ASES National Solar Tour
www.NationalSolarTour.org

LIVING WITH THE SUN
ARIZONA STYLE – 2011

Valley of the Sun
Solar and Sustainability Tour

October, 22-23, 2011
9:00 am-4:00 pm

ARIZONA SOLAR ENERGY ASSOCIATION

Arizona Solar Center
Your Guide to Solar in Arizona

SCOTTSDALE GREEN BUILDING PROGRAM

LIVING WITH THE SUN ARIZONA STYLE – 2011
Valley of the Sun Solar and Sustainability Tour

October, 22-23, 2011
9:00 am to 4:00 pm

Overview

This free, self-guided tour of Valley solar, sustainable, and Green buildings offers the public access to a dazzling variety of technologies, equipment, and strategies for energy and resource wise, desert appropriate, and environmentally responsible living in the Arizona desert.

Arizona's Solar & Sustainable Buildings Tour is part of the American Solar Energy Society's (ASES) National Solar Tour. ASES is the nation's largest and oldest solar and sustainability membership organization.

See projects ranging from new construction to remodels; from residences to public buildings; and from simple to complex. See passive (non mechanical) and active (mechanical) solar applications for heating and cooling, water heating; power generation and even cooking. See energy and resource efficient applications of water catchment and water reuse. See a variety of Green building strategies in creating a comfortable and environmentally appropriate lifestyle in our severe desert environment.

A special treat — meet the people who created and live in these building and who will be sharing their experiences in creating and experiencing these solar and sustainable buildings. Ask questions, learn about ways to incorporate their lessons and experiences into your own life and environments. Talks at each site will be on the hour with a noon-time break.

There is something for everybody, whether it is low cost, high technology, desert design, or simple environmental and behavioral techniques: a day of technology, strategies and the people taking action.

Specific Tour information will be at the Arizona Solar Center www.azsolarcenter.org — Check it often as content may change - with the addition of sites or adjustments in availability.

This free, self-guided tour is put on by the Arizona Solar Energy Association — State Chapter of the national Solar Energy Society; the Arizona Solar Center — the State's go-to non-profit solar collaborative; and the City of Scottsdale Green Building Program.

Special thanks to Donna DiFrancesco, City of Mesa Conservation Specialist, Environmental & Sustainability, and to ASU Professor Dr. Martin Pasqualetti and his student volunteers.

For questions and additional information please contact Dan Aiello at J2envarch@aol.com. Or call 602-952-8192.

LIVING WITH THE SUN ARIZONA STYLE – 2011
Valley of the Sun Solar and Sustainability Tour

Tour Sites

9:00 am to 4:00 pm
Free, Self-Guided

Saturday, October 22

SCOTTSDALE

Becker Residence – 12176 E Double Tree Ranch Road, Scottsdale, AZ 85259 1
Garrett Residence – 8502 E. Cactus Wren, Scottsdale, AZ 85250 2
Edwards Remodel – 8737 East Valley View Road, Scottsdale, AZ 85250 3

MESA

Catlin Residence – 120 S. Omaha Street, Mesa, AZ 85205 4

TEMPE

Hoffmann Residence – 1430 S. Roosevelt St., Tempe, AZ 85281 5
Tempe Beach Park Solar Installation – 80 W. Rio Salado Parkway, Tempe, AZ 85281 6

PHOENIX

Peris Residence – 337 West Roma Avenue, Phoenix, AZ 85013 7
Dunton Residence – 16026 S. 14th Dr. Phoenix, AZ 85045 8

Sunday, October 23

SCOTTSDALE

Edwards Residence – 8151 E. Smokehouse Trail, Scottsdale, AZ 85266 9
Grieb Residence – 30600 N. Pima Road, Lot 62, Scottsdale, AZ 85266 10

MESA

Barnhart Studio – 506 N. Center St., Mesa, AZ 85201 11
DiFrancesco-Priebe Residence – 463 N. MacDonald Street, Mesa, AZ 85201 12
Catlin Residence – 120 S. Omaha Street, Mesa, AZ 85205 4

TEMPE

Hoffman Residence – 1430 S. Roosevelt St., Tempe, AZ 85281 5
Tempe Beach Park Solar Installation – 80 W. Rio Salado Parkway, Tempe, AZ 85281 6

PHOENIX

Dunton Residence – 16026 S. 14th Dr. Phoenix, AZ 85045 8

1 Becker Residence

October 22 - Saturday only

12176 E Double Tree Ranch Road
Scottsdale, AZ 85259
Map
Directions: From 101 in Scottsdale, take the Shea Blvd exit. Travel east on E. Shea Blvd. Turn right onto N. 124th Street. Turn right onto E. Doubletree Ranch Road. Home is at end of the road on the right.

