17th Annual Metro Washington, DC
Tour of Solar Homes & Buildings

October 6 & 7, 2007
11 am - 5 pm

Sponsored by
Montgomery County Department of Environmental Protection
Maryland Energy Administration
Virginia Solar Council
MD-DC-VA Solar Energy Industries Association
Potomac Regional Solar Energy Association
Sierra Club

www.solartour.org

This guide is your ticket to the homes

STANDARD SOLAR®

We Put The Sun At Your Service

Residential Solar Energy Systems

for the Washington Metropolitan Area

Enjoy Clean Energy

Lower Your Electric Bill

Guard Against Rate Hikes

Reduce Your Carbon Emissions

Ask about the Federal Tax Credit and State Incentives

1-888-GRID-TIE

(1-888-474-3843)

www.standardsolar.com metrodc@standardsolar.com

2007 SOLAR TOUR OF HOMES

Welcome to the 17th Annual Metro Washington, D.C. Tour of Solar Homes and Buildings. Part of the American Solar Energy Association's National Tour of Solar Homes.

Tour Organizer John Lippert and his solar home in Maryland

Thank you for taking part in what we hope will be an exciting and informative tour of solar and environmentally friendly homes. This guide book will provide you with information and directions to the homes that are showcased throughout the Washington DC Metropolitan area.

It will also be a handy reference for those considering the step up into the world of solar energy. With articles and success stories from leading experts in the industry and ads from local area installers. We have also included a listing of credits and incentives for each locality.

Because the homes are spread throughout the metropolitan area, we suggest that you choose the homes and plan your tour in advance to maximize the number of sites you will be able to see. We have included different homes on each day of the tour, so make sure your plans include the homes on the correct day. For those who like to take in the scenery by bicycle, we have an included a bike route for each day. We hope you will come away with an appreciation of how and why each of these buildings was developed and an understanding of their features. Consider incorporating these energy saving features in your own present or future solar home.

"…conserving energy offers us a way to do our part to address acid rain, global warming and fossil fuel usage so that we may preserve our heritage for future generations."

Just as important as the financial benefits is the minimal impact solar and energy efficient homes have on the environment. Finally, conserving energy offers us a way to do our part to address acid rain, global warming and fossil fuel usage so that we may preserve our heritage for future generations.

Enjoy the tour!

CONTENTS

Washington, DC Solar Tour
www.SolarTour.org

17th Annual Tour of Solar Homes and Buildings

The Annual Solar Tour of Homes is organized by a staff of dedicated inviduals to educate the public on the positive aspects of Solar Energy.

2007 SOLAR HOMES TOUR STAFF

Charlie Garlow - Chairman
Jeanie Osborne - Tour Coordinator
Al Sobel - Treasury
Nelson Buck - Advertising
Steve Gorman - Public Relations
Peter Lowenthal - Solar Policy
Sergio Obadia - Solar Technology
Chip Gribben - Guide Design/Website
Monica Gribben - Editor

CONTRIBUTORS

Kaye Brubaker
Eric Coffman
Jim Crowley
Charlie Garlow
Chip Gribben
Tim LaRonde
Peter Lowenthal
Ron Resch
Lisa Wright

GUIDE DISTRIBUTION OUTLETS

REI-Bailey's Crossroads
REI-Fairfax
REI-College Park
REI-Tyson's Corner
Greenbelt Co-op
Common Market
Future Green
Summer Delights

Prining and production by Eric Coffman, Montgomery County Department of Environmental Protection.

For information on the Washington DC Solar Tour of Homes contact Charlie Garlow at charliegarlow@solartour.org

Representative Roscoe Bartlett
6th District of Maryland

Welcome Message from Congressman Roscoe Bartlett

As an engineer and a scientist, I know there's no comparison to being on site to observe and talk with the designers and implementers of innovative technology. That is why I encourage you to attend the Metropolitan Washington DC Tour of Solar Homes on October 6-7, 2007. I started studying energy closely more than 30 years ago when I was a Professor. Subsequently, I designed and built my own solar-powered home that is off the grid. I also built approximately 50 passive solar homes in Frederick County.

There are more and more reasons for homeowners to consider buying solar power as a supplement or replacement for your home. Conventional fossil fuel energy sources are increasing in costs and produce pollution. Technology advances have improved efficiency and ease of use while reducing capital and operating costs for solar power. Solar thermal water heating has a very short payback period and is cost-competitive compared to natural gas or electricity. Solar power as a distributed energy source will eliminate the potential for loss of power from blackouts. There are also federal and state tax benefits for renewable solar power. There are also increasing opportunities to sell surplus power generated and fed into the grid.

Whether you are interested in exploring solar power as an option, are concerned about energy or appreciate home design and architecture, I am sure that you will enjoy the Metropolitan Washington DC Tour of Solar Homes.

Congressman Roscoe Bartlett
House of Representatives
6th District of Maryland

Congressman Bartlett with members of the University of Maryland design team in front of their entry in the 2005 Solar Decathlon national competition.

Welcome to the Tour

October 6-7, 2007
Open 11:00 am to 5:00 pm

This guidebook is your ticket for entry to the homes. One guide is required per household. Don't forget to bring the guide to each location and keep it handy as a reference for building your own solar home. To navigate your way around we have provided directions to each location organized by day and have provided a map and grid coordinates from the latest edition of the *ADC Book of Street Maps*.

PLANNING YOUR TOUR

Take a few minutes to browse through the guide. Each home has a description and directions to make it easier for you to select which homes to visit. We've also included a handy map in the center of the guide to help you plan your trip.

GETTING AROUND

The tour is easily accessible by car but many of the locations around the Beltway are also convenient to Metro. Directions from Metro stations are provided in several of the location descriptions.

Enjoy the fresh air and take in the tour by bicycle. See the *Bike Tour* section below for details.

THINGS TO SEE

We have a large variety of homes and buildings this year including homes with earthen roofs and straw bale walls, green homes incorporating the latest environmentally friendly building techniques, technology and appliances. And of course, passive solar homes and solar powered homes featuring an array of photovoltaic panels and solar hot water systems. Also look for earth friendly electric vehicles that will be at several of the sites. Some of which charge from the home's solar systems.

A garage in DC with a green roof

This home on the tour features 36 PVL laminate panels from UniSolar

TALK TO THE EXPERTS

If you are considering a solar home, the tour is the best place to get information. And the best people to ask are the ones who are the pioneers and have endeavored to install a system themselves or with a contractor. Feel free to ask the homeowners about their systems.

JOIN THE TOUR

If you have a home you would like to include in a future tour contact Tour Chairman Charlie Garlow at charliegarlow@solartour.org.

Visit our website at www.solartour.org.

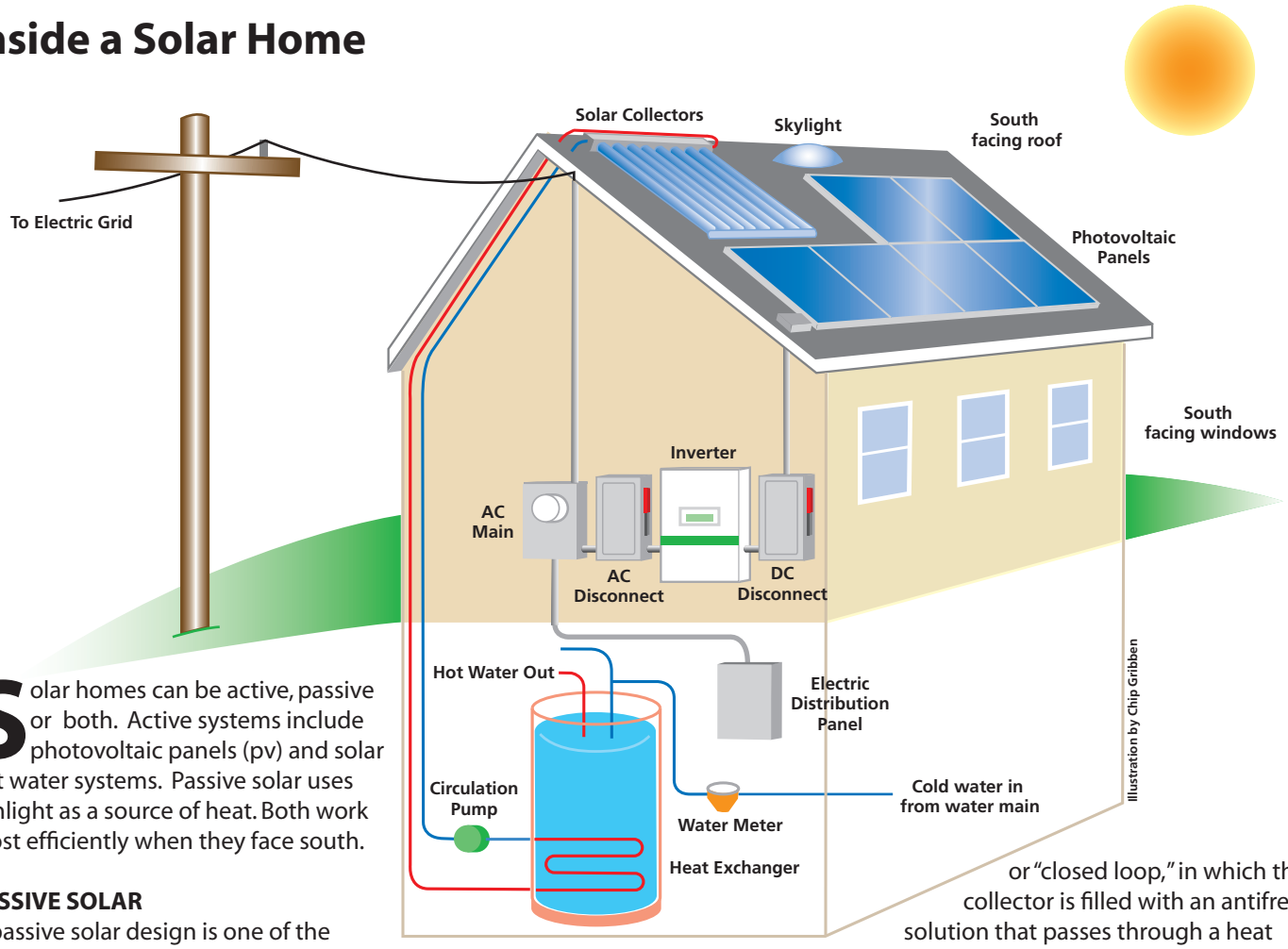
Visit the PPTC website for more info:
http://www.bikepptc.org/Oct07Rides
http://www.bikepptc.org/node/1058

Thanks to the Washington Area Bicyclist Association (WABA) and the Potomac Peddelers Touring Club (PPTC), visitors can take a bicycle tour of the homes. Look for the symbol in the home descriptions and on the tour map.

Saturday
Start time 10:45 at Sidwell Friends
3825 Wisc. Ave (Sidwell Friends School)
5230 Belt Rd
3918 Jenifer St
3934 McKinley St
3369 Runnymead Pl
2308 19th St
517 13th St SE (for the hardy cyclists)

Sunday
Start time 10:30 Greenbelt Metro
103 Ridge Rd
45 Lakeside Dr
4 Maplewood Ct
16 Maplewood Ct
7108 Holly Ave
808 Kennebec Ave

Inside a Solar Home



Solar homes can be active, passive or both. Active systems include photovoltaic panels (pv) and solar hot water systems. Passive solar uses sunlight as a source of heat. Both work most efficiently when they face south.

PASSIVE SOLAR

A passive solar design is one of the most economical means of heating a home and requires little maintenance. Sunlight enters the living areas through south-facing windows and is absorbed by features that provide thermal mass such as a masonry trombe wall or any other dense material. Once sunlight is absorbed into the wall heat is slowly released into the living environment.

Sunspaces such as south-facing solariums with large thermal windows absorb sunlight to heat living spaces.

PHOTOVOLTAIC PANELS

An array of pv on the roof of the home can provide electricity either "grid-tied" to the local electric utility or "off-the-grid" with a backup battery power supply.

PV panels are made up of silicone which converts sunlight to electricity. Each panel is connected to others to form an array. DC power from the panels is converted to AC power through the inverter and sent to the main panel of the home. During peak power, excess electricity can be sent back through the utility grid which is called net metering. In that case a credit can be given to the homeowner.

SOLAR HOT WATER SYSTEMS

These systems can be either "open loop," in which the water to be heated flows directly through the rooftop collector, or "closed loop," in which the collector is filled with an antifreeze solution that passes through a heat exchanger mounted in or around your normal water heater. Collectors are available in an extruded tube configuration or enclosed panels. During the day your water can be heated entirely by the sun! In any weather, the heating system can back up your existing heater, reducing overall energy costs. Solar hot water systems can also be used for heating swimming pools.

What is Net Metering?

Maryland and Virginia have net metering which allows your electric meter to run backwards when you are producing more solar generated electricity than you are consuming.

Net metering is a method of crediting utility customers for electricity that they generate or "net" on site in excess of their own electricity consumption. You will get a carry forward credit on the following months, as opposed to getting "paid" the lower avoided cost for the electricity produced by solar, and paying the normal higher cost for electricity you use.

Now, what you use and what you produce have the same value. The program basically provides the electric grid as a free "battery" storage system. The grid thus uses the energy you generate and then gives you credit for it at a future time. The program allows up to 10 Kilowatts (KW) of generation by residential users and up to 25 KW for everyone else.

"BP announces it will contribute $100,000 to the Maryland Solar Schools program."

Maryland Governor Martin O'Malley at the BP ground breaking

BP Solar is Expanding their PV Production Facility in Frederick, MD, More than Expected

BP Solar's efforts to expand its manufacturing plant in Frederick will be larger than originally planned. It is increasing its investment to $97 million from $70 million, and will create 70 new jobs. The project will nearly double the current casting and sizing capacity to 150 megawatts. Construction is scheduled to be completed in 2009.

