



The View from Denver

By Gary Vaughn, NMSEA Vice-President

The annual conference of the American Solar Energy Society (ASES) was held in mid-May in Denver, and for the first time ever it was combined with the World Renewable Energy Forum and the International Solar Energy Society conference. This added a rich and impossible-to-miss “international” flavor to the week. Mark Chalom of NMSEA wrote an excellent report on the conference for the July edition of the Green Fire Times (available at www.greenfiretimes.com).

I went to the conference this year, and now that I’ve had some time to “digest” the information overload, I’d like to share some of my insights.

Chapter Caucus: Not all states have an active ASES chapter but the vast majority do. A few chapters, especially in the east, represent more than one state. It’s fair to say that all state chapters face the same challenges of growing membership, raising funds, and organizing and executing projects. Some chapters are very grass-roots oriented, while a few have executive directors who fund their own salaries by soliciting major contributions from big corporations. The biggest yearly event for many state chapters is the annual ASES Solar Home Tour. A few put together events along the line of our Solar Fiesta. I’m not aware of any state chapter that “invests” in a SunChaser educational outreach effort on the scale that NMSEA does. And no other chapter comes close to matching our SunPaper publication.

One of the initiatives that ASES is pushing is to encourage chapters to “Go Beyond Education” to “Activation” (“people are inspired and mobilized by real projects rather than abstract concepts”) and even beyond that to “Advocacy.” It’s fair to say that NMSEA is already ahead of that curve.

The current projects by various state chapters include these: solar site assessment program; community bulk purchase of panels; community solar installations;

(Continued on page 8)

Video Project News

by Janet Bridgers, NMSEA Board Member

The "Renewable New Mexico" TV Series team captured 26 individual interviews in four days, Aug. 6th through 9th, at the new Community Access recording studio in downtown Albuquerque. The interviews are short - 11 minutes each - and will be edited into 13 half-hour made-for-TV episodes. The range of guests was amazing - from countercultural and mainstream entrepreneurs, passive and off-grid solar home owners, architects, educators, a German solar plant manager - guests both young and old. We prepared our screen host, Sean Wells, our director’s daughter, as best we could for dealing with a week full of eclectic personalities.

Late Wednesday afternoon, Toby Younis, our director, told us that one of the community access studio

(Continued on page 5)

Inside this Issue

Page	
1	The View from Denver; Video Project News
2	NMSEA personnel, location; Advertising Rates; Words of Sol
3	NMSEA Chapter Leaders and Contact Info
4	NMSEA Board Meeting, September 29
5	RE:ENERGIZE Community and Transportation
6	General Election - November 6
7	ABQ Chapter Meetings; Energy Investments
8	2012 is our 40th Anniversary!
9	Thank You PNM?!
10	News from the Silver City Chapter
11	Benchmarking Empowerment
12	Hybrid Solar Power Systems Are the Next Big Wave for Solar Technology
15	NMSEA Membership Form
16	Mission/Vision Statements; Coming Events

The NMSEA SunPaper

NMSEA Board of Directors, Voting Board Officers

President: Monte Ogdahl
Vice Presidents: Gary Vaughn
Secretary: Jim Barrera
Treasurer: Barbara Menicucci

Balance of Voting Board Members

Janet Bridgers Athena Christodoulou
Mars DeLapp Amanda Scarberry

Advisory Board Members

Carl Axness, Odes Armijo-Caster, Elya Arrasmith, Gale Zander Barlow, Charles Bensinger, Jennifer Beyss, Carl Bickford, R. P. Bohannon, Marlene Brown, Mark Chalom, David Dobry, Wayne Evelo, Jr., David Hughes, Rose Marie Kern, Deena Klein, Michael David Lipkan, Mary McArthur, Robert Nelson, Jim Palmer, Eric Robinson, Randy Sadewic, Lisa Silva, Allan Sindelar, Julie Stephens, Steven Stephens, Howard and Virginia Stephens.

Chapter Leaders

Alamogordo: Ron Offley
Albuquerque: Jim DesJardins
Las Vegas: Lloyd Goding, Emelie Olson
Los Alamos: David Griggs
Santa Fe: open
Silver City: Lynda Aiman-Smith, Sarah Jane Gendron
Taos: Scott Evans, Larry Mapes

NMSEA Office Staff: Ragan Matteson

SunPaper Editor: Ron Herman

Send all letters, comments, and articles to

The NMSEA SunPaper
1009 Bradbury Dr. SE #35
Albuquerque, NM 87106

(505) 246-0400 (888) 886-6765 info@nmsea.org

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.

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 format. Ad copy must be e-mailed by October 19 for the Nov/Dec SunPaper. Circulation is typically 700 copies. Size requirements and prices for individual ads are as follows (call 505-292-4375 for multi-issue discounts):

		Nov/Dec
Full Page:	9½" H X 7" W	\$122.00
Half Page:	4¼" H X 7" W	\$66.00
Quarter Page:	4¼" H X 3½" W	\$36.00
Biz Card:	2" H X 3½" W	\$20.00

The NMSEA SunPaper is printed with soy ink on recycled paper by Vanguard Printing in Albuquerque, NM. The views expressed in the SunPaper are not to be considered an endorsement by the staff or Board of Directors. We strive for an open platform.

© 2012 by the New Mexico Solar Energy Association



Enchanting Education

The education level of the majority of Americans has declined since the early '80s, causing America's academic scores to fall behind many of the other industrial nations in virtually every category, leaving sports and entertainment as the main areas we excel in. Since a good percentage of this "play" and entertainment mindset is focused on the iPad, computer, and big screen, maybe we need to focus on that format, as well, in our endeavor to educate and advocate for a renewable energy (RE) future. And if we can hold enough eyeball interest for enough minutes, we just might get enough sponsorship to expand our RE education in NM and beyond. Although NM is lower in standard test scores and graduation percentages than a number of other states, the awareness and general knowledge of solar energy is probably in the higher percentages. Is that enchantment education?

