

# Compendium of Best Practices



SHARING LOCAL AND STATE SUCCESSES IN ENERGY EFFICIENCY  
AND RENEWABLE ENERGY FROM THE UNITED STATES



renewable  
energy  
& energy  
efficiency  
partnership



2009). Pricing must take into consideration all factors of cost, incentives and other factors such as Renewable Energy Credits (RECs).

- ▶ **Permits and obtaining credits:** The property owner should be sure that the developer is informed about the timeline regarding filing permits and receiving state incentives before the deadlines.
- ▶ **Project execution:** At the point of implementation the developer must carefully render the project and design a system appropriate for the site. A firm timeline must be set between the property owner and the developer

on construction dates in order to comply with state incentive guidelines.

#### RESOURCES

NV Energy's (Nevada Power Company) includes documents which have been previously tested in the marketplace. URL: <http://www.nvenergy.com/company/doingbusiness/rfps/>

Example PPA Requests for Proposals from several California municipalities. URL: <http://www.lgc.org/spire/rfps.html>

Department of Energy Office of Energy Efficiency and Renewable Energy provides an overview of third party financing for the public sector. URL: [http://apps1.eere.energy.gov/state\\_energy\\_program/update/feature\\_detail.cfm/fid=82/start=4](http://apps1.eere.energy.gov/state_energy_program/update/feature_detail.cfm/fid=82/start=4)

National Renewable Energy Laboratory, "Power Purchase Agreement Checklist for State and Local Governments." URL: <http://www.nrel.gov/docs/fy10osti/46668.pdf>

### Example of Successful Implementation: Oregon Solar Highway

#### HIGHLIGHTS

- ▶ The nation's first Solar Highway project.
- ▶ Oregon's Department of Transportation had no capital budget for this project. Without the option for a public-private partnership enabling third-party ownership and sales of the energy generated through a power purchase agreement, the project would not exist.

#### OVERVIEW

The Oregon Solar Highway is a 504 panel, 104 kW ground-mounted solar array at the intersection of two interstate highways, supplying the Oregon Department of Transportation (ODOT) with around 128,000 kWh a year. All generated electricity feeds into the grid during the day, and at night, the equivalent amount of electricity from the grid flows back to light the interchange. ODOT buys the energy produced by the array at the same rate the agency pays for regular energy from the grid.

Oregon-based companies supplied the materials, and designed, installed, and now operate the project. The project is owned and operated by SunWay1, a limited liability company (LLC) managed by Portland General Electric (PGE) the utility serving the area. The

project was financed through the LLC using the state's 50% Business Energy Tax Credit, the 30% federal Investment Tax Credit, accelerated depreciation and utility incentives. The private ownership was necessary to take advantage of these financing mechanisms since ODOT, as a public entity, has no tax liability. Further, ODOT's expertise is transportation, not energy generation. Partnering with the utility allows the entity with the greatest expertise to manage the resource.

ODOT plans to expand the use of roadside solar, using a third-party "sales-leaseback" model, to provide the electricity needed to run the state's transportation system, which uses more than 47 million kWh of electricity annually. It is projected that PV projects installed over less than 1% of the state's highways could cover ODOT's annual electricity usage and reduce greenhouse gas emissions by over 18,000 metric tons of carbon dioxide (ODOT 2008). The private partners—most likely utilities—would contract with solar developers to design, build and install the arrays. ODOT would purchase all electricity generated by the systems under a 25 year Solar Power Purchase Agreement, with options to renew for up to three five-year extensions.

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**KEY DATES**

**February 2008** – The Oregon Transportation Commission approved development of solar installations on ODOT properties, including operating right of way. The Oregon Solar Highway demonstration project is the first of those installations, and the first solar highway project in the nation.

**Late 2008** – The legal agreements were signed in September 2008 and the project started feeding into the grid December 19, 2008, just 135 days after the agreements were signed.

**FUNDING SOURCE AND COSTS**

The prototype project cost \$1.28 million (ODOT 2009a). ODOT invested no capital and receives solar power at no greater cost than it would pay for power from the grid. Funding was provided through an innovative public-private partnership with Oregon's largest utility Portland General Electric. The utility makes use of state and federal tax credits, utility incentives and accelerated depreciation to minimize costs. PGE's SunWay1, LLC contracted with SolarWay, a solar energy engineer/procure/construct (EPC) consortium to build and commission the project and secure the tax credits.

**LESSONS LEARNED**

ODOT's core mission is to provide a safe and efficient transportation system. Addressing energy-related carbon emissions has added complexity to an already stressed and under-funded system. Through focusing on safety first in siting solar highway projects, and through innovative and responsible public-private partnering, both these goals—safety for the public, and reducing ODOT's carbon footprint—were achieved.

For details on the many challenges and how they were addressed, see [http://www.oregon.gov/ODOT/HWY/OIPP/docs/Solar\\_LessonsLearned.pdf](http://www.oregon.gov/ODOT/HWY/OIPP/docs/Solar_LessonsLearned.pdf)

**MONITORING AND EVALUATION**

Both ODOT and Portland General Electric are monitoring the production, operation and maintenance of the system. Results to date have been very positive, leading ODOT and PGE to actively investigate further solar highway partnerships (ODOT 2009b).

**RESULTS**

This project:

- ▶ Won the Federal Highway Administration's 2009 Judge's Award for Special Recognition (FHA 2009) in the biennial Environmental Excellence Awards.
- ▶ Won the national 2009 Solar Electric Power Association Award for Solar Business Achievement in the category of Partnering for Success.
- ▶ Will save or offset, over its lifetime, the energy equivalent to 2,900 tons of CO<sub>2</sub>, 301,000 gallons of gasoline, or 8,700 trees.
- ▶ Demonstrates that solar arrays can complement and not compromise the transportation system, and they can be safely installed and operated on highway rights of way throughout the nation.

**CONTACT FOR MORE INFORMATION**

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**RESOURCES**

Solar Highway Monitor, shows how much energy is being generated on-site. URL: <http://www.live.deckmonitoring.com/?id=solarhighway>

Oregon Solar Highway website. URL: [http://www.oregon.gov/ODOT/HWY/OIPP/inn\\_solarhighway.shtml](http://www.oregon.gov/ODOT/HWY/OIPP/inn_solarhighway.shtml)