

SOLAR RISING

January 2000

Volume 3, Issue 1

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

Bringing you tomorrow's sustainable energy technologies today!

Global Warming Education Campaign

from Laura Culberson National Environmental Trust



Advertisements

The National Environmental Trust (NET) launched a national, multi-million dollar advertising campaign to help educate the public about the causes, impacts and solutions to global warming. The television ads ran from approximately October 3-November 7 and will be complemented by radio and print advertisements.

Solutions Tour

In broad terms the tour is a fair-like press event that highlights energy-efficient and less carbon intensive end-use products already on the market, as well as products which will be introduced in the next 5 years. The tour features several alternatively fueled vehicles and a mobile home trailer containing a variety of hands-on energy-efficient product displays.

The Home

Coal-burning power plants, which are among the largest producers of global warming pollution, are the number one source of electricity used in the home. The mobile home trailer synthesizes the overall message of the tour by bringing together a number of energy-efficient products to bring "home" the point that consumers can save money while reducing pollution. The mobile home, in addition to being equipped with all energy-efficient appliances features working models of a diesel-electric generator which replicates the function and emissions profile of an oil-power electric peaking generator and a 1 kW Solar Electric PV system with an advanced net metering inverter. The power sys-

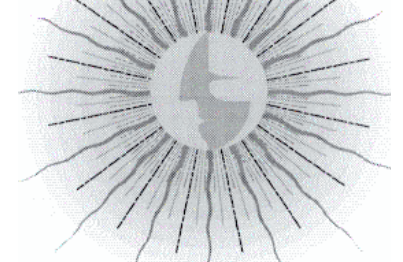
tem supplies all the trailer's electricity, and in the case of the solar power system produces enough electricity to put power back onto the electrical grid. The trailer is equipped with digital display panels that show the loads of the trailer vs. the contribution of the net-meter systems.

Personal Transportation

Americans love their cars, and are typically unwilling to compromise on any sort of vehicle that would represent a loss of freedom. Automobiles are, however, one of the largest sources of global warming pollution. Currently, manufacturers are taking steps to redesign the family car and have produced new alternative-fuel low-emission vehicles. The Pollution Solution trailer is pulled by an alternative fuel vehicle that is currently available on the market. The tour also includes energy efficient and compressed natural gas vehicles.

More information on the National Environmental Trust can be found at www.environet.org.

Oregon's Remote PV Program



The goal of this two year program is to triple the rate of solar photovoltaic (PV) system installations for grid-independent homes and water pumping applications. The program details have not yet been finalized but will include the following:

- \$3 per watt tax credits for residential applications (limited to \$1,500)
- \$1 per watt rebate for residential systems 500W-2,500W (A 1,500W system would receive \$1,500 for the first 500W and \$1,000 for the generating capacity above 500W).
- 35% tax credit for business applications
- Low cost financing through the State Energy Loan Program
- Training and technical assistance
- Marketing support for qualified installers

The program began in October of 1999. If you are interested in receiving more information once the details have begun please contact Christopher or Justin at the Oregon Office of Energy @ 1-800-221-8035.

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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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 Eugene, Oregon 97403-1274
 Phone: (541) 346-4745
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Recognition should be given to Laura Culbertson and Chris Eames of Energy Service Company, for their contributions to the newsletter. Thank You!

OSEIA Meeting Agenda

Oregon Electric Station
 27 E. 5th Ave., Eugene OR

Tuesday, January 18, 2000

(Oregon MSR Coalition Meeting
 10:00 am — 1:00 pm see page x)

OSEIA Meeting 1:00 pm—3:00 pm

1. Welcome and Introductions: F. Vignola
2. Approval of Minutes: Chris Eames
3. Treasurer's Report: Ray Pokorny
4. Election of Officers: David Parker
5. OSEIA Corporate Status: Doug Boleyn
6. OSEIA Bylaws: Doug Boleyn
7. Proposed Budget: Frank Vignola
8. OSEIA Brochure: Ray Pokorny
9. OOE Programs: Christopher Dymond
10. Other business:
11. Adjourn

The Oregon MSR Coalition meeting will be from 10:00 am to 3:00 pm at the Oregon Electric Station. The OSEIA meeting will immediately follow.

Directions to the Oregon Electric Station

The January meeting of OSEIA will be held at the Oregon Electric Station (OES) in downtown Eugene, north of the Eugene Hilton and the Hult Center.

To get to the OES from I-5, take exit 194b to Eugene. This is the I-105 interchange. Once on I-105 take the Coburg - University of Oregon exit. On Coburg road, head south over the Ferry Street bridge and take the sixth avenue exit. Take 6th to Willamette street (about 4 blocks) and turn right. The Oregon Electric Station is on the northeast corner of 5th and Willamette. The parking lot is on 5th avenue.



President: Frank Vignola
 Univ. of Oregon Solar Energy Center
 Ph: (541) 346-4745

Vice President: Doug Boleyn
 Cascade Solar Consulting
 Ph: (503) 655-1617

Secretary: Chris Eames – Energy Service Company, Ph: (541) 302-6808

Treasurer: Ray Pokorny – Solar Interior Design, Ph: (503) 224-2322

OSEIA Member	Contact	Phone Number	OSEIA Member	Contact	Phone Number
Heliodyne, Inc	Bieri	(510) 237-9614	Oregon Conservancy Foundation	Marbett	(503) 637-6130
Cascade Solar Consulting	Boleyn	(503) 655-1617	Energy Outfitters	Maynard	(541) 592-6903
Solar Design & Construction	Bortz	(541) 753-8725	Solar Depot	Mizani	(916) 381-0235
Bobcat and Sun Construction	Claridge	(541) 389-7365	Read Goods Trading Company	Musser	(541) 334-6962
Mainline Electric	Cordeiro	(541) 535-9862	Mr. Sun Solar	Patterson	(503) 245-3722
Solar Collection, Inc.	Dawson	(541) 535-5364	Home Power	Perez	(530) 475-3179
Oregon Department of Energy	Dymond	(800) 221-8035	Solar Interior Design	Pokorny	(503) 224-2322
Energy Service Co., The	Eames	(541) 302-6808	Sun Earth, Inc	Reed	(909) 605-5610
SolarTech	Elliot	(541) 545-3201	Stellar Processes	Robison	(503) 827-8336
Gen-Con, Inc.	Gunderson	(503) 245-7657	Emerald PUD	Savage	(541) 744-7448
Sunlight Solar Systems	Israel	(888) 787-6527	Eastern Oregon Solar Electric	Slater	(541) 576-2478
Oregon Solar and Water	Johnson	(541) 344-1594	EWEB	Spiek	(541) 484-1125
Solar Energy Solutions	Koyaanisqatsi	(503) 238-4502	Summers Solar Systems	Summers	(541) 683-4014
Renewable Energy, Inc.	Larson	(503) 287-4777	Univ. of Ore. Solar Monitoring Lab.	Vignola	(541) 346-4745
Solar Assist	Loken	(541) 338-4957	City of Ashland	Wanderscheid	(541) 552-2061