Our Renewable New Mexico film project (see details on p. 1) is our pilot project "tool" into the digital and social media world. This new tool will not replace the creative, dedicated messengers of RE, but it will give our entrepreneurs and teachers potentially a much larger audience. After we pique the visual interest of the digital audience, they will be able to click on our new under-construction website for more info or "hardware," like online contacts with our sponsors and products, an interactive RE professionals directory, and hands-on educational kits. With the RE "gold mind" we have in our organization and other groups in NM, we've just scratched the surface vein, and in future episodes we will be going deeper in diversity and content. So, if you were not in this pilot series, get your story and RE info ready for next year's series.

We are planning to film special events, and our upcoming Solar Fiesta next spring will include workshop presentations that can be cloud-archived on our website for all to view.

So, in education if you can't beat 'm, enchant 'm.

Probably one of the most effective ways to expedite cleaning up air, water, and land, while eliminating unwanted oil imports and wars over foreign oil, is educating the children and adults on the efficient use of energy and how to value clean sustainable energy, verses the quick and "cheap" dirty energy that costs us dearly in the long run. Leading the dirty unsustainable energy is coal, oil and gasoline (COG). These are touted as cheap,

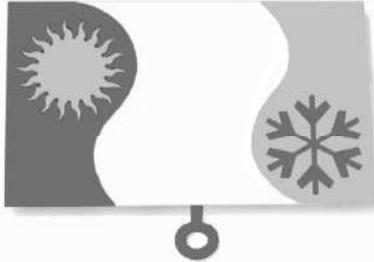
because the real costs to the health and survival of all living beings on earth and the planet itself are not taken into account. COG is nothing more than dead rotted plant and animal matter millions of years old; talk about dirty and stinky. Have you ever smelled an oil refinery?

Electric Vehicles (EV) can make serious inroads into the COG problem. EVs that can be recharged on RE are the ultimate in clean, sustainable transportation, which will grow RE at a faster pace and become even more affordable. Even if you have to plug your EV into a old predominately coal fired power plant, you will still cause way less pollution than the equivalent size car with the best gasoline internal combustion engine on the American market. A research paper published by Argonne National Labs compares three production EVs, a Tesla S (the fastest, longest range, least energy efficient), a Nissan Leaf (medium range and efficiency), and a Honda Fit (the most efficient) against four production hybrids - a Mercedes 27mpg, Lexus 29mpg, Prius 51mpg, and VW 63mpg. None of the hybrids sold in America could match the energy efficiency and low emissions of the EVs charged from the average American grid power. Hypothetically, a hybrid with over 70 mpg could.

At the Energy Village Event in Santa Fe on September 22 and 23rd (National Plug-in Day for EVs, Hybrids and E-Bikes) you will be able to see alternative vehicles

(Continued on page 4)

AWINDOWAY



Insulating Shades for Every Season

Insulating window shades are a beautiful and affordable way to save energy. My "Warm Window" shades give over 3 times the insulating value of double or triple glazed replacement windows. You choose the fabric and style, I'll make them and install them.

Call 281-6095 for a free in-home estimate.

AWINDOWAY.COM
You'll feel the difference!

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:
Jim DesJardins, (505) 917-5074
jim.desjardins@affordable-solar.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

Co-Presidents:
Lynda Aiman-Smith,
lynda_aimansmith@yahoo.com
Sarah Jane Gendron, (575) 770-8410
sarahjane@energyideal.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
Chapter Vice-president:
Larry Mapes

*It's time to have
PNM pay you.*

**Call Jim for a
free consultation!
505.917.5074**



affordable solar
affordable-solar.com

LINEAR

CITY
CONCEPTS
<http://www.imagine-city.info>

Schedule a Free Climate Presentation!

Jill Cliburn speaks as an Al-Gore-trained volunteer and from professional experience in clean energy innovations. climateresality.org
Contact: cliburn.associates@gmail.com



**The Climate
Reality Project**

(Words of Sol, Continued from page 3)

and join the movement. (See next page.) If you have a plug-in vehicle, drive it, plug it in, take a picture and send it in to Karen@PositiveEnergySolar.com. There will be drawings for great prizes. A pre-event on Electric Transportation and Sustainability will take place on September 15th from 8:30 to 11:30 in Eldorado, NM, (near Santa Fe) at the La Plancha Café. This will include various plug-in vehicles and presentations on how one may work for you. For more info, contact Dana Richards at danaecologia@gmail.com or 505-690-5500.

Albuquerque has two level II chargers with numerous level I chargers around the city, including one at Southwest Green Building and Products Center (www.swgreenbuildingcenter.com). Rio Rancho has level I and level II chargers. Santa Fe has a level II PV charger (www.PositiveEnergySolar.com) with numerous other chargers around town. Los Alamos has numerous chargers, too (nnmev@googlegroups.com).

Anywhere you need serious portable RE power stations with options that include multiple level EV charging, contact odes@sacredpowerecorp.com or call 505-325-7420. You will be able to see one of these units at the Energy Village Event in Santa Fe.

And don't forget to get as many voters as you can enchanted to vote for candidates who support RE in the upcoming election, so we can really have a fabulous NMSEA 40th Anniversary party on December 9th.

Sincerely,
Monte Ogdahl
NMSEA President



**NMSEA Board Meeting,
September 29**

The next meeting of the NMSEA Board of Directors will be on Saturday, September 29, in the conference room at the office at 1009 Bradbury Dr. SE, Albuquerque, 87106, from noon to 3:00 with a potluck before at 11:30AM. Members welcome. Call 505-246-0400 by Sept. 25, if you have an item for the agenda.

