

The NMSEA SunPaper

September/October 2009

Published Bimonthly

Volume XVII, Number 5

2009 Solar Fiesta! Guide

Power Shift!

It's our
planet.



It's your
choice.



September 26-27, 10am to 5pm
Highland High School
Albuquerque, NM

10th Annual Solar Fiesta!
Learn Easy Ways to Save on Energy!
New Mexico Solar Energy Association
www.nmsea.org

Inside this Issue

Page	
2	NMSEA Personnel, Advertising Rates, Words of Sol
4	Solar Fiesta General Information
6	Educational Opportunities at the Solar Fiesta
8	Kids' Area Activities
10	PNM Changes Solar Programs
12	Solar Fiesta Sponsors, NMSEA Booth
14	Solar Bake-Off, NMSEA Board Meeting, "Power Shift!" Logo
16	Solar Fiesta Site Map
17	<u>Indoor Map, Legend of Exhibitors, Greenbuild International Conference</u>
18	Seeing is Believing - Solar Works
19	Legend of Exhibitors (Alphabetical), Solar Fiesta Silent Auction
20-21	Solar Fiesta <u>Workshop Schedules</u>
22	Solar Fiesta <u>Workshop Descriptions and Presenters</u>
26	Sunport Display Offers NM Solar History Lesson, Solar in All 50 States
32	NMSEA PV Workshops, Solar Fiesta Alternative Vehicles Include Tesla Roadster
35	Santa Fe Chapter Resumes Meetings
41	Adobe-making Demonstrations
42	NMSEA Chapter Leaders
44	Speaker and Exhibitor Contact Information
46	Sustainable Las Vegas Chapter Discusses RE Issues
47	NMSEA Membership Application
48	Mission, Power Shift! Coming Events

The NMSEA SunPaper

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If you wish to submit an article, you may do so by traditional mail or send it by e-mail to info@nmsea.org.

Advertising Rates

All advertising is in black and white, and photos and graphics must have a resolution of at least 250 dpi in JPEG, TIF, or PDF format. Text-only ads may be provided in MS Word (.doc) format (not .docx). Ad copy must be e-mailed by the 15th of the month before publication. Circulation is typically 800, but 3,000 for the Sept/Oct Solar Fiesta Guide. The size requirements and new prices for the SunPaper ads are as follows:

		<u>SunPaper</u>
Full Page:	9½" H X 7" W	\$115.00
Half Page:	4¼" H X 7" W	\$65.00
Quarter Page:	4¼" H X 3½" W	\$35.00
Biz Card:	2" H X 3½" W	\$20.00

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Charting a Course Past the Dark Side to the Golden Solar Age

Recently we have seen a flurry of articles in numerous venues presenting the pros and cons of different approaches as to how renewable energy (RE) can best be utilized to solve the energy problems. These presentations by energy specialists have provided laudable reasons for their particular approach to RE. However, often these presentations over-hype their own approach and de-rate the other RE competitors, a common practice, of course, when promoting the product that makes you money. It's a healthy exercise to point out the strong and weak points of each RE source, but let's not be too critical of those who are not at exactly the same point on the RE path that we may be. Otherwise, those sources known as the "Dark Side" energy monsters - Nuclear, oil, and Coal - the "NoCs" (pronounced "No Sees") are going to smother RE, while we quibble about the most perfect RE path!

Probably the most realistic way for RE to become a major energy provider is through a diverse balance of large RE facilities interconnected with individual and community power systems. Community or co-op power systems could work well as part the "Smart Grid" in an emerging economically-viable RE energy future. The smart grid will allow a multitude of diverse power sources to flow as needed with variable cost and billing processed in. (We have to make sure the real costs of NoCs are included.) At a local level, the community model could have a "Micro Grid" to manage the power sources within the community and/or sell the community's excess power in fairly large blocks through the smart grid for transfer to where it is most needed for a good price.

We need to act like family and grow as communities for the right changes. As nature is beautiful in its balance

(Continued on page 14)

NMSEA Vision Statement

We envision a future and believe in the possibility of a civilization based on clean, renewable energy, where future generations will be able to peacefully enjoy the Earth's natural abundance and biodiversity, and where all people have access to affordable, renewable energy.



Put the power of the sun in your pocket while you protect the environment

If you've ever thought about installing Solar Photovoltaic (PV) panels on your home, there's never been a better time.

You know that solar energy is a great source of renewable energy that produces no emissions. Solar Photovoltaics (PV) is more affordable than it has ever been. Federal and State tax credits have never been higher, and the PNM SolarPV Program pays you in two ways – by reducing your electric bill, and by paying you for the environmental component of the energy you produce. Your investment in solar energy can pay for about 90 percent of its initial cost in 12 years. It wasn't that long ago that solar energy had a payback horizon of 30 years or longer.

- Get 40% in Federal and State tax credits on equipment and installation.
- PNM also pays 13¢ for the environmental component of each kilowatt hour of electricity to help us meet our renewable energy goals.
- The energy that you produce and use reduces your PNM electric bill.

Learn about energy efficiency programs for residential customers, too.

- Home lighting discounts.
- Refrigerator recycling.
- PNM Power Saver for refrigerated air conditioning.



Stop by the PNM Booth.

Get the details about the PNM SolarPV Program at PNM.com/solar, give us a call at 505-241-2750, or send us an email to solar@pnm.com.



Solar Fiesta!

General Information



Location: Highland High School, 4700 Coal Ave. SE, Albuquerque, 87131

Welcome to our great Solar Fiesta site! Our gratitude goes to Principal Nikki Dennis, Assistant Principal Frank Maestas, Activities Director Pat Arguelles and Albuquerque Public Schools for their support in the use of this wonderful facility for the third year!

Highland High School is accessible from both I-40 and I-25. From the Big I (the intersection of I-25 and I-40), go east on I-40 or south on I-25.

Going south on I-25, take the Lead and Coal exit. Turn east onto Coal. Go about 3 miles to the light at Washington, where Coal becomes Zuni. Turn left onto Washington and right onto Coal Ave. again.

Going east on I-40, take the San Mateo Blvd Exit (the second exit). Turn south. Go about 2 miles to the light at Central. The school is SW of the San Mateo/Central intersection.

If you go straight, take the next right onto Silver and then left on Monroe to the front of the school. If you turn right, take a left at Monroe and drive straight to the front of the school. Free parking is north and east of HHS.

Ticket and Workshop Prices: Pay at Main Gate, East Entrance

Admission to Exhibit Grounds

\$5 Adults
\$4 Seniors
\$3 Kids over 12 and Students with ID
Free Admission for NMSEA members and:
PNM Employees with ID
Teachers with ID
Children under 12

Admission to Workshops

Single Workshop Pass	\$10
NMSEA Members	\$7
All-Day Workshop Pass	\$30
NMSEA Members	\$20
All-Weekend Workshop Pass	\$50
NMSEA Members	\$35

Other Discounts on Entry

NMSEA Members - Remember to bring your NMSEA membership card for discounts on entry and workshops. Join or renew your membership before or at the Solar Fiesta to receive the discount.

PNM Customers – Check your PNM bill insert for a discount coupon. Bring it with you for \$1 off of exhibit entry (for adults and seniors) or \$5 off an all-day or all-weekend workshop pass.

General Info

No pets, other than those trained to assist handicapped individuals, will be allowed in the Solar Fiesta grounds.

Food and drink will be available from several concessions.

General and handicapped parking will be north of the main gate. General parking will also be available in other areas and along streets near Highland High School.

Recycling barrels will be available near trash cans. Please dispose of trash and recyclables properly.

Note: Bottled water will not be sold nor given away at the Solar Fiesta. Water fountains, vending machines and other drinks will be available. Bring your own cup or bottle to fill or buy one of our water bottles.



NEED CLEAN ENERGY DIRECTIONS?

www.CleanEnergyNM.org

Your Source for Energy Efficiency and Clean Energy Information

ECMD, the state Energy Conservation and Management Division, provides advisory support to New Mexico's general public, tribes, public schools, state agencies and institutions of higher education. If you have questions, whether professional or in general, start looking for directions to energy efficiency and clean energy at our website.

- *Renewable Energy*
- *Sustainable Building*
- *Energy Star Rebates*
- *Clean Energy Incentives*
- *Energy Efficiency and Conservation*
- *Clean Fuels and Efficient Transportation*



New Mexico Energy Conservation and Management Division

Energy, Minerals and Natural Resources Department, 1220 South St. Francis Drive • Santa Fe, NM 87505
 (505) 476-3310 • FAX (505) 476-3322

Funding provided by the 2009 American Recovery and Reinvestment Act through the U.S. Department of Energy

Educational Opportunities at the Solar Fiesta

Educational events for adults and children abound throughout the weekend. Once again, the solar and renewable community has reached out to support NMSEA and you. Our instructors are a diverse group of seasoned and emerging professionals.

Free Workshop, 9:00 am - Reducing Energy Use

We begin each day of the Solar Fiesta with a free workshop in the Aspen Room (Lecture Hall; see map) for the general public at 9:00am before the Solar Fiesta opens. Perfect for people who want to lower their energy use, the free workshop shows you free and low-cost ways to lighten your utility bill load, frequently up to 30%.

Workshop Tracks

To assist you with finding the classes you are interested in, workshop categories are indicated by letters within parentheses at the end of each workshop title. The schedule is shown on pages 20 and 21.

Design/Materials (DM)

Passive solar building design and Earth-friendly and energy-saving building materials.

Energy Efficiency (EE)

Utility bill reduction through energy conservation and efficiency. Efficient lighting, appliances, window coverings and household products.

Energy and Policy Issues (EP)

These workshops feature discussions of current energy and policy issues for New Mexicans.

Financial (F)

Solar tax credits, green home financing and sales, net metering and Renewable Energy Certificates (RECs).

Green Jobs (GJ)

In the Birch Room on Saturday in both the morning and afternoon there will be panel discussions on educational opportunities and job skill requirements with guidance and advice.

Heating, Cooling and Water (HCW)

This broad category encompasses everything that deals with water or heat, from solar water pumping, water catchment and greywater use to solar heating and cooling, and heating and cooling efficiency.

Renewable Energy (R)

On- and off-grid photovoltaics, wind generation, and utility interconnection.

Sustainable Living (SL)

Workshops on green living, from greenhouse designs to off-grid living, energy independence and solar cooking.

Technical/Professional Track (T/P)

Workshops specifically for current and aspiring solar and renewable vendors. Within this track, the Technical Sessions return to NMSEA's roots. Open to the public, but at a level for professionals.

Transportation and Fuels (TF)

These workshops focus on alternative fuels and new, more sustainable modes of transportation vehicles.

Room Key (See map p. 16 & Workshop Descriptions p. 22.)

A = Aspen, B = Birch, C = Cedar, D = Dogwood, E = Elder, Q = Quad (outdoor)

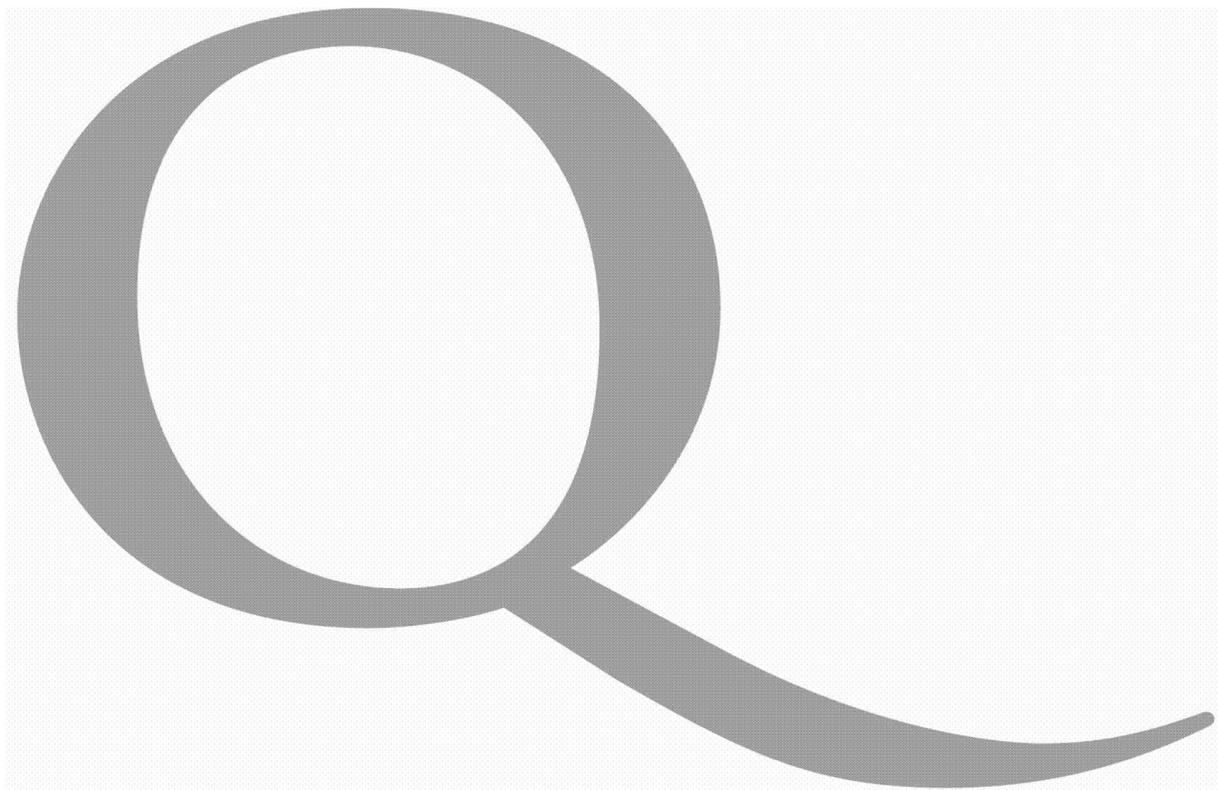
An all-weekend workshop ticket is an inexpensive way to maximize your contact with professionals in the solar and renewable industries. See prices on page 4. Set aside the weekend to boost your solar education.

Double-check Schedules!

Some events and activities may change after this Guide is printed, so please verify schedules and locations upon arrival.

Use This Solar Fiesta Guide!

Help us be gentle on the Earth and bring this Guide with you to the Solar Fiesta. Plan ahead for the exhibits and workshops you want to see. Recycle your guide as you leave.



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Kids' Area Activities



The 2009 Solar Fiesta will feature many exciting events and activities designed especially for kids!

Solar Scavenger Hunt - Pick up your instructions at the Scavenger Hunt Table located directly west of the main gate. Gather clues as you visit booths and exhibits throughout the Fiesta grounds. Then exchange your completed Scavenger Hunt form for a prize back at the Kids' Area.