Oregon MSR Coalition 2000 Action Plan



1. Support Ashland as a Solar City

Support Ashland's continuing solar city efforts. (Dick Wanderscheid and City of Ashland)

2. Licensing and Training

Having certified well trained solar installers is very important. For the MSRI to work, systems must be installed correctly and in a professional manner. Government and Utilities cannot be expected to inspect every system. Therefore qualified technical people need to install these systems. Plumbers and Electricians do not have the expertise to work on renewable energy systems and do not like to climb on roofs to install such systems. Therefore others need to install and connect these systems down to ground level where trained plumbers and electricians can take over. In order for plumbers and electricians to work with solar installers, certification and licensing is needed. These licenses will probably require legislation. Solar installer licenses already exist in California and Florida. The goal is to get solar installer licensing approved by the 2001 legislature.

- ♦ In order to show the need for such licenses, trained installers need to be requesting these licenses and programs are needed to train these licensees.
- ♦ SDHW training program for installers:- (Tom Scott & David Parker work with Robert Ebbage of NEEI to develop and implement such a program.)
- ♦ PV contractor training – continuing ed. – Utility training: (Doug Boleyn)
- ♦ Find champions for 2001
- ♦ Frame Bill as necessary to reach mainstream
- ♦ Get government, utility support (OOE, government, Building Code Division, EWEB, Ashland, ...).

3. Support Office of Energy Remote Photovoltaic Program

Along with Washington and Idaho, the Oregon Office of Energy has a program to assist with cost effective remote solar electric applications. (This program is headed by Christopher Dymond.)

4. Implementation of net metering – Interconnection agreements

Net metering is being implemented in Oregon right now. The coalition needs to make sure that this is handled correctly and decisions are made with full knowledge of safety features of grid-tied PV systems. Discussions should include the need for proper licensing of installers.

- ♦ Technical interconnection (Christopher Dymond of OOE will spearhead)
- ♦ Administrative interconnection (Process)
- ♦ Springtime meeting/workshops for utility representatives (possibly in conjunction with the Ashland project). (Coordinators: - Christopher Dymond and Elly Adelman (BPA))

5. Case studies of successful grid-tied systems in Oregon

There are approximately a dozen grid-tied PV systems in Oregon. Case studies will tell us about these systems and how, where and why they were installed. (Include guerilla solar systems if found.) From this information we can determine the type of market that exists. The information would also be of interest to utility boards, engineers, and staff. (Doug Boleyn will write up a proposal and Frank Vignola will assist.)

6. Education: PVs in Schools

Install a PV system and develop an education package for Elmira High School (Joe Savage and Frank Vignola). Project will be used as a prototype for installing PV systems on schools.

7. Promotion Opportunity

A national global climate change awareness program will be advertising solar as part of the solution starting in spring 2000. Tie promotional activities in with this national program. There is a need to increase the awareness of environmental groups to the value of solar energy technologies with regard to protecting the environment.

8. Marketing Plan

Develop an outline of a marketing plan to achieve 50,000 solar roofs in Oregon by 2010 sometime before the next MSR/OSEIA meeting on January 18, 2000. (Doug Boleyn and Frank Vignola)

Northwest Solar Forum II Meeting

The following information comes from the Northwest Solar Summit #2 held October 26-29, 1999 in Winthrop, Washington. The forum was put together by Ellen Lamiman of Okanogan County Electric Cooperative and Mike Nelson, WSU Energy Office. As Sam Vanderhoof of Trace Engineering said, "Northwest Solar Forum II has proven to be an enjoyable and enlightening event". The following ideas were sent by Mike Nelson to summarize the conference.



Utility Summary

Needs:

- Cost effectiveness data arguments
- Lower Cost/Financing Strategies
- Expanded customer base/marketing (Staff Expertise)
- Education and Training
- Strategic Partnerships
- NB Focus Distributed Energy
- Economic Development

Opportunities Available now

- Life cycle cost analysis
- Comparison software available to everyone
- UPVG conducting case study of rural utility conducting PV lease business and grid replacement service.

Easy Programs

- Explain benefits not how technology works in detail
- Simple monitor of systems, idiot lights
- Educated support staff, technical help line in centralized locations for multiple utilities.
- Easy to explain process for buying/installing/operating systems
- Use existing users to give examples of working systems.

Utility Needs

- Convince Boards
- More dollars and cents case studies staff can say "pencil's out"
- (Western Sun)
- Cost effectiveness
- As Cooperatives want to do what customers want: offer services
- Need staff expertise
- (Progress since last year helps)
- Add people who won't be a customer

- Need to know more about distributed energy before can serve customers -- convince board -- cost-effectiveness
 - Board actively looking for renewable project. Long-term commitment
 - Working together through utility organizations is essential
 - Conflicts with balanced budgets
 - Need to focus on distributed green power home-based as 1) reliability and 2) economic development for rural areas
 - A sweet deal with some pizzazz with economic development = plug and play
 - Connect with re-roofing
 - Survey customers and ask
 - BPA pie getting smaller
 - Distributed power will happen with us or without us -- report about distributed power

Your Opportunities

How do we present this information to our boards?

