



Service Directory

***"Green Your Home
from Soup to Nuts"***

Spring 2009

ABOUT THE EVERGREEN™ HOME

The EverGreen™ Home offers homeowners Green Consulting services for those interested in eco-conscious renovations and/or interior design. Our company's **Green Team** includes the country's finest architects, builders and designers who work to achieve the standards set forth by the U.S. Green Building Council's LEED (*Leadership in Energy and Environmental Design*) program. Our team can assist you with energy audits, green renovations, green site plans for building new homes, eco-friendly additions to your existing home, and green interior design consultation.

If you are getting ready to buy or sell a home, consider speaking with one of our certified Green Real Estate Agents and EB Certified™ Agents, available across the country. Making your home greener is an invaluable investment for homeowners, and working with the right agent increases the value of your home when you wish to place it on the market. Green is the standard. So, give yourself the advantage of working closely with one of our certified Agents.

Contact Us at:

10125 Colesville Road, Ste 230

Silver Spring, MD 20901

301-312-2407 or 1-800-270-2448 ext 708

www.TheEverGreenHome.com

Please note that The EverGreen™ Home selects members of its Green Team based upon the following criteria: 1) The company/agent has an emphasis on eco-friendly services; and 2) The principals of the company follow best practices in fostering sustainability. The EverGreen™ Home therefore can make no guarantee about the quality of service provided by these companies/agents to the general public.

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ENERGY AUDITS

Sponsored by
Bill Gray, Certified Energy Auditor

The primary goal of an “energy audit” is to find ways of reducing a home’s energy consumption.


Energy auditors measure the “R-value” of a home’s structure. This is an in-depth analysis where the area and resistance to heat flow is measured for the doors, main walls, floors, as well as the ceilings.

The structural integrity of a home’s windows and the sealing around the doors greatly impact a home’s R-value. This is because windows and doors are particularly vulnerable to the infiltration of air and the loss of heat.

Mechanical Analysis


Many energy audits also include a study of how well the home’s mechanical systems work. For example, audits look at the heating and air conditioning units in a home, the ventilation systems, as well as the thermostat to determine their condition and rate of efficiency. Any systems that are not adding value are brought into view on the auditor’s written report. Such reports are very comprehensive in scope and include an overall estimation of the home’s energy use given the average temperature outside. These reports take into consideration 1) whether the home is shaded or in direct sun; 2) the habits of the people living in the home; and 3) thermostat settings. However, the most valuable aspect of these reports is that they can demonstrate the bottom line impact of any improvements that


the energy auditor may recommend. Homeowners can see a clear line to reduced energy costs and long-term savings. That’s money in the bank.



BILL GRAY
BPI Certified Professional
Energy Auditor

Complete home energy audits
The second visit is free* it will show you the
results of your energy improvements

**301-253-3262**
To schedule your audit
www.InspectWithAllStar.com


Return visit must be within 6 months of original audit.

Will the Audit be Accurate?

The findings of an energy audit can be extremely accurate providing the auditor has enough information with which to work. Auditors need to know what the billing history is for a given household, and how energy is typically consumed by the residents on a daily basis. Your auditor is not being “nosey.” However, the more your auditor knows about your energy consumption habits, the better the results of the energy audit will be for you and your family.

Can I Get a Tax Break?

Depending upon where you live, the results of an energy audit may qualify your home for tax credits under your county government. Remember, the primary goal of an energy audit is to find ways of reducing your home's energy consumption. Home improvements that are made in accordance with your energy audit may qualify you for energy savings tax breaks. Check with your county or state to determine what programs apply to you.



Class Notes:

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Opening Windows to a Greener Tomorrow.



ENERGY-EFFICIENT WINDOWS

Sponsored by
Thompson Creek Windows

The average American home loses a significant amount of heat and cool air through its windows. Although windows are meant to minimize the loss of heat and air conditioning from the home, poorly structured windows are going to allow precious heat and air conditioning to escape. Windows that are old, or poorly fitted, are literally helping you throw your hard-earned money away.

2009 Energy Tax Credit

Still need more of a reason to replace those old inefficient windows? As part of President Obama's recently passed Stimulus Plan, the US Government is now offering incentives to the increasing number of energy-conscious American homeowners. The American Recovery and Reinvestment Act of 2009 includes certain energy conservation incentives for homeowners looking to install energy-efficient products in their homes. **Installing qualifying energy-efficient windows in their homes now entitles homeowners to a 30% tax credit of up to \$1,500.**

However, homeowners looking to take advantage of the new Energy Tax Credit should be aware that not all windows on the market meet qualifications. Simply having an ENERGY STAR label on the window does not qualify the product for the tax credit. In order to qualify, windows must have a **U factor and SHGC rating at or below 0.30**. Americans are urged to do their research before purchasing windows in order to ensure that the windows meet all qualifications. The National Fenestration Rating Council (NFRC) publishes window ratings for many window manufacturers and distributors around the country. For more information, visit the NFRC website at www.nfrc.org.

Did You Know...

