

# SOLAR RISING

October 2003

Volume 5, Issue 3

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

Bringing you tomorrow's sustainable energy technologies today!

## Solar Mind Teaser

by Christopher Dymond—Oregon Office of Energy



*Solar Electric system at White Bluffs, Washington*

*Photo from BEF web page.*

Someone asked me how much energy would a solar array produce if it covered 3% of the Hanford Nuclear Reservation?

Here's the math:

Hanford covers roughly 300 square miles. Thus 3% of Hanford would therefore be about 9 square miles or about 3 miles by 3 miles. Of course if we include space for roads, rack spacing the total array might cover an area more like 3 miles by 5 miles.

1 MW AC solar electric (PV) system would produce 1.6 million kWh per year (PV Watts slope 25, orientation 180). This would require ~1.25 million DC watts of modules. Typical modules produce 12.5 DC watts per square foot (some as much as 15) - Thus we would need 100,000 square feet to produce 1 MW<sub>peak</sub> AC

There are 27,878,400 square feet in a square mile. Thus each square mile would produce 278.8 MW of peak AC power. Annually each square mile would produce  $278.8 \times 1.6$  million kWh/MW = 446,054,400 kwh per year = 50,919 average kilowatts - call it 50 average Megawatts (aMW).

*(Continued on page 4)*

## Letter from Executive Director

by Jon Miller

During Oregon's recent state budget crisis we often heard the rallying cry to develop our natural resources from politicians and pundits – referring always, of course, to our timber industry.

Often, they lamented over the loss of Oregon's natural resources (read 'timber') as a source of revenue. The motto 'break glass in case of economic crisis' was used in one Oregonian editorial with an axe to illustrate the point.

The point these politicians (and general public) did not, and still do not, realize is that our natural resources also include abundant sources of solar, wind, biomass, geothermal, and low impact hydroelectric energy. In fact, unlike our timber industry, Oregon's renewable energy industry is underdeveloped and has massive potential for growth.

Oregon's renewable energy resource potential is well over 350% of our current electric energy needs. Solar energy potential alone is more than double our current electric energy use. Oregon residences and businesses pay over \$2 billion annually for electricity. 54% of that electricity is derived from imported fossil fuels (39% coal, 15% natural gas). If only a small fraction of Oregon's RE potential was developed it would mean hundreds of millions of

*(Continued on page 8)*

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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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## OSEIA Meeting Agenda

October 14, 2003

11:00am-3:00pm

EWEB Conference Room—Eugene

1. (15 min) Introductions and welcome new members
2. (5 min) Approve previous meeting minutes
3. (15 min) Treasurers report
4. (45 min) Executive Directors report
  - A. License issues
    - a. SOL
    - b. LRT
    - c. CLRE
  - B. Legislative issues
5. Legislative Committee Update (John McIntosh)
6. (30 min) Membership Issues
  - A. Membership dues for 2004
  - B. Website update
  - C. 2004 Officer elections
  - D. Request for agenda items for next meeting
  - E. Set date for next meeting
7. (30-60min) Solar Thermal System Failure and Maintenance issues (Andrew Koyaanisqatsi and Tim Dawson)
8. (30min) Addressing the 'Payback' Question for PV and DHW
9. (30 min) ETO Solar thermal program update
10. (15min) On the horizon announcements
  - A. Growing the RE Industry in Central Oregon—Oct. 21-22
  - B. Northwest Solar Summit #6—Sunriver, Oregon—Oct. 27-30
  - C. ASES 2004 Conference in Portland
    - a. Great opportunity for industry to get involved
    - b. Need input for possible workshops

## Contact Information

OSEIA Web Page

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# Minutes of the Oregon Solar Energy Industries Association

## Tuesday, August 5, 2003

Prepared by John McIntosh, Reviewed by Jon Miller



The meeting was called to order on August 5, 2003 at 11:20 A.M.

The meeting was held at 500 E. 4<sup>th</sup> Ave., Eugene OR

The notice for the meeting was given more than seven days in advance by email, in person at the previous meeting, and by phone.