- Get customers to buy it -- keep dollars in community ... "Ceremonial Karma Power"
- Ashland - 8 year payback -- their own
- Award solar pioneers
- You have to have back-up power to make it work
- Selling customer generation into market: crunch those numbers
 - Seasonal cost)
 - Peak hours) When is electron worth more? NREL help on this?
 - Non-firm)
- Nobody is building large generating plants
- BPA should be able to maximize distributed energy
- SLICE -- and beyond SLICE with

distributed electricity

- Need to forget the Feds -- just get into selling to home generators -- needs just a generator, -- Cooperatives can do PV workshop and sell
- It is not cost-effectiveness, it is people who do not like to be inconvenienced
- Utilities do not know how to market: demographics; displays; tracking; etc.
- For other customers -- cost is prohibitive, process is daunting -- need information center
- Reduce cost
- Focus on applications—small e.g. water pumping on farms
- No interest loans -- expand
- Need to address off-grid customers - - there is momentum -- act as conduit to equipment
- On-grid customers expect us to be experts on all energy. Public purpose tax will occur -- need to have programs -- technical assistance
- Info -- cost neutral
- Need to educate more customers
- Need net-metering policy in place
- Renewable - PV
- Only one piece of customer issues as reliability; system sustainability
 - Life cycle cost needed on each possibility -- turbines, wind, PV, etc.
 - Software package that would crunch
- Need customer demand in urban areas
- Used as PR factors -- 1 system/year
- Urban may want reliability -- for home use
- Begin with schools -- will move to large building - public
- Would take a huge rethink to not balance among other utility needs -- conservation, fuel cells

Where is the funding?

Provide a simple, affordable product (solar system) "providing power at cost" Offer payment plan Dollars into R.L.F. \$50,000 per utility for Bullitt Foundation

Partnership Strategies

- Install multiple PV systems across

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Northwest Solar Forum II Meeting

- states and utilities
- Form more cooperative ventures with financial institutions, government (i.e. GMAC) for accessible, affordable loan programs
- PV coalitions with other renewable/distributed technologies
- Investor-owned utilities involved to serve large percentage of Northwest clients
- Link Western Sun to municipal utilities and cities for installation (a la SMUD)
- Seek greater political support
- Support annual forum for PV and distributed technologies
- Incorporate technology at the construction level allowing for additions to systems by owner
- Circuit rider for rural electric
- Work with Electric Leagues
- Utility and PV industry meet and understand each others needs
- Develop Northwest PV industry for export
- Utility cooperative select existing local dealer to provide services to customers
- Join Northwest Solar Alliance through State Million Roofs
 - 1-page "strategy" summary to educate
- Join Western Sun Coop, for product purchasing and some technical assistance and education
- Local workshop and demonstrations with NW Solar Alliance, Western SUN Coop, BPA, VPVG, DOE NREL, EPA, BPA and industries
- Clearly articulate all the values of developing the industry/technology in your community
 - Jobs/Manufacturing Jobs
 - Economic Development
 - Clean Energy for the community
 - Keep energy dollars in the community
 - Positioning for future
 - Diversification of economic base
 - Increased and diversified tax base

Build Coalition of common interests

Develop and launch programs and incentives to make it easier and more affordable to buy solar

- One-Stop Shopping
- Low Cost Loans
- Buy Downs
- Net Metering
- Tax Credits

Marketing

- Gather data on electric consumption monthly
- Use market transformation model for emerging renewables
- Promote export opportunities
- Put together \$1,000 systems for schools
- Target: Schools, hospitals, nursing homes, transportation marine transportation (Ferries)
- Target grid customers who:
 - Have computers, electronics, are or want to be cutting edge, and want to control cost of energy
- Identify customer needs
- Go to government services with advertising and questions
- Energy Star
- Market with brochures, How to booklets at technology conferences, MacWorld, CES, Comdex
- Expand market area

Finance, costs, policies

- Retail sales tax credit in Washington
- More rebates
- Low financing
- Property Tax incentive
- Buy-down programs new construction
- Hold legislature to Washington RCW 54.04.020 ... authorizing PUD to conserve resources and benefit people of the state
- Why cost-effective is important?
- Do customers want it anyway
- Peak shaving
- Firm - non-firm
- BPA rate changes (Need residential incentive)
- Support federal tax credits
 - 15% solar thermal
 - 10% PV
- Lobby for California \$3/watt rebate discount in other areas
- Lease systems/bypass up-front high costs
- Million Solar Roofs provide residen-

tial subsidy for on grid

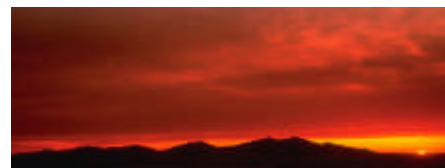
- Opportunity for utilities to collaborate with UPVG team-up if Round 4 offered
- Develop standard systems/cut manufacturing costs, volume sales (Net Metering Law)
- Wrap renewables into efficiency projects
- Include other renewables in WSU Solar Rebate; wind and hydro
- Leverage Salmon dollars: hydro, La Nina
- Get density credits for solar on new construction

Legislate at the state level

- Net metering and inter-connecting standards
- System liability - no additional insurance
- UL/IEEE/NEC Standards
- Develop standard systems
- Or work for acceptability with Home Depot or appliance stores

Education and Training

- Programs need to be easily understood, easy to use for customers
- Utility provided guidelines to:
 - Designers, builders, roofers, architects, home association lenders, developers, electricians
- \$1,000 PV systems for schools
- Support annual regional forum for PV and distributed technologies
- Train/influence architectural and engineering students on solar
- Develop customer info packets for consumers
- Content needs:
 - Solar = asset, not \$ threat
 - Subsidizing solar investments in the future
 - Clear message about what solar provides to end user
- Tie PV electric supply with passive design
- Include environmental impacts of manufacturing PV's/net energy costs



OSEIA Quarterly Meeting Minutes

Friday October 1, 1999 10:00 am—12:00 PM
World Trade Center Portland, OR.

by Chris Eames



1. Welcome and Introductions

Attending were: Ray Pokorny, David Parker, Howdy Reichmuth, Andrew Koyaanisqatsi, Doug Boleyn, Christopher Diamond, Joe Savage, Don Spiek, Newt Loken, Frank Vignola, & Chris Eames. Jon Biemer, a Strategic Planner for the Energy Efficiency Group of Bonneville Power Administration, is going to be available at our meetings for information sharing purposes. Along with Elly Adelman, who will be concentrating on MSRI, he represents a commitment of personnel to establish and maintain contact with groups like ours in Oregon. His Email is jrbiemer@bpa.gov and his phone number is 503-230-5995 if you would like more information on this outreach effort.