Maryland Expands Commitment to Solar: 1,500 MW Solar by 2022

The passage of legislation in Annapolis requires the development of 1,500 megawatts (MW) of solar energy by 2022 as part of Maryland Renewable Portfolio Standard (RPS). That puts Maryland in the "upper echelon" of solar-supporting states in the U.S. In addition, the bill raises the net metering cap from 200 kilowatts (kW) to 2 MW.

"Nationally it ranks just behind New Jersey on a per capita basis. If you think about population, this bill is really phenomenal. Maryland's target is half of California's but only has one sixth the population, so that says a lot about how significant the program is," said JP Ross, of the Vote Solar Initiative.

The legislation requires 0.005% of the state's electricity supply to be generated from solar starting in 2008 -- increased incrementally each year until reaching the required 2% by 2022. If an electricity supplier fails to comply with the RPS they must pay a fee into the Maryland Renewable Energy Fund, which will make loans and grants to support the creation of new renewable energy sources within the state.

"It will really put Maryland at the forefront of solar energy," said Senator Rob Garagiola, who sponsored Senate Bill 595. "1,500 megawatts, that's greater than some of the power plants that we have in Maryland today."

Maryland Solar for Schools

To help educate Maryland students about the importance of solar energy, BP announces it will contribute $100,000 to the Maryland Solar Schools program. Administered by the Solar Schools Foundation, the program assists schools in the installation of solar electric systems, provides curriculum guidance, technical assistance, and can provide limited grants to help defray the high upfront cost of solar.

Solar Decathlon on the National Mall October 12-20

The Solar Decathlon is an international competition in which 20 teams of college and university students compete to design, build, and operate the most attractive, effective, and energy-efficient solar-powered house. The Solar Decathlon is also an event to which the public is invited to observe the powerful combination of solar energy, energy efficiency, and the best in home design.

The event takes place on the National Mall in Washington, D.C., October 12 - 20. The team houses are open for touring everyday, except Wednesday, October 17, when they will close for competition purposes. An overall winner is announced on Friday, October 19.

"Maryland Expands commitment to Solar with 1,500 MW Solar by 2022"

Teams of college students design a solar house which must be powered entirely by the sun. In a quest to stretch every last watt of electricity that's generated by the solar panels on their roofs, the students absorb the lesson that energy is a precious commodity. They strive to innovate, using high-tech materials and design elements in ingenious ways. Along the way, the students learn how to raise funds and communicate about team activities. They collect supplies and talk to contractors.

The teams transport their solar houses to the competition site on the National Mall and virtually rebuild them in the solar village. Teams are judged in ten different categories, seven of which focus on energy efficiency; others include design and comfort of the house. The team with the most points – the most energy-efficient and innovatively designed house – wins.

Local 2007 Solar Tour Home Profiled in Kiplinger's

Kiplinger's Personal Finance Magazine is planning a "Green" issue for October featuring the Mullin home which is one of the homes in the 2007 solar homes tour. The article will take an in-depth analysis

Dan Mullin's solar home to be featured in the October issue of Kiplinger's

of solar home financing. Be sure to pick up your issue at local news stands today.

PEPCO's Net Metering Policies Under Investigation

The Public Service Commission of the District of Columbia is investigating the Potomac Electric Power Company's (PEPCO) net metering policies.

In 2005, the Commission approved final rules and regulations implementing the net energy metering provisions. After several revisions, PEPCO filed its Net Energy Metering Service Rider, which provided customers an application to obtain Net Energy Metering Service, and the Commission approved the rider.

On June 13, 2007, Athena Angelos filed a complaint with the Commission regarding her solar generating system. According to Ms. Angelos, PEPCO required the installation of two new meters. She questioned PEPCO's authority to install a meter in the "middle of circuitry," rather than the customary location.

Ms. Angelos also said, "we are concerned that the implementation of the rate charges for the net metering do not seem to follow the spirit of the law, even if they follow the letter. Our concern is that the charge for transmission and delivery is not being implemented correctly and does not reflect actual costs of service."

On July 16, 2007, the Solar Energy Industries Association (SEIA) filed a separate petition and joined Ms. Angelos in her request for an investigation." Specifically, SEIA requested that the Commission: 1) investigate PEPCO's policy of charging distribution and transmission charges on the output of net metering customers, and 2) modifying the Net Metering Standard Contract to allow net energy metering on the PEPCO Low Voltage Alternating Current (LVAC) system."

2005 Solar Decathlon on the Mall in Washington, DC.

7105 Persimmon Lane, Owings Maryland

ADC Map [CC 5 J-1]

FEATURES

pv
waste-heat recovery
solar hot water
ground-source heat pump
efficient furnace/appliances
net metering
composting
rainwater reuse
electric vehicles
biodiesel car

DIRECTIONS

From the beltway take Rt. 4 south to Briscoes Turn Road, 3 miles south of Dunkirk. Turn right at flashing light onto Briscoes Turn Rd. Go almost 2 miles and turn right onto Redbud Lane to enter The Meadows subdivision. Go about 1 mile and turn left onto Persimmon Lane. 7105 is second house on right.

ABOUT THE HOME

With 60 PV panels on the roof, it's hard to miss this home. The owners have installed a grid interactive 2.2 kW PV system providing power to the home, their transportation and for resale back to the electrical grid. It was one of 10 Maryland Million Solar Roof program systems installed in 1998 and was powered up on January 18, 1999. In addition to the PV system, the owners have a GFX greywater heat recovery system which reclaims about 55% of the heat from shower water. The 4'X10' flat-plate solar hot water collector on the back side of the home is connected to a 60 gallon hot water tank in the basement and provides solar heated water. Their primary source of heating in winter and cooling in summer is a WaterFurnace Premier two speed geothermal heat pump. The energy-efficient Whirlpool refrigerator won the grand prize for energy efficiency in a federally-sponsored contest. The Asko dishwasher and horizontal-tumble Frigidare washing machine are also very energy efficient. Compact fluorescent lightbulbs are used for lighting. The family vehicles include a 2002 Toyota RAV4 EV and a 2000 Ford Ranger Electric pickup truck (both are 100% pure battery electric vehicles), and a 2003 Volkswagen Jetta TDI diesel wagon that is fueled with B100 soy biodiesel. The owners have an average electricity bill of $165 per month which includes fueling both of their electric vehicles.

6208 Gold Yarrow Lane, Upper Marlboro Maryland

ADC Map [PG 26 J-5]

FEATURES

pv
solar water heating
geothermal heating/cooling

DIRECTIONS

From the beltway take Rt. 4 (PA Ave) exit 11 south. Take the Old Crain Highway exit and turn right onto Old Crain Highway. Approximately one mile, turn left on Gold Yarrow Lane.

ABOUT THE HOME

The homeowners are reducing dependency on fossil fuels while maintaining modern conveniences and have installed a 2,880 watt array of solar panels manufactured by BP Solar. The panels are grid-tied and net metering runs the electric meter backwards when the panels provide more power than the family uses. The solar domestic water heating system, consisting of Thermomax evacuated tube collectors, provides 70% of the family's domestic hot water requirements to minimize the use of the electric backup water heating element. The super-efficient ground source heat pump keeps the family warm in winter and cool in summer, for a fraction of the operating costs of a heat pump.

3 Potomac Overlook Park - 2845 Marcey Road, Arlington Virginia

ADC Map [NV 5527-C7]

FEATURES
pv
solar water heating
solar oven
greenhouse

DIRECTIONS
From George Washington Parkway go west on Chain Bridge Rd., turn left onto Military Rd., and left onto Marcey Road. The Park is at the end of the road. Potomac Overlook is located at the very end of Marcey Road, off of Military Road, in north Arlington.

ABOUT THE PARK
Energy is one of the areas of emphasis in Potomac Overlook Park. A program about solar energy and solar cooking is presented to adults and children age 8 and older. The solar oven and PV unit are also occasionally set up for public demonstration and used in other programs as well. The Park manager's house has a solar water heater which is clearly visible from the park road near the nature center. A greenhouse, situated in the Park's educational gardens, is equipped with a variety of solar energy features. Finally, there is a small display about solar energy in the nature center. A handout about the role of the sun in life and for human energy production is available for Park visitors. The Park also recycles yard waste by composting it into fertile soil.

http://www.nvrpa.org/parks/potomacoverlook/?pg=hours.html

4 517 13th Street SE, Washington DC

ADC Map [DC 16 G-4]

FEATURES
solar hot water
pv
energy efficient windows
supertherm insulating paint
window quilt
mini-split heat pump/ac
rainwater collection system

DIRECTIONS
Three blocks from Potomac Metro. On weekends, house has a block of diagonal parking up the street.

ABOUT THE HOME
Solar hot water and PV, as well as a DC SunFrost with battery backup. Pellet stove insert in the fireplace and a TempCast masonry stove in the basement (among the more efficient and clean burning wood stoves) and a Rinnai tankless back-up hot water system. House has been a donor and recipient of reused building materials. Interior double-glazed argon-filled framed-in-place picture windows to retain historic casement windows while reducing heat gains and losses. Future plans include greywater and enlarged rainwater collection.

5 4108 32nd Street, Mt Rainier Maryland

ADC Map [PG 12 A-6]

FEATURES
solar thermal panel
solar clothes dryer
skylights
superinsulation
energy efficient appliances
energy efficient lighting
low impact building materials
electric pick-up truck

DIRECTIONS
Capital Beltway (95/495) east to exit 25, go to Route 1 South (Baltimore Avenue); Continue through College Park, Hyattsville, over the Northeast Branch of the Anacostia River, cross 38th Street; at 34th St. Traffic Circle, turn right, up the hill, cross Shepherd street, and 4108 is about halfway down on the left.

ABOUT THE HOME
The home features a host of energy efficient improvments including Solar Thermal panel; solar clothes dryer; tubular skylight; Sunfrost refrigerator; reel lawn mower; all fluorescent lighting, organic garden, Energy Star front loading clothes washer. Green Home Renovation in Progress featuring: "cool roof," radiant barrier sheathing, R-38 insulation, sidewall insulation, building envelope sealing, Energy Star doors and windows, low VOC paints, caulk, FSC lumber, bamboo, cork flooring, E-85 pickup truck, and whole house water filtration. Solar thermal panel is a flat plate collector which blows sun heated air into the

house, a PV direct panel operates the fan; tubular skylight brings diffuse day-lighting into darkened interiors, with no heat gain; Sun Frost fridge operates at less than 1 Kilowatt per day; organic garden is approximately 400 sf, growing wheat and /or vegetables for home use, utilizing kitchen scraps, weeds, etc. for compost. Green Home renovation is based on Arlington County, VA Green Home Choice specifications, and is about halfway completed. Renewable Energy credits with Native Energy, at $12/ton our household carbon dioxide payload of < 18 tons/year is below average. Energy credits help put wind power into the energy market. Also, water use well below average.

2308 19th Street NW, Washington DC

ADC Map [DC 9 J-11]

DIRECTIONS

From Connecticut Ave northbound at DuPont Circle turn right onto Florida and left onto 19th Street.

FEATURES

pv
retrofit
solar hot water
radiant floor heating
special windows
waste heat recovery

ABOUT THE HOME

This 3000 sq. ft Adams Morgan-Kalorama Triangle townhouse was retrofit with a 3 kW solar electric PV and a 360 sq ft solar thermal array for air-space and water heating. Other green/energy efficient features include: Heating- gypcrete radiant floor heating with adjustable heating zones; high-efficiency natural gas condensing furnace for solar backup; 2 high-efficiency wood burning fireplaces as secondary, occasional or emergency heating system, drawing combustion air from outside; programmable thermostats. Cooling- high-efficiency air conditioning unit (14 seer unit), ceiling fans. Air Quality- HEPA air filtration; timer switches; fans; humidification system with automatic sensor/humidistat used in winter months; heat recovery ventilation system; low-VOC paints, adhesives, and floor finishes, toxin-free area rugs and mattresses, all new formaldehyde-free cabinets, Insulation- Low-E glass on windows and doors; double and triple glazing on windows; soy-based spray-in foam insulation in walls, floors, and attic; soy-based reflective/waterproof roof coating over copper roofing; EPS in floors below radiant tubing. Water conservation and reuse- Rainwater collection and reuse system for toilets and hose bibs; low-flow faucets; flapperless, dual-flush toilets, high-efficiency/low water-use washer/dishwasher; centrifuge for removing water from clothes; on-demand hot water; shower timer. Water filtration- showers/faucets filtered, solar water distillation for drinking water and rainwater reuse. Electricity/lighting- 18 Shell Powermax PV panels to supply ~3 kW of power that is net metered, battery backup/inverter, skylights for daylighting.

Sidwell Friends Middle School - 3825 Wisconsin Ave NW, Wash DC

ADC Map [DC 9 D-6]

OPEN FROM 11:00 AM to 3:00 PM

DIRECTIONS

Sidwell Friends is off Wisconsin Ave, 6 blocks south of Tenley Circle and the Tenleytown Metro

FEATURES

constructed wetland
pv
green roof
passive solar strategies
recycled materials
solar chimneys

ABOUT THE SCHOOL

Sidwell Friends was awarded a Platinum level LEED rating by the U.S. Green Building Council. It is the first K-12 school in the United States to have this rating and the first LEED Platinum building in the District of Columbia. A constructed wetland treats the School's wastewater on-site, and the water is re-used in the toilets and cooling tower. The roof includes a green roof, organic garden beds, and a photovoltaic array. Building orientation, passive and mechanically assisted ventilation, solar chimneys and other features reduce the need for supplemental energy for heating and cooling. Window placement, skylights and reflective panels maximize use of natural light. These energy efficiency measures result in 60% less energy when compared to similar sized buildings. Guides will be on hand to offer tours every half hour. For more information, visit www.sidwell.edu.

8 3918 Jenifer Street NW, Washington DC

ADC Map [DC 9 C-3]

FEATURES
pv
net metering
Gridpoint battery backup

DIRECTIONS
Take Wisconsin Ave (Rt 355) into NW, Washington. After you pass Mazza Gallery make a left onto Jenifer Street. 3918 is about 4 blocks down just before Reno Road.