Solar Micro Cars Races & Mini Truck Rallies - Solar Car Races for prizes will be held each day between 11:00 & 1:00. There will be car assembly and tune-up classes held first, and then the Races will begin! These Races are open to all kids and kids may bring their own Solar Micro cars, too. Monte Ogdahl and others are sponsoring FREE car kits for early-arrival MEMBERS each morning. There will be Drag Race Tracks, two-lane "Indy" tracks and Rally Corrals with demo cars available, including some of the new "2010 performance vehicles" to test drive both days. The final race will be a demolition derby in a round arena where multiple cars will all start up at once. The last car moving wins! **New NMSEA members will also receive a raffle ticket for a solar car!**

Solar Model Car Races - Albuquerque Public Schools (APS) - 3rd, 4th, and 5th graders won't want to miss the Solar Model Car Workshops on Saturday. There will be one at 10a.m. and another at 2p.m. Boys and girls will learn to assemble their own cars and then participate in a race afterwards. There will be awards for the winners and all participants will get to take their cars home with them. The APS "Energy S.T.A.R.S." program is the proud sponsor of this event, and Ron Rioux, APS District Energy Conservation Coordinator, will teach both workshops.

Solar Ovens - Enjoy chocolate chip and sugar cookies freshly baked by the sun.

Girls Gone Green - A group of girls that is trying to help save our Earth through education about the reduction of our carbon footprint. The Girls have distributed over 2,000 CFL bulbs with their goal of getting every household in the US to replace their incandescent bulbs in order to completely shut down two coal power plants. All 5th-6th grade girls welcome to join.

Kids Raffle, Poster Contest & APS Attendance Awards - Kids, get your raffle ticket at the main gate, put your **completed ticket** in the jar at the Special Table to win one of many prizes! Must be present to win. If you don't hear your name called, check at the Scavenger Hunt table before you exit the Fiesta. K-12 students show us your creativity by **designing** a poster that we'll use at the Fiesta. Go to nmsea.org for details and rules. Winners of the Solar Poster Contest will be announced during the Fiesta. **APS Students:** We'll award a trophy to the class from each grade that has the highest Fiesta attendance. So encourage all of your friends to join you for a great day at the Fiesta!

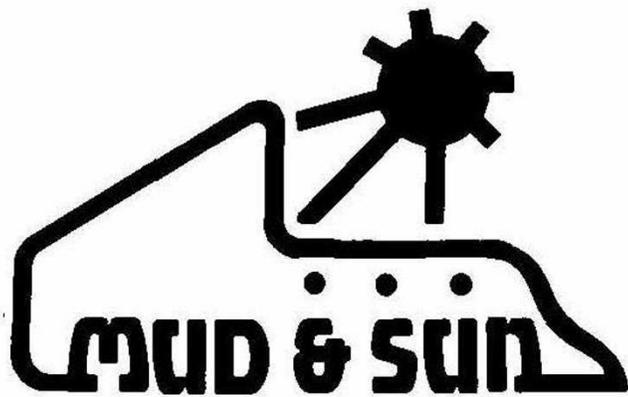
Special Performances & Activities

Both Days: Various **make-your-own activities** such as **Pizza Box Solar Ovens** and **Parabolic Water Heaters**.

Saturday: Energy On-the-Move from Cleveland Middle School will host workshops making Pizza Box Solar Ovens and a special Wind Propeller project. **Zoo-To-You** and **Talking Talons Youth Leadership** educational presentations at 10a.m., 11a.m., 1p.m. and 2p.m.

Sunday: The Albuquerque Astronomical Society will feature several telescopes with special lenses and filters to allow you to look right at the sun. Hopefully we'll see some sunspots this year!

Sponsors Needed - Please contact NMSEA if you would like to help us continue to make these programs possible, through a donation of time or cash. Your time will be put to use helping us staff the various booths in the Kids' Area. (No technical expertise required.) And your cash donation will help us to provide more prizes for this important and educational Solar Fiesta! Please mention **Kids** with your offer.



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PNM Changes Solar Programs

By Ron Herman

Since 2006, PNM has had a small solar electric power program under which it allows the connection of photovoltaic (PV) systems to their grid and compensates system owners in two ways – REC purchase payments and Net Metering credits. At the beginning of this year, PNM also launched a large-scale PV REC purchase program. On July 1 of this year, they proposed changes to the REC program, so first we should all understand their current provisions.

REC Payments

The REC payments are for the Renewable Energy Certificates that PNM must acquire to meet the renewable energy percentages stipulated by the Public Regulation Commission (PRC) in their Renewable Portfolio Standard. PNM makes REC payments based on the total energy produced by a solar energy system, both for what is consumed by the owner (a REC “incentive”) and for what goes to the utility grid. Essentially, this is for the energy that PNM avoids generating by conventional plants. These payments are currently \$0.13 per kilowatt-hour (kWh) in 12-year contracts for small systems under 10 kilowatts (kW) and \$0.15/kWh for larger systems in 20-year contracts. (Peak demand and PV system size for a home is typically about 2 kW.) The size limit for large systems is currently 1,000 kW (1 megawatt, MW).

Net Metering Credits

The Net Metering energy credits are earned for every kWh that the system owner sends to the utility grid each month. Under the small system program, the energy sent to the grid is subtracted from the energy drawn from the grid when there was no sunshine or not enough to meet the user’s demand. So, if a property owner takes 500 kWh from the grid in a given month, but sends 300 kWh to the grid, the owner is charged only for the net 200 kWh. If the owner’s system produces more than the property draws from the grid, PNM credits those kWh against future consumption. No cash is ever paid for any surplus energy on the account for small systems until the customer leaves the PNM service area. For large systems, PNM actually pays cash for the Net Metering credits each month. Both rates paid by PNM are variable and based on PNM’s avoided costs. Currently the rate is \$0.09/kWh.

Changes Proposed

On July 1, PNM issued a new filing with the PRC asking for changes to this program based on two problems of growing significance. First, if continued in their current form, the costs of these programs would raise electricity prices for all customers above the Reasonable Cost Thresholds (RCT) established by the PRC for 2010 and 2011. Therefore, they are proposing to

eliminate REC payments for new small systems after about 1 MW is added to their grid each year. After those limits are reached, applications will be placed on a waiting list for RECs for the following year. This could slow the demand for small installations. The opportunity for net metering would continue for all new systems, so that owners will still be compensated for energy produced. It should be noted that property owners will retain the right to have their own PV systems installed and connected to the grid and receive Net Metering credits, whether they qualify for the REC program or not.

For 2010, large PV systems would be limited to 250 kW instead of 1 MW, and the REC payments for those systems will be reduced from \$0.15 to \$0.13/kWh (the same rate as for small systems). They also want to eliminate REC payments entirely for large systems at the end of 2010, or once their total online capacity is 4.2 MW. (They currently have 5.2 MW of system applications.) Although Net Metering payments would continue to be available, this could effectively halt large-scale development at that point. These measures will help contain PNM cost growth for new systems.

The other problem for PNM is that they need the flexibility of siting renewable energy systems near certain geographical locations in their grid system. To address this problem, PNM will create a new Customer-sited program. Under this plan, PNM will decide how many roof tops and ground sites will be required and where they should be. PNM will own the systems and will request bids and proposals from contractors for the hardware and installations. (See www.pnm.com/rfp/solarpv/.) Furthermore, the energy produced by each PNM-owned PV installation, large or small, will not be available for use at that site, but will be sent directly to the grid. Program details are still being developed, but installation site owners would be compensated for the use of their roof-tops or property under a lease agreement with terms yet to be determined.

Early Reactions

News of the PNM proposals to the PRC caused understandable uncertainty and distress among many solar energy companies and NMSEA members. If approved, these changes would impact industry sales and business plans, and possibly some job training and certification programs. On Sunday, August 2, the Albuquerque Journal ran a front-page article about these proposed changes. The following week PNM held meetings and workshops for about thirty solar energy system installers, manufacturers, and other interested parties. In these meetings, PNM personnel explained their REC and cost numbers and the changes described above. In the workshops, they outlined how installation proposal requests from vendors for the new Customer-sited program would be structured. They asked for feedback on

(Continued on page 14)



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KC135GX-LP \$397.00 \$2.94/watt
KC85T \$389.00 \$4.58/watt

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Schott Solar
Poly 220, 220 Watt 24V Panel
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Sanyo
HIP-215NKHA5, 215W 30V Panel
Our Price: \$935.00 \$4.35/watt

*Pallet pricing

Featured Products



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M190-24-240-S01
Our Price : \$ 192.00



Outback Flexmax 80
Charge Controller
Our Price : \$ 580.00



Morningstar SunSaver
SS-MPPT-15L Charge Controller
Our Price : \$239.00



Southwest Windpower
Air-X Land 12V Wind Turbine
Our Price : \$699.00



SMA SB 7000US
7000W inverter
Our Price : \$4,108.00



Xantrex XW6048-120/240-60
Hybrid Inverter Charger
Our Price : \$ 3,488.00

NMSEA Thanks the Following Sponsors of the 2009 Solar Fiesta!



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ALBUQUERQUEGREEN



The New Mexico Solar Energy Association Booth

The **NMSEA Booth** is at the end of the sidewalk, west of the main entrance gate. There you will find these:

- Free Literature** On topics such as solar electricity (PV), space and water heating, passive solar building, and sustainability.

- Sales Items** T-shirts, Kill-a-Watt Meters, Solar Home Plans on CD, Solar Model Cars, Global Warming Mugs, Bumper Stickers, Cloth Bags, Water Bottles and the book "Rainwater Harvesting for Drylands" by Brad Lancaster.

- Classified Ads** If you have used solar or similar equipment to sell, post a classified ad on the bulletin board at the NMSEA Booth. *Note: NMSEA will be not be involved in used equipment sales; we are simply providing a channel for sellers and buyers to connect.*

- Job Notices** If you have a job opening or are looking for a job in a solar or renewable industry, post a notice on the Jobs Bulletin Board at the NMSEA Booth. *Note: NMSEA will not be involved in hiring in any way; we are just providing a channel for prospective employers and employees to meet.*

- Class Sign-up** Our first **Successful Solar Businesses** class will be held Thursday through Saturday, Oct. 29-31. Our next hands-on **Photovoltaic Design and Installation** class will be over two weekends (Fri-Sat-Sun-Sat-Sun) in October or November. Register or sign up to receive notices of these or other classes.



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Solving climate change requires engagement at all levels – from local grassroots projects to advocacy for smarter policies. Join the NM Sierra Club in advancing energy efficiency through the Low Carbon Diet and CoolBiz projects, or help us in implementing clean energy policies at the local, state, or federal levels. Contact the Albuquerque office to learn more and get involved!



**To track or not to track...
...that is NOT the question.**



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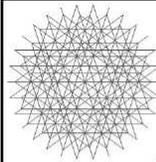
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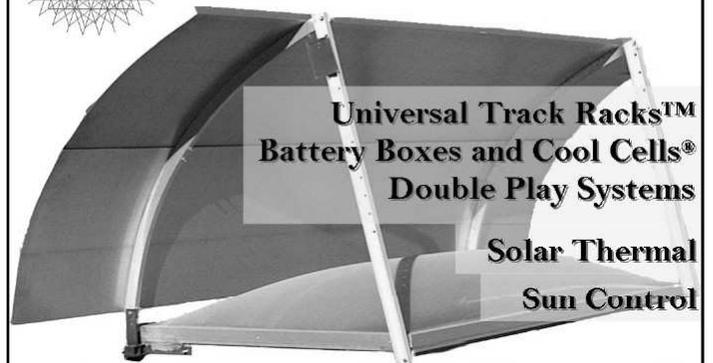
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 Double Play Systems

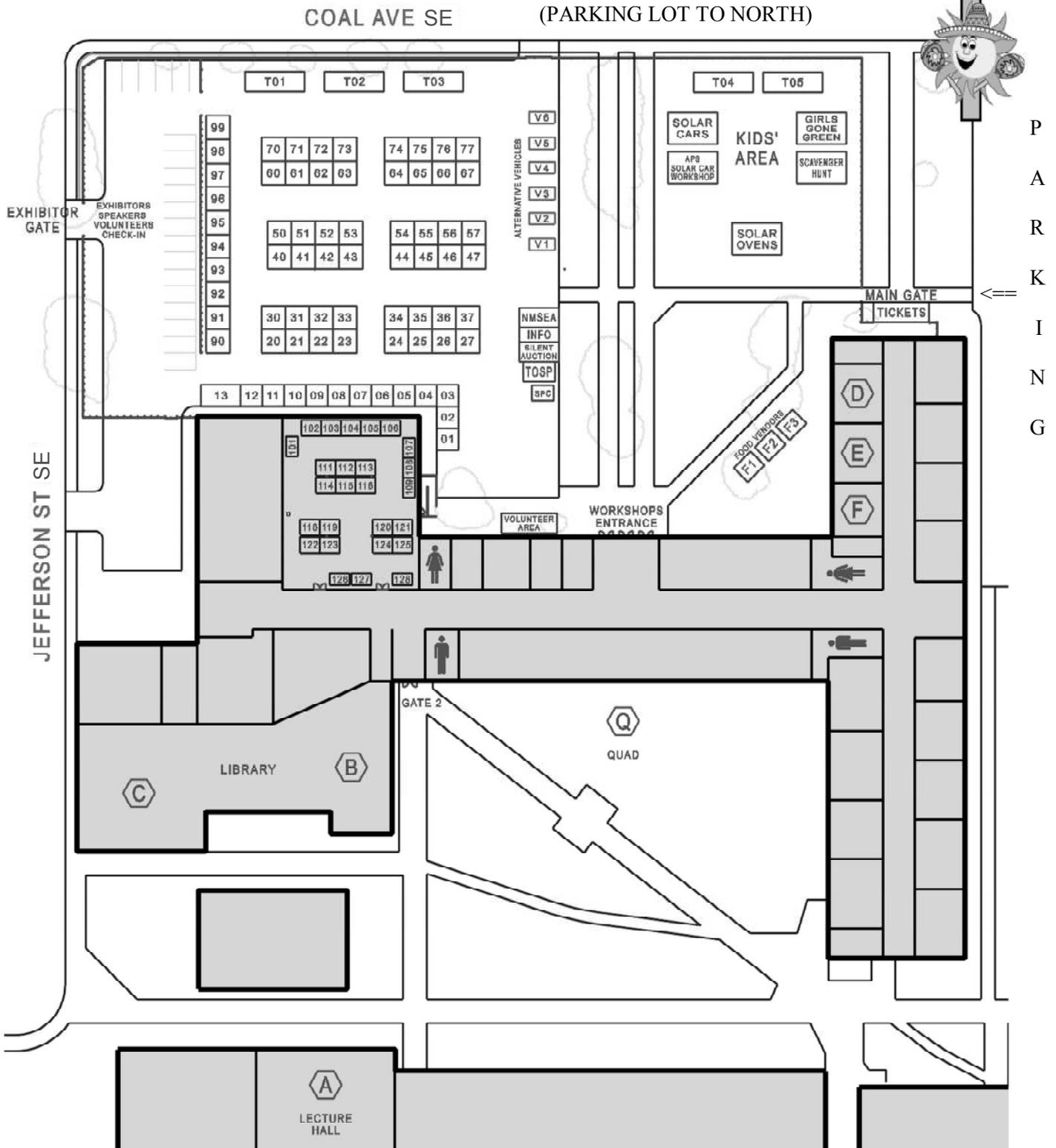
Solar Thermal
 Sun Control



Website: www.zomeworks.com
 Email: zomework@zomeworks.com
 Phone: 800-279-6342

Solar Fiesta Site Map

HIGHLAND HIGH SCHOOL, 4700 Coal Ave. SE



See page 17 for the Legend of Exhibitors.

