

OREGON SOLAR HIGHWAY

THE OREGON COMMITMENT: TOGETHER WE CAN MAKE A DIFFERENCE

America's First Solar Highway Project

In 2008, the Oregon Department of Transportation (ODOT) completed the nation's first solar photovoltaic project in the highway right-of-way, lighting an interchange. The 594 solar panels produce nearly 112,000 kilowatt hours annually and use the utility grid as a battery, supplying energy during the day to light the interchange at night. The project was completed December 19, 2008, just 135 days after agreements were signed. The prototype project cost \$1.28 million, but through an innovative public-private partnership with Oregon's largest utility – Portland General Electric – ODOT invested no capital and receives solar power at no greater cost than it would pay for power from the grid.



The Oregon Commitment

Mahatma Gandhi's words, "you must be the change you wish to see in the world" inspire us, but it is the others who stand by our side that enable us. The **Oregon Commitment** acknowledges that together we can truly make a difference – and it is that commitment that is the story behind the Oregon solar highway initiative.

Governor Ted Kulongoski – The governor's legacy will be his leadership and unflinching support for renewable resource development even through the recession, giving Oregonians hope in green jobs today and sustainable energy for the future – with commitments to solar, wind, biomass, wave energy, electric vehicles, sustainable buildings and other green technology. Governor Kulongoski has personally embraced the solar highway vision and given the Oregon Department of Transportation the opportunity to succeed and allowed them to risk failure, nurturing a culture that enables one person's vision to emerge and become a reality.

Portland General Electric – Oregon's largest electric utility demonstrates extraordinary national leadership in the utility industry as one of the nation's top two green energy suppliers, without whose support America's first solar highway project simply would not have been possible.

SolarWorld USA – Oregon's and the nation's largest solar manufacturer whose parent company SolarWorld AG was Germany's fastest growing company in 2008.

PV Powered – Oregon's and the nation's largest inverter manufacturer which President Obama visited in May 2008 calling for investment in energy independence, saying *I've called for a replication of what's being done right here in Oregon.*

United Fund Advisers – A financial services firm with a triple bottom line mission dedicated to investing in and structuring financing for projects that produce social and environmental returns. UFA secured essential financing for the solar highway project.



World's Largest Solar Highway Project

Although the US has four times the population of Germany and 28 times the land area, Germany – a country the size of Montana – produced nearly 150 times more power from solar photovoltaic arrays in 2006, the year before Oregon's solar highway initiative began. (Source: IEA) Germany is now completing a 2.8 megawatt solar highway project near Aschaffenburg, Germany.

On February 11, 2008 Governor Ted Kulongoski called on Oregon to build the world's largest solar highway project which will have more than 17,000 solar panels with a capacity of 3 megawatts generating more than 3.2 million kilowatt hours each year – one day powering electric vehicle charging stations as well – and expanding to more than 6.4 million kilowatt hours each year.



Portland General Electric (PGE) – PGE began business in 1889, producing hydroelectric power from Willamette Falls in Oregon City to light 55 street lamps 14 miles away in Portland. Today Oregon's largest electric utility demonstrates extraordinary national leadership in the utility industry in renewable resource development:

- Winner of the **2008 Green Power Beacon Award** given by the Center for Resource Solutions (CRS) in conjunction with the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) for innovation in creating an online "green community" through the launch of their GreenPowerOregon.com Web site.
- Number one in the nation in residential green power sales from 2005-2008 and number two nationwide in number of green power customers in 2008.
- Harnessing the power of the wind at Biglow Canyon Wind farm in eastern Oregon to produce enough electricity to power about 100,000 homes when completed in 2010. Phase one is now producing enough power for 34,000 homes. Phases two and three are expected to be online in 2009 and 2010.
- Supports new advances in electric vehicles and charging stations, partnering with Nissan and the State of Oregon on a zero emissions vehicle initiative.
- Helping fund wave power research at Oregon State University, which itself purchases 67 million kilowatt-hours of renewable energy – equal to nearly 75 percent of the total campus electricity consumption – placing the school on EPA's list of Top 10 College and University green power purchasers.
- Completing the first solar highway project in the nation to light Interstate 5 - nation ally designated the *Corridor of the Future* – and completing the largest solar project in the Pacific Northwest installing 328,000 square feet of "thin-film" solar panels installed on the rooftops of three distribution warehouses in northeast Portland.
- Teaming with PV Powered, Inc. on the Solar Energy Grid Integration System (SEGIS) program funded by US Department of Energy (DOE) to develop innovations that reduce the cost of PV systems and remove barriers to increased grid penetration.



