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Solar "Exit Fees" - Truths and Misconceptions

By Elaine Hebert, NCSEA President

The California photovoltaics (PV) solar electric industry has been through a lot lately. The emerging renewables buydown (rebate) program, which includes PV, was on a yo-yo for many months. It ran out of money for small systems several times; the program parameters changed in March 2003, after the program had been on hold for four months; net metering was in danger of ending; and the worst of the state's electricity crisis passed, potentially lowering the number of customers interested in an alternative such as solar.

Enter the "exit fee" scare.

In early February, our email boxes started filling up with dramatic statements and requests to contact the Public Utilities Commission (PUC) and the Governor's office to prevent the PUC from approving a proposed "exit fee" on distributed generation of electricity (which includes PV). The emails said that "the proposal would give utilities the right to install meters that measure solar production on privately owned solar energy systems and increase the cost of this solar energy for customers by up to 40 percent." The fee would be on the order of "2 to 5 cents" per kilowatt-hour (kWh) generated. California's large investor-owned utilities (IOUs) – PG&E, Southern California Edison and San Diego Gas & Electric - wanted to use this revenue to "reduce the debt California incurred from buying lots of expensive (and dirty) power during the energy crisis." Some of the emails further claimed that the fees would be retroactive to 2001 - that utility customers who had already installed PV would pay "back" fees.

(By the way, the fee is nicknamed an "exit fee" because a local (distributed) electricity generator is, in a sense, exiting the established centrally-generated electricity resource portfolio. The more technical term for distributed generation is "departing loads.")

The prospect of the exit fee felt to the core to be undoing the support shown to PV by the state and the Legislature via the buydown program. Solar supporters were so vocal opposing the fee (whether the emails were accurate or not) that the PUC backed off and began to consider alternatives.

This gave everyone a chance to catch their breath. In sorting this out, this author uncovered some ver-r-r-r-ry inter-r-r-esting facts and counter-opinions.

First, some background: in 2001, the existing net metering law (see Net Metering sidebar next page) was expanded to include PV systems up to 1 megawatt (MW) for all classes of electric utility customers, but this law was to sunset at the end of 2002. In 2002, the California Solar Energy Industries Association (CalSEIA) lobbied to have this situation made permanent. The proposed legislation got hung up. What came out in the end was what might be considered a political compromise: net metering would continue indefinitely for all customer classes on PV systems up to 1 MW, BUT **three** fees on net-metered systems, or departing loads, would be instituted. This was in Assembly Bill 58.

AB 58 said that the fees would start in 2003; all net-metered PV systems permitted or installed by 12/31/02 would be exempt. So one of the statements in the February emails (about retroactive fees) was just plain false.

The three fees on departing loads are a bond charge (to

(Continued on page 2)

In This Issue:

* See erratum, page 3

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The NCSEA Mission

To activate community support in order to make solar a primary energy choice in the 21st century.

Board of Directors

Ed Nold has decided to leave the Board. Thanks for your hard work, Ed! See next issue for our Ed tribute...

About the Sun

The *Northern California Sun* is a publication of Northern California Solar Energy Society (NCSEA), a private, nonprofit organization founded in 1974. NCSEA is a chapter of the American Solar Energy Association (ASES).

Guest Editor: Elaine Hebert
Layout: Christopher Gayle

Exit Fees (Continued from page 1)

cover power purchased in 2001 by the state), a public benefits charge, and a charge to cover the high costs of power from long-term contracts signed by the Department of Water Resources (DWR) during the electricity crisis. The first two are firmly set - the bond charge is around 0.5 cents/kWh and public benefits charge is around 0.35 cents/kWh. These are small amounts; they total less than one cent per kWh. Matt Freedman, staff attorney for The Utility Reform Network (TURN), estimates that for a typical 2-1/2 kW PV system, this would come to about $3.50/month. The PUC has discretion over the third charge; it is not set in stone. So far, this doesn't look like a 40% increase in the cost of solar, as the emails stated. Also stated in those e-messages was that the utilities would receive the exit fee money; this is only partly true, as the bond charges would go to DWR and the public benefits funds to the Energy Commission for renewable energy and R&D programs, and energy efficiency and low-income programs run by the utilities.