General Election - November 6

By Ron Herman, Editor

Issues of global warming and climate change, as well as immediate pollution threats to our air and water, make the election this November critical. Those who are elected or re-elected will likely influence the success or failure of solar and other renewable energy industries. They will effect how much we pay for gasoline, diesel, and home and business heating, cooling, and lighting.

In general, Democrats seem to favor continued regulation of the “spent” fuels industry (fossil fuels and nuclear) and continued subsidies and mandates for renewable energy. Consequently, they are asking us to pay more through taxes and/or higher costs to protect our environment. They suggest that these taxes and costs will also create new jobs. In my opinion, regulations may actually add to hiring, since someone has to implement, monitor, and enforce health and safety provisions.

Republicans in general want to unshackle the fuels industry from regulations to encourage greater production and lower prices, and to allow more hiring for production and distribution. Apparently they are confident that North American production can be increased without serious risks to health and safety, or that the environment and those of us who live in it will cope with the consequences. Sacrificing the health and safety of miners and drill workers has always been seen as an acceptable hidden cost of our energy affluence (not to mention the lives and treasure spent on wars for oil). Apparently they feel that if some of us have to sacrifice because of pollution and climate changes, at least the rest of us will be living well. Personally, I don’t think I have ever heard a Republican leader address the health, safety, and climate risks of spent fuel/energy production.

Democrats have held a slim majority in the US Senate during the past four years, and Republicans won a large majority in the House in 2010. The imbalance between those two houses has paralyzed congressional action in several areas of energy legislation. This during a time of not only energy price increases and disasters and weather extremes, but general economic depression. That makes your vote even more important than ever.

In addition to the national elections, there are many state candidates running for re-election or to fill vacancies. We hope you will inquire about your local candidates’ positions on energy issues and how they can be solved best for everyone in our state and the nation.

To help you make your decision when you vote early or on election day, we suggest you visit the websites for the Presidential candidates and for the candidates for New Mexico congressional offices. However, details comparisons are not always obvious. Below are the Internet addresses for the major candidates (listed in

alphabetical order by last name). Please note that, as a 501(c)3 nonprofit organization, NMSEA does not endorse any candidate.

President

Barack Obama

www.barackobama.com/record/environment?source=issues-nav

vs.

Mitt Romney

www.mittromney.com/issues/energy

US Senate from New Mexico, District 1

Martin Heinrich

www.martinheinrich.com/issues/energy

vs

Heather Wilson

www.heatherwilson.com

US House of Representatives from NM

District 1

Janice Arnold-Jones

www.janice2012.us/v2

vs

Michelle Lujan-Grisham

www.michellelujangrisham.com/issues

District 2

Steve Pearce

www.pearce.house.gov/about-me

vs.

Evelyn Madrid Erhard

www.evelynforcongress.com

District 3

Ben Ray Lujan

www.benlujan.com/about/issues

vs.

Jeff Byrd

www.jeffbyrd2012.com

Democrat candidates for the Public Regulation Commission Karen Montoya, District D1, and Valerie Espinoza in District 3 are unopposed this election.

Voters should consult other sources in addition to candidate websites before deciding their vote. The League of Women Voters will be publishing a free non-partisan voter’s guide in early October that will be available at libraries.

Fulfill your obligation and privilege by voting on Tuesday, November 6. As the radio ad says, “if you don’t vote, who are you electing?”



ABQ Chapter Meetings

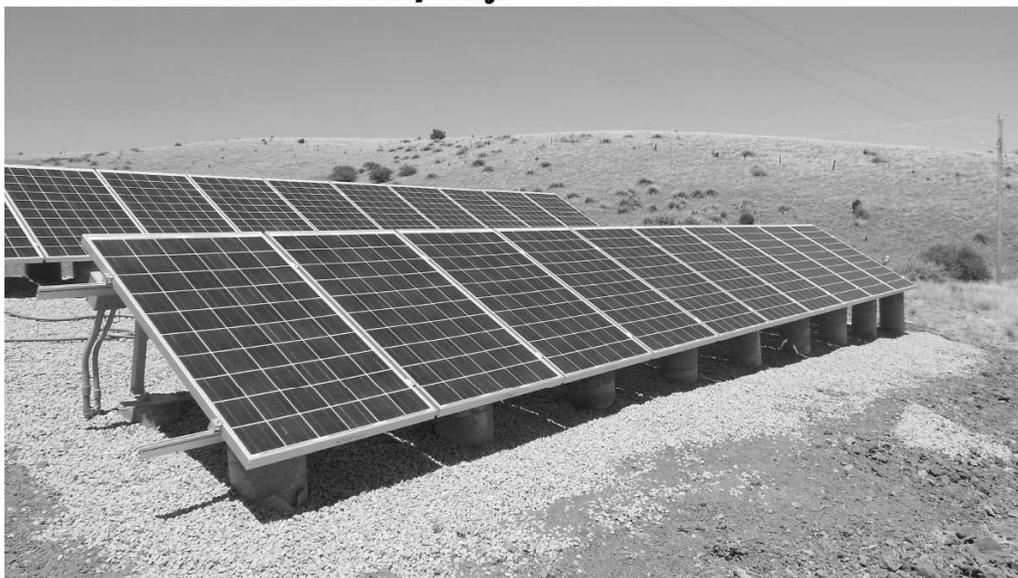
Be a part of the change toward a more sustainable future and join us at our monthly Albuquerque Chapter meetings. Our new chapter leader is Jim DesJardins, a local business owner who brings a wealth of knowledge and experience to NMSEA. Meetings are held on the fourth Tuesday of each month from 6-8 PM at the REI store, 1550 Mercantile Ave NE, 87107. On September 25 Jim will have two presentations, one on a "Net-Zero Energy Home," one homeowner's personal journey to remodel a 1950s UNM-area bungalow into a high-efficiency home that consumes less energy than is produced on site. The other presentation will be on the Solar Decathlon, an annual event in which UNM students are participating, which challenges twenty collegiate teams from around the nation to design, build, and operate solar powered houses that are cost effective, energy efficient and attractive. Again, Net-Zero Energy is the goal.