The members present for the meeting were:

Bob Maynard, Bob-O Schultze, John McIntosh, Steve Still, David Parker, John Patterson, Tom Scott, Pat Kemmerer, Doug Boleyn, Frank Vignola, Steve Musser, Joe Savage, Newt Loken, Russell Harrison, Al Walker, Sonja Ling, Jon Miller, Andrew Koyaanisqatsi, Christopher Dymond

A quorum was present because there are currently 30 voting members and 13 were present at this meeting.

### I REPORTS AND DISCUSSIONS

1. The Oregon Licensed Renewable Technician group is meeting monthly. At this time there are two individuals in the apprenticeship program: Allen Van Zuuk and Andrew Bortz. The following list the companies that are qualified to be LRT trainers: Mr. Sun Solar, Energy Outfitters, Electron Connection, Electric Norm.

2. The Building Codes Division has been funded for the LRT license for the current biennium.

3. The National Energy Bill is still working its way through Congress. No final word at this time.

4. The National Green Building Conference 2004 and ASES Conference 2004 are both scheduled in Portland.

5. The Oregon Electric Co-operatives are meeting in Sunriver October 27-30. Please plan on attending and contract your local co-operative to encourage their participation.

6. The Energy Trust Oregon has implemented their Solar Hot Water rebate program. Any individual or business that has already completed the Brightway training or attended an ETO PV training class is approved to begin returning the Solar Hot Water rebate to qualifying customers.

7. The Board of Directors will discuss and publish a suggested change to the by-laws to increase the required voting membership percentage. It will be an agenda item for the next meeting.

8. OSEIA has had 15 new members join this year.

9. Jon Miller is publishing photos of member's installations. Email your photos and captions to Jon. Statistics indicate that photos with people in them get the most hits.

10. The Oregon Department of Energy (formerly OOE) is soliciting a rule review. Any interested individual may supply a written suggestion for a change. Deadline for all suggestions is November 15, 2003.

11. A member noted that the European community is preparing to issue storage tank temperature standards

of 145 degrees to prevent legionnaires disease.

The next meeting date was set for October 14<sup>th</sup>, 2003 at 11am at – Eugene EWEB conference area.

### II ACTIONS

1. Prior Meeting Minutes: The following motion was made, seconded and passed:

RESOLVED to accept the minutes of the prior meeting as written.

2. Treasurer's Report: The following motion was made, seconded and passed:

RESOLVED to accept the treasurer's report as written.

3. Legislative Sub-Committee: The following motion was made, seconded and passed:

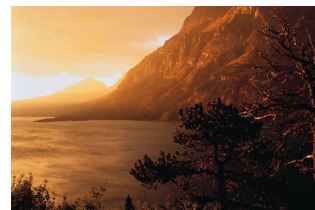
RESOLVED to create a legislative sub-committee consisting of the following members: Bob Maynard, John Patterson, Frank Vignola, Sonya Ling, John McIntosh – Chairperson.

4. Quarterly Prorated Dues: The following motion was made, seconded and passed:

RESOLVED to pro-rate dues for all membership classes based on the following schedule: 100% January – March, 75% April – June, 50% July – September, 25% October – December.

Adjournment: There being no further business, the meeting was adjourned.

John McIntosh





## Solar Mind Teaser



How many 5 kW systems on roof tops would it take to produce 450 average MegaWatts?

*Answer 3000 DC MegaWatts / 5 KW DC = 600,000 systems*

(Continued from page 1)

9 sq. mi x 50 aMW = 450 average MegaWatts = roughly 4.6% of the BPA's average output (9,871 aMW)

The system would have a name plate rated output of about 3,000 DC Megawatts.

If this system was purchased using the same rate that BPA has used to refinance it's dam debt, the cost of this power would have a leveled cost of 4.9 cents per kwh if installed for \$2 per watt (from factory floor directly to field). Based on a 20-year historic trend this price will be achieved with three doublings of current

production. Currently the PV industry is doubling production every 2-3 years, most of which is from Japan.

As shown in markets with incentives, at \$3 per watt (installed on a *building*) PV becomes a rational roofing material for homes and businesses with solar exposure. It becomes a sunk cost and increases the value of the building or home by 50-90% of the cost of the system (depending on utility rates and solar resource).

