

SOLAR SHOWPLACE

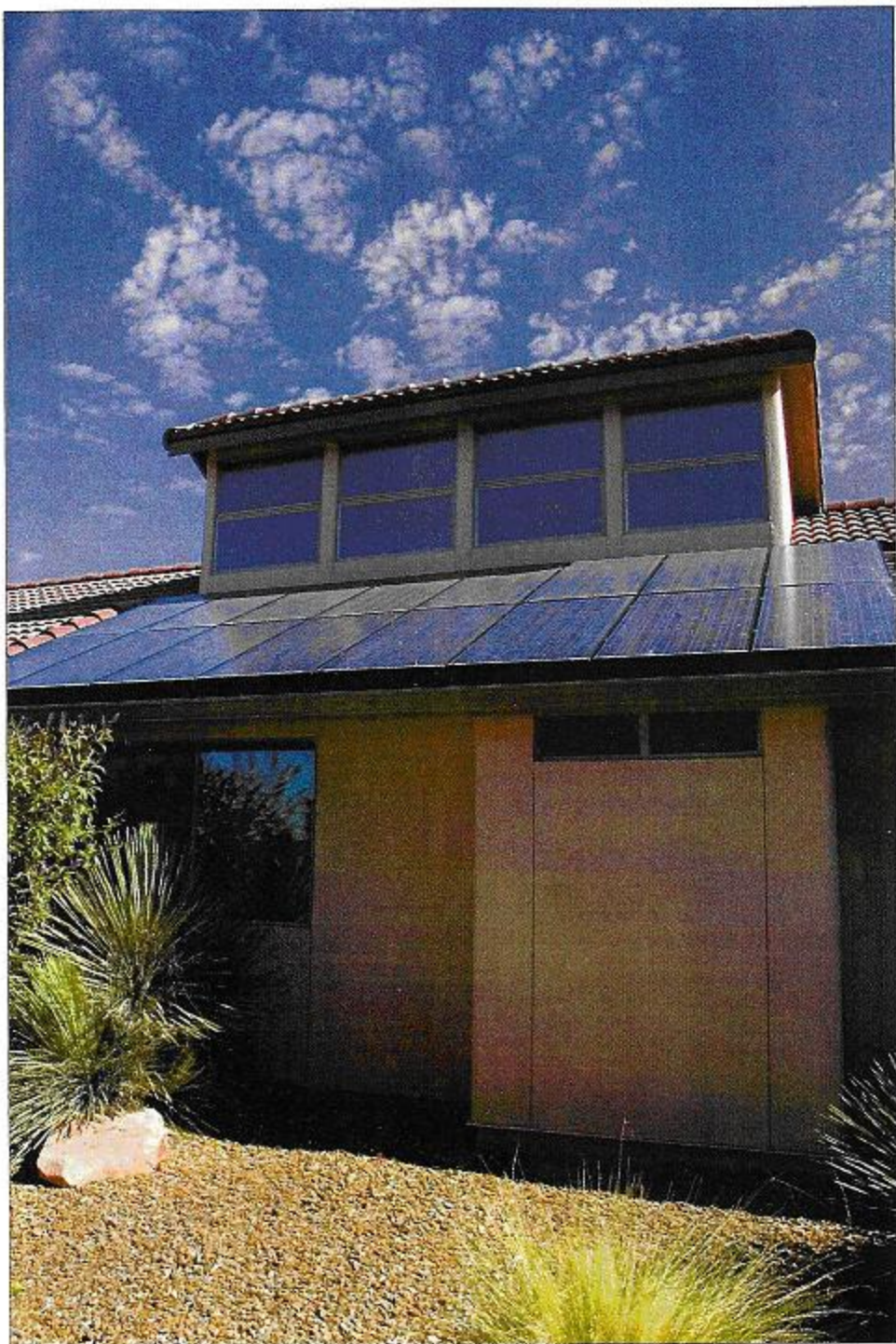
TEXT AND PHOTOGRAPHS BY CHERYL HARTZ

Four years ago, architect Carl Ramsey built an energy-efficient demonstration house in the Village of Oak Creek to show clients what can be done.