According to Freedman, what happens next is implementing the fees – or changing the law. Assembly Member Mark Leno (D-SF) has proposed Assembly Bill 1684, which would "exclude solar installations from any cost responsibility surcharges that the commission may impose upon customer generation departing load" because "[t]he imposition of cost responsibility surcharges would impose a strong disincentive to investments in solar technology that would reduce the risk of future electricity shortages."

Because of the public outcry against the exit fees, PUC Commissioner Loretta Lynch issued an alternate decision that provided some exemptions to net-metered solar systems (but penalizes all other departing loads). Commissioners Michael Peevey and Susan Kennedy proposed a complete exemption of all renewable technologies from any future exit fees. Both PG&E and SCE have argued that the complete exemption for all solar installations violates AB 58 and cannot be adopted.

Net metering refers to allowing customers who generate their own electricity onsite to send the power through their electric meter and backwards toward the utility system; this allows the meter to turn backwards when more juice is being generated onsite than is being used onsite. The customer gets to "sell" his/her power to the utility company for the same price the utility charges so long as the amount of production does not exceed the customer's own consumption on an annual basis. From the utility's point of view, this isn't fair, because the utility has sunk a lot of money into putting up and maintaining the power lines and other infrastructure.

Freedman suggests that **if solar supporters want to take action at this time**, they contact their assemblypersons and **express support for AB 1684**. (For more on this bill, go to **www.leginfo.ca.gov** and search on the bill number).

One more item from the e-alerts wasn't quite accurate: "the proposal would give utilities the right to install meters…" SDG&E's plan to implement AB 58 would give customers the choice of installing a separate meter on which to base the fee or using an estimate of production from the PV system (based on 5 hours/day of output at the rated system capacity). Under the net metering law, utilities cannot require the installation of a second meter as a condition of service.

Many of us want to be proactive in supporting what we believe in, such as solar energy utilization. It pains me to say it, but we must use some discretion when reading the well-meaning action alerts that come our way. I hope I've helped clear up some misconceptions about the exit fee alerts. Keep those cards and letters coming in, folks! (The PUC is/was scheduled to make a decision on April 3.)

Solar-Powered Vaccine Storage

By Jim Norland

Solar-Powered Vaccine Storage Concerns for safekeeping vaccines and other medicines at proper temperatures and a global need for vaccination have spurred the development of refrigerators that can run on solar or other nonelectric grid sources. These refrigerators can be used in rural and undeveloped areas all over the world.

Some units from Energy Storage Technology, Dayton, Ohio, can operate on solar power with the company's photovoltaic solar grids.

Kyocera Solar, Inc., Matlacha, Fla.; Sun Frost, Arcata, Calif.; and Schott Applied Power Corp., Rocklin, Calif., are also making solar or nonutility-powered vaccine storage units for use in underdeveloped regions.

SolarChill, which the manufacturer describes as a "solar greenfreeze refrigerator for vaccine and food preservation," was developed by the Danish Technological Institute and the Danish refrigerator manufacturer Vestfrost.

Its direct current compressor was developed by Danfoss Company of Denmark.

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Thank You, Volunteers!

The NCSEA Board wishes to send a special "thank you!" to the volunteers who have recently helped out.

Shan Daroczi and John Hammett helped produce the last newsletter. And Dan Lieberman has volunteered to help answer the NCSEA voicemail.

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NCSEA Names New Board Members

The NCSEA Board is growing!

New to our group of dedicated solar volunteers are Liz Merry of Davis, and John Raphael of Alameda.

Both have been contributing their considerable skills and unique senses of humor to NCSEA efforts over the last year as volunteers, and the Board is delighted that they've chosen to join.

