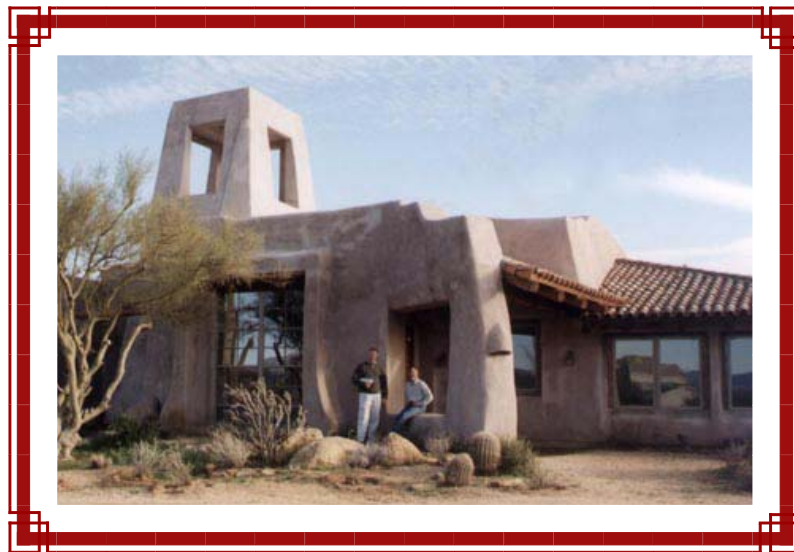




# VALLEY OF THE SUN TOUR OF Solar & Sustainable Buildings



*Living With the Sun — Arizona Style*

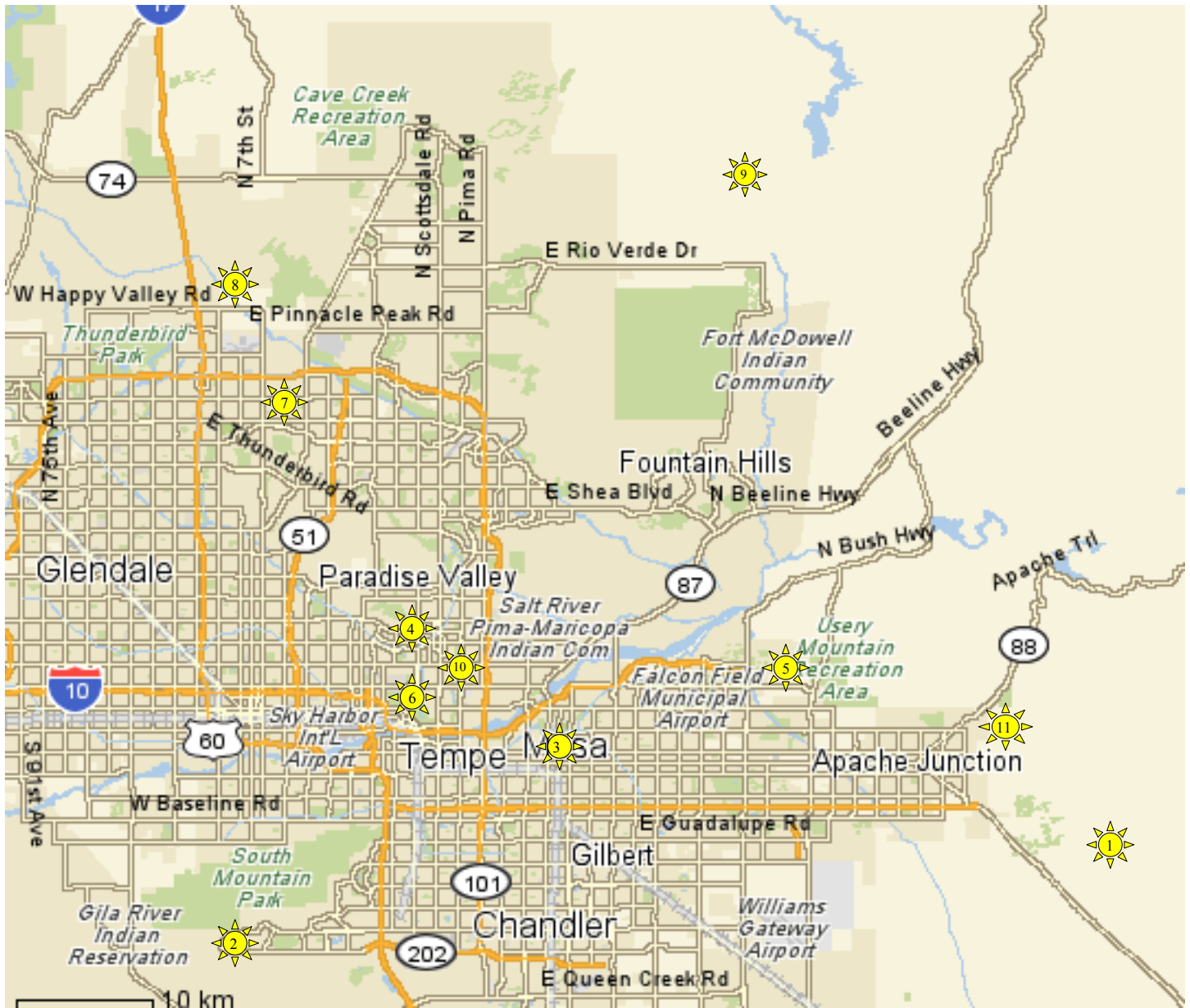
*Presented by:*

*Arizona Solar Energy Association*

*Arizona Solar Center*

*Scottsdale Green Building Program*





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|------------------------------|--------------------------|----------------------------------|
| 1. Quarter-Circle U Ranch *  | Peralta Road             | 16 miles East of Apache Junction |
| 2. Benjes Residence          | 1337 W Muirwood Drive    | Phoenix (Ahwahtukee)             |
| 3. DiFrancesco Residence     | 463 N Macdonald Ave      | Mesa                             |
| 4. Ernst Residence           | 6641 E Calle Redondo     | Scottsdale                       |
| 5. Frias Residence           | 7814 E Palm Lane         | Mesa                             |
| 6. Fuller Papercrete Project | 1 Continental Drive      | Tempe                            |
| 7. Henson Residence          | 18223 N 16th Way         | Phoenix                          |
| 8. Lee Residence             | 209 W Quartz Rock Road   | North Phoenix                    |
| 9. Lo Tempio Residence *     | 30107 N 173rd Place      | NE Scottsdale                    |
| 10. Scottsdale Senior Center | 1700 N Granite Reef Road | Scottsdale                       |
| 11. Strawbale by Tom Hahn    | 4801 E Hildago Street    | NE of Apache Junction            |

\* starred locations involve travel on dirt roads and may not be suitable for low-clearance vehicles