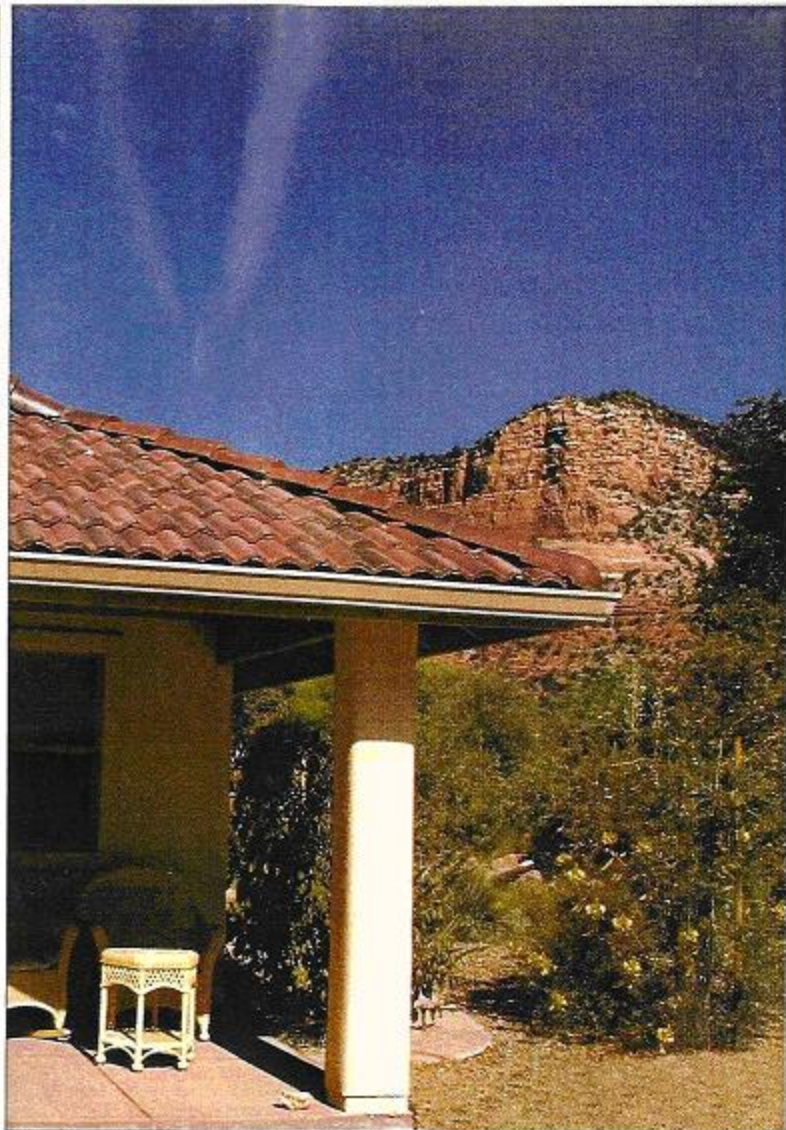
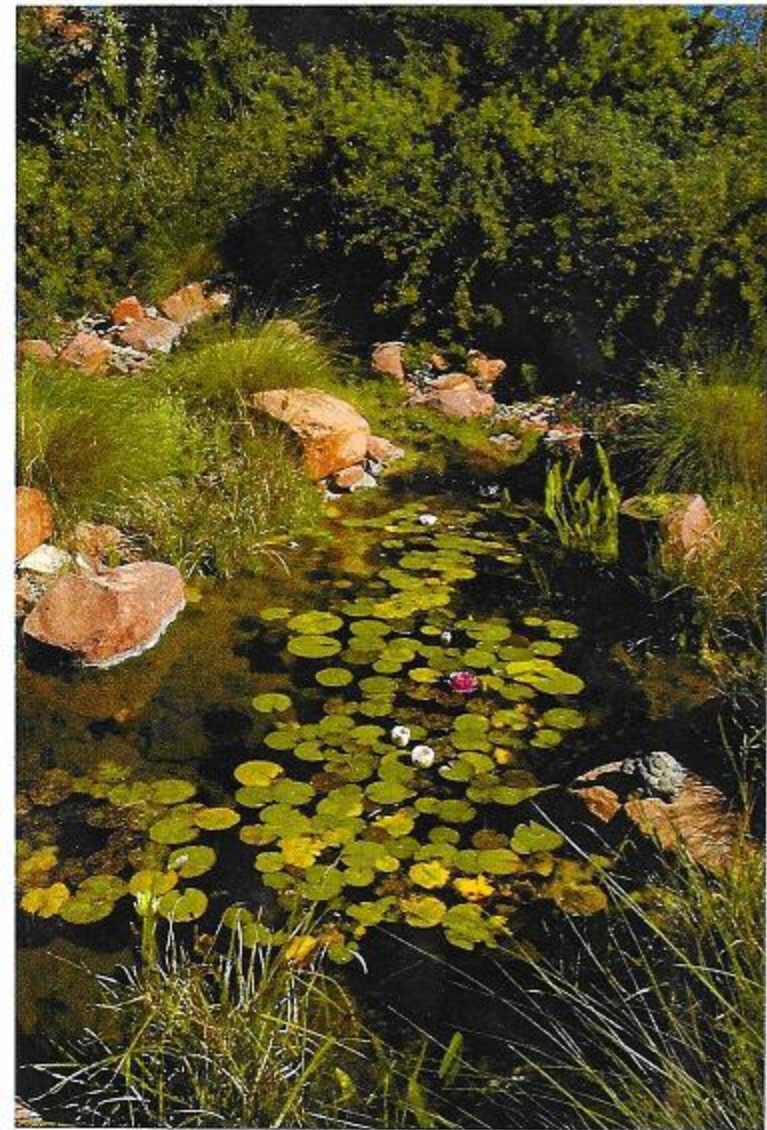
He laid out the house with the long dimensions facing north and south, allowing good opportunities for collecting solar power and providing natural lighting. That means fewer light fixtures, and he uses compact fluorescent bulbs, which he said are 75 percent cooler than incandescent. These features save heat, cut down air-conditioning use and increase the comfort level.