This sort of economies of scale could be achieved in 3-5 years with public investment of perhaps a billion or two

dollars as a production incentive. Such an investment would produce local jobs, clean air, improve our nation's energy security and re-establish the USA as the #1 supplier of solar electric power in the world. What is that worth?

By comparison:

In fiscal 2001, DOE's national nuclear cleanup budget was \$6.267 billion (source: Tri-city Herald)

"The Natural gas located in Alaska will provide environmentally friendly energy to America for years to come." "... in lieu of the price-floor tax credit, the Administration would be willing to support an appropriately structured 80 percent loan guarantee, accelerated depreciation, and enhanced oil recovery tax credit to support the construction of a pipeline to the nearest economical access point to markets in the continental United States." (source: letter from Spencer Abraham, Secretary of Energy to Pete V. Domenici, Chairman of the energy bill conference committee – Sept 10<sup>th</sup> 2003) The current cost of such a pipeline is estimated at a little over \$20 billion.

[Note: One average MegaWatt is one MegaWatt hour times 24 hours a day, 365 days a year. Ed.]

## DDX—David Douglas Express—Solar Hybrid powered light Rail Train nominated for Youth for the Energy Globe Award



Tom Ullmann has been notified that his project "The DDX - David Douglas Express - Solar Hybrid powered light Rail Train" is among the nominees in the category Youth for the Energy

Globe Award 2003!

"We cordially congratulate you, and will soon send you all details for further procedure, participation in the Energy Globe Television Gala 2003, which will take place on November 12th, in Austria, city of Linz. The winners will be announced during the TV-Gala." wrote Cornelia Kirchweger of the Energy Globe Team.

A film crew will be arriving in Portland on October 12th, 2003 from Germany to film and interview the students,

instructors, staff, and supporters during their three day visit.

Photos of the project will be display on on screen during the Energy Globe Television Gala. For more information go to their web page: [http://www.energyglobe.at/energygl/pages\\_en\\_heavy/energy\\_globe/index\\_energy.html](http://www.energyglobe.at/energygl/pages_en_heavy/energy_globe/index_energy.html).

Congratulation Tom and David Douglas High School. It is good to see Oregonians being recognized for the hard work and exciting ideas.

# San Francisco's Solar Cities Summit

by Frank Vignola



*Dan Shugar of Power Light greets Frank Vignola and participants of the Solar Cities Summit before giving a close up view of the 675-kilowatt solar array atop the Moscone Center. The system supplies as much as 1/3 of the center's midday electricity demand. Photo by Ben Chan*

On September 18-19, 2003, San Francisco held a Solar Cities Summit to tout progress made since the voters passed the Vote Solar Initiative. The summit brought together elected officials and solar experts to explore the challenges and find solutions to implementing solar.

"In San Francisco we recognize the benefits that solar energy offers—reduced air pollution, increased energy independence, peak demand relief and new jobs—but we must all become more ambitious in finding new ways to help bring solar energy into the mainstream", Willie Brown.

While Mayor Willie Brown was away in Australia during the conference, Mayor Jerry Brown from Oakland lead off with

opening remarks. He mentioned that supporting renewables doesn't guarantee re-election, but it is the right thing to do and he challenged San Francisco to compete with Oakland in implementing solar technologies.

About 100 elected officials and solar experts packed the War Memorial Building conference room to hear ideas and experiences from solar experts and elected officials. Steve Strong, Don Aitken, Don Osborn, and Amory Lovins provided the solar fundamentals from which policy must grow. Speakers varied from Will Toor the mayor of Boulder, through Doug Allday, President of Kyocera Solar, to Joyce Mason, Vice President, Marketing, Pardee Homes.

The afternoon had a session on Making Solar Energy Work in Your City had experts ranging from Ed Smeloff of the San Francisco Public Utilities Commission to Tom Van Dyck, Senior Investment Management Consultant, US Bancorp Piper-Jaffray to Loretta Lynch, Commissioner, California PUC. Loretta Lynch is a leader.

The day ended with a tour of the Moscone Center Solar Array (See Fig. above).