The Becker Residence is the result of a creative solution to an awkwardly shaped site squeezed by utility corridors and a desert wash that was previously scraped bare and left by a subdivision developer. The owners decided that the lot's deep arroyo and view of the McDowell Mountains outweighed the negatives.
Rainwater harvesting, site contours and swales were constructed to collect rain water on the lot for abundant plant growth while creating a desert oasis. A gray water recovery system collects household water that would otherwise go down the drain.

Southwestern tree species and plants were selected for drought tolerance and year-round color. Most of the trees adjacent to the residence were placed for shading and reducing heat gain.

Other features include sun protected building entries; graywater collection from bathroom sinks and showers that supply a 400 gallon storage tank to irrigate trees; rainwater collection from roofs directed to landscape areas via roof drains; thermal mass (concrete flooring) and exposed masonry that tempers daily indoor temperatures and contributes to healthy indoor environment; and use of local and regional materials including masonry, stone and recycled metal.

2 Garrett Residence

October 22 - Saturday only

8502 E. Cactus Wren
Scottsdale, AZ 85250
Map
Directions: From Loop 101 Pima Freeway, take the Indian Bend Road exit. Head westbound, turning south on 86th street. Turn westbound on Cactus Wren. Home is on the corner of Cactus Wren and 85th Street.

This 30+ year-old passive and active solar residence shows shows that good ideas, design and applications withstand the test of time.

Orientation, materials, below-grade living zones, thermal decompression, and numerous passive strategies combined with solar equipment have led this building to provide a comfortable environment through Valley summers and winters, year after year for at least three decades.
Features include:

- PV tracker to run the pool pump
- Solar hot water heater
- 12V lighting in bedroom
- Solar powered 24V battery-based Sunfrost refrigerator

3 Edwards Remodel

October 22 - Saturday only

8737 E. Valley View Road
Scottsdale, AZ 85250
Map
Directions: From Pima Rd. and McDonald Rd. go West to 86th street then turn south (left). Go 7 blocks until you come to Valley View Rd. turn East (left) drive about a block the house is on the south side (right) follow the house numbers.

This House was built in 1961 — the era of cheap energy, and the insulation and mechanical system equipment reflected it. There was no wall insulation, just masonry block and single pane windows and HVAC equipment with a SEER rating of about 8 located on the roof, with the leaky duct work running through the hot attic. This is the typical situation found in the existing inventory of homes in the valley. An attic fire provided the opportunity for a complete remodel.

It was decided to reconstruct this home as a super energy efficient structure, which allowed the Owner to minimize the expense of future utility bills but also offers a good example of a practical approach to modernizing existing Homes.

The thermal envelope is the center piece of this remodel and is achieved by replacing the windows, wrapping the masonry walls with a unique wall system that has aluminum backed foam and a ventilated air space for the radiant barrier and air flow. The ceiling area is a hybrid that is fully ventilated for the radiant barrier and air flow benefits while adapting the roof trusses to encapsulate the HVAC duct work within the conditioned air space.

Mechanical equipment is the most efficient available in today's market with a SEER rating of 20. The appliances, lighting and plumbing fixtures will all be selected to optimize today's cutting-edge technologies.
Indoor environmental health is another consideration, by utilizing continuous mechanical air exchanges, selecting low VOC products, and providing easy-to-clean surfaces.
Passive solar adaptations include incorporating large overhangs and strategic placement of vegetation.
Active solar PV and thermal water heating applications are currently being planned for by providing the space and integrating conduit and piping to the appropriate locations for gray water, and other green technologies.

4 Catlin Residence

October 22, 23 - Saturday & Sunday

120 S. Omaha Street
Mesa, AZ 85206
Map
Directions: From Main Street and Val Vista, drive East on Main Street. Turn right on S. Norfolk. Make a left turn on E. Alder. At the end of that street turn right onto Omaha. The home is the next to last house on the right side of Omaha.

The homeowners created a system designed to eliminate all electric bills – even during the summer! There are three different photovoltaic systems with three different inverters located here (roof- and pole-mounted panels with one system having battery backup), for a total of 12 KW of installed capacity. The home also features:

- A solar water heater
- Solar clothes dryer (clothes line)
- Solar-powered attic fan Information about energy production, system costs, and return on investment will be provided.
- A water feature with fish, raised gardens and fruit and pecan trees.

