

Benefits of a Green Home

The world of sustainable design can offer home owners numerous benefits. Depending upon the level of sustainable design used in your new home, the focus that guides you through this experience and the motivation that led you to Green Home design; the benefits can infiltrate into all areas of your life.

Green-Product Benefits:

The products alone offer incredible benefits to all of those individuals involved in the creation of a green home.

Home owners, architects, contractors, landscapers and entire communities experience the benefits that sustainable design can incorporate into their lives.

The majority of sustainable/green products are developed to be better than their conventional counterparts. Whether this means the products are stronger, longer lasting, more energy and resource efficient, non-toxic, healthy or made with environmentally conscientious practices, the benefits of using these materials comes through in every step of the building process and remains strong throughout the life of the home.

Examples of Green-Home products highly recognized for their higher quality, lower maintenance needs and environmental integrity:

- Natural linoleum, cork and bamboo flooring
- Recycled glass tiles
- Recycled-content ceramic tiles or composite decking
- Resource efficient, native plant landscaping
- FSC-certified or reclaimed wood

Greater Comfort and Lower Utility Bills:

The level of comfort that accompanies sustainable building design far exceeds anything that can be found in conventional building design. Green homes are designed and constructed to fit the individual home owner's lifestyle and needs. Homes are oriented towards the sun to maximize the use of natural light, the healthiest form of lighting. Heating and cooling systems use radiant energy, the most comfortable type of climate control, instead of forcing superheated or cooled air into your home that increases air born particulate matter. The aspects of a green home provide it's occupants with ideal continuous comfort while reducing your utility bills immensely.



Examples of green homes systems that provide better comfort for a lower cost:

- Solar/Photovoltaic Panels
- ENERGY Star Appliances
- Efficiently designed and installed windows, doors and ductwork
- Passive Solar Heating
- Improved home insulation (walls and ceiling)
- High efficiency toilets
- Water saving shower heads and sink faucets
- Whole house fans
- Water conservative, native landscaping
- Efficient landscape irrigation systems for landscape and gardens

Healthy, Happy Lifestyles

Green homes provide the immense benefit of a toxin-free, natural and healthy environment. Through the use of toxin-free, natural products and building materials, the problems with indoor air pollution in your home are eliminated. Green homes have far fewer problems with mold or mildew and the natural ventilation systems associated with Green homes, bring fresh air inside, while expelling the stale air out, making breathing easy and effortless.

Examples of non-toxic materials and products:

- Wheat derived strawboard
- Natural linoleum
- Paints and adhesives with little or no VOC's
- Toxin free insulation made from soy beans, recycled paper or old denim
- Building products with low or no formaldehyde emissions
- Water-based, low VOC wood finishes
- High quality air filters and heating/cooling unit
- Sealed combustion furnace or water heater (tankless water heater)
- Exhaust fan in garages
- Etc...

Green Homes turn into Green Communities

The benefits of smart growth city planning and green communities create healthy environments for social growth and environmental awareness. Communities planned properly can provide areas for recreation, walking, or riding bikes. They enable residents to walk to local services or to use mass transit to reach their destination.



Examples of the benefits associated with Smart Growth City Planning:

- Mixed use, walkable communities
- Pedestrian pathways to open space, parks and trails
- Clustered homes for land preservation, parks and recreational areas
- Home entrances with porches, views of the neighborhood and front yards
- Closely spaced essential services and transit stop accessibility

The Home as a System

The Site:

The site of your new green home should be located in an already developed area known as “in-fill” properties like former parking lots, malls, factories and urban lots. Development sites should be compact to an average housing density level of six units per acre. Homes should be in close proximity to some form of mass transit system like the bus lines, a trolley line, or a subway system to enable residents to leave their cars at home. One of the most important factors to consider when choosing a site for your new home is the proximity to essential facilities and services, like parks, schools and grocery stores.

Environmental Factors to consider with the site of your new green home:

- Minimize your project footprint by minimizing the disturbance of the existing plants and trees on the site and maximizing protection of your natural resources
- Protect the topsoil from erosion and reuse the soil after construction
- Deconstruct the previous on site building instead of demolishing it
- Recycle the construction waste from the deconstruction of the previous structures on your site: Require a diversion of waste by weight from the landfills by recycling more than 50% of the materials acquired during deconstruction. A higher recycling requirement is better.
- Use a recycled content aggregate for the walkways, driveways and the roadway base. Recycled content for this aggregate should be at least 25% recycled content.

The Size:

The size of your home should be adequate to serve the needs of your family, but should also reflect your decision to build sustainably. Remember that a larger home consumes more natural resources, requires more heating, more cooling and more lighting than a smaller home.



