



New Mexico Solar Energy Association

SunPaper

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ASES Passive Solar Pioneer

By Janet Bridgers and Jim Palmer

A New Mexico architect, Mark Chalom, has received recognition for his work in passive solar energy by two prominent organizations. On March 17, Mr. Chalom received the Equinox Award presented by the Bridgers family and Earth Alert at a Solar Social hosted by NMSEA. Then in April it was announced that Mark will receive the 2012 Passive Solar Pioneer Award from the American Solar Energy Society (ASES) at their May conference in Denver, Colorado. This award will be presented at the Annual Awards Banquet at the World Renewable Energy Forum on May 15.

Mark Chalom of Santa Fe, NM, has dedicated 35 years to the development, research, promotion, application and documentation of passive solar architecture. His projects and teaching have brought passive solar architecture to new heights in development and performance. Mark is a man who is curious, who asks questions, who needs to know the latest and the most creative answers, who looks always for the best technology that will benefit the most people, and who searches for the most sustainable features in all work that he does. He teaches what he believes - that "the building is the machine" and simplicity is the key.

The Equinox Award was inaugurated Sept. 21, 2006, to celebrate the 50th Anniversary of the Bridgers and Paxton Solar Building, the world's first commercial solar-heated building, built in Albuquerque in 1956. The award was established by the Bridgers family in conjunction with Earth Alert, an environmental non-profit of which Janet Bridgers is co-founder, to recognize efforts by an individual toward sustainability. It was first presented to Santa Fe architect Ed Mazria, founder of Architecture 2030, an organization working toward dramatic reductions in the greenhouse gas emissions in the building sector by changing the way buildings are designed and constructed.

(Continued on page 5)

NMSEA Science Fair Awards

Barbara Menicucci, NMSEA Treasurer

The New Mexico Solar Energy Association was pleased to present the Dr. William A. Gross Memorial Award to Sara Hasan at the annual New Mexico State Science and Engineering Fair held on March 31 at the New Mexico Institute of Mining and Technology in Socorro. Sara attends the Salam Academy in Albuquerque, and her project was titled "Solar and Hydro Energy." See photo, p. 10. This award was instituted to honor excellence in scientific research or engineering in the field of renewable energy. One of Dr. Gross's guiding principles was to leave the world a better place, and Sara's project was clearly focused on that goal. Her project explored the possibility of storing solar energy by using PV electricity during the day to pump water to the roof of a home or building. At night, the water would

(Continued on page 10)

Inside this Issue

Page	
1	ASES Passive Solar Pioneer; NMSEA Science Fair Awards
2	NMSEA personnel, location, Advertising Rates; Words of Sol
3	NMSEA Chapter Leaders and Contact Info
7	Equinox Award to Rick Shoudt
11	Is an EV or PHEV Good for the Environment and Your Pocketbook? NMSEA Board Meeting May 8
12	How Bad Is It?
14	PRC Election; ABQ Chapter Meetings; Energy Investments
15	NMSEA Membership Form
16	Mission and Vision Statements; Coming Events

The NMSEA SunPaper

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Send all letters, comments, and articles to

The NMSEA SunPaper

1009 Bradbury Dr. SE #35

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Preference is given to articles on solar energy topics (PV, passive, technology, performance histories, incentives, cost benefits, etc.), but we will also consider other renewable energy subjects as space allows.

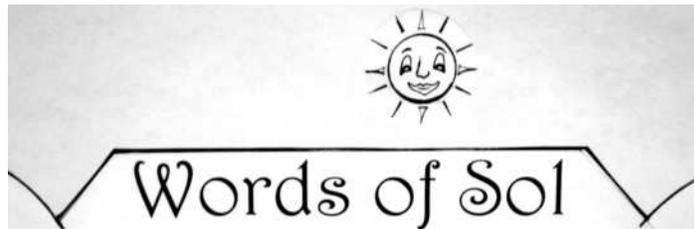
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All advertising is in black and white, and photos and graphics must have a resolution of at least 250 dpi in JPEG, TIF, or PDF format. Text-only ads may be provided in MS Word format. Ad copy must be e-mailed by June 15 for the July/August SunPaper. Circulation is typically 700 copies. The size requirements and prices for individual ads are as follows:

		<u>July/August</u>
Full Page:	9½" H X 7" W	\$122.00
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RE New Mexico

It's Earth Day - which now is more like a month of events - and it's time for new beginnings. In January an opportunity we had imagined for years was presented to NMSEA. One of our Board members, Janet Bridgers, had discovered a professional group of videographers, Toby Younis and his production company Videotero, LLC., and she recommended that we consider how we might use them. The result was a new project to feature a cross-section of New Mexico's renewable energy innovators - from the ancient history of the solar-oriented Anasazi dwellings, through the Native American pueblos and the passive solar adobe structures of the early settlers, as a backdrop to the early 1970s renaissance of the new solar age that began in New Mexico. The key to this new project is having the right documentary videographer, director, and executive producer. Videotero recognizes that New Mexico has nurtured or attracted an eclectic, personable, credible, talented cadre of renewable energy pioneers and experts, who can "enchant" audiences throughout America with their stories, opinions and insights. They know that we have important contributors to renewable education and originators of renewable energy businesses. Mr. Younis is also making this endeavor feasible by assisting us with financing for the project.

We sent out a casting call by e-mail to members and affiliates in February for pioneers and experts to be guests on our shows. The response we received provided more good candidates than we can use in the first series of 13 introductory episodes in a television format of 28 minutes each. The final contract has been voted on and passed by the board and signed by Toby Younis. Filming of the episodes is scheduled for mid-June in the new CNM film studios with some in-field locations to follow. The editing will begin in July. Once we have the editing in process for viewing, we will be soliciting sponsors to fund distribution, which should begin by the first of October. The guest finalists are now being notified for confirmation and scheduling.