Speakers for the October 23 meeting are yet to be determined. If you, or someone you know, would like to speak on solar energy or some other renewable energy topic, call the office, or let Jim know at the September meeting. (His contact info is on page 3.)

See you there!



Wentz Electric Company



installation by



Craig Wentz

Jen Cooper

Wentz Electric Co., L.L.C. P.O. Box 5129 Silver City, NM 88062, 575-388-1727

Serving the Silver City, NM area since 1987 with quality electrical systems for homes and businesses, promoting energy efficiency and solar PV

Energy Investments

Closing share prices compared to the DOW index:

<u>8/29/12</u>	<u>6/29/12</u>	<u>8/29/11</u>
First Solar (FSLR):		
\$24.20	\$15.06	\$101.62
Market Vectors, Solar Energy ETF (KWT):		
\$38.95	\$39.15	\$120.30
(reverse split July 1, 1sh/15sh)		
Dow Jones Industrial Average (\$INDU)		
13,107	12,880	11,539
Crude Oil//barrel (NYMEX Dec futures)		
\$95.49	\$84.96	\$87.27
Natural Gas/mmBtu		
\$2.63	\$2.82	\$3.86
Gasoline/gal		
\$3.10	\$2.73	\$2.91

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.

(View from Denver, Continued from page 1)

soliciting bank sponsorship for Green Loans; bi-monthly solar social; bi-monthly solar drinks; solar system install maps; recognition of solar installs in the community; hands-on workshops; virtual solar tours; development of solar/RE curriculum that meets state standards; 4-H science education outreach; publication of a “Solar Guide” (including a Kindle edition).

Big Name Speakers: US Energy Secretary Steven Chu headed the list, but we also heard from Dan Arvizu, the director of the National Renewable Energy Lab, and NM’s own Ed Mazria, among others. A sampling of random factoids from those talks:

* The total battery capacity in the world can supply the world’s energy needs for about 10 minutes.

* The first solar water heater went on-line in 1890.

* In 2011, world-wide investment in RE reached \$260 billion.

* 10.2% of the world’s non-food energy needs are supplied by renewable, but not really sustainable, biomass in the form of wood and animal dung.

* The US Department of Defense (DOD) has made a major commitment to giga-watt sized system deployment as well as to advanced micro-grid and grid-scale-storage technologies.

* The major players in energy efficiency upgrades and retrofits for buildings are (1) DOD and (2) Wal-Mart.

* The sociological correlation to Newton’s 1st Law is that people will keep right on doing what they’ve always done, until they are faced with an “unbalanced force” which “motivates” change.

* “Go Green” is “hippie talk.” “Energy Saving” implies “scrimping and doing without.” Sell “earnings” not “yearnings.”

* Electricity rates are 33¢/kWh in Germany; 26¢ in Hawaii; and 2¢ in Saudi Arabia (9¢ to 16¢/kWh in NM).

* The cost of residential PV is now at grid parity in California, and below grid parity in Hawaii.

* When the moderate to high risk energy-related “investment” portion of the federal stimulus package was reviewed by Congress, they demanded that the “reserve” be increased to \$10 billion to cover the inevitable failures. Solyndra’s loan guarantee cost half a billion.

Women in Solar: This theme has been growing at ASES Conferences for a while now – thanks in no small part to the efforts of NMSEA’s Marlene Brown and her co-organizers. Beyond the obvious, I wasn’t sure what this was really all about, so I made an effort to find out. Boy, did I get an education! Take a minute to think about these statements:

* “Energy poverty is the mother of all poverties.”

* In Nicaragua, 90% of the population still cooks over a fire. Who manages both the food and the fire? Women.

* In remote and rural Africa, PV is, hands down, the best energy option.

* Food prices track oil prices. And - - (oh my gosh!) wine prices also track oil prices! This is more serious than I thought!

* In Malawi in southeast Africa, semi-literate women are using PV to electrify their village lighting and cell phone charging infrastructure.

* In India, 70% of the population still lives in rural villages. Dung is still the major fuel source. Eye and lung diseases caused by smoke are chronic among women and children.

* In the tropics, home heating and hot water are relatively minor needs. Solar thermal is all about cooking and water purification.

* In the 3rd world, it is women who manage the major energy sector – which is biomass.

* This quote still makes me gasp: “In rural India, a girl is a burden before marriage. After marriage, she is a beast of burden.”

So, in much of the world, RE is really all about the “empowerment” of women. WOW! ☀



The New Mexico Solar Energy Association

2012 is our 40th Anniversary!

Help us plan our December 9 celebration.

NMSEA actively supports Solar Energy and RE
- education, policy, and implementation.



Thank You PNM?!

By Athena Christodoulou

As a citizen of this earth, mother of future generations, scientist, and environmental activist/writer for NMSEA, I would like to thank PNM. I have a reliable 24-hr source of electricity and yet am able to generate some of my own electricity with a 2 kW PV system. Therefore, since I, so to speak, “grow my own” electricity, I will keep my future power bills manageable without having to change my lifestyle much. And just like I still have a landline for my phone, I will most likely maintain a “landline” for my electricity. However, if PNM were more inclined to get rid of their coal power plants, I would not be as interested in enlarging my own power production capabilities.