Building Design:

Home orientation should be considered in the first phase of design, taking into account the orientation that would best maximize natural light consumption and use within the home. Orientation also can also optimize your homes ability to self regulate the interior climate through the use of prevailing breezes. Windows, clerestories, skylights, light shelves, light monitors and other design methods should be used to bring daylight into your new green home. Dual, and triple glazed windows designed to maximize the insulation abilities of your home will conserve energy and minimize heat loss in the winter and heat gain in the summer. Shading devices should be used on the exterior of the home to block hot summer sun from entering the home and heating the home undesirably. Sunshades, canopies, green-screens and trees are fabulous shade producers for green homes. Roofs should be made out of a light colored, energy star material to reduce heat absorption, or it can be a green roof, landscaped with vegetation to reduce heat absorption.

The Foundation:

- The foundation of a green home can be made with 50% recycled material, it can be laid with tubing for built in radiant floor heating and cooling systems, it can be non-toxic, stronger, less permeable to water and it can reduce the corrosion of reinforcing steel. Through the use of Flyash and slag, both of which are byproducts of the coal and steel industries respectively, cement can be made to be 50% recycled content, healthier and more efficient.
- To avoid pest problems and therefore dangerous chemical pest treatments in your new home, consider designing and building permanent structural pest controls within the foundation. This is done by installing termite shields around the perimeter of the foundation and separating all exterior wood to concrete connections by plastic or metal dividers or fasteners.
- Avoid or transplant the vegetation to the outside of a 36 inch perimeter of the foundation of your home. This will eliminate your chances of getting pest problems caused by vegetation roots penetrating into your foundation.

Insulation:

According to the Department of Energy, space heating and cooling consumes 44% of all energy used in the home. The right type and quantity of insulation can save a home owner hundreds of dollars a year and an immense amount of energy. Insulation should be fitted to the local climate, the individual home design and should be considered one of the most important energy saving techniques applied in your new homes construction. The installation of the proper insulation materials within your home, in the attic, in the exterior walls and in your foundation is extremely important for both the energy conservation and for the comfort level of your home.



Things to consider when choosing insulation material and the installation techniques to use on your new home:

- The local climate in your area, the amount of moisture to expect, and the amount of money you spend every year on heating and cooling bills.
- The environmental impacts of each material, its production and its disposal. Is the product sustainable, renewable with equal to or greater than 75% recycled content?
- Does the material contain toxic materials or have toxic emissions?
- How well does the insulation material perform in your homes conditions (suitability)?
- Proper installation of insulation materials is a key factor in their effectiveness and efficiency. Be sure to check the detail and quality of your installation job before closing the wall cavities.

Floors:

- Use environmentally friendly materials, recycled, reclaimed, renewable and efficient materials that are durable and desirable.
- If using new wood for your flooring material, only use FSC-certified wood flooring materials. FSC-certified wood flooring comes from forests managed in accordance with stringent sustainable forestry practices. Sustainable forestry practices focus on maintaining the long-term availability of wood and protecting our local economies, ecosystems and natural resources.
- Use reclaimed flooring materials, such as high quality salvaged wood flooring or other flooring products. Reclaimed products can be salvaged from demolished or remodeled buildings.
- Consider bamboo which is as durable as most hardwoods, linoleum or cork which are naturally fire and moisture resistant.

Windows and Doors:

- Windows should be strategically placed throughout the home to best utilize natural lighting, natural heating and/or ventilation.
- Dual pane and triple pane glass windows are extremely energy efficient, working hard to reduce unwanted heating in the summer and heat loss in the winter.
- The use of solar window screens blocks insects, light and heat from the sun, keeping your home bug free and cool in the summer.
- Gas filled windows, like low-E, argon filled windows are resistant to heat flow and better at insulating giving them a lower U-factor. The lower the U-factor is, the lower your energy bills will be. Gas filled windows work to make the home



more comfortable by reducing incoming solar radiation during the summer and maintaining their efficient insulating ability during the winter.

Heating, Ventilation and Air Conditioning (HVAC):

As much as half of the energy consumed by residential homes can be attributed to the heating and cooling of your home. Increasing the efficiency of your home's HVAC systems can be easily accomplished by considering minor changes in the equipment used and the maintenance schedules of those systems. By simply changing your air filters on a regular basis (no less than every three months) you can increase the efficiency, the effectiveness and the life of your systems, while also protecting your family from indoor air pollutants, one of the leading causes for allergies, asthma and lung infections. Yearly tune ups of your heating and cooling systems can extend the lives of these systems extensively, while also ensuring that these systems are working efficiently. This will save you money on your utility bills and the cost of having to replace any damaged systems.

Sealing your heating and cooling ducts with duct sealant (mastic), or metal-backed (foil) tape reduces the loss of heated or cooled air from your HVAC system. This reduces the amount of energy lost during the use of your HVAC system.

After sealing your duct system, wrap the ducts in insulation to keep the ducts from getting hot in the summer and cold in the winter. This will also reduce the amount of energy it takes to heat and cool your home by removing the initial energy loss consumed by the actual duct material.

Consider installing programmable thermostats in your new home. These devices are ideal for people who are away from home during set periods of time throughout the week. Programmable thermostats have the ability to save homeowners in energy expenses.

