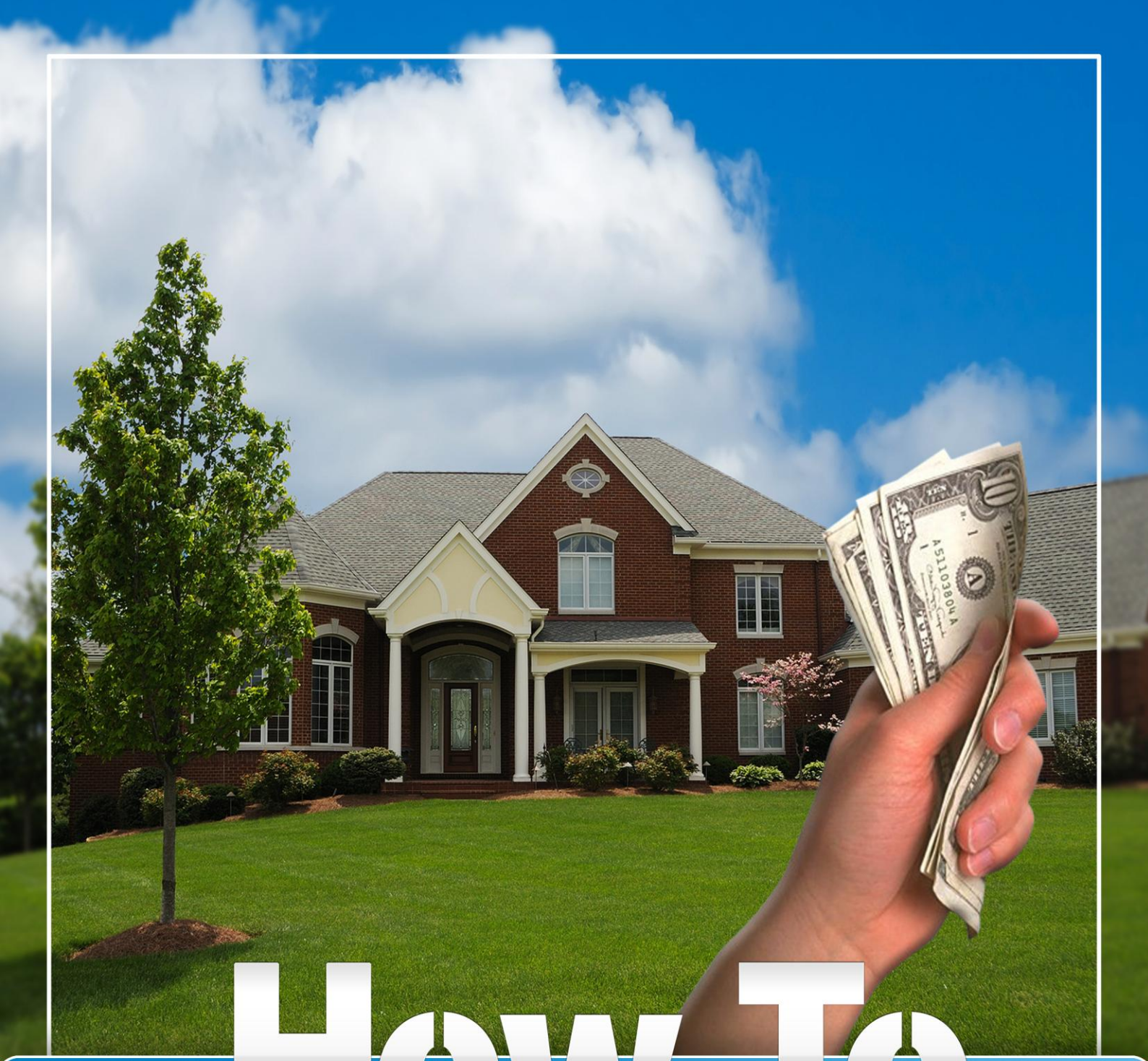

How To Green-up your Home

Useful tips to enhance your personal space and to save money

Content

The House as a System

Before we build a home (or hire a contractor to build it for us), we need to understand how the house works as a complete system. It is much easier to build a green home once we become familiar with some key principals such as how heat and cold gets transferred, and the reasons why moisture and air move throughout our homes. It is even more important to understand how a house works as a system; this saves both on energy losses through air leaks, and added moisture.

The transfer of heat

To understand heat flow it is best to look at the laws of thermodynamics (the study of energy) that is, thermo (heat) and dynamics (movement). Once we understand these principals, we come to understand that science plays a big role in building a home, as well as the more commonly thought-of nails, wood and hammers.