Legend of Exhibitors

Booths in numerical order:

- 1 Lasya Design Group
- 2 US Green Building Council
- 3 New Mexico Public Regulation Commission
- 4 New Mexico Wilderness Alliance
- 5 The Loan Fund
- 6 New Mexico Interfaith Power & Light
- 7 Sierra Club
- 8 Peacecraft
- 9 Democratic Party of New Mexico
- 12 The Renewable Energy Program, Northern NM College
- 13 New Mexico Earth Adobes
- 13 The Adobe Program, Northern NM College
- 20 LUZ Energy Corporation

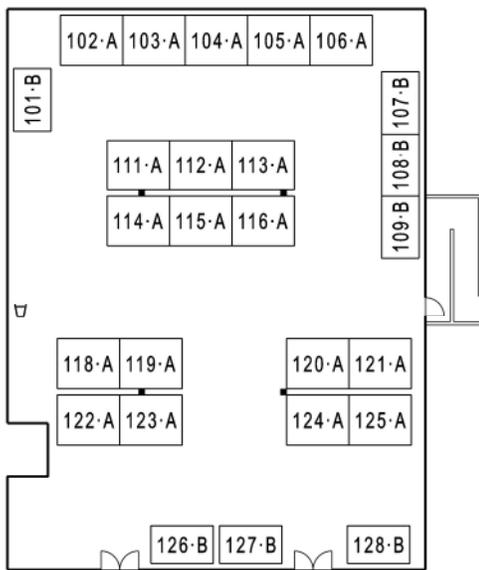
- 24 Pugo Systems
- 25 AAA Solar Supply, Inc.
- 26 Solar Ranch
- 27 Solar Power Evolution, LLC
- 34 Solar Automation, Inc.
- 35 Green Image Solar
- 36 AWINDOWAY
- 37 310 Solar, LLC
- 40 Sunface Solar
- 44 ADI Solar Electric
- 45 Zomeworks Corp.
- 46 Prime Electric, Inc.
- 47 Sun & Earth, Inc
- 54 UNM Sust. Studies/Footprint NM
- 55 Delta Third Design
- 56 CNM Community College
- 57 Extreme Green Design
- 63 Solar Design and Analysis
- 64 Bella Solar
- 65 UNM Gallup
- 66 Independent Energy Center
- 67-77 Affordable Solar Group
- 75-76 Everguard Solar Energy
- 97-98 UNM Electrical and Computer Engineering
- 101 Desert Lights of New Mexico
- 102 City of Albq., Facilities and Energy Mgmt Dept
- 106 Permaculture Credit Union
- 108 NMSEA 2009 Pajarito Home Tour
- 109 Linear City Concepts
- 112-113 Consolidated Solar Technologies
- 114 Energy Concepts
- 115 PNM
- 116 NM Energy Conservation and Management Division
- 118 Sunergy, Inc
- 119 Direct Power & Water Corp.
- 120 Sandia National Labs
- 122 Earth Origins Realty

- 123 Building Energy Solutions,
- 126 Builders Without Borders
- 127 Natural Building Resources
- 128 Sacred Power Corporation

Lawn, Trailer & Vehicle Spaces:

- Ln-S NMSEA Villager Solar Oven
- Ln-S NMSEA Solar Bake-Off (Sun 12pm-2:30pm)
- Ln-S Sunny Skies
- Ln-WAPS Solar Car Building (Sat 10am, 2pm)
- Ln-NW NMSEA Solar Model Car Races (11am-1pm)
- Ln-NE Girls Gone Green
- Ln-SE NMSEA Scavenger Hunt/Raffle
- T01 Positive Energy, Inc.
- T02 San Juan College
- T03 Sub Surface Contracting
- T04 Energy on the Move/ Cleveland MS (Sat)
- T05 Talking Talons Youth Leadership (Sat)
- T06 The Albuquerque Astronomical Society (Sun)
- T07 Zoo-to-You Van (Sat)
- V01 Electric Cars of Albuquerque, LLC
- V02 Veggie-Oil Powered Vehicle
- V03 GreenWheels Sustainable Transportation
- V04 Greenwheels Ecomotors
- V05 Electric Bikes and Scooters
- V07 Tesla Roadster (Sat 2-4pm)
- TBD SFCC/Sustainable Tech Center.

See page 19 for booths in alphabetical order



SOLAR FIESTA 2009
INDOOR EXHIBITOR LAYOUT

Greenbuild International Conference, Phoenix, AZ

The 2009 Greenbuild International Conference & Expo's program has been announced for November 11-13, 2009, organized by the U.S. Green Building Council. The lineup of master speakers will include Daniel Wildcat, Sylvia Earle, Peter Gleick, Arthur Rubinfeld and Josh Bernstein. These industry leaders will engage in the conference theme of "Main Street Green: Connect to the Conversation." Master speaker sessions will explore topics from corporate social responsibility, indigenous populations and climate change, to the impact our choices have on the environment, each viewed from various perspectives. See the complete master speakers program at www.usgbc.org. The conference in Phoenix, AZ, will also feature over 100 educational sessions, LEED workshops, off-site educational sessions, a two-day Residential Summit, and tours of local green building sites throughout the Phoenix area. ☀

Seeing is Believing - Solar Works!

By Monte Ogdahl

If kids and young-minded adults are going to believe that solar energy is the future, they have to see examples that prove it, followed by “hands-on” and “minds-on” materials that give them a visual and working knowledge to pursue the solar path.

Start small, envision big. How? The presentation should start with basic things they can identify with and show that solar energy can provide fast results.

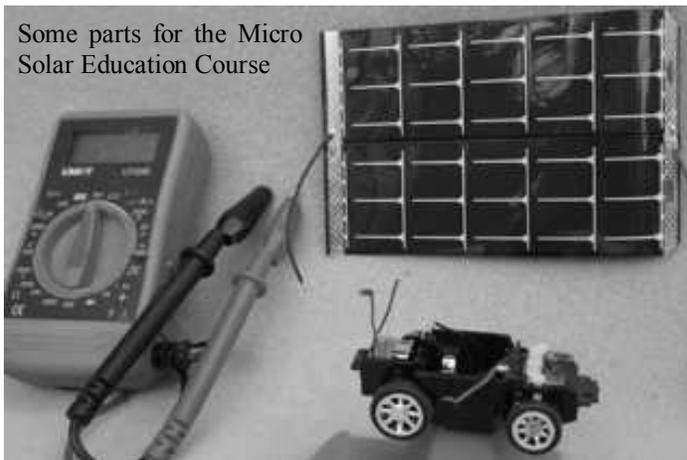
Questions: Can solar energy cook food? Have kids put small pieces of cookie dough or cheese and crackers on a metal sheet or plate in a solar oven and adjust it to the sun. Can solar energy boil water in 15 minutes or so? Pour cool water into the fill spout until full, position to the best solar angle, and have the kids note the water temperature gauge on the tanks. How can solar electricity be collected and used? A good start for kids is a Micro-Solar Course designed around a car kit utilizing color-coded instructions and photos for enhanced learning. Various measurements are done and noted on how the sun powers the car at different sun angles and times. Next, we visually understand how water works like electricity by connecting a large PV panel directly to a water pump. The kids can watch the water pressure vary, as they partially or completely shade the panel. This is very effective even down to preschool ages, because it puts them in the “energy stream.” Doing calculations with numbers taken from the hands-on experience is more fun and easier to understand.

A more advanced version of solar water pumping uses a Solar Electric Display (SED). Follow a simple flow diagram through real working components measuring electrical potential and flow rate, while simultaneously showing water pressure. “Click,” the physical-visual connection is made! There is a percolating sound coming from the little water heater, and the smell of freshly-baked cookies fills the air. It’s time for a solar break - eat cookies, play with solar cars, and “solar socialize.” Oh, and check out that little solar water heater to see if the water is hot.

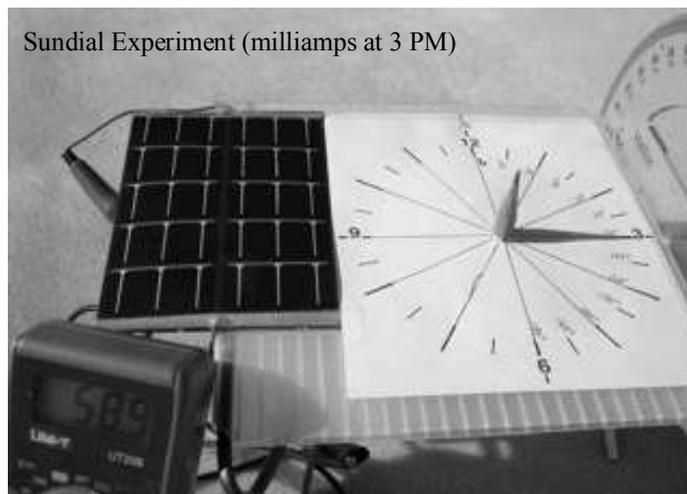
To be continued Next time we’ll cover some things like wind energy, solar-wind hydrogen, solar-hydrogen cars and rockets. It could be a real blast!

More information on educational and fun kits, presentations, and materials can be found at www.nmsea.org, or call 505-246-0400. ☀

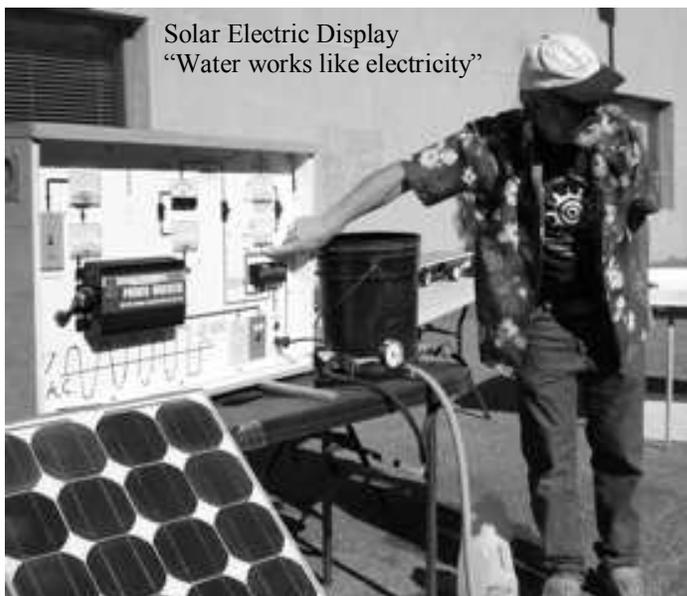
Some parts for the Micro Solar Education Course



Sundial Experiment (milliamps at 3 PM)



Solar Electric Display
“Water works like electricity”



American Solar Energy Society
WORKING TOWARD A SUSTAINABLE ENERGY FUTURE

Legend of Exhibitors

Booths in alphabetical order:

37	310 Solar, LLC	116	NM Energy Conservation and Management Division	12	Renewable Energy Program, Northern NM College
25	AAA Solar Supply, Inc.	75-76	Everguard Solar Energy	8	Peacecraft
24	Pugo Systems	57	eXtreme Green Design	106	Permaculture Credit Union
44	ADI Solar Electric	35	Green Image Solar	115	PNM
67-77	Affordable Solar Group	V04	Greenwheels Ecomotors, LLC	T01	Positive Energy, Inc.
T06	Albuquerque Astronomical Society	V03	GreenWheels Sustainable Transportation	46	Prime Electric, Inc.
Ln-WAPS	Solar Car Building (Sat 10am, 2pm)	V02	Veggie-Oil Powered Vehicle	128	Sacred Power Corporation
36	AWINDOWAY	66	Independent Energy Center	T02	San Juan College
64	Bella Solar	1	Lasya Design Group	120	Sandia National Labs
V05	Electric Bikes and Scooters	109	Linear City Concepts	TBD	SFCC/Sust. Tech. Ctr.
126	Builders Without Borders	5	The Loan Fund	7	Sierra Club
123	Building Energy Solutions,	20	LUZ Energy Corporation	34	Solar Automation, Inc.
102	City of Albq., Facilities and Energy Mgmt Dept	127	Natural Building Resources	63	Solar Design and Analysis
56	CNM Community College	13	New Mexico Earth Adobes	27	Solar Power Evolution, LLC
112-113	Consolidated Solar Technologies	6	New Mexico Interfaith Power & Light	26	Solar Ranch
55	Delta Third Design	3	New Mexico Public Regulation Commission	T03	Sub Surface Contracting
9	Democratic Party of New Mexico	4	New Mexico Wilderness Alliance	47	Sun & Earth, Inc
101	Desert Lights of New Mexico	Ln-NE	Girls Gone Green	118	Sunergy, Inc
119	Direct Power & Water Corp.	Ln-SE	NMSEA Scavenger Hunt/Raffle	40	Sunface Solar
122	Earth Origins Realty	Ln-NW	NMSEA Solar Model Car Races (11am-1pm)	Ln-S	Sunny Skies
V07	Tesla Roadster (Sat 2-4pm)	Ln-S	NMSEA Solar Bake-Off (Sun)	T05	Talking Talons Youth Leadership
V01	Electric Cars of Albuquerque, LLC	108	NMSEA 2009 Pajarito Home Tour	97-98	UNM Electrical and Computer Engineering
114	Energy Concepts	Ln-S	NMSEA Villager Solar Oven	65	UNM Gallup (Solar Oven)
T04	Energy on the Move/ Cleveland MS	13	The Adobe Program, Northern NM College	54	UNM Sust. Studies/ Footprint NM
				2	US Green Building Council- NM Chapter
				45	Zomeworks Corp.
				T07	Zoo-to-You Van

Solar Fiesta Silent Auction

The Silent Auction this year will include several valuable items and services. Proceeds will go to the SunChaser Education Program.