▲ Liz Merry

▲ John Raphael

Erratum

This issue of the SUN is Volume 26 Issue 5. Normally, issue 4 is the final issue of each volume. However, we erroneously identified issues 2 and 3 as issues 3 and 4. We apologize for the confusion.

NCSEA Business Members

We thank the following firms and organizations for their support of our activities through corporate and small business memberships.

Corporate Members

Akeena Solar
Alsop Solar Electric
EcoEnergies
Light Energy Systems
MC Solar Engineering
Palo Alto Hardware
Powerlight Corporation
Scholfield Solar.Com, Ltd.
Sky Power Systems
Solar Energy International
Team Solar, Inc.

Small Business

A2Z Energy
ACME Electric
Black Oak Electric
Douglas Beaman Associates
Green Home Design
Harmony Farm Supply
K. M. Urfer Engineering
Offline Independent Energy Systems
OM Solar Energy
OnGrid Solar Energy Systems
John Schaefer Consultant
Schott Applied Power
Solar Cell Sales
Sun Power and Geothermal
Verve Enterprises

Please support our business members.
Visit **www.norcalsolar.org** for complete contact information.

Bright Lights, Small Villages Why helping Africa get solar power is good for America

By Nicholas Thompson and Ricardo Bayon

Patriensa: a tiny town amidst lush farming land in the remote Ashanti region of Ghana, where per-capita income is less than a dollar a day. The day starts when the rooster crows and ends at about 9 p.m., when everyone has finished eating their pounded yams and plantains.

To Osei Darkwa, Patriensa is the ideal place to build a technological metropolis. Darkwa was born in Patriensa, educated in Norway, and able to make a bit of money working as a University of Illinois professor. Now he's back and building giant telephone, Internet, and health centers. Already, he has shipped hundreds of old computers from the US, set up computer literacy courses, and found donated hospital beds. He's currently cajoling friends and fellow villagers to donate labor and land. "It's just a sacrifice for a better tomorrow," he says.

But one thing is stumping him right now: power. The telecenter lies too far from Ghana's national power grid to receive any electricity, so Darkwa has set up solar cells on his roof. Funded partially by an American non-governmental organization, Greenstar, the cells provide enough power for basic lighting and five computers. Darkwa would like to do more, but he doesn't have the money for more cells. And getting electricity from the grid means wading his way through a corrupt and convoluted bureaucracy.

At first blush, it may not be clear that Darkwa's problem should concern anyone outside Patriensa. But although most Americans couldn't even find Ghana on a map, the energy choices of this small African country, together with those of millions of other people in the developing world, will ultimately affect the environmental, economic, and energy prospects of all Americans. If Darkwa and those like him--some 2 billion energy-starved people around the world--decide to power their televisions and refrigerators with coal and oil, the eventual environmental meltdown will affect every place on earth.

But if wealthier nations can help their poorer neighbors turn to clean and renewable energy, the air will be cleaner, there will be less pollution and poverty, and new trading markets will develop--and the price of oil may even drop. In other words, the US shouldn't help Darkwa go green merely for his sake, or just because it's a nice thing to do. We should help Darkwa go green because it is profoundly in our own interest.

Power Gridlock

Solar energy makes vastly more sense in Patriensa than it does in Philadelphia. Americans tend to take electricity for granted. You can buy a hair dryer, plug it in, and turn it on just about anywhere, thanks to a "grid" of generating stations, power lines, and transformers that enmeshes the entire country. But that grid is the product of hundreds of billions of dollars of government subsidies and private investment over the years. In developing countries, by contrast, functioning grids tend to be limited to urban areas, are usually nearing obsolescence, or cannot keep up with demand. Most places lack any grid at all. As ESKOM, South Africa's largest utility, has discovered, extending the grid to serve a few households often costs significantly more than providing the same village with solar power, and so it has begun to install solar in hard-to-reach communities on a monthly-fee basis.