RE and PNM

One of NMSEA's primary missions is educating the public and businesses on why more renewable energy (RE) and less fossil fuel pollution is the best solution for

people's health, corporate public relations, and everyone's bottom line going into the future. So, how does a small non-profit organization like NMSEA work with some of the more progressive people in a large multi-million dollar corporation like PNM to keep RE alive and growing? We need to remember that PNM is a big corporate creature. Yet, it may have some very well-meaning people working within the corporation that truly believe they can make changes from within, perhaps if they could just get a little more support from organizations like ours. Those people believe PNM could become more environmentally conscious and perhaps even phase out dirty coal-fired plants by replacing them with natural gas, solar, wind, bio, and geothermal plants. Natural gas (methane) plants could even operate someday with a mix of hydrogen (hythane) generated from wind machines.

One of the strengths of our organization is the diversity of our membership. I believe we should encourage those members who have strong beliefs concerning our involvement with PNM to come forward and advise us on how we might best communicate with them. How do we maintain a dialogue with the people within PNM that are reaching out to us, considering that these well-meaning souls may only have a sliver of a chance of nudging their big corporation towards a clean path? And, are these good people just being used in a public relations charade?

We've always encouraged PNM participation in our Solar Fiesta, because they appeared to be inching in a little greener direction. But Gary Vaughn's article "The End of Pretend" in the March/April SunPaper unmasked PNM's 20-year Electric Integrated Resource Plan, which doesn't look very promising for RE. With the majority of PNM's electricity coming from very dirty antiquated coal plants and an inefficient distribution system, they may have only one mantra left - "PNM has cheap electricity" - however myopic and temporary that may be. To be effective in our encouragement or criticisms of PNM, we might reconsider rejecting their sponsorship of our events and programs. That would also give NMSEA more credibility when working with other groups that are diligently committed to seeing PNM use more RE and abandon coal.

Perhaps the most important way to move a clean sustainable future forward and keep in check the runaway corporate power structure is to encourage everyone to vote for progressive candidates in the coming elections. And don't let progressive people become discouraged. There is still hope, at least until the last vote is honestly counted this year.

Sincerely,

Monte Ogdahl
NMSEA President



NMSEA Chapter Leaders and Contact Information

Alamogordo Chapter

Official Name:

Alamogordo-NMSEA

Chapter President:

Ron Offley, (575) 682-6027,
offley@nmsua.nmsu.edu

Chapter Program Director:

Jay Harrell, (575) 430-0876,
harrellalm@aol.com

Albuquerque Chapter

Coordinator:

Athena Christodoulou, (505) 246-0400
athenamsea@gmail.com

Las Vegas (New Mexico) Chapter

Official Name:

Sustainable Las Vegas

President:

Lloyd Goding, (505) 454-9122,
lgoding@hughes.net

Communications Contact:

Emelie Olson, (505)-454-3920,
eolson@desertgate.com

Los Alamos Chapter

Official Name:

Los Alamos Sustainable Energy Network
(LASE Network)

Website:

www.lasenergy.net

Chapter President:

David Griggs, (505) 661-4572,
griggs2000@hotmail.com

Alternate Contact:

Gale Zander Barlow,
galezbar@earthlink.net

Chapter Box:

P.O. Box 221, Los Alamos, NM 87544

Santa Fe

Leaders:

Open

Silver City

President:

Teri Matelson,
t@tmatelson.com

Chapter Box:

P.O. Box 5129, Silver City, NM 88062

Taos Chapter

Official Name:

NM Solar - Taos Chapter

Chapter President:

Scott Evans (505) 758-5338,
scott@greenbuilderstaos.com

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Mark Chalom, passive solar architect.

As an architect Mark started his work in solar energy in 1973 at the University of Oklahoma. Moving to New Mexico in 1974, he worked for architect William Lumpkins, a New Mexico legend who designed his first passive solar adobe home in 1935. Mark served as drafter for the Sundwellings Team (see photo below), a group of true passive solar pioneers which included Peter Van Dresser, William Lumpkins, Benjamin “Buck” Rogers, and Francis Wessling as the core group. Their consultants included Steve Baer, Douglas Balcomb, David Wright, Bill Yanda, and Quentin Wilson. Mark applied passive solar and other sustainable technologies to the economic and social fabric of northern New Mexico’s Hispanic villages and native pueblos as a way of preserving their unique culture and architecture. Mark went from learning the art and magic of adobe and natural materials to working with Los Alamos National Laboratory as he and Doug Balcomb monitored, collected and analyzed the energy flows in these passive solar buildings. This project culminated with Mark helping Peter Van Dresser organize and publish his famous book, *Home Grown Sundwellings* (1979). Mark then returned to William Lumpkin’s office to design climate-responsive buildings.

In 1982 Mark started his own company, Solar Design and Analysis, as a full-service architectural office, and he now has over 150 successful climate-responsive buildings in his portfolio.

(Continued on page 8)

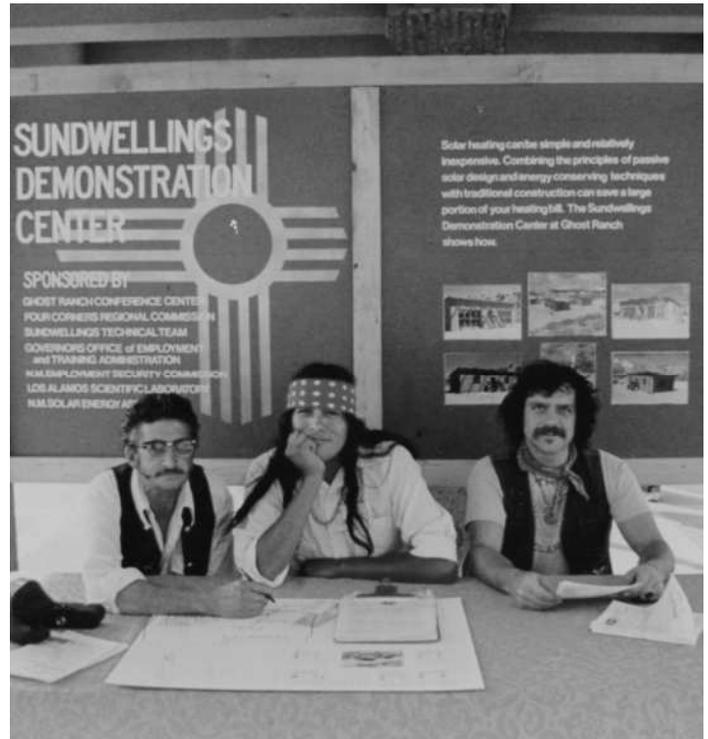
(ASES Pioneer, Continued from page 1)