You might say I have a love/hate relationship with PNM. Probably not unlike most PNM customers. Yet as a board member of NMSEA and all those other roles I mentioned, I am interested in sustainability and the future of the planet we live on. And face it, fossil fuels used in the generation of electricity are the biggest single source of greenhouse gases and pollution. The low hanging fruit, so to speak. Therefore, when given the opportunity to talk to PNM representatives, I am not shy.

Fellow NMSEA board member, Janet Bridgers, and I met with PNM representatives on August 10 along with representatives from the League of Women Voters, The Nature Conservancy, the American Lung Association, and the Prizm Foundation. The meeting was informative, and Amy Miller and Patrick O’Connell were both knowledgeable and quite concerned about PNM’s community image. A concern we share, as NMSEA’s image has been linked to PNM’s, most notably via Solar Fiesta.

In fact, in my experience, NMSEA has been an excellent and low-cost public relations source for PNM in past years. When I first moved to NM over twelve years ago my first exposure to PNM marketing was through the billboards and bill inserts advertising the Solar Fiesta. Wow, I thought, what a progressive utility company. They support their competition in favor of the environment. Yes, PV owners are PNM’s only competition. Generating my own electricity does mean a reduction in income for PNM. So does being more energy efficient.

I offer my own household as an example. We are actually two households, including an apartment for my mother with a full electric kitchen. (My husband couldn’t understand why we couldn’t share a kitchen until I asked him to share his computer with our sons.) In any case, we steadily and indiscriminately added and used appliances and electronics until the summer of 2007.

In August 2007 we reached a peak 2740 kWh of use in one month. The average monthly household usage was around 650 kWh for the U.S., and we just blew it off the

charts. And our bill? \$236. Pretty steep for 2007. At that usage today, the bill would be about \$440, an increase of over 86% in five years, by the way. Inspired and guided by NMSEA, I rooted out and abolished most of the energy hogs and installed a PV system in 2009. Nobody in my family noticed a difference in comfort or standard of living. Our bill for July this year was only \$169. (Now my sister lives in the house, so now it’s basically three households.) Thank you PNM for making our bill as an energy hog closer to the true cost of fossil fuel electricity to inspire my shift to solar and institute energy efficiency measures.

But I digress, Amy and Patrick gave us information about all kinds of efforts PNM was making toward reaching their mandated renewable portfolio. Of interest to me was their 2013 and 2014 projected energy production from renewables, especially distributed generation (DG). Most of you know that DG is the term the energy industry uses to indicate generation at the site where the power is used, which includes PV systems by homeowners, businesses, and other entities, including utility companies. (Just in case this article falls in the hands of someone in the general public, that’s what DG refers to.) In 2013 DG solar is projected to be 11.5% of renewables in the PNM portfolio and 14.8% in 2014. Way to go New Mexicans! These are similar numbers to the 10% (2013) and 13% (2014) of RE in large-scale solar that PNM will be providing. Thank you PNM for finally realizing New Mexico has the sunshine and wind capabilities to make its own electricity without fossil fuels. But apparently it comes at a price. This is now a separate line item on **all** PNM customers’ bills.

Not unsurprisingly, solar, whether DG or PNM owned, costs PNM money. PNM pays DG customers a “Renewable Energy Certificate” rate of \$0.13 to \$0.05 per kWh that their PV system produces, and installing utility-scale solar fields has an upfront capital cost. At the meeting, I learned about the new Renewable energy rider that may go into effect in January 2013, a charge to PV owners to offset these costs. Yep, that renewable energy comes at a price. But PNM shareholders should be happy.

Pat Vincent-Collawn, PNM Resources president and CEO said this:

"Since 2007, our utilities' efforts have focused on reducing operating costs. And, every year since, we have taken steps toward facilitating trust and a better understanding of the need for consumer rates to properly reflect those costs. This agreement (May 2011 rate case) provides PNM with the certainty of a rate path that stretches to the end of 2013, while balancing the need to keep consumers' costs as low as possible. The settlement removes uncertainty for the utility and

(Continued on page 10)

(Thank You, PNM, Continued from page 9)

its customers, provides a roadmap for PNM to earn its allowed return within the three-year period and allows us to continue to focus on cost control."(<http://www.pnmresources.com/common/mobile/iphone/releasedetail.cfm?ReleaseID=547692&CompanyID=PNM&mobileid=>)

(My underlines.) Thank you PNM for making sure customers know they are paying "extra" for the renewables and that shareholders are well taken care of during these difficult economic times.

Personally, I'm looking to invest my money in more PV and maybe a solar water heater. I've discovered I'm only interested in companies which reflect the triple bottom line that PNM is only now showing signs of noticing: People, Planet, and Profit. I think many people - customers and shareholders - would applaud and support a more aggressive effort to chart a path toward a fossil fuel-free utility, though. Thank you PNM for beginning to move toward that path. As we live through the worst drought on record across the United States, I pray we're not too late.

Some suggestions for PNM marketing: emphasize the fuel and operations cost savings in renewable energy; emphasize the positive cost control benefits of renewable energy; emphasize the reduction in CO₂ emissions with renewable energy... on everyone's bill. Oh, and when you institute the required changes at the San Juan Generating Power Plant for pollution control and pass those costs on to your customers, consider carefully how you show that on the bill. Will that be a Fossil Fuel Rider or San Juan EPA mandated cost? Anyway, thank you PNM, for realizing New Mexico has enough renewable energy potential, even enough to export to other states via new transmission lines. Very astute of PNM. But I'd rather use it locally first, thank you.