There are two laws of thermodynamics:

1) The first law of thermodynamics states that energy can be changed from one form to another, however it cannot be destroyed. Energy exists in many forms including solar, chemical and electrical. In fact, the total amount of energy available stays the same - it just changes to different forms.

2) The second law says that in all energy exchanges, the potential energy of that state will always be less than the initial state. In other words, whenever energy is converted it gets downgraded in the process. This process is what is referred to as entropy.

You may be thinking right about now, what do these laws have to do with me building a house? It's just bricks and mortar. These laws of science actually play a rather large role because when building a home you want to make it as efficient as possible.

A house that is electrically heated is nowhere near as efficient as a home which takes advantage of passive solar design features. Homes that utilize electricity typically come from fossil fuels such as coal. Coal as an energy source requires much energy to change from one form to another. A big chunk of this energy ends up getting 'lost in transit' and therefore by the time the usable power is delivered to a house its energy potential is very low. Sometimes by the time useful energy reaches a house its net energy is only 15 per cent of its original. That is, electricity has lost 85 per cent of the potential energy coal used to make it through transportation,

refinement, generation, transmission, and transformation by the time it reaches the end user. I don't know about you, but in a world where the supply of fossil fuels is running out by the day, finding an alternative is very much a reality for me.

Instead of using fossil fuels i.e. non renewable energy, have you ever thought about passive solar design? Solar design uses the power of the sun to create energy and in the process reduces the amount of energy a house will consume. The sun as an energy resource is ever abundant and most areas in the world have enough sun energy to harness this energy. Even areas where the sun does not shine brightly every day, surprisingly there is still enough energy to power homes throughout that specific area.

Unlike with electricity conversion, solar conversion only uses one conversion process. That is, the sunlight shines through windows in your home and hits an object which is then radiated to human bodies giving us heat.

People find passive solar design a great way to reduce heating and cooling bills, and reduce wear and tear on heating and cooling equipment. These techniques are easy to apply when building new because you can control the placement of the home and were you put the windows (i.e. north facing, south facing etc). However, if you live in an existing home you can still take advantage of solar energy technologies. Some of these technologies include energy efficient windows, solar panels and rainwater catchment.

When we build a home and want to incorporate green elements, the process is easy once we have a clear understanding of entropy. We come to realize the role that well-designed windows play and the type of appliances we should use to make our homes run as smoothly as possible, using the least amount of fossil fuels.

How heat moves

The flow of heat is the flow from hot to cold, and is an important concept to understand. Heat is energy, and as long as there is a difference in temperature, heat will move. Ever notice how when it is cold outside and you have the heater or fire on, you leave the outside door open even briefly the warm air sneaks out the house? Heat always moves from hot to cold and keeping this warm air inside the home is imperative to keep you feeling comfortable as well as saving you money on utility bills. This concept is important when building a home in order to truly comprehend how to heat and cool our homes, and how to control added air and moisture in our homes.

There are three ways that heat can be transmitted and energy movement is always a combination of three movements of energy: conduction, convection and radiation.

1) Conduction

Heat conducts through solid substances in the conduction process. Conduction is usually measured in insulation terms. R-value is a measure of thermal conduction - the higher the number the greater the resistance to heat flow. This means that heat will move more slowly through the material. You will also find that anything that conducts electricity will have a low R-value. It is important to have good insulation in a home to limit the amount of heat loss. To do this we need to use low conducting materials.

2) Convection

Convection happens due to density differences between warmer and cooler parts of a fluid.

In simple terms, the hotter the fluid is the less dense it is. Hot air rises and this is why warm air remains in the upper levels of a home and the basement stays cold. Even using your morning coffee as an example: when you blow on your drink to cool it down, convective heat loss occurs between the drink and the air. It is important to understand convection because when not controlled, convection can result in a cold house and damp house. It's not only utility bills that will sky rocket if you have a cold damp house, but dampness which can lead to mold and mildew which can have catastrophic effects on your family's health as well.

3) Radiation

Radiation occurs when heat passes from one object to another. For instance, the sun radiates heat and when you stand next to a cold object such as a window, your body radiates heat towards that object, and that is the reason you feel cold. Radiant floor heating is often a popular choice for consumers and is often said to be the most energy efficient and comfortable heating method on offer today. With a forced air furnace, hotspots are created only where the air blows and in high ceiling areas, however radiant heating provides an even temperature throughout the house.