2. Minutes of the July 23, 1999 Combined Meeting

Elly Adelman pointed out via e-mail an error in the minutes published in the September 1999 issue of Solar Rising. "BPA is proposing a ½ mil rate increase for renewables" should read "BPA is proposing a ½ mil rate decrease on the BPA subscription rate for customers that engage in qualifying conservation and/or renewables including solar."

It was moved seconded and approved unanimously to approve the minutes as amended.

3. Treasurer's Report: Ray Pokorny

Ray Pokorny reports balance in checking of \$3,393.22, receivables of approximately \$1,500.00, and \$2,342.94 in the net metering savings account. SEIA dues are as yet unpaid and considering the effort to reorganize will affect the decision to renew our membership. Paid membership is between 22 and 30. Some have not as yet remitted their dues for 1999, accounting for the receivables. Questions AND dues payments can be mailed to Ray at his home address: 242 NE 61st Portland, 97213. The donation of \$1,000 by Richard Perez of Home Power Magazine to help fund the lobbying effort for Net Metering was not used. It was moved by David Parker and seconded by Ray Pokorny to offer to return the money to Richard Perez of Home Power Magazine or to create a lobbying fund for future lobbying efforts if Richard Perez chooses to leave the funds with OSEIA. Those present voted to leave the \$1,342.94 that the organization dedicated to the effort in the Lobbying Fund. A motion to propose inclusion of funding assistance to SEA of O in the OSEIA budget and to consider the topic separately at our January meeting was made by Don Spiek and seconded by Ray Pokorny. This passed unanimously.

4. OSEIA Corporate Status:

Doug Boleyn reported that Jeff Misely, an attorney friend of his, has looked into the issue and is willing to modify whatever Articles of Incorporation we may have for submission to the Corporation Division. Doug will contact Wendy to assemble the existing documents.

5. OSEIA Bylaws Status: Doug Boleyn

Doug distributed copies of proposed

Bylaws for OSEIA. Several language change recommendations were included to reflect the voting-membership focus on sale of solar products and services in contra-distinction to SEA of O's focus on education. Other discussion focused on organizational mechanics and all revisions may be commented on before or at the next meeting. Doug suggested that it may be best to file these prior to the end of the calendar year. However, if no action is taken prior, Don Spiek moved and David Parker seconded that the topic be discussed fully at the January meeting. The vote was unanimously in favor.

6. Solar Legislation Update: Frank Vignola

The net metering legislation that was passed by the legislature and signed by the governor has some language ambiguity regarding the utility's choice about "true" net metering or paying avoided cost plus costs associated with monitoring and billing. This of course only affect those customers that produce excess electricity, but the debate centers around whether that excess is calculated monthly or annually. OSEIA's stance with the PUC is that the calculations are for the entire year. If anyone has any reason to change that opinion, contact Frank with your argument.

7. OSEIA Brochure:

A draft brochure produced by Home Power was presented for review. It will have photos, information, and space for individual company personalization. It will be made available in grayscale over the Internet for downloading and printing by the membership. A color version may also be created and similarly downloadable for printing. Christopher Dymond moved and Andrew Koyan-

(Continued on page 7)

OSEIA Quarterly Meeting Minutes

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nisqatsi seconded that \$500.00 be dedicated to hire a professional with experience in copywriting and brochure development to complete the brochure process. Ray Pokorny has a contact and Howdy Reichmuth has an alternate who will be approached for this purpose.

8. OOE Programs: Christopher Dymond

OOE is going to kick-off a "road-show" with displays and demonstrations fitted within an Airstream Trailer. If you know of an event or venue where this would be of value, call Christopher

at OOE in Salem.

9. Other Business:

Laura Culberson of the National Environmental Trust dropped in to preview her MSRI presentation detailing their near-term focus on global warming: the Campaign on Global Climate Change. She will be contacting members to explore areas where we can coordinate our efforts. (503)221-7922 Email: lculber-son@mrss.com

10. Adjourn

"This one step
-- choosing a
goal and
sticking to it --
changes
everything."

-Scott Reed

Oregon MSR Coalition Meeting Minutes

Friday October 1, 1999 1:00 – 4:00 pm
World Trade Center, Portland ,OR

by Chris Eames

1. Introductions

Attending were: Wayne Lei of PGE, David Parker, Howdy Reichmuth, Andrew Koyaanisqatsi, Doug Boleyn, Christopher Diamond, Joe Savage, Don Spiek, Newt Loken, Frank Vignola, & Chris Eames. Elly Adelman, an Energy Efficiency Representative for Bonneville Power Administration, is going to be available at our meetings for information sharing purposes. Along with Joh Biemer, who will be concentrating on OSEIA, she represents a commitment of personnel to establish and maintain contact with groups like ours in Oregon. Her Email is eyadelman@bpa.gov and her phone number is 503-230-3679 if you would like more information on this outreach effort.

2. Campaign on Global Climate Change: Laura Culberson

Laura Culberson of the National Environmental Trust (NET) detailed their near-term focus on global warming: the Campaign on Global Climate Change. The Campaign is a fairly generic one that details only documented science to

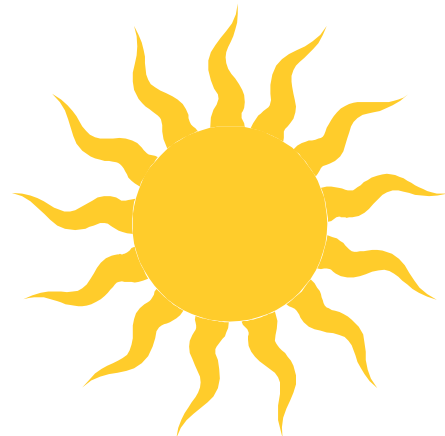
avoid criticism that might divert attention from the issues. It will buy advertising to help educate the public about the causes, impacts and solutions to global warming. In addition, NET has organized a "Solutions Tour" to be a fair-like press event that highlights energy efficient and less carbon intensive end-use products already on the market as well as new products expected to be introduced in the next 5 years. The Tour features alternatively fueled vehicles and a mobile trailer containing a variety of hands-on energy-efficient product displays. Finally, NET is currently expanding its state-based presence to include organizers in 27 states who work in partnership with physicians, scientists, religious organizations, businesses and other environmental groups to advance the issue of global warming in their states. She will be contacting members to explore areas where we can coordinate our efforts. Laura can be contacted in Portland at (503) 221-7922 Email: lculberson@mrss.com.

