

SOLAR RISING

March 2005

Volume 7, Issue 1

Quarterly Newsletter of the Oregon Solar Energy Industries Association (OSEIA)

OSEIA - Promoting Oregon's largest natural resource since 1981 - solar energy

U.S. Solar Power Industry Maps Growth Plan

by Chris Holly

The U.S. solar power industry, seeking to recapture market share lost over the last decade to German and Japanese competitors, will roll out an ambitious set of policy recommendations on Capitol Hill today that industry officials said could sharply trim natural gas demand, create 260,000 new jobs and make solar-generated electricity the cheapest power on the U.S. market by 2020.

The recommendations, which would cost roughly \$2 billion in the first five years, are embodied in a policy "roadmap" for the next two decades prepared by the Solar Energy Industries Association (SEIA). Today's event will launch an intensive lobbying campaign aimed at winning congressional support for including tax credits and other incentives for the solar industry in comprehensive energy legislation.

Significantly, the roadmap reflects a clever retooling of the industry's lobbying strategy that recognizes both Republican and Democratic

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Pepsi Cola of Klamath Falls Bottles Sunshine Powered by 172 Kilowatt Solar Electric System

by Jan Schaeffer—Energy Trust and Deston Nokes—PacifiCorp



One of three solar electric systems on top of the Pepsi plant. 165 Sharp 175 Watt modules sit at the Pepsi Frito Lay Warehouse and power a Ballard Ecostar 30kW inverter. The system has a peak power of 23kW_{AC} and generates about 38,000 kWhrs per year.

Pepsi Cola of Klamath Falls unveils 172 kilowatt solar electric system for 'net zero' energy use

Tax credits, incentives, utility agreements make Northwest's largest solar array a reality.

KLAMATH FALLS, Ore. – December 14, 2004— It all started by updating an out of date lighting system. Pepsi Cola General Manager John Bocchi decided to improve the energy efficiency of the lighting systems at one of the company's facilities in Klamath Falls. When it was all finished, they had installed the largest solar electric system in the Northwest, 172 kilowatts at three locations — a system that will generate all of the energy that the facilities will use over the course of a year.

It was a combination of tax

credits, financial incentives, attractive loan terms — and the prospect of eliminating all of their electric bills — that attracted Pepsi to solar energy. "The tax benefits for installing a solar electric system are substantial and the prospect of making all the electricity we need is appealing," said Bocchi. "I don't know why more businesses aren't taking

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SOLAR RISING is the newsletter of the Oregon Solar Energy Industries Association (OSEIA). OSEIA is Oregon's local chapter of the Solar Energy Industries Association. The information presented in this newsletter reflects the opinions of the authors and not necessarily those of OSEIA.

The success of the newsletter depends upon your contributions. This is an opportunity to tell the OSEIA members about your activities and to express your opinions. Photographs or figures to accompany articles are most appreciated. Articles of current and timely interest will be given highest priority. Otherwise, articles will be published on a first come basis as room allows.

Send your contributions to:

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Draft OSEIA Meeting Agenda

12:00 am—3:00 pm
EWEB Conference Room—Eugene

1. (10 min) Introductions
2. (5 min) Approve previous meeting minutes
3. (40 min) Executive Directors report
4. (60 min) OSEIA's 2005 legislative agenda issues
5. (15 min) ETO program update
6. (30 min) Membership Issues

OSEIA Board Members

Bob Maynard	David Parker
Bob-O Schultze	Diggy Breiling
John McIntosh	Andrew Koyaanisqatsi
Tom Scott	Frank Vignola

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Capturing Solar Industry Jobs

A forum for Oregon policy makers



Date: March 8th
Time: 1:00pm-3:30pm

Oregon State Capitol Building, Salem: HRM 350

Sponsored by: OSEIA, ODOE, BASE, BEF, RNP

Solar energy demand has grown consistently by 20-25% annually over the past 20 years. In the past several years annual industry growth rates have exceeded 30%. By 2020 the global market will have annual revenues exceeding \$250 Billion.