Friday's session was held at the Lawrence Berkeley National Laboratories. The emphasis there was on combining energy efficiency with renewables.

One lesson learned: solar means jobs and politicians are becoming interested.


# Northwest Solar Summit #6


## October 27-30, 2003


The Northwest is fortunate to have one of the nation's premier solar conferences providing a spectrum of solar information targeted to utility personnel. Over the last 5 years, the meetings were held at Sun Mountain in Washington. This year the meeting will be held at Sun River in central Oregon.

It takes a lot of effort by many people to put these summits together. Mike Nelson and Western SUN got these summits going and play a central role in these conferences. If you haven't been to one of these summits, they are great events and provide for an exchanges of ideas and interaction with those interested in solar technologies.


The goal of this sixth annual solar conference is to bring Pacific Northwest public and investor-owned electric utilities, as well as non-profit, state and federal agencies, together to learn about existing utility solar-electric programs, and to design utility solar programs that work best for Pacific Northwest electric utilities.

 This year's Northwest premier electric utility solar-electric conference will be October 27-30, 2003 at the exceptional Sunriver Resort in Sunriver, Oregon.

 The conference will provide an in-depth look at utility and non-utility solar-electric promotional programs, including Chelan County PUD's award winning SNAP program. Utility representatives will have an opportunity to describe their solar-electric programs, discuss what is working and what is not working, and formulate a program that will work at their utility. Sessions will deal with solutions to metering kilowatt production, system performance evaluation, and installer certification issues. Exhibits will showcase the latest solar equipment.

 Registration for Western SUN member organizations is \$320. The non-member fee is \$370. Registration includes all meals and conference materials, and can be made by

credit card or check. Register early, space is limited. To register go to: [Solar Conference Registration](http://www.chelanpud.org/scripts/conservation/SolarConference_chk/welcome.html) (http://www.chelanpud.org/scripts/conservation/SolarConference\_chk/welcome.html) or contact Jim White at Chelan County PUD, (509) 661-4829.

 Sunriver Resort village lodge guestrooms for the conference are specially priced at \$99.00 per night for single or double occupancy. The rate also includes Sunday night, October 26th. Our block of rooms will be held to September 26th. To register for lodging call 800-547-3922. To learn more go to: [Sunriver Resort](http://www.sunriver-resort.com) (http://www.sunriver-resort.com).



*Zero Energy Home (ZEH) demonstration trailer*

### UO Solar Radiation Monitoring Laboratory Participation in Northwest Solar Summit #6

The new satellite derived solar radiation database will be unveiled by the University of Oregon Solar Radiation Monitoring Laboratory at the Northwest Solar Summit #6. In

addition solar electric monitoring being conducted under a contract with the Energy Trust of Oregon will be discussed.

Richard Perez of SUNY Albany and



Dave Renné and Steve Wilcox of the National Renewable Energy Laboratory are also coming to present related solar resource assessment work. (See schedule below.)

#### Agenda for UO presentation at the Solar Summit October 30, 2003

9:00- 9:15	Solar radiation basics	Frank Vignola—UO SRML
9:15- 9:45	Creation of satellite based solar radiation database	Richard Perez—SUNY Albany
9:45-10:00	UO SRML Solar Radiation Data Base	Frank Vignola—UO SRML
10:10-10:15		break
10:15-10:30	Tool to calculate PV system performance	Peter Harlan—UO SRML
10:30-10:45	Upgrading the National Solar Radiation Data Base	Dave Renne—NREL
10:45-11:15	Tools being developed by the National Renewable Energy Laboratory	Steve Wilcox—NREL
11:15-11:30	Monitoring PV systems	Rich Kessler—UO SRML
11:30-11:45	PV Shade evaluation forms	Frank Vignola—UO SRML
11:45-12:00	Using satellite data for load matching	Richard Perez—SUNY Albany