5 Hoffmann Residence

October 22, 23 - Saturday & Sunday

1430 S. Roosevelt St.
Tempe, AZ 85281
Map
Directions: From 101 in Tempe, take Broadway Rd exit. Head west on E. Broadway Road for 3.2 miles. Turn right (north) onto S. Roosevelt Street. Travel 0.4 miles, then turn left onto access road. Home is on north side of street. Note: There is no parking on the small access road to the property, so it is best to park on the West side of Roosevelt Street, or on West 15th Street (just south of access road) for easiest access to property.

This 1,200-square-foot passive solar home was built with 160 bales of straw covered with eight coats of mud plaster outside and four coats inside. The 24-inch-thick walls keep average monthly utility bills at around $20, not counting the basic fee and taxes.

Trees surround the home and a wide covered porch on the east side overlooking a garden creates a passive solar climate. Two garden beds and a rain-water catchment system help meet needs for vegetables.

The is no clothes dryer, dishwasher or garbage disposal on the premises. Rather, clothes are hung outside, dishes dried by hand and leftovers composted. With lots of natural light in the home, the lights are rarely turned on.

6 Tempe Beach Park Solar Installation

October 22, 23 - Saturday & Sunday

80 W. Rio Salado Parkway
Tempe, AZ 85281
Map
Directions: The park is located at the Northwest corner of Mill and Rio Salado in Tempe. The shade structure is located to the west of the splash pad. Note that the Soma Triathalon will be going on at the park on both days.

The PV-covered Solar Ramada at Tempe Beach Park creates the triple benefit of solar visibility, energy cost savings, and increased functionality with shade. The new Solar Ramada was designed to compliment the materials and aesthetics of similar structures throughout Tempe Beach Park.

The design approach sought to combine energy generation and shade creation so that the public understands the multiple functional and aesthetic benefits of well thought out solar projects. In addition the highly visible design approach sought to provide inspiration and motivation for home owners and business owners to undertake their own solar projects and investment. New signage located adjacent to the Solar Ramada describes project information and general solar technology principles. There is even a crossword puzzle to appeal to the kid in all of us.

The project was funded in part through a grant from the US Department of Energy under the Renewable Energy Leadership Program. The project was managed by Arizona Public Service with the client being City of Tempe.

Equipment

- 10kW AC PV system
- 15° tilt angle and 24° azimuth
- PV Module: Solon 230/07 polycrystalline
- Inverter: Enphase microinverter M190-72-208-S12
- HDPE construction fabric for shade panels

Energy and Environment

- 19,357 kWh per year (predicted)
- 13% of the energy needed for the parks south-side facilities
- Avoids 578,000 lbs of CO^2 emissions over 25 years

7 Peris Residence

October 22 - Saturday only

337 W. Roma Avenue
Phoenix, AZ 85013
Map
Directions: From the intersection of Indian School and Central Avenue, go north on Central Avenue. Take a left onto West Turney Avenue. Take a right onto North 3rd Avenue. Go one block to West Roma Avenue. Take a left. The house is on the south side of the street.

In the mid-1930s Yaple Park was the country getaway from urban Phoenix. Now, only two blocks away from the Central Avenue Metro stop at Campbell, this 1938 Territorial Revival house has been beautifully restored and tastefully expanded with an outdoor patio to create a true urban retreat without compromising its historic character.

The southern exposure of the backyard made it a perfect candidate for a passive solar ramada, which provides full shade in the summer months, full sun on the house during the winter months, and pleasant partial shade inbetween. The thermal mass of the brick and stucco southern wall gently radiates heat into the house during winter evenings.

8 Dunton Residence

October 22, 23 - Saturday & Sunday

16026 S. 14th Dr.
Phoenix 85045
Map
Directions: Take Pecos off of the I-10 heading west. Exit north on S. 17th. Ave. and head north until Chandler Blvd. Turn right (East) on Chandler Blvd. take first right on S. 14th Ave. (Club West Golf Course), then take second right onto W. Wildwood Dr., then head north (right) up to the end of S. 14th Dr.

We have converted ½ of our lawn in the back to a vegetable garden, the front lawn is now a desert scape, window shades and some film on all south and west windows. Our small PV system (3.8 kW) and PV pool pump (1.3 kW) have had a nice impact on our energy bill.