## THE QUARTER-CIRCLE U RANCH (BACKUS)

Peralta Road about 16 miles East of Apache Junction

### DRIVING DIRECTIONS

The ranch headquarters is about 16 miles East of Apache Junction & requires travel on a good dirt road for about 6 miles. Go East on US 60 about 1-2 miles past Gold Canyon and turn North (only option) onto Peralta Road. The only junction on this road is about another 4-5 miles. There is a sign post at the junction indicating “Peralta Trailhead 1 ½ miles” to the left - DO NOT take this road. Bare right (straight ahead) and proceed up and to the end of the ranch road - another 1 ½ miles. Continue on—thru a white pipe gate (it will be open) and eventually thru a cattle guard/gate and into the ranch headquarters at the end of the road.



The Quarter Circle U Ranch is an old, historic working ranch on the southern boundary of the Superstition Wilderness Area. The existing ranch house was built 1876 and the entire ranch has been **PV powered since 1979**. It is believed to be the **first solar powered ranch/farm in the world**. The PV system has evolved from just providing minimum lighting and radio/TV, to a full power service providing 110 and 220 volt, AC power to all aspects of the ranch headquarters. This includes two homes, shop, corrals and water pumping (plus 4 remote wells). The PV system uses batteries for storage and has never had a backup system. PV panels include a variety of designs with some over 30 years old. Chuck and Judy (wife) and ranch manager (Howard) will be available to answer questions about experiences with owning and **living Off-Grid with PV** for 27 years.



