



It's Time to "Efficiency Up"

By Gary Vaughn, NMSEA President

If you haven't been paying attention to the world of Light Emitting Diode (LED) light bulbs, you'll be surprised at what's been going on recently. There are lots of new models and manufacturers, and prices have dropped substantially.

All the "big box" stores sell LED bulbs. Walmart was late to the LED light bulb game, but they now offer multiple choices, including their own "Great Value" brand. Costco and Lowe's and Home Depot have been selling LED bulbs for a while. Last year the Santa Fe Home Depot sold as many LED bulbs as any HD store in the country.

The usual arguments for LEDs haven't changed: much longer life, much lower energy use, much harder to break, no mercury, and a wider operating temperature range. With the recent price reductions we can also add – financially a "no-brainer." Off-grid PV system owners switched to LEDs a long time ago because energy efficiency pays for itself fast in an off-grid home. Now the same argument applies to all homeowners. And LEDs are more attractive than ever for business owners and city governments because they have to pay their employees to replace the much shorter-life incandescent and CFL bulbs.

With a wide range of models and manufacturers and specs, it can be hard to choose. Here are the major factors to consider:

- Size and shape: Most LED bulbs will fit into standard lamp fixtures, and most look more or less like a standard old-fashioned light bulb. There are a few tubular and pancake shaped LED bulbs available that will fit most lamp fixtures too. You can find specialty LED bulbs to replace a variety of incandescent bulb sizes and shapes.
- Light output: "60 Watt Equivalent" is a typical description of an LED bulb that is supposed to produce as much light as a standard 60W incandescent bulb. Somewhere on the package it will list the number of lumens of light produced. A standard 60W

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2015 Solar Fiesta September 26, CNM Workforce Training Center

By Janet Bridgers, NMSEA Vice President

NMSEA is proud to announce that the 2015 Solar Fiesta will be held on Saturday, September 26, once again at the CNM Workforce Training Center near I-25 and Alameda.

We're also proud to announce that we have a new Solar Fiesta manager—Angela Arriaga, who brings her boundless energy and enthusiasm to the event.

Angela is busy looking for ways to preserve most Solar Fiesta traditions, while adding a few new features, such as hands-on workshops, a wider variety of vendors, including artisans and food sellers, and more alternative fuel vehicles than ever. She's also busy working on a Friday evening event designed to appeal to a wider audience. Stay tuned for that announcement!

As host to the event, CNM is a major sponsor, and we are grateful and proud of the association with the college, which continues to offer the majority of training for solar installers available in the Albuquerque area. Professors and staff from the program will be on-hand to open the training bay to the public again this year.

As we go to press, we have two companies already committed to sponsoring this year's Solar Fiesta - Sol Luna Solar and Affordable Solar.

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The SunPaper

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Send all letters, comments, and articles to the Editor, or to the NMSEA office, by the ad due date given below. 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

Advertising copy may be in black and white or in color. 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 to the Editor by August 21 for the September/October issue. Note that the SunPaper is no longer available in printed form, but only at our website and by e-mail to members, which is currently about 200. Size requirements and prices for individual ads are as follows:

		<u>Sept/Oct</u>
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incandescent bulb produces about 800 *lumens*-worth of light. 75 and even 100 Watt equivalent LED bulbs are common now.

