NMSEA: A Brief History of the New Mexico Solar Energy Association

One of the Nation's Oldest and Most Influential Solar Groups

By Ben Luce *NMSEA President, 1999-2005*, with input from Mark Chalom, Athena Christodoulou, Marlene Brown, Rose Kern, Julia Stephens, and Karlis Viceps

The New Mexico Solar Energy Association (NMSEA) has been at it for a long time. Over the past 50 years, this dedicated and diverse group of experts and enthusiasts has exerted a vast impact on solar energy use and technology, both locally and nationally, and even internationally.

NMSEA was the first state organization to become a regional chapter of the International Solar Energy Society (ISES). It initially attracted members nationwide, many of whom later founded other regional groups. This group also has a special depth of character to its advocacy, having always aimed at nothing less than saving the planet through a radical transformation of the way we interact with nature.

This article presents a brief history of the NMSEA, informed by input from some of its key supporters. A warning: this short account cannot do justice to the generosity of the hundreds of folks who tirelessly built NMSEA's lasting legacy.

From left-to-right, top-to-bottom: The Sunchaser in action, circa 2000; NMSEA's solar cooking display at a Solar Fiesta! (with a "Solar Villager" sun oven loaned by Sandia Labs); NMSEA volunteers dispensing educational literature at a Taos "Solar Village;" The author demonstrating solar energy and energy efficiency concepts to a young attendee of a Solar Fiesta! event. As these photos demonstrate, we worked hard, and still do, to reach the next generation as well as adults.

NMSEA's history begins with the work of solar pioneer Peter Van Dresser, a former developer of early rockets and sci-fi author who became involved with constructing solar water heaters in Florida. Van Dresser was inspired to explore solar heating after touring a solar building designed by MIT solar engineer Maria Telkes.[1] After relocating in 1949 to the little enclave of El Rito, New Mexico,[2] Van Dresser began to experiment with designing and constructing solar heated buildings.

Additional solar innovators gradually appeared on the scene and in 1972, passive solar designer Keith Haggard began to organize the NMSEA with Van Dresser, solar innovator Steve Bair, and others.[3] The group began hosting its now famed "Life Technics" conferences at Ghost Ranch in Abiquiu. Van Dresser also obtained funding for a project at Ghost Ranch to design four low-tech, experimental passive solar buildings.[4] The project's core team included solar designers William Lumpkins, Benjamin "Buck" Rogers and Francis Wessling, along with consulting input from Steve Baer; Douglas Balcomb, a Los Alamos nuclear physicist turned solar scientist; architect David Wright; and solar innovators Bill Yanda and Quentin Wilson.[5] Architect Mark Chalom who would later become a major pioneer in the fusion of passive solar design with adobe construction, along with Quentin Wilson at Northern New Mexico College, as NMSEA stalwart who serve as the team's drafter.

The NMSEA was formally established as a charitable nonprofit in 1974, with an initial membership of 55. Within a year, the group obtained a grant and outreach efforts began in earnest. From 1975 to 1984, the organization maintained an office with a few employees and "innumerable volunteers," and its membership ballooned into the thousands. Besides those already mentioned, leading contributors included solar innovator Bob Reines with Integrated Life Systems; Los Alamos passive solar scientist Don Neeper; Dr. William (Bill) Gross, mechanical engineering professor at the University of New Mexico; and Bristol Stickney, an expert solar thermal designer.

Fueled by strong public interest and federal tax credits, NMSEA affiliated companies like Chuck Marken's AAA Solar and Steve Baer's Zomeworks in Albuquerque thrived. Simultaneously, passive solar houses became common, and the attached greenhouses promulgated by NMSEA's Bill Yanda through his influential books appeared around the US.

Solar research programs at Los Alamos and Sandia National Laboratories also boomed. Los Alamos produced nationally distributed passive design guides and Sandia pioneered concentrating solar power and PV technology research. In 1979, NMSEA-affiliated solar architect Ed Mazria published his influential book, "The Passive Solar Energy Book."

Over the past 15 years, Mazria has exerted a new global influence training architects to reduce carbon through his organization Architecture2030.org.

Van Dresser passed in 1983, but not before publishing several books like 'Homegrown Sundwellings' (with assistance from Mark Chalom) that disseminated his technical ideas and his comprehensive approach to sustainable development, the spirit and depth of which still guides the NMSEA.