- ✓ It would take 9 million trees to absorb the CO₂ produced in one year by inefficient windows.
- ✓ Thompson Creek windows reduce CO₂ emissions by up to 1600 lbs. per home each year.
- ✓ If every home in America had Thompson Creek windows, we could save the environment over 58 million tons of CO₂ pollution.



FREE, no-obligation price quotes

866-57CREEK
thompsoncreek.com



Money Doesn't Grow on Trees

The best types of windows to get are those that are thermally efficient. Windows with no metal components are best because they will not conduct heat or cool and therefore are the most thermally efficient types of windows on the market. Windows that are designed to save energy can actually reduce CO₂ emissions by keeping heat in or out of your home, lowering residential energy usage, and saving homeowners hundreds of dollars per year in energy costs. It's a green choice that will keep saving you money for years to come.

In today's economy, watching every dollar counts. Installing energy-efficient windows makes your home more energy efficient, which saves you money each month. Properly installed energy-efficient windows can drastically reduce the amount of heating and cooling you will need to produce on a daily basis. Therefore, over time you will end up spending less on producing energy and lower your home's carbon footprint.



Class Notes:

ECO-FRIENDLY REAL ESTATE AGENTS

Sponsored by

*REAL ESTATE AGENTS: MARI NEGRON (N. VA),
LINDA GRAY (MONTGOMERY COUNTY), LILI SHEELINE (D.C.)
AND SHIRLEY MATLOCK (HOWARD & BALTIMORE COUNTY)*

Today's eco-conscious customers want to work with professionals that can guide them towards being more sustainable. Customers are now more savvy about being "green" and when it comes to seeking a real estate agent, they now want to work with agents and brokers who "walk the walk."

Since "green" is the standard, you may be interested in upgrading your home for a stronger sale. *"A stronger sale? What does that mean?"* Making your home attractive in today's market is much more than repainting and restaging the rooms in your house. Today, you are going to get premium offers for your home if you can demonstrate that it has 1) great indoor air quality; 2) has recently been through an energy audit and has proven itself to be energy efficient; 3) is retrofitted to solar or geothermal systems; or 4) is decorated using sustainable components.

Green real estate professionals are an important resource in today's "green" climate. If you are seeking to purchase or sell a home, you would benefit greatly from the knowledge and expertise of a certified agent who has studied the environmental impact of real estate. Homes most definitely impact the environment, and an eco-conscious agent can show you how. There are several types of "green" certifications for real estate professionals. Our **Service Directory** has highlighted two well-known certifications that you should look for when selecting a real estate agent.

Green Real Estate Education™

Graduates of the Green Real Estate Education™ Program use the term "GL-Certified." They are well prepared professionals in the arena of green real estate. These agents are full service real estate professionals who can also consult with homeowners on when to do an energy audit and why. GL-Certified agents are sensitive to climate control issues and can define renewable



Mari Negron

National Realty LLC

11890 Sunrise Rise Valley Dr.
Reston, VA 20191
(703) 801-1689

www.MariNegron.com
MariNegron@aol.com

As a Green Certified Realtor® I can help you with all of your real estate consulting needs: From finding what you are looking for in a home, to marketing your home to the most appropriate audience resulting in an expedient sale.



Surfing the wave into the future of Real Estate



Leading an effort...to a new way of life.
Green Real Estate Education

Mari Negron – Northern VA

energy sources to assist their clients in making greener choices as they embark on home renovations, additions, purchasing a home or selling a home. Graduates of the Green Real Estate Education™ Program can effectively market your home so that there is always the right fit between buyer and seller.

EB Certified™ Professionals

EB Certified™ real estate professionals have received special training from EcoBroker International in the areas of energy and environmental issues as they relate to real estate. EB Certified™ professionals are typically "licensed real estate salespersons" or "licensed associate real estate brokers" with extensive training in environmental issues. These trained professionals offer you the energy efficiency and environmentally sensitive choices that help you save money, live comfortably, and

Shirley Matlock – Howard and Baltimore Counties



An experienced Realtor®, committed to her clients, Lili is advisor, strategist, negotiator and advocate for her home buyers and sellers.

With certification by EcoBroker International® and Green Real Estate Education and with a background in international conservation, she also helps clients pursue options for energy-efficient and environmentally friendly homes.

Lili: For me, the job is about researching the market, understanding financing, and negotiating solid deals. It's about smart energy use and environmental stewardship. But at its core, it's about people — people who want, and deserve, to be treated with honesty, integrity and respect.

Buying or selling a home is an opportunity — for financial growth, family happiness, and future security. See what opportunities await you.

20 Chevy Chase Cir. NW, DC • 202.363.9700
Lili@longandfoster.com • www.LiliSheeline.com



Lili Sheeline – DC

reduce your carbon footprint.

EB Certified™ real estate professionals understand your values and can make a huge difference. Are you looking to get a “green mortgage” for your energy-efficient home? You’ve come to the right place. EB Certified™ professionals possess a wealth of knowledge about new trends in “green lending,” and they can position you to benefit from tax credits and other perks for which your home may be eligible.