Will have a system monitoring station running, with current and past energy harvest information visible. Being an instructor for PV installers and a residential PV system design engineer I can hopefully answer questions people may have about solar energy. Will have a number of solar modules on display, and other system components.

9 Edwards Residence

October 23 - Sunday only

8151 E. Smokehouse Trail
Scottsdale, AZ 85266
Map
Directions: From the intersection of N. Scottsdale Road and E. Carefree Hwy., go south on Scottsdale Road about 1/2 mile. Turn east onto E. Westland Rd. Travel east on Westland Road 1 mile to Hayden Road then turn south on Hayden Road. Turn east onto Smokehouse Road — 4th house on right.

Completed in 1999, the Edwards Residence in North Scottsdale incorporates many Green Building elements in its construction. Its Southwestern design blends with the surrounding desert with an emphasis on sustainability.

The Edwards residence was also the first straw bale home to be permitted in the City of Scottsdale. Features include:

- Straw bale R-50 walls
- Thermal mass floors
- Cooling tower
- Thermal pane windows
- water heating
- Grid-tied 5.0 kW PV system
- Highly insulated attic, R-67
- Dual-drain plumbing for graywater

10 Grieb Residence

October 23 - Sunday only

30600 N. Pima Road, Lot 62,
Scottsdale, AZ 85266
(Sincuidados Community)
Map
Directions: From the 101 in Scottsdale,take Pima Road exit toward Princess Dr. Turn right to stay on N Pima Road. Travel north for 7.9 miles, and turn left onto N Las Piedras. Guard at gate will direct you to home.

This highly energy efficient and passive solar home is one of a few in Arizona constructed of load bearing solid foam panels for the exterior walls and roof structure. Designed by owner/architect and innovator Donald Grieb, this home was certified at the advanced level of Scottsdale's Green Building Program.

Mr. Grieb has had a long distinguished architectural career starting with an American Academy of Rome award in 1941. One of his signature projects include the Milwaukee's Mitchell Park Conservatory beehive-shaped biosphere domes (mid-1960s) containing botanical gardens based on distinct climates in a naturalistic setting.

The residence is situated on an acre plus lot and is adjacent to the Sincuidados 18-acre Wallace Desert Gardens. The home has 2 bedrooms, 2- 1/2 baths and office with 3 beehive fireplaces. The home includes outdoor shaded living area, negative edge pool and views of the Sonoran desert landscape. For more information, visit www.sincuidados62.com

11 Barnhart Studio

October 23 - Sunday only

506 N. Center St.
Mesa, AZ 85201
Map
Directions:From Main Street and Center Street in Mesa, north on Center for ½ mile to University. Studio is on West side of street approximately 500 feet north of University.

Completed in 2008, the studio is constructed from glass and steel, and a vast amount of additional material in this project are used or recycled. The Studio is 3,700+ sf with 28 foot ceilings. Beautiful natural light pours through the 7 skylights and north windows. The Studio is complete with a rock climbing wall, sculpture garden, a fireman's pole, and a VW Bus mounted 12 feet off the floor that has been converted to a bedroom, and accessible by a glass catwalk. A 1,500 lb arched steel and concrete-ball entry gate gently pivots across the driveway to the front, and a lushly planted xeriscaped sculpture garden graces the rear of the property.

12 DiFrancesco-Priebe Residence

October 23 - Sunday only

463 N. MacDonald Street
Mesa, AZ 85201
Map
Directions: From University Dr. and Country Club go east on University approximately 3/8 of a mile to MacDonald. Head north on MacDonald—home is the 5th house on the right.

Located within a historic district, this six-year old residence incorporates numerous green building/sustainable strategies while keeping with the neighborhood. The east-west axis with large southfacing windows coupled with stained concrete floors and countertops for thermal mass provide much of the winter heating requirement. Gray water lines to the landscape and many other water-saving strategies are incorporated.

Exterior walls are constructed of OmniBlock with an additional inch of insulation applied to the exterior of the wall and interior insulation is made from recycled denim blue jeans! Lots of natural daylight provided by windows and solar tube, high-efficiency air cooling, tankless water heater and a PV solar power system make this a super-livable home.

About the Arizona Solar Energy Association

www.azsolarenergy.org

The Arizona Solar Energy Association (ASEA) is the Arizona affiliate of the American Solar Energy Society (ases.org). Founded in the 1970's as a technical association of early solar technology professionals, the group has evolved into a diverse assemblage of individuals from all walks of life who share a common interest in sustainable human activity and the use of solar energy. ASEA reaches out to both professionals and non-professionals alike.

