The Oregon Solar Highway Program

Offsetting Transportation's Carbon Footprint

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The Oregon Solar Highway Program came to life in 2007 after I watched a Public Broadcasting System special, *Saved by the Sun*, featuring solar panels along the autobahn in Germany. I thought, "If they can do that there, why can't we do it here?" It turns out that we can.

Transportation departments across the country are tasked with meeting climate change and sustainability policies and goals, including greenhouse gas reduction targets, while facing declining revenues. At the same time, they support the business of moving goods and people in vehicles that are powered almost exclusively by carbon-based fuels. How can a transportation agency reduce its own carbon footprint?

PHOTO: OREGON DOT

Solar panels near the Baldock Safety Rest Area in Oregon. Completed in 2012, the Baldock Solar Highway Project is the largest in the country.

Powering Up

An innovative program at the Oregon Department of Transportation (DOT) encourages partnerships with private industry to expedite project delivery and secure private-sector financing for projects. Through this program, Oregon DOT constructed the nation's first solar highway project in 2008, a 104-kilowatt direct-current array in the middle of one of Oregon's busiest interchanges—Interstate 5 and Interstate 205—just south of Portland. Oregon's second—and the nation's largest—solar highway project was completed in January 2012. The Baldock Project is a 1.75-megawatt direct-current array on 7 acres of land owned by Oregon DOT at the eastern edge of the Baldock Safety Rest Area, approximately 6 miles south of the first project.

The Oregon Solar Highway Program seeks to site renewable energy projects on suitable parcels of publicly owned transportation system rights-of-way—the miles of fallow ground between the drainage ditch and private property. Oregon has 19,000 lane-miles of rights-of-way; solar arrays on less than one percent of that land could offset all of Oregon DOT's annual electricity use with clean, sustainable, home-grown energy. More than 8 million lane-miles of rights-of-way are available across the country.

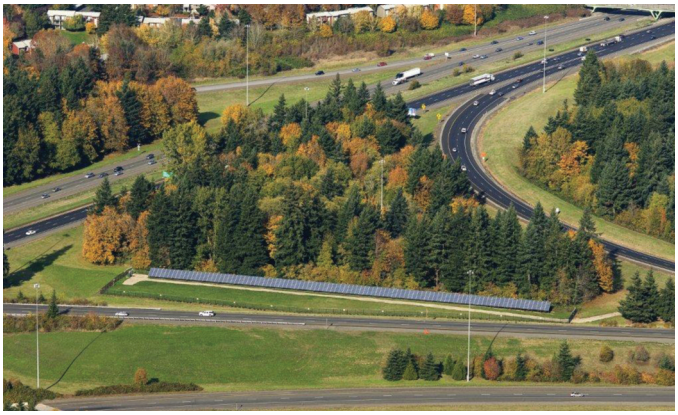

PHOTO: OREGON DOT

Oregon DOT's first solar highway project, constructed in 2008, is a 104-kilowatt direct-current array located near a busy interchange south of Portland.

Financing and Operation

Solar energy is beautiful, silent, and almost maintenance-free—but today it is expensive. The two Oregon solar highway projects were financed through a public–private partnership with the state's largest utility, Portland General Electric (PGE). PGE's green energy program provides money to build renewable energy projects within its territory, and the company is working to meet a 25 percent Renewable Portfolio Standard by 2025. PGE was willing to take the risk with Oregon DOT to develop the "first in the nation" prototype, as well as the Baldock project.

PGE's green energy program was not the only source of funding. Until recently, Oregon provided a 50 percent tax credit for renewable energy projects; through limited liability partnerships with tax equity investors, PGE was able to take advantage of the tax credit. PGE also applied the federal investment tax credit of 30 percent, the accelerated depreciation, and grant funds from the Energy Trust of Oregon at $1 per watt.

PGE's limited-liability corporation constructed, owns, operates, and maintains the prototype project. PGE constructed, operates, and maintains the Baldock project, which is owned by the tax partner.

The energy produced from both projects feeds into the PGE grid. Oregon DOT buys the energy produced from the prototype project and receives a small annual site license fee and a share of the renewable energy certificates (RECs) for the Baldock project. For the project's estimated 40-year life, Oregon DOT will receive 26 percent of the RECs generated—equivalent to the funds the agency has committed for the project's environmental assessment and permitting activities and for consultant and staff time. Oregon DOT will apply the RECs to its carbon footprint. As solar costs continue to decline, the agency will be able to increase the site license fees, which will provide a revenue stream—and help power the grid with the energy of the future.

For more information and details about the Oregon Solar Highway Program, visit www.oregonsolarhighway.com.

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