3. Activities of the Northwest Solar

Alliance (NSA): Christopher Dymond

The goal of NSA is to provide a regional approach to solar applications by getting the price to the consumer down to a level near \$3.00/ kW. Mike Nelson of the Washington MSR partnership reported to NSA the formation of a utility purchasing cooperative – Western Solar Utility Network (SUN) – to buy solar PV equipment in order to achieve a level of solar generating capacity that

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Oregon MSR Coalition Meeting Minutes

(Continued from page 7)

will serve as a “critical mass” to establish general demand for solar in the region. This could work hand-in-hand with a BPA program which Elly Adelman described wherein BPA is proposing a ½ mill rate decrease on the BPA subscription rate for customers that engage in qualifying conservation and/or renewables including solar. There was considerable discussion regarding the potential impact on the existing solar industry. Christopher explained that the proposal is still in the formative stage and welcomes input from all interested parties.

4. Brief update on Northwest Shine, Inc. plans to build Solar Manufacturing facilities in Oregon.

Spire Corporation has been contacted about building the facility. It is anticipated that everything will come together in October. Representatives from OOE and the University of Oregon are fairly confident that the project will in fact take place.

5. Discussion, prioritization, and commitment to the Oregon MSR coalition action plans for 1999-2000:

Committee Reports:

i. Financing: Jeff Keto’s committee has met a few times and has identified action items as listed in the September 1999 issue of Solar Rising. Systems over \$10,000 are eligible and economically feasible through the SSELP (Small Scale Energy

Loan Program) loan through OOE. Systems of lower cost are still in need of financing alternatives.

ii. Licensing Issues: David Parker presented a summary of his committee’s findings. Briefly, Electrical and Plumbing boards in Oregon are unwilling to create a “sub-license” for solar. Specialty licenses in other states are in place and may provide a template for our programs and contact with a representative in Florida produced a willingness to assist us with a legislative effort.

iii. Schools & Education: Joe Savage shared a hand-out describing an initial Educational Presentation through the vocational department of Elmira High School for Photovoltaics. He has lined up a potential syllabus and tentative funding through EPUD. This could be the prototypical model for statewide programs.

iv. Marketing: Doug Boleyn reports no response from his committee for his “rather voluminous” marketing plan. Consequently he intends to simplify his approach and create a timeline format for his committee.

v. Codes and Regulations: Interconnection Standards (no report)

vi. Utility Programs: Don Spiek reported little progress but explained that there are about 10 utilities in the state that are potential

players who have not been approached due to the fact that we really don’t have a concrete action plan to present to them.

All of these areas need to have a time-line for implementation. Once concrete actions are identified and a time frame assigned, funding sources can be approached with some confidence of acceptance.

6. New Business:

The next meeting will be in Salem to prioritize the Action Plan - Committee Chairs should send their individual Time Lines to Frank in advance of the meeting which will be held at OOE on October 20th at 10:00 AM

7. Adjourn



Satisfied customers on cover of the new Trace Engineering catalogue.

Main “Headings” for actions needed to get to 50,000 Installs in Oregon

Main Headings	Licensing	Affordability	Utility/Industry Interface	Marketing
Priorities	Training	Incentives	Technical Interconnection	Education
	Legislative/Rules	Lower system cost	Administrative Interconnection	Utility Programs
		Financing		Promotion Schedule
		Tax Credit Renewal		

Oregon MSR Coalition Agenda

Tuesday January 18, 2000 10:00 am to 1:00 pm
At the Oregon Electric Station, Eugene, Oregon

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> 1. Introductions 2. Brief Committee Status Reports <ul style="list-style-type: none"> a. Finance b. Training c. Codes d. Marketing e. Education f. Utility Programs | <ul style="list-style-type: none"> 3. Solar Stewardship Initiative 4. MSR Proposal Preparation 5. Northwestern Shine Update 6. Northwest Solar Alliance <p>The OSEIA meeting is planned at 1 pm after the finish of the Oregon MSR Coalition meeting.</p> | <p>Lunch can be ordered around noon from the Oregon Electric Station menu and a working lunch is planned.</p> |
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MSRI Coalition Action Plan Meeting Minutes

Wednesday October 20, 1999 10:00AM - 12:00 PM
Oregon Office of Energy Salem, Oregon

by Chris Eames

1. **Introductions:** Attending were: Doug Boleyn, Christopher Diamond, Elly Adelman, Don Spiek, Justin Klure, Frank Vignola, & Chris Eames.
2. Purpose of the meeting is to develop action plans, prioritize activities and goals, and assign responsibility for action items.
3. Action plans with expectations of time-lines for implementation and cost estimates should be sent to Frank Vignola before Thanksgiving.
4. Next meetings will be on January 18, 2000 at The Oregon Electric Station in Eugene. MSR meeting starts at 10:00 AM and ends at 1:00PM. OSEIA will begin immediately after and will adjourn at 4:00PM.
5. This will be the annual meeting for OSEIA at which officers will be elected and essential votes on various topics will be taken.
6. Adjourn - 12:15 PM

Licensing	Affordability	Utility/Industry Interface	Marketing
<ul style="list-style-type: none"> -Training Program (Tom Scott & David Parker: SDHW OSEIA / Community College program) (Doug Boleyn: PV Continuing Education program.) (Utility Training) -Legislative / Rules -Find Champions for 2001 -Frame Bill as necessary to reach mainstream -Get Government Support (OOE, Government, Building Codes Division, EWEB, Ashland,... 	<ul style="list-style-type: none"> -Incentives -Lower system cost -Financing (SSELN loans through OOE) -Tax Credit Renewal (OSEIA) 	<ul style="list-style-type: none"> -Technical Interconnection (OOE) -Administrative (Process) Christopher Dymond & Elly Adelman: Spring meeting/workshops for utility representative in conjunction with the Ashland project 	<ul style="list-style-type: none"> -Education (Joe Savage & Frank Vignola Elmira High School Prototype program.) (OOE display for Mall) (Doug Boleyn: SEAofO) -Utility Programs (Doug Boleyn & Frank Vignola: Case Studies of successful grid-tied systems and possibly guerilla solar systems to be distributed to utilities, utility engineers, boards & staff) -Promotion Schedule (Climate Warming, Earth Day 2000, SEA of O,...)