## Benjes Residence

1337 W Muirwood Drive Phoenix, AZ

### DRIVING DIRECTIONS

From I-10 and Chandler Blvd, go West on Chandler Blvd to South 14th Drive (about 2.5 miles west of Desert Foothills Parkway—just before the confluence with Pecos Road). Go South on S 14th Drive 1 block then East on W Muirwood Dr. Home is about 1/2 way down the block on the Right.



This residence has almost 6 KW of patio-mounted solar modules with expansion capability. The grid-connected PV system contains 35 SunTech Monocrystalline solar modules and 2 Sharp 3.5 KW Inverters.



## DiFrancesco Residence

463 North Macdonald Ave Mesa, AZ

### DRIVING DIRECTIONS

From University Dr & Country Club go EAST on University appx 3/8 miles to Macdonald. Head NORTH on Macdonald—Home is the 5th house on the Right.



Located within an historic district, this new residence incorporates numerous Green Building/Sustainable strategies while keeping with the neighborhood. The east-west axis with large south-facing windows coupled with stained concrete floors and countertops for thermal mass provide most of the winter heating requirement. Exterior walls are constructed of OmniBlock with an additional inch of “outsulation” (insulation applied to the exterior of the wall) and the roof & interior insulation is made from recycled denim Blue Jeans! Lots of natural daylight provided by windows & solar tubes, high-efficiency air cooling, tankless water heater and a PV solar power system currently being installed ... make this a super livable home.



## Ernst Residence

6641 E Calle Redondo Scottsdale, AZ 85251

### DRIVING DIRECTIONS

From the intersection of Scottsdale Rd & Indian School, go WEST on Indian School to 68th St. Turn NORTH on 68th St then WEST onto LaFayette after crossing the canal. Follow LaFayette about 1/4 mile then turn SOUTH onto Calle Redondo. Home is the 3rd house on the left.



This designer home includes lots of Artwork incorporated into the exterior architecture to compliment the roof-mounted 3 KW PV system which includes 18 solar modules and an inverter.



## Frias Residence

7814 E Palm Lane Mesa, AZ 85207

### DRIVING DIRECTIONS

From the intersection of McDowell & Power Rd, go EAST appx 1 1/4 miles to 78th St. Go NORTH on 78th St to Palm Lane (1/4 mile) then EAST on Palm Lane to 7814.



This residence is a new, custom-built ZERO-Energy home with many energy saving features – including a 3.2 KW PV array with dual-axis tracking and a solar water heating system.



## Fuller Papercrete Project

1 Continental Drive      Tempe, AZ



### DRIVING DIRECTIONS

From the intersection of Scottsdale Rd. and McDowell, travel South approx. 1/2 mile to Continental Dr/Roosevelt St. Turn West onto Continental Dr and continue approx. 3/4 mile to the PeraClub . Enter the gated area and follow the signs to the Papercrete Demonstration site.

This nearly completed 500 ft<sup>2</sup> office structure is constructed of 7 tons of waste paper mixed with other materials to provide a low-cost high-insulation prototype building material. The roof & walls are rated greater than R-30 with the roof approaching R-40, requiring little additional heating or cooling. The facility, which cost about half what conventional construction costs, is expected to consume considerably less electricity and includes monitoring devices for power usage and various structural elements of the building.



## Henson Residence

18223 N 16th Way      Phoenix, AZ



### DRIVING DIRECTIONS

From the intersection of Cave Creek Rd & Union Hills go WEST on Union Hills then turn SOUTH on 16th Way (1 block east of 16th Street) into The Cove at North Canyon development. Bear to the LEFT on 16th Way—home is about 1/4 mile down on the Left.