Not only will radiant floor heating increase the comfort levels of a home, it will cut the heating bills of a house more than other traditional heating methods can do.

Controlling heat flow

It is important to build a house in order for you to remain comfortable and keep the cold air outside and the warm air in. You need to make sure that you build your home to respond to the environment around you. Once this is achieved, no matter where you are in the country, you can design your house so that you can control the flow of heat.

When looking at controlling heat flow, insulation is the key element that you need to consider. There are a number of options when it comes to insulation choices and most are available from a home center store or large hardware retailer. Before going to the store to purchase insulation it is best that you measure the areas to be insulated beforehand so that you purchase the right amount of material.

Depending on where you live, the amount and R-value of insulation you require differs. However, remember that the more insulation you have, the warmer and more comfortable your home will be. The Department of Energy website which is regularly updated is a great resource for you to use and has a helpful insulation calculator www.ornl.gov/~roofs/zip/ziphome.html.

If your home was built before 1981 you will probably need to add insulation, and if you are currently remodeling your home there is an easy way to add insulation. When it comes to insulation people tend to know what `Pink Batts` are but most are unaware that there are other types of insulation as well. You need to realize that no type of insulation is the same and each different type is used for a different purpose and has a different R-value.

Batts are the most common form of insulation available. They come in either fiberglass batts, non-fiberglass batts or wool and cotton batts, and are often described as 'fluffy blankets of insulation'. Batts are easy to install and sit easily in the space between the studs in a wall. As with all insulation choices there are tradeoffs in terms of performance, cost, and the amount of chemicals they contain. Avoid fiberglass batts if possible. However, if you do choose to go with fiber glass batts, choose formaldehyde free and make sure the installer knows what he/she is doing. There are three choices with batt insulation: foil-faced, kraft-faced and non-faced. They all have their benefits and limitations. Talk to your local insulation professional about what choice is best for you.

Loose fill insulation is another popular insulation choice and as the name suggests, loose fill is made up of small pieces of insulation that is blown into place using a

special piece of equipment. Fiberglass and cellulose are the main loose fill options available, they are both cost competitive; however cellulose is a better insulator. Cellulose has a R-value of 3.7 whereas fiberglass has an R-value rating of 2.8. Loose fill insulation is a popular choice in small and hard to reach places such as in the attic. If you choose to install loose fill insulation into the walls, it needs to be held in place with netting or held in place while the wall is being completed.

Spray-in Insulation is similar to loose fill insulation. It expands into a foam, filling every possible area even in hard to reach places. Spray-in Insulation has high R-values, creates a super insulated area and is great for sealing tiny gaps. The one down side to spray-in insulation is that they are one of the most costly options and not an option you should consider if you are looking to save money. However, the one thing you need to keep in mind is that by spending up now, in the future you will be much better off and will be living in a warm and comfortable home.

Rigid foam is a stiff board and when applied to the outside of a framed wall is a great way to keep wall cavities dry and reduce the risk of mold. More expensive than batts and loose fill, rigid foam has more than double the R-value of batts and loose fill making it a great choice and especially effective where space is limited. If you are remodeling your home and you want to incorporate insulation in that process, you may want to consider rigid foam because it is easier to add insulation to the outside of a framed wall rather than removing a wall and adding insulation i.e. batts or loose foam, and replacing the wall again.

Air leakage

Air leaks can be responsible for approximately 25 per cent of the heat loss in a new home, and even more in older houses. Leaky Building Syndrome is an issue affecting homeowners worldwide. Air leaks are an important part of the equation, often causing mold and structural deterioration.

To determine whether your home is suffering from air leakage you can do a blower door test which must be performed by an energy auditor or a heating contractor. These tests shouldn't cost you more than a few hundred dollars and are a great way to check if air leaking areas should be sealed.

Once you have all air leakage problems sorted out it is important to have good ventilation i.e. fresh air needs to be able to come into your home. Don't ever think that you have tightened up your house too tight by sealing all potential air leaks, you haven't. Mechanical ventilation is the next step that you should take to control the

flow of fresh air in your home. Not only does mechanical ventilation control the flow of fresh air in your home, it also helps define the correct pressurization of a house.

Foundation and framing essentials

The foundations of a home are one of the most important things to take into consideration when building a home, yet the importance of the foundations for the efficiency and air quality of a house is often forgotten about. When looking at the foundations of a home there are three key factors that must be taken into account. These are: resource conservation, energy conservation and moisture control. I will discuss why these factors are so important in the chapter below.

