

2011 SOUTHERN NEVADA SOLAR HOME TOUR



NOVEMBER 5 | 10-4PM

AMERICAN SOLAR ENERGY SOCIETY

S O U T H E R N N E V A D A C H A P T E R

SUNPOWER®

SUCCESS STORY

2007 INTELEGANT AWARD WINNER



Courtesy of Clean Power Systems

SunPower saves the Aguiar's more than \$1,000 per month with clean solar power

John Aguiar, a pool contractor in Yorba Linda, California, knows the importance of energy efficiency. After paying summer electricity bills in excess of \$1,000, he knew his family needed a more efficient way of meeting its electricity needs. To save money and reduce energy consumption, Mr. Aguiar installed a SunPower® Residential Solar Electric System on his home, which produced 700 kilowatt hours (kWh) more energy in month one than the family used, virtually eliminating the family's energy bill. The investment in the SunPower system, which was installed in February 2007, will pay for itself in less than 8 years.

PROJECT OVERVIEW

Location: Yorba Linda, California
Completed: February 2007
System Size: 10.2 kW
PV Surface Area: 800 SF
Number of Panels: 54
Products: SunPower® 215 Solar Panels

BENEFITS

- Eliminates electric bills of \$1,000 during summer months
- Attractive design integrates nicely with existing rooftop
- Fast installation & reliable operation with no maintenance
- Will realize ROI in 8 years
- Will reduce harmful CO₂ emissions by 7 tons annually, which is equivalent to not driving over 17,000 miles

Clean, Efficient,
Greener Than You Think.

Solar water heating provides a clean, renewable source of hot water that helps reduce your carbon footprint and increase your energy savings.

Customers installing qualifying solar water heating systems in conjunction with a natural gas water heater may be eligible to receive rebates.

**The Smarter Greener Better
Solar Water Heating
Program for Nevada**

For residential, small business, school, public and non-profit properties.

REBATES

up to **50%** or up to
\$30,000



For more information on the *Smarter Greener Better* Solar Water Heating Program for Nevada, visit www.solarwaterheatingrebate.com or call toll-free at 1-855-743-1603.



RYPKA RESIDENCE

ORIENTATION

HOUSE:
North

SOLAR:
South

OWNER:
Steve Rypka

FEATURES

- Energy Star rated
- Net-zero energy residence
- 5kW AC PV system
- Solar hot water system
- Passive solar orientation
- PET carpet from recycled soda bottles
- Sun oven
- Daylighting with multiple SolaTubes
- Zero VOC paint
- Organic bedding
- Hybrid vehicles
- Energy efficient lighting and appliances



We are all aware of the serious issues we face today, including the climate crisis, pollution, dwindling supplies of fossil fuels and increasing energy costs. It can often seem that these issues are too big for anyone to have a significant impact on. Well, we do have an impact. Every one of us can be part of the solution, but we need the solution now. That's why I'm grateful for events like the Southern Nevada Solar Home Tour.

Before we had one here, I traveled to Arizona three times to attend solar home tours. First there was Tucson, then a year or so later, Flagstaff and Prescott. Each one was a great experience. I got to meet home owners who were doing things differently, and benefiting from it! Best of all was their willingness to share their experiences with others.

There are often some pleasant surprises on a solar home tour. For example, I'll never forget seeing my first straw bale home. The natural feel of the walls and the thick, inviting window ledges seemed to gently envelope those within. On another occasion I watched in amazement as a Tucson, AZ homeowner proudly displayed his solar heating and cooling system. Yes, in their very hot summers, he cooled his home using passive and active solar technology and design, with very little electricity. I learned a lot from that conversation.

From passive solar design, to water and energy efficiency and of course solar power, each home on a tour has unique combinations of technology, materials and wise use of resources.

The common thread is the enthusiasm of generous homeowners sharing their experiences about the tangible benefits of green living.

We are learning how to live well while at the same time, doing more with less waste. My experiences at solar home tours have been of tremendous and lasting value. I have learned that green living is more about awareness,



attitude and commitment than dollars and cents. That commitment is growing across the globe and a major shift is underway, but at this point, a post-carbon era cannot come soon enough. Just how soon is up to us, but there is some good news that we're making progress.

Technology alone will not save us from ourselves, but it can play a key role. I think photovoltaic (PV) power is a good example. Of all the solar energy technologies, PV is perhaps the most elegant. It converts sunlight directly to electricity, with no middle-man so to speak. PV does not use water (a real plus in the arid Mojave Desert) and rarely needs maintenance. Panels are so robust that they come with performance warranties of twenty years or more.