A recent report ranked Oregon 9th nationally in an increasingly competitive arena to benefit from solar manufacturing related businesses. This competitive market presents an opportunity for Oregon and every positive step we take to embrace renewable energy sends a signal to these manufacturers that Oregon is the place to locate their new facilities.

Our goal is to double Oregon's US solar market share to 5% within 15 years, creating 6,500 jobs and a \$1 Billion annual solar industry in Oregon by 2020.

Oregon's Solar Industry

- Two out of the thirteen nationally certified solar water heater manufacturers are located in Oregon, with a third Oregon company developing products for 2006

- Oregon's solar PV market grew by over 400% in 2004

- Oregon's proximity to California, the third largest market for solar in the world, provides an excellent opportunity to export our products.

Agenda (1PM-3:30PM)

1:00pm - 1:30pm - Welcome, Michael Graine, Director Oregon Dept. of Energy

Legislative Hosts: Sen. Ted Ferrioli, Sen. Frank Shields, Rep. Jeff Kropf, Rep. Jeff Merkley

1:30pm - 1:45pm - Oregon's Solar Industry, Jon Miller, Executive Director OSEIA

1:45pm - 2:00pm - Central Oregon's RE Industry, Cylvia Hayes, Director BASE

2:00pm - 2:20pm - Global Solar Market, Christopher Dymond, Oregon Dept. of Energy

2:20pm - 2:50pm - Preparing for our Solar Future, Tom Starrs, Chair American Solar Energy Society

2:50pm - 3:30pm - Break - Come and talk with business owners from your legislative district



Pepsi Cola of Klamath Falls Bottles Sunshine Powered by 172 Kilowatt Solar Electric System

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advantage of this. It makes financial sense and it's the right thing to do."

Pepsi Cola of Klamath Falls is a 50-year-old family owned business. Currently there are eight siblings with ownership in the company.

The package of incentives and tax credits that closed the deal for the Bocchi family included \$210,000 in financial incentives from Energy Trust of Oregon, Inc., \$444,412 in Business Energy Tax Credits from the Oregon Department of Energy, an accelerated state and federal tax depreciation schedule and a financing package from the Oregon Energy Loan Program.

Pacific Power was a valuable partner in making this innovative project a reality. "We pre-purchased green tags from Pepsi's solar facility for Oregon Blue Sky customers," said Bill Edmonds, Pacific Power's director of environmental policy. "That helped provide start-up funds for the project." Under the utility's Blue Sky options, Oregon customers voluntarily can purchase one of three renewable power options.

"I am sure this is the first of many opportunities to take advantage of the ample sunlight resources available in Southern Oregon," said Vickie Liskey, board member, Energy Trust and Klamath Falls resident. "I'm so pleased that the Energy Trust has been able to assist in this great energy savings project here in Klamath Falls."

"This project shows that solar is more than a clean resource choice



John Bocchi, David Parker, Steve Bocchi, and Toni Bocchi celebrating the installation of the solar electric system.

for Oregon's environment, it's a good business decision for Oregon businesses," said Peter West, director, renewable resource program, Energy Trust of Oregon. "The Oregon Department of Energy, Energy Trust and Pacific Power worked together to make this project work for Pepsi. We hope to see many more projects like this."

Solar array technology is first in the region

The solar installation is actually three systems in three different locations. The first completed system is at the company's warehouse at 1275 S.12th St. in Lakeview. This 11 kilowatt system features 64 photovoltaic panels and started generating power in September. Another warehouse at 3930 Miller Ave in Klamath Falls that the company shares with Frito Lay is 29 kilowatts, generated by 165 photovoltaic panels. These two systems are net-metered, so that excess power generated by the

system flows back to the local electricity grid for a credit on Pepsi's bill from Pacific Power.

The largest installation is at the company's main office and warehouse at 4033 Miller Avenue, Klamath Falls. The 132 kilowatt system features building-integrated photovoltaic technology (BIPV), with 1,042 laminated solar panels that are literally bonded to the entire metal roof.