The good performance of a home relies on a good foundation in order to cut down on heavy heating and cooling costs, as well as reducing the likelihood of any moisture and mold problems. The one thing which rings true for the foundation of all homes is that a foundation should not need to be replaced over the lifetime of a house – in other words, foundations need to be built to last.

Look at the foundation of a house as part of a whole system rather than as just one aspect of home construction. In this day in age it is important to build the foundation of your new home using sustainable building practices. For starters, you may want to consider substituting fly ash for cement. There are two main benefits for doing this, firstly using recycled product means you will be stopping the waste being dumped in landfills and secondly substituting fly ash actually improves the strength and durability of the concrete. Not all builders know that you can substitute fly ash in concrete, so the key is communication here. Do a little research and find a contractor who has experience working with fly ash.

Another important framing essential that you should be aware of when building your home is that foundations should be insulated. If the foundations of your home are not insulated, you will find that there will be heat loss throughout the home. This includes the foundation walls, crawl space and concrete slabs. It is best to insulate before you lay the foundations down as this will save you considerable savings in the long run, and add value to your home if you ever decide to sell.

It is best to insulate foundations on the outside in order to reduce any risk of condensation and mold development. The best way to do this is to insulate the exterior of the foundation wall by a process often referred to as backfilling. Two inches of rigid foam insulation should be used to insulate foundations, but you may need to increase it to 3 inches if you live in areas which are very cold. Once installed,

this insulation will keep your basement at a steady temperature and in the future you may want to use the room as a fun room for the kids to play in or as an office.

Seeing as you are insulating foundations, it is also a good idea for you to insulate the slab. It is very important that you insulate slabs if you live in an area where the number of cooling degree days is high. In these instances you can gain approximately 15 per cent of cooling load. You can insulate the slab perimeter (this is a cheaper option), but I would recommend that you insulate the entire slab to avoid any heat loss.

As I have said before, you need to do everything you can to prevent moisture getting into your home and this means controlling moisture around your foundations as well. Even if your builder uses asphalt-based damp-proofing before back filling the foundation, it is still not enough to control moisture around foundations entirely. You may wish to discuss with your builder other options such as applying a rubber-based coating over the outside of the foundation wall to help keep your basement warm, dry and without mold.

Framing

I'm sure that there are many questions that you would like answered in terms of what materials and techniques you should use, and what you should do to make the framing of your new home as energy efficient as possible.

There are a range of materials that you could use for the framing of your home such as straw bale construction, blocks of aerated concrete and structured insulated panels. There are benefits for using all of these materials and they all play a role in sustainable building practices, however the real problem is that not all of these materials are widely used and to get hold of them is often difficult and a rather expensive process.

Despite the fact that there are a range of materials you can use to build your home, wood is still the most popular choice. In fact, wood is one of the most renewable materials that is used in the construction of a house. The one problem with typical house construction is that builders are using too much framing. If builders incorporated advanced framing techniques by using less wood and smarter joints, the amount of wood required to build a typical home will be chopped by at least half, if not more.

By taking advantage of advanced framing, cost savings will be significant as not as much wood will be required and you will be curbing some of the construction waste that gets thrown in landfills every year, at the same time cutting down on green house gas emissions. Having a home with less framing will mean that it is easier to install insulation as well.

Build with certified wood

As of now, global warming is a real threat to our environment and because of this, having trees planted in forests is beneficial to both us and the environment. Every year we chop down more than 32 million acres of forest to use the timber, but in the future it is going to be more beneficial to maintain forests that cut them done.

The Forest Stewardship Council (FSC) was founded in 1993 as an international not for profit organization which certifies that wood has been harvested sustainably from forests. It is important that you use timber which has the FSC stamp of approval which means that the wood that you are using is from organizations that follow responsible forest management standards. Responsible forest management standards mean that the harvesting of the wood did not contribute to deforestation. There is no difference with wood which is FSC certified than the wood from a clear cut forest, apart from the fact that it doesn't contribute to deforestation or global warming. It's something to think about, because the more people that choose to use certified wood, the better it will be for the environment - and it will stop illegal logging practices as well.

FSC certification is the only way you know that the wood that you are using comes from a sustainably harvested forest.

Top ways to save on electricity bills

Taking stock of your utility bill is one way you can save money, but by following these tips you will also find you are more comfortable in your home and more energy efficient at the same time.

One way that you can instantly save money is by making sure that every time you leave the room you are turning off the light switch. It seems simple enough, but many people fail to do this simple task and pay the price for leaving the lights on in the next months' power bill.