ABOUT THE HOME
This 1924 Chevy Chase home features a grid-tied 4080 watt photovoltaic system consisting of 24 170-watt BP solar panels mounted on the south-facing second story roof. A 7 kWhr Gridpoint battery backup system was also installed and is charged by the panels. The system will operate at peak efficiency when the electrical load in DC is at its greatest thereby reducing the demand on the grid. The system was installed by Standard Solar in Gaithersburg, Maryland.

9 5320 Belt Road NW, Washington DC

ADC Map [DC 9 C-2]

FEATURES
pv
net metering
passive solar
protective vegetation
solar hot water
efficient lights
daylighting
superinsulation

DIRECTIONS
4 blocks from red line Friendship Heights Metro, bordered by 41st and 42nd, Jenifer St. and Military Rd.

ABOUT THE HOME
This 2800 sq. ft. active and passive solar home gains sunlight through 250 sq. ft. of windows onto a 600 cu. ft. concrete slab covered with quarry tile for thermal storage. The home was designed to maximize natural convection and with a solar chimney for cooling. Awnings and vegetation help cool the home in summer, and skylights provide daylighting. A closed-loop collector provides solar-heated domestic hot water. To increase energy efficiency, the home is insulated with fiberglass and Styrofoam™. Most of the lights are fluorescent, there is an airlock entry, and automatic (set-back) thermostat to aid in decreasing the energy load. The low-flow toilet conserves water and the cistern collects rainwater for watering the garden. Recently the homeowners installed a 3.99 kW, grid-tied photovoltaic system with a grant from the DC Energy Office. The PV system consists of 21 Sanyo 190W PV modules and a SMA SunnyBoy 6000 DC-AC inverter. These homeowners also take advantage of net metering and enjoy watching their meter run in

10 3934 McKinley Street NW, Washington DC

ADC Map [DC C-2]

FEATURES
Green roof

DIRECTIONS
From Chevy Chase Circle, take Connecticut Ave south 1/8 of a mile and make a right on McKinley Street. 3934 is about 2 blocks down. Or take Western Avenue from Chevy Chase Circle and make a left onto McKinley Street. 3934 will be just over 1 block down.

ABOUT THE HOME
This green roof is on a garage and one of the first private residential green roof projects in Washington DC. The base is a thick waterproof rubber material covered with a 6 inch thick layer of 70 percent staylite (a pumice like roofing stone) and 30 percent peat moss. It is bordered by red tiles with tiles placed randomly on the surface for stepping. Growing on the roof is a variety of sedum plants that are heat and drought resistent. This type of roof requires little maintenance other then periodic watering and weeding. In addition, green roofs can reduce city heat radiation back in the atmosphere by 7 percent. It reduces runoff by absorbing 75 percent of the rainwater and saves on heating and cooling losses by 26 percent.

11 3369 Runnymede Place NW, Washington DC

ADC Map [DC 9 D-1]

FEATURES

pv
net metering
organic gardening
composting

SYSTEM OFFSETS

The system saved 12,000 lbs of CO_2, 65 lbs of SO_2, and 34 lbs of NOx in it's first year of operation.

DIRECTIONS

From Chevy Chase Circle, NW (intersection of Conn. Avenue and Western Avenue). Head east on Western, take a right onto Runnymede Place.

ABOUT THE HOME

The homeowners installed a Standard Solar PV system consisting of 28 215-watt SunPower solar panels capable of producing 5,200 watts of DC power in full sunlight. The panels use back-contact cells on a black substrate to give the panels a completely black appearance, creating a uniform appearance with the existing roof . The system is "grid connected" and takes advantage of the District of Columbia's net metering. A Fat Spaniel monitoring system constantly measures and displays system performance. This information is presented in the form of daily graphs of voltage, current, and wattage produced by the system. The homeowners also practice other environmentally friendly behaviors: organic gardening, composting, energy efficient appliances, and compact fluorescent light bulbs throughout the home, and they drive a Toyota Camry hybrid. The homeowners are implementing recommendations from a D.C.-sponsored energy audit.

12 1100 Kathryn Road, Silver Spring Maryland

ADC Map [MC 5287 B-2]

FEATURES

pv
solar hot water
programmable thermostats
ultra-efficient appliances
new insulating windows
energy-efficient CF lightbulbs
solar-powered outdoor lights

DIRECTIONS

Take 495 to exit 28A, New Hampshire (MD 650) North. Go about 2.2 miles, after you pass the White Oak Library make a right turn onto Tracy Drive. Take the first right on Kathryn Road. We are on the left side as soon as you pass Ithaca Street. If you pass Jackson Road you have gone too far.

ABOUT THE HOME

The owners of this home installed a 3.06 KW grid-connected PV system as well as a 60-gallon solar hot water system with financial assistance from a grant and tax credit from the State of Maryland and Montgomery County. Most lightbulbs have been replaced by energy-saving compact fluorescents, all rooms except for bathrooms have ceiling fans decreasing the need for air-conditioning, and the dishwasher, washer, and dryer have all been replaced with ASKO-brand appliances, a Swedish brand which specializes in energy- and water-saving devices.

13 5913 Crawford Drive, Rockville Maryland

ADC Map [MC 5164 J-8]

FEATURES

pv
solar tube skylight
solar attic fan
energy efficient appliances
energy efficient lights
rain barrels
water-saving toilet
hybrid-electric vehicle

DIRECTIONS

From the Beltway take I-270 North to Exit 4A (Montrose Road East). Bear left on the ramp to Tower Oaks Blvd. Turn left on Tower Oaks Blvd. At first stop light, turn right on Wootton Parkway. Turn right on Edmonston Drive at second stop light. Cross Rockville Pike and turn right onto Crawford Drive. This home is a 12-minute walk (1 mile) from the Twinbrook Metro Stop.

ABOUT THE HOME

The owners of this 1400 square foot 1951 Cape Cod installed a 1 kW polycrystalline PV system on the roof. The grid-tied system includes 8 125-watt Kyocera panels and a Sun Tie inverter. The panels supply 40% of the home's total electrical needs after efforts to increase energy efficiency, including efficient windows, compact fluorescent lights, Energy Star-qualified appliances, a solar attic fan, and a solar tube skylight. The house was recognized by the City of Rockville with an environmental excellence award. The cost of the system was defrayed with a grant from the Maryland Energy Administration.

13700 Valley Drive, Rockville Maryland

ADC Map [MC 5163 H-8]

FEATURES

pv
solar hot water
energy efficient lighting
electric lawn mower
solar oven

DIRECTIONS

From I-270 North, exit Falls Road (Exit 5, taking a Left). Turn Right on Wootton Parkway. Turn Left on Glen Mill Rd. Turn Right on Valley Drive.

ABOUT THE HOME

This handyman homeowner installed 1000 watts of PV with panels from Shell Solar, Matrix, and GE Solar as well as a closed loop Alternate Energy Technology (AET) solar water heating system. The PV is a 24 VDC stand alone system, using 12 deep cycle batteries as storage, and a 1500 watt Xantrex inverter. The PV system charges the battery powered lawnmower, refrigerator, solar hot water pumps, television, and DIRECTV system. The solar water heating system consists of two AE single glazed panels with black absorber surfaces. A double walled heat exchanger transfers heat from the propylene glycol to the potable water. Two PV powered pumps circulate the liquids. The system preheats the water in a separate water tank which supplies the primary hot water heater tank with preheated hot water. The sun supplies about 90% of the domestic hot water needs in the summer and 50% in the winter. Most of the lights in the home are compact fluorescent. A solar oven cooks food in sunny weather without heating up the home or using fossil fuels.

17000 Tom Fox Avenue, Poolesville Maryland

ADC Map [MC 5044 E-10]

FEATURES

pv
solar-powered attic fan

DIRECTIONS

From I-495, Capital Beltway, take River Road (MD-190) exit West. After 12 miles, River Road comes to a T intersection. Stay on River Road by taking a left. Continue from there for another 4.5 miles to Hughes Road. This will be your first right after Partnership Road (about 3 miles from Partnership). Take Hughes Road for almost 3 miles. You'll see the house with the solar panels on the left. Take a left on Tom Fox Ave. The house is on the corner of Hughes Road and Tom Fox Ave.

ABOUT THE HOME

The homeowners are reducing dependency on fossil fuels while maintaining modern conveniences and have chosen to install a 2,084 Watt array of solar panels manufactured by BP Solar. The panels are grid-tied and net metering runs the electric meter backwards when the panels provide more power than the family uses.

214 Tulip Drive, Gaithersburg Maryland

ADC Map [MC 5048 A-9]

FEATURES

pv
solar hot water

DIRECTIONS

From the intersection of 355 and Shady Grove Rd. go north on 355. Go to the second stop light and turn left onto East Deer Park. Go two blocks and turn left onto Woodland. Go one block and turn right onto Oakton Rd. Go one block and our house is on the far left corner of Oakton and Tulip Dr.

ABOUT THE HOME

This Cape Cod house has a 2.7 kW system with 18 panels on the front roof and solar hot water heat. One rain garden is finished and others are in progress and planting many native plants.

17 20500 Alderleaf Terrace, Germantown Maryland — ADC Map [MD 4928 G-10]

FEATURES
pv
solar hot water
energy-efficient lights
energy efficient appliances
set-back thermostat
rainwater reuse
composting

DIRECTIONS
From I-270, take Exit 16, Father Hurley Blvd., west towards Germantown. Turn left onto Crystal Rock Drive at the first intersection. Take the first right onto Waters Landing Drive. Take the first right onto Alderleaf Drive. Pass Alderleaf Court. The next cross street is Alderleaf Terrace.

ABOUT THE HOME
This 2700 sq. ft. pseudo-Victorian home, built in 1983, sports 1.5 kW of BP Solar MST-43 panels with an integrated hot water system. The inverter is a Xantrex SunTie XR1500, and the system is net metered. Funding assistance was received through the Maryland Residential Solar Rebate Program. Compact fluorescent bulbs, an Energy Star-compliant refrigerator and dishwasher, and a programmable thermostat augment the energy savings. Rainwater from the roof is collected in 4 barrels to satisfy the garden's water needs and they use indoor and outdoor compost bins. Children are welcome! For a preview: www.sunlitleaf.com/house/

18 11201/11203 Neelsville Church Road, Germantown Maryland — ADC Map [MC 4929 B-9]

FEATURES
pv
solar hot water
energy efficient windows
insulating window shades
geothermal heating/cooling
passive solar heating
composite siding

DIRECTIONS
From I-270 take exit 15A, route 118 East toward MD355. Continue on 118 across MD355. At first stop sign (Scenery Drive) turn left and go three blocks to Neelsville Church Road. Turn left, and the first gravel driveway to your right will take you into the Simple Gifts cottage site.

ABOUT THE COTTAGES
These two staff cottages are the initial phase of the Simple Gifts Earth Ministry Center at Dayspring, a 206 acre church retreat farm in east Germantown. Each cottage is 1250 square feet, and is designed to provide an energy-efficient home for a couple or a small family. They include passive solar heating and cooling, well-insulated walls and roof (structural insulated panels/blown cellulose), top energy-efficient windows and appliances, insulating window shades, living roof, FSC-certified framing lumber, geothermal heating and cooling, grid-tied and grid-independent photovoltaic panels, solar hot water, masonry heater, oak and cherry trim from trees on the land, earth plaster and milk paint wall finishes, stained concrete slab floors, bamboo floors, fiber-cement composite siding and trim, roof water collection, and landscaping with native plants.

19 23400 Ridge Road, Germantown Maryland — ADC Map [MC 4929 C-2]

FEATURES
UMD 2005 Solar Home entry in the Solar Decathalon

DIRECTIONS
From I-270 take exit 16 (Father Hurley Blvd./Route 27) toward Damascus. Go 3+ miles past Frederick Road (Rt. 355). The farm is on the left across from the Southern States store.

ABOUT THE FARM
Red Wiggler Community Farm is home to the University of Maryland's 2005 Solar Decathlon entry, an 800-square-foot one-bedroom all-solar house. This house won the BP "Innovation Award" and the "People's Choice Award" in competition with 17 other teams. The house features 51 175-W photovoltaic panels installed on a curved roof, evacuated-tube solar water heating, a hot-water radiant floor, state-of-the-art appliances, triple-pane windows, cedar siding, recycled glass tile, recycled rubber flooring, and bamboo flooring and cabinetry. Because the house is under construction, entry is not permitted. Visitors will be able to enjoy views of the interior through the windows. Members of the Maryland Solar Decathlon team will be on hand to answer questions.

http://www.gazette.net/stories/102605/damanew215720_31897.shtml

20 40267 Quarter Branch Road, Lovettsville Virginia

ADC Map [LC 4 K-11]

FEATURES

pv
battery backup
solar hot water system
pv powered outbuilding
hybrid vehicle
solar cooker
energy efficient appliances

DIRECTIONS

From Frederick MD, take Rt 15 south towards Leesburg, VA. Immediately after crossing the Potomac River into Virginia, turn right (west) on Lovettsville Road (Rt 672). Go 4 miles to right on Quarter Branch Road. Proceed 0.7 miles to brick mail box and driveway on left. Stay to right on divided driveway.
From Virginia and DC, take the Dulles toll road and the Greenway to Leesburg, and go north on Rt. 15 Bypass. Proceed about 4 miles past Lucketts and turn left on Lovettsville Road (Rt. 672). If you cross the Potomac River, you missed the turn! Follow directions above from "Go 4 miles."