"The material used for building-integrated systems is extremely lightweight and unbreakable, making it a good choice for metal roof structures that cannot hold the weight of more common framed PV panels," said David Parker of Advanced Energy Systems, Eugene, Ore., whose company designed and installed the system. "This is the best technology available today to integrate solar panels into a building's roof. We have created a solar project which will generate all of the electricity Pepsi needs

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Pepsi Cola of Klamath Falls Bottles Sunshine Powered by 172 Kilowatt Solar Electric System



132 kW building integrated solar electric systems—largest in the Northwest! Consists of 1042 Unisolar Laminates that power 1 Ballard Ecostar 75 kW inverter and 1 Xantrex PV 45 kW inverter. Maximum system power is about 100,000 Watts AC and the system will generate approximately 150,000 kWhrs of electricity each year.

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on an annual basis to run its operations in Klamath and Lake Counties.”

As a condition of the contract with Energy Trust and the State of Oregon, all solar electric systems receiving incentives and tax credits must be connected to the local utility grid. Bocchi estimates that Pepsi will export about 50,000 kilowatt hours of electricity to the Pacific Power grid per year after satisfying its own internal loads.

The project contained many firsts, according to Parker. “Pepsi Cola of Klamath Falls has now taken the lead in the Pacific Northwest by installing 172 kW of solar electric panels on three commercial buildings. Plus, it has installed the largest individual system at 132 kW and the largest building-integrated photovoltaic system in the region,

being a pioneer for this revolutionary solar technology to be adopted on a large scale.”

Energy Loan Program, energy tax credits help fund project

The Oregon Department of Energy’s State Energy Loan Program is providing a \$950,000 loan to finance the project over six years. Business Energy Tax Credits are also available to help offset the cost of the investment in renewable energy technologies.

“The owners show great concern for the environment in installing this solar electric project,” said Hal Simms, loan officer with the Oregon Department of Energy’s Loan Program. “We are pleased that we can assist and look forward to helping other business owners with their renewable energy projects.”

According to Simms, the Energy Loan Program is currently reviewing two other large solar electric loan applications.

The Energy Loan Program provides low-interest, fixed-rate loans for projects that promote energy conservation or renewable energy resources. Since the program’s first loan in 1981, it has financed 606 projects for \$315 million. The Energy Loan Program issues state general obligation bonds and borrowers pay for the cost of the program.

Lighting retrofit started the energy savings ball rolling

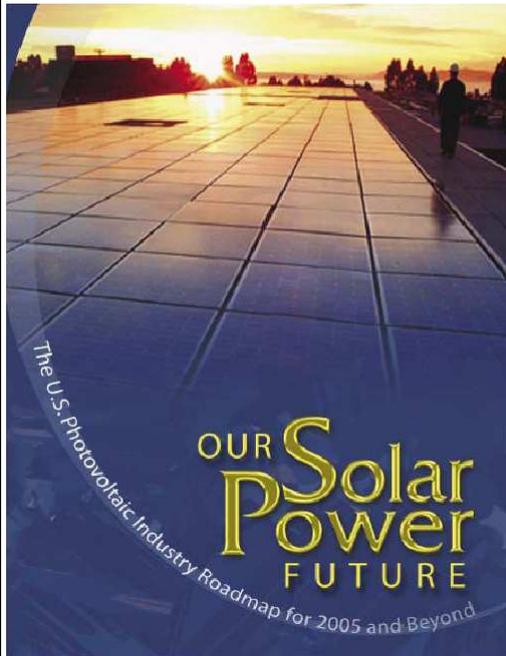
In August, the company completed a lighting retrofit at their main warehouse in Klamath Falls that will save more than 30,000 kilowatt hours of electricity each year, worth more than \$1,800 on the firm’s annual electric bill. For this energy measure, Pepsi received an Energy Trust incentive of nearly \$2,000 and Business Energy Tax Credits of more than \$2,300, enabling a payback of just over one year for the improvements.