It is important that you get rid of any incandescent light bulbs that are used for more than two hours at a time and replace them with Compact Fluorescent Light Bulbs (CFL's). CFL's only use 25% of the electricity of incandescents, which means a saving of several hundred dollars for the average household every year. They last at least eight times longer than incandescents which save you on replacement costs as well.

Turn off the screensaver on your desktop computer or laptop. By doing this you can save upwards of $100 a year. Sure screensavers look attractive but the reason they were developed was to prevent screens burning out, but now that technology has developed they are no longer required. Better yet, to save even more money I would suggest turning your computer off completely.

Look at the appliances that you use every day and look for ways to make them more efficient. For starters, when you replace your appliances such as refrigerators, dishwashers, and washing machines, replace them with a new and more efficient model - make sure you look at the Energy Guide sticker and look for appliances with the lowest yearly operating cost. Visit the US Department of Energy's Energy Efficiency and Renewable Energy website www.eere.energy.gov/consumer and the ENERGY STAR website www.energystar.gov. I like to do my research before purchasing a new appliance and find both of these sites handy.

Choose to cook energy smart. There is no ENERGY STAR rating for ovens and stove tops, however there are a few things you can do to make sure these appliances are running as efficiently as possible. If you are cooking a small meal it is a good idea that you use a microwave or a toaster as an oven or stove top uses much more energy. Other things you should consider to cook energy smart is that when cooking on the stove top you match the size of the pots and pans with the size of the element. Avoid opening the oven door to check on food - instead trust the recipe, your instinct and the oven timer.

Cut down on how much water your shower uses. If you install a low flow showerhead you can save approximately 4,000 gal. of water a year. Apart from saving water you are saving gas and electricity as well by not having to heat that excess water. This is a project that you can do straight away, all you need to do is go to your local hardware or homestore and ask for a low-flow showerhead. Due to federal law, all showerheads will be no more than 2.5gpm but lower flow amounts are available as well.

Install a programmable thermostat. If you set the thermostat to your daily schedule you can have you home at a comfortable temperature at all times, for instance you can set the thermostat at a level you are comfortable with for when you first wake up in the morning and also for when you return home in the evening.

Take stock of your appliances and see which ones you really need and if you can do without them, get rid of them. A lot of the appliances that we now use are for convenience rather than as a necessity. Do you really need that spa pool or that dishwasher than you fill up with only a few dishes a day? Try going without the dishwasher for two weeks and see how you feel.

Front loader washing machines are gaining popularity and use much less electricity than standard top loader washing machines. Another benefit of front loaders is that they use far less soap than top loaders and spin the water faster with less vibration as well. If you are thinking about replacing your top loader washing machine why not replace it with a more efficient front loader.

Another way to instantly save money is to hang washing on the line outside or on racks to dry rather than placing the clothes in the machine. It requires no energy at all and is a task that can be completed in minutes.

Get rid of appliances which use large amounts of water and cost you a lot of electrical energy to run. These appliances include large aquariums, swimming pools and spas. If you do not need these appliances for your survival and you can't afford to have them my best advice is to just get rid of them or sell them to someone who will make better use of them. A heated aquarium uses a lot of energy and most of that energy is for controlling the tank temperature. If you can't fathom the thought of not having fish as pets then you could sell the aquarium and purchase a small glass fish tank and keep a few gold fish.

It's a great idea to insulate your water heater if it is not already internally insulated with foam and it's not so old that it will be replaced in the next 12 months. To find out if your water heater is internally insulated all you need to do is look at the opening of the water heater where the pipes emerge from the tank. Look at the pipe fitting and see if there is a plastic trim piece around the pipe. If you wrap your heater with a 'tank wrap' you will save some energy on your monthly utility bill.

Have you thought about installing a solar water heater? If you have some spare disposable income and have real interest in building sustainably then it is recommended that you install a solar water heater. At approximately $10,000 a pop

it is a decision that takes a bit of thought. Solar water heaters are great if you have some wall area or an unshaded roof that faces south as you can reap the benefits for decades. It's important that you speak to your solar expert who will be able to give you advice on the type and size of solar water heater that you should utilize depending on the size of your house, the location of your house and the number of people in your household.

If you have a furnace or an air conditioning unit in your home make sure that you always have clean filters i.e. make sure that you change the filters at least once a month the system is in use. If these systems are not used so much in the off season (spring and fall) then you don't need to change the filters as often. The same rule applies when you have really dirty filters, change the filter more often.