ABOUT THE HOME

Stroll past the homeowner's vineyard to see one of the few net-metered PV systems in Northern Virginia. Most of the region's electricity comes from coal (mountain-top mined) and nuclear sources, but not at this house! The 2.1 kW solar array supplies approximately one-third of the home's power usage. (Heating is mainly by woodstove). The PV system features an Outback 3648 inverter with battery backup, coupled with 12 x 175 w Shell Powermax modules ground-mounted on a wind-resistant support structure. Efficiency measures include a front-loading washer, energy-saving refrigerator, fluorescent lighting, hybrid vehicle, and switches to turn off phantom loads. The house also demonstrates proper solar orientation and use of deciduous tree plantings to manage solar gains. The winery/garage sports standalone PV panels. Weather permitting, visitors will be able to enjoy solar-baked cookies while they watch the electric meter spin backwards—just two of the simple pleasures of the solar enthusiast. New for 2007--Hot water from the sun! Check out the solar hot water system built from a Heliodyne Inc. kit.

21 12606 Trillium Glen Lane, Lovettsville Virginia

ADC Map [LC 5 E-13]

FEATURES

passive solar
active solar
efficient appliances
super insulation
geothermal heating/cooling
environmentally friendly
construction materials

DIRECTIONS

From I-270 in MD: Take I-270 to Frederick where I-270 N becomes US-40 W. Take the US-15 S/US-340 W exit, proceed for about 5 miles. Take the US-15 S exit on the left towards LEESBURG. Cross the Potomac River into Virginia and make an immediate right onto Lovettsville Rd (Route 672) and go 2.7 miles to Rte 668. Turn left onto Taylorstown Rd (Route 668). Travel approximately one mile, and turn left on Hickory Shade Lane. Travel less than a 1/2 mile, on the left, adjacent to the road, you'll see space for parking. Park here and walk to the intersection of Hickory Shade Lane and Trillium Glen Lane. Turn left on Trillium Glen Lane and follow the gravel road/path until you reach the last house.

From Rt 7 in VA: Take Route 7 West to Route 15 North towards Frederick, Maryland. Stay on 15 North (about 20 minutes--depending on speed). Immediately before crossing the Potomac River bridge into Maryland, make a left onto Lovettsville Rd (Route 672). Follow directions above.

ABOUT THE VILLAGE

"EcoVillage of Loudoun County VA is a tangible symbol of the three essential elements of sustainable development: A cooperative social structure, a positive effect on the environment, and careful design. It establishes a new benchmark for community living...." Harry T. Gordon, FAIA – Burt Hill Kosar Rittleman Architects, Washington, DC. Homes are clustered to preserve more of the 180-acre site. The homes feature energy-efficient designs using passive solar, geothermal heating and cooling and many Green building materials. With convenient commuter rail access, the organically managed site emphasizes a kid-friendly pedestrian infrastructure that is integrated with nature. For more information visit www.ecovillages.com.

15126 Shannondale Road, Purcellville Virginia

FEATURES
pv
solar hot water
passive solar
geothermal heating/cooling
energy star appliances
battery backup

ALSO OPEN ON SUNDAY

DIRECTIONS
From Beltway (I-495) take Dulles Toll road west (Reston/Herndon) passing Dulles Airport after about 15 miles. Continue West on Dulles Greenway towards Leesburg, Virginia. Exit on 7/15 Bypass West towards Warrenton/Winchester. Continue on 7 Bypass West towards Winchester four miles over the low lying Catoctin Ridge. Exit Rt. 9 West Hillsboro/Charlestown West Virginia. Turn right at stop sign at end of exit ramp. Continue on Rt. 9 West through four traffic lights (8 miles) into the town of Hillsboro. Upon leaving Hillsboro, turn left on Stony Point Road. Go 1.7 miles and turn left on Edgegrove Road (Gravel Road). Go 1/2 mile and turn right on Shannondale Road. Our Solar House is a little more than 1/2 mile on the right.

ABOUT THE HOME
This house, which was once featured on the National Mall and in President Bush's National Energy Policy, is nearly a true Zero Energy - Grid-Tied Solar House and is offered for sale as the owners are moving to Georgia. It features 4.0 kilowatts of solar PV from a Uni-Solar Standing Seam Roof and an additional 2.0 kilowatts of BP Solar PV modules on the garage. In addition, the house features 2.0 kW (equivalent) hot water panels supplied by Solargenix which, combined with a heat exchanger for hot water off the 5.0 ton Geothermal heat pump system, reduces hot water energy use by nearly 90% to just 1 kilowatt-hour per day. Energy-efficient appliances, lighting and passive solar design coupled with geothermal heating and cooling means that this house uses less than 10% of the energy a typical 3800 square foot, four bedroom, three and a half bathroom house would require. Energy use in the last 12 months has averaged just 7.7 kWHs per day (<$1.00). A 1600 Amp-Hour battery bank provides more than 10 kWHs of stored energy daily for emergency operation.

The house, situated on 5 acres of rolling farmland, next door to a vineyard, in the beautiful "Land between the Hills" region of western Loudoun County, offers affordable and graceful country living as well as great opportunities for a bed and breakfast. The owners are offering a SPECIAL DISCOUNT on this house for solar tour takers (See advertisement in the Brochure). For more information about the house, please go to www.ert.net/solarhome and for an interior tour www.teampizzimenti.com.

1851 Griffith Road, Falls Church Virginia

ADC Map [NV 5525 H-4]

FEATURES
structural insulated panels
insulated concrete forms
timberframe
radiant floor heat
low flow toilets
solar-ready construction
shading porches
Energy Star appliances
recycled construction materials

DIRECTIONS
From DC: I-66 West to Rte. 7 North (toward Tysons Corner). Right at Pimmit Dr. (2nd light). Left on Griffith Rd. ~ 3/4 mile to 1851, on right.
From MD: I-495 to I-66 East (LEFT exit!). Immediate first exit to Rte. 123 (to Tysons). Straight at end of ramp onto Anderson Rd. Right on Lisle Ave. Left on Griffith Rd. 1851 is 1st house on left.
From south: I-495 to I-66 East. Exit to Rte. 7. Left at end of ramp onto Rte. 7. Right at Pimmit Dr. (2nd light). Left on Griffith Rd. ~ 3/4 mile to 1851, on right.
Metro: Orange line to West Falls Church. 3T Metro bus to Griffith. Take stop at intersection with Lisle Ave. About 50 ft to house, on right.

ABOUT THE HOME
New construction, Craftsman style home. 1450 sqft plus unfinished partial basement. Elderly-friendly first floor. Accessible to public transportation, bicycle to parks, shopping. Extensive re-use of construction materials. (Dog-friendly features, too.)

EmPOWER Maryland

Maryland Governor Martin O'Malley and Maryland Energy Director Malcom D. Woolf

Maryland Governor Martin O'Malley has announced new energy efficiency goals intended to save taxpayers money and reduce pollution.

The EmPOWER Maryland initiative aims to reduce state government energy consumption by 15 percent by 2015.

MARYLAND SOLAR ENERGY GRANT PROGRAM

Maryland Residents and businesses can qualify for the solar grant program for up to 20% of the system cost:

Solar Water Heating	$2000 Maximum
Residential PV	$3000 Maximum
Nonresidential PV	$5000 Maximum

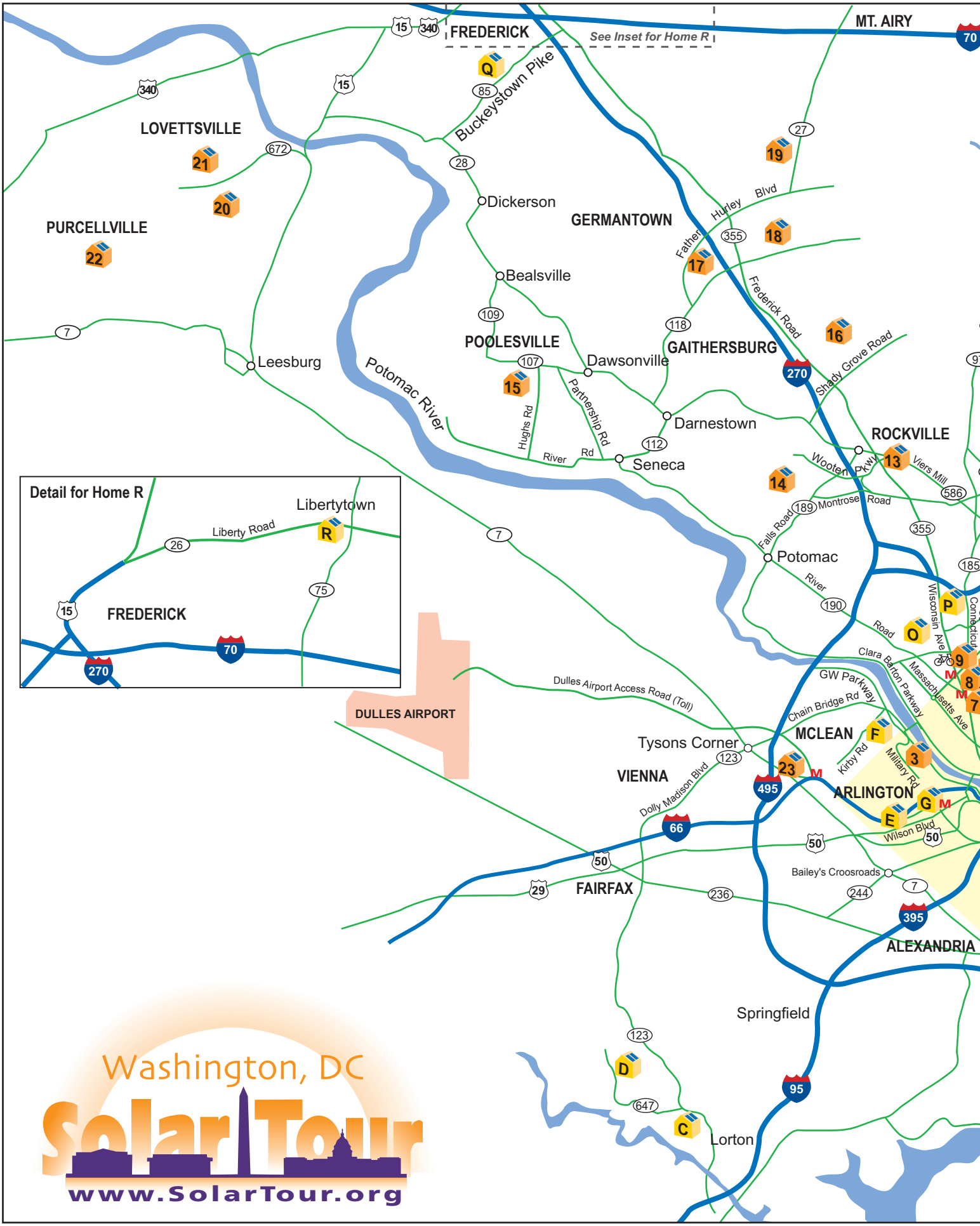
To apply for the grant visit:
www.energy.state.md.us/programs/renewable/solargrant

MEA
MARYLAND
ENERGY ADMINISTRATION

Maryland Energy Administration
Malcom D.Woolf, Director

meainfo@energy.state.md.us
1-800-72-ENERGY (1-800-723-6374)

Tom and Frances Yuhas of Pasadena proudly display their 3.2 PV system


FREDERICK
See Inset for Home R
MT. AIRY
Buckeystown Pike
LOVETTSVILLE
PURCELLVILLE
Dickerson
GERMANTOWN
Bealsville
POOLESVILLE
Dawsonville
GAITHERSBURG
Leesburg
Potomac River
Darnestown
Seneca
ROCKVILLE
Potomac
Hughs Rd
Partnership Rd
River Rd
Frederick Road
Shady Grove Road
Wootton Pkwy
Viers Mill
Montrose Road
Falls Road
Wisconsin Ave
Clara Barton Parkway
GW Parkway
Chain Bridge Rd
Massachusetts Ave
Kirby Rd
Military Rd
Dulles Airport Access Road (Toll)
DULLES AIRPORT
Tysons Corner
MCLEAN
VIENNA
Dolly Madison Blvd
ARLINGTON
Wilson Blvd
Bailey's Croosroads
FAIRFAX
ALEXANDRIA
Springfield
Lorton
Detail for Home R
Libertytown
Liberty Road
FREDERICK
Washington, DC
SolarTour
www.SolarTour.org

MAP ILLUSTRATION BY CHIP GRIBBEN

4929 Hine Drive, Shady Side Maryland

ADC Map [AA 30-E9]

FEATURES
off-grid 4kW pv
passive solar heating/cooling
superinsulation
solar hot water
composting toilet
solar cooker
grey-water system

DIRECTIONS
From the beltway take exit 11, Rt. 4, east. Proceed 11 miles to Rt. 258 towards Deale. Turn left on Rt. 256 and then right on Rt. 468. Pass the firehouse and go left onto Steamboat Rd. Turn left on Lee Blvd. and left onto Hine Dr.

ABOUT THE HOME
This Shady Side home is an ongoing experiment in sustainable living. The owners installed additional insulation, low emissivity windows, and have a wood pellet stove, solar cooker, organic vegetable garden, recycling grey-water system, composting bins, composting toilet, passive solar heating and cooling, photovoltaic power, and a wood stove. More important than the parts is the way in which they are integrated and managed to significantly reduce energy costs. The owner/designer of the home, has 30 years of experience in solar design and is happy to share his knowldege and library with guests of the tour.

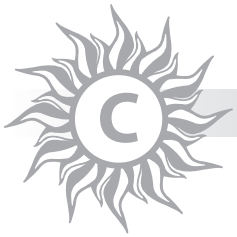
102 Queen Anne Bridge Road, Upper Marlboro Maryland

ADC Map [AA 16-C13]

FEATURES
retrofit
straw bale construction
composting toilet
light clay insulation
timberframe addition
portable saw mill
stone construction

DIRECTIONS
Take Rt. 50 east. Exit on Rt. 301 south. Exit onto Rt. 214 east. Proceed 2 miles and turn right on Queen Anne Bridge Rd. Proceed 1/2 mi to stop sign. Turn left into driveway at stop sign. Note: Do not turn onto Queen Anne Bridge Rd. when you first see it crossing Route 301 south.