Global implementation is growing rapidly and technological advances are improving performance while reducing cost. With incentive programs that help level the playing field against heavily-subsidized fossil and nuclear power, there has never been a better time to begin planning a personal transition to and energy-independent life. We can all do our part.

Soon, electric cars will be common and

many will be charged at home using roof-mounted PV systems. I don't know about you, but I can't wait! After a lifetime of buying gasoline and paying electric bills, it's nice to know that change is in the air. It's in the form of sunlight - the freshest, cleanest and most abundant energy source we've ever had, especially here in Southern Nevada.

I hope you enjoy the adventure while learning how others are making the most of it.

Steve Rypka

Green Living Consultant and Columnist

GreenDream.biz





VILLA TRIESTE BY PULTE HOMES

Sales Office and Model Homes open 7 days a week, 10am–6pm, except Wednesdays from 12pm–6pm. Daylight Savings Time open 'til 5pm.

ORIENTATION

HOUSE:
Location varies

INSTALLED SOLAR:
Location varies

ADDRESS:
1918 Morro Vista Drive,
Las Vegas, NV 89135

PHONE:
(702) 834-5677

FEATURES

- LEED for Homes certified
- 3-year heating and cooling energy usage guarantee, as low as \$69 per month*
- HERS ratings ranging from 36 – 40* (per floorplan)
- Integrated solar roof paneling by SunPower®
- Tankless hot water heaters
- ecoConcierge energy and water monitoring systems
- Blown-in cellulose insulation
- Conditioned attics
- 15 SEER-rated air conditioning systems
- Low-E, dual pane, aluminum framed windows

*Home Energy Rating Scale by the Residential Energy Services Network (RESNET). RESNET standards are recognized by the U.S. government for such programs as federal tax incentives, the Environmental Protection Agency's ENERGYSTAR program, and the U.S. Department of Energy's Building America Program. More at resnet.us.

Estimated monthly costs provided is for Roma Plan at Villa Trieste. Based on NV Energy and Southwest Gas rates as of May 2011. Guarantee not of cost, but of usage. Refer to third party RESNET® certified energy auditor guarantee for details.



BEYE RESIDENCE



ORIENTATION

HOUSE:
South

PHOTOVOLATICS:
South

SOLAR WATER HEATER:
East

PLANS:
Change to micro-inverters to increase efficiency of photovoltaic system

FEATURES

- 3.7 kW photovoltaic system installed September 2011
- Glycol closed-loop solar domestic water heater system
- LED and CFL external and internal lighting
 - o Reduces external lighting wattage from 1200W to 60W
- Radiant barrier in attic with R39 insulation





MOREDOCK RESIDENCE

ORIENTATION

HOUSE:
North

SOLAR 1:
South

SOLAR 2:
East

TOUR NOTES:
Gate code: #7433

FEATURES

- LEED for Homes certified
- 5kW system installed in 2009
- 5kW system installed in 2010
- Solar thermal pool system installed in 2006
- Blanketed water heater
- Extra Styrofoam insulation around garage refrigerator and freezer
 - o Estimated \$50/month savings in summer months
- Upgraded air conditioning system from 8 SEER to two 14 SEER systems.



HULL RESIDENCE

ORIENTATION

HOUSE:
South

SOLAR:
East

FUTURE PLANS:
Solar water heating pool

FEATURES

- 6.11 kW system installed August 2010
 - o 16-24 kWh in winter, 39-45kWh in summer
 - o Previous monthly electric bills were \$113-\$256
- Security screens with shading features
- LED and CFL lamps
- Little efficiencies around the house have allowed homeowner to reduce winter daily use to 9kW
- Accumulated credits quick and has paid only the hook up fee after the second month
- System cost \$32,000. \$12,000 back from NV Energy, and \$6,000 back from federal tax credit. Expected Payback time = 5 years





LEWIS RESIDENCE

ORIENTATION

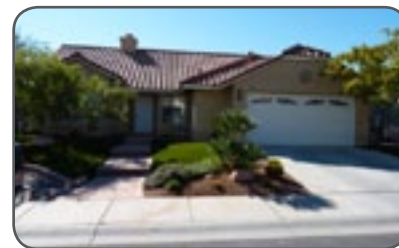
HOUSE:
North

SOLAR:
South

FUTURE PLANS:
Heat pump water heater

FEATURES

- 10 kW photovoltaic system installed in September 2010.
 - Last 10 power bills have been just the hook up charge.
 - Converted to electric dryer
 - Payback time of 6-8 years
 - Double inverter system
- Artificial turf and drought resistant landscape
- Variable speed pool pump
- E-shield radiant barrier in attic with increased insulation
- 16 SEER air conditioning unit



Radiant barrier in attic

Double Inverters.