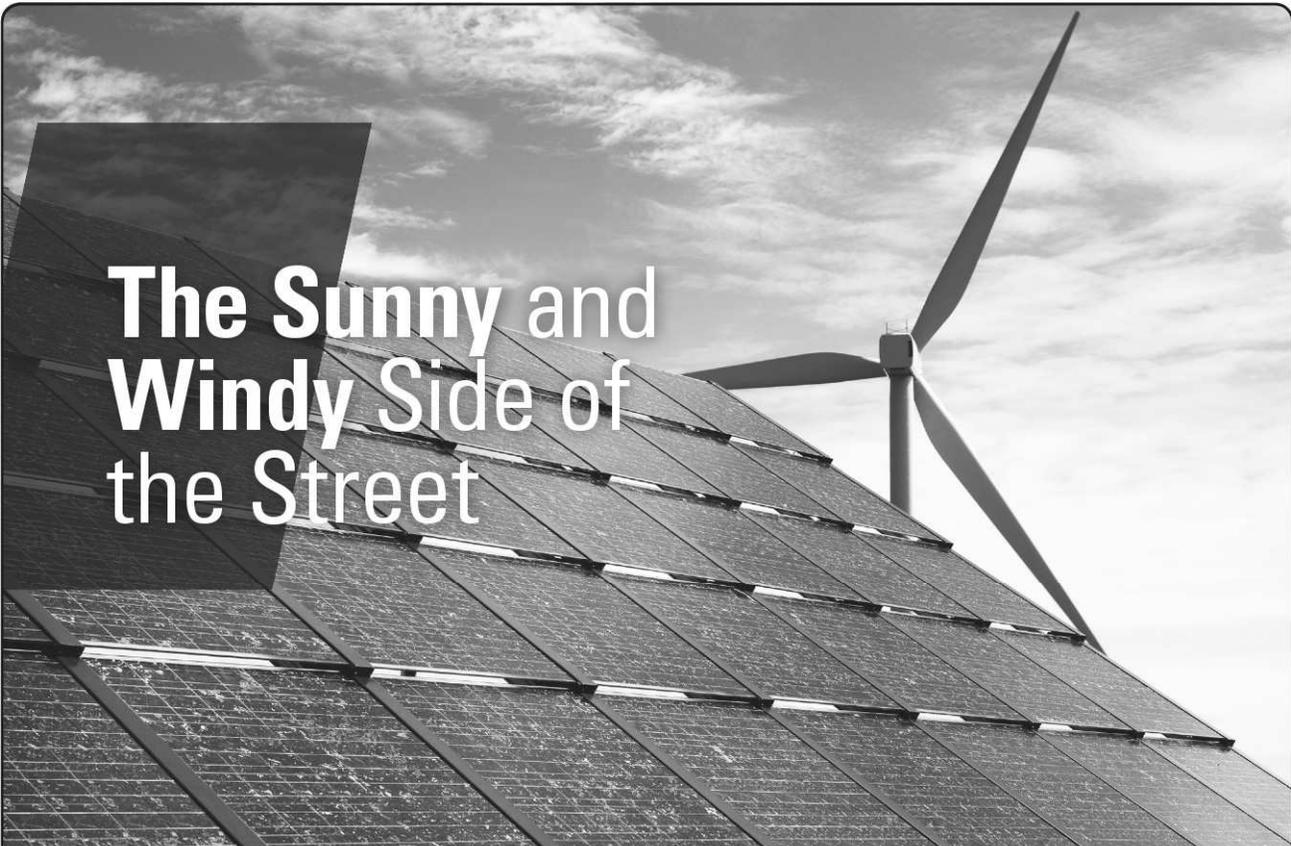
In 2007, the Equinox Award was presented at a solar tea ceremony to Steve Baer, founder and past president of Albuquerque’s Zomeworks. Baer has been awarded many patents in passive controls and energy conservation products.

The ASES award was established in 1979, and past winners include Bruce Anderson (1990), founder of Earth Day, Ed Mazria (1994), who wrote *the Passive Solar Energy Book*, and Native Americans (as a group, 1991), whose resourceful living with nature is an enduring inspiration. The award honors distinguished members in the passive solar energy field who developed the early theories, research efforts, new concepts, and opportunities for later researchers. Their foresight, innovative thinking, and creativity opened the doors for others.

Mark Chalom is surely one of the true pioneers in the field. He is known for his success in blending traditional and contemporary styles with sustainable technologies. Mark has also worked to quantify passive solar design to provide data that documents the role of orientation, fenestration, and mass to collect, store and release solar heat in a building structure. He has made passive solar architecture a handcrafted art form.

Mark Chalom at right with Sundwellings staff, about 1977.





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Equinox Award to Rick Shoudt

By Janet Bridgers, NMSEA Board Member

In early April, Rick Shoudt was posthumously presented an Equinox Award by the Bridgers family and Earth Alert. It was given to his widow, Diane Shoudt, at a memorial celebration held Sunday, April 1. Shoudt died January 20, 2012.