Even where grids are available, state-owned or -run utilities can be corrupt and unreliable. In Ghana, for example, the one-third of the population that does have access suffers through periodic blackouts, energy spikes, and capricious policies such as a recent 60 percent increase in electricity taxes. The country largely relies upon a single giant dam. When a 1998 drought inflicted rolling blackouts, students at the country's top university clustered underneath solar-powered street lamps just off campus to study for their exams.

Solar power and other decentralized sources of energy can help get around these problems.

Solar Power to the People

Another reason solar makes more sense in rural Ghana than downtown D.C. is, simply, competition. In the United States, renewable energy has to compete with highly efficient, cheap, subsidized, and easy-to-find fossil fuels. Burning coal may melt icebergs, but in America coal is inexpensive and widely available, and we have already invested in transmission infrastructure. It costs 2-4 cents a kilowatt hour to generate electricity from coal; solar energy costs several times that amount. Solar costs are slowly dropping, and burning coal carries long-term health and environmental costs. But in the short term, solar makes the most economic sense: using fossil fuels would mean investing heavily in infrastructure, transmission capabilities, generating facilities, and fuel.

So why aren't more developing-world villagers using solar power? The main obstacle isn't income per se, but access to financing. The world's poor can and often do pay for energy on a month-to-month basis; it's difficult for them to amass any capital to pay for renewable energy systems upfront. A common problem in many developing nations is that no one is quite sure who owns a given plot of land--which deprives would-be entrepreneurs of the most common form of collateral for loans.

If the US can help provide financial tools and incentives to change that

(Continued on page 5)

Metering the Sun

By Richard Komp, Maine Solar Energy Association

One of the aphorisms floating around since the seventies is that large multinationals wouldn't be interested in using solar energy until they could figure out a way to meter the sun. Shell Oil seems to have done just that: Shell Renewable and ESKOM, South Africa's national electric utility, announced a joint venture to bring photovoltaic electric power to remote villages in East Cape Provence. In this part of the country, installing photovoltaic systems is much cheaper and more reliable than extending the utility grid (normally the case in remote areas in the Developing World).

What is unusual about this project is the way the users are being charged for their solar electricity.

The individual PV modules have a microchip imbedded in the encapsulant behind the cells, and an unusual cable connects the modules to a specially designed charge controller located in the peasant's house. This charge controller has a touchpad, and once a month the peasant visits the local general store and pays a monthly fee to receive the month's pass-number. Only when the proper number is typed into the touch pad will the PV module continue to deliver electricity to the storage battery in the house. The 50-watt systems are enough to run a few fluorescent lights, a small TV set, and a radio, and are never actually owned by the peasant. Instead, as long as the monthly fee is paid, the Shell joint venture will repair and maintain the system, which continues to belong to the joint venture.

The payment schedule is geared to the extremely limited financial resources of these people. After paying a $30-equivalent deposit, the peasant pays about $8/month for the electricity. This is based approximately on what the household was paying for kerosene, so instead of buying $8 worth of Shell kerosene or candles made from Shell paraffin, the peasant now pays Shell the same amount of money for electricity. Certainly there are benefits from this exchange: the light from the fluorescents is far superior to the dim yellow from the kerosene lamps; the noxious fumes of burning kerosene are eliminated; the family gets to watch television (editor's note: this last may be debatable as a benefit); and the 50 watt system, over its 25-year lifetime, will eliminate 12 metric tonnes of CO_2 from the atmosphere. However, a good portion of the money will leave the local economy.