ABOUT THE HOME
This 80-year old country house was retrofit with strawbales for energy efficiency and aesthetic change. New windows and an EPS insulated roof were installed. The toilet was replaced with a composting model. An addition to the house has a rubble trench, local stone and recycled brick foundation, timber frame sawn from surplus trees, 14' north strawbale wall attached to an internal pole frame, adobe stucco, light-clay infill in South and East walls that allows timbers to remain exposed inside and out, infill kept in place with home made wooden lath, lath covered with adobe plaster, white-washed walls, recycled materials, hand-made tiles, and clay slip finishes. Outdoor earth baking oven.



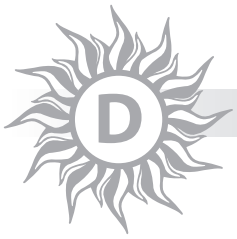
9200 Denali Way, Lorton Virginia

ADC Map [NV 5876-G7]

FEATURES
ground-source heat pump
superinsulation
passive solar
greenhouse
special fireplace
efficient lights
special windows

DIRECTIONS
Head south on I-95 to the Lorton exit. Turn right onto Lorton Rd. and go to end (approx 1.5 miles). Turn right onto Route 123 (Ox Road) and proceed approx 1.3 miles to traffic light (Giant Food on right). Turn left onto Palmer Road and proceed to end (0.4 miles). Turn right onto Elk Horn Road and go 0.25 miles. Turn left onto Denali Way; then take first driveway on right.

ABOUT THE HOME
This contemporary, 2950 square feet, frame structure has 83% south-facing windows and skylights. A greenhouse supplies some passive-solar heating. A vertical closed-loop geothermal system and a high velocity air-to-air system provide heating. An efficient Finnish fireplace allows the owners to enjoy a fire and gain real heating. Insulation includes R19 fiberglass bats in the 6" walls, R13 fiberglass bats with R3.8 polystyrene in the 4" walls, and R30 fiberglass bats in the ceilings. An air-lock entry, Tyvek wrap, and foam caulking reduce air infiltration. Windows are of low-E thermopane glass. Skylights provide daylighting, and the electric lighting is fluorescent. Clerestory windows allow natural ventilation. Other energy-savers include a timer on the water heater and low-flow shower heads.



8304 Pinyon Pine Court, Fairfax Station Virginia

ADC Map [NV 5876-A4]

FEATURES
earth-covered
passive solar
trombe wall
greenhouse
heat storage
superinsulation
special windows
composting

DIRECTIONS
I-95 S to Lorton Exit. Turn right onto Lorton Road, right onto Route 123, left onto Hampton Road. At Timberlane Development, turn right onto Timberridge Road. Park on Timberridge and walk from there. Bear left at fork. Turn left onto Pinyon Pine. Do not park in the driveway!

ABOUT THE HOME
This 5000 sq. ft. house was designed and built by the owners as a passive-solar, earth-covered home. The entire structure is a concrete shell built of tilt-up concrete construction most of which is underground. An exposed greenhouse on the south supplies the heat which is stored in a Trombe wall. The plenum floor (raised floor through which air is blown from the greenhouse to the back of the house) allows warm air pulled down through a chimney-like column from the high ceiling with a fan to circulate through the floor and envelope walls. Warmth stored in the walls radiates back into the house as it cools down. Upper windows also have insulated panels for closing, and all windows are double glazed. A woodstove serves as backup heat for colder days, and the kitchen has on-demand hot water (no hot water storage) which is also hooked up to the dishwasher.

861 North Jefferson Street, Arlington Virginia

ADC Map [NV 5526-K10]

FEATURES
pv
rainbarrel
solar oven
recycled blue jean insulation
electric lawn mower
line dry laundry

DIRECTIONS
Located near Ballston, Arlington at the intersection of Wilson Blvd. and Jefferson Street.

ABOUT THE HOME
Two-story home with 2.6kW SunPower PV solar electric system generating approximately 300kWh electricity per month. This system supplies 50-67% of the monthly electrical use. System installed by www.standardsolar.com. Compact florescent bulbs and Energy Star appliances throughout. A small PV system powers the children's electric car. Rain barrel helps water the garden and recycled blue jean insulation keeps the house warm in winter. Breezecatcher clothes dryer in back yard. We have been cooking with our solar oven for two years, which will have warm brownies ready for visitors. Details of the home can be found at www.DanRedmond.com, click on Solar Power.

5909 Calla Drive, McLean Virginia

ADC Map [NV 5526-J2]

FEATURES
pv
solar air heater
clothesline
skylight
efficient appliances and lighting
rainwater collection
organic garden composting

DIRECTIONS
From Maryland: *Beltway to GW Parkway to McLean exit. Left on Kirby Road; 2 miles to left on Chesterbrook Road; 1/2 mile to left on Forest Lane; 3 blocks to right on Calla Drive.*
From Fairfax: *Route 66 East to Exit 66--Leesburg Pike; left onto Leesburg Pike; first right onto Idylwood Road, which turns into Kirby Road; right on Chesterbrook Road; left on Forest Lane; right on Calla Drive.*

ABOUT THE HOME
The home has a 1600 watt grid-tied Sharp PV system, mounted on a southwest-facing roof, solar air heater with integrated solar-powered fan, solar-powered attic fan, solatube skylight, mini-split ductless air conditioner. From March 2007 to June 2007 the PV system generated 130 more kilowatt-hours than was used! Energy efficient kitchen, including Fisher-Paykel dishwasher, Vent-A-Hood range hood and Peerless Premier gas range. 100% compact fluorescent or LED lighting, including dimmable CCFL candelabra CFL bulbs from BetterBulb.com. Blown-in cellulose insulation in attic. Large organic fruit and vegetable garden and extensive composting. Rainwater harvesting system, including underground drip irrigation system and rain barrel. Electric and push lawn mowers.

706 N. Ivy Street, Arlington Virginia

ADC Map [NV 5527-E9]

FEATURES
pv
solar hot water
sunspace
wind turbine
fuel cell
solar heated greenhouse
display of solar products

DIRECTIONS
From Washington take Rt. 50 west to the 10th St. exit, turn left onto N. Ivy St., and proceed to 706. This home is 2-1/2 blocks from the Clarendon Metro stop.

ABOUT THE HOME
This 1920's Sears kit home was retrofit in 1993 to incorporate several solar features including solar water heating and a 1.5 kW photovoltaics system on the upper roof that charges a large 24 gel cell battery bank. A rear sunroom adds passive solar heating. A freestanding solar greenhouse is heated by ground-mounted solar panels. The homeowners have also added .5 kW of new solar electric peel and stick PV roofing shingles on the metal roof on the front porch and a solar attic vent fan. Behind the house, 1 kW of solar electric on the small office building along with a .5 kW small wind turbine and a 5 kW hydrogen fuel cell for back up power. The office building has an efficienct ductless heat pump and incorporates CFLs and bundled LED lighting and a solar light tube.

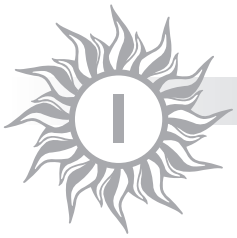
1001 Douglas Street NE, Washington DC

ADC Map [DC 10 F-9]

FEATURES
pv
solar water heating
net metering

DIRECTIONS
From the Rhode Island Ave. metro, exit the station, cross the parking lot and go right on Rhode Island Avenue for 2 blocks to 10th Street. Go left on 10th one block to Douglas Street.

ABOUT THE HOME
This 1917 bungalow was retrofit with solar water heating and PV. The 16 panel PV system was installed on the south-facing rear roof. Solar power is fed to the home via an inverter and to the grid through "net metering." The family heats their water using 16 space age evacuated tube solar heat collectors, mounted above the back porch. Heat from the sun is transferred to an 80 gallon tank of water used to supply the water heater tank with preheated water. The installation was partially funded by a grant from the DC solar program.



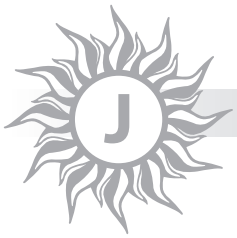
7108 Holly Avenue, Takoma Park Maryland

ADC Map [5408 H-4]

FEATURES
pv
passive solar
straw bale
salvaged materials

DIRECTIONS
From DC - Drive north on 13th, which becomes Piney Branch Ave. Take a right on Eastern Ave., which defines the boundary between Maryland and DC. First left is Holly Ave.

ABOUT THE HOME
This home is highly energy, cost and resource efficient (both the building and living in), as well as nurturing and healthful. Come see the simplicity, beauty and pleasure of natural building as well as many Green/sustainable technologies, including living roofs , biodiesel-fueled radiant floor heat (and a hand pump to fill our diesel cars!), and a corn stove. Also included is an extensive storm water management plan, gracefully integrated into a beautiful garden (includes a retention pond, overflowing into a bog, with a rain garden around the corner, ending with pervious pavers on our driveway).



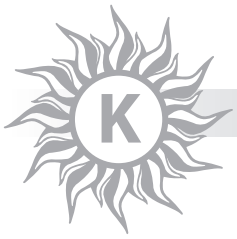
808 Kennebec Avenue, Takoma Park Maryland

ADC Map [MC 5408 K-2]

FEATURES
solar heated water
solar powered roof vent
efficient lighting

DIRECTIONS
From Rt 29 inside the Beltway. Take 29 south and make a left at Franklin. Turn right onto Flower Avenue, cross Piney Branch, head for 5 blocks and make a right at Kennebec.

ABOUT THE BUILDING
This 5-unit apartment house has a solar water heater consisting of 4 panels and 2 80-gallon storage tanks. The system preheats the conventional electric water heater saving significant energy costs. All common area lighting uses efficient fluorescent lights. An ultrasonic switch in the main hall turns on automatically when people enter and turns off 5 minutes after sensing no movement in the room. A garage light is also automatic. 2 solar powered roof vents remove heat from the attic, reducing the air-conditioning load. These improvements have lowered electric usage from 800 kWh to 300 kWh per month.



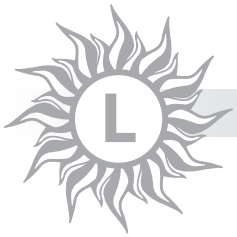
103 Ridge Road, Greenbelt Maryland

ADC Map [PG 8-B7]

FEATURES
passive solar home
envelope construction
solar water heating

DIRECTIONS
From Washington Beltway, take Exit 23 onto Kenilworth Ave. north a very short distance to stoplight at Crescent Rd. Right onto Crescent Rd for two blocks, foregoing the temptation to take first left which is Ridge Rd. -- it dead-ends. Take next left, Lastner Lane; follow till it dead-ends at top of hill. Right onto Ridge Rd. 103 Ridge Rd, is the fourth house on right.

ABOUT THE HOME
This passive solar Colonial style home was constructed in 1981 as a modified envelope system. It has 500 sq ft of south-facing glass for thermal gain in the winter and overhangs and deciduous trees for shading to prevent overheating in the summer. South side glass is thermopane. The windows on the West side have single glazing, while the north windows are triple glazed. Each entry has an air chamber/vestibule for air lock entry. There is a 240 sq ft sunroom with thermopane glass in the envelope. To reduce air infiltration through the windows, the homeowners installed insulated window quilts on all the north and east windows. The crawl space under the basement floor is part of the envelope. In the summer, the attic exhaust fan helps to remove heated air from the envelope. The 6' exterior walls were factory prefabricated from 8' x 16' sheets of 4 1/2" extruded Polystyrene.



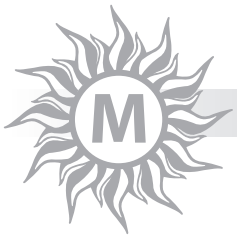
45 Lakeside Drive, Greenbelt Maryland

ADC Map [PG 8-B8]

FEATURES
pv
daylighting
energy-efficient lighting
energy-efficient appliances
solar cooker

DIRECTIONS
From the Beltway, take MD-201/Kenilworth Ave exit (exit 23) toward Greenbelt/Bladensburg. (Go 0.34 miles). Veer right, taking ramp toward Bladensburg. Merge on Kenilworth/ MD-201 S. and take immediate ramp on the right toward MD-193/Greenbelt Rd. 0.16 miles. Turn left onto Greenbelt Rd. After the next light, go under overpass and into left turn lane. Turn left onto Lakecrest Dr. Turn right onto Lakeside Dr. 45 Lakeside is half-mile on the right.

ABOUT THE HOME
The owners installed a 520 watt grid-connected PV system with a grant and tax credit from the state of Maryland as part of the Million Solar Roofs project. Solar tube skylights decrease the need for lights in the central bathroom and kitchen. Light fixtures and lamps all use compact fluorescents or T-8 fluorescents with electronic ballasts. The ceiling fan has energy-saving blades with dimmable compact fluorescent bulbs. Nightlights are either Limelite , Indiglo electroluminescents or are LED. Insulated window quilts protect the home from air infiltration, and the automatic, sensor-activated faucets help conserve water. The homeowners use an energy-efficient Sahara dehumidifier, and decrease the load on hot summer days by cooking outside with their portable solar oven. A Toyota Prius hybrid-electric vehicle gets them around reliably with great gas mileage.



16 Maplewood Court, Greenbelt Maryland

ADC Map [PG 8-B8]

DIRECTIONS
Follow directions from Home L to Lakeside Dr. and turn on Maplewood Ct.

FEATURES
solar hot water
setback thermostats

ABOUT THE HOME
In 1982 the homeowners installed a Reynolds Solar Hot Water Heating System to supply their domestic hot water needs and received a rebate from the State of Maryland for the cost of the system. In early April and late September the owner manually switches between the gas backup system and the solar water heater. Heat for the 2500 sq. ft. home is supplied by a four-level, water baseboard heating system with hot water supplied from a gas boiler. Each level has its own set-back thermostat, and ceiling fans improve circulation of air making the home more comfortable with less energy used to condition air.