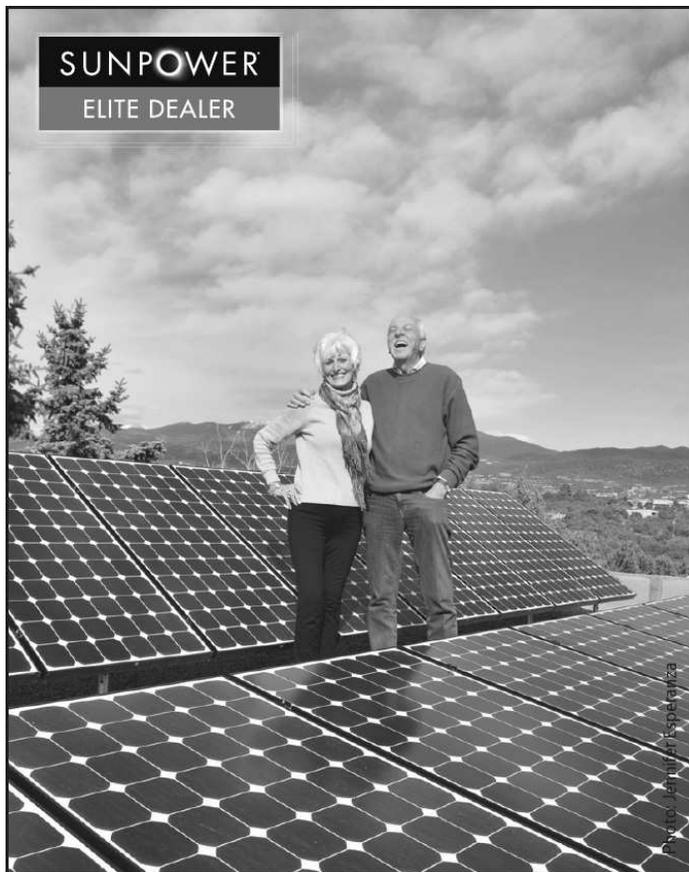
Shoudt was a promoter of car racing and trade shows in Albuquerque. He was also passionate about renewable energy and alternative fuel vehicles, and volunteered several years at NMSEA's annual Solar Fiesta. He donated significant space to NMSEA at the annual Ultimate Home Showcase/International Green Ideas Show, which he produced, as a way to help educate homeowners about solar and nurture local solar businesses.

Besides his wife of 33 years, Rick is survived by two daughters and their families, two brothers, and two sisters. Rick's dedication and friendly support will be missed.

For a short history of the Equinox Award, see the front page article about Mark Chalom, who also received an Equinox Award this year.



Rick Shoudt (1944-2012)



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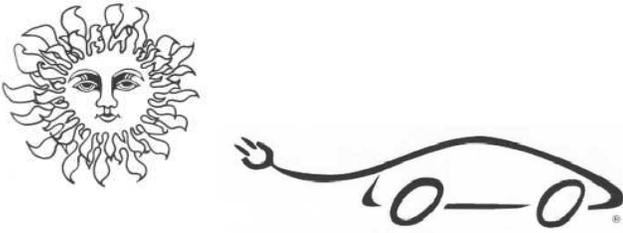
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(ASES Pioneer, Continued from page 5)

As a teacher Mark has always believed in empowering others to build their own home. Since 1976, Mark has taught passive solar design for the Sundwellings Program, Santa Fe Community College, Ghost Ranch, and the Southwest Solar Adobe School. In the 1980s, Mark teamed with Quentin Wilson and the late Bill Yanda to form Adobe Solar Associates, which presented three-day workshops in New Mexico and Arizona.

Throughout his career, Mark has developed, tested, and refined new ideas. Working with David Wright, he developed a simple passive solar analytical methodology to predict performance and to compare different passive solar buildings. He has also published empirical data for the New Mexico State Energy Office about passive night-sky radiant cooling systems.

Mark has always been an activist. When he came to New Mexico, he volunteered for the young New Mexico Solar Energy Association. He helped produce the first *SunPaper*, then a technical newsletter compiling the groundbreaking work being done in New Mexico. Mark was active in organizing many of the early Ghost Ranch Lifetechnics Conferences. Many of the past ASES Passive Pioneers were a part of this early gathering. Today Mark is an NMSEA Advisory Board member and passive solar activist. He helps with green homes shows and judges the Science, Technology, Engineering and Math fair at UNM.

As Mark learned, taught, talked, built, and researched, he never forgot one of his basic premises: there is no sustainability on this earth without social justice or equality. His personal skills and design sense have given passive solar not only validity in its performance, but beauty in application. His work has helped develop simple designs, products, and skills that can be used by all nations, developed and developing. He has been and will continue to be a guiding force in the field.