- Actual LED bulb Wattage: Some 60 Watt equivalent LED bulbs run on 11 or 12 Watts – others consume only 8.5 Watts. If energy efficiency is your goal, then the lower the better. But keep in mind that these differences only become significant if the bulb is turned on a lot.
- Color: “Warm-white” or “soft-white” is a typical description of an LED bulb that “looks like” an old incandescent bulb. “Bright white” or “Cool white” or “Daylight” describes a whiter appearance. These terms can be misleading, so you might want to double check the bulb’s “color temperature” – a more scientific measurement of its color. An incandescent bulb is rated at 2700K. Higher numbers like 3500K or 4000K shift the bulb color toward a “whiter” white color.
- Dimming or not: Many LED bulbs will work with electronic dimmers, but some manufacturers offer non-dimming LED bulbs for a lower price. Look for the labels “dimmable” or “non-dimmable.” No use paying extra for a feature that you won’t ever use.
- Expected life: Some brands specify up to a 22.5 year life – others a 10 year life or less. These are estimates, and they’re based on operating the bulb for a specified number of hours each day.
- Brand Name: Well-known brand names like Phillips, Sylvania and GE are major players in the LED marketplace. CREE is an established US company with a lot of LED experience. Store brands at the big box stores can be less expensive if you trust the store to offer reliable products.
- Rebates: Some electric utilities such as PNM offer “subsidized” price reductions on some LED light bulb models. Look for the PNM rebate sign or decal on the display shelf. If you like the bulb offered, there’s no reason not to take advantage of this price reduction.
- Sales and special offers: Competition in the LED bulb market is heating up, even if the LED bulbs themselves aren’t. Sale prices and multiple LED bulb package offers are common.

Some recent “deal” examples:

Phillips 60W equivalent, 8.5W, 10 year life, non-dimmable, 800 Lumens – 2-pack for \$4.97 at Home Depot.

Great Value 60W equivalent, 8.5W, non-dimmable – 2-pack for \$4.67 at Walmart

CREE 60W equivalent, 9W, 22 year life, dimmable, 800 Lumens – \$9.97 at Home Depot.

Osram 60W equivalent, 8.5W, 22 year life, dimmable, 800 lumens – \$9.98 at Lowe’s.

So the bottom line on light bulbs is: if you’ve been waiting around to swap your old incandescents and CFLs for LEDs, now is a great time to make the switch and lower your electricity bill. PNM hates that!



We all know this is an extremely important year for the solar industry. On the one hand, prices of photovoltaic panels continue to drop, and new financing plans have been developed, bringing systems within financial range of many more people. Meanwhile, cost-effective home battery technologies are advancing rapidly to make it possible to store the sun's energy for use when the sun is not out and possibly disconnect from the grid entirely...even in the city. And the crying need for renewable energy to displace carbon-based electrical generation becomes more obvious by the day.

Unfortunately for our industry, the federal and state tax credits on systems that have stimulated the market since 2009 will expire in 2016, and the political climate in Washington makes it extremely unlikely they will be renewed. Governor Martinez vetoed the bipartisan bill to renew the New Mexico state tax credits, so they'll be history after next year. And as you know, PNM is proposing a monthly charge to solar system owners for accessing the grid. Though the PRC has asked for revisions to the utility's rate case proposal, PRC decisions are still likely to be made before the end of the year.

Solar Fiesta has always been an important venue locally for potential buyers to educate themselves and become acquainted with the area's solar companies. This year its importance is magnified as we all scramble to let the public know—THIS IS THE YEAR! By fall of 2016, it will be cutting it very close for beginning the purchase of a solar energy system and having it installed in time to qualify for tax credits.

To state what should also be fairly obvious, Solar Fiesta is a major way in which NMSEA supports itself as an organization. We need our members and supporters to participate in helping to make this the most successful Fiesta ever. To that end, we ask that you mark your calendars now with the date, and if you're not going to be staffing a booth, please consider volunteering to help with the myriad of tasks that must be accomplished to plan and run a successful event.

All skill sets are welcome. Here's a short list:

- those good at posting signage,

- those adept at social media,

-those who are great with kids and willing to show them some basic renewable energy and energy conservation principles, or

- those just willing to contribute energy and a bit of muscle to the physical tasks to set up and tear down.

We need all of these, and more.

If you can be involved in helping to plan the event, email me at janetbridgers@msn.com. If you'd like to limit your help to the weekend of the event (Friday for set-up and Saturday for the event itself), please see the volunteer page on our Fiesta website <http://www.nm-solarfiesta.org/>. It allows you to sign up easily and quickly for the specific time you can commit.

Looking forward to seeing you all again soon!





The Lunatic Fringe

In the 70s and early 80s while the rest of the solar community in the US was focused on active solar systems, innovators here in New Mexico were dedicated to passive solar approaches. At the time, this NM group was often referred to as “The Lunatic Fringe,” because few other “solar experts” were convinced that such simple and inexpensive passive solar designs could possibly work.