In the 1980s, the organization decreased after federal support for renewable energy collapsed. William (Bill) Gross, Dean of Mechanical Engineering at UNM, remained determined that NMSEA live on. Around 1987, he teamed up with Julie Stephens, an environmental planner who studied under passive solar pioneers John Yellot and Jeffrey Cook in Arizona. Julie and Bill renamed the Ghost Ranch conferences the "Peter Van Dresser Village Development Workshops" and broadened its scope. In 1990, Stephens became President and focused on rebuilding the Board. Stephens was succeeded by energy advocate Ingrid Kelley; Taos solar design-builder Karlis Viceps; solar industry figure and longtime NMSEA member Ray Bahm; solar advocate Rose Kern and me.

Highly active members from this era and beyond included PV expert Marlene Brown from Sandia Labs whose "Woman in Solar" workshops continue to have global impact; Jeanette Moore, solar technician from Sandia; solar enthusiasts and homeowners Elaine & Michael Prine; Cath Hale from Taos, spouse of Karlis Viceps; Monte Ogdahl, Santa Fe solar installer; Barbara Menicucci, an educator from Albuquerque and spouse of solar researcher David Menicucci from Sandia Labs; Allan Sindelar with Positive Energy Inc.; Amy Bunting, passive solar house occupant and advocate; David Melton, founder of Sacred Power Inc.; Odes Armijo-Caster, a solar thermal expert and later partner in Sacred Power Inc.; Windy Dankoff, solar water pumping; Larry Mapes, a solar thermal installer from Taos, NM; solar energy installer David Dobry; solar builder Don Miller; city planning visionary Michael Lipkan; and NMSEA educators Deena Klein, Wayne Evelo and Lisa Silva.

DID YOU KNOW?

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With this revitalized volunteer base and in close coordination with ASES, NMSEA began organizing annual solar tours again.

To reach young people, NMSEA created the "SunChaser" solar trailer. The brainchild of then NMSEA President Karlis Viceps and guided by sustainability specialists Donna Fisher, Larry Mapes, Ron Sutcliffe and others, the SunChaser was equipped with a full-size, accessible solar hot water panel that heated a small radiant floor assembly, a small PV system and an enclosure into which students could enter to see the PV inverter, batteries and efficient lighting. Science educator Ellen O'Donnell drafted an initial program for teachers. I created Energy Pathways Curriculum, a comprehensive presentation designed to strongly engage students and provide them with an environmental conceptual context. From 1999 to about 2007, the SunChaser visited scores of New Mexico

schools all over the state, some in very remote areas, and educated tens of thousands of New Mexico students about solar and sustainability.

SunChaser enabled students to interact with PV powered water pumps, passive solar home models and solar ovens (solar cookies!). To expand our reach, we developed a set of ten car-portable solar kits that contained many of the same exhibits.

An important interactive component was PV powered, radio-controlled toy cars created by NMSEA members and later president Monte Ogdahl, an avid advocate of both PV and electric vehicles. Monte acquired discarded satellite-grade PV cells and affixed these to radio-controlled toy cars, along with capacitors to enable them to operate well even on a cloudy day. These were so popular with students that we found ourselves having to reserve them for the end of presentations!

We also provided exhibits and information booths at innumerable events around New Mexico. In 1998, the Taos based solar radio station KTAO-FM teamed up with Karlis Viceps and NMSEA to host a "Solar Village" at the first of a series of "solar music festivals" in Taos. I organized eight more Solar Villages from 2000-2007. Other annual events included various Earth Day fairs, All Species Day in Santa Fe and the "SynergyFest" in Las Vegas, New Mexico organized by Highlands University student Ben Remmers.

In 1998, NMSEA received a major boost when it was selected to host the 1998 ASES National Solar Conference in Albuquerque. Two important events occurred at this conference that set some new directions for NMSEA. The first was NMSEA hosting a new public energy fair called "Solar Fiesta!," the brainchild of NMSEA President Rose Kern. This developed into an annual affair that provided solar education to tens of thousands of New Mexico residents.