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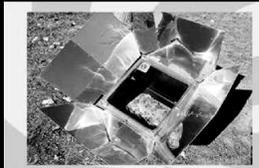
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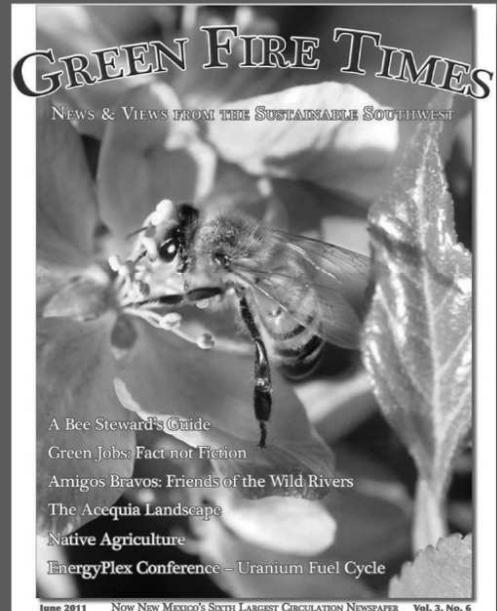
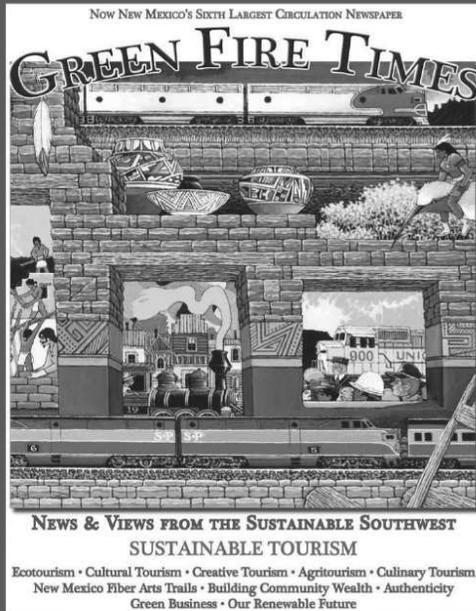
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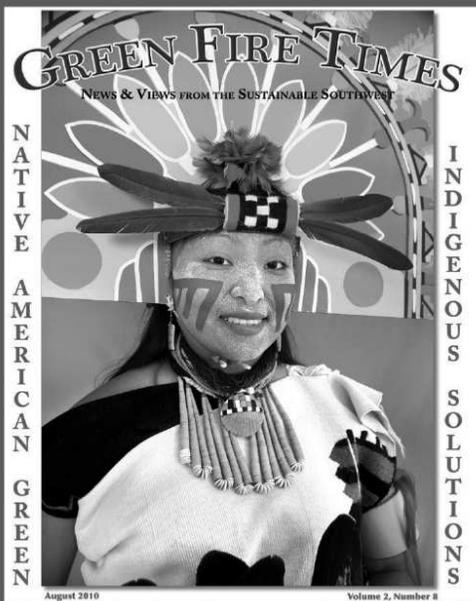
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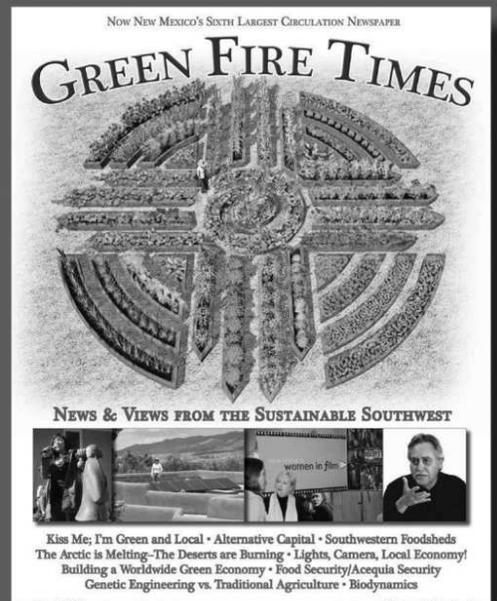
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Sara Hasan, Science Fair Winner

(NMSEA Science Fair, Continued from page 1)

be released to drive a small turbine to supply modest amounts of electricity to power efficient lighting and electronic devices. (Makes you wonder why small-scale pumped/hydro couldn't be a widely applicable solution to the solar energy storage problem, doesn't it?)

NMSEA Board members Jim Palmer, Mark Chalom, and Gary Vaughn adjudicated at the Regional Fair in Albuquerque and Barbara Menicucci and Gary at the State Fair in Socorro. Sara's project also won first place in the junior division at the Regional Fair. Sara received an NMSEA award certificate and a cash award of \$200.

Mark Chalom had this to say about Sara's project: "Her science project was well thought out. She started with the concept of how scientific principals could be applied to a global social problem and utilized for the betterment of humanity. Few projects had this focus. You would all really enjoy meeting and speaking with this young enthusiastic person. It really makes her generation look like they are concerned with much more than video games and texting."

Dr. Gross served as dean of the UNM School of Engineering from 1974 to 1980, when he championed the construction of a new mechanical engineering building as a working example of state-of-the-art renewable energy innovation. Following two decades as a mechanical engineer in industry, Dr. Gross demonstrated his dedication to education as professor of mechanical engineering at

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UNM for 15 years. Dr. Gross's keen concern for energy sustainability also led him to develop several international programs for supporting renewable energy and sustainable living in developing countries. He was a long-time member of NMSEA and served on the Albuquerque Energy Conservation Council.

NMSEA also issued these special awards at the State Science and Engineering Fair:

Senior Division:

- 1st: Wayne W. Vigil, Jr. of Grants High School, "Electric Algae Proliferation"
- 2nd: Christian R. Jahrling of Piedra Vista High School "Wavelengths of Lights' Effect on Solar Vehicles' Performance"
- 3rd: Madison C. Woelfel, "Solar Panel Efficiency"

Junior Division:

- 1st: Nicholas Koskelo of Los Alamos Middle School, "The Effect of Windmill Blade Pitch and Surface Area on Energy Generation"
- 2nd: Jeremy B. Torres of Gallup Catholic School, "Thermodynamics in Motion"
- 3rd: David I. Gill of Las Cruces Catholic School, "Exploring Efficient Solar Cookers"

Congratulations to Sara and all the NMSEA state winners.



Is an EV or PHEV Good for the Environment and Your Pocketbook?

By Monte Ogdahl, NMSEA President

The Union of Concerned Scientists (UCS) recently weighed in with their “realistic scientific” approach to comparing green house gas (GHG) caused by the charging of electric vehicles (EV) from different mixes of grid power sources. They equate those to new efficient gasoline and hybrid miles per gallon of green house gas (MPG/GHG). With 45% of Americans living in “best” (lowest GHG) areas like California, grid charging an EV would be the equivalent of about 80 MPG/GHG for a new gasoline or Hybrid car. About 37% of Americans live in “better” grid charging areas that would equate to GHG emissions of a 40 MPG/GHG Hybrid. (The price of electricity was also included in the formula, so with PNM’s cheap rates with the new emission controls “in process” on the Four Corners coal-fired plant, New Mexico just made it into this category.) “Good” states mostly in the Midwest would equate to about a 35 MPG/GHG gasoline vehicle. Even if your area only had coal plants for electricity, your EV would equate to about 30 MPG/GHG. This study was done to help people make better comparisons of different types of energy available for different new car purchases for the majority of buyers. The annual savings for the electricity cost verses gasoline cost varied from about \$580 to \$1220. Of course a Nissan Leaf or Chevy Volt will cost you about \$35,000 to \$40,000 to purchase, respectively.