## Northwest Solar Summit #6 Preliminary Agenda

Time \ Day	Monday	Tuesday	Wednesday	Thursday
8:00-8:45		Breakfast	Breakfast	Breakfast
9:00-10:15	Field Study of Kinematic & Aerodynamic Effects on Small Sphere Trajectories (Optional Golfing at Sunriver Resort)	What's Working-What's Not Presentations of utility solar-electric programs	PV Installer Certification & Training NABCEP, Esra Aurbach LRT –Jon Miller	Solar Resource Assessment Frank Vignola & Richard Perez Calculating PV performance Peter Harlan
10:15-10:30		Break	Break	Break
10:30-noon	Field Study (cont.)	What's Working—What's Not (Cont.) Presentations of utility solar-electric programs	OR & WA Utility Programs Oregon Energy Trust, Peter West SNAP, Sustainable Natural Alternative Power –Jim White	National Solar Radiation Data Base Dave Renne and Steve Wilcox Monitoring PV system - Rich Kessler PV shade evaluation - Frank Vignola Using Satellite data for load matching - Richard Perez
Noon-1:15		Lunch	Lunch	Wrap-up and Adjourn Box Lunch
1:30– 2:45	Field Study (cont.)	Non-Utility Solar Programs Bonneville Environmental Foundation, Rob Harman DOE, Heather Mulligan Idaho Water Resources, Gerry Galinato	Utility Metering of Grid Connected Solar Systems Simple mechanical meters to sophisticated electronic metering of battery and non-battery systems.	 <p>Conference Sponsors: Western SUN WSU Energy Program Chelan County PUD Oregon Office of Energy Oregon Solar Energy Industries Association BPA</p>
2:45-3:00		Break	Break	
3:00-3:50	Open House Zero Energy Home (ZEH) Demonstration Trailer Exhibit	Non-Utility Solar-Electric Programs (Cont.) WSU, Energy Program, Mike Nelson Oregon Office of Energy, Christopher Dymond	Finding Common Ground Group work session with consultant Melinda Aurbach.  Reaching group consensus on the best way to grow the solar energy industry in the Pacific Northwest	
4:00-5:20	Conference Registration Social Hour Sponsored by Oregon Solar Energy Industries Association Exhibit Hall Showcase the latest and greatest solar	Exhibit Hall Showcase the latest and greatest solar products	Exhibit Hall Showcase the latest and greatest solar products	
5:30-7:30	Dinner Speaker from Germany – Michael Schumacker Washington has 0.3 MW, California has 15 MW, and Germany has 85 MW of solar. With less sunlight than Seattle, what do they know that we don't?	Dinner Speaker – Tom Starrs, PhD, Executive Vice President, Sales & Marketing, RWE SCHOTT Solar Inc. The Future of Solar in America	Dinner Speaker – Mike Nelson, Executive Director Western SUN Solar Power – The supreme, ultimate harmony with the universe power source.	
8:00-9:30		<b>Western Sun Annual Meeting</b>		

# Letter from Executive Director

*(Continued from page 1)*

dollars (and reduced fossil fuel imports). That same level of development would mean thousands of additional jobs. These jobs would be dispersed all throughout Oregon. Everywhere the sun shines, the wind blows, or the cows crapped (biomass...) new jobs would be created.

It's time for Oregon representatives to recognize Oregon's renewable energy potential. Our representatives need to recognize that our natural resources are not limited to our forests but also include the sun, the wind, geothermal, and biomass resources as well.

I encourage all of you to contact your representatives today and remind them of Oregon's huge renewable energy potential. You can find a link at OSEIA's legislative webpage for your representatives contact information ([www.oregonseia.org/legislation.htm](http://www.oregonseia.org/legislation.htm)).

## Random Notes

### Growing the Renewable Energy Industry in Central Oregon

October 21<sup>st</sup> and 22<sup>nd</sup>, 2003  
At the Deschutes County Fairgrounds  
(Redmond, Oregon)

*Presented by the Central Oregon Intergovernmental Council and 3E Strategies in collaboration with The Oregon Office of Energy, the Oregon Department of Agriculture and the Governor's Community Solutions program. For more*

information, contact Sharon Nance  
Central Oregon Intergovernmental Council

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There are solar powered parking meter throughout Portland. One central meter keeps track on payments for on side of the block. This requires power and the cheapest, easiest, most dependable way is through solar energy.



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