

# Berea Solar Tour

Saturday, October 3, 2009

2009 National Solar Tour  
Berea, Kentucky  
Saturday, October 3

Organized by



In Affiliation with



And With Support From



Sustainable Berea, in affiliation with the American Solar Energy Society, is pleased to offer residents of and visitors to Berea the opportunity to visit homes and businesses that use solar energy. By viewing these systems up close and talking with the owners about cost and performance, you can make a better judgment as to whether solar energy is right for your house or business.

On this year's tour, you can see solar electric (photovoltaic) and solar hot water systems, passive solar and solar-tempered house designs, daylighting, wood stoves, energy conservation techniques, natural building materials, a wind turbine and even a solar oven. Learn about "net metering" and how some of your neighbors are supplying electricity to the grid.

## How to Participate in the 2009 Berea Solar Tour

1. Attend one or more of the three solar workshops
2. Visit some of the 13 solar homes and buildings open to the public from 11am to 4pm
3. Take a guided bus tour of some of the solar homes
4. Join the car caravan to an off-the-grid home in Garrard County
5. View pictures of many of the sites at [www.sustainableberea.org](http://www.sustainableberea.org)

Solar energy is an essential tool in the effort to increase Berea's resilience – its ability to withstand and adapt to external stresses and shocks. Installing solar systems in Berea creates local jobs, and locally-produced solar energy reduces the flow of money out of the community to pay for energy. Learn more. Join us for the Berea Solar Tour.

## Workshops and Presentations

*Free; no registration required.*

An overview of home solar energy

10am to 11am

Public Library, 319 Chestnut Street

Thinking of adding solar energy to your house, and interested in an overview of the many options? Join Mark Jeantheau, owner of one of Berea's most complete solar homes, as he describes photovoltaic, solar hot water, passive solar and other possibilities for tapping into this renewable energy source. Mark will also touch on issues such as reducing energy use as a first option, dealing with the utility company, locating and choosing an installer, financing and state and federal incentives. Get the basics here, then visit some of the homes on the solar tour to see some systems "in person."

Home energy conservation

12:30pm to 1:30pm

Appalachian Center Gallery, 205 North Main Street

Before you add solar kilowatts or Btus to your household, consider "nega-watts." Reducing your energy use first will decrease the size and cost of your solar systems. Architect and builder Jason Coomes will take you on a pictorial hunt for energy loss in an older home. In this often humorous presentation, Jason will show how a caulk gun, tape, socket covers and other inexpensive materials can give you large energy savings and quick pay back. Presented in the beautiful Appalachian Center Gallery, powered by Berea's largest photovoltaic array.

Clean energy, green jobs

4pm to 5pm

302 Center Street

East Kentucky Power Cooperative is proposing to build a new 278 megawatt coal-burning power plant on the Kentucky River, near Trapp, in Clark County. Members of Kentuckians for the Commonwealth will describe how an equivalent investment in energy efficiency and renewable energy could generate more jobs and greater economic development while meeting the area's energy needs.

## Guided Tours

Bus Tour of Selected Berea Sites

1:30pm to 4:00pm

Meet at Appalachian Center Gallery, 205 North Main Street

*No charge, but seats are limited and reservations are required*

Josh Bills, former professional solar installer and now the Energy Specialist with the Mountain Association for Community Economic Development (MACED), will give a guided tour including the following sites: Appalachian Center Gallery, Olson residence, SENS House, Hope Estates, and ending at the Boyce/Maxson/Abbot residence. Having worked on more than 100 solar installations – including some of the ones on the tour – Josh has a thorough practical knowledge of solar systems and can answer any of your questions.

*To reserve a seat on the bus tour, call 985-1689 or email [info@sustainableberea.org](mailto:info@sustainableberea.org) by **September 21***

Guided car caravan to an off-the-grid home

Leaves at 4:30pm from the Boyce house, 304 Center Street

*No charge, no registration required*

Josh Bills will lead a group of personal vehicles to the off-the-grid home of Don and Dina Hess in Garrard County (about a 20-minute drive from Berea). This passive solar home features a 3564-watt photovoltaic system with 80-kWh battery storage; evacuated tube solar water heating system for domestic water heating and space heating; 3000-watt wind turbine.

*This site is not one of the open houses; it can be visited only as part of the guided tour.*

## Open Houses

The following homes and buildings can be visited any time between

11am and 4pm  
Saturday, October 3

Please respect home owners by visiting only during the tour hours of 11am to 4pm, and only on October 3.

Use this guide and map for directions to the solar tour locations. “Solar Tour” yard signs will mark each site.

