

Architect:

Solar Strategies
Development Corporation
P.O. Box 63314
Philadelphia, PA 19114
Phone: (215)464-4780
solarstr@bellatlantic.net
http://solarstrategies.com

Owner:

Private Residence

Project Cost:

n/a

Square Footage:

3000 sf

Cost per Square Foot:

n/a

Completion Date:

spring 2001



Project Description:

The home is modular construction consisting of four modules. After its debut on the National Mall, it was moved to its permanent location in a rural area of Purcellville, Virginia.

The home was placed on an insulated full basement constructed from Superior Wall™ precast concrete panels. A building-integrated PV system was added to a standing-seam metal roof on the home and a detached garage was built to the east of the home. Collectors for an active solar water-heating system were placed on the roof of the garage along with a second PV array. The house was equipped with a ground-coupled heat pump system that supplies heating and cooling as well as backup water heating.

Green Features:

- **Passive-solar design:** Direct-gain passive design with cement board and tile floors used as thermal mass; south-facing low-e windows; 2-foot-wide overhangs; cross ventilation with operable windows. Sun-Tube skylight provides daylighting in master bathroom.
- **Insulation:** R-45 ceiling, R-24 exterior walls.
- **Photovoltaics:** The Solar Patriot's family of five uses 24 kilowatt-hours (kwh) of electricity per day, compared to the average of 55 kwh for conventional houses of its size. A 4-kilowatt (kw) Uni-Solar thin-film array on the house's roof and a 2-kw array of BP Solar modules on the garage roof meet most of their electricity needs. Eight 200-amp-hour batteries provide backup power. When state regulations allow, the Hathaways expect to sell some of their green energy back to the utility company.
- **Heating and cooling:** ECR Technologies Earthlinked geothermal heat-pump system; Heat-N-Glow wood-burning fireplace insert.
- **Water heating:** Closed-loop system, consisting of two 4-by-61/2-foot Solargenix solar panels. (In the summertime, the panels produce 90 percent to 95 percent of the family's hot water needs; in the winter, 40 percent to 45 percent.) Backup is a hot-water loop off the geothermal system.
- **Water conservation:** Low-flow showerheads and faucets; low-flush toilets.
- **Other efficiency features:** Ceiling fans and compact fluorescent lightbulbs.