Solar Ranch has donated a **Global Sun Oven** capable of reaching 420 degrees, produced by Sun Ovens International. For more info, go to www.sunoven.com. Value: \$279.

Affordable Solar Group has donated a **Home Energy Audit** valued at \$199 and a **10w Portable, Rollable Solar Kit** valued at \$175.

New Mexico Earth Adobes has donated an **Adobe Casita Kit**. The Casita Kit is a charming miniature casita approx. 12" x 12". It is a one-room adobe house with a flat roof and an adobe parapet, complete with door and window openings and rustic vigas.

Components are predominantly renewable and recycled materials. Value: \$65.

Natural Building Resources has donated the **"Building with Straw" Video Series** produced by Black Range Films. Value: \$59.

NMSEA has entered the books, **"Rainwater Harvesting for Drylands", Vol 1 and Vol 2**, written by Tucson author, Brad Lancaster. One set will be auctioned Saturday and one set on Sunday. Value: \$24.95 and \$32.95 respectively. NMSEA will be selling them individually at the NMSEA booth for \$20 and \$25 respectively.

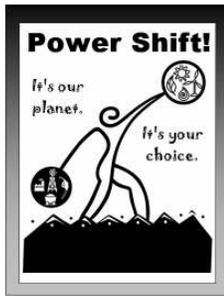
And More! Look for the Silent Auction Booth right between the main NMSEA Booth and the Solar Power Tower! ☀

Saturday 09/26/09 Workshops

Start Times	Aspen	Birch: Green Careers Track	Cedar	Dogwood	Elder	Quad (outdoors)	Class Legend
9:00 AM - 10:15	<p>Low- & No-Cost Ways to Lower Your Energy Use: A Guide for Homeowners & Small Businesses (EE) Matthew Dickens, Los Alamos Department of Public Utilities (free workshop for early birds)</p> <p>-- 30-min break --</p>		<p>Passive Solar Design: A Holistic Approach - Principals & Tools (DM) Mark Chalom, Design & Analysis -- 15-min break --</p>	<p>Building & Using Solar Ovens for Sustainable Living (SL) Jeannie Martinez-Welles UNM-Gallup -- 15-min break --</p>	<p>Truly Affordable Housing: From Tiny Houses to Eco-Villages (DM) Jeron Smith, Laysa Design Group -- 15-min break --</p>	<p>Aerated Autoclaved Concrete: Intro & Construct'n Demo (DM) Michael Baron, Aerblock Enterprises, LLD -- 15-min break --</p>	<p>(R) = Renewable Energy (DM) = Design & Materials (HCW)=Heating, Cooling, & Water Heating (TF) = Transportation & Fuels (EE) = Energy Efficiency (SL) = Sustainable Living (F) = Financial</p>
10:45 AM - 11:45	<p>Introduction to Solar Electricity (R) Marlene Brown NM Solar Energy Association -- 15-min break --</p>	<p>On a Green Career Path? Green Jobs Education & Training Opportunities in New Mexico (Green Jobs Track) a moderated panel discussion (10:45-12:45)</p>	<p>The Most Affordable Road Map to Zero Energy Home Design (DM) Joaquin Karcher, Zero E Design -- 15-min break --</p>	<p>Transitioning Communities from Oil Dependancy to Self Resilience (SL) Zaida Amaral & Maggie Sealey Transition U.S. -- 15-min break --</p>	<p>Alternative Transportation Fuels: Overview (TF) Frank Burcham, Land of Enchantment Clean Cities Coalition -- 15-min break --</p>	<p>Love Your Batteries: Sizing, Installing, Maintaining an Off-Grid System (R) Jonathan Jimenez, Affordable Solar</p>	
12:00 PM - 1:00	<p>Understanding PNM's Solar PV Programs: NET Metering & REC Purchases (R, F) Frank Andazola, PNM Solar Program -- 15-min break --</p>		<p>What's Your Solar Payback? (F) Nick Bovic, Affordable Solar -- 15-min break --</p>	<p>Off-Grid Sustainable Living in Rio Rancho (SL) Carl Axness -- 15-min break --</p>	<p>Understanding LEED for Homes (DM) Stace McGee, Green Insights Environmental Dynamics, Inc. -- 15-min break --</p>		
1:15 PM - 2:15	<p>Six Principles of Solar Heating Design (HCW) Bristol Stickney, Cedar Mountain Solar -- 15-min break --</p>		<p>Bamboo Basics (DM) Peter Fust, Natural Building -- 15-min break --</p>	<p>Community Power Off-Grid or In Town (SL) Monte Ogdahl NM Solar Energy Association -- 15-min break --</p>	<p>Getting the Best Bang for Your Buck: Space Heating & Hot Water Systems (HCW) Robert Althouse, SolarWise -- 15-min break --</p>	<p>How to Make Delicious Meals From Sunlight Using a Solar Box Cooker (SL) Rose M. Kern, Solar Ranch</p>	
2:30 PM - 3:30	<p>10 Things to Do BEFORE You Go Solar (EE) Ryan Wallace, Affordable Solar -- 15-min break --</p>	<p>Breaking into the Business: Personal Stories, Guidance, & Advice from Green Professionals (Green Jobs Track) Moderated panel discussion</p>	<p>Designing, Building, & Living in a Solar Home (DM) Howard & Virginia Stephens Vision Trust, Inc. -- 15-min break --</p>	<p>Solar Water Pumping Overview (HCW, R) Allan Sindelar, Positive Energy</p>	<p>Everything You Need to Know About Small Wind Systems for the Home (R) Gary Anderson, WindSunNM, LLC</p>		
3:45 PM - 4:45	<p>Financing Your Solar Installation (F) Brian Cassutt, Consolidated Solar Technologies</p>						

Sunday 09/27/09 Workshops

Start Times	Aspen	Birch	Cedar	Dogwood	Elder	Quad (outdoors)
9:00 AM - 10:15	Energy Independence: How to Reduce Your Utility Bills (EE) Randy Sadevic, Positive Energy Dalinda Bangert, EcoTerra Ent. (free workshop for early birds) -- 30-min break --	Using Generators in On-Grid & Off-Grid Home Systems (TIP) Allan Sindelar, Positive Energy -- 15-min break -- 10:00 High-Mass Solar Floor (TIP) Robert Stout, Southwest Solar Design 11:15: Tech/Prof Session I	Renewable Energy Policy for New Mexicans (EP) Patrick Griebel, Consolidated Solar Technologies -- 15-min break --	Green Building for Dummies (DM) Robert Montoya, Extreme Green Design Build -- 15-min break --	Off-Grid Solar PV Systems (R) Allan Sindelar, Positive Energy -- 15-min break --	
10:45 AM - 11:45	Energy Literacy: Understanding Numbers that Matter (EE) Alan Zelicoff -- 15-min break --	(TIP): The MicroFactory: Efficient Small-Scale Production Patrick Gallagher, Solar Automation Surprise! Things We Didn't Expect (TIP) Randy Sadevic, Positive Energy	New Mexico's Path to a Sustainable Energy Future (EP) Jason Marks, PRC -- 15-min break --	Green Cars, Blue Cars: How to Achieve Nirvana with Your Car (TF) Skip Dunn, GreenWheels & BlueWheels -- 15-min break --	Solar Heated Swimming Pools (HCW) Jim D. Palmer, PE, CEM, GEB, LEED NRG Engineering -- 15-min break --	Hands-On Weatherization Training for Homeowners (EE) Carrie McChesney, NM Solar Energy Association
12:00 PM - 1:00	Introduction to Solar Electricity (R) Claudia Pavel, Positive Energy -- 15-min break --	Two-Axis Tracking for the Price of One (TIP) Kevin Tan, Zomeworks 1:00: Tech/Prof Session II				
1:15 PM - 2:15	Ten Things to Do BEFORE You Go Solar (EE) Ryan Wallace, Affordable Solar -- 15-min break --	Integrated Energy Design Towards Net-Zero Building (TIP) Matt Higgins, Green Insights/ED A Survey of Energy Performance Software (TIP) Baldwin Burr, Kevin Tan	10 Things I Wish Knew When I Started Installing a Residential Grid-Tied System (TIP) Aaron Cabral, Affordable Solar -- 15-min break --	Passive Solar Residential Design & Construction (DM) Mark Feldman, High Desert Construction, Inc. -- 15-min break --	What's Your Solar Payback? (F) Nick Bovic, Affordable Solar -- 15-min break --	
2:30 PM - 3:30	Solar Hot Water Basics (HCW) Odes Armijo-Caster, Sacred Power -- 15-min break --	Statements of Work: A Legal Perspective (TIP) Colin Adams, Law Offices 3:00 - 103 Years of Wood Frame Structures (DM), K. Erickson 4:00 - Energy Efficiency: The ABCs of LEDs (DM) Mary Broemel & Justin Armstrong	Heating & Eating with Mini Greenhouses & Solar Growing Pods (SL) Jeron Smith, Laysa Design Group -- 15-min break --	How One Homeowner Got His Home PV-Ready (EE) Robert Mallory, Southwest Noise Control -- 15-min break --	Basics of Wind Energy: Terms & Technology (R) Mark Rumsey, Sandia Labs -- 15-min break --	Simple Solar Systems Using Selective Surface Absorbers (R) Helene Beauchamp, Zomeworks
3:45 PM - 4:45	Financing Your Solar Installation (F) Brian Cassut, Consolidated Solar Technologies		The (Truly) Sustainable Vegetable Garden (SL) Laurie Lange, BotanicArts	Building Green in NM: New Construction & Home Renodels (DM) Steve Hale, Build Green NM	Medium Speed Electric Vehicles: An Urban Revolution (TF) Dr. Paul J. Watson, Electric Cars of Albuquerque, LLC	



Solar Fiesta Workshop

Descriptions and Presenters



Regular Workshop Descriptions (Alphabetical Order)

(Technical Sessions descriptions begin on page 41.)

☀ **10 Things I Wish I Knew When I Started: Installing a Residential Grid-Tie System (T/P)**

Sunday, Cedar Room, 1:15-2:15 PM

Aaron Cabral, Affordable Solar

What does a grid-tie system look like? How does it work? Avoid the common pitfalls of a residential grid-tied installation and maximize your solar investment.

Aaron is Affordable Solar's Residential Grid-Tie specialist who designs residential solar electric systems. With a degree from UNM in Physics, Aaron instructs renewable energy courses at CNM.

☀ **103 Years of Wood Frame Structures (DM)**

Sunday, Birch Room, 3:00-3:45 PM

Katje Erickson, Delta Third Design

Explore sustainability issues as they have changed since 1906 as applied to an historic pioneer silver miner's cottage at 11,200 feet at Animas Forks, Colorado, compared to modern Green construction, building science knowledge, and current upgrading for affordable frame home construction and expectations. Find out how progressive your frame home is--or is not yet--and what the future and retrofitting of existing homes could become.

Katje Erickson has 23 years' experience designing and drafting home plans across five states under www.deltathird.com exploring all materials and methods possible, providing owner-builder and conservation ranch sustainable sites and homes, affordable homes for Habitat for Humanity, and Energy Efficiency analysis.

☀ **Aerated Autoclaved Concrete: Construction Demo (DM)**

Saturday, Quad (outdoors), 10:45 AM

Michael Baron, Aerblock Enterprises, LLC

In an outdoor demonstration, Michael will touch on a number of topics regarding Aerated Autoclaved Concrete (AACs): History, production, attributes and block modules. Tools and equipment, cutting and drilling. AAC and block laying, U block placement over windows and doors. Fasteners, anchors, setting doors, windows and cabinets. Prep and application of

finishes – stuccos, plasters, tile, brick, stone, etc.

Michael Baron is the founding director of AerBlock Enterprises LLC, in Santa Fe, NM. Aerblock distributes Autoclaved Aerated Concrete block and panel products, AAC tools, equipment and finishes through out the western states.

☀ **Alternative Fuels Transportation Overview (TF)**

Saturday, Elder Room, 12:00-1:00 PM

Frank Burcham, Land of Enchantment Clean Cities Coalition

This workshop reviews the range of alternative fuels currently used for transportation. Frank discusses each fuel and covers the unique benefits and drawbacks of each fuel type, their ideal applications and the vehicles in which they are used.

Frank Burcham has been the Executive Director and State Coordinator for the Land of Enchantment Clean Cities Coalition since 2003. He is the founding member of the Coalition as the Department of Energy's 11th designated Clean City Community in 1994. He has served on the Board of Directors from 1994-1997 and 2001 to now.

☀ **Bamboo Basics (DM)**

Saturday, Cedar Room, 2:30-3:30 PM

Pete Fust, Natural Building Resources

Bamboo may be the most useful plant in the world. It's the largest of the grasses, yet is stronger by weight than steel. It can be fashioned into shelter, tools and furniture, and is an important food source for millions of people. Bamboo is also a beautiful plant that grows very fast and can thrive in diverse climates, including the American Southwest. *Bamboo Basics* will identify bamboos appropriate for New Mexico, and show how to grow and maintain bamboo in a dry-land climate.

Instructor Pete Fust grew up on a North Dakota farm and earned a degree in horticulture. He has worked designing and creating landscapes in Seattle and California, and currently practices permaculture and natural building in Kingston, NM.

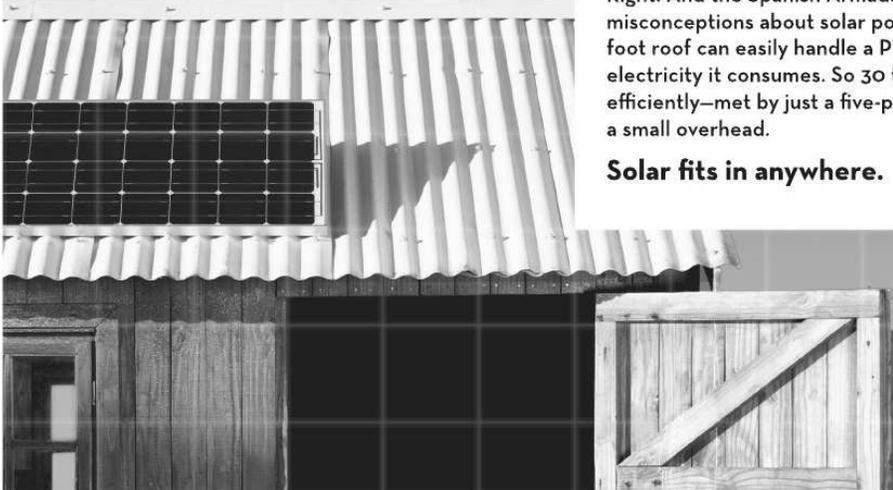
☀ **Basics of Wind Energy – Terms and Technology (R)**

Sunday, Elder , 2:30-3:30 PM

Mark A. Rumsey, Sandia National Laboratories

(Continued on page 24)

“My roof is too small for solar panels.”