“Working with an EB Certified™ Real Estate Professional is a Huge Opportunity to Benefit the Planet.”

According to the U.S. Green Building Council, buildings account for nearly 40 percent of total U.S. energy consumption and 12 percent of water use. Your EB Certified™ real estate professional is more than a real estate agent.



LINDA GRAY

**EB® Certified
RE/MAX Green Agent**

*Helping you (and the planet) get the most
when buying and selling your home.
Let me help you make your home more
comfortable, healthier, and more
energy efficient.*



301-922-1008

RE/MAX Realty Centre, Inc.



Linda Gray – Montgomery County

They can help you make cleaner, greener choices as you select a new home, upgrade your present home, or prepare your home for eco-conscious buyers.

The Following two homeowner tips are provided by **EcoBroker® International**:

Appliances

When buying an appliance, remember that it has two price tags: what you pay to take it home and what you pay for the energy and water it uses. ENERGY STAR qualified appliances incorporate advanced technologies that use 10–50% less energy and water than standard models. The money you save on your utility bills can more than make up for the cost of a more expensive but more efficient ENERGY STAR model.

For top performance, premium features, and energy savings, look for energy-efficient clothes washers, refrigerators, dishwashers, room air conditioners and dehumidifiers that have earned the ENERGY STAR.

Blocking the Heat

Two excellent methods to block heat are insulation and shading. Insulation helps keep your home comfortable and saves money on mechanical cooling systems such as air conditioners and electric fans. Shading devices block the sun's rays and absorb or reflect the solar heat.

Insulation

Weatherization measures—such as insulating, weather-stripping, and caulking—help seal and protect your house against the summer heat in addition to keeping out the winter cold. For additional tips on insulating, please contact an EB Certified™ professional.

Shading

Shading your home can reduce indoor temperatures by as much as 20°F (11°C). Effective shading can be provided by trees and other vegetation and exterior or interior shades.

Landscaping

Landscaping is a natural and beautiful way to shade your home and block the sun. A well-placed tree, bush, or vine can deliver effective shade and add to the aesthetic value of your property. When designing your landscaping, use plants native to your area that survive with minimal care.



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SUSTAINABLE INTERIOR DESIGN

Sponsored by
Ambi Design Studio LLC

Today, more and more interior designers are offering "green" or "Sustainable" design. It has almost become a trend. But what does "sustainability" have to do with working with an interior designer? Is it just another fad – here today, gone tomorrow? Here is some food for thought:

People Friendly, Earth Friendly

"Sustainable" interior design is an approach towards interior decorating that emphasizes the health of the people living in the home as well as the health of the planet. Interior designers that employ "green" practices are more inclined to (1) buy products that promote improved indoor air quality; (2) make design decisions that protect our natural resources; and (3) show their clients how to use less energy.

The joy of working with a talented interior designer is achieving a fresh new look in the home, and highlighting the home's best qualities. However interior designers focusing on "green" can help you achieve this renaissance in your home, while protecting our most important resources.

Interior designers are like conductors. If they are utilized from the planning stage, their hands will touch nearly every part of the project. They can work with a client's architect and contractor to help the homeowner achieve

their dreams. Now take that raw talent and add to it knowledge of science and the environment. Viola! You have a "sustainable" interior designer.

Choosing Better Products

When it comes to implementing a plan for your home, interior designers have access to literally thousands of products. But the types of products they choose reveals how committed they are to being "green." For example, sustainable designers opt for paints that have low "volatile organic compounds" ("VOC's") or VOC-free paints. These paints protect indoor air quality, and they are available in any of the colors that

enlightenment through design



Visit our website for more information and for a full portfolio of diverse projects. Find tips on eco-friendly interior design in our cover story of Southern Living Magazine's May "green issue" located in the accolades section.

5220 Kings Park Drive, Springfield, VA 22151, 703-597-8401
www.ambidesignstudio.com

you would typically find for standard paints. These earth-friendly paints also require no special application methods or treatment.

Flooring, cabinetry, and furniture are all available in sustainable materials like FSC (Forest Stewardship Council) certified woods. Your eco-conscious interior designer is knowledgeable about where to purchase these items or may recommend a different direction – like decorating with highly sustainable fast growing woods such as bamboo or rattan. You can speak with your sustainable designer about the soft touches as well. Fabrics and wall-coverings, linens, and towels are also available in renewable fibers and range in color and texture.

There are a multitude of ways to “go green” in the home. Working with a smart interior designer will help you get what you want from the standpoint of design. However, designers who want to protect you *and* the planet would probably all agree to the importance of the following three green tips:

#2 Every Drop Counts: Protecting the planet and saving water go together. But you may be concerned that water-saving fixtures may not be visually appealing or provide optimal water pressure. Don't worry. Sustainable designers can suggest great looking "low-flow" fixtures that provide satisfying water pressure for showers and sinks, as well as dual flush toilets that save over 5,000 gallons of water per year. Anything you can do to save water in your home is *more than* just a drop in the bucket towards sustainability.