Ventilation is important in a home as is an efficient air conditioner. Make sure that when you buy an air conditioner it is efficient. When you buy a new air conditioner, the Seasonal Energy Efficiency Ratio (SEER) is the ratio of efficiency which you need to look for. Do your research and choose an air conditioner with the ENERGY STAR label.

Adding insulation to your home is one of the best ways to save on electricity bills. Whether you are building new or adding renovations to an existing home, there are a number of insulation options. Talk to an expert about ways you can add insulation to your home to save on electricity costs because heat loss through ceilings and walls can add 50% extra to your home's utility bill in winter. To save money immediately, why not seal doors and windows and spray the roof with foam insulation. If your roof is already insulated with batt insulation you can add a layer of rigid foam in order to cut your energy bills down just that little bit more.

Many people find that windows and doors are one area of the home where the majority of heat is lost. The inefficiency of windows and doors adds to your utility bill; however there are a number of things that you can do to improve this situation. It is important that you install energy efficient windows in your home if you are replacing windows. Double glazed windows are a popular and great energy saving option because their inside surface is closer to room temperature. If replacing your windows is not an affordable option why not add weather stripping to old windows. At the same time you are weather stripping your windows why not weather strip your doors as well.

I could give you more great tips about what you can do to cut down your electricity bills but something that will benefit you tremendously is a bit of advice from the experts. Through discussing with an expert your home's structure, the appliances you use, and the number of people in the household, you will come to an understanding of how and in what areas you can cut down your energy usage and your monthly power bill. Before you hire an 'energy auditor' I would suggest that you ask what services he/she provides and at what cost. Call a few different companies up so that you get the best deal. Most top quality auditors will spend a few hours with you at your home and go through your entire house including your attic and basement. They should conduct an air leakage 'blower door' test as well and will use an infrared camera to assess the insulation levels in your home, as well as test your ducts for leaks.

Install solar and wind power and save money

Solar and wind power are readily available power sources and the one reason why everybody is not using it (or at least not yet) is that up until now it has been too cost prohibitive. It is all a supply and demand thing and until more people choose to use renewable energy, the cost of producing those types of energy will remain high. However, at the moment governments worldwide are realizing the benefits of these technologies and thus offer incentives and paybacks for people who decide to use solar energy and wind power.

The Energy Policy Act makes installing solar and wind power affordable options through the use of tax credits which range from $50 to $2000. Aside from tax credits there are rebates available as well. There are a range of renewable energy incentive programs available for consumers. The North Carolina Solar Center and the Interstate Renewable Energy Council were key developers of the Database of State Incentives for Renewable Energy (DSIRE). This database describes what resources and incentives are available for people who wish to consider renewable energy options.

A great thing about renewable energy is that if you generate enough you can sell it back to the utility company. The 1978 Public Utility Regulatory Policy Act states that if individuals or businesses generate excess amounts of power through renewable energy, the utility company must buy it at wholesale cost.

There is an abundance of sunlight available for people to harness and use to power their homes, but because of the heavy cost involved, very few people are taking

advantage of solar energy - despite it being the cleanest source of energy that has ever existed.

Electricity can be generated from sunlight through the use of the PV Cell. The PV Cell converts light energy into electrical energy using the simple process called the photovoltaic effect. Sun light hits the PV cell and the cell then transforms light energy into an electrical signal. The electrical signal is then converted into electrical power. The same principles apply to a small solar power system as to a large scale solar power system.

If you have a large area (more than an acre) of land at your disposal then you may be able to turn that wind into power. For people who live in a rural location or on a lifestyle block, wind power is a cost effective and renewable source of power. Even if you only have minimal natural air movement, your home can at least produce some electricity and for many people it is often a cost effective option. Depending how much wind you have on your property you could possibly save 50 to 90 per cent on your electricity bill. Combining wind power with solar power could potentially mean that you never have to pay a power bill ever again.

It is almost a better idea to take advantage of both solar power and wind power. If you require the energy of the wind to power your home completely you may find that you don't have enough wind to power your home for the entire year. To measure how much wind power you have available at your home you need to have the correct measuring equipment. Wind socks are available which indicate the speed of the wind as well. Equipment is available at a science or weather equipment store.

There are wind resource maps available which detail the estimated yearly electricity production available from a wind turbine. These maps are based on an average wind speed, but if you are going to rely fully on wind power you will want to make sure that you get consistent wind speeds at your wind power location. The Wind Energy Resource Atlas of the United States is available on the Wind Technology Center website at www.nrel.gov/wind. More than likely you will want to have on hand a battery system where you can store generated power.