SolarWorld USA – Oregon's and the nation's largest solar manufacturer whose parent company SolarWorld AG was Germany's fastest growing company in 2008. The Oregon facility will employ up to 1,000 people by the end of the ramp up phase in 2009 and provide enough PV cells to serve the entire North and South American market.

In as little as a year and a half we managed to build the largest and certainly also the most modern solar cell production facility in the USA! We succeeded in engineering a knowledge transfer from our German production site in Freiberg to our new US location – an exchange of knowledge that does not only bring us added value in economic terms but also in human terms. ...the State of Oregon (has) welcomed us. We are seeing an extraordinary enthusiasm for solar energy and for our company. The future remains exciting and we will go our way together. ~Frank H. Asbeck, Chairman SolarWorld AG, Letter to Customers, Shareholders, Employees and Friends of SolarWorld AG

I have no doubt that she (Allison Hamilton) will transform not only Oregon's highways to solar highways but also the nation's. In 20 years as we drive across the country and see beautiful solar panels lining and lighting our nation's highways, I will remember who the pioneer was. Kevin Keene, SolarWorld USA

PV Powered – Founded in 2003 and based in Bend, Oregon, PV Powered is the largest US-based manufacturer of solar power inverter technology. Inverters transform direct current from solar panels to alternating current for the power system. President Barack Obama visited PV Powered in May 2008 and called for investment in energy independence, saying *I've called for a replication of what's being done right here in Oregon*. PV Powered later supplied the 30-kilowatt solar inverter needed to supply solar energy to the 2008 Democratic National Convention. This may have been the first time a convention of that size used alternative energy, including solar. PV Powered supplied the inverter for the America's first solar highway project.

United Fund Advisers (UFA) – A financial services firm with a triple bottom line mission dedicated to investing in and structuring financing for projects that produce social and environmental returns. UFA secured essential financing for the solar highway project.

Other Oregon Leaders in Sustainability – Oregon nurtures sustainability in many other ways as well, as the following illustrate.

Vestas – The largest wind turbine manufacturer in the world has its North American headquarters in Portland, Oregon.

Oregon is at the forefront of the renewable energy movement in the United States. ~ Jens Søby, President of Vestas Americas A/S

Iberdrola Renewables – Iberdrola Renewables, Inc. in Portland is the North American headquarters of Iberdrola Renewables, a world leader in renewable resource generation with the largest base of operational renewable assets (over 9,300 MW) and the largest portfolio of future projects in the world (over 55,000 MW).

Cascadia Region Green Building Council – The Cascadia Region Green Building Council, incorporated in Oregon in December 1999, is one of three original chapters of the U.S. Green Building Council and, as a chapter of the Canada Green Building Council as well, is the only international chapter in North America. The Council inspires design that builds a sustainable future, including the Living Building Challenge:

Imagine a building designed and constructed to function as elegantly and efficiently as a flower. Imagine a building informed by its eco-region's characteristics and that:

- generates all of its own energy with renewable resources
- captures and treats all of its water
- operates efficiently and for maximum beauty

Intel Corporation – As of January 6, 2009, Intel Corporation was rated the number one company in the nation by EPA's Green Power Program. Intel is the largest supporter of wind power in the state of Oregon. In 2007, Intel purchased about 23 million kWh of PGE Clean Wind power, enough to meet the needs of almost 2,150 average homes in the utility's service territory, according to PGE.

Oregon Institute of Technology (OIT) - OIT has long used geothermal heat to warm its classrooms and melt snow from its sidewalks, but within a year, OIT will become the first campus in the world powered entirely by its own renewable geothermal source.



More Information:

ODOT Solar Highway Project Director

Allison Hamilton, Project Director
Oregon Innovative Partnerships Program
Oregon Department of Transportation
355 Capitol St NE, Room 115
Salem, OR 97301-3871
Phone: (503) 986-3732
Email: Allison.M.HAMILTON@odot.state.or.us