Secondly, the workshop on utility deregulation issues, held at the 1998 ASES Conference, led to NMSEA joining the newly formed New Mexico Coalition for Clean Affordable Energy (CCAE), an alliance of environmental groups that advocated for clean energy. After a six year struggle, the CCAE (which I co-chaired and later directed) finally spurred the state's adoption of a strong Renewable Energy Standard (2004), Solar Tax Credits (2006), a PV RECs incentive (2006), and other renewable energy policies. These and NMSEA's educational efforts combined to drive a several thousand percent increase in the installation rate of PV in NM, as well as significant wind power development in Eastern NM.

As PV took off, another important project in the early 2000s was the development of a set of Passive Solar Guidelines that NMSEA still offers. These simple but potent guidelines were distilled by me from the vast accumulated experience of Douglas Balcomb, Mark Chalom and other NMSEA experts (www.NMSEA.org).

A succession of NMSEA presidents and volunteers has kept NMSEA initiatives alive, and introduced new ones. Subsequent presidents have included Monte Ogdahl, Marlene Brown (Sandia Labs); Gary Vaughn; Athena Christodoulou; and currently New Mexico Tech Mechanical Engineering Professor Ashok Ghosh.

In 2012, NMSEA's Janet Bridgers produced Renewable Energy New Mexico, an ambitious video series documenting many New Mexico clean energy pioneers. Solar Fiesta! has continued almost every year up through 2019 (stopping temporarily for Covid). The New SunPaper, NMSEA's newsletter, continued in print form into 2016, followed e-newsletters and blogs. Under the leadership of President Athena Christodoulou, the organization interacted again with the Legislature and more broadly with climate action efforts.

The original SunChaser, no longer roadworthy, has been donated to the ACES Technical Charter School in Albuquerque. However, under the leadership of President Ghosh, a new SunChaser is now in the works. Leading the design is NM Tech graduate student Gabriel Maestas, carrying on NMSEA's reputation for trailblazing a full fifty years after NMSEA was founded, and more than 70 years after its proud legacy began in the little enclave of El Rito, New Mexico. ■

About the Author

Dr. Ben Luce is Professor of Physics at Northern Vermont University where he conducts research in renewable energy and also electronic music synthesis. He has been a member of the NMSEA since 1996, serving as President from 1999-2004, and then Vice-president until 2007.

Sources

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NMSEA's "SunChaser 2k20" Project

By Gabriel Maestas

Educational outreach has been central to NMSEA's mission since our founding in 1972. Part of this outreach effort was established in the original SunChaser mobile education tool. The original Sunchaser, first presented in the late 1990's, taught the core ideas of renewable energy and methodology. With the help of NMSEA volunteers, the original SunChaser toured the state of New Mexico giving presentations at schools, community events, and fairs. This first rendition of the SunChaser housed a first-generation photovoltaic (PV) system with various solar powered demos headlined by the solar powered oven. Thirty years later, the original SunChaser has become dated and fallen into disrepair. NMSEA never stopped its outreach efforts, shifting to renewable energy teaching kits rather than transporting the retired trailer. In 2012, NMSEA visited 56 schools (reaching 5,900 students) and attended 28 community events. Yet even with the great success of the education kits, the utility of a purpose-made, large-scale renewable energy education tool was still missing.

The original SunChaser was built on a flatbed trailer, housing a small enclosure as well as an exterior PV rack.

Today, NMSEA is happy to present a new SunChaser for modern times, dubbed the "2k20 Pandemic Edition." In an effort to provide the best education for renewable energy methods possible, the new trailer was designed to be a mobile educational tool. Since the 1990s, technological innovation has led to great improvements in renewables, especially in solar energy. The new SunChaser has greater capabilities and is more representative of modern renewable technology while still displaying the pertinent heritage methods.

During the summer of 2020 and with my background as a mechanical engineering graduate student, I joined NMSEA as the project lead for the SunChaser. That summer I was accompanied by two other student interns also from New Mexico Tech, Dana Figueroa and Isaac Flores. Together, we designed the SunChaser 2k20 to be a trailer-bound education tool, roughly equivalent to a scaled-down home, that displays a variety of renewable energy methods that can be adopted by New Mexicans (and others) in their own homes.

In the summer of 2021, and with the help of two new interns, Frank Maldonado and Yazbeth Montoya, the plans were completed and handed off to our friends at ACE Leadership High School, a nationally recognized charter school in Albuquerque, New Mexico that focuses on hands on, learning-by-doing projects. With the goal of creating a modern SunChaser that will function for many years, the design process started from the ground up. Multiple lessons