4 Maplewood Court, Greenbelt Maryland

ADC Map [PG 8-B8]

DIRECTIONS
Follow directions from Home L to Lakeside Dr. and turn on Maplewood Ct.

FEATURES
pv
energy-efficient lighting
water conservation
set-back thermostat

ABOUT THE HOME
This circa 1963 home was retrofit with 1.9 kW PV panels in 1999 with assistance of a $3000 grant and 15% tax credit from the state of Maryland as part of the Million Solar Roofs project. Excess electricity generated from the panels is pumped into the grid, spinning the homeowner's meter backwards. To assist in reducing the electrical load, the homeowners utilize compact fluorescent lighting. The panels save them 20% - 40% on their electricity bills. The homeowners have been so pleased with the PV system that they recently installed a 1.4 kW grid-connected PV system on their beach house in Chincoteague. Additional energy-conscious conservation measures include low-flow toilets and showers and a set-back thermostat for both heating and AC.

7902 Glenbrook Road, Bethesda Maryland

ADC Map [MC 5407 D-2]

DIRECTIONS
From Wisconsin Ave and Old Georgetown Road, go west on Old Georgetown Road. Turn left on Glenbrook Road.

FEATURES
pv
battery backup
solar hot water

ABOUT THE HOME
Grid-tied 2.8 KW solar PV system featuring Sharp 175 Watt solar panels, Outback PS-1 inverter and charge controller, and battery backup. Installed by Chesapeake Wind and Solar. Active closed-loop hot water system featuring Sunda evacuated tube collectors, 80-gallon tank with heat exchanger, and in-line, natural gas, on-demand water heater. Installed by Standard Solar.

4707 Elmhirst Lane, Bethesda Maryland

ADC Map [MC 36-A7]

OPEN 1PM—5PM ONLY

FEATURES
pv
solar hot water and heat
net metering
superinsulation
solar cooker
electric vehicle
efficient furnace

DIRECTIONS
From beltway head south on Rockville Pike (Rt. 355). Turn left on Locus Hill Rd (third left after Pookshill Rd), and right onto Elmhirst Lane. First house on left.

ABOUT THE HOME
Built in 1943, this Colonial features the latest in solar technologies including 1.6 kWs of amorphous silicon, 48 BP Solar Millennia modules, monitored and net metered into Pepco's grid, a small emergency electrical power system, a solar thermal system that includes hot water pre-heating and radiant floor heating and two fan convectors for space heating new additions. The ceiling in the new shed dormer home is insulated with lycnene foam. Various other energy efficiency options, Rudd 90%+ efficient gas furnace, and an assortment of PV modules on display such as ASE Americas, BP Solar, Shell Solar, GE Solar, including reflective roof coating LoMit1. There will be solar cookers on display cooking hot dogs and/or corn on the cob depending upon weather.

4310 Buckeystown Pike, Frederick Maryland

ADC Map [FC 38 D-5]

FEATURES
pv
solar hot water
straw bale

DIRECTIONS
From the beltway take I-270 North. Take exit 31B "MD-85S" towards Buckeystown. MD-85 is Buckeystown Pike. Proceed for 2 1/2 miles and cross the railroad tracks. House is on the right 100 yds. after the tracks. Signs will mark the house.

ABOUT THE HOME
This code-approved house just south of Frederick, MD with 1,105 sq. ft. has an American Southwest look. The interior plaster walls have soft contours and the exterior earth based stucco walls carry the same theme. The shallow frost-protected foundation was done as a mono-pour. The energy reduction strategy includes a 1 KW grid intertie PV array, solar hot water, a composting toilet, gray water filtering and careful home appliance selection. Cotton and cellulose insulation. Rainwater is captured in a below-grade cistern. The owner of this house has started GreenBEES, LLC to build straw bale homes in the Frederick area. A plan of the first house to be built will be on display and Randy Williams and his partner, Bob Hanson, will be glad to answer questions during the tour.

9158 Liberty Village Way, Libertytown Maryland

ADC Map [FC 24 B-6]

FEATURES
greenhouse
ground-source heat pump
superinsulation

DIRECTIONS
Take I-270 to US 15-N in Frederick. Go 4 miles. Merge right onto MD 26-E. Go 2 miles and merge right to stay on 26-E. Follow MD-26 (Liberty Rd) for 7.8 miles. At intersection with MD-31, turn right onto Liberty Village Way. 9158 is the first house on the left.

ABOUT THE HOME
This home is part of a new cohousing community of 18 homes each of which utilizes ground source heat pumps for heating and cooling, 6" frame walls to provide for added insulation, and double pane windows. This home also has a super insulated lower level with 8"-10" concrete walls insulated with 2" thick foam on either side. The attached greenhouse and blower system with thermostat vents warm air from the greenhouse into the home on sunny winter days. In the community, the second phase of home building is expected to begin in 2008. For anyone who is interested, there will also be tours of the neighborhood; for more information, visit www.libertyvillage.com.

Maryland Renewable Energy Portfolio Standard

By Peter Lowenthal

MD-RPS takes a turn toward the Sun

Maryland Governor Martin O'Malley signs Bill 595 and 1016 approving provisions for the renewable energy portfolio standard

On, April 24, 2007 Governor Martin O'Malley signed into a law Senate Bill 595 and House Bill 1016, approving a far sweeping amendment to the states existing renewable energy portfolio standard, or RPS. The amendment includes provisions that will encourage solar electrical systems utilizing photovoltaic modules to be added to the state's energy mix. The new standard requires utilities to gradually increase electric generation from solar sources to reach a goal of 2% of the states electric generation by the year 2022.

The bill uses some interesting policies, based on the long-term reliability of solar technology, for compensating the owner-generator for investing in clean power production. The amendment supports both the large commercial installations that are meeting the needs of large retail stores like Staples, Wal-Mart, Whole Foods and smaller residential installations which typically have less than 10 KW of capacity. The incentives are typically based on system performance and the long-term sale of the clean power to the utilities by the means of solar renewable energy credits produced by the solar electrical generators or photovoltaic systems.

The Maryland program builds on the existing RPS, which creates and establishes renewable energy credits (RECs) among electric utilities that serve electrical customer's loads in Maryland. An REC is a verified, accredited electrical generation, measured in units of 1,000 KWhrs or one megawatt hour of renewable energy generation. The REC is the value or credit attributed to the beneficial nature of renewable electrical generation. The new law sets a distinct value for solar generation through these tradable RECs, and stimulates customers to become solar owner-generators

The utilities, or "load serving entities", will be required to produce and turn over to the public service commission a certain quantity of renewable energy credits at the end of the year. Currently the state is seeking to reach 7% of the total electrical generation by 2022, and this amendment will increase that overall goal to 9.5 %, 2% of which will be derived from solar photovoltaic systems.

Rules and regulations will be created by the MD-Public Service Commission, and with the support of leading companies like Sun Edison, BP Solar, Power Up, Standard Solar, Chesapeake Solar and the MD-DC-VA-Solar Energy Industries Association; we hope to create a seamless program that can continue to deliver jobs, economic development and a new sustainable energy source for Maryland.

Peter Lowenthal is the President of the MD-DC-VA-Solar Energy Industries Association

The solar amendment establishes several fundamental changes in the prior law to enable solar electrical systems to have a primary role in meeting the goals, including:

1) The law established that specific requirements of solar renewable energy credits should be presented to the commission. They are a distinct subset from tier 1 REC's. They must be connected to the Maryland distribution system so they must be located within the state. The solar systems must be metered if over the size of 10 KW in capacity. If smaller residential systems, like the law in New Jersey, their output can be estimated according to guidelines to be determined by the MD Public Service commission.

2) The Solar REC or SREC is a distinct commodity. Similar to a pollution allowance, the REC is the embodiment of the generation attributes of solar energy and these attributes are deemed to be valuable assets according to this amendment. In fact, the utilities can pay an alternative compliance payment should they choose not to participate they can simply pay the alternative compliance payment which begins at $450 per MWhrs and decreases $50 every two years until it is no longer needed. The alternative compliance payment is the principle motivator for larger utilities to comply with the Law.

3) In addition, the law stipulates that Utilities have first right to buy the credits for a period of 15 years. The owner generator can agree to sell or not to the utility. For smaller residential systems the opportunity to sell the credits and recover much of the expense should make solar more affordable. For example a 3 KW system cost $24,000-$30,000 might generate 4 MWhrs or 4 RECs and at an estimated $200 per SREC times the 15 years would equal $12,000 which is almost 50% of the cost of the system. This provision, for up front sales of RECs is an alternative to rebate programs that are complex in collecting and distributing funds. Rebates and buy-downs have created significant interruptions in business activities.

4) The prior net metering law limited the amount of net metered systems installed on the grid and the size of systems that could be interconnected. These constraints were expanded in the new law to the more common levels for such systems in other states. Now net metered systems can be up to 2 MW in size and the state can install 1500 MW by law.

UNIVERSITY OF

Starting October 12, the University of Maryland, College Park, will represent the solar and green building community of the entire region when the University's LEAFHouse takes on 19 competitor homes on the National Mall.

For the third time, the University of Maryland has been selected to compete in the Solar Decathlon, a student design contest organized by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy. Twenty colleges and universities from around the world are building fully functional, 800 square foot, solar powered homes. Each home has all the amenities of a typical home; hot water, electrical appliances, heating, and air conditioning – all powered by the sun.

In the 2005 Solar Decathlon Competition, team Maryland placed 8th overall and was voted the "People's Choice" by visitors. The 2007 Maryland team is building on that success with its 2007 entry, LEAF House. LEAF House will em-

LEAFHouse Project Showcases Local Solar Vision at 2007 Solar Decathlon

MARYLAND

ploy sustainable or "green" technologies and renewable, environmentally friendly materials. The name "LEAF" symbolizes the team's commitment to following nature as mentor and guide; leaves are nature's perfect machine for capturing solar energy and making it available to the rest of the biosphere. The name also stands for "leading everyone to an abundant future," which reinforces the Maryland team's message that solar energy is key to a high quality of life.

LEAF House includes many innovative, student-designed technologies unique to the Maryland house. Among some of these features are a liquid desiccant system to remove humidity from interior air and smart house monitoring system that will allow the homeowner to track energy use and maximize photovoltaic and passive solar performance.

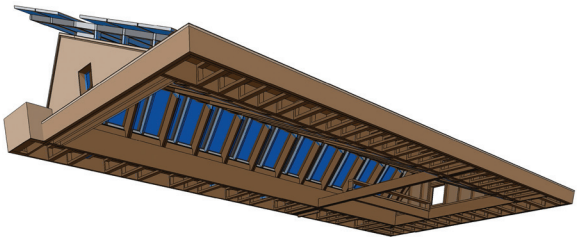
Two years of design and construction culminate in early October, when the schools transport their homes to the National Mall in Washington, D.C. The solar village will be open to the general public starting Oct. 12. Each home will be evaluated and scored in ten subjective and performance-based contests. Panels of judges will rank the teams' architecture, engineering systems design, and construction documents. Teams earn additional points by performing mandatory tasks such as cooking, washing and drying clothes, and using the shower -- simulating a real family living in the home. The homes are monitored in real-time and points are earned by meeting minimum indoor air temperature, humidity, electricity, and light level benchmarks. The team with the most points wins the competition.

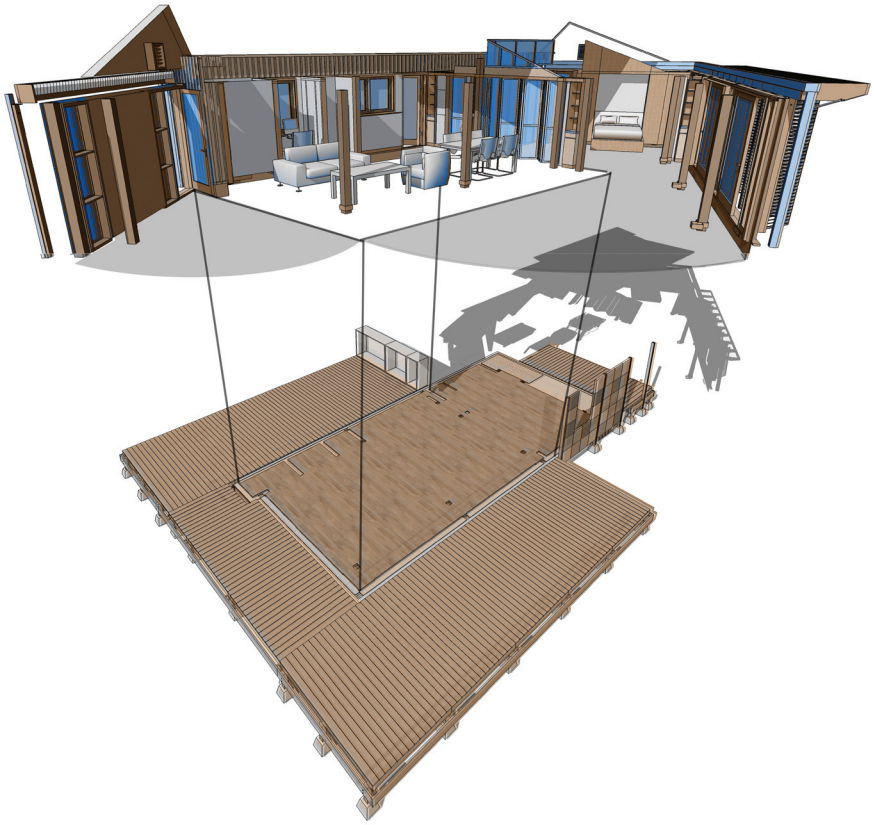
For the University of Maryland, the Decathlon is an unparalleled opportunity to educate future leaders in the process of integrated design; to educate the public about environmentally sound, sustainable construction; and to promote the role of efficiency and solar technologies in achieving energy independence.