News from the Silver City Chapter

by Gayle Simmons

The Silver City chapter of NMSEA is proud to announce new leadership. Lynda Aiman-Smith and Sarah Jane Gendron are now our chapter co-leaders. Lynda is a professor of business and a strong advocate for local investing, including solar energy. Lynda and her partner, Larry Taylor, have invested in a grid-tied solar system that supplies power for their home and their electric car. Sarah is the owner of Energy Ideal, a Silver City business that specializes in finding energy efficiency solutions for homes and businesses. She is a journeyman electrician and solar PV installer for Wentz Electric Co. Lynda and Sarah come to our organization with a lot of enthusiasm for promoting solar energy and energy efficiency. Our former president, Teri Matelson, will continue to help the chapter by maintaining our local e-mail list and announcements. We are so happy to have more human energy powering our chapter.

Because of this added energy, our chapter went beyond our normal 4th of July event table in Silver City's Gough Park this year. We were also in the parade with two electric cars carrying NMSEA members and signs! We also occupied the whole north end of the park with our event tent and parked EVs. The added features helped to enhance enthusiasm for our already popular event table.

SunChaser presentations are still going strong in the Silver City area. We will continue our collaboration with the Gila Conservation Education Center, a great relationship since 2008! We hope to work more closely with Silver City's Office of Sustainability and the Gila Resources Information Project (GRIP), both of which have expressed the desire to use SunChaser presentations as part of their education efforts.

Finally, we are happy to report that Silver City NMSEA business member, Wentz Electric Co., has another certified Solar PV installer. Jen Cooper joined the Wentz Electric team last year and passed the NABCEP Solar PV Installer exam given in March. She is a graduate of the San Juan College renewable energy program.

The NMSEA Silver City chapter meets every 2nd Friday of the month in the back room at Isaac's Restaurant on the corner of Broadway and Bullard St. in historic downtown Silver City. We meet in conjunction with Southwest NM Green Chamber of Commerce Green Drinks.



Off-grid Solar Home

For lease in Rio Rancho

3 bedrooms, 2 baths

\$800 / month

Available furnished or unfurnished

Call Carl at 505-796-8776

Benchmarking Empowerment

By Gary Vaughn, NMSEA VP

“Grid integration” is utility-speak for adding photovoltaic (PV) and wind power sources to the traditional fossil fueled electrical power system. There are very real challenges to adding high levels (a high “penetration”) of PV and wind power to traditional utility grids. These issues are now getting a lot of attention, not only from some of the more progressive utilities themselves, but also from university researchers, National Renewable Energy Lab (NREL) staff, and the U.S. military.

Many traditional ultra-risk-adverse utilities still cling to the belief that even a modest percentage of wind and PV power integration is too expensive, intermittent, unreliable, and undependable to bank on. At the same time, the US military has committed to a major investment in renewable energy (RE), precisely because they want cost-effective, reliable, dependable and completely self-sufficient power sources that are immune from fuel supply disruptions and potential utility grid failures. Fascinating, isn’t it?

A state regulated electrical utility usually fits the definition of “big business.” It has deep pockets, powerful political clout, and access to teams of seasoned lawyers, sympathetic expert witnesses, and cooperative financial wizards. The utility’s costs related to rate cases, regulatory hearings, and even pollution lawsuits are normally completely covered by customer rate increases. The issues involved are complicated, highly technical, and often involve mind-numbing accounting methods using proprietary financial information. And utilities have access to powerful national utility lobbying and advocacy resources. Consumer advocates, non-profit organizations and even state utility regulators are at a huge disadvantage in these contests.

“Benchmarking” is the process of comparing a business’s policies, practices, performance, and even strategy to industry “best practices.” It’s a well recognized business school approved method for encouraging “continuous improvement.” Turns out that benchmarking is also a potent weapon for energy policy advocacy and citizen empowerment. While it’s difficult to counter an entrenched utility’s PR machine, sophisticated misrepresentation of information, and hidden financial flim-flam, it’s relatively easy to point out crystal-clear examples of what other similar utilities are successfully doing in nearby states. Let’s take a look at some of these examples and contrast them with PNM’s current positions.

Adapting to Renewable Sources: Wind and PV power sources have very different characteristics than standard fossil fueled generators. Utilities that expect RE sources to “conform” to traditional utility rules complain

a lot. Utilities that adjust their operating procedures to be more compatible with their RE sources are far more successful at “integrating” RE. Not that many years ago, the Colorado division of Xcel Energy was highly resistant to integrating RE. A combination of political pressure and common sense changed Xcel’s point-of-view. Xcel has now joined a growing number of “progressive” utilities in their attitude toward renewables. PNM still complains a lot.

Distributed Generation: Many researchers and several utilities have documented significant advantages to distributed generation (located close to its end use), including a reduction in transmission line loss, reduced maintenance costs for transformers and other components, and improved power system “robustness.” Traditional utilities like PNM are all about centralized power generation and distribution – a business model that may well be challenged in the not too distant future.

Time of Use Rates: Utilities use relatively low-cost nuclear and coal fired “base-load” generation to satisfy average daily power demands, and relatively high cost natural gas-fired “peaking” generators to meet afternoon peak demands. Many utilities adjust their rates hourly to compensate for this difference. This means that PV and daytime wind power sources should be credited with much higher “earning power.” But not in PNM’s territory.

Energy Storage: The lack of utility-scale energy storage is often cited as a major barrier to the adoption of wind and solar power. Yet there are a growing number of utilities in the US and around the world that are already successfully managing grid integration levels that far exceed what we have here in New Mexico - without utility-scale storage. NREL published a 2010 study which found that in the western US a wind/solar penetration of 24% was practical without requiring storage, assuming that utilities were willing to make certain operational changes. PNM is touting their involvement in the “stimulus” funded “Prosperity Energy Storage Project.” Fair enough, but PNM’s recent PR campaign seems to be using the Prosperity Project to bolster its argument that RE isn’t practical without utility-scale storage. That’s clearly not true, and there are plenty of examples to prove it.