This residence features a grid-interconnected PV array mounted as a shading entrance canopy which provides 30% of the home's annual energy requirements. The 1.9 KW PV array, with an operational life of 25+ years, will avoid over 100,000 pounds of CO<sub>2</sub> emissions - saving 14 tree acres of forest.



## Lee Residence

209 W Quartz Rock Road      Phoenix, AZ



### DRIVING DIRECTIONS

From the intersection of Central Ave and Happy Valley Rd, go North on Central about 1/4 mile then turn West on Quartz Rock Rd. Home is about 2 blocks down.

This OWNER-designed architect's home is an example of Passive Solar at its best. Proper site and window orientation along with overhangs, wing walls, Low-E glass provide the perfect complement to the R-45 roof system and R-50 exterior walls of concrete-core polystyrene block. A SEER 19 high-efficiency heat pump is used for additional cooling and back-up heating, if necessary. Due to the thermal storage properties of the stained concrete floors and interior masonry walls, back-up heat has not been required yet. Hot water is provided by the passive (no pumps) solar DHW system and all appliances are very energy efficient for effective function with the future PV system. All rooms have access to natural daylight and ventilation to further reduce energy requirements.



## Lo Tempio Residence

30107 N 173rd Place Scottsdale, AZ

### DRIVING DIRECTIONS

From the intersection of Pima Rd & Rio Verde (Dynamite) travel EAST on Rio Verde to 168th St. Turn NORTH on 168th to Dixieletta then turn EAST on Dixieletta. Travel EAST on Dixieletta to 172nd St. and turn NORTH on 172nd St. Go NORTH on 172nd for 1/2 mile then EAST on Windstone Trail and Follow "Solar Tour" Signs to the only white house with a RED metal ROOF (it is quite noticeable).



This new, OWNER-built highly energy-efficient custom home incorporates many unique features to meet LEED certification standards. A unique double-roof system insulated with soy-based eco-friendly foam tops the E-Crete walls and metal studs. Overhangs, Low-E glass and EnergyStar appliances throughout compliment the 6 KW PV System and Solar Hot-Water System with Gray-water reclamation. Custom Radon venting, fiberglass doors and window frames, soapstone stove, engineered wood, titanium roof underlayment and many other features.



## Scottsdale Senior Center

1700 N Granite Reef Road Scottsdale, AZ

### DRIVING DIRECTIONS

From the intersection of Hayden Rd and McDowell, go EAST on McDowell about 1/2 mile to Granite Reef Rd. Turn NORTH on Granite Reef—Senior Center is down one block on the WEST side of the Street.



The new Scottsdale Senior Center is the first city facility to earn a Leadership and Energy and Environmental Design (LEED™) Gold level certification. This is a multi-purpose facility which incorporates energy-effective lighting strategies and both passive and active solar systems.



## Strawbale by Tom Hahn

4801 E Hildago Street NE of Apache Junction

### DRIVING DIRECTIONS

US 60 East to Idaho Exit—Turn left on Idaho (North) go 3 miles to Route 88—Turn right (East) on Route 88 4 miles to Nodak—Turn right (South) on Nodak follow curve to Val Vista—Right (South) on Val Vista to Hidalgo—Right (West) on Hidalgo—last home on left (street dead ends) at State Land.



ECO-FRIENDLY, Contemporary **Minimalism**, VERY UNIQUE structure! Dollars spent on highest quality & efficiency, not `fluff`. Designed & built by nationally renowned, environmental expert & architect, Tom Hahn. Super energy-efficient HVAC, appliances, windows & R-44 walls. Healthy indoor air quality, 100% fresh air capable ventilation, low-VOC products & finishes. Unique construction, steel frame & strawbale infill insulation. Timeless, desert-evolved structure with passive solar design sited on this 1.25 ac. parcel makes the most of the spectacular Mountain View (2 miles from head of Superstitions) and pristine desert vistas. This building is currently on the market but the designer/builder and a representative from the City of Scottsdale Green Building Committee will be on hand to educate visitors and answer questions.