When selecting lighting fixtures, designers who want to save energy try to work with a combination of fluorescent and low-voltage fixtures. They know best how to use a combination of energy-efficient bulbs to create a nice ambient glow.

The goal of the sustainable designer is three-fold: 1) working to bring beauty to their clients' homes through rich, high-quality design; 2) implementing designs that will help their clients save money through energy efficiency; and 3) achieving healthier indoor air quality for their clients while promoting a healthier planet.



Class Notes:

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GREEN COUNTERTOPS

Sponsored by
Melesco Builders, Inc.

How Do I know It's Really "Green?"

Many people are becoming more and more interested in ensuring that their countertops are "green." But how can you be certain they *are* green? The best answer is to consider the manner in which mainstream countertops are made. Generally, materials such as plastic laminate and petroleum are used. These materials are neither sustainable, nor good for a home's indoor air quality. Even heavy, earthy materials like the very popular granite can compromise your good intentions to "go green." Granite, although durable and attractive, has a pretty hefty carbon footprint since quarrying and shipping this very heavy stone requires a lot of energy. So what's a green-minded homeowner to do?

Consider the Environment

From the perspective of preserving natural resources and lowering our carbon footprints, a close look at recycled materials for countertops is key. There are a variety of excellent options available today. Manufacturers are able to provide very durable countertops in a wide array of colors to their "green" minded customers. High performing non-toxic materials such as recycled plastic, or recycled bottle glass are making their way into the spotlight. These materials have a good degree of versatility and can be used for kitchen countertops, table tops, bathroom countertops and more. From an environmental perspective, recycled bottle glass is a winner. Recycled glass countertops are typically greater than 80% post consumer content and they don't require toxic adhesives and glues to keep them in place.

Sustainable Countertops

Designed and Made By

Melesco Builders, Inc.



**New River Aggregates
Recycled Glass**

276 773 3175

www.NewRiverConcreteCountertops.com

Another very "green" choice is purchasing countertops made from low impact aggregates like river sand and gravel which is collected in a sustainable and non-damaging way. River sand and gravel are aggregates that build up behind dams and can be collected during maintenance of the dams. Therefore there is no excavating or mining required and the sand and gravel is a by-product of the dams.

If you are purchasing recycled glass countertops it makes more sense to buy from a regional

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Environmental and Sustainable Flooring

Sponsored by
Select Floors Inc. and EcoTimber

How Do I Know I'm Buying Green?

Wood suppliers often make claims that their products come from "managed" or "sustainable" forests, but without independent certification, there is no way to really know. Increasingly, such claims are used as a marketing ploy to "greenwash" material that came from destructive forestry practices. That's why it's important to buy certified wood. But beware! The fact that a wood product is "certified" does not mean that it comes from an ecologically well-managed forest. There are now various types of forest certifications, and most do not have meaningful environmental standards, enforcement mechanisms, or methods of tracking the wood through the supply chain to

keep out illegally-logged material and prevent misrepresentation.

How do I Choose?

The only forest certification system that enjoys the support of environmental groups worldwide is that of the **Forest Stewardship Council (FSC)**, which is independent, non-profit, and has a mechanism for tracking wood from the forest to the consumer. The U.S. Green Building Council only recognizes FSC certification as evidence of the sustainability of a wood product. If you want verification that the wood you are purchasing came from a truly well-managed forest, demand FSC-certified material.