Pointing out the need for fundamental changes “to prevent the worst consequences of global warming,” the report concludes, “the automotive industry must deliver viable alternatives to the oil-fueled internal-combustion engine - i.e., vehicles boasting zero or near-zero emissions (NZE).” For complete articles, search the Internet for “Battery Cars Bring Energy, Emissions Savings Anywhere in U.S., Finds New Study by UCS.”

Remember, they are only considering GHG as an emission. There are numerous other emissions and toxins given off from the oil, coal and nuclear fuel sources that contain pathogens and carcinogens that lead to short and long-term environmental and related health problems.

NZE is best accomplished by plugging an EV or a plug-in hybrid (PHEV) into your grid-tied solar photovoltaic (PV) or stand-alone off-grid renewable energy system, if it has sufficient capacity. Then your EV MPG/GHG can go to infinity.

If you don’t want to spend \$40,000 for a vehicle that doesn’t quite fit your needs or desires, consider converting one of your favorite and/or practically-useful gas vehicles to electric, or having one converted for you. If you drive or commute over 10,000 miles per year at a

range of 30 miles between charges, the payback can be about 3 yrs, leaving 3 to 5 yrs or 150,000 miles left on the battery pack. With the new battery technology you can have an EV that will go 250 to 300 miles between charges and recharge within a hour, but that is quite expensive. For the occasional long range trip, a plug in hybrid is more practical. If you are environmentally aware, and especially if you have or are planning to have PV, owning an EV or PHEV is a “no-brainer.” For more information on EV conversions email solpwr@plateautel.net or info@NMSEA.org to sign up for classes.



NMSEA Board Meeting May 8

The next meeting of the NMSEA Board of Directors will be on Tuesday, May 8, in the conference room at the office at 1009 Bradbury Dr. SE, Albuquerque, 87106, from 6:00-8:30PM with a potluck before at 5:30PM. Members welcome. Call 505-246-0400 by May 7, if you have an item for the agenda.



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How Bad Is It?

by Ron Herman, Editor

How bad is pollution in New Mexico from fossil fuel energy use? Pretty bad, or not so much, depending on where you live. We NMSEA members advocate for less fossil fuel consumption and more renewable energy production. But why? Do we and our businesses, industry, and power generation really cause that much of a problem? If so, is it mostly our air, or our water, or is it mostly our influence on climate change that we should be concerned about? Have recent additions of renewable energy (RE) kept pollution low or even reduced it?

NMSEA has many friends in groups that have monitored, measured, and in some cases spoken out on these issues. They include the local Sierra Club, New Energy Economy, the Coalition for Clean Affordable Energy, and EarthJustice. These people make it their business to find out how bad it is.

Of course, the air pollution you experience depends on where you live and which way the wind is blowing. The electric power plants in the Four Corners area are major sources of air pollution, but there are others, like refineries and automotive pollution in the larger cities.

What and where are the main sources of New Mexico air pollution? The U.S. Environmental Protection Agency (EPA) recently listed the state's worst polluters, and Staci Matlock wrote an excellent article in the Santa Fe New Mexican last January highlighting those sources. The worst greenhouse gas (GHG) emissions come from our sixteen power plants that produce millions of tons of carbon dioxide, methane, and nitrous oxides (NO₂). That is literally tens of millions of tons of pollution spanning a wide area due to their low density. The largest component of these pollutants is carbon dioxide from the coal-burning Four Corners Power Plant, which is partially owned by PNM and operated by Arizona Public Service Company. According to the EarthJustice website, the Four Corners Plant is operating illegally outside the Clean Air Act. The operator plans to close down three of the five generating units there, which will reduce emissions. PNM has 15% ownership in the remaining units, and apparently California Edison must sell their 48% share under new California environmental requirements for divestiture of coal plants.

Next on the list is the San Juan Generating Station, another coal plant in the same area. PNM owns 46% of San Juan and operates it for eight other owners. This 40-year old coal-fired plant and the Four Corners Power Plant are two of the dirtiest in the nation, according to EarthJustice.

The other high producers of air pollution are the forty-four natural gas (NG) processing and compression facilities, including the San Juan Gas Plant in Bloomfield. Also, three oil refineries in the state emit

major amounts of greenhouse gases, particularly the largest one located in Artesia.

PNM websites have excellent descriptions of their power plants in New Mexico, specifically <http://www.pnm.com/systems/plants.htm>. I recommend that NMSEA members visit these sites to see for themselves the incredible infrastructure that has been created to provide electricity for us and the improvements that have been made to reduce emissions, thanks to public health safeguards like the federal Clean Air Act.

According to a recent column in the Albuquerque Journal by David VanWinkle, Energy Chair of the Sierra Club's Rio Grande Chapter, the EPA has issued a plan to cut haze and ozone-forming emissions of nitrogen oxide (NO_x) from the San Juan coal plant by 80%. That limit is widely supported by federal agencies, including the National Park Service and the U.S. Fish and Wildlife Service, as well as several public health, environmental, and tribal organizations. However, PNM and the Martinez Administration are lobbying for a plan that would reduce harmful NO_x emissions by only 20%. The EPA plan is actually cheaper per ton of NO_x eliminated. PNM customers were notified of both plans in a recent bill mailing, which complained about the higher cost of the EPA plan and claimed that "San Juan county [is] an area that has some of the best air quality in the nation, according to recent reports by the World Health Organization and the American Lung Association."

The local Sierra Club website and other news sources have reported that state plans to reduce GHG emissions established by the NM Environmental Improvement Board (EIB) in 2010 have been revoked by the Martinez Administration. Thousands of hours of testimony on economic impact and health concerns went into those discarded plans. The only thing that changed was the administration in the governor's office. The EIB members serving in 2010 were fired by Governor Martinez, who replaced them with people who support her agenda. In March 2012, the EPA and the Obama administration released another proposal to limit carbon pollution from power plants. According to Shrayas Jatkari, organizer with the Sierra Club in New Mexico, "The EPA and Obama Administration stood up to the big polluters like PNM and opposed efforts to block clean air standards."