Right. And the Spanish Armada was invincible. We hear these myths and misconceptions about solar power all the time. But the truth is, a 900 square foot roof can easily handle a PV system. The smaller your house, the less electricity it consumes. So 30 to 60% of your electric needs can be easily—and efficiently—met by just a five-panel system. Now that’s generating big savings with a small overhead.

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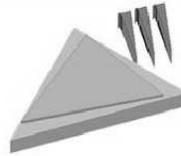
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(Continued from page 22)

Topics to be discussed are: wind resource assessment and siting; wind turbine types, parts, characteristics and sizing; and a few words on storage versus grid-tied, vendors and costs. Reference material will be provided.

Mark Rumsey has been involved in wind energy technology research and development for over 23 years at Sandia National Laboratories. He works with other engineers researching and developing the next generation of utility-size wind turbines.

☀ ***Building and Using Solar Ovens (SL)***

Saturday, Dogwood Room, 10:45-11:45 AM

Jeannie Martinez Welles, UNM-Gallup

This presentation will discuss different types of solar cookers available, with focus on building solar ovens. Oven use and foods cooked will be discussed along with methods for retaining heat when sun loss occurs. A slide presentation will show basic construction and various foods cooked in solar ovens.

As a Professor of Health Careers at the University of New Mexico, Gallup Campus, Professor Welles has worked over the past six years with solar oven construction and testing through the Center for Disease Control and the National Institutes of Health.

☀ ***Building Green in New Mexico (DM)***

Sunday, Dogwood Room, 3:45-4:45 PM

Steve Hale, Build Green NM

This workshop provides an overview of green building considerations for new construction and remodeling. Steve will cover how to get a newly-constructed home certified and discuss incentives for building green.

Steve Hale is Director of Build Green NM, which certifies homes built to National Green Building Standards. A custom home builder (strictly green), Steve has served on National Green Building committees, including the development of the first ANSI approved NGB Standard, February, 2009.

☀ ***Breaking Into Business: Personal Stories, Guidance, and Advice from Green Professionals (GJ)***

Saturday, Birch, 10:45-12:45

Moderated panel discussion. Check our website for details.

☀ ***Community Power Off-Grid or In Town (SL)***

Saturday, Dogwood Room, 2:30-3:30 PM

Monte Ogdahl, New Mexico Solar Energy Association

Monte will present examples and possibilities as to how people who are neighbors in town or off-grid can form a community energy, water, or transportation system. These presentations will include concepts for existing

properties and ways to plan new communities.

Monte Ogdahl grew up on the family ranch in Montana that was powered by a wind electric system. (Monte is currently spending some of the spring and fall there retrofitting the buildings and springs for solar and wind). He currently lives off-grid near Santa Fe and is working in research on integrating renewable energy sources and developing RE educational resources.

☀ ***Designing, Building and Living in a Solar Home (DM)***

Saturday, Cedar Room, 3:45-4:45 PM

Howard and Virginia Stephens, Vision Trust, Inc.

Energy conservation and sustainability are major considerations for designing a solar home. But, there is more to a solar home than saving energy and reducing your carbon footprint—your home must be comfortable and enjoyable. The Stephenses will share their experience in designing, building, and living in their passive/active solar home that in the first year of occupancy had a total net energy bill (gas and electricity) of \$60!

Howard Stephens is a retired energy R&D scientist and manager and is the Past Chair of the Albuquerque Energy Council. Virginia Stephens has served as a teacher, technical writer and editor. For the past ten years, they have produced energy outreach and education programs through the non-profit, Vision Trust, Inc. They also serve as members of the NMSEA Advisory Board.

☀ ***Energy Efficiency/Conservation: The ABCs of LEDs (DM)***

Sunday, Birch Room, 4:00-4:45 PM

Mary Broemel, Shelter Earth; Justin Armstrong, Abraxis

Remarkable progress has been made with LED lighting in the past year. This workshop is a technical and visual review of the LED lighting products that are on the market today. The LED is ideal for residential use, because it uses a fraction of the energy without sacrificing wattage and luminance.

Mary Broemel is a residential designer that has focused on sustainable solutions since the early 1980's. Justin Armstrong is an electrical contractor that has been helping residential and commercial to maximize energy efficiency by choice and placement of lighting types.

☀ ***Energy Literacy: Understanding Numbers That Matter, Sunday, Aspen Room, 10:45-11:45 AM (EE)***

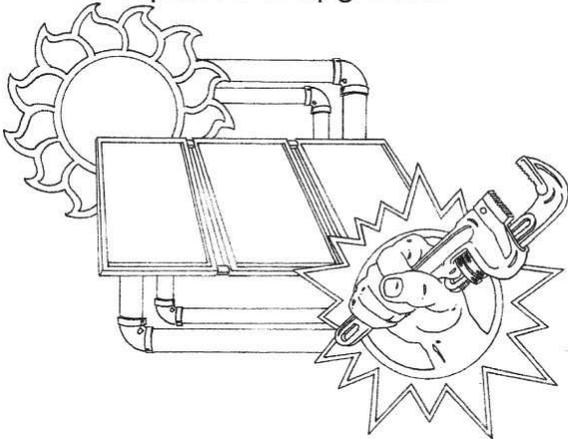
Alan Zelicoff, Scientific, Medical-Legal Review

The quantity of energy we use – as individuals and as a society – is enormous. Yet, few people know where all of those kilowatt-hours and therms go, and thus have little idea where to make changes that matter to the energy bill bottom-line or to the environment. In this lecture, we will

(Continued on page 28)

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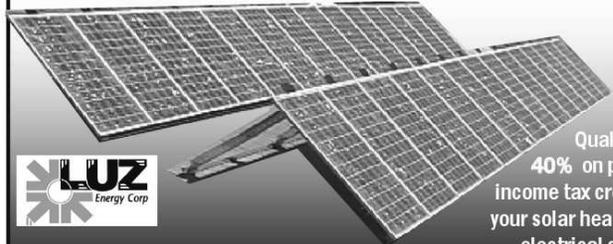
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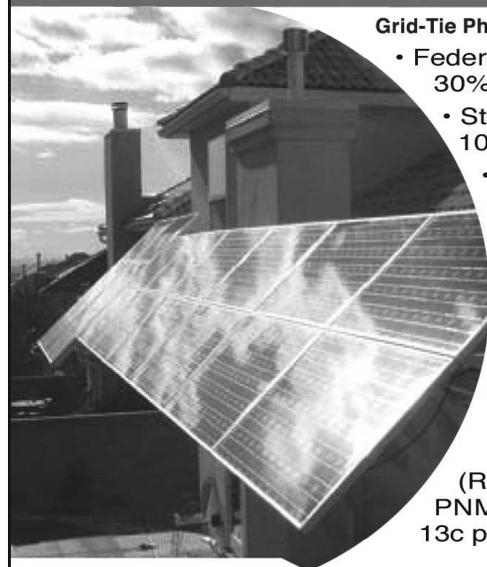
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Sunport Display Offers NM Solar History Lesson

NMSEA Press Release, 8/4/9

A group of businesses and nonprofits have mounted a display at the Albuquerque Sunport that provides travelers and their families a quick look at how New Mexico has pioneered development of solar energy technology. "Using large format photos and text, the display provides thousands of people each day with a look at more than a thousand years of history," said Janet Bridgers, founder and president of Earth Alert, one of the sponsoring organizations. Other sponsors include Bridgers & Paxton Consulting Engineers, Albuquerque, one of the country's leading mechanical engineering firms, NMSEA, and Advent Solar, a solar manufacturing firm located at Mesa del Sol.

The display is located in the passageway from the parking lot into the terminal. The first panel has the heading "Since Ancient Times" and depicts use of passive solar energy in Native New Mexicans' dwellings at Taos Pueblo and the ruins at Bandelier and Gila National Monuments. The second panel is devoted to solar achievements in New Mexico in the 1950s through the 1970s, including the Bridgers and Paxton Solar Building at 213 Truman N.E, the world's first solar-heated office building, built in 1956. This panel also shows the Sandia National Laboratories Solar Power Tower, built in 1978, and Santa Fe architect Ed Mazria's book *Passive Solar Energy*, which was published in 1979.

The third panel includes large photos from a number of solar companies with operations in New Mexico, including Advent, Schott, Emcore, and Sacred Power.

"We've had the confluence of thousands of years of use of passive solar energy by Native New Mexicans, along with the science and engineering leadership provided by those employed and associated with the national laboratories here, for some of the foundational achievements in solar energy. Many people may not be aware that New Mexico has this long history with these technologies that are finally being implemented worldwide as ways to reduce use of fossil fuels," Bridgers said.

The display will be up at the Sunport through the third week of September. Plans are being discussed to mount it at the Solar Fiesta and at other locations throughout the State in the upcoming months. For information contact Janet Bridgers at info@earthalert.org. ☀

Solar in All 50 States

By Neal Lurie

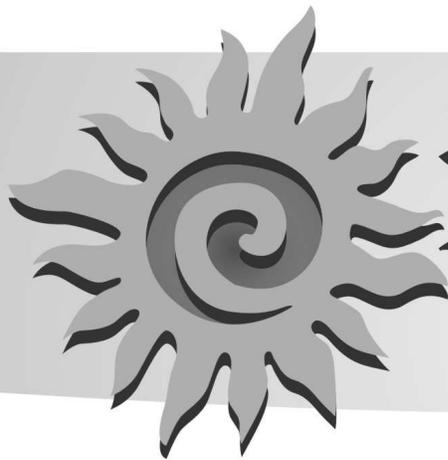
Director of Marketing & Communications
American Solar Energy Society

The world's largest grassroots solar event is coming to town. It's called the ASES National Solar Tour, and it accelerates the use of solar energy across America. Last year it took place in 49 states. Can you help us reach all 50 states this year? The ASES National Solar Tour offers open-house tours to show how neighbors are using solar energy and energy efficiency to reduce monthly utility bills and to help tackle climate change. With more than 150,000 participants in 3,000 communities this fun event is changing how people think about their energy choices on a massive scale. Now in its 14th year, it's coordinated nationally by the nonprofit American Solar Energy Society in collaboration with dozens of outstanding partner organizations and thousands of volunteers.

But this powerful event would not be possible without solar supporters like you who bring it to life. Can you help organize a solar tour in your community? It's a fun way to make a difference and to help increase the use of solar energy. Saturday, October 3, 2009 is the date (in conjunction with National Energy Awareness Month). We'll guide you through the process. It's easy to get started. Here's how: go to the ASES website, www.ases.org, and find the Internet link to a tour in your area to get involved locally; if none is scheduled in your area, you can organize a solar tour in your community. If you have any questions, feel free to contact Richard Burns, ASES National Solar Tour Manager at rburns@ases.org or 303.443.3130 x101.

Get ready to be inspired! And get involved. Together, we'll bring the world's largest grassroots solar event to all 50 states this year - and help speed the transition to a sustainable energy economy. ☀

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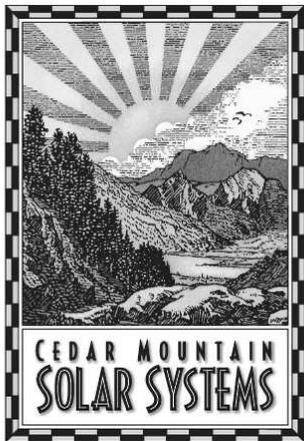
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(Continued from page 24)

use some real-world examples (and some not-too-unpleasant arithmetic) to understand our own energy use and where easy and very cost-effective changes can be made in just about every household.

Alan Zelicoff is a physicist and physician who writes and lectures frequently on energy policy and conservation and on healthcare issues. His most recent book is: "More Harm than Good", a practical look at addressing spiraling healthcare costs and maybe avoiding the unintended consequences of too much medical care. He is also the author of "Saving Energy without Derision", which even political conservatives praise from time to time.

☀ ***Everything You Need to Know About Small Wind Systems for the Home (R)***

Saturday, Elder Room, 3:45-4:45 PM

Gary L. Anderson, WindSunNM, LLC

Gary discusses site criteria and explains the different types and sizes of small wind systems. He discusses what you need to consider before deciding whether or not to install a system yourself or to hire an installer. The workshop also covers code compliance issues and cost analysis.

Gary L. Anderson is an ex-residential contractor who started in alternative energy in 1978 in Las Cruces, NM. Starting with passive solar design and building, then evolving into all aspects of AE, he is currently owner of WindSunNM, LLC in Santa Fe and the proud owner of a Skystream 3.7 wind system.

☀ ***Financing Commercial and Residential Solar Installations (F)***

Sunday, Aspen Room, 3:45-4:45 PM

Brian Cassutt, Consolidated Solar Technologies

Learn more about the new ways you can finance solar installations at your home or business. Solar is now affordable.

Brian is a finance MBA out of Anderson School of Management at UNM. He currently works at Consolidated Solar Technologies and is an expert in the field of renewable energy financing.

☀ ***Getting the Best Bang for Your Buck: Heating and Hot Water Systems (HCW)***

Saturday, Elder Room, 2:30-3:30 PM

Robert Althouse, SolarWise

How do you choose a system with the highest returns and the least maintenance? We will compare the advantages of different kinds of solar thermal collectors, systems, and controls. We will go over the differences of flat plate and evacuated tube collectors, drainback and antifreeze closed-loop systems, and discuss figuring paybacks and

integration of combination hot water heating systems. If you care about the stability of our environment, and wouldn't mind some financial stability as well, be ready for the best bang for your buck.

Robert Althouse heads SolarWise, bringing 25+ years of experience, designing and building solar and sustainable structures, both commercial and residential.

☀ ***Green Building for Dummies (DM)***

Sunday, Dogwood Room, 10:45-11:45 AM

Robert Montoya, Extreme Green Design

This is an introductory overview on fundamentals of practical green building ideas that are affordable enough to be used in mainstream construction. Many green building products are great for the planet, but since few people can actually afford them, they have little impact. The primary emphasis will be passive solar, but we will also elaborate on Insulated Concrete Forms, SIPS and 3D Design. The workshop will enable participants to make informed decisions.

Robert Montoya is the former owner of the NM RASTRA Plant where the company supplied over 300 projects in NM and CO. In 2005, he began the construction company, Extreme Green Design, which is ranked as the number one residential green builder in New Mexico.