“Combined with the energy efficiency upgrade to the lighting system, the building reached a remarkable benchmark. On an annual basis, the sunlight on the building’s roof will produce as much electricity as the building uses,” said Christopher Dymond, energy analyst with the Oregon Department of Energy.

“When I went to the Energy Trust website for information about the lighting program, I clicked on ‘solar incentives,’ thinking that it might be a good

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U.S. Solar Power Industry Maps Growth Plan



Resch, who took over the SEIA reins last year, said photovoltaics (PV) could displace all new projected imports of liquefied natural gas by 2016 if the roadmap is fully implemented. Put differently, PV could displace 6.3 trillion cubic feet of natural gas demand over the next 20 years, an amount equivalent to what is expected to be produced from Gulf of Mexico reserves in 2005, he said.

“That’s a huge benefit for the United States,” Resch said. “It would reduce our reliance on imported energy and save consumers \$64 billion over

20 years.” Solar power also could reduce electricity prices during peak summer demand periods because sunlight is strongest in summer afternoons, when air conditioning load intensifies. And by reclaiming market leadership in photovoltaics technology created by U.S. researchers, PV investments today could trim the U.S. trade deficit and allow residential electricity consumers to own a piece of the fastest growing renewable energy market in the world, he said.

Over the last 20 years, solar electricity prices have dropped by 95 percent as technology has improved and manufacturing has expanded. Most of that manufacturing growth, however, has occurred in Germany and Japan, who launched aggressive incentive programs in the mid-1990s and seized the lead in global production and installed capacity.

Worldwide sales of PV equipment totaled 744 megawatts in 2003,

with Japan capturing roughly half of that total. Germany dominates in installed PV capacity, leaping from 20 megawatts per year in 1999 to 130 MW per year in 2003. By comparison, in 1997 U.S. PV developers held 100 percent of the domestic market and 40 percent of the global market; in 2003 they had 73 percent of the U.S. market and only 14 percent of the world market. To reverse this trend, SEIA is calling for a program to:

- Create a 50 percent investment tax credit—capped at \$3 per watt—for PV systems installed at homes and small businesses. Mindful of budget deficit concerns, SEIA calls for the credit to decline 5 percent per year until it is phased out. SEIA wants a smaller credit, with the same cap and phaseout, for larger commercial systems;
- Expand the renewable energy production tax credit for wind, solar and other renewable energy technologies to 10 years;
- Enact a national standard for interconnecting PV systems to utility grids and a net metering standard to enable consumers to sell unused power back into the market;
- Increase federal procurement of PV systems to \$100 million per year; and
- Expand federal investment in research and development from the current \$80 million annually to \$250 million per year. If these elements are enacted in full, the national

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policy preferences. It emphasizes creating jobs, boosting national energy security by reducing energy imports, building consumer “ownership” of cutting-edge energy technology and trimming the burgeoning U.S. trade deficit.

The strategy also focuses on addressing strongly held concerns of key lawmakers such as Sen. Pete Domenici (R-N.M.), chairman of the Senate Energy and Natural Resources Committee, about the continuing natural gas supply crunch that has bedeviled U.S. manufacturers. SEIA officials also are wooing other influential GOP lawmakers.

SEIA Executive Director Rhone Resch, in a briefing for reporters Tuesday, said spiraling gas prices have cost consumers billions of dollars over the last five years. “The United States has the most expensive gas in the world,” Resch said. “That’s a huge economic impact.

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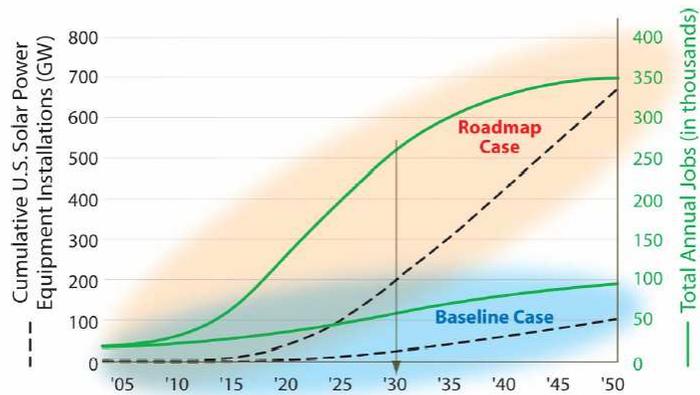
U.S. Solar Power Industry Maps Growth Plan