PNM was also given a mandate by the NM legislature and the PRC to bring online a higher percentage of Renewable Energy (RE), meeting a Renewable Portfolio Standard of 10% by 2011; but it has only achieved 7.3%. How bad was NM pollution before we installed so much wind and solar electricity production, say in about 2000? Has the burning of fossil fuels decreased because of RE over the past 10-15 years, stayed the same because of coal-fired base-load and NG backup for RE, increased because of greater demand, or what? Because of RE standby and backup requirements, the production of a

MWh of RE electricity doesn't necessarily mean that a MWh of coal pollution was avoided. I would like to see more studies on this to answer these questions. Do any of our readers have a good information source for this "before and after" comparison?

Another source of pollution is coal and uranium mining. Blowing coal dust is a dangerous air pollutant, and wastewater and runoff from mining and drilling operations can contaminate water supplies. The worst water pollution in the state is probably from the San Juan Coal Company mine and coal ash/slag from the San Juan Generating Station. This is particularly threatening to the San Juan River basin, which is a westward drainage area feeding the Colorado River in Arizona. Recent litigation by the Sierra Club against PNM and San Juan Coal Company resulted in a settlement under which they will build a "slurry wall" and a recovery trench, whereby pollution will be pumped into a lined pond, protecting the San Juan River from contamination. In addition, PNM and the coal company will fund from \$2 to \$3.7 million in additional monitoring, control, and restoration projects in the basin watershed. The Rio Grande also suffers considerable pollution, which includes mercury, another toxic air pollutant from coal-fired power plants.

Uranium mining in New Mexico stopped in 1982, but there are still federal superfund cleanup sites between Gallup and Grants on the Rio Puerco as the result of a major spill from a tailings pond and routine waste dumping. There are plans to re-open mines at Church Rock and Crownpoint, depending on the market price for uranium, which has been low the past couple of decades.

And then there is the issue of the consumption of water by power plants, mining, and drilling. San Juan Generating Station, for instance, consumes twice as much clean water as the entire City of Santa Fe every year. According to NMSEA VP Gary Vaughn, "Water use and water pollution related to coal mining and coal ash disposal isn't regulated to any serious extent in NM or anywhere else." Conventional generating plants all use the same water-based cooling technologies as part of the steam cycle, and therefore they use the same amount of water per MWh. Whether they boil the water with fossil fuels, a nuclear reactor, or solar thermal energy, the steam cycle cooling is done the same way. Solar photovoltaic (PV) electricity, of course, is a direct conversion process without a thermal cycle, and so needs no water. Small amounts of water are needed for an occasional washing of PV panels, but that water naturally returns to the ground, or it can be recycled. It is not dispersed into the atmosphere like steam in a cooling tower.

While some still dispute the evidence for climate change, global warming, and human contributions to that phenomenon, we are certainly seeing changes in climate patterns, marine biology and coral reefs, permafrost and



San Juan Generating Station, coal-fired power plant.
(Rio Grande Sierra Club and EarthJustice photo.)

glaciers. 97% of climate experts claim that we humans are causing global warming.

Besides the dangers of climate change, what ailments and problems have been caused by this pollution? According to EarthJustice "Pollution from burning coal has been found to contribute to four of the five leading causes of death in the United States, including heart disease, stroke, cancer, and chronic lower respiratory disease." Words like "contribute" don't get your attention like the words "coal plants are killing you," and no study is going to say that directly, since there are so many variables. According to the EPA, the Four Corners Plant is the worst NOx polluter in the nation, putting out more than 38,000 tons into the air each year. That contributes to ozone formation and regional haze that also contains sulfur dioxide and smoke stack particulates. These affect the people of the Navajo Nation more than anyone else, particularly those in and around the towns of Shiprock and Farmington. Unfortunately, the high incidents of respiratory diseases and other conditions for those residents may also be attributed to the fact that many burn wood or coal in poorly maintained home stoves, most of which are not designed for burning coal.

Still, the smog plume from the power plants is often visible in Shiprock, especially during winter thermal inversions. The plant is responsible for the regional haze that passes through several wilderness areas and national Parks, including the Grand Canyon in Arizona, Mesa Verde in Colorado, and areas of northern New Mexico.

Is more RE in the form of PV electricity, solar thermal and passive solar for homes and buildings, wind farms, and biofuels a viable solution to some of our pollution problems? Certainly they have helped, and they should be a part of our energy plans for the future of New Mexico. Furthermore, replacement of coal power plants by more

(Continued on page 14)

(How Bad Is It, Continued from page 13)

efficient NG plants would reduce pollution and prepare them for even greater uses of RE. As our VP Gary Vaughn says, "Get rid of the dirtiest stuff first!" (See the next SunPaper for more on this.) Of course the concerns about the fracking process that is becoming more common in NG production must be addressed, too.

I must admit that while I am scientifically-minded, I am not an expert in any of these areas myself. So, I am looking to the experts to answer these questions. If you can contribute an article for the SunPaper on a specific pollution subject, send it to me directly at rhermansolar@aol.com, and together we can help others understand our situation better. Let's join together to educate and to stand up and speak out to better meet our energy challenges for the benefit of all New Mexicans. ☀

PRC Election

This is an election year, in case you haven't guessed. The New Mexico primary elections will be held on June 5th, and we hope all NMSEA members will study the field of candidates for the New Mexico Legislature and the U.S. House and Senate. But did you know that there will be two other very important positions on the ballot this June? These are positions on the state Public Regulation Commission, which in conjunction with our Legislature, formulates public policy for utility companies and other corporations, including the insurance, transportation, and safety industries.