RE Penetration: SMUD, the Sacramento city-owned electric utility which is actually larger than PNM, achieved 24% RE penetration in 2011, and they are heading for 30%. Xcel Energy in Colorado is on track to meet the state’s 30% RE mandate. Utah utilities are adding wind power as fast as they can without any state mandate at all. Iowa, North Dakota, Wyoming and Minnesota already get at least 10% of their power from renewables, mostly wind. Iowa and conservative South

(Continued on page 14)

\$0* down
payments for 12 months
utility

SUNPOWER

ELITE DEALER

Call for
a FREE
Quote

* subject to credit approval

www.PositiveEnergySolar.com



POSITIVE ENERGY SOLAR

Santa Fe: 505-428-0069 • Albuquerque: 505-344-0071 • Las Cruces: 575-524-2030 • Taos: 575-737-9553

Hybrid Solar Power Systems Are the Next Big Wave for Solar Technology

by Michael David Lipkan

The gamut of solar technologies is very large and often too subtle to remain long in our conscious thought. Windows are solar technologies we rarely think about, and so are growing plants of the flora kind. Many kinds of chemical reactions can be aided or caused by activation energies provided by solar energy. Scientists are working to make chemicals that work in concert with each other to generate electricity when exposed to light. Look at the great variety of photovoltaic systems that are possible now.

When was the last time you thought of your digital camera as a form of solar technology? Video cameras use mega-pixel arrays of photo cells to capture an image and convert it to a data stream a computer can reassemble into a facsimile of the original image. A variation of this technology is used to make solar sensing controllers for automated systems. Whether they are security lights turning on when an infrared beam is altered by the presence of someone, lights turning on at dusk, or products being counted as they move past a light emitter on a production line, solar technology makes it possible.

Asphalt gets very hot in the summer which helps us believe intuitively that solar ovens truly can cook food and other things. If you use a heliostatic array of mirrors to focus sunlight onto a tightly focused target, the energy concentration at the target can be hot enough to vaporize diamonds! Proof diamonds may not really be forever. More important though, may be the possibility that heliostatic arrays may be hybridized to function in a variety of ways, including plasma incineration of trash. Precision engineering and control systems may make a heliostatic array that generates energy during the day become a multi lens telescope at night. How many ways could this be a useful idea?

Solar Arrays

Solar arrays can heat water and provide shade. If you put solar photovoltaic panels on the roof of your house, you might use the heat buildup on the panels to preheat water for swimming pools and other hot water uses. Fresh water could be made to flow behind the panels to cool them. A temperature sensing valve would regulate the flow of fresh water throughout the array. Cool panels do a better job of generating electricity, and this kind of system has the added benefit of keeping your roof cooler, thus lowering your cooling bills in the summer. Also, water flowing across the front surface of the solar panels would help keep them clean, which would also improve

GREEN FIRE TIMES

SHOWCASING GREEN BUILDING AND RENEWABLE ENERGY
Green Businesses • Culture • Environment • Economy



WWW.GREENFIRETIMES.COM

NEW MEXICO'S FIFTH LARGEST CIRCULATION NEWSPAPER

AVAILABLE THROUGHOUT NORTH-CENTRAL NEW MEXICO

TO ADVERTISE CALL: SKIP WHITSON AT 505.471.5177 • ANNA HANSEN AT 505.982.0155

their ability to generate electricity. You could extract heat from the warmed cooling water and use it for a swimming pool or to pre-heat a storage tank for use in a great variety of ways.

Synergistic Solar Power

There are variations of hybrid solar systems that have synergistic power. The basic idea of heat-cool-generate is expanded to make a portico, colonnade, or ramada that shelters people and plants. Now your power generator helps people stay comfortable while moving from A to B.

A wetlands water treatment system exemplified by John Todd's Living Machines systems is an example of solar technology that uses plants and filter feeders (bivalves, mussels, etc.) to purify water.

Here's the big kahuna -- VERTICAL FARMS. Most, if not all, of the technologies mentioned above could be incorporated into a very large system for growing food, medicines, and animal feed. (Think of all the different ways people use plants, and you get the idea.) If we combine and harness solar technologies as our first priority for overall design of our vertical farm, there will be niches where other technologies can help.

A plentiful supply of ultra-pure, fresh water will be needed in large vertical farms in the future. This water could come from a variety of treatment processes, many of which could get their energy from solar powered

generation. Because of the need to maintain optimum growing temperatures and humidity, vertical farms use refrigeration (possibly thermo-acoustic and/or Peltier Effect) to condense water out of the air.

Daisy-chained water treatment systems may cascade water in ways that allow extraction at any stage, depending on suitability for a great variety of purposes in vertical farms. There are vertical farms planned for New York City that process and treat sewage to derive safe organic fertilizers for their hydroponic gardens.

Consider power toilets that generate heat, electricity, and ultra pure water from toilet waste! Flushing toilets with dehydrating hydrocarbon materials allows making fuel pellets that can be burned in co-generating power units. NASA has methods for generating hydrogen from urine that can be burned in fuel cells to make pure H₂O and electricity. Since waste heat from co-fired, renewable fuel generators can easily reach pasteurization temperatures, these toilets will be important for deriving organic fertilizers for use in vertical farms.

Anaerobic biomass conversion processes generate methane, which helps other organic fuels burn cleanly in micro-turbine generator systems. The waste heat from this sort of power generation may have a variety of practical uses in the hybrid solar technology we call vertical farms.