### A. Sustainability and Environmental Studies (SENS) House

*121 W. Jefferson Street, Berea*

View a Berea College student residence (the Margaret Austin SENS House) that incorporates a variety of high tech and low tech approaches to energy and water use efficiency. Highlights: 1.5 kW grid-tied photovoltaic system on a tracking mount; 32 sq. ft. drainback solar water heating; passive solar design including attached greenhouse for solar heat and greywater treatment; cistern with filters and UV-sterilizer supplies all house water from roof-top capture of rain; roof of structural insulated panels (SIPS); Sun-Mar composting toilet; portable solar oven.

<http://www.berea.edu/SENS/ecovillage/senshouse/default.asp>

### B. Natural Building Shelter

*121 W. Jefferson Street, Berea College Ecovillage*

This six-sided one-room building is constructed of natural building materials such as cob and straw-clay and has a living roof. The radiant floor heating system is supplied by a solar hot water panel with an independent photovoltaic panel for the water pump, which will only run when there is adequate sunlight and the water temperature is sufficient for heating. The building is designed to take advantage of passive solar heating with the aid of a south-facing mass wall, and solar cooling using a ventilating cupola. A 100-watt photovoltaic panel and battery provide power for indoor/outdoor LED lighting. Surrounded by an edible landscape including espalier fruit trees, grape arbor, cane berries, and perennial herbs.

### C. Ecological Machine

*121 W. Jefferson Street, Berea College Ecovillage*

This 2048 ft<sup>2</sup> greenhouse is currently undergoing conversion from a waste treatment facility to an aquaponics (aquaculture and hydroponics) facility. The 6000 ft<sup>3</sup> of gravel in the greenhouse base and 21,000 gallons of water provide thermal mass to dampen temperature swings. Swamp coolers, ventilation fans, and natural gas heaters provide supplemental heating and cooling. Anticipated products of this Berea College student project include catfish and tilapia, a variety of vegetables and herbs, starter plants, and vermi-compost (worm compost).

### D. Ecovillage Commons House

*116 Washington Avenue, Berea*

A drainback solar water heater with three solar collectors provides radiant floor heating for the building. Structural insulated panels (SIPS), low emissivity windows, bi-directional ceiling fans, solatubes, and compact fluorescent lighting are among the building components increasing energy-use efficiency.

### E. Wilson Residence

*111 Jefferson Street, Apt. 44*

A retrofit of a conventional electric hot water system (40-gallon tank) to add a solar thermal drainback system with an evacuated tube collector.

### F. Olson Residence

*199 Adams Street, Berea*

See how a variety of solar technologies can be added to a typical ranch house. Highlights: 1925-watt grid tied photovoltaic system; 40 sq. ft. drainback solar water heating; Suntube skylights; solar-tempered through addition of south-facing glazing; double-glazed, Argon-filled, low-emissivity windows with R-value of approximately three; thickening of some existing walls to achieve R-40 insulation.

### G. Appalachian Center, Bruce Building

*205 North Main Street, Berea*

A 66 panel, 15000-watt photovoltaic array generates much of the electricity used to power Berea College's Appalachian Center. An exhibit in the Center's gallery describes the solar system and displays current and cumulative electricity production. The display also illustrates the relationship between energy use, resource extraction, and the health of Appalachia.

## H. Boyce/Maxson/Abbot Residence

*302/304 Center Street*

This 4200 ft<sup>2</sup> house was planned, built and shared by two families, 2500 ft<sup>2</sup> on one side and 1700 ft<sup>2</sup> on the other. House-wide features: solar water heaters, metal roof, hardy plank siding, geothermal HVAC, passive solar design, day lighting, ceiling fans in every room, builder attention to energy efficiency (especially the building shell), highest energy star rating (5 Star Plus), HERS index 29, all Energy Star appliances and light fixtures, emphasis on materials that are nearly local and have recycled content. The 1700 ft<sup>2</sup> side has a 2.66 kW grid-tied photovoltaic system.

## I. Ukeiley/Crowe Residence

*507 Center St, Berea*

Typical older single family home in in-town neighborhood with well established vegetation has been retrofitted with a small PV system that meets almost all of the home's electric needs on an annual net basis. Highlights: 1.2 kW grid intertied PV system that uses all black, high efficiency PV panels and high efficiency inverter. Also, solar powered attic fan, and natural gas-fired tankless water heater.

## J. Reedy/Clemons Residence

*2593 Hammonds Fork Rd, Rockcastle Co.*

This geodesic dome makes a unique, off-the-grid home. Highlights: Passive solar design; on-demand propane water heater; 350-watt off-the-grid solar electric system-ground mounted with manual tracking. Very efficient small 7.5 cu. ft. electric 12-volt refrigerator, and many 12-volt DC appliances, including compact fluorescent lights, ceiling fan, and water pump. Future plans include a micro-hydro system to supplement current solar electric system.