Radiant floor heating

Radiant heating involves heat energy being emitted from a warm element (floor, wall, overhead panel) and warms people and other objects in rooms rather than directly heating the air. The internal air temperature for radiant heated buildings may be lower than for a conventionally heated building to achieve the same level of body comfort (the perceived temperature is actually the same). Instead of forcefully super heating the air in your home by convection, radiant energy allows for the heating of people in your home by conduction.

To find out more about radiant heating (and cooling) systems for your new home visit the following website:

<http://www.radiantec.com>



Appliances:

Energy star appliances use 10 to 50% less energy than conventional appliances and can save the average homeowner \$80 a year in utility bills, while also saving the environment.

Lighting in your New Home:

Simply changing the light bulbs throughout your home to Energy Star light bulbs that use 75% less energy than conventional bulbs do can have a significant impacts on your utility bills.

Energy Efficiency:

- Individuals who live in green homes consume 40% less energy than those who live in conventional homes.
- In order to maximize your new homes energy efficiency, it id helpful to consider your entire home as one system. When you can imagine this, you will be able to understand your major areas of concern for energy loss, waste and consumption.
- Through the use energy star appliances, adequate insulation in the body of your home, insulating doors and windows, and energy efficient heat your new home can meet all California's ss

Renewable Energy:

Solar-Photovoltaic Systems: Installing renewable energy systems in your new home is a great investment that can pay for itself over time in the savings accrued from energy bills. Photovoltaic or **PV** for short, is a solar power technology that uses solar cells or solar photovoltaic arrays to convert light from the sun directly into electricity. This electricity can be used to either supplement grid electricity for your home or to completely support all of your home electricity needs. After initial setup PV systems can operate with very little maintenance or intervention and initial costs are quickly reimbursed through decreased utility bills and savings.

The best orientation for PV panels is either west or south facing, so placement on your new homes roof to face in one of these two directions is optimal. Even if you do not plan to install a PV system immediately, making provisions to ensure that installation at a later date is easy and less expensive is ideal. In order to pre-wire for a future PV system homeowners need to consider allowing for an area of approximately 200 square feet on a south or west facing roof for placement of the panels, running conduit from your circuit breakers to your attic and ensuring that your roofs structural design can withhold any additional roof loads.

Install solar hot water heaters, tankless water heaters and/or water heating systems that are extremely efficient at heating your homes necessary water supply while using



minimal energy, preferably generated from a renewable energy system. Only buy and use solar water heaters that are Solar Rating and Certification Corporation (SRCC) certified.

Financial incentives for photovoltaic systems:

- Investment subsidies -the authorities refund part of the cost of installation of the system
- [Feed-in Tariffs \(FIT\)/Net metering](#) -the electricity utility buys PV electricity from the producer under a multiyear contract at a guaranteed rate
- [Renewable Energy Certificates](#) ("RECs")
- Electric company offered rebates

To learn more about solar power for residential dwellings visit the following website:

<http://www.sdenergy.org/ContentPage.asp?ContentID=44&SectionID=42>

And to learn more about California's new solar laws and incentive programs, click here => [California Solar Initiative](#)

Also see the [GreenSpark Local Financial Incentives Resource Page](#).

Water Efficiency:

Water efficiency is attained by installing water conservative shower heads, faucets and low flow toilets. Installing sensor activated water delivery appliances is a great way to ensure that your home is a water conservative household. Drip irrigation watering systems that also run on water content sensors within the soil will save enormous amounts of water year round.

Gray water systems enable homeowners to reuse and recycle your homes used water and use it for non-potable water use in and around your home.

Monetary Savings:

Living in a green home saves money in every area of consumption.

Things like water efficiency and energy efficiency save large amounts of money in the short and in the long term. Products with better durability and lower maintenance needs and/or replacement needs enable homeowners to minimize their individual impacts to the environment.

Landscaping:

Sustainable landscaping practices can generate significant environmental and economic benefits by reducing maintenance costs, conserving natural resources and minimizing environmental impacts and pollutants. Sustainable landscapes decrease water use, promote healthy, toxin-free soils, create fire resistant home buffers and keep pollutants



out of waterways. Native vegetation is vegetation that grows naturally in your local environment with out the need for excessive attention, watering, and care. These plants are less consumptive and because the natural environment can supply them with whatever they need to survive, they do not become brittle and dry, adding fuel to brush fires around your home. The use of native vegetation in home landscaping reduces water consumption year round, and leads to great financial savings from reducing labor costs, fertilizer costs, hauling and disposal fees, while also working to protect your home from fires.

Having a compost pile on your property is a great way to recycle your decomposable waste such as, leaves, twigs, grass clippings and vegetable food waste, while also creating soil for your home garden. The act of composting returns valuable organic material to the ground, increasing the water holding capacity of soil, reducing erosion and protecting our environment from pollutants.

Send information requests to homeowner_info@green-spark.org



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