PV Watt — A Performance Calculator for Grid Connected PV Systems

by Bill Marion and Mary Anderberg

Mary Anderberg and Bill Marion have added a feature to NREL's website called PVWATTS. PVWATTS is an internet-accessible model that calculates the performance of grid-connected PV systems. Based on sub-routines from Sandia's PVFORM. PVWATTS reads Typical Meteorological Year (TMY2) data and performs an hour-by-hour simulation for a one year period. Users may select any of the 239 TMY2 stations from a clickable station map, and may select default PV system parameters, or specify their own. Parameters that may be specified include: PV system size, fixed or tracking PV array, PV array tilt angle, PV array azimuth angle, and local electric cost. PVWATTS outputs a table of monthly and annual energy production in AC kWh and energy value in dollars.

PVWATTS' internet accessibility and ease of use permits both experts and non-experts to quickly obtain performance estimates for grid-connected PV systems located in the United States and its territories. The website address for PVWATTS is http://rredc.nrel.gov/solar/codes_algs/PVWATTS/.

[A sample output of AC output and Cost Savings is given on the right for a 1 kW peak AC system in Eugene, Oregon tilted at latitude. The price of electricity was chosen to be 5 cents/kWh. This program is very useful in comparing the array output at various tilts and orientations. Output from tracking arrays can also be estimated. ED.]

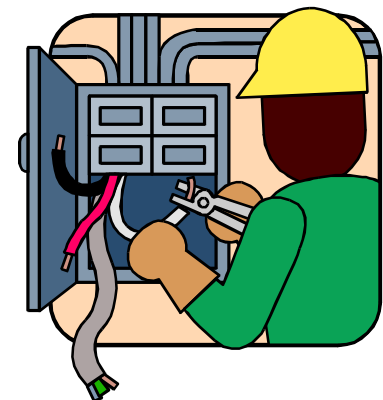
Energy Production		
Month	Energy (kWh)	Energy Value \$
1	54	2.70
2	67	3.35
3	113	5.65
4	125	6.35
5	150	7.50
6	145	7.25
7	170	8.50
8	169	8.45
9	146	7.30
10	111	5.55
11	52	2.60
12	46	2.30
Year	1348	67.40

Solar Electricity and the State Building Codes Division

The State Building Codes Division is holding hearings on the code requirements for grid tied solar electric systems. So far the codes division has found that the National Electric Code and the pending IEEE 929 rules for solar electric systems are adequate and no additional changes are needed. However, the buildings code division can not approve pending rules and is going to review the existing IEEE 929 rules on January 26, 2000.

IEEE is in the process of approving the revised IEEE 929 rules. It is likely to do so in January. This means that new solar equipment has to pass the new IEEE 929 rules. SEIA, Trace Engineering, and others in the solar industry have been working on this and new systems will comply with the IEEE 929 rules.

Inspectors are already showing interest in learning more about PV systems. Building inspectors pay to take classes, and this offers an opportunity for anyone who wants to organize an accredited class for inspectors. We often forget that solar is new and exciting to many people who have not seen the progress made over the last twenty years.



Distributed Resources, Renewables and the Environment

February 2, 2000 Portland, Oregon



On February 2 of 2000, BPA and a host of sponsors including our Energy Dynamics Online project will present a one-day conference entitled "Distributed Resources, Renewables and the Environment." The conference will be held at the Double Tree at Jantzen Beach in Portland and is a box-lunch no-frills conference with a \$35 admission price. Its purpose is to discuss and study the ongoing rush of transformational distributed energy resource (DER) products and technologies in a plus-and-minus context of environmental concerns.

This conference comes almost a year after BPA staged its elaborate two-day Electric Revolution conference in March. BPA is currently working on a follow-on conference for August 2-4 (Electric Revolution: The Energy Web) in Portland. And there will be many more conferences throughout the world as interest in these cutting edge developments grows and grows.

Co-sponsors with BPA include Renewables Northwest Project, Bonneville

Environmental Foundation, Northwest Energy Efficiency Alliance, Natural Resources Defense Council, NW Energy Coalition, PNUCC, Northwest Power Planning Council and the Public Power Council. Our Energy Dynamics Online project is an organizing co-sponsor with the collaboration of Ralph Cavanagh of NRDC and Cheri Larson of BPA. Two big low-price conferences in the recent past are the model for this one. First in April of 1994 in Portland was the "Present Shock" conference that was co-operatively co-sponsored with BPA's lead. The second was a conference in July 1996 in Seattle to report on progress of the Comprehensive Regional Review. Both attracted hundreds of people. The two-day Bonneville conference in March at a higher price still attracted more than 500 people.

Those of us involved in organizing the February conference believe that timely involvement in DER issues of three special & related energy interests-renewables, energy efficiency and environment-is very important. The diversity of DER and related energy options represents an opportunity to couple meeting energy demand with net environmental benefit directly and indirectly. Direct benefit comes from deployment of cleaner generating hardware; indirect benefits range from coupling new generating hardware with energy efficiency and DSM measures to forestalling (or even eliminating) new power line construction.

Moreover, DER enthusiasts need to hear environmental concerns early on. I

would like to believe that emergence of the energy products which BPA indexes as an electric revolution (and for which our company is developing a news service) represents an extraordinary opportunity for co-operation between the energy industry and the environmental community. Scheduled speakers include Judi Johansen, BPA administrator, Carl Weinberg, widely hailed as the godfather of distributed generation; Eric Heitz of the Energy Foundation in San Francisco; Karl Rabago of the Rocky Mountain Institute; Joe Chaisson, Maine-base DER activist, Alison Silverstein of the Texas PUC, Randy Berggren, manager of EWEB, Ralph Cavanagh, NRDC, and Rachel Shimshak of RNP. For more information on the conference go to www.newsdata.com/edonline/groundhog.

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Cosponsors
Bonneville Environmental Foundation,
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Northwest Energy Efficiency Alliance,
Northwest Public Power Association,
Public Power Council,
PNUCC, and
Energy NewsData

Electric Revolution: The Energy Web

with Trade Show August 2-4, 2000

at the Portland Convention Center

For more information contact:

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SEA of O 20th Anniversary Conference



Polly Cooper watches as Ken Haggard test drives around the exhibit area in an electric powered car called the Gizmo.