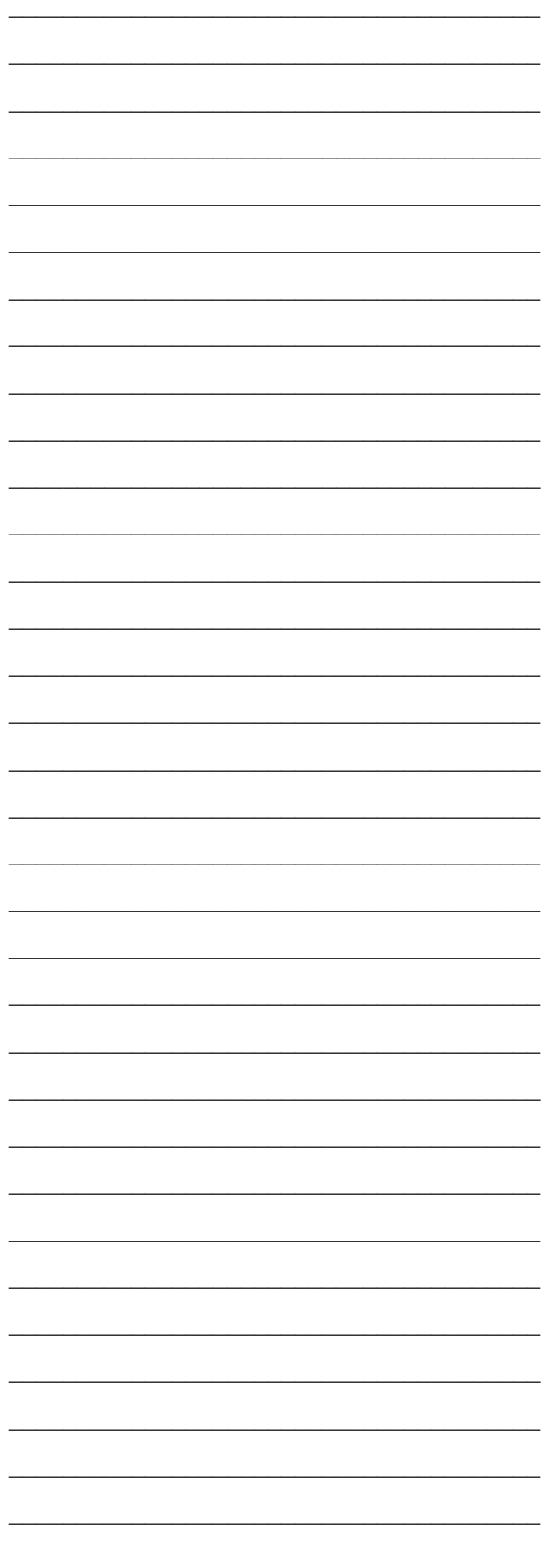
www.ecotimber.com



Hand-scraped Hickory | Spice
100% FSC Certified

An EcoTimber floor is more than beautiful wood or bamboo. Since 1992, EcoTimber is the only flooring company devoted exclusively to forest protection and indoor air quality. You can trust that an EcoTimber floor, no matter which one you choose, satisfies the highest environmental and health standards.

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235 Derwood Circle, Building B
Rockville, MD 20850
310.762.5100

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LEED for HOMES

Sponsored by
Greenbuilders, Inc.

Would it be possible to build your dream home without the guilt of a huge carbon footprint?

Absolutely – that is, if you build a USGBC LEED-certified home. “What’s *that*?” You may wonder. LEED stands for Leadership in Energy and Environmental Design, the US Green Building Council’s rating system which was issued February 2008. Asking your builder to use the LEED-H rating system will assure that your home construction project is as green as possible. Builders who are using LEED-H place a strong emphasis on the importance of efficient design as it impacts the environment. The LEED-H rating system looks at issues like how to build in a way that will promote water

conservation; how to design for energy efficiency; the use of sustainable materials that promote good indoor air quality; and how to help clients make many other sustainable choices.

However, even if you are not looking to have your home built to LEED standards, you can still work with a builder who has the “LEED AP” designation. A LEED AP is a person who has passed an extensive exam demonstrating his or her grasp of green building practices and principles. A LEED AP builder will work with you on targeting the areas of your building project that you really want to make “green.”

For more information on green homes go to: www.usgbc.org or www.greenhomeguide.org.



Thinking of going
'Green'



On your next project?

We can build

green roofs • natural materials

energy systems • straw bale

Greenbuilders, Inc.

www.greenbuilders.com



Polly Bart, PHD, Owner
Leader in green building since 1988



Consider Straw Bale Construction When Building

Straw is an amazing building material. Yes, we said *straw*. As far as green building materials go, straw is an impressive front-runner. Straw is relatively inexpensive, is easy to obtain, and is easy to work with. Whereas, unwanted straw is discarded by farms each year by burning and other environmentally unfriendly methods, using straw as a building material helps to wisely utilize a natural resource.

How Do You Build with Straw Bales?

Think of how sturdy a bale of straw is when you sit on one. It's solid. The straw bales are used to provide structure and support, and they make for sturdy wall construction. One way of building a wall with straw bales is to stack the bales. This technique provides a great support for the roof and overall structure. Builders who use this sustainable material will typically finish the exterior of the wall with lime plaster and will apply lime plaster to the interior facing wall as well. This ensures that the straw bales breathe and do not accumulate moisture. You can build almost entirely with straw bales. Straw bale houses have lasted over one hundred years, are fire rated, and have an insulation value of R-40. Using straw bales in construction saves an average of 50 trees per house. Straw bale houses can be built for about the same cost as conventional construction, and they are relatively easy to build.

Straw bale homes can be very gratifying. These homes are both beautiful *and* kind to our planet.



Straw Bale Walls finished with Lime Plaster



Class Notes:

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GEOHERMAL ENERGY

Sponsored by
Ground Loop, Inc.

Geothermal Technology works with nature to achieve a source of heating and cooling for the home. Tens of thousands of homes are being built or retrofitted with geothermal heating and cooling systems every year because geothermal technology is a high quality option that is becoming more economical.



Geothermal systems have now become affordable options for thousands of low and moderate income homes because of the system's low life cycle costs compared to all alternatives in almost every region of the country. According to the Environmental Protection Agency (EPA), geoexchange systems save homeowners more than 30 – 70% in heating costs, and 20 – 50% in cooling costs when compared to conventional systems. The EPA has concluded that well designed and properly installed high efficiency geothermal heat pump systems are easier on the environment than any alternative space conditioning technology currently available.