☀ ***Green Cars, Blue Cars: How to Achieve Nirvana With Your Car (TF)***

Sunday, Dogwood Room, 12:00-1:00 PM

Skip Dunn, GreenWheels and BlueWheels

A green car that gets 40-60 mpg will reduce gas consumption and greenhouse gas emissions by 50-67%. That's a good start, but to achieve an 80% reduction – nirvana for a sustainable planet – cars must move beyond green to a true blue 100-200 mpg or a super blue 200+ mpg. Blue cars will almost certainly be all-electric. Why? We will go over that and how EVs can play a major role in a smart grid and in providing stability to solar- and wind-generated electricity.

Skip Dunn is the Founder and President of the GreenWheels Center for Sustainable Transportation in Los Alamos. He is the owner of several antique and modern green cars, a 112 mpg (equivalent) Porsche 914 electric conversion, and three 245 mpg neighborhood electric vehicles.

☀ ***Hands-On Weatherization for Homeowners (EE)***

Sunday, Quad (outdoors), 12:00-1:00 PM

Carrie McChesney, NMSEA

In this fun and engaging workshop, homeowners will learn what causes high winter heating bills and how to check their homes for the most common energy leaks.

(Continued on page 30)



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(Continued from page 28)

Carrie will show participants the different tools and materials needed to seal and caulk doors, windows and outlets, and demonstrates how to use them. Participants will then team up and try their new home weatherization skills. All participants will receive handouts full of free and low-cost resources and information that can help them lower their energy costs year-round.

Carrie McChesney is passionate about green jobs, energy and the environment. Carrie owns Concept Green, a sustainability communications and reporting company. She is also the Education and Outreach Coordinator for Consolidated Solar Technologies, where she works with homeowners and businesses to help them lower energy costs and understand the benefits of solar PV. She has extensive public speaking experience and has led several weatherization and efficiency programs for seniors, low-income homeowners, and tribal communities.

☀ ***Heating and Eating with Mini Greenhouses and Solar Growing Pods (SL)***

Sunday, Cedar Room, 2:30-3:30 PM

Jeron Smith, Lasya Design Group

This workshop is a follow-up to last year's presentation on a solar greenhouse design tailored to year-round growing in the Southwest high desert. Feedback from ongoing seminar participants and winter testing has sparked strong interest in an even easier to build and more affordable growing area attached to the south side of your home. Learn what you can do on a budget to keep your greens-a-growing year-round!

☀ ***Household Energy Independence – A Guide to Reduce Your Utility Bill (EE)***

Sunday, Aspen Room, 9:00-10:15 AM, FREE

Randy Sadewic, Positive Energy, Inc. and Dalinda Bangert, EcoTerra Enterprises, Inc.

The most effective approach to saving energy is energy efficiency. Step through the process of energy basics, tools to identify savings, and practical approaches to saving up to 50% of your bill, while reducing your carbon footprint. This course focuses on simple, practical solutions to cutting your bill.

Randy Sadewic is a frequent speaker and teacher on energy efficiency topics, and performs dozens of energy audits each year. Dalinda Bangert is a HERS rater and performs energy audits and ratings for homes, in addition to teaching energy efficiency.

☀ ***How One Homeowner Got His Home PV-Ready by Dropping His Natural Gas Usage by 86% (EE)***

Sunday, Dogwood Room, 2:30-3:30 PM

Robert Mallory, LEED AP, Southwest Noise Control

Tired of high heating and cooling costs? Join Robert as he shares how he prepared his home for solar photovoltaics by first lowering his heating and cooling costs by 86% over an eight-year period. Robert shares his home energy conservation journey by sharing what worked, what didn't, how much it cost him and how much he saved. This workshop is perfect for the homeowner who wants to save energy before installing solar PV, but doesn't know where to begin. Robert's presentation includes humor, no-nonsense advice, before-and-after pictures, stories, and performance measures.

Robert Mallory is a homeowner passionate about energy conservation, renewable energy, and cost-effective solutions to responsible energy consumption. In his professional life, Robert owns Southwest Noise Control, LLC, which provides LEED-appropriate acoustical materials, calculations, and services for commercial buildings. Robert is a LEED Accredited Professional, a fellow with the Construction Specifications Institute and a member of New Mexico's Green Building Council.

☀ ***Introduction to Solar Electricity (R)***

Saturday, Aspen Room, 10:45-11:45 AM

Marlene Brown, New Mexico Solar Energy Association

This workshop provides an introduction to photovoltaics (PV, solar electricity). This will be an interactive class on the basics of PV, including components and terminology, for those with little or no previous knowledge of the subject.

Marlene has been working in the field of solar photovoltaics for 20 years. She has been a community advocate as well as a member and past President of NMSEA. She currently serves on the Board and teaches hands-on PV classes for the NMSEA.

☀ ***Introduction to Solar Electricity***

Sunday, Aspen Room, 12:00-1:00 PM

Claudia Pavel, Positive Energy, Inc.

Grid-tied solar electricity systems: how they work, what they cost, what kind of financial incentives are available. Lots of pictures of different types of homes, systems and mounting options. Also: new solar technology, financing options, solar-ready preparations for new construction and new roofs.

Claudia Pavel works with Positive Energy, Inc., New Mexico's solar electricity professionals with offices in Albuquerque, Santa Fe and Las Cruces. She gives solar electricity presentations to homeowners, large and small business owners, architects, engineers, and builders. She is a commissioner on the Sustainable Santa Fe Commission and a member of the New Mexico First Energy Economy Implementation Team.

☀ ***Love Your Batteries: Sizing, Installing and***

Maintaining an Off-Grid Solar System (R)

Saturday, Quad (outdoors), 12:00-1:00 PM

Jonathan Jimenez, Affordable Solar

How do I size an off-grid system? How can I extend the life of my battery bank? Learn the answers to these questions and how to avoid costly mistakes in system design and installation.

Jonathan is Affordable Solar's Off-Grid specialist having designed over 8,000 residential systems. Jonathan is a true expert in battery maintenance, regularly consulted by both homeowners and large multi-national corporations about off-grid systems. He is recognized as a leading industry expert in solar charge controllers.

☀ Low- and No-Cost Ways to Lower Your Energy Use: A Guide for Homeowners and Small Businesses (EE)

Saturday, Aspen Room, 9:00-10:15 AM, FREE

Matthew Dickens, Los Alamos Dept. of Public Utilities

Home energy conservation is often thought of as complicated and resulting in high cost improvements, when in fact conservation can generally be achieved with little or no investment. Using historical consumption trends and readily accessible information available through Energy Star and Water Sense, residents and small businesses can develop successful conservation initiatives today.

Matt Dickens has over 10 years' experience in the field of conservation. Prior to relocating to Los Alamos, Matt worked as a water conservation contractor to the Albuquerque and Bernalillo Water Utility Authority, the cities of Phoenix, Santa Fe and Durango, and many other small communities in the Southwest. Matt currently manages the water and energy conservation program for the County of Los Alamos.

☀ Medium Speed Electric Vehicles: An Urban Transportation Revolution (TF)

Sunday, Elder Room, 3:45-4:45 PM

Dr. Paul J. Watson, Electric Cars of Albuquerque, LLC

This workshop will explain the Medium Speed Electric Vehicle (MSV) concept and political campaign. It will give an overview of the diverse national, humanitarian and global ecological benefits of electrifying our transportation. It will argue that MSV's (and even robust Low Speed Vehicles) should not be perceived as filling a narrow niche, but a wide one, and that such a transformation in the public's thinking – and consequent buying decisions – would make a major contribution to important ecological and humanitarian goals.

Dr. Paul J. Watson is a member of the research faculty in the UNM Biology Department. His specialty is the evolution of animal and human behavior and psychology. Recently, he established Electric Cars of Albuquerque, which specializes in the retailing of ZENN electric cars.

☀ NM's Path to a Sustainable Energy Future (EP)

Sunday, Cedar Room, 12:00-1:00 PM

Jason Marks, NM Public Regulation Commission

This presentation outlines a roadmap for transitioning to an electric supply based on sustainable sources available in New Mexico. It covers (1) the technical and economic characteristics of wind energy, PV solar, concentrating (thermal) solar electric, and other renewable resources; (2) the role of transmission; and (3) the various regulatory and policy tools in place to promote customer-owned and utility-scale renewable generation and to encourage energy efficiency. The material will be general but sufficiently detailed to interest persons with some knowledge of the renewable energy industry.

Commissioner Marks believes the PRC has an important role to play in our state's transition from fossil-fuel dependency to energy supplies that are environmentally and financially sustainable. On the Commission since 2005, he is the sponsor of rules creating diversity targets for solar energy and distributed generation, and has been active in proceedings addressing net metering and incentives for customer-owned renewables, energy efficiency, and greenhouse gas emissions. He is a member of the governing board for the Western Renewable Energy Generation Information System and the steering committee for the Western Renewable Energy Zones project.

☀ Off-Grid Solar PV Systems (R)

Sunday, Elder Room, 10:45-11:45 AM

Allan Sindelar, Positive Energy, Inc.

This class is for those seriously considering living off the grid using solar PV power. We will discuss the joys and limitations, the design process and load analysis, and the principles and costs of off-grid living. By workshop's end, you will either know it's not for you or be excited to get started.

Allan Sindelar has been designing, installing, and teaching about off-grid PV systems since 1988. He is a NABCEP nationally-certified installer and the founder of Positive Energy, Inc. of Santa Fe.

☀ Off-Grid Sustainable Living in Rio Rancho: Focus on Living on Harvested Water

Saturday, Dogwood Room, 1:15-2:15 PM

Carl Axness, Sandia National Laboratories

This talk will discuss off-grid living in the city of Rio Rancho and will focus on the author's goal of living comfortably with all household water being provided by rainfall. The author will discuss the impact that large

(Continued on page 34)

NMSEA PV Workshops

By Mark-Eli Smith

How sun savvy are you? If you're serious about upping your sun savvy rating, take the plunge by spending two weekends at NMSEA's Photovoltaic (PV; solar electricity) Design and Installation course. Through lecture and practice, you will learn how electricity works (in case you forgot what you learned in that high school physics class) and how to wire without electrocuting yourself. The course answers important sizing questions like "How much power do I need to run my house?" and "How many solar panels will I need?" Over the weekends, you will find yourself measuring and cutting wires, determining correct PV panel placement, and climbing ladders to actually mount them. NMSEA's intensive weekend courses amount to a truly enlightening experience!

Solar novice attendees Mark-Eli Smith and Adenike Parker attended NMSEA's Photovoltaic Design and Installation course in October, 2008. The class installed photovoltaic systems at Bandelier National Monument in Los Alamos and at Nahalat Shalom synagogue in Albuquerque. (See photos, next page.) The class was taught by Randy Sadewic, NMSEA Co-Vice-president, and Marlene Brown, NMSEA Board Member and past President and winner of the American Solar Energy Society's 2008 Women in Solar Award. Then Mark-Eli and Adenike interviewed fellow classmate Gary Anderson about his experience in the course, as follows:

Q: What was your experience with solar energy prior to attending NMSEA's Photovoltaic Design and Installation class?

GA: None to speak of, really. At the same time, my interest in renewable energy is long-standing. In 1978, I was a member of the Dona Anna Solar Energy Society. At that time they were working on 'low-income solar retrofits.' Also, I worked with Solar Mart for two years with sales and installs. However, that did not include any work with photovoltaics, because they were considered expensive and assumed to produce 'bad' electricity. There were no incentives to learn anything new.

Q: What was your response to the 'bad' renewable energy climate?

GA: I became a carpenter! Later, with Reagan as President, solar credits died, and I was sure that solar was dead.

Q: What has your more recent experience with renewable/solar energies been like?

GA: In mid-2008, with Obama running for office, I was excited by the possibility of a proactive President interested in renewables. But, I knew nothing about photovoltaics. Like most, I saw photovoltaics as expensive, unsupported, hard to size, etc. At the same

time, I was willing to take another look.

Q: How have things changed?

GA: Drastically. Now there are a variety of both federal and state incentives and tax credits to encourage solar power use. Anyone can have a PV system installed on their home or business and then feed solar energy back to the grid and eliminate their electricity bill.

Q: What inspired you to take the NMSEA Photovoltaic Design and Installation class?

GA: I've been waiting to get back into renewable energy for 25 years! I've always been into reducing and reusing, and the positive renewable energy climate is altogether inspiring.

Q: What did NMSEA class teach you?

GA: Lots! More than enough to speak intelligently about photovoltaics to anyone. Specifically, how to size photovoltaic systems. I knew how to install already, but I learned the specifics of conduits, standoffs and racking -- the things that really make photovoltaics work effectively.

Q: How has the NMSEA photovoltaics class influenced you?

GA: I'm back into renewable energy at full swing. I took the Residential Energy System Network (RESNET) national exam and passed the energy auditor training. I now work with Home Energy Rating Service (HERS) and perform energy audits. I also added design and installation of PV systems to my business, WindSunNM, LLC (www.windsunnm.com). Now I can deliver the full range of renewable energy products and services. The NMSEA photovoltaics class made all that possible.

Q: Any final comments?

GA: Anyone interested in renewable energy should take this class. You will not be disappointed. Thank you NMSEA, Marlene and Randy!

For further information about course offerings and community involvement, contact NMSEA at www.nmsea.org. ☀

Solar Fiesta Alternative Vehicles Include Tesla Roadster

Each year, the Alternatively-Fueled Vehicle section of the Solar Fiesta displays cars and other types of transportation that help us to be gentler on our environment. This year's selection includes a veggie-oil car and electric cars, scooters, and bike. A special treat, a Tesla Roadster, will be on display Saturday, only, from 2pm to 4pm. Come see how fun this electric car can be! ☀



Above, a PV panel is installed on a rooftop. Below, members of the class prepare for the installation of the power inverter. Both photos are from the October, 2008, NMSEA PV Design and Installation Course; see the article on the previous page.

So You Want to Go Solar...

Read the 10-page

How to Go Solar Guide

... accessible from the top of NMSEA's homepage, and

when you seek vendors, check out the

Solar and Sustainable Directory

Both at

www.nmsea.org



NMECMD



A personal commitment to New Mexico

(Continued from page 31)

scale water harvesting could have on the reduction of pollution in water supply and reducing the expenses associated with arsenic remediation. Changes in water harvesting subsidization are suggested.

Carl L. Axness is employed as a senior technical staff member at SNL. He obtained his Doctorate in Civil Engineering from the Technical University of Catalonia in Barcelona and has Masters degrees in both Hydrology and Mathematics from NM Tech.

☀ ***On A Green Career Path? Jobs Education and Training Opportunities in New Mexico (GJ)***

Saturday, Birch Room, 10:45-12:45

Moderated panel discussion. Check our website for details.