NMSEA was founded in 1972 by proud members of the Lunatic Fringe, including Steve Baer and Dr. Douglas Balcomb. The Lunatic Fringe in New Mexico designed and built passive solar homes and devices, documented their real-world performance, and proved that passive solar approaches could match and even exceed the performance of far more complicated and costly active solar designs.

Recently Mark Chalom hosted a get-together for some of the Lunatic Fringe Society members, including left to right in photo above:

- Susan Yanda, wife of solar greenhouse guru Bill Yanda.
- Bristol Stickney, solar thermal expert.

- Quentin Wilson, also known as NM’s “Adobe-Wan Kanobi.”
- Ray Bahm, an engineer who quantified NM’s solar resources.
- Windy Dankoff, founder of the leading solar water pumping company Dankoff Solar.
- Mark Chalom, ASES Passive Solar Pioneer Architect.
- Dr. Douglas Balcomb, ASES Passive Solar Pioneer, who championed passive solar at Los Alamos National Labs and later at the National Renewable Energy Lab.
- Karen Terry, a contractor who built passive solar adobe homes that were beautiful, as well as functional.

T-shirts from early conferences and some new ones by Mark Chalom were shared, as highlighted by Mark and Windy (not a sitcom duo) in the photo on the following page.

Photos and story by Gary Vaughn.





Mark Chalom with his "Lunatic Fringe" T-shirt and Windy Dankoff with his from the 1981 Ghost Ranch Life Technics Conference.



ABQ Chapter Meetings

You are invited to join us on the 4th Tuesday of odd-numbered months for a couple of hours of "energy" and education. NMSEA monthly Chapter Meetings in Albuquerque are FREE and open to the public. We meet next on July 28 at 6:00 PM at the REI store, 1550 Mercantile Ave NE, 87107. We have a variety of speakers and expert-led discussions at each meeting. Come hang out with other concerned citizens to learn how you can do your part, as we all transition toward a more sustainable lifestyle. Share your project successes with us! Experts and novices are all encouraged to attend. We hope that you will join us!



NMSEA 2015

Solar

Fiesta!

Saturday Sept. 26th
10:00 A.M. - 5:00 P.M.



CNM Workforce Training Center
I-25 at Alameda Blvd.

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Why Not Subsidize Solar Power?

By Gary Vaughn, NMSEA President

After much debate and cost justification, the NM legislature approved a reasonable extension of NM's state tax credits for residential solar and solar thermal systems which are scheduled to expire at the end of 2016, but that bill was vetoed by our Governor. In the recent special session, a few influential legislators prevented the RE tax credit extension from being included in the capital spending bill. These maneuvers, along with vigorous debate about PNM's San Juan Generating Station Plan as well as the upcoming PNM Rate Case, have generated a monsoon of renewable energy related op-eds and editorials. RE advocates will want to challenge these major talking points offered by the opposition:

Rooftop solar systems are several times more expensive per kilowatt of capacity than traditional generating sources. But homeowners are still lining up to buy their own RE systems. Even with current tax credits, homeowners end up paying for most of the cost of these systems. Why would they do that? Because, for a variety of reasons, they see "real long-term value" in owning their own PV or solar thermal system.

Wind and Solar aren't reliable. In "utility speak", a generating source that's not available 24/7 is labeled as "unreliable." So that means that sunshine and wind are unreliable sources of energy. Plants figured out long ago how to deal with the fact that the sun doesn't shine at night. Surely utility executives are almost as innovative as sunflowers.

Utilities have to run expensive back-up generation sources continuously to cope with RE's "unreliability." That's PNM's claim, but the fact is that PNM has to have substantial "spinning reserve" generating sources on-line to compensate for short-term changes in customer demand, as well as to deal with the unreliability of its traditional generating sources. That's how the "stability" of the grid is maintained. It's easy to prove that as you add more and more geographically diverse PV and wind sources, the net energy output of the RE system becomes much more stable and predictable. Properly managed, RE sources can actually decrease the run-time of conventional generating sources thus reducing emissions and extending the conventional generator's operating life.