WATERFURNACE SYSTEMS QUALIFY FOR THE
NEW 30% FEDERAL TAX CREDIT UP TO \$2000

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A WaterFurnace geothermal comfort system uses the **clean, renewable energy** found in your own backyard to provide **savings up to 70%** on utility bills. Call **Ground Loop Heating & Air** today, and show your neighbors that intelligent life is right next door.

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What's so Special About Geothermal?

Geothermal heat pumps are one option that homeowners should consider. Why? Because geothermal heat pumps will help homeowners (1) save energy and money; (2) reduce emissions (with the lowest CO₂ emissions for minimum greenhouse warming impact); and (3) provide indoor comfort at less cost to the environment. Overall, the EPA found emerging geothermal heating and cooling systems to have the lowest environmental cost of all



CARBON OFFSETS

Sponsored by
Sterling Planet

Did you know that just about everything you do on a daily basis has some impact on the environment? The term “carbon footprint” is basically your personal impact on the planet. Your carbon footprint means the amount of CO₂ (carbon dioxide) that you are responsible for generating every day. The more CO₂ you generate, the worse it is for the planet.

CO₂! Who ... Me?

You might wonder how it is that you generate CO₂. Activities like running a lawn mower, driving a car, riding in a speedboat, all impact the environment. Even using a hair dryer adds to your carbon footprint. Having an impact on the environment is essentially unavoidable. However, the trick to placing less stress on the environment is to do environmentally healthy things like re-using and recycling items as much as possible, being mindful of your energy consumption at home, carpooling if possible and living in a way that considers the health of the planet. Another consideration is purchasing carbon offsets.

What's a Carbon Offset?

A carbon offset is a measurable instrument that you purchase each month, and this instrument represents a specific and calculated reduction in greenhouse gases. Specifically, one carbon offset is measured as the reduction of one metric ton of CO₂ or its greenhouse gas equivalent. Companies that sell carbon offsets typically offer packages where you can select the number of offsets you want to buy on an ongoing basis. These companies then use the money you spend on your offsets and invest those funds into renewable energy projects or programs that foster energy efficiency. Some projects are

locally based, others may be abroad. For example, your funds may be used to invest in clean technology like a local wind farm project, or the money might be used in a project to install energy efficient stoves in a third world country. The idea is that by purchasing carbon offsets, you are essentially compensating for your own greenhouse gas emissions.

Living “Carbon Neutral”

Carbon offsets are easy to purchase and typically very inexpensive, with monthly plans that are under \$5.00. Living a “carbon neutral”

A vertical advertisement for Sterling Planet. The left side features a light blue background with illustrations of a green house, a green car, and wind turbines. The right side has a dark blue background with white stars. Text on the right includes 'Live green. Drive green. Shift to carbon neutral.', 'wind energy ♦ carbon offsets', and contact information '877 457 2306' and 'www.sterlingplanet.com'. The Sterling Planet logo is at the top left of the graphic.

STERLING PLANET
what the world can be™
You can reduce your footprint.
We'll show you how.

**Live green. Drive green.
Shift to carbon neutral.**

wind energy ♦ carbon offsets

877 457 2306
www.sterlingplanet.com

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RAINWATER HARVESTING/COLLECTION SYSTEMS

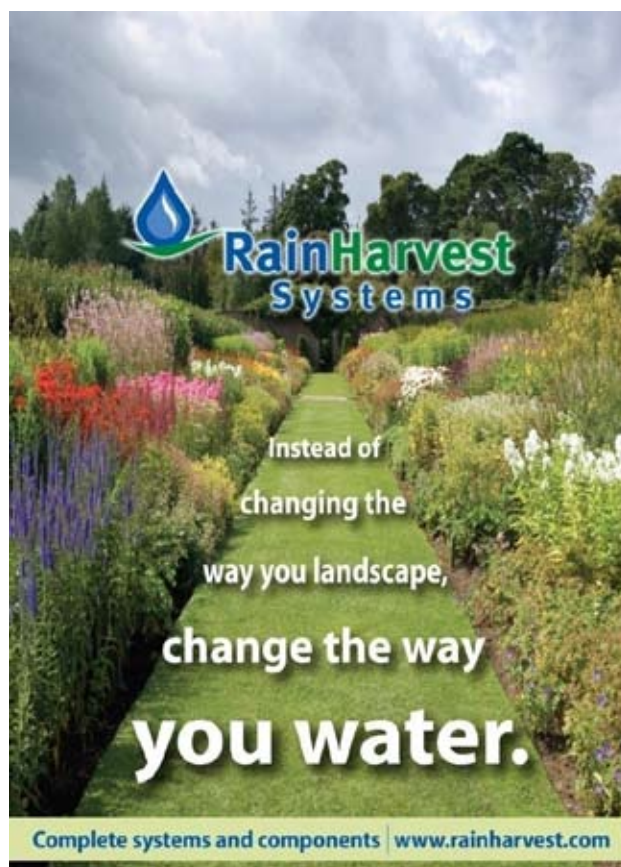
Sponsored by
RainHarvest Systems

Rainwater harvesting is a means of collecting and storing the world's most precious resource, rainwater. In the United States, rainwater has traditionally been directed into stormwater systems and streams, altering the natural flow of water into our aquifers. However, with the proper systems for harvesting the water, rainwater can become a source for irrigation, and can be used for general domestic uses. Harvesting rainwater can also restore important ground water levels. Rainwater harvesting is at the core of conservation because it restores the natural cycle of local rainwater absorption.