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average price of PV power, now at roughly 18 cents per kilowatt-hour (kWh), would fall to 6 cents, making solar-generated electricity the least-cost option by 2030 and enabling PV to produce 50 percent of all new generation—the equivalent of 40 nuclear plants—by that year, Resch said.

This outcome is not as far-fetched as it seems. The United States has the best solar resource of any developed country. And unlike solar water heating systems, which use the sun's thermal energy and work best in warm climates, PV technology works in all 50 states. A typical home in Maine, for example, needs only 25 percent more roof space for PV installations than a home in

Solar Power's Future A National Choice



Nationally 30,000 jobs are estimated for the solar industry by 2015. If the solar roadmap was implemented this would rise to nearly 70,000 jobs.

Southern California to produce half of its electricity.

Pepsi Cola of Klamath Falls Bottles Sunshine Powered by 172 Kilowatt Solar Electric System

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idea for my home here in Klamath Falls,” said Bocchi. “One thing led to another and now we have a great solar electric system, good tax benefits and we’ll be exporting excess electricity to the grid.”

Energy Trust of Oregon, Inc., is a nonprofit organization dedicated to changing how Oregonians use energy by promoting energy efficiency and clean renewable energy for Oregon customers of Pacific Power, Portland General Electric and NW Natural. For more information, visit the Energy Trust website, www.energytrust.org, or call 1-866-ENTRUST (368-7878).



An 11 kW solar electric system on top of the Lake View warehouse. 64 Sharp 175 Watt panels power 4 PV Powered 2800 inverters. It is estimated to generate 16,000 kWhrs of electricity per year.

Picture Gallery

Solar Panels Power Tsunami Warning System in Cannon Beach



Hearing on Net Metering Legislation

There are two bills on changes of the net metering law, Senate Bill 84 and Senate Bill 658. OSEIA is trying to amend SB 84 with language in SB 658. By doing this, the legislation will only have to consider one net metering bill.

The first hearing SB 84 will be Tuesday, March 8 at 1:00 pm. Those interested should attend.

OSEIA executive director, Jon Miller, is coordinating OSEIA's testimony so that the solar industry can speak with one voice.

Contact Jon Miller if you can attend to testify on the net metering legislation

Solar panels offer long-term, reliable power and are increasingly used to power systems that have to operate during emergency situations.

The recent earthquake and tsunami in Asia has reminded Oregonians to be aware of the dangers. Fortunately, experience from the tsunami following the Alaskan earthquake in 1964 has helped Oregonians be prepared. Pictured above is a tsunami warning siren in Cannon Beach. For reliability and because power may be knocked out by the earthquake, the system is powered by solar panels.

As the public becomes aware of the many attributes of solar powered systems, one finds solar arrays used throughout the

Progress on Federal Solar Legislation

Rep. Charles Bass, R-NH: "I will use every opportunity as a member of the House Energy and Commerce Committee to advocate the Roadmap's targets as a minimum of what is possible," says Rep. Charles Bass, R-N.H. "Solar energy will be a practical and cost-efficient component of the United States' energy mix. It will also be a driver of economic growth and high paying jobs, a tool for environmental stewardship, and a new pillar for distributing generation as a means toward greater grid reliability."

Senator Harry Reid, D-NV: "We have to look to a different type of energy in this country," Reid said to reporters Tuesday in discussing Democrats' goals for new energy legislation. "And the only [sources] we can look is at the things nature produces, like wind, geothermal and sun."