KARDEKE RESIDENCE

Summer cooling bill decrease attributed to solar panel installation

ORIENTATION

HOUSE:
West

SOLAR:
East

This retired couple started noticing electricity bills in 2009 that were reaching over \$500, and started to look for solar options. They admit that they run the air conditioner for their 2300 sq.ft. home a lot during the summer since they are home all day. They had their system installed in the fall of 2010, and it took them awhile to

build up the credits they needed to be energy neutral, but by March they were paying only the monthly hook up fee. In the late summer months, when the heat is especially oppressive, they once again use more energy than they produce, but the bill is far less than the \$500 they had paid before their system was installed. The photovoltaic system and its metering devices have helped them educate themselves about energy efficient behavior and technologies. They love bragging about their summer electricity bill to their neighbors. They estimate their payback

time for the system to be 6-7 years. They were happy with the quick installation, and the low-profile of the photovoltaic system. They could not be part of the tour, but eagerly wanted to share their positive experience with their solar panels.

“We have nothing negative to say about it.”

“We love our solar system. We absolutely love it. We are just tickled to have it.”



Discrete wiring under soffit





LAZARECK RESIDENCE

Before installing a solar PV system on our 2,500 sf home, we improved the performance of our house by taking a whole-house approach. Treating a home as a system yields more cost effective results than focusing on one element like air conditioning while improving our energy efficiency, comfort, health, safety and durability. With the average single family home in southern Nevada using over 14,000 kWh/yr, our home with a spa and outside refrigerator consumes 9,900 kWh/yr. The 5.1 kW Solar PV Array generates over 11,000 kWh/yr making our home Net Zero electric. The gas appliances when warranted will be replaced with electric models eliminating the use of all fossil fuels

ORIENTATION

HOUSE:
North

SOLAR:
South

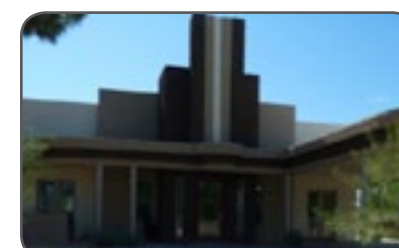
FUTURE PLANS:
Heat pump water heater

FEATURES

- Reduced Baseload Artificial turf and drought resistant landscape
- Reduced Heating and Cooling Loads
- Reduced Water Usage
- Improved IAC (indoor air quality) and Reduced VOCs
- Green practices: recycling, vegetable garden and compost



FECCHINO RESIDENCE



ORIENTATION

HOUSE:
North

PHOTOVOLTAICS:
Flat Roof with slight westward tilt

SOLAR DOMESTIC WATER HEATER:
West

FEATURES

- 5kW Photovoltaics
- Solar thermal water heater with recirculation pump and timer
- 4 Solar tubes
- Solar roof vents
- Made from recycled materials
 - o Support poles on front patio are from the Nevada Test Site
 - o External walls are made from concrete blocks reclaimed from a concrete convention

- Foamed insulation on exterior of concrete walls and in all walls inside the house for higher efficiency and zoned air conditioning.
- 18 SEER air conditioning and evaporative cooling inside insulated garage.
- Duct work within insulated air of house rather than attic space
- Windows are 366 Glass for better insulation – From Oregon
- Overhang for patios provides awning affect to windows on north, south, and west
- Minimal windows on east and west faces of house.
- Waterless urinals
- Water from evaporative cooling is recycled to xeriscape landscaping.
- LED and CFL lighting in & out





Solar NV strives to educate Southern Nevadans about the benefits of renewable energy and to encourage and promote the use of sustainable energy technology.

Solar NV helps raise awareness of solar energy and energy related issues through our monthly meetings and annual events.

Please join Solar NV the Southern Nevada chapter of the American Solar Energy Society!

Visit our website at solarnv.org and ases.org

Don't waste all your energy trying to do your own advertising.

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