The Maryland team is actively seeking corporate and individual sponsorship. Your gift, large or small, will energize LEAF House. The Maryland team invites you to invest in tomorrow's leaders in sustainable design and renewable energy. Sponsors will be acknowledged in the website and in print materials visible to hundreds of thousands of visitors on the National Mall. It's not too late to join this exciting team! Contact Fundraising Coordinator Dan Feng at dfeng711@gmail.com for sponsorship opportunities.

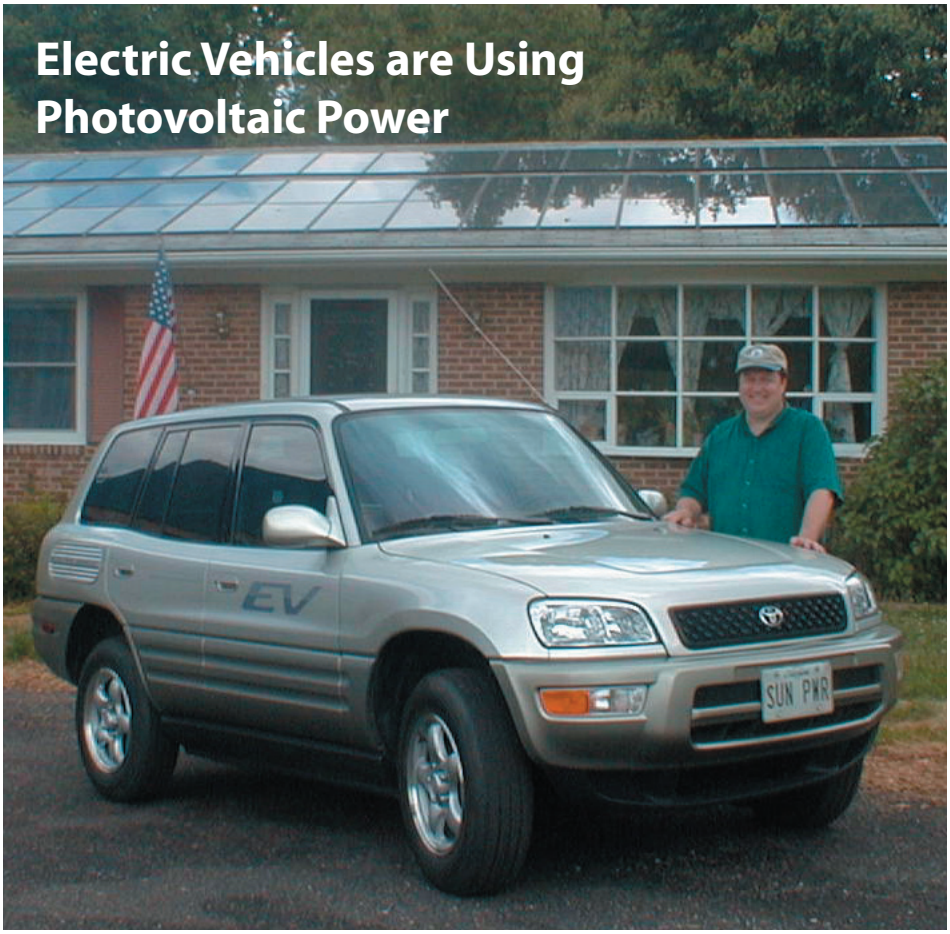
Be sure to track LEAFHouse construction progress by viewing the webcam at www.solarteam.org. Come visit the LEAFHouse on the National Mall October 12 -20!

Maryland Decathlon 2005 - http://www.solarhouse.umd.edu
Maryland Decathlon 2007 - http://solarteam.org
Dept of Energy Solar Decathlon - http://www.solardecathlon.org





Electric Vehicles are Using Photovoltaic Power



2007 Solar Tour participant Bryan Murtha charges his electric Rav-4 off the 2.2 kW System from his home in Maryland.

By Charlie Garlow

That's right, electric and plug-in hybrid electric cars are the only vehicles on the road TODAY that can use the electricity your solar photovoltaic (PV) panels generate.

That is why we consider them to be the cleanest, coolest cars around. No pollution. Zero. Nada. Of course, you can also use wind powered electricity and other renewable electricity to power an electric vehicle (EV). Here in the DC area, Bryan Murtha, on the 2007 Tour, has solar PV and an EV. He also has a low polluting biodiesel car. Don't miss his Annapolis-area home on the Tour. Others are following in his footsteps. Tour organizer, Charlie Garlow, has used wind power to provide electricity for both his home and his all-electric Chevy S-10 pickup truck. He gets his wind from www.cleancurrents.com. Chip and Monica Gribben converted their Ford Escort to run on electric. power and signed up through BG&E for wind power. Bryan, Charlie, Chip and other Solar Home Tour organizers are members of the electric vehicle club locally, the Electric Vehicle Association of Greater DC, or www.evadc.org on the web. They have all sorts of fun building EVs and having drag races in June of each year (see www.powerofdc.com) Although major car companies are not currently marketing EVs, www.teslamotors.com is selling hot EV sports cars, now, and plans to sell less costly family sedans called the White Star that are also all-electric.

So, what's the buzz on plug-in hybrid electric cars (PHEVs)? This is a vehicle like a Toyota Prius hybrid that has a gasoline engine and an electric motor, except it has a bigger battery than a regular hybrid. The bigger battery can be put in your Prius (pretty expensive at present) to give you an all electric range of 20 – 40 miles or more, depending on your battery pack. This is enough to do most all of your local runs to the store, the soccer game, or work, in the all-electric mode. Then you can plug in to a standard wall socket at home to refill your battery. All this time you haven't used gasoline. You could go for a week without using a drop of gasoline. That is why you will see a few PHEVs around DC with "150+ miles per gallon" written in large letters on the side. Fairfax County owns one. The local rep for A123 Batteries has one in Virginia.

"Another feature PHEVs and EVs provide is a balancer for the nations's electric grid"

Although none of the automakers are offering PHEVs to the public, except in Japan where Toyota is currently testing PHEVs in small quantities, some North American conversion companies are offering kits that include larger batteries and the plug. Other companies such as Hymotion, based in Canada, install the systems in the Toyota Prius.

Another feature both PHEVs and EVs provide is a balancer for the nation's electric grid. While they are still plugged in after taking in a charge they act as giant capacitors to help smooth out power demand for the grid during peak periods of demand. Toyota has experimented with this system using a Prius.

Toyota and GM have pledged, sort of, to make PHEVs soon. GM is experimenting with the new GM Volt, a hybrid that is electric powered but has a small on-board engine to generate electricity for the battery pack. GM hopes to produce 60,000 vehicles by 2010. We'll see. Until then, build, buy and drive your own !

Charlie Garlow is the Vice President of the Electric Vehicle Association of Washington DC (EVA/DC)

Solar Showers

By Jim Crowley

As I write this in midsummer, temperatures are in the nineties and many people are hunkering down with their air conditioner. (Confession--even I turn on the window unit for a few hours now and then). Shopping malls, offices and SUV's are conditioned to near arctic temperatures, lest we break a sweat during the daily commuter/consumer marathon. As a result of this behavior, power plants are running at full blast, burning long trainloads of coal, and precious supplies of natural gas. None of this is getting any cheaper.

The paradox of summer energy demand is that we are literally surrounded by energy on hot summer days. I did not fully appreciate this fact until recently—after the installation of our new solar hot water system. For the past several weeks the system has been daily warming the storage tank to about 140° F. As a bona fide energy geek, I love to check temperature gauges, write down numbers every hour, fool around with insulation, etc., which I realize is not for everyone. But, don't get me wrong, you don't need to do any of this! The hot water system comes on automatically in the morning, turns off in the evening, and produces a full tank of hot water as the end result. At cooler times of the year it will substantially preheat the water, providing our household with a net energy savings of several hundred kilowatt hours of electricity each month. A first step for many homeowners towards being "energy smart" should be to build or have installed a solar hot water system. Talk to an expert and crunch the numbers, but you will find that a properly-designed solar hot water system will pay for itself within a reasonable time. Besides this, there are few things quite as nice as a hot (guilt-free) shower powered by plain old sunshine!

Jim Crowley has a home on the Saturday tour. Ask him about his new Heiliodyne solar hot water system

Federal Tax Credit Update

By Rhone Resch

"Americans continue to favor solar as the most popular energy option for increased government investment . . ."

After twenty years without any federal incentives for homeowners who install solar energy systems, Congress took a welcome step forward in the Energy Policy Act of 2005 by creating a new solar investment tax credit (ITC) for homeowners. The residential ITC is set at 30 percent of the installation cost of a solar energy system, with a maximum dollar credit of $2,000. Eligible property includes solar photovoltaic (PV) or domestic hot water systems (excluding solar for swimming pools). For businesses, the ITC is a straight 30 percent credit with no dollar cap. To find out more about the scope and details of the federal ITC, download SEIA's Tax Manual free of charge at http://www.seia.org.

Unfortunately, the ITC is currently set to expire in December 2008. While the credit helped fuel a 75% increase in the residential solar installation market last year, the limited size and duration of the credit has restricted manufacturing investment, which is critical to drive down future costs. In response, SEIA and our 580+ member companies have identified a long-term extension of the tax credits, and the elimination of the $2,000 limit on the residential credit, as our highest priority. This policy would help make solar the economic choice for millions of American consumers, save billions in energy costs, and create tens of thousands of solar industry jobs throughout the United States.

Thanks to solar advocates like you, we have sent over 50,000 letters to Members of Congress asking them to pass meaningful long-term solar ITC provisions. Americans continue to favor solar as the most popular energy option for increased government investment, and the ITC is one of the few energy tax provisions that consumers can use directly to "go solar" and personally increase our energy independence.

As of this writing, the House and Senate are working towards a comprehensive energy bill that could potentially extend the business ITC by as much as eight years and the residential ITC by as much as six years. The two legislative bodies have produced different versions of the ITC provision, and SEIA will continue to push for the strongest possible provisions for solar. We anticipate that the final version of the energy bill may come for a vote in September or October.

To learn more about the status of the solar tax credit legislation, or to find a solar installer for your home, visit http://www.seia.org.

Rhone Resch is President of the Solar Energy Industries Association

Energy Efficient Lighting Lights up This Year's Solar Tour

Visit Home F in McLean, Virginia on Sunday from 11:00 am to 5:00 pm to see a demonstration of high efficiency lighting from BetterBulb.com

BetterBulb
4963 Elm Street, Suite 103
Bethesda, Maryland 20814

www.betterbulb.com
betterbulb@aol.com

BetterBulb introduces the latest in compact fluorescent (CFL) lighting technology. Cold Cathode Fluorescent Lamps (CCFL) are dimmable, instant on, contain less mercury and can last up to 25,000 hours which is more then twice the life of standard CFL bulbs. At $19.95 each CCFL bulbs are competitively priced due to their long life spans.

A 13 watt CCFL bulb is equivalent to a 60-watt incandescent bulb

LED lights operate at low temperatures and wattages resulting in a substantial savings in both electricity and cooling costs. They also have less impact on the environment and can last up to 40,000 hours! These bulbs fit in standard size sockets and come in a variety of arrays.

BetterBulb
ENERGY EFFICIENT LIGHTING

Maryland Energy Administration Credits

The Maryland Energy Administration (MEA) provides financial incentives to homeowners, businesses, local governments and non-profit organizations that install solar water-heating systems or solar-electric (PV) systems. This program took effect in January 2005 and applications will continue to be accepted through 2008. The incentives are as follows:

Residential Solar Photovoltaic
20% of the cost for solar-electric (photovoltaic) equipment on residential property up to a maximum of $3,000.
Minimum system size: 500 watts (0.5 kW); on and off-grid systems are eligible.

Solar Hot Water
20% of the cost for solar water-heating equipment up to a maximum of $2,000.
Minimum system size for residential, school or public buildings:
20 square feet of collector area (or 1 kW equivalent)
Minimum system size for commercial buildings:
40 square feet of collector area (or 2 kW equivalent)

Non-residential Solar Photovoltaic
20% of the cost for solar-electric (photovoltaic) equipment on non-residential property up to a maximum of $5,000.
Minimum system size for school, government and churches: 1 kW
Minimum system size for commercial buildings: 5 kW

PV system hardware must be in compliance with all applicable performance and safety standards, including: Underwriters Laboratories (UL) 1741, "Standard for Static Inverters and Charge Controllers for Use in Photovoltaic Systems" and UL 1703, "Standard for Safety: Flat-Plate Photovoltaic Modules and Panels." The system must be installed in compliance with applicable requirements of local electric codes and the National Electric Code (NEC). Utility interconnected (grid-tied) systems must be installed in compliance with IEEE Standard 929-2000, "Recommended Practice for Utility Interface of Photovoltaic Systems."

Note that these grants may be subtracted from adjusted gross income for state income tax purposes. Program recipients do not have to pay state taxes on the amount of the grant received. See House Bill 590, enacted in May 2007.