In Nicaragua, the Grupo Fenix has started to install similar systems with a financial plan that has significant differences. First, the entire system is actually manufactured in Nicaragua and all the personnel involved in the project (except myself, and I don't take any pay for the work) are residents of Nicaragua. This means that all the money paid by the campesinos stays in the country. Second, the campesino actually owns the system and the money paid each month (after the $40 "prima" or downpayment) goes to pay off a microloan. With a payment of $10 per month, a 35-watt system is paid off in about 4 years. The first year's maintenance is covered (I'm arguing to make this 4 years) as part of the contract. The campesino will probably have to replace the storage battery after 5 years and pay for this over the next 8 months or so, but after that the payments stop even though the electricity continues to flow from the sun. What we have done to make the project valuable is, instead of embedding a microchip in the module, we have embedded a trained solar expert in each village. The latest of these installers, who also visit the campesinos to collect the money each month and take care of any problems with the systems, are former land mine victims who have been through the training program set up as part of our Land Mine Awareness Project, sponsored by a Canadian government program. While nowhere close to the 50,000 households Shell expects to include in its marketing program, we have been expanding this program in the northern areas of Nicaragua and have installed over 100 systems so far (although the majority of them have been community systems paid for by outside grant money and not involving the micro-loans). We have been talking with various groups about financing many more of the micro-loans.

Reprinted from the Maine Sun, with permission from Richard Komp.

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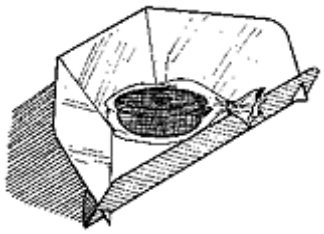

Solar Cookers International's Solar Cookit http://solarcooking.org (916) 455-4499

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short-term mindset born of necessity and bring power to the world's poor, the benefits would be enormous. Electricity allows people to irrigate farmland, refrigerate vaccines, run machines, work later, pump water, and perhaps, eventually, connect to the Internet. Widespread access to power can lead to fundamental changes in how people live, setting the stage for a global surge in development. "People don't have power because they are impoverished," says Nana Yaw Boakye Asante, the CEO of a private Ghanaian solar company, Terrasolar. "But they are impoverished in part because they don't have power."

Adapted from The Washington Monthly December 1, 2002. Printed with permission from Ricardo Bayon

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Solar News

PV/Roofing Partnership

UNI-SOLAR, a division of Energy Conversion Devices that manufactures flexible photovoltaic (PV) materials, announced in January a unique strategic alliance with Solar Integrated Technologies of Los Angeles to utilize UNI-SOLAR's flexible solar electric laminates for integration with single-ply roofing membranes for Southern California. UNI-SOLAR is calling this a "basic building block" to produce the first (in North America) building-integrated PV roofing membrane system for commercial and industrial uses. This partnership is said to hasten the marriage of the solar industry to the commercial roofing industry. From a 1/7/03 press release by Energy Conversion Devices. See **www.uni-solar.com** or **www.ecologicinvestor.com** for more info.

East Bay Habitat for Humanity Uses PV; Donation$ Accepted

East Bay Habitat for Humanity (EBHFH), a non-profit residential housing developer, announced that it will begin construction in 2003 on 26 housing units with solar electric systems designed to provide most if not all of each low-income family's annual electricity needs. According to Lisa Boege of EBHFH, the 26 homes, to be placed on in-fill lots in Oakland and nearby Livermore, will each have a 2.22 kW solar electric system on their rooftops, and will be grid-connected to Pacific Gas and Electric, the area's electric utility, as part of EBHFH's newly developed "Green Habitat Project." Discounted equipment and technical and program management assistance are being provided by Sky Power Systems of Castro Valley, CA. Each EBHFH solar electric system will consist of 12 Sharp 185 Watt modules wired into an SMA SunnyBoy 2500 inverter, and will be attached to the roof using Uni-Rac mounting hardware. These systems are expected to save each of the 26 families in this "Green Habitat Project" nearly $500 per year in reduced electric bills.

While much of the overall expense is being reduced by generous discounts on material and labor as well as the California Energy Commission rebate program, EBHFH is actively soliciting donations to cover the remaining $133,000 ($5,100 per unit) cost of this "groundbreaking" PV project. Contributions can be mailed to EBHFH at 2619 Broadway, Suite 215, Oakland, CA 94612. Information about the "Green Habitat Project" can be found at **www.eastbayhabitat.org** or by calling 510-251-6304. Sky Power Systems, an NCSEA member, can be reached at **www.skypowersystems.com** or 510-727-9640 for more information on the solar electric technology being used. From a EBHFH press release Feb 25, 2003.

