said she's heard from 16 states and six countries interested in learning more about the Solar Highway, including Japan, Italy, Korea, Vietnam and Iraq.

Hamilton said, "Follow-on projects are already benefitting from what we learned from the demo. For example, we learned that bigger is better. Ideally you want at least a 1-megawatt installation to get the cost per installed kilowatt down. We will continue to learn and adjust based on experience."

The project has received multiple awards, including a 2009 Federal Highway Administration "Judge's Award for Special Recognition," and a 2009 "Solar Business Achievement Award" from the Solar Electric Power Association. [g&c](#)



The success of the demonstration project has spawned several other solar highway projects in Oregon.