(Benchmarking, Continued from page 11)

Dakota already have the highest wind power penetration in the country, at 20%, without either utility-scale storage or state mandates. After missing the 2011 target date, PNM has promised to reach 10% RE in 2013, but only because the NM Public Regulation Commission (PRC) is forcing it to.

Peak Shaving: Researchers and a few “engaged” utilities have confirmed that PV systems can do a good job of reducing expensive summertime afternoon peak loads, even without utility-scale storage. In the summer they orient their PV panels about 45 degrees west of south to match the peak PV output to the afternoon peak demand. Utilities on the coast have reported that a 70/30 mix of PV and wind works well for peak shaving. The wind turbines fill the early evening demand by harnessing the dependable late-day sea-to-land breezes. PNM is claiming that it needs sophisticated utility-scale energy storage solutions to “time shift” the output of its fixed-due-south pointing PV installations.

Intermittency: PV systems temporarily turn down or even off when cloud shadows roll by. That’s just a fact, and one that certain utilities like PNM love to emphasize. But researchers working with interested utilities have confirmed that PV systems that are more than a few miles apart don’t turn off at exactly the same time. The more PV systems and the more geographical diversity, the smoother the average PV grid-tied result. This is essentially a “free” voltage smoothing benefit, and it is quite significant. The same is true for wind turbines. PNM’s recent public presentations ignore this benefit. In addition, many utilities are starting to pay very close attention to site-specific weather forecasts and weather satellite data. The result is that they can anticipate cloud cover and wind events and thus greatly reduce their use of expensive and polluting standby generators. Xcel Energy in Colorado used to keep their backup generators operating all the time. They don’t do that anymore. PNM still does, which unnecessarily drives up their RE-associated costs.

Cost Caps: Many states, including Colorado and NM, have imposed “cost caps” to limit the amount that utilities must spend to meet state-imposed RE mandates. Colorado’s cost cap is very similar to NM’s. That hasn’t been a problem for Xcel Energy, which continues to add renewables by choice. In NM the cost cap has been used creatively by PNM to try to avoid adding additional renewables. PNM doesn’t admit to any benefit from RE sources, other than fossil fuel cost displacement.

Interconnect Rate Riders: A few years ago, several major southwestern utilities attempted to impose extra charges on customers who “grid-tied” their PV systems to the utility system, arguing that these PV systems were actually costing the utility money. In the two most

prominent cases, independent third-party studies concluded that these grid-tied distributed PV systems were, in fact, saving the utility money, so the rate riders were not approved. PNM has promised it will demand a grid-tie PV rate rider in 2013.

Energy Efficiency: Many utilities talk the talk, but then adopt only modest initiatives, such as efficient lighting and appliance rebates. In general, electrical cooperatives have been much more supportive of energy efficiency programs. In ultra-conservative Oklahoma, Oklahoma Gas and Electric is leading the nation in energy efficiency initiatives, having concluded that they can earn serious profits by helping their customers save money. PNM continues to struggle to meet NM’s modest energy efficiency mandates. PNM’s “energy efficiency committee” has no trouble coming up with good ideas. PNM executives veto most of them.

Electric Vehicles: EV sales this year are lower than some had forecast, but make no mistake – EV is a big deal. And the combination of plug-in hybrids and full electric vehicles with PV charging stations is starting to take off for sound economic reasons - the payback for EV owners can be impressive. GM is partnering with SunLogics; Tesla is partnering with Solar City; Nissan and Ford are partnering with SunPower; BMW is partnering with Active-E. NRG, a Texas utility, is leasing residential EV charging systems bundled with special time-of-use rates. The buzz is that “*forward looking electric utilities are active in promoting electric vehicles.*” PNM executives are apparently looking in the opposite direction.

PNM deserves some credit for not being a member of the dwindling “no-way” utility club. At one time it might have even been fairly described as “not opposed” to RE, but these latest utility benchmark “best practices” prove that current PNM management is stuck in “de Nile.” In fact, some of these best-practice examples completely undercut PNM’s current strategy, as well as several of its recent formal proposals to the NM PRC. This just shows how ordinary folks can use a few “best practice” examples to expose utility-scale “untruthiness.” Are you feeling empowered yet?



Watch for new plans for our next NMSEA

Solar Fiesta!

Now scheduled for spring 2013.

A cartoon mascot character wearing a sombrero and holding a solar panel, positioned to the right of the text in the box.



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

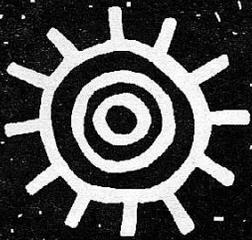
New Mexico Solar Energy Association
1009 Bradbury Dr. SE
Albuquerque, NM, 87106
www.nmsea.org

Non-Profit Organization
U.S. Postage
Paid
Albuquerque, NM
Permit No. 846

Return Service Requested

NMSEA

Works for you!



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

- September 15 Electric Vehicle and Sustainability event at the La Plancha Café in Eldorado, NM, (near Santa Fe) 8:30 to 11:30 am.
- September 15 Next Big Idea Festival, 11am-3pm at Fuller Lodge and Lawn, Downtown Los Alamos. Free educational event with exhibitors, including the Northern NM Electric Vehicle Association.
- Sept. 22, 23 Renewable Energy Village Fair, 1628 St. Michaels Dr. in Santa Fe. RE parade Sunday at 11:30.
- Sept. 25, Oct. 23 Albuquerque Chapter Meetings at REI, 1550 Mercantile NE, 6:00 to 8:00 p.m.
- September 29 Board of Directors Meeting, Saturday, NMSEA office, 1009 Bradbury Dr. SE, Albuquerque, 87106. Members welcome. Meeting Noon 3:00PM, potluck lunch starting at 11:30AM.