☀ ***Passive Solar Design, A Holistic Approach to Design Principals and Tools.***

Saturday, Cedar Room, 10:45-11:45 AM

Mark Chalom, Solar Design and Analysis

This will be a beginning-to-intermediate level introduction to passive solar design, which must incorporate various principles to be successful. Different climate zones require different strategies. We will cover basic thermodynamics, siting, insulation and mass, room placement, building system components and various solar apertures. We will explain the benefits and what one can expect in various parts of New Mexico, covering the 11 climate zones and discussing passive cooling, as well as passive heating. Simple useful tools and resources will be shared. Other sustainable technologies can be incorporated to achieve a holistic and synergistic effect.

Mark Chalom Architect, Solar Design and Analysis, is a LEED Accredited Professional. Mark has been designing and developing passive solar designs for 35 years. Mark also teaches solar design at various schools such as the Southwest Solar Adobe School in Los Lunas, NM and the Yestermorrow School in Warren, Vermont. Mark is on the Technical Committee and Advisory Board of NMSEA and is on the Board of the Adobe Association of the Southwest. Mark has written and presented technical papers at national and international conferences such as ASES 2007 and Adobe USA 2006, 2007 and 2009.

☀ ***Passive Solar Residential Design and Construction***

Sunday, Dogwood Room, 1:15-2:15 PM

Mark M. Feldman, High Desert Construction Inc.

In this workshop, Mark shows how to design a passive solar residence given various view, access, and privacy orientations. He discusses how to design and build Trombe walls, as well as passive solar water heating design strategies.

Mark has been designing, building, and living in passive

solar homes in New Mexico for 33 years. He has built over 200 passive solar homes. He received a Masters Degree in Architecture from UNM in 1980.

☀ ***Renewable Energy Policy Primer for New Mexicans***

Sunday, Cedar Room, 10:45-11:45 PM (EP)

Patrick Griebel, Consolidated Solar Technologies

As an active participant in the legislative and regulatory arena, Patrick Griebel is closely engaged in energy policy issues for New Mexico. Join him as he discusses the latest legislative and regulatory issues that affect renewable energy at the state and local levels. This is a great primer for those who are interested in learning more about energy policy, as well as for those who already have a good understanding of the process. Participants leave the session with the knowledge, tools and resources to stay informed and get involved in the public dialog. Patrick Griebel of Consolidated Solar Technologies is an attorney and active renewable energy advocate.

☀ ***Simple Solar Thermal Systems for the Southwest Using Selective Surface Absorbers (HCW, T/P)***

Sunday, Quad (outdoors), 2:30-3:30 PM

Helene Beauchamp, MS, Zomeworks Corporation

Selective surface unglazed flat plate solar thermal collectors can perform as well as, or better than, glazed collectors in much of the American Southwest. A selective surface coating prevents re-radiation, sending more of the sun's heat into the working fluid. Preliminary warm season testing shows that an unglazed selective surface absorber performs 50% more efficiently than a glazed collector in climates with mild to moderate temperatures and high irradiance. Using absorbers that are freeze-tolerant in moderate climates and under low pressure conditions, simple solar thermal systems can be designed and installed to provide domestic hot water year-round and winter space heating.

Helene Beauchamp does R&D at Zomeworks Corporation with an emphasis on simple solutions that promote direct use of renewable energy sources .

☀ ***Six Principles of Good Solar Thermal System Design***

Saturday, Aspen Room, 1:15-2:15 PM (HCW)

Bristol Stickney, Cedar Mountain Solar Systems

In this presentation, Bristol discusses the six principles of good solar thermal design as well as how the home owner can apply these principles. This workshop covers all of the ins and outs of solar thermal, from piping and pumping strategies to sizing and heating controls. Bristol also covers solar heat banking in mass floors, night sky radiant cooling, and energy comparisons and case studies from real-world examples.

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(Continued on page 38)

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Santa Fe Chapter Resumes Meetings

By Bob Kreger

The Santa Fe chapter of NMSEA held its first meeting in several years on July 15 in the Community Room of the Santa Fe Main Library. Mary McArthur, NMSEA's Executive Director, came up from Albuquerque to give the opening address and took questions from the small gathering of solar enthusiasts who attended. Later in the program, Gary Anderson of WindSunNM gave a slide presentation about the recent installation of a SkyStream wind turbine at his home in Santa Fe county. At the August meeting, Claudia Pavel from Positive Energy talked about the latest developments in grid-tied photovoltaic systems. Bob Kreger of Kreger Design Build and leader of the Santa Fe chapter, made a presentation on the current state of residential green building design. The chapter will be holding monthly meetings at the library at 145 Washington St. downtown. For more information, contact Bob at 505-660-9391, kregerdesignbuild@msn.com, or Allan Davies at 575-770-4791, allandaviesnm@gmail.com. ☀

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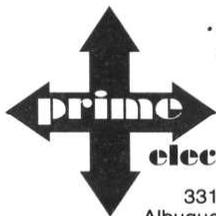
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Albuquerque Chapter Monthly Meeting Programs

The Albuquerque Chapter of NMSEA hosts a highly successful series of meetings each month on the fourth Tuesday at 6:30 pm at the UNM Continuing Education Building, 1634 University Blvd NE, Albuquerque, 87131. These meetings are open to the public and free of charge. For more information, contact the NMSEA office at 505-246-0400 or visit www.nmsea.org.

Expired Memberships

The expiration date of your NMSEA membership is on the mailing label for your Fiesta Guide or SunPaper. If your expiration date is before 9/30/09, please renew for reduced ticket prices at the Solar Fiesta, to support NMSEA's educational programs, to vote in the upcoming election, and to receive the SunPaper. Membership includes discounts on NMSEA classes and workshops.

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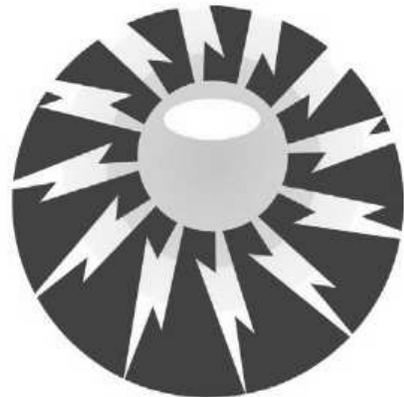
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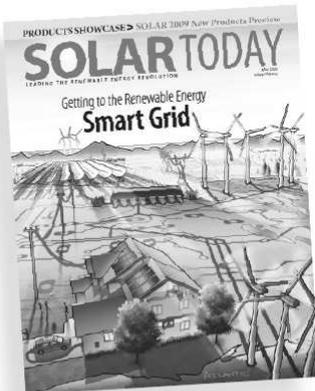
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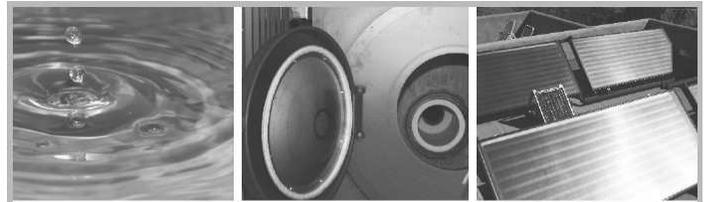
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(Continued from page 34)

systems, Bristol Stickney is a well-known authority on solar hydronic heating solutions. During his tenure at the NMSEA, he developed unique control system concepts that optimize the design of solar heating systems. Bristol currently writes a monthly column on "The Six Principles of Good Solar Hydronic Heating System Design", which is published in national magazines such as *Plumbing and Heating Contractor*, *Plumbing Engineer*, and Santa Fe's *Haciendas: Parade of Homes*.

☀ ***Solar Cooking 101: How to Make Delicious Meals from Sunlight Using a Solar Box Cooker.***

Saturday, Quad (outdoors), 2:30-3:30 PM

Rose M. Kern, Solar Ranch

It sounds fun – cooking meals with sunlight – but the concept is a little daunting until you actually see how it is done. Rose Marie Kern takes you through the basics of how to set up the oven and aim it, what pots to use, and how to determine cooking times based on sky conditions. The class starts inside with a brief presentation and follows with a food tasting of solar cooked foods!

Rose Marie Kern is the author of the "Solar Chef" cookbook. She is an aviation weather forecaster who combines her knowledge of meteorology and cooking in a way that makes sense to new solar cooks. Past President of NMSEA and originator of NMSEA's Solar Fiesta, she writes for several magazines including the *Journal of Sustainability and Countryside*.

☀ ***Solar Heated Swimming Pools for the City of Albuquerque – An Update (HCW)***

Sunday, Elder Room, 12:00-1:00 PM

Jim D. Palmer, PE, NRG Engineering

This workshop provides an update on system types, sizes, dates, BTUs saved and dollars saved on gas bills. The discussion will be followed by a walk-by tour of the solar system at the Highland High School swimming pool.

Jim D. Palmer, PE, CEM, GBE, LEED-AP, was involved in this project from the conceptual through the construction stages. His engineering background will not inhibit his ability to describe these solar thermal installations and report on their effectiveness. Summertime swimming pool heating is the most cost-effective use of solar energy.

☀ ***Solar Hot Water Systems for New Mexico Homes and Small Businesses (HCW)***

Sunday, Aspen Room, 2:30-3:30 PM

Odes Armijo-Caster, Renewable Energy Industries Association of New Mexico, Sacred Power Corp.



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This workshop provides nearly everything that a consumer would need to know for the purchase of a solar hot water system for their home or small business.

Odes has nearly 30 years' experience in the solar industry with hundreds of solar installations including solar hot water, pool heating, hot air heating and solar electric systems. He is the only dual photovoltaic and solar thermal NABCEP-certified installer in the state and has presented dozens of presentations and workshops internationally on solar-related technologies.

☀ ***Solar Water Pumping Overview (HCW)***

Saturday, Dogwood Room, 3:45-4:45 PM

Allan Sindelar, Positive Energy, Inc.

A general introduction to home water supply with renewable energy. Basic concepts of head and flow, pump selection, storage, and system design will be presented. This will give you the foundation to intelligently work with a supplier to select an elegant solution for your own application.

Allan Sindelar has been designing, installing, servicing and teaching about PV systems since 1988. He is a NABCEP nationally-certified installer and the founder of Positive Energy, Inc. of Santa Fe.

☀ ***Ten Things To Do BEFORE You Go Solar – Sorry, The Electric Stove Has Got To Go!***



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Saturday, Aspen Room, 2:30-3:30 PM **–and–** Sunday,
Aspen Room, 1:15-2:15 PM

Ryan Wallace, Affordable Solar

Learn how \$1 spent on energy efficiency can save you \$5 when installing solar power. This workshop will show you how to prepare your home for installing solar power. Learn about many low cost ways to save thousand of dollars on your solar installation.

Ryan is Affordable Solar's residential energy conservation specialist. Ryan is a licensed general contractor and NABCEP-certified solar professional who renovated homes across Albuquerque with dramatic increases in energy efficiency. He specializes in education about free and low-cost methods to reducing power consumption and maximizing solar investment.

☀ ***The Most Affordable Road Map to Zero Energy Home Design (DM, EE)***

Saturday, Cedar Room, 12:00-1:00 PM

Joaquin Karcher, Dipl. Ing. Zero E Design

Would you like to be free of volatile energy prices and enjoy unsurpassed comfort in your home? This presentation demonstrates how zero energy works, and what you can expect as a homeowner. Come and learn about this revolutionary and new approach, which is sweeping Europe and the US. Zero Energy is the new

Green, and you can now meet your personal climate change goals in an affordable fashion.

Joaquin Karcher was trained in Germany and has been a passive solar designer in Taos for more than 15 years. In recent years, he became involved with the German Passive House Energy Standard and his office has researched and developed this concept for the cold climate of the Southwest. He considers himself a bridge for technology transfer between Germany and the Southwest. He teaches the art of deep energy savings to students, the building industry and government officials.

☀ ***Transition Initiatives: Moving Communities from Oil Dependency to Self-Resilience (SL)***

Saturday, Dogwood Room, 12:00-1:00 PM

Zaida Amaral and Maggie Seeley, Transition U.S.

Learn about this positive, community-building response to the energy, climate and economic crises – transitioning from our oil dependency to a vibrant, healthy life style. This workshop will guide you through the 12 ingredients of the Transition Movement and lead you through experiential network exercises that will inspire you toward creating a Transition Initiative in your town, community or neighborhood.

Zaida Amaral is an environmental architect, ecovillage

(Continued on page 40)

(Continued from page 39)

designer, community builder and educator. As Director of Ecovillage Design Southwest in Albuquerque, she premiered the UN-certified Gaia Education curriculum in the United States in 2007. As principal of Resonance Design, she also uses feng shui and holistic design to create sustainable sacred spaces for a variety of individual, commercial, and community clients. She and Maggie are certified Transition trainers.

Maggie Seeley consults with clients on incorporating the Triple Bottom Line (people: social equity; profit: economic prosperity; and planet: ecological responsibility) in their business decision-making. She is a community activist in New Mexico about water issues, micro credit and community building and is a citizen facilitator. Maggie teaches in the Sustainability Studies Program at UNM. ☼ ***(Truly) Affordable Housing – from Tiny Houses to Ecovillages (DM)***

Saturday, Elder Room, 10:45-11:45 AM

Jeron Smith, Lasya Design Group

Lasya Design Group has been pioneering new green alternative building materials and methods over the past five years. Learn what we have been doing with laminate construction, Green SIPS panels, and low cost solar to make unique tiny houses that are elegant and affordable by design. Our current project is a Green Art Studio, Solar Cabin, or Office Space that meets the newest 2009 IBC building code for detached accessory structures. This structure will evolve into a larger unit for our planned ecovillage in the Taos, NM area.

☼ ***(Truly) Sustainable Vegetable Gardens (SL)***

Sunday, Cedar Room, 3:45-4:45 PM

Laurie Lange, Botanicarts, the Bee Collaborative

Many of the gardening practices traditionally used in southwestern home gardens are not sustainable. This class will turn your ideas about how to grow vegetables inside-out. Starting from the principles in the 1985 classic, *How to Grow More Vegetables*, we will explore how to apply the bio-intensive techniques outlined there and expand on them with adaptations for our arid climate. Learn how to grow a garden with the lowest possible impact on the planet, while producing a significant proportion of your nutritional needs, not just in the summer, but year-round as well.

Laurie Lange is a landscape designer, naturalist and natural builder who has been creating an off-the-grid residence and wildlife sanctuary for the past five years. She is co-founder of the Bee Collaborative, working to establish an outdoor classroom and habitat for bees and other beneficial insects under a grant from the Fish and Wildlife Service.