In District 1, the Albuquerque area, three Democrats and one Republican are running to fill the position now held by Jason Marks, whose four-year limited term will soon expire. (See photo at right.) The Democrats are Bernalillo County assessor Karen Montoya; Cynthia B. Hall, a former PRC associate general counsel and staff attorney; and Al Park, an Albuquerque attorney and District 27 state representative. The Republican is Albuquerque attorney Christopher Ocksrider.

In District 3, five Democrats will officially be running for the PRC position vacated by Jerome Block and filled temporarily by the Governor's appointee, Doug Howe. The candidates are as follows: Virginia Vigil, who chairs the Santa Fe County Commission; Valerie Espinoza, the Santa Fe county clerk; Brad Gallegos, a mortgage broker from Santa Fe; Daniel "Danny" Maki, a former aide to Rep. Ben Ray Luján, D-N.M., and director of development at the Boys & Girls Club of Santa Fe; and Ronald L. Rees of Rio Rancho. No Republicans are running in this district.

The support by these commissioners for renewable energy is key to the NMSEA mission and vision, so please vote and vote wisely. ☀

ABQ Chapter Meetings

Be a part of the charge toward a more sustainable future and join us in our monthly chapter meetings in May and June. Both meetings will be held on the fourth Tuesday of the month (May 22 and June 26) from 6-8 PM at REI, 1550 Mercantile Ave NE, 87107. Athena Christodoulou is our chapter leader. More reasons to be there - networking, door prizes and finger foods.



Energy Investments

Closing share prices compared to the DOW index:

<u>4/27/12</u>	<u>2/24/11</u>	<u>4/27/11</u>
First Solar (FSLR):		
\$18.35	\$35.58	\$138.59
Market Vectors, Solar Energy ETF (KWT):		
\$3.26	\$4.45	\$12.36
Dow Jones Industrial Average (\$INDU)		
13,228	12,983	12,691
Crude Oil//barrel (NYMEX Dec futures)		
\$104.93	\$109.77	\$112.76
Natural Gas/mmBtu		
\$2.19	\$2.55	\$4.38
Gasoline/gal		
\$3.21	\$3.15	\$3.42

NG and gasoline are national averages.

Selected prices provided for relative information, only; NMSEA does not recommend specific investments. All investments involve risk; invest cautiously.



Commissioner Jason Marks, generating electricity the hard way, while PRC staffer Viara Ianakieva lends encouragement, at the IGIS Home Show in March.



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.

Name: _____

Company or
Affiliation: _____

Address: _____

City, State,
ZIP Code: _____

Phones: _____ (W)

Email: _____

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 |
| <input type="checkbox"/> Business Lifetime | \$400 |
| <input type="checkbox"/> Teacher/Student/Senior (62 & up)
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:

<u>Affiliation</u>	<u>Donation</u>
<input type="checkbox"/> Alamogordo Chapter	\$ _____
<input type="checkbox"/> Albuquerque Chapter	\$ _____
<input type="checkbox"/> Las Cruces Chapter	\$ _____
<input type="checkbox"/> Las Vegas, Sustainable Las Vegas	\$ _____
<input type="checkbox"/> Los Alamos Chapter (LASE)	\$ _____
<input type="checkbox"/> Santa Fe Chapter	\$ _____
<input type="checkbox"/> Taos Chapter	\$ _____
<input type="checkbox"/> Silver City Chapter	\$ _____
<input type="checkbox"/> Main Office / General Fund	\$ _____

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.

Check category if you want to renew/subscribe to ASES with your NMSEA membership. Fill in total below:

- | | | | |
|---|------|--|--------|
| <input type="checkbox"/> Professional | \$89 | <input type="checkbox"/> Supporting | \$125 |
| <input type="checkbox"/> Senior Professional (proof required) | \$45 | <input type="checkbox"/> Contributing | \$250 |
| <input type="checkbox"/> Basic | \$39 | <input type="checkbox"/> Lifetime | \$1200 |
| <input type="checkbox"/> Student (proof required) | \$35 | <input type="checkbox"/> SOLAR TODAY Subscriber only | \$29 |

ASES Options

- | | |
|---|---|
| <input type="checkbox"/> Do not rent my name | <input type="checkbox"/> I do not wish to receive the Sunbeam on-line newsletter |
| <input type="checkbox"/> I do not wish to receive Solar Action Network Alerts | <input type="checkbox"/> I do not wish to be listed in the on-line Membership Directory |

NMSEA Dues \$ _____ + ASES dues \$ _____ + Donation \$ _____ = Total \$ _____

Payment options: Check or money order enclosed Visa MasterCard

Credit Card # _____ Exp. Date: _____ Signature _____

Credit Card Billing Address (if different from above) _____

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

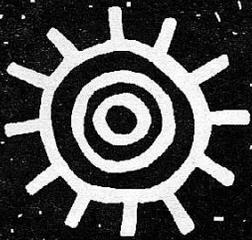
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NMSEA

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Mission Statement

We promote clean, renewable energy and sustainability in New Mexico through education, empowerment, collaboration and advocacy.

Please consider investing your time and/or money toward solar energy education through NMSEA.

Vision Statement

We envision a thriving, bio-diverse earth, with civilization powered by clean, renewable and sustainable energy from the sun.

Coming Events

- May 13-17:** ASES National Solar Conference & World Renewable Energy Forum, Denver, CO
- May 8** Board of Directors Meeting, Tuesday, NMSEA office, 1009 Bradbury Dr. SE, Albuquerque, 87106. Members welcome. Meeting 6:00-8:30PM, potluck dinner starting at 5:30.
- May 12** Electric Vehicle Conversion Basics and Safety Classes, from 9:00AM to 12:30PM at 1009 Bradbury Dr. SE. Write to solpwr@plateautel.net or sign up at info@NMSEA by May 10.
- May 22, June 26** Albuquerque Chapter Meetings at REI, 1550 Mercantile NE, 6:00 to 8:00 p.m.

Watch for new plans for our next NMSEA **Solar Fiesta!** now scheduled for May of 2013.