For an application and more information contact:

Public Information Officer
Maryland Energy Administration
1623 Forest Drive, Suite 300
Annapolis, MD 21403
Phone: (800) 723-6374
meainfo@energy.state.md.us
www.energy.state.md.us/programs/renewable/solargrant/

Summary of Residential Solar Credit Programs by Locality

Compiled from www.dsireusa.org

FEDERAL

Eligible Renewables:	Photovoltaic, solar hot water, fuel Cells
Amount:	30%
Maximum Incentive:	$2,000 for solar electric and solar water heater; $500 per 0.5kW for fuel cells
Requirements:	Must be certified by SRCC or endorsed by the state. Half the dwellings hot water must be from solar.
Effective Date:	January 1, 2006 to December 31, 2008
Website:	http://www.irs.gov/pub/irs-pdf/f5695.pdf

MARYLAND

Eligible Renewables:	Photovoltaic, solar hot water, solar thermal process heat
Amount:	20%
Maximum Incentive:	$3,000 (residential PV); $5,000 (non-residential PV); $2,000 (solar water heating)
Requirements:	20 sq. ft. for solar hot water collectors, 500 watt minimum for photovoltaic or 1kW equivalent
Effective Date:	January 1, 2005 through 2008
Website:	http://www.energy.state.md.us/programs/renewable/solargrant/

VIRGINIA

Incentive Type:	Net metering
Eligibility:	Photovoltaic, solar thermal electric, biomass, geothermal electric, fuel cells, wind, hydroelectric
Amount:	Credited to following month at utility's retail rate; either granted to utility annually or credited to following month
Requirements:	Maximum systems size 500 kW non-residential; 10 kW residential
Effective Date:	April 4, 2007
Website:	http://www.mme.state.va.us/de

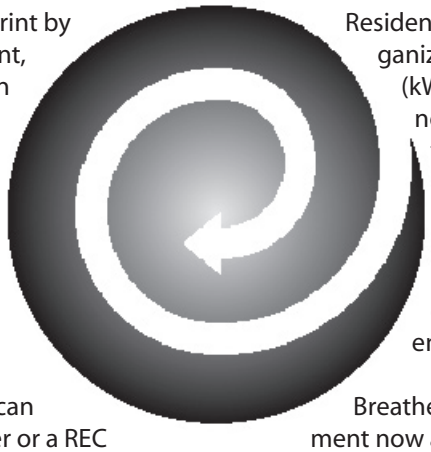
DISTRICT OF COLUMBIA

Incentive Type:	Net metering
Eligibility:	Photovoltaic, solar thermal electric, biomass, geothermal electric, fuel cells, wind, hydroelectric
Amount:	Credited to customer's next bill at utility's retail rate
Requirements:	Maximum systems size 100kW
Effective Date:	February 18, 2005
Website:	http://dceo.dc.gov/dceo/cwp/view,a,3,q,601821.asp

Montgomery County Clean Energy Rewards

By Eric Coffman

When was the last time you were rewarded for "doing the right thing"? Well now you can be. Montgomery County is rewarding its consumers who are reducing their environmental footprint by purchasing clean energy. Any county resident, small business, congregation, or organization making the switch to clean energy through the Clean Energy Rewards program will receive a reward that reduces the added cost of clean energy by 40%! Even consumers who pay for their electricity bill through their rent or lease can make a difference by purchasing renewable energy certificates (RECs), or carbon offsets.



Through Clean Energy Rewards, consumers can choose clean energy from an energy supplier or a REC marketer coordinating with Montgomery County's Department of Environmental Protection (DEP). Visit the program's web site (www.montgomerycountymd.gov/cleanenergyrewards) to see the list of suppliers and learn more about the program. You can click through to suppliers' web sites to purchase clean energy directly. It's easy to make the switch to clean energy – it's just like making any other purchase on-line.

Residents will receive 1 cent, and businesses and organizations will receive 1.5 cents per kilowatt-hour (kWh) of clean energy used. The reward will be noticed either as a line item credit on your electricity bill, or will be deducted from the price of RECs purchased. Depending on the clean energy purchased and how much electricity you use, the added cost will be about $15 - $25 a month. That's the price of one pizza dinner per month! Isn't that worth a better environment for you and your family?

Breathe easier and do your part for a cleaner environment now and for the future. Choose clean energy!

Contact Information:
Montgomery County Department of Environmental Protection
240-777-7753
susan.kirby@montgomerycountymd.gov

JOIN THE VIRGINIA SOLAR COUNCIL

The VIRGINIA SOLAR COUNCIL is a non-profit, public education organization dedicated to increasing the awareness and the use of renewable energy technologies and energy conservation in Virginia. Dues are $10 per year (tax deductible).

Send check to: VIRGINIA SOLAR COUNCIL
PO BOX 8689
ALEXANDRIA, VA 22306
Fax /Call: (703) 768-7749

PURPOSE AND GOALS

1. Provide information specific to the state of Virginia about renewable energy and conservation to benefit the citizens of Virginia
2. Encourage activity of local governments and organizations to participate in energy planning and encourage efficient use of public funds.
3. Establish and maintain a network of SOLAR activists and professionals to assist and inform members of their own community.
4. Publicize, sponsor and host SOLAR events and small community meetings to discuss the potential of renewable energy and conservation.
5. Provide public with experience of renewable technologies.
6. Promote renewable and energy conservation policies and projects in the state and to local governments of Virginia.

41 Low-Cost Conservation Tips

1. Seal around fireplace trim, window trim and baseboards
2. Seal between sheathing and foundation on the outside
3. Weather-strip windows, doors, and joints
4. Insulate band joists area
5 Install switch plate and outlet plate insulators
6. Seal basement crawlspace, ceilings and walls
7. Install doorsweeps and new thresholds
8. Caulk and insulate all primary and secondary duct joints, except return duct joints
9. Weather-strip/insulate scuttle hole or attic access doors
10. Weather-strip vertical joints of exterior sliding doors and window air conditioners
11. Weather-strip top, bottom, and sides of garage doors
12. Install radiator reflectors
13. Install air filter alarm; clean and replace regularly
14. Insulate all accessible water heating and hot water pipes
15. Insulate the first 6 feet of cold water pipes leading into water heater
16. Insulate air-conditioner pipes and tubing
17. Install heating/cooling monitors
18. Install setback thermostat
19. Install water miser for toilet tanks, shower and faucets
20. Install hot water tank jacket and insulate with reflective foil
21. Seal around soil vent stacks in attic floor, and around all plumbing access doors
22. Seal mail chutes
23. Install temperature-controlled attic exhaust fans
24. Install dryer vent diverters (electric dryer only)
25. Set thermostat to 68°F
26. Install automatic foundation vents
27. Install Plug-Itt in fireplaces
28. Install Cap-Itt over pull-down stairs
29. Install pulley plugs over pulleys of double hung windows
30. Reduce hot water temperature to 120°F and periodically drain tank sediment
31. Reduce boiler temperature
32. Reduce low-limit cutoff in the furnace
33. Replace incandescent bulbs with compact fluorescent, cold compact fluorescent or led bulbs
34. Add humidifiers for greater winter comfort at low temps
35. Clean air-conditioner exterior condenser unit
36. Open shades on south-facing windows on sunny days in the winter
37. Minimize use of exhaust fans when A/C or heat is in use
38. Use motion detectors with halogen lamps for outdoor lighting
39. Purchase high-efficiency appliances
40. Use "cool dry" cycle or allow dishes to air dry when using a dishwasher
41. Hang laundry outside to dry on nice days

Solar Resources

Magazines

Home Power Magazine, The Hands-on Journal of Home Made Power, $10.00 per year. This magazine covers various energy topics: solar, wind, PV systems, electric vehicles, batteries, hydrogen, domestic solar hot water, etc. www.homepower.com

Mother Earth News, $19.95 per year. The guide to living wisely features renewable energy projects and helpful sustainable living articles. Published bimonthly. www.motherearthnews.com

Solar Today, The magazine of the American Solar Energy Association. Available through The American Solar Energy Society at www.ases.org

The Real Goods Catalogue, (800) 762-7325. This is a wide-ranging catalogue of conservation and renewable energy, including photovoltaic panels, solar hot water, and do-it-yourself items. www.realgoods.com

Books

Real Goods 11th Edition Solar Living Sourcebook, $30. The Sourcebook provides the technical details you need to harness the sun, wind, or water for your home power generation. 600 pages. www.realgoods.com

The Solar Electric House: A Design Manual for Home-Scale Photovoltaic Systems, by Steven J. Strong, Sustainability Press, 1993, $21.95. A complete guide to solar home design, helping you choose the right system and how to install it.

Consumer Guide to Solar Energy, by Scott Sklar and Kenneth G. Sheinkopf, $11.00. Reduce energy costs while making your home more comfortable with energy efficient products available at your local store. The new edition includes updated information on solar energy tax credits. Available through Amazon.

Websites

American Council for Energy Efficient Economy - www.aceee.org

American Solar Energy Association - www.ases.org

Database State Incentives, Renewable Energy - www.dsireusa.org

Interstate Renewables Council - www.irecusa.org

MD Energy Administration - www.energy.state.md.us/programs/renewable/solargrant/

MD-DC-VA Solar Energy Industries Association - www.mdv-seia.org

Montgomery County
Clean Energy Awards - www.montgomerycountymd.gov/cleanenergyrewards

Potomac Region Solar Energy Association - www.prsea.org

Solar Electric Industries Association - www.seia.org

Solar Electric Power Association - www.solarelectricpower.org

US Department of Energy
Energy Efficiency and Renewable Energy - www.eere.energy.gov

Solar Installers

AURORA ENERGY, INC.
Since 1994, Aurora Energy, LLC has provided renewable energy services and equipment to government agencies, businesses, and individuals throughout the Mid-Atlantic states.

Aurora Energy, Inc.
9009 Mendenhall Court
Columbia, Maryland 21045
Local: (410) 997-0778
Toll Free: (800) 7SOLAR7
E-Mail: info@thermomax.com
www.aurora-energy.com
www.thermomax.com

STANDARD SOLAR, INC.
Standard Solar, established in 2004, is a solar home energy services company based in Maryland, providing solar photovoltaic (and solar hot water) systems for the Metropolitan Washington area.

Standard Solar, Inc.
P.O. Box 83309
Gaithersburg, Maryland 20883
Local: 301-253-5008
Toll Free: (888) GRID-TIE
metrodc@standardsolar.com
www.standardsolar.com

CHESAPEAKE SOLAR LLC
Chesapeake Solar was founded in 1999 as Chesapeake Wind & Solar LLC. The founding partners started the company based on their years of engineering experience and their passionate commitment to the development of renewable energy in the Mid-Atlantic region.

Chesapeake Solar LLC
7761 Waterloo Road
Jessup, MD 20794
Baltimore: 443-733-1221
Local: 301-604-6288
info@chesapeakesolar.net
www.chesapeakesolar.net

Late Arrivals

The following is a list of homes that did not make it in time for final printing in the guide or map but will be open on the tour.

334 Delight Meadows Road, Reisterstown Maryland

ADC Map [BC 24 A-1]

OPEN ON SUNDAY

FEATURES

pv
fluorescent lighting
propane-powered vehicle & lawn equipment
olar water heating

DIRECTIONS

From the Baltimore beltway (I-695) take Rt 795 North to exit 7B, Franklin Blvd. west. Go to the 2nd light and bear right onto Church Rd. Go about 1/8 mile and turn left onto Sunnyking Rd. (also signed "to Delight Meadows"). Take the 3rd left onto Sunnydale Rd, the 2nd left onto Sunlight Rd, turn left onto Bonnie Meadow Rd (at dead-end), and right onto Delight Meadows (at dead-end). Turn right onto the panhandle and the house is in the back off the main road and to the right.

ABOUT THE HOME

Ninety percent of the lighting in this 3900 sq. ft. home is fluorescent, 40% of all the electricity in the home is supplied by a 2.8 Kw roof-mounted PV array. Domestic water heat also comes from the sun (with propane backup). The homeowner's pickup truck, tractor, tiller, and pushmower also run on propane. The battery on the weedeater is recharged with solar power. Gardening with native species is a favorite pastime of this homeowner.

6719 Conway Ave, Takoma Park Maryland

ADC Map [FC 24 B-6]

FEATURES

pv
solar hot water
daylighting
corn pellet stove
structural insulated panels
high efficient ac and heat
high efficient appliances
radiant floor heating
recycled building materials
dual-flush toilets
water-efficient washer

DIRECTIONS

From the North take New Hampshire Ave (650) south, crossing University Blvd (193) and East West Highway (410). After crossing 410, go one block and make a right at Belford Place. Take Belford Place around till it becomes Conway Ave. The house will be on the right near the intersection of Belford and Conway.

ABOUT THE HOME

Energy and materials conscious construction of a formerly 900 sq ft, one-story, brick Cape Cod transformed into a 1600 sq ft two-story house. Energy features include: corn pellet stove, large and small green roof, 3kw photovoltaic panels (grid-tied), evacuated tube solar hot water system, natural ventilation and daylighting, and ceiling fans and efficient lighting throughout. Structural Insulated Panels (SIP) construction, supplemental insulation of existing walls, and soy-based spray foam insulation of 2x6 construction for some new walls, old roof and foundation. High efficient AC and heat (21 SEER heat pump) with energy recovery ventilator (ERV) and small electric radiant floor heating used only as supplement to other systems.

Old building materials recycled and others purchased through Community Forklift. FSC, local and borate pressure-treated lumber and natural finishes; non-toxic paints, tile and wood sealants; recycled tiles and countertops; salvaged wood flooring and doors; surplus, energy-efficient windows (no vinyl); reused lighting fixtures and sinks; Interface Flor and cradle-to-cradle carpet tiles; extensive construction recycling; fiber cement siding and trim; recycled rubber shingles; metal roof and gutters and rain barrels for water conservation; low-flow and dual-flush toilets, water-efficient washer, clothes line.

Mostly updated photo tour available at: http://flickr.com/photos/satjiwan
email address: satjiwan@alumni.brandeis.edu

My Parents Made the Switch to Clean Energy.

They are helping to keep my future bright for less than the cost of a pack of diapers a month. By switching to clean energy they are:

- Emitting fewer greenhouse gases into my air.
- Decreasing their dependence on fossil fuels.
- Getting a 1¢/kWh reward for the clean energy they use.

More information and a list of suppliers is available at:
www.montgomerycountymd.gov/cleanenergyrewards
Or, call DEP (240.777.7700) with any questions.

CLEAN ENERGY REWARDS

Montgomery County, Maryland, Department of Environmental Protection

Solar power is here NOW.

And Chesapeake Wind & Solar is now...

Chesapeake Solar

Smart solutions. **Smart power.**

..with a new look and a brand new Web site.

www.chesapeakesolar.net

Visit our Web site, or call us at 443-733-1221 for more information on going solar.

NABCEP Certified Installers, MHIC #123793

Chesapeake Solar specializes in:

- Solar Photovoltaic Systems
- Grid-tie and Power Back-up
- Solar Hot Water
- Solar Pool Heating
- Residential or Commercial
- Project Financing
- Grants, Tax Credits, and Net Metering