On October 2, 1999 the Solar Energy Association of Oregon held its twentieth anniversary conference in Portland at the World Trade Center. Attendance was up from last year and over 100 people attended the conference. The keynote speaker, Sim Van der Ryn set the tone for the conference with his talk on sustainable design and renewable energy.

There were two panel sessions. The first was led by Ken Haggard and Polly Cooper of the San Luis Obispo Sustainability Group. Polly and Ken are long time activists in the solar community and practice what they preach. They live in a beautiful straw bale / solar home of their own design. Ken and Polly also enjoyed the conference exhibit [see picture above of Ken driving an electric car called the Gizmo].

John Reynolds, Larry Sherwood, and Curtis Framel made presentations for the panel on "where have we been, where do we want to go, and what have we learned" in 20 years. John Reynolds recently took early retirement from the University of Oregon Architecture Department, although he still teaches a class occasionally as part of the univer-

sity's 600 hour program. John showed slides of his activities from the 70's through the 90's. John, who served as president of SEA of O several times has certainly contributed a great deal to the solar community over the years. A few years ago John received the Passive Pioneer Award from the American Solar Energy Society for his contributions to the field and the many students he has

enlightened and encouraged along the way.

The pictures of the early solar water heating competitions were fun to see and brought back many fond memories. Among John's slides were a solar booth at the Lane County fair about 1980 and some of the solar buildings he helped to design. We have come a long way in the past 20 years and it will be exciting to carry the movement into the next millennium.

Larry Sherwood, the executive director of the American Solar Energy Society (ASES) talked about ASES activities designed to assist local ASES chapters. ASES is putting more effort into their local chapters these days [see picture below]. Larry's appearance is part of an effort to visit the local chapters and discuss ways that the groups can work together. At recent ASES conferences, workshops were held to train local activists on how to effectively promote the solar agenda. ASES has also helped with the Oregon Net Metering Law by funding the efforts of Tom Starrs. Recently, ASES and Tom Starrs have produced a document on the interconnection agreement. This document is being reviewed by PacifiCorp and PGE while they develop their interconnection

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Larry Sherwood, Executive Director of the American Solar Energy Society answers questions after his presentation.

SEA of O's 20th Anniversary Conference



Andrew Koyaanisqatsi of Solar Energy Solutions shows off his solar electric wares. Andrew is one of many OSEIA members who attended the conference.

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agreement.

One of these days ASES may hold another of its annual conferences in Oregon. This takes a considerable effort, as those who have been involved in conference planning know. However, the potential benefits to the local chapter can be considerable.

Curtis Framel of the Seattle office of the US Department of Energy completed the panel with a discussion of the Million Solar Roofs Initiative [see picture]. There are now over 40 partners nationwide that have pledged over 900,000 solar roofs by 2010. Curtis has been a tremendous source of advice and inspiration in forming, planning, and organizing the Oregon MSR Coalition. The solar community can look forward to working with Curtis for many years to come.

After the panels, the conference had lunch in the exhibit area. It was good to see so many exhibitors at the conference and that was an additional draw that had been lacking in past conferences. Having the lunch and breaks in

the exhibit area also led to more interaction with those attending the conference. Andrew Koyaanisqatsi of Solar Energy Solutions had a solar electric display at his booth. [See picture.]

One big hit was the electric vehicle

called the Gizmo. During the afternoon people were allowed to take turns driving the Gizmo around the exhibition area.

Ben Gates and Maren Tomblin, co-directors of the University of Oregon Solar Information Center set up an information table [See picture on page 14]. They had one eye catching gadget, a small PV powered motor that spun a flashy silver disk. A lot of people wandered over to see the moving object. If the solar cells were shaded, the disk stopped turning.



The Oregon Office of Energy (OOE) served free 'Solar' coffee. The OOE booth included their solar electric modules with Trace inverter and batteries. Plugged into this system was a coffee pot. In the future OOE will use the system to demonstrate remote water pumping systems [see picture at bottom of page 14].

The OOE display at the exhibit offers an excellent example of how to present information [See photo on page 14].

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Jon Biemer of the Bonneville Power Administration and Curtis Framel of the Seattle office of the US Department of Energy discuss the Million Solar Roof Initiative after Curtis's discussion. Nationwide there are over 40 MSR partners that have pledged 900,000 solar roofs.

SEA of O 20th Anniversary Conference



Ben Gates and Maren Tomblin, co-directors of the University of Oregon Solar Information Center, staff a table at the exhibition downstairs from the conference.

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The key information is in clear large lettering, uncluttered with other pictures and information. Pictures and detailed information are presented in the center at eye level. Again there is plenty of space between the text and pictures.

After lunch there was a second series of

sessions. Tom Scott, president of The Energy Service Company, gave an informative and entertaining presentation on solar water heating systems and Howdy Reichmuth discussed energy savings from systems installed under the Eugene Water and Electric Board's Bright Way to Heat Water program.

While experimental confirmation of the results is needed, several interesting areas for investigation and improvement were identified. 1) In general, systems did not produce the energy savings expected. 2) The electric pumps on some systems were oversized and the parasitic energy loss from these pumps resulted in negative energy production during the worst solar months. In general there is some room for more realistic evaluations and for improved performance. Contact Howdy or EWEB for information about the report.

In another session, people who built and live in solar powered homes presented their experience. The audience was particularly interested in these presentations and a good question and answer session followed.

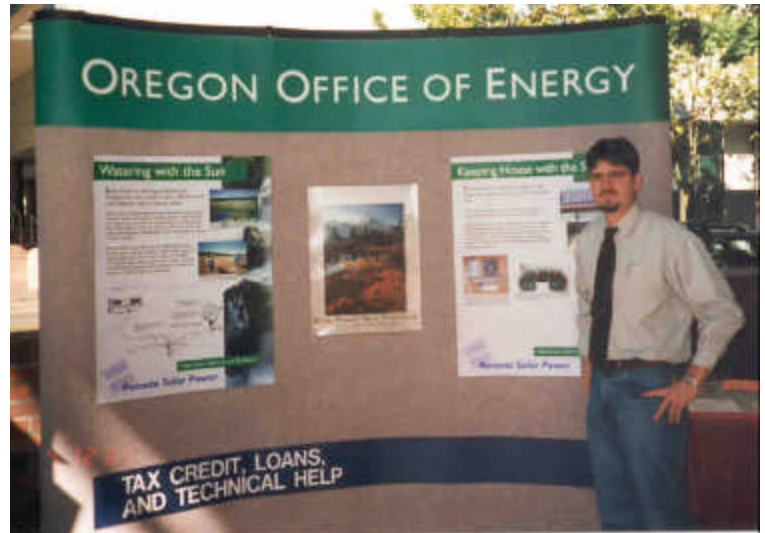
Ray Pokorny of Solar Interior Design talked about adapting the interior of a home for solar living. There were several concurrent sessions and this was one I was unable to attend. However, I did learn that his talk was well received.