If you are concerned about the damage that fossil fuels are doing to the environment and are looking for other options, then solar and wind energy are your best options. You do not have to fully commit to a wind power or solar powered system, instead think about the small changes you can make. For starters, you may want to install

solar panels on your roof. There are a range of styles and cost ranges available which fit into any budget.

By combining both green-building techniques as well as active solar systems, you can actually create a home which produces as many kilowatts of energy a year as it uses. These active solar systems that you could use to create a `zero energy` home include such technologies as solar water collectors and photovoltaic panels. Passive solar design of a home is important when you wish to create a `zero energy` home.

Talk to an engineer who will be able to give you the best advice about how you should build your home to take advantage of both the sun and the wind. You need to make sure that your house is orientated in the right position, that your windows are in the right spot and that you have an overhang in the right position. A home which uses passive solar design can cut heating bills by up to 80 per cent and the extra energy cost can be minimized by utilizing wind power and solar power.

Plumbing tips to help with your water

If you are looking for ways to save money you may wish to consider using less hot water. Using less water means that you will be paying less on your energy bills because you will not need to pay for that extra water. There are a number of things you can do and the projects I am discussing in this chapter can be completed by any DIY enthusiast.

If you want to use less hot water you might want to install a low flow aerator on your faucet. To complete this project follow these steps:

1. Unlock the old aerator.

2. Screw the replacement aerator in. Makes sure it doesn't leak when used, if it does leak use pliers to tighten.

After installing a low flow aerator you may wish to add an on/off lever for the aerator. I have a lever on the aerator in my kitchen and bathroom; they are helpful for when pouring a glass of water. The biggest benefit of an aerator with a lever is in the bathroom when you require intermittent hot water.

To save on hot water bills it is important that you replace showerheads. To complete this project follow these steps:

1. Unscrew the showerhead using pliers.

2. Wrap the threads of the shower arm clockwise for a few turns.

3. The next step is to screw in the new showerhead and tighten with pliers.

4. Turn the shower on and make sure that there are no leaks.

Get your toilet to use less water; you can do this by installing a flush adapter and Aqua system. But when the time does come for you to replace your toilet make sure that you buy a toilet with low flow. An easy thing you can do to save the amount of water that your toilet uses is to lower the tank float manually. It's easy to do this, all you need to do is turn the adjustment screw to lower the float using a screwdriver.

To get your toilet to use less water you can also place a soda bottle in the back of the tank. Fill a soda bottle half to three quarters fill with sand and small pebbles, top it up with water and seal the lid. Place the bottle in the water tank; this process can actually save half a gallon of water per flush.

As well as stopping equipment using excess water it is also imperative that you fix leaks - otherwise you are pouring water (and money) down the drain.

Grey water is the left over water from sinks, showers and dishwashers EXCEPT toilet water which is referred to as black water. You may want to consider utilizing grey water for irrigation and to flush the toilet rather than watching it run down the drain. Grey water is a relatively new concept but there are some plumbing systems which already incorporate a way of capturing this used water. The big problem is that most cities do not have building codes which allow the use of grey water. The best advice I can give you is that if you are building a home, you should talk to a plumber about pre-plumbing for grey water for when building codes come into fruition for it. One of the reasons that there are no building codes for plumbing grey water at the moment is that there is a bit of fear that grey water and black water may get mixed up.

When you are looking at ways to save water, you need to make sure that the appliances that you wash clothes are dishes in are energy efficient. Did you know that a washing machine uses just as much water as your toilet does? If you use a model which is more efficient you may be able to cut down how much water you use

per load. Front loader washing machines are a better option when it comes to water efficiency, but do your research as there are some energy efficient top loaders as well.

If you do need to use a dishwasher it is important that you use one which has an ENERGY STAR rating. You will find a good range of water-saving models available by most manufacturers. It is also important that you fill the dishwasher before turning it on otherwise you will just be wasting electricity and water. Choose to be water and energy efficient today and you will be doing your part to making this world a greener place.

Landscaping tips

Good green landscaping is important when you are building an energy efficient home. There are a number of things that you can do to incorporate plants into the overall design of a home that may reduce the need for insulation and reduce the flooding from rainwater runoff.