Directions: From Berea, take KY 21 east toward Big Hill. Go approx. 5 miles until road ends. Turn RIGHT onto US 421. After you go up Big Hill turn RIGHT (just after passing the Rockcastle County sign) onto Burnt Ridge Rd. Go about 0.25 mile and turn LEFT onto Hammonds Fork Rd. When the road flattens out, look for a drive with two red wagon wheels and two green windmills on the right. At the next driveway turn RIGHT. Park at the green gate at the end of the gravel drive.

## K. Robertson Residence

*1248 Scaffold Cane Road*

Large family solar water heating system; 80 sq.ft. collector, 120 gallon tank, drainback system with heat exchanger in the drainback tank.

Directions: 1.5 miles from Boone Tavern, on left.

## L. Appalachia – Science in the Public Interest (ASPI), Demonstration Center

*50 Lair Street, Mt. Vernon, KY*

This office building incorporates an attached greenhouse, a propylene glycol closed-loop solar hot water system, a net-metered grid-intertied 2.7 kilowatt solar photovoltaic system, and raised-bed organic vegetable and pollinator gardens. The net metered PV system was the first in Kentucky and supplies 35% of the building's electricity. Phone: (606)256-0077

From the North:

- Take I-75 South to Exit #62 (Mt Vernon/Renfro Valley)
- Turn Right onto US 25.
- Travel 0.7 miles to your first stop light.
- Turn Left at the light (continuing on US 25). Travel 0.7 miles to School Street.
- Turn Right onto School Street.
- As you go around the curve on School Street, it becomes Williams Street.
- Turn Right at the second street on your right, Lair Street. We are the first building on the right – a green painted building with solar panels visible from the road. Park in the designated spaces for the Tour.

From the South:

- Take I-75 North to Exit #62 (Mt Vernon/Renfro Valley)
- Turn Left onto US 25.
- Follow the same directions as "From the North" from the third bullet point on.

## M. Roselli Residence

*104 Cherry Road Court*

Older single-family house in in-town neighborhood has been fitted with a solar hot water system that uses a solar photovoltaic panel to run the pump. The house has a metal roof and double-cell thermal blinds to conserve energy. A passive solar room was added in 2007. A whole-house fan is used to take advantage of the cool nights in Kentucky. All lights are compact fluorescent. Clothes are hung out to solar dry.

## Sources of information on renewable energy for the home, and home energy efficiency

American Solar Energy Society  
<http://www.ases.org/>

Kentucky Solar Partnership  
<http://www.kysolar.org>  
Information on local workshops, solar installers, and financial incentives for home solar installations.

The Tax Incentives Assistance Project  
<http://www.energytaxincentives.org>  
Information on federal income tax incentives for energy efficient products and technologies.

Database of State Incentives for Renewables and Efficiency  
<http://www.dsireusa.org>  
A comprehensive source of information on state, local, utility, and federal incentives and policies that promote renewable energy and energy efficiency.

U.S. Department of Energy: Energy Efficiency & Renewable Energy  
<http://www.energysavers.gov>  
Information on appliances, materials and actions to reduce home energy use and make use of renewable energy.

The Carbon-Free Home: 36 Remodeling Projects to Help Kick the Fossil-Fuel Habit. Stephen and Rebekah Hren, 2008. Chelsea Green Publishing.

The Kentucky Solar Energy Guide. Andy McDonald and Joshua Bills, 2006. Available [http://kysolar.org/ky\\_solar\\_energy\\_guide](http://kysolar.org/ky_solar_energy_guide)

Second Annual Madison County Home Energy Expo—March 13, 2010 at the EKU Perkins Building. Learn about energy efficiency, renewable energy, and local energy businesses. This event is coordinated by the UK Cooperative Extension Service of Madison County, call 859-623-4072 for more information.

# Sustainable Berea

## VISION

A vibrant, self-reliant city known for its strong local economy, regional food system, minimal use of fossil fuels, and engaged, skilled citizenry.

## MISSION

To increase Berea's resilience – its ability to withstand external economic and environmental shocks – by partnering with other community groups and individuals to re-localize our economy, food system, and energy sources while radically reducing the city's reliance on fossil fuels.

## PROGRAMS

Sustainable Berea's members engage in a variety of activities designed to strengthen our households, neighborhoods and community. These include the Edible Yard Project, which facilitates conversion of lawns to food gardens and mini-orchards. Sustainable Berea manufactures and sells to its members at low cost 50-gallon rain barrels and wooden raised bed frames. Other projects promote water and energy conservation, and alternative energy. The Household Resilience Project focuses on actions that individual families can take to increase the resilience of their homes, while Transition Town Berea emphasizes community-wide planning for a future in which Berea not only sustains itself, but thrives.

Sustainable Berea

859.985.1689

[www.sustainableberea.org](http://www.sustainableberea.org)