RE generating sources have substantial costs and no financial benefits. PNM actually claims this in their 2014 Rate Case proposal. Yet there are at least a dozen independent studies conducted by state regulating agencies around the US that show that RE sources offer utilities significant financial net benefits, even in states with much poorer RE resources than NM.

RE mandates have contributed to electricity rate increases. There are many factors that contribute to rate increases, including a contribution from state-mandated RE sources. The contribution due to RE mandates is limited by law, unlike most other factors. But the cost of solar and wind power is decreasing rapidly

while the cost of conventional generation is increasing rapidly. Many regulated utilities, including at least one in NM (hint – it's not PNM), are now adding more RE sources to REDUCE the cost of power for their customers.

RE systems are only affordable by those in the middle and upper income brackets. "Early adopters" of any new product or technology pay premium prices. As markets grow, economies-of-scale result in much lower prices which in turn make the product much more affordable for everyone. That's what RE incentives are supposed to accomplish, and that's exactly what's happened with PV and wind systems all around the world.

Poor New Mexicans are paying for wealthy New Mexicans to install solar systems. The fact is that poor New Mexicans pay little if any federal or state income taxes, so they aren't actually paying for the state or federal tax credits for solar installations in NM. Almost all of the federal tax credits for NM solar installations are paid for by folks in other states, resulting in a net inflow of "clean energy investment dollars" to NM. NM electric utility rates include the shared cost of the NM state mandated RE systems "owned" by PNM and other regulated utilities, but those RE systems provide clean electricity to all utility customers. The so-called REC credits paid by PNM to PV system owners for the clean electricity they supply "for free" to PNM have been steadily decreasing and will soon be phased out as planned. And keep in mind that PNM sells the free electricity that rooftop solar owners supply back to PNM's other customers for the full retail price (kaching!).

PV system owners are not paying their fair share of grid costs, obligating everyone else to pay more. The costs of the electricity distribution system (the Grid), are currently covered by how much PNM charges per kilo-Watt-hour. Now that customer owned RE generating sources are growing in popularity, PNM is worried that its monopoly business model may be threatened. As residential energy storage becomes affordable, this challenge will only grow. How long can PNM resist adapting its business model to reality?

State RE incentives are an expensive way to create jobs. Dividing the total accumulated cost of NM's RE incentives by the number of RE-related jobs created is a misleading way to calculate the cost per job created because it ignores the value of the clean energy "infrastructure" that exists as a result of these incentives, as well as the state income tax paid by solar companies and their employees.

The EPA's "Clean Power Plan" to cut greenhouse gases would raise poverty among Blacks and Hispanics. This is a curious claim considering the recent Papal Encyclical and several recent national and international studies that make a strong case for exactly the opposite conclusion.

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International Visitors

On May 12, 2015, NMSEA hosted a group of international visitors from Central and South America. The US State Department sponsored their trip to the United States. Two “simultaneous translators” accompanied the visitors. The focus of the trip was “Energy Security and Renewable Energy in the Western Hemisphere.” The trip facilitators thought that NMSEA could provide a good example of a “grass-roots” solar and renewable energy related organization.

Five NMSEA Board members presented short summaries of NMSEA’s activities, some in Spanish, which were followed by a lively discussion and Q&A session. The meeting lasted for the scheduled 90 minutes, and could have easily continued all afternoon, if the delegation hadn’t been booked to tour PNM’s PV installation just east of Belen.

The participants were (left to right in photo below):
Gary Vaughn, NMSEA President,
Mr. Oswaldo Vargas Pinzon, Economic Journalist for the Colombian magazine *Dinero*,
Mr. Mario Alvarado Mora, ED, Costa Rican Association of Private Energy Generators,
Ms. Magali Giovanelli Petito, Attorney and Analyst, Argentine Armed Forces,
Mr. Christian Anaya Velazquez, Engineer, Mexican Federal Commission of Electricity,
Angela Arriaga, Student and Activist, NMSEA,
Rolf Nitsche, Engineer, NMSEA,
Carl Axness, Phd, NMSEA,
Athena Christodoulou, Engineer, NMSEA.