In the late afternoon, Greg Mihalik of Siemens Solar Industries in Vancouver discussed recent advances in the manufacture of silicon ingots used for solar

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Justin Klure, of the Oregon Office of Energy offers free solar coffee to those attending the conference.



Justin Klure, of the Oregon Office of Energy staffs their booth at the conference exhibition area. [OSEIA members should note the display setup. The name and product are clearly visible.]

SEA of O's 20th Anniversary Conference

cell production. Energy usage was reduced by 40%, the amount of argon needed was reduced by 80%, the amount of 'slag' silicon was significantly reduced, and the overall quality of the silicon crystal was improved. These results are an example of improvements possible as the solar industry expands and increased investment is made in the technologies. Funding for this research is from the Northwest Energy Efficiency Alliance.

Chris Pride, founder of Northwestern Shine, discussed the Pride-Bridges initiative and discussed his plans for building a solar electric manufacturing facility in Oregon. Plans are proceeding smoothly and Chris hopes to begin production by the end of 2000. This is a major undertaking that has culminated 11 years of effort.

GREAT JOB SEA of O on your 20 Anniversary conference!

The Future of Solar Electricity by Frank Vignola

A tremendous solar electric market is beginning to emerge. An estimate of the

initial size of this market appears in a note in the December 9, 2000 PRNewswire. A new report, "Photovoltaic Materials: Analysis of Emerging Technology Markets" by Technical Insights predicts that photovoltaic power sales will reach \$2 billion in 2000. And by 2005, manufacturing capacity of photovoltaic materials will need to double from present levels to keep up with demand.

The market for photovoltaic materials may reach \$12 billion by 2010. The report says that photovoltaic solar electric power is expected to capture only a small fraction of the energy market at the beginning of the century but is poised to make significant inroads thereafter.



Chris Pride, founder of Northwestern Shine Inc., and Dave Robison of Stellar Processes listen as Nicky Pride talks about the future solar electricity in the Pacific Northwest.

The Pacific Northwest is establishing a solar industry to take part in this growing world market. We are at the dawn of the new millennium and the solar age. We have come a long way in the past twenty years, but the future is now ours to shape.

Greenhouse Effect and Global Warming among the Top 5 Scientific Discoveries of the 20th Century

Information from article by David Levy from the December 19, 1999 issue of Parade magazine

About 1970 a new kind of thinking appeared—the science of environmental preservation.

The seeds of this ecology-mindedness was sown in 1940, when American astrophysicist Rupert Wildt theorized that the amount of carbon dioxide in Venus's atmosphere would keep heat from escaping, raising the surface temperature of the planet. This phenomenon was latter called "the greenhouse effect." In a greenhouse on a sunny day, sunlight comes in and warms the ground and the plants. The plants radiate heat back, but the greenhouse glass that lets sunlight in prevents the heat

from escaping into the atmosphere completely. As a result, the greenhouse warms up.

In 1962, the spacecraft Mariner 2 proved Wildt right. It passed by Venus and recorded surface temperatures higher than 800° F. Venus' atmosphere of carbon dioxide and sulfuric acid is so opaque that the temperature on the surface rises and rises.

In 1970, the late Carl Sagan saw in Venus a catastrophe that could occur on Earth. (On Earth, carbon dioxide and water vapor block heat from escaping.) Could the fate of Venus await our

planet, he asked, if burning of fossil fuel continues to pour carbon dioxide into the atmosphere?

Carbon dioxide in our atmosphere has been steadily increasing during the industrial age. We clearly understand the science behind global warming. The 1990's have been the warmest decade of the century and prospects for warmer times are ahead.

A warmer earth means more moisture in the atmosphere, stronger storms, and higher sea levels. Just as we clean up our streets and rivers, we will have to stop using the atmosphere to dump our wastes or live with the consequences.



PGE & PacifiCorp's PV Grid Connected Tariffs



On November 30, 1999 the Oregon Public Utility Commission approved the net metering tariffs from PacifiCorp and Portland General Electric. The tariffs describe how PGE and PacifiCorp customers can hook their solar electric systems up to the grid. These tariffs are the direct results of HB 3219 making net metering a state law in Oregon.

Under these tariffs, the utilities will install a meter that will read the amount of electricity used by the customer and the amount of electricity fed back to the utility grid. At the end of the monthly billing period, net amount of electricity used by the customer will be calculated and the customer will be billed accordingly. If the customer generates more electricity than was used during the billing period, the customer will be credited for the electricity at the avoided cost (approximately 2 cents/kilowatt hour).

For safety concerns, the utilities are requiring a utility approved disconnect

switch that is accessible 24 hours a day, 365 days a year. Standards for these switches are in the utility handbook. The utilities are not questioning the quality of the disconnects in the inverter, but want to be able to disconnect the system when they are maintaining the line or meter as well as when power is out.

Attending the tariff hearing were Doug Boleyn, Peter West, Christopher Dymond, Don Bain, and Frank Vignola. The PUC made it clear that they want the net metering tariffs to work and the utilities said that they are willing to work with the industry to make the tariffs work.

The utilities are working on the interconnection agreement between the customer generator and the utility. The utilities are using a sample interconnection agreement drawn up for American Solar Energy Society by a group that includes Tom Starrs. Drafts of the inter-

connection agreement and the agreement form should be available early next year.

As representatives in the field are not always familiar with the latest tariffs from headquarters, Lauren Pananen of PacifiCorp has agreed to answer questions from the field representative. His phone number is (503) 813-6600. If you are dealing with someone in PacifiCorp who is unfamiliar with the net metering tariff, give that person Lauren Pananen's name and phone number and most of the issues will be settled.

The task of educating utilities and inspectors about solar electric systems now begins. Utilities are skeptical and wonder if people are willing to pay the price. However, just as there are three grades of gasoline there are three types of electricity (brown, green, and solar). Solar is the premium grade.

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