Educational Material Now Available

by Jennifer Barker

EORenew has compiled energy lesson plans created in Oregon into an Oregon Teachers' Energy Resource for grades K-12 on CD-ROM. The purpose of the Teachers' Resource is to create a readily available source of renewable energy information to use in classrooms. On the CD you will find separate sections for four grade levels: Early Primary (K-3rd), Late Primary (3rd-6th), Junior High, and High School. Inside each grade level you will

find Teacher Presentations (which include lesson plans and power point presentations) and Hands-On Activities such as games or worksheets. On this CD you will also find a Reference section with internet sites for information, games, lesson plans, maps, suggested reading, mail order and a glossary of terms and phrases. In addition to the Oregon Teachers' Energy Resource, you will find the Energy for Keeps and Get Smart About Energy CDs in the

set. For information about obtaining the CD set, contact EORenew or the Solar Energy Association of Oregon.

Oregon's Solar Energy Economic Opportunities

by Bob Maynard

Oregon's solar industry has a goal. It wants to capture 5% of the U.S. solar market share by 2020. This will bring a \$1 billion dollar per year industry to Oregon with 6,500 high wage jobs spread throughout the state.

Global shipments of solar electric modules grew by 32% in 2003 and generated \$4.7 billion in revenue. The solar industry projects that growth above 30% per year will continue through 2015.

Oregon has an established solar industry base. The number of solar businesses has grown from 50 to over 150 in the past two years. These business leaders are building a wealth of knowledge and experience that will give Oregon the solar edge.

By supporting proposed solar energy legislation, Oregon can ensure the future of this new industry and reap the benefit of thousands of new jobs in

manufacturing and construction. Approximately 80% of the cost of solar electricity is in manufacturing of the components and 20% in installation of the system.

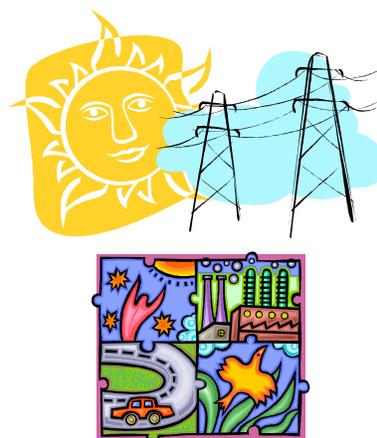
Oregon has unique assets that make it a natural leader in solar electricity:

- Two thirds of Oregon has as much sunlight or more than Florida—this solar resource is enough to supply two times the state's energy needs
- Oregon universities have world recognized leaders in solar energy
- Oregon ranks 9th among states with potential solar industry revenues
- Oregon has easy access to California and Pacific Rim markets
- Oregon's high tech "silicon forest" manufacturing

capacity can be leveraged to produce solar electric modules and the electronic controls that complete a solar electric system.

Solar electric potential is shining on Oregon today.

There is a short window of opportunity to capture the market and high wage solar industry jobs. This window is closing as other states compete for leadership positions. For Oregon's future, this is an opportunity that we must seize!



SOLWEST Renewable Energy Fair

July 29, 30, 31, 2005

by Jennifer Barker

EORenew presents the seventh annual SolWest Renewable Energy Fair July 29, 30 and 31, 2005 at the Grant County Fairgrounds in John Day. Oregon solar technicians are encouraged to volunteer to teach a workshop about off-grid or grid-intertied renewable energy and sustainable living topics. Join fifty RE and independent living exhibitors in displaying tools for energy and lifestyle self-reliance, including solar, wind and agricultural resources. Keynote speakers John Ivanko and Lisa Kivirist will

emphasize the limitless possibilities for powering “the good life” with renewable energy. An Electrathon race highlights efficient, lightweight vehicle technology. Exhibit fees are on a sliding scale. Fair entry, camping, and Friday evening dinner are free for presenters and exhibitors. For more information contact: Jennifer Barker SolWest/EORenew PO Box 485 Canyon City, OR 97820 phone 541-575-3633 info@solwest.org www.solwest.org



Jennifer Barker showing solar cookers at Solar 2004 in Portland 2 weeks before putting on the 2004 SolWest.



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