Nevada Renewable Energy

Nevada beat California in passing a Renewable Portfolio Standard (RPS), legislation that requires a certain percentage of renewable energy sources – solar, wind, geothermal and biomass – to generate electricity for customers within the state. The Nevada legislation contains an escalation provision that requires providers of electric service to increase the use of renewable energy by two percent every third year, until the provider's energy portfolio accounts for 15 percent of its total energy sales. The requirement for solar-generated power must be 5 percent of the total renewable energy portfolio.

Two Nevada-based utility subsidiaries have signed long-term contracts with Duke Solar Energy LLC to supply 50 megawatts of electricity generated by solar power from a plant to be located near Boulder City, Nevada. The Public Utilities Commission of Nevada (PUCN) reviews such contracts before determining whether they should be approved.

Nevada Governor Kenny Guinn said, "The 50 megawatt solar contract submitted for PUCN review today represents a large investment in our economy and will make Nevada the second largest producer of solar energy in the country. Southern Nevada has among the best solar resources in the country and this facility will pave the way for additional solar energy in the future." From a December 20, 2002, press release from Nevada Power. (For information on California's RPS, see the last issue of the SUN, Jan 2003).

PG&E launches E-NET Online Application System - It's here!

The E-NET Online System (ENOS) is live at **https://www.pge.com/enos/**, and we encourage all of you to use it as a means for submitting your customer's application form. This online version takes the place of the paper application, so if you fill it out you don't need to mail in that portion of the application. We still need you to send in the other paper items, such as the Single Line Diagram and Building Permit. The use of this system will allow the application to be processed faster and eliminate other issues related to the misreading of hand-written components. Items input on the Equipment page are validated against the current CEC approved list for Inverters, Disconnect Switches, PV systems, and Wind Turbines. You will receive an alert if you enter an invalid component. This eliminates delays in the processing of

(Continued on page 7)

(Continued from page 6)
applications that contain invalid equipment. Rating and Total Capacity will be calculated by the system, so you cannot fill in those fields. If you have any questions or encounter any issues regarding the Online App, please contact Dave Turner at 415-973-2291 (e-mail **dltk@pge.com**) or Frank Salguero at 415-973-2284 (e-mail **fjs2@pge.com**). Additional information on E-NET program here. at **www.pge.com/002_biz_svc/gen/standard_enet.shtml**. Also, please note that a copy of the customer's most recent PG&E bill has been added to the list of documents required for each E-NET application. Due to PG&E's changeover to a new customer information system, we need certain information that is on the bill in order to reliably identify the meter location.

USDOE Announces Solar Decathlon 2005

The Solar Decathlon (**www.eere.energy.gov/solar_decathlon/**) is an intercollegiate competition among student teams that will design, build, and operate solar-powered houses. The solar decathletes must supply all the energy for an entire household, including the transportation needs of the household and home-based business. During the event, only the solar energy available within the perimeter of each house may be used to generate the power needed to compete in the ten Solar Decathlon contests. The houses are built and put on display on the National Mall for several weeks in the fall in Washington, DC. This competition is open to US and international colleges, universities and other post-secondary educational institutions. Let's get a California team there this time! More info at **www.nrel.gov/contracts/solicitations.html**.

(Thanks to Tor Allen and **www.californiasolarcenter.org**).

Proton Energy Systems, Inc., a maker of hydrogen generation and fuel cell technology and products, announced an award of $375,000 to develop a 1 kW regenerative solar/Proton Exchange Membrane, or PEM, fuel cell demonstration system. The contract, with Jacobs Sverdrup Technology, Inc., a subcontractor to the U.S. Navy, is to support testing at the Naval Air Weapons Station at China Lake, California.