The only way to seal the house well, Carl said, was to use blown-in insulation, either foam or cellulose. The tight seal in conjunction with photovoltaic panels on the roof mean low energy needs. Hooked into the APS grid with a bidirectional meter, Carl gets a buy-back from APS for excess energy. Rebates and state and federal tax credits allowed him to recoup much of the installation cost.

Windows, including the clerestory windows above the solar panels, are insulated low-E glass with microscopic metal scattered onto the glass to reflect radiated sunlight and lessen the heat load. "Windows are the weakest link," Carl said. "The best you can buy is R-3.



Clerestory windows above solar panels help make for an energy-efficient home in the Village of Oak Creek.



A waterfall and lily pond with a red mountain backdrop are part of an outdoor living space at Carl Ramsey's demonstration house.

You should always use them on the north and west sides." Protecting the west side with overhangs, shade structures, trellises and trees all reduce cooling bills.

Faucets and showerheads are low-flow and toilets low-flush. ENERGY STAR appliances further reduce power requirements.

The demonstration house exemplifies how to correctly install stucco, the architect said. Stucco has microscopic holes that allow water in, so a way is needed to let it out. Installing a "weep screed," or wall flashing, holds stucco a minimum of four inches off the ground to prevent rot and mold. By using control joints every 12 to 14 feet, each section of stucco acts as a separate panel for contraction and expansion, so stucco won't crack.

"Three things affect indoor air quality: caulking and adhesives, paint

and carpet. The proper way to control IAQ is to use the right materials to begin with," Carl said. He called carpet one of the more archaic materials, because it harbors mites, bacteria, mold and even lead. Basic vacuuming simply throws the microscopic particles back into the air. The demo house contains all hard-floor surfaces using natural clay saltillo tile. Easily washed throw rugs add color.

All framing was sealed after installation to quell emissions from turpentine or formaldehyde. Paint contains no volatile organic compounds.

Special electronic and activated charcoal HEPA (high-efficiency particulate air) filters on the heating and cooling systems run through an auxiliary unit piggy-backed into the return air system.

He installed piping for rainwater harvesting that could collect all the

water needed, but doesn't have the system in place.

The furnished house provides a home away from home when Carl attends meetings with the Northern Chapter of the U.S. Green Building Council. "Green has got to happen and it will happen. Let's embrace it," Carl said. ▼

RESOURCES

Architectural and
Environmental Associates Inc.
Flagstaff, 928-214-0005

US Green Building Council
www.usgbc.org