How is it Harvested?

There are several systems available to harvest rainwater. The most economical system is the rooftop collection system. Typical harvest systems will have a storage tank to store the water and a conveyance system to filter debris and contaminants and to guide the water into the tank. Additional technology is added for water purification and disinfection, depending on the intended use. (Greywater systems are very different from rainwater collection systems because they focus on collecting water from laundry and from showers).

While we do not suggest that people drink harvested rainwater, the process of harvesting your rainwater is extremely valuable to homeowners because the rainwater can be used for irrigation of lawns, flushing toilets and washing laundry. Homeowners who harvest their rainwater realize extensive savings on their water bills. PLEASE NOTE: It requires treatment prior to use for bathing. Appropriate technology for treatment before bathing should



be added and can easily be installed by a professional.

Is Harvesting Rainwater a “Green” Choice?

If you are looking for ways to go green, considering how you use water is important. When you consider that water literally falls from the sky, figuring out how to harvest this free resource seems to warrant a closer look. Historically, the simple practice of using rain barrels that stored water for future use was commonplace. It was something that was the

thinking about ways to collect and use water, is an important step in preserving one of our most precious resources.



Class Notes:

Environmental Impact

Harvesting rainwater helps your family maintain its own water source, but it also has a favorable impact on the environment. When rain falls onto your property it collects chemicals and nutrients from your lawn, roof, garden and other areas. This runoff from your property eventually gets into our watershed and/or our drinking water. Lawn and garden fertilizers, as well as naturally occurring nutrients, run off from our properties when it rains and essentially these chemicals end up in our streams and rivers. This can harm fish and the ecological balance in our waterways. In addition, when this runoff gets dumped into the reservoirs for our drinking water, our water bill goes up due to the need for additional filtration and treatment. As such, there is increasing interest in collecting and harvesting rainwater, because this practice significantly decreases the run-off from our houses and from our lawns.

Similarly, with all of the man-made impervious surfaces that we have in our cities and suburbs, primarily concrete, asphalt and roofing materials - rainwater is quickly diverted into storm drains and watersheds. As a result, rainwater doesn't have a chance to percolate into the soil and down into the aquifers deep underground. The result is that the aquifers are rapidly becoming depleted as evidenced by the increasing number of wells going dry all over the country. However, harvesting rainwater, whenever and wherever possible provides an important solution to these negative impacts on the environment.

As the world looks for ways to protect the planet, harvesting rainwater, is becoming increasingly important. It's sustainable, it makes sense, and it's relatively easy to implement – especially for homeowners. Consciously

[illegible]

RESIDENTIAL SOLAR ELECTRIC SYSTEMS

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Introduction to Solar Power

There are several types of solar technologies. The focus of this section will be on solar electric systems used for your home. More specifically, the systems being discussed are Photovoltaic, or PV, systems that are connected to the power grid.

Grid-tied solar electric systems do not use batteries and do not function when the power grid is not functioning. The goal of a grid-tied solar electric system is to produce clean electricity in lieu of the utility company producing fossil-fuel based power. While other types of systems are available, grid-tied systems are great options for people who have access to the power grid and whose utility companies allow net-metering, which will be explained later in this chapter. The main reasons that grid-tied systems are the superior options are that (1) the batteries that are required to run an off-grid system are expensive; (2) they require extensive maintenance, and (3) are extremely toxic.

For people who have no access to the power grid, such as people in mountainous or remote regions, battery-based systems may be a good choice for electric power. For mission-critical electric needs, such as hospitals who may want a backup option to a generator, battery-backup systems can be an option. For homes and small businesses, a generator is a more cost-efficient and less toxic alternative. Otherwise, the problems associated with batteries are likely not worth tackling for most solar systems.

In the future, technologies such as thin-film solar will become less expensive and start to make sense financially. In the meantime, PV is a



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How a Grid-Tied Solar Electric System Works for Your Home

The basic job of a solar electric system is to produce electricity. Photovoltaic cells are grouped in modules, commonly referred to as panels. These panels are arranged in arrays somewhere where they can be directed toward a reliable source of sun, away from shade considerations. The roof of a house is an ideal space because it is elevated above sources of shade and because the pitch of most roofs is in the ideal angle range.

The modules are placed upon rails, also called a “racking” system. The racking system usually ties into the roof trusses, but can sometimes sit entirely on top of the roof without penetrations. The modules sit between 3 and 5 inches off the roof surface to allow for air circulation, since the modules are more efficient at lower temperatures. The modules should be arranged in a symmetrical manner, centered on an unshaded portion of the roof.