# Arizona Solar Facts

- ☺ Arizona receives MORE sunshine than any other state in the entire country. *National Weather Service*
- ⚙ With current technology, the sunlight falling on just half of Maricopa County could produce all the electricity required for the entire United States. *ETA Engineering*
- ⚙ The amount of energy in sunlight that falls on a Valley house is MORE than the energy that house uses. *Daniel Peter Aiello/Az. Solar Center*
- ☺ There is more solar energy collecting equipment installed in New Jersey than in Arizona. *AZ Corporation Commissioner Kris Mayes*
- ⚙ Worldwide, over a million homes rely on solar energy as their primary or only source of electricity. *ETA Engineering*
- ⚙ In 2003 Arizona had a \$6 billion energy deficit ... this number grows every year. *AzDeptOfCommerce*
- ⚙ Money spent on energy efficiency and passive solar design goes 8 times as far as money spent on solar electric equipment ... even after incentives for solar equipment. *Dan Aiello/Lane Garrett*
- ⚙ All conventional forms of energy (fossil fuels and nuclear) are highly subsidized (funded by taxes) - much more so than renewable energy. *EIA*
- ⚙ The energy stored in the earth's reserves of coal, oil, and natural gas combined is matched by the energy from 20 days of sunshine. *Lee Feliciano*
- ⚙ Simply by proper solar orientation - energy usage can be reduced by 30%. *Lane Garrett/Dan Aiello*
- ⚙ Most new residential construction in Arizona is LESS energy efficient than homes built 50 years ago or than homes built by Native Americans several hundred years ago. *Dan Aiello/Ben Marcus*
- ⚙ Polls show that over 70% of Arizonans are willing to pay an additional \$2 per month to increase the percentage of their energy generated from the sun. *AZ Corporation Commissioner Kris Mayes*
- ⚙ Arizona utilities provide substantial rebates for installation of photovoltaic and hot water heating equipment. (See specific utility provider's website for latest incentives)
- ⚙ There are Federal and Arizona rebates and tax credits for solar equipment and energy efficiency. (See [www.AZSolarCenter.com](http://www.AZSolarCenter.com) for a complete listing of Incentives and Credits)
- ⚙ Arizona has a strong Consumer Protection policy for the sale and installation of solar and renewable energy equipment. *Az. Dept of Commerce Energy Office*
- ⚙ *What are YOU WAITING for?*



## WHO WE ARE

The Arizona Solar Energy Association (ASEA) is the Arizona affiliate of the American Solar Energy Society (ASES). 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 ([www.AZSolarCenter.org](http://www.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 (<http://www.scottsdaleaz.gov/greenbuilding>) continues to draw large attendance. Our speakers' bureau is available to address your organization on many sustainability and solar-related topics.

Your donation supports ASEA efforts. ASEA is entirely a volunteer, non-profit 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.

The Arizona Solar Center, Inc. (AzSC) is a not-for-profit organization dedicated to the implementation and integration of solar, renewable energy and sustainability in Arizona. The AzSC was created by a collaboration of members from the Az. Dept. of Commerce Energy Office; the solar industry (Az. Solar Energy Industries Association - AriSEIA); the State chapter of the American Solar Energy Society (Arizona Solar Energy Association - ASEA); Arizona utilities (APS, SRP and TEP); the educational community (ASU, U of A, NAU); renewable energy and sustainability businesses, and solar

The AzSC has created a website with over 80,000 discrete hits professional education programs statewide Solar and Sustainability tours and open houses; provides workshops at various public and school venues; executed development of down-loadable education materials and teaching/lecture tools; participated in local, regional and national forums re: renewable energy and sustainability; and is evolving a physical center for the purposes of further education as well as exploration and development of energy and resource efficient and appropriate materials and equipment.



[www.azsolarcenter.com](http://www.azsolarcenter.com), currently per month; partners in public and pro-

and lectures, as well as the bi-annual

[www.azsolarcenter.com](http://www.azsolarcenter.com)

## Scottsdale Green Building Program Sustainable Building in the Sonoran Desert

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.

[www.ci.scottsdale.az.us/greenbuilding](http://www.ci.scottsdale.az.us/greenbuilding)