Even the correct placement of trees and shrubs can mean the difference of having a home which is cool in summer and warm in winter. The US Department of Environmental Protection says that planting trees can cut a home's air conditioning cost and a home's heating cost by approximately 25 per cent. That's not bad for a tree that stands there and does nothing. Make sure that your landscaping plans take into consideration the way that plants can be used to save on both energy and water. By no means do these energy and water savings mean that your garden cannot be aesthetically pleasing.

When looking at your landscaping options you want to buy plants which require the least amount of water and little other maintenance such as fertilization.

When it comes to a lawn, you need to understand that the more lawn that you have the greater dependency you will have on water. The ultimate aim of a green home is the opposite of that; you want to conserve as much water as you possibly can. There are more options than simply going without a lawn and having a concrete slab as your front yard. For instance, you could plant many native plants as they require less water and are a plant drought tolerant species as well. If you still want to have a small lawn on your front yard, that can be accommodated for too.

Sprinklers are the biggest waste of water in a garden because the dispersed water only touches the plants rather than the soil where the roots of the plants and flowers

are able to properly absorb the moisture. If your plants do require that little bit of extra water to remain healthy, you may want to consider in ground irrigation. In-ground irrigation uses less water, yields better results, and if you are concerned about wasting water you may want to place the irrigation system on a timer or on a rain meter.

As mentioned in the previous chapter grey water (used water) is a way to make use of water which is left over from other processes. Rainwater catchment systems are a way of utilizing rainwater and can be used to water your garden. It is actually really easy to make your own rainwater catchment system – all you need to do is place a rain barrel underneath the gutter spout from your home. If you want to get a bit more technical measure the size of your roof multiplied with the average yearly rainfall in the area to find out how much rainfall you can gain from the roof. Once you have calculated this figure you will be pleasantly surprised with how much water you can feed your garden without ever having to turn that tap on.

It is amazing how things have changed over the past decade or so, there was a time that having an outdoor swimming pool or spa added great value to a property - now it is just seen as a costly expense. Aside from needing hundreds of gallons of water to fill a pool, it is very expensive to heat and the chemicals required to purify the water add to this cost. As people are becoming more aware of the cost of resources they are realizing that despite being aesthetically pleasing and a fun activity, it has higher costs than people are willing to spend.

Follow these landscaping tips and combine them with the other advice in this book including framing, insulation, ventilation, electricity savings, plumbing and solar and wind energy advice about how to build a home green from the ground up. Remember that all of the projects discussed in this book you will be able to complete if you are keen and are willing to put a bit of hard work in.

Best of luck with your future projects.

Recommended Reading

MagniWork

http://www.diysolarpowerforhomes.com/go/magniwork

The Magniwork guide will teach you how to create a magnetic power generator so you can power your home for free, and help save the energy crisis.

The zero point magnetic power generator uses magnets and magnetic force to induce continual energy by itself.

In other words, the magniwork power generator that you can construct using the Magniwork guide will give you the ability to generate FREE energy - without the need for renewable, or non-renewable sources to create that energy.

A magnetic power generator does not require a lot of space in your home, and it is reliable - working in all extreme weather conditions. The Magniwork free energy generator is a great eco-friendly solution, and the materials you need to build one are all very common - totaling less than $100.

Organic Food Gardening Beginner's Manual – By Julie Villani

http://www.diysolarpowerforhomes.com/go/1stoporganicgardening

I recommend the Organic Food Gardening Beginner's Manual by Julie Villani as a great place to start for growing your own organic food.

Do you enjoy gardening? Or consider it more of a chore and something you'd rather not spend time on?

If you agreed with the former, then you're probably relishing the idea of successfully growing your own food (if you're not already).

If you agreed with the latter, but you're keen on having organic food, the Organic Food Gardening Beginner's Manual will make it easy for you - and you'll begin to realize it is not just a 'chore' after all.

Julie Villani didn't begin life as a natural gardening enthusiast, but learnt with a lot of time and effort how to become a successful organic gardener.

She developed the Organic Food Gardening Beginner's Manual so that everyone would be able to experience the same benefits she has - without wasting time and effort on trial and error.

Not only does growing your own fruit and vegetables reward you with a natural joy of accomplishment, and save you money, but Julie has made it easy for you to do.

And, don't forget that growing your own organic food means you will be serving up you and your family chemical free, vitamin filled, fresh, natural foods that your body is really looking for.

Julie's Beginner's Manual is crammed full of information covering the best growing tips and instructions for never failing, written in simple steps.

She's also giving away 4 bonus gifts with every purchase; these include a garden diary, an eBook on seed saving tips and techniques, plus more.