Most of the Power Produced by the Solar Electric System is in the Middle of the Day, also Called the Solar Window

The array should face toward the south in the northern hemisphere. An array that faces due south is ideal, but any roof surface that faces more south than north should be efficient enough to justify an investment in a solar array. Most of the power produced by the solar electric system is in the middle of the day, also called the solar window. The time when the sun is highest in the sky typically lasts about eight hours in the summer months and as little as four hours in the winter months. This is one reason that solar production should be considered in a year-long cycle.

The type of electricity produced by the photovoltaic cells is “Direct Current,” or DC. This is the type of power that batteries generally produce. Your house uses “Alternating Current” electricity, or AC. The modules are wired to carry the DC power to an inverter, which typically is about the size of a medicine cabinet. The inverter converts the DC power into AC power by synchronizing the power into the proper sine and cosine sequences.

Inverters can be inside or outside, should be close to the house’s electric service and circuit breakers. A garage or mudroom is a good location because they are secure (inverters are expensive), but away from more decorated areas.

Once the power is converted to AC electricity, it passes through the house’s electric service and becomes part of the electricity being used by the

house. When the system is producing more than the house is using, it is sent back into the grid through a net meter.



What exactly is Net Metering?

Net metering is the process that allows people to get credit for the electricity they create, not just the electricity they consume. Your solar contractor will arrange with your utility company to have your meter switched out for a net meter, which can spin backwards as well as forward. In sunny fall and spring months, a solar electric system can produce far more power than is being consumed and the balance can be applied to energy-intensive summer and winter usage.

Most states that allow net metering place their net metering cycle in one year increments. This way, on a given date, the homeowner can keep a running balance over the course of the year. At the end of the year, if there is any negative balance, it will not be credited to the resident, so it is important not to buy too large of a solar electric system unless you wish to donate power to the grid.

Incentives and Rebates for Buying a Solar Electric System

In Maryland, there are rebates available for most homeowners and business owners. Depending on the utility company they use, they can expect to be eligible for a rebate of up to \$2.50 per



Class Notes:

Your solar contractor takes care of the application process and will even allow for the customer to receive their panels prior to the grant money being refunded.

In addition to the \$10,000 maximum refund that Maryland gives homeowners, the Federal Government offers a 30% tax credit. President Obama's stimulus package allows for this credit to be taken in the form of an immediate grant.

When you combine these two programs, you are eligible for up to 60% off of your total system price. However Maryland's grant amount may soon be adjusting downward due to the Program's overwhelming success. Homeowners interested in taking advantage of this program should act soon.

Once You Have Chosen Your System

Once you have chosen your system, your solar contractor will:

- **Apply for all grants and incentives**
- **Order the proper system components**
- **Acquire all necessary permits**
- **Professionally install your system**
- **Conduct a system inspection**
- **Have your meter switched to a net meter**
- **Arrange to have your RECs sold**
- **Be available for troubleshooting that may arise**

A good contractor will make the process worry-free and easy. You should be able to trust your contractor and know that they are working on your behalf to sell you the system that works best for your needs.



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NON-PROFIT ORGANIZATIONS & GOVERNMENT PROGRAMS



Habitat for Humanity of Montgomery County ReStore is a nonprofit retail outlet specializing in the resale of new and gently used furniture, appliances and building supplies at deep discounts. All proceeds help build affordable housing in Montgomery County, MD. By taking in donations, ReStore diverts tons of reusable materials from the local landfills.

<http://habitat.montgomery.md.us/restore/index.html>



DC Greenworks is a tireless advocate for implementation of green roofs and low impact development techniques. We design, build, and install, while training community members and youth to do so as well. We advocate, consult, and generally assist many diverse groups of stakeholders to achieve our mission of promoting social revitalization through urban environmental restoration. Please visit our website to learn more about our services!

www.dcgreenworks.org



The District Department of the Environment (DDOE) is responsible for the natural and indoor environments in the District of Columbia. DDOE's work includes direct assistance to residents and businesses, policymaking, and monitoring and enforcement. DDOE is a relatively new agency, formed in 2006 from the Department of Health's Environmental Health Administration, the DC Energy Office, and policy functions of the Office of Recycling.

DDOE programs are designed to facilitate cleaner air and water, green our neighborhoods and building space, and assist with the management of hazardous and toxic waste disposal. Additionally, DDOE conducts community and educational outreach to increase public awareness of environmental and energy related issues.

<http://green.dc.gov>



Montgomery County Department of Environmental Protection (DEP)

DEP's mission is to protect and enhance the quality of life in our community through the conservation, preservation, and restoration of our environment, guided by the principles of science, resource management, sustainability, and stewardship. Visit the Department's web site for information and resources on air quality, energy, forest stewardship, water management and waste issues.

<http://www.montgomerycountymd.gov/dep>



The Forest Stewardship Council is an international, non-governmental organisation dedicated to promoting responsible management of the world's forests. FSC provides standard setting, trademark assurance and accreditation services for companies and organizations interested in responsible forestry. Products carrying the FSC label are independently certified to assure consumers that they come from forests that are managed to meet the social, economic and ecological needs of present and future generations. FSC-certified products include construction lumber, flooring, furniture and also paper.

www.fsc.org

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