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 electronically 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: _____

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City, State, ZIP Code: _____

Phone: (H) _____ (W) _____

Email: _____

Any special Solar interests? _____

Yes, I would like to volunteer on occasion!

How did you hear about us? _____

NMSEA Chapters

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: NMSEA 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 (by default) to the main office general fund:

Affiliation	Donation
<input type="checkbox"/> Alamogordo Chapter	\$ _____
<input type="checkbox"/> Albuquerque Chapter	\$ _____
<input type="checkbox"/> Las Vegas Chapter	\$ _____
<input type="checkbox"/> Los Alamos Chapter (LASE)	\$ _____
<input type="checkbox"/> Santa Fe Chapter	\$ _____
<input type="checkbox"/> Taos Chapter	\$ _____
<input type="checkbox"/> Silver City Chapter	\$ _____

Dr. Wm A Gross RE Education Fund \$ _____

NMSEA Membership Dues

<input type="checkbox"/> Individual / Family, 1 year	\$40
<input type="checkbox"/> Business, 1 year	\$100
<input type="checkbox"/> Individual Lifetime	\$325
<input type="checkbox"/> Senior (65 & up) /Discounted, 1 year	\$20
<input type="checkbox"/> Teacher / Student (with certification), 1year	free



Combined NMSEA & 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, discounts on ASES Conferences, publications, and more! For more info about ASES and ASES membership benefits, please visit www.ases.org

ASES is offering a discount on ASES Membership & Combined ASES & NMSEA Membership if:

you JOIN on-line using the ASES website at www.ases.org/join

you RENEW your ASES/NMSEA membership on-line using the ASES website at www.ases.org/renewme

If you are or wish to become a member of ASES, please take advantage of this discount & join/renew via the ASES website.

NMSEA Dues \$ _____ + Dr. Gross Scholarship \$ _____ + Donation to NMSEA \$ _____ = **Total \$** _____

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For more information, please call **505-246-0400** or visit www.nmsolar.org.

(Subsidizing Solar Power, Continued from page 7)

We should depend on the “free market”, not “government intervention”, to pick the “winners.” That’s a familiar argument, but there’s a long list of important industries that exist because of government intervention including railroads, automobiles, oil/natural gas/nuclear, and rural electric cooperatives. And PNM is, after all, a NM government-imposed monopoly. Government incentives for RE have been and continue to be significantly lower than those for many other industries.



Energy/Utility Investments

Closing share prices compared to the DOW index:

<u>6/26/15</u>	<u>4/24/15</u>	<u>6/27/14</u>
First Solar (FSLR):		
\$49.95	\$63.43	\$71.40
Market Vectors, Solar Energy ETF (KWT):		
\$77.48	\$88.79	\$86.11
PNM Resources (PNM):		
\$25.00	\$28.57	\$28.90
Dow Jones Industrial Average (\$INDU):		
17,947	18,080	16,852
Crude Oil//barrel (NYMEX futures)		
\$59.63	\$57.15	\$105.74
Natural Gas/mmBtu		
\$2.77	\$2.53	\$4.41
Gasoline/gal		
\$2.05	\$2.01	\$3.10

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.



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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

- July 14-16 **InterSolar North America 2015 Conference**, San Francisco Inter continental Hotel and Moscone Center trade show and exhibition.
- July 28 **Albuquerque Chapter Meetings**, Fourth Tuesdays at REI, 1550 Mercantile NE, 6:00 to 8:00 PM, odd numbered months, only.
- July 28-30 **SOLAR 2015**, the 44th annual conference of the American Solar Energy Society, Penn State University in State College, PA. “Expanding Horizons: Shaping the New Energy Economy,” embracing the story of the past, enriching the communities of today, and revealing the trends of the future. <http://solar2015.ases.org/>
- Sept. 1 **Board of Directors Meeting**, Tuesday, NMSEA office, 1009 Bradbury Dr. SE, Albuquerque, 87106. Meeting at 6:00 PM, starting with potluck dinner at 5:30. Members welcome.

Check our online event calendar at <http://www.nmsolar.org/Pages/Events.aspx> for the latest event listing.