Proton's patent-pending renewable interface is capable of producing hydrogen from water using electricity directly generated by the solar array. During a six-month test program, the system will supply power during daylight hours using its solar panels, while simultaneously using some of the solar electricity to generate hydrogen and store it in tanks. During the night, the system will regenerate the hydrogen produced from sunlight and create clean electrical power through a PEM fuel cell with the only emission being water, which is recycled to create hydrogen from the sun again.

Proton Energy System's President and CEO Walter "Chip" Schroeder says, "This project will be a demonstration of a truly sustainable energy system. In the near term, it could solve the vexing challenge of providing electrical power to remote locations and ultimately has the potential to reduce our dependence upon imported oil and increase homeland security." From a 1/23 press release from Proton Energy Systems, Wallingford, CT. See **www.protonenergy.com** for more info.

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Upcoming Events - For more events, visit www.norcalsolar.org

Date	Event	Location	Contact Info
April 16 6-7 PM	Solar Power for Your San Francisco Home (Seminar)	SF Main Library	415-557-4277
April 29	Solar Energy Seminar for Contractors	Petaluma (Other dates in So. Calif.)	Solar Depot 707-766-7727 x 104 **Ana@solardepot.com www.solardepot.com** Click on "PV Workshop"
May 18 10 –3PM	Eco-Home and Garden Tour *(benefit for Live Oak Waldorf School)*	Auburn	530-878-8720 **www.liveoakwaldorf.org**
June 21-26	Solar 2003 - National Solar Energy Conference	Austin, TX	**www.ases.org** 303-443-3130 **ases@ases.org**
Oct 4	Annual Solar Home Tours	Northern California locations	**www.norcalsolar.org**. Also takes place in many other parts of the country – see **www.ases.org.**

Northern California Solar Energy Association

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Become a Member

If you are not already a member of NCSEA, it is easy to join. Not only will you get a copy of this quarterly newsletter, but you will also get discount admission to the Solar Home Tour and other NCSEA sponsored events. Most of all, you will have the satisfaction of knowing that you are helping add your voice to the growing number of citizens insisting that we choose a different energy future with solar energy. To sign up today, go to **www.norcalsolar.org/join** or use the handy form in this newsletter.

Join Our Free Emailing List

To stay on top of the very latest in the world of solar, simply go to **www.norcalsolar.org** and type your email address in the box provided. About every two weeks, we'll send you a concise bulletin of information on current solar happenings. And you can always unsubscribe with a click of a button. We never spam, and we never sell or trade your email address. Have your friends sign up too - help spread the solar word!

Volunteer

We need dependable volunteers who would be willing to help us with all aspects of running and staffing various events. Some examples are: docents for the Solar Home Tour, staffing the NCSEA booth, mailing this quarterly newsletter. If you'd like to become an NCSEA volunteer, send an email to **info@norcalsolar.org** or call 510-869-2759.

Join the Board

We are always looking for talented people to help provide leadership for the organization. In particular we are looking for help in the following areas:

- Publicity
- Fund raising
- Publication
- Event planning
- Bookkeeping and accounting
- Legal

To find out more about becoming a board member, send an email to **info@norcalsolar.org.**

YES! I WANT TO JOIN/GIVE TO NCSEA TO HELP ENSURE A RELIABLE, SAFE AND ABUNDANT ENERGY FUTURE FOR CALIFORNIA.

Please make check payable to NCSEA and mail with the form below to the address above.

☐	$30	Individual NCSEA Membership
☐	$75	Small Business/Professional
☐	$150	Corporate
☐	$500	Solar Star
☐	$15	Student/Limited Income

Name _____

Address _____

City, State, Zip _____

Phone _____

Email _____

☐	Free	ASES Affiliate Membership (included in your NCSEA membership)
☐	+$65	Full ASES Membership (includes a subscription to *Solar Today* magazine)

☐ Yes, I would like to receive electronic newsletters from NCSEA and ASES.

☐ I'd like to volunteer to help NCSEA!

☐ This is a renewal!