As a founding and sustaining organizational member of the Arizona Solar Center (AzSolarCenter.org), ASEA provides a platform for its members to educate and advocate for a sustainable future for Arizona.

Depending upon local preferences, local chapters may have meetings, workshops, a newsletter and other activities. Members are active in industry associations, workshops with the Arizona Corporation Commission (ACC), the State Legislature, Maricopa Association of Governments (MAG), the Governor's Solar Energy Advisory Council (SEAC), and other groups that welcome our input.

In addition, ASEA conducts lectures on sustainability and solar technology at the invitation of groups from all over the State. A long-standing lecture series in Scottsdale continues to draw large attendance. Our speakers' bureau is available to address your organization on many sustainability and solar-related topics.

ASEA is entirely a volunteer, nonprofit organization and welcomes new supporters. Whether you simply want to support our efforts with your donation, or want to also become actively involved, we welcome your participation. Please join us in our efforts to achieve a sustainable future for Arizona. Visit the ASEA website for more information.

About the Arizona Solar Center

www.azsolarcenter.org

The Arizona Solar Center, Inc. (AzSC) is a not-for-profit collaborative of professionals dedicated to the development, implementation and integration of solar, renewable energy and sustainability in Arizona. The AzSC Board is comprised of representatives from various elements of the solar, RE and sustainability arena including government (the Arizona Department of Commerce Energy Office); the solar industry (Arizona Solar Energy Industries Association—AriSEIA); non-profits (Arizona Solar Energy Association—ASEA); Arizona utilities (APS, SRP and TEP); the educational community (ASU, UofA, NAU); the architecture, design and construction industry; the renewable energy and sustainability businesses sector; and solar and sustainability professionals. The AzSC hosts an informational and interactive website, which is the go-to central location for unbiased and trusted information for Arizonans; provides, and partners in, public and professional education programs, lectures, and workshops, and is involved in a variety of state-wide events such as the bi-annual Solar and Sustainability tours and open houses.

Informative and educational outreach is performed at a number of levels: information and education for the general public; specific audience programs; and the new professional/business forum of the Arizona Solar Center Meet-Up Group (www.meetup.com/az-solar-center), which produces technical tours, and talks/information exchange from industry, manufacturers, business people, researchers and professionals in the various RE, solar, and sustainability industry arenas. This professional/business focused AzSC element currently has participation by the AzSC, AriSEIA, ASEA, the City of Scottsdale Green Building Program, and the Phoenix Alternative Energy Meet-up Group.

The AzSC is also a resource, directly and with others, in the development and production of informational and education materials and teaching/lecture tools; participates in local, regional and national renewable energy and sustainability forums; and is evolving a physical center to further it’s solar and sustainability education and development mission, as well assupport the exploration and development of renewable energy, resource efficient applications and appropriate materials, and equipment.

About the Scottsdale Green Building Program

www.scottsdaleaz.gov/greenbuilding

The Scottsdale Green Building Program encourages a whole-systems approach through design and building techniques to minimize environmental impact and reduce the energy consumption of buildings while contributing to the health of its occupants.

OVERVIEW

The Scottsdale Green Building Program rates building projects in the following six environmental impact areas: Site Use, Energy, Indoor Air Quality, Building Materials, Solid Waste, and Water. A green building point rating system is used to qualify projects into the program. Design flexibility is achieved by offering over 135 green building options, while maintaining a whole building systems approach.

A builder, designer, or developer may enter any given number of projects into the program. The Green Building Program is voluntary and open to builders in the Scottsdale area.

INCENTIVES

As a consumer-driven program, the city of Scottsdale is engaged in an ongoing effort to bring the program to the attention of the general public and building industry:

- Development process assistance (expedited plans)
- Construction job site signs
- Directory of participating builders and designers
- Certification (green building inspections)
- Lecture series, workshops, and special events

PARTICIPATION

Every builder and designer who enters a project into the Green Building Program is expected to attend at least two green building related lectures, workshops, or seminars. These educational programs provide information on energy/resource efficient and environmentally responsible buildings, and feature experts in all areas of environmental design and construction. Lectures, workshops, and special events are held throughout the year.

2011 Solar Tour Presented by:

ARIZONA SOLAR ENERGY ASSOCIATION

www.azsolarenergy.org

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