☼ ***Understanding LEED for Homes (DM)***

Saturday, Elder Room, 1:15-2:15 PM

J. Stace McGee, LEED AP Homes, Green Insight and EDI

This presentation is a basic overview of the Leadership in Energy and Environmental Design (LEED) for Homes program. Topics discussed include these: who is the USGBC, what is LEED, background of the program, what types of projects are eligible, how existing homes work within the program, the what and why of LEED for Homes, how LEED for Homes works, the typical cost of registering a project, and what's next.

Stace McGee is a principal at EDI and one of the first in the nation to acquire the LEED for Homes Professional Accreditation. He is Chair of the USGBC West Regional Council and was a founding member of the NM USGBC. He has been instrumental in the adaptation of the LEED rating system in various communities across the nation and has given numerous presentations to advance the practice of green building.

☼ ***Understanding PNM's Solar PV Programs: Net Metering and REC Purchases (R, F)***

Saturday, Aspen Room, 12:00-1:00 PM

Frank Andazola, Anthony Bueno, Jody Karp, PNM Solar Energy Program

Put the power of the sun in your pocket while you protect the environment. PNM will present an overview of interconnection of renewable energy to the grid. Now is a great time for this with 40% in Federal and State tax credits and PNM's Small REC Purchase Program.

Frank Andazola is a Program Manager for PNM's Renewable Energy Department. As an electrical engineer, Frank's previous jobs included electric and gas design of industrial, commercial, and residential projects for PNM. Anthony Bueno, Electrical Engineer, is also a Program Manager for PNM's Renewable Energy Department. His previous jobs included system engineering focusing on fault/load/protective devices of the distribution grid. Jody Karp is the project administrator for PNM's solar photovoltaics program. Her previous roles at PNM include regulatory, strategic planning, and CEO Aide.

☼ ***What's Your Solar Payback? Rebates and Credits***

Saturday, Cedar Room, 1:15-2:15 PM –and– Sunday, Elder Room, 1:15-2:15 PM (F)

Nick Babic, Affordable Solar

How long will it take to pay off my system? How do I take full advantage of the federal and state tax credits? Get the answer to these questions and more from an expert in solar finances and payback.

Nick Babic has designed hundreds of systems from 1

kilowatt to 5 megawatts. Babic has a degree in Aerospace Engineering and has been in the solar industry since 2004. Nick tracks Federal, State, Local, and Utility rebate and tax programs to create return on investment analysis for residential and commercial solar installations.

Technical/Professional Sessions (Sunday Only, Birch Room):

Early Bird Sessions

☀ Using Generators in On-Grid and Off-Grid Home Systems (T/P)

Birch Room, 9:00–9:45 AM

Allan Sindelar, Positive Energy, Inc.

This presentation will focus on the role of a backup generator in a home PV power system, both on-grid and off-grid. Topics will include selection, features, sizing, and integration. A feature article on this topic in the June-July issue of Home Power Magazine, authored by the presenter, will serve as the basis for discussion.

Allan Sindelar has been designing, installing, servicing and teaching about PV systems since 1988. He is a NABCEP nationally-certified installer and the founder of Positive Energy, Inc. of Santa Fe.

☀ High Mass Solar Floor (T/P)

Birch Room, 10:00-10:45 AM

Robert Stout, Southwest Solar Design

Learn about a high mass solar floor, how it's constructed and how it can save energy in a home. Using real-world examples, Robert will demonstrate how much of the "thermal" performance of these houses is under the 5" slab and how the use of a second layer of radiant tubing can assist a ground source heat pump.

Robert Stout has over 30 years' experience designing and building. With a five-year architecture degree (specialization in solar), a three-year engineering degree and a six-month tenure in Denmark studying co-housing, Robert Stout has a wealth of knowledge to share with Solar Fiesta participants.

Track I: 10:45–12:45 AM Session (in time order)

☀ The MicroFactory: Efficient Small-Scale Production (T/P)

Patrick Gallagher, Solar Automation

This presentation explores the realities of "distributed manufacturing" in solar photovoltaic module production. Can mom-and-pop enterprises compete with giant factories and off-shoring? Learn about new tools and methods for small-scale photovoltaic module production.

Patrick Gallagher is a mechanical engineer involved in

(Continued on page 42)

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(Continued from page 41)

manufacturing equipment and process design and development. Mr. Gallagher designed and built the world's first automation equipment for solar cell soldering 30 years ago and now operates Solar Automation Inc., based in Albuquerque, New Mexico.

☀ **Surprise! Things We Didn't Expect (T/P),**

Randy Sadewic, Positive Energy, Inc.

Join Randy Sadewic as he shares information he's learned in the field from his solar photovoltaic installations. A must for installers, Randy discusses his surprising findings from shading analyses and the impact of orientation on a solar photovoltaic array's output.

Randy Sadewic is NABCEP-certified PV Installer and licensed electrician.

☀ **Two-Axis Tracking for the Price of One (T/P),**

Kevin Tan, Zomeworks

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Kevin Tan currently works for Zomeworks providing technical support for PV racking, as well as CAD drafting and design, and R&D projects.

Track II: 1:15-4:45 PM Session (in time order)

☀ **Integrated Energy Design Towards Net-Zero Building (T/P),** Matt Higgins, Environmental Dynamics, Inc.

Attendees will gain a solid understanding of the discipline of energy and lighting modeling – also called performance modeling. Matt shares his experience and provides real-world examples of performance modeling,

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including analysis of component assemblies, architectural elements and building systems. With a focus on integrated design in the southwest, Matt explains how to create a model that informs design decisions specific to LEED objectives and serves as an analytical tool for life-cycle costing and energy reduction. Through case studies, Matt bridges theoretical and practical, and illustrates how to manage model output data to reflect actual conditions.

Matt has been a LEED Accredited Professional since 2006 and was the first in New Mexico to become an ASHRAE High-Performance Building Design Professional in 2008. An employee of EDI, Matt has worked on over 30 projects applying for various levels of LEED certification. Matt's expertise is in sustainable master planning, technical daylight and energy modeling, and high performance building design.

☀ **A Survey of Energy Performance Software (T/P),**
Baldwin Burr, TechKnowledge

This talk will present a survey of current residential and commercial building energy performance analysis software. The range of software tools is extensive, from the four-input online Home Energy Survey (HES) to sophisticated input intensive hour-by-hour simulations such as eQUEST, Energy-10, and Energy Plus. Programs will be evaluated for strengths and weaknesses, user knowledge levels required, appropriate uses for the software and issues such as cost and availability.

Baldwin Burr has more than 30 years of experience in energy conservation procedures as well as teaching and

training. Mr. Burr has held state Energy Auditor certification in both New Mexico and Colorado and has performed hundreds of energy audits. He has been a faculty member at several colleges and was Teacher of the Year at the UNM Valencia Campus in 1998. Mr. Burr has managed technical training programs for several leading organizations. Baldwin Burr is a member of the New Mexico chapter of the Association of Energy Engineers and the U.S. Green Building Council.

☀ **Statements of Work: A Legal Perspective**

(T/P), Colin Adams, Colin L. Adams Law Offices

A must-attend for any business owner or project manager, this technical session will provide guidance for drafting a project's statement of work that won't leave you (or your customers) high and dry. Attendees will learn the common pitfalls and "gotchas" many business owners and project managers experience when writing a statement of work, including buzz words, terms of art, acronyms and abbreviations. In this informative and engaging workshop, technical and professional audiences will learn how to avoid ambiguity and maintain consistency for the benefit of their customers and their projects.

Colin L. Adams is an attorney with offices in Albuquerque. He maintains both a commercial transactional practice and a computer and information technology law practice. He has extensive experience in advising and representing clients in the drafting and negotiation of statements of work and related documents for many different kinds of projects. ☀

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www.cedarmountainsolar.com

City of Albu., Facilities and Energy Mgmt Dept

Ken Mitchell
1801 4th St NW, Bldg B
Albuquerque, NM 87102
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http://www.cabq.gov/energy/

CNM Community College

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Albuquerque, NM 87176
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www.deltathird.com

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(505) 454-0614, (877) 765-2713
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Ryan Helton
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Frank Burcham
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[http://apps1.eere.energy.gov/
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Michael David Lipkan
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The Loan Fund

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www.nmcdlf.org

**Los Alamos Dept. of
Public Utilities**

Matthew Dickens
901 Trinity Dr.
Los Alamos, NM 87544
(505) 662-8234
www.losalamosnm.us/utilities

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Lawrence Peterson
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www.luzenergy.com

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www.newmexicoearth.com

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www.nm-ipl.org

**New Mexico Public
Regulation Commission**

Jason Marks
PO Box 1269
Santa Fe, NM 87504-1269
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www.nmprc.state.nm.us

**New Mexico Solar Energy
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www.nmsea.org

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**Southwest Green
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www.sunandearth.net

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(Continued on page 46)

(Continued from page 45)

Santa Fe Comm. Coll./

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6401 Richards Ave
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www.usgbcnm.org

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Sustainable Las Vegas Chapter Discusses RE Issues

By Emelie Olson

After the two-month summer hiatus, the next meeting of Sustainable Las Vegas, NM, (the local chapter of NMSEA) will be Thursday, September 10 at 5:15 pm. Daniel Jencka from Energy Concepts will be the speaker. We will meet in NMHU Donnelly Library, Rm. 325. For further information, call Emelie at 454-3920.

The title for Daniel's talk will be "Small Wind and Solar Power Systems in New Mexico: The Current Picture." Where are we as a city, county and state in terms of promoting residential and small business use of renewable energy systems? What are some of the roadblocks that stand in the way of individual participation in the green economy--financial, technical and political? Are there differences between urban and rural needs when it comes to the use of renewable energy? What might we accomplish in terms of needed change and a sustainable, positive future here in Las Vegas and NE New Mexico? What may be around the corner in terms of new policies and new technologies? What are the benefits of distributed, small-scale versus utility-scale solar and wind power systems?

These are some of the questions Daniel will discuss and explore, based on his ongoing involvement in renewable energy education and sales across our state. He will also share some of his broader, and perhaps controversial, ideas on what renewable energy can and can't accomplish, technically and socially, for our community and the world around us, including what the energy "powers that be" may have in mind. This may lead to some surprising conclusions and lively discussion! Daniel will also be available to answer general questions on renewable energy systems, utility company incentives, tax credits, etc.

The topic for October is still open, though we are working on some interesting possibilities. If you have a hot topic and a speaker, please let me know ASAP. In November, Del Jimenez of the NMSU agricultural research center in Alcalde will speak on their work promoting sustainable agriculture. We will not meet in December, but January will feature the second solar homes tour in the area, so there will not be a speaker meeting. Look for regular meetings in February and March and the Synergyfest in April. ☀



ALBUQUERQUEGREEN





Join the New Mexico Solar Energy Association!

Be a part of a creative, innovative organization dedicated to bringing renewable energy and sustainable building to New Mexico!

Keep informed of what's happening through our bi-monthly newsletter, the SunPaper! Actively support education for kids and adults and learn of workshops and classes where you can learn about photovoltaics, hot water, green building, solar rights and all the wide range of sustainable living and building practices.

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Any special solar interests? _____

How did you hear about us? _____

Yes, I would like to volunteer on occasion!

NMSEA Membership Dues

- | | |
|--|-------|
| <input type="checkbox"/> Individual and Family, 1 year | \$30 |
| <input type="checkbox"/> Business, 1 year | \$75 |
| <input type="checkbox"/> Individual Lifetime | \$250 |
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w/copy of ID (circle one) | \$10 |

NMSEA Chapter Options

All NMSEA members are invited to participate in our local chapters around the state. When you register, you will be placed in the chapter nearest to you geographically, or you may contact the office to change your chapter, if you desire. (Note: members are not limited to the chapter in their area and are welcome to visit other chapter events.)

Check if you would like to be affiliated with and/or donate an additional amount to any of the following chapters or to the main office general fund:

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ASES Membership

NMSEA is a chapter of the American Solar Energy Society, and we encourage our members to join ASES as well. ASES members receive SOLAR TODAY magazine, Solar Action Network (SAN) alerts, the Sunbeam e-newsletter, discounts on publications, and more! Five percent of your ASES dues are dedicated to special outreach programs including ASES Legacy Schools, library gift subscriptions and the purchase of Green Tags.

For more information and for ASES business membership categories, please visit www.ases.org.

If you join or renew ASES at the Professional level *and* join or renew NMSEA, deduct \$10 from your ASES dues (as indicated below). If you join or renew ASES at the Basic level and join or renew NMSEA, deduct \$5 from your ASES dues.

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Mail this form with payment to: NMSEA, 1009 Bradbury Dr. SE #35, Albuquerque, NM 87106.
For more information, please call 505-246-0400 or 888-886-6765 or visit www.nmsea.org.

The SunPaper

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**Solar
Fiesta
Edition
2009**

NMSEA Mission Statement

As a chapter of the American Solar Energy Society (ASES), NMSEA is working to further solar and related arts, sciences and technologies with concern for the ecological, social and economic fabric of the region. NMSEA serves to educate individuals, public institutions and governmental bodies and seeks to raise the level of public awareness of the organization's purposes. Anyone who shares these aims may become a member. Your tax-deductible donation is urgently needed to continue our work benefiting the citizens of New Mexico.

**Power Shift! Participate in the NMSEA Solar Fiesta
Sept. 26, 27, Highland High School, Albuquerque**

Please notice all of our wonderful advertisers in these pages of the Solar Fiesta Guide. Also see who will be at the indoor and outdoor booths and who will be presenting talks on solar, conservation, efficiency, and renewable energy topics in the workshops. See solar energy hardware at the Fiesta and sign up to purchase, if you are ready. Enjoy the solar pumping and cooking demonstrations and kids activities, including small solar race cars. See the real cars of the future now, including the Tesla Roadster. Join the Solar Bake-Off noon-2:30pm on Sunday. Our solar and renewable energy event of the year! Go to our website for Solar Fiesta 2009 information: www.nmsea.org.

Coming Events

- Sept. 12 Board of Directors Meeting, Saturday, NMSEA office, 1009 Bradbury Dr. SE, Albuquerque, 87106. Members welcome, 12:00 noon to 2:00PM; potluck before.
- Sept. 22 Albuquerque Chapter Meeting - 6:30pm, speaker TBA, UNM Continuing Ed Bldg, Rm G, 1634 University Blvd NE.
- Sept. 26-27 Solar Fiesta, NMSEA, Highland High School, Free workshops 9:00AM. Gates open for exhibits & activities from 10:00AM – 5:00 PM.
- Oct. 3 ASES National Solar Tours. Sign up in your community: www.ases.org.
- Oct. 27 Albuquerque Chapter Meeting, 6:30 pm, speaker TBA, UNM CE Bldg (see above)