



# Green Building Starts Here

## Homeowner's Manual





## From the Director...

Dear Homeowner,

Congratulations on your new green home! Your builder has made sure that your home has been built to meet the criteria of the Build San Antonio Green's Single Family New Construction Certification Program. This means that your home has been built to a high-quality standard using strict energy & water conservation strategies as well as considering indoor air quality measures.

Your home was designed to be at least 15% above the energy code at the time of its construction, the 2015 International Energy Conservation Code (IECC) and it has achieved a BSAG Certification Level 1, Level 2, or Level 3 which can be found in your home's certificate. This means that your home is at least 15% more efficient than an average new home in San Antonio. Additionally, if your home was certified under the Level 3 program, your builder has further increased the energy efficiency of this home by installing a Solar PV System which was specifically designed to offset part of the projected energy demand of your home.

Please read through this manual to learn about some of the many attributes of your new home that make it energy efficient, water efficient, and cost effective to operate and maintain. Being able to know more about what makes this certified as a Build San Antonio Green Home will help you realize the benefits of owning this house for years to come. As with owning a car, owning a home requires some knowledge of how its components work, and knowing when and how to provide proper maintenance to keep those components working well. Because of this, we recommend keeping a folder of owner's manuals, warranties, receipts, operating instructions, maintenance schedules, and maintenance records along with this Homeowner's Manual. Keep this Homeowner's Manual in a safe and easy to find place for future reference.

Please contact Build San Antonio Green at (210) 224-7278 if you would like to learn more about the green features of your home or about our green building programs.

Thank you,

Anita Ledbetter  
Executive Director

Build San Antonio Green®



# Contents

## What is a BSAG Home?

Green Home Basics.....	4
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## Energy Efficiency

ENERGY STAR® Rating .....	6
Natural Gas Connections .....	7
Heating, Ventilation and Air Conditioning .....	8
ENERGY STAR® Windows, Doors, and Skylights .....	9
LED & Compact Fluorescent Lights .....	10
Programmable Thermostat .....	12

## Water

Tankless Water Heaters & EPA High Efficiency Toilets .....	14
Fixtures .....	15

## Site Development

Native Plant Landscaping .....	16
On-Site Vegetation .....	17

## Health

Non-Toxic Pest Control .....	18
Indoor Air Quality .....	19
Garages & Proper Ventilation .....	20
Dehumidification Systems .....	20
Fireplace .....	20
Carbon Monoxide Detectors .....	20
HVAC Filters .....	21

## Materials

VOCs .....	22
Carpet .....	23





# What Is A BSAG Home?

## Energy Efficiency

BSAG homes use less energy and provide greater comfort than standard homes.

## Water Efficiency

BSAG homes use less water indoors and outdoors

## Site Preservation

For minimal disruption of the site, trees and vegetation are preserved as extensively as possible. All recyclable waste is diverted from the landfill.

## More Healthful

Reduced VOC's and particulate matter, along with proper air flow and efficient filtration provide a more healthful environment

## Efficient Use of Materials

Efficient techniques, such as advanced framing, provide greater efficiency with less material.

# Energy Efficiency



## ENERGY STAR® for Homes Rating



Another great feature of your home is that it has been certified through the **ENERGY STAR®** for Homes Program Certification which is a voluntary certification program of the U.S. Environmental Protection Agency (EPA). The **ENERGY STAR®** for Homes Program is a third-party certification program provided by an energy rater. Your builder has utilized advanced building techniques, high-efficiency equipment & appliances, as well as inspections and testing to meet the criteria as established by the **ENERGY STAR®** for Homes program. The **ENERGY STAR®** for Homes program utilizes the Home Energy Rating System (HERS) Index to measure the efficiency of participating homes. The HERS Index is an energy efficiency scale with a typical range of one-hundred (100) to zero (0) points for a Single-Family New Construction home as shown on your **ENERGY STAR®** Label. The lower the HERS Index, the more efficient the home is as compared to an average US Home.

If your home features a Solar PV System, your **ENERGY STAR®** Label will show two different HERS Indexes. The first HERS Index is an Index determined before the solar system was accounted for, which represents the efficiency your home just from building techniques and efficiency of equipment & appliances. The second HERS Index represents that your home's projected energy demand was lowered by the inclusion of the Solar PV System in your home.

One of the benefits of having a HERS Index for your home is that the HERS Index has been entered into a National Registry of Rated Homes which can be found at <http://www.resnet.us/public-access-to-resnet-national-registry>. This information can be very useful in the case you decide to sell your home as it will provide information to you and your Real Estate agent as how your home compares to other homes in the market in terms of energy efficiency (HERS Index) which may help increase the resale value of your property.



In addition to the **ENERGY STAR®** for Homes certification, applicable builder-installed products in your home have the **ENERGY STAR®** label for products and appliances that are recognized by the **ENERGY STAR®** program. The qualified products in your home may include: refrigerators, freezers, dishwasher, clothes washer, and ceiling fans to name a few. There are over 50 categories of products that are eligible to earn the **ENERGY STAR®** label. However, not all products or appliances are considered by the program. For example, as of this writing, there are not clothes dryer that have earned the **ENERGY STAR®** label. To learn more about the program or search for qualified **ENERGY STAR®** products and appliances, refer to their website: [www.energystar.gov](http://www.energystar.gov).

**When you see the ENERGY STAR® label, remember:**

- The product exceeds minimum federal standards for energy consumption.
- It's in one of the over 50 categories of products rated.
- For more products to keep your home green, see: [www.energystar.gov](http://www.energystar.gov)

## Natural Gas Connections

Your home may have been provided with natural gas connections if natural gas was available in your neighborhood for the reason that natural gas burns cleaner than other fossil fuels, such as oil and coal, and produces less greenhouse gas per unit of energy released. For an equivalent amount of heat, burning natural gas produces about 30% less carbon dioxide than burning petroleum and about 45% less than burning coal. Combined cycle power generation using natural gas is thus the cleanest source of power available using fossil fuels, and this technology is widely used wherever gas can be obtained at a reasonable cost. Natural gas is the most efficient choice for many applications such as home heating, water heating, and cooking. Gas-fired water heaters and cooking appliances are more responsive than electrically-heated water heaters and cooking appliances for adding heat quicker.



### Natural Gas Benefits

- 30% fewer carbon dioxide emissions than petroleum
- 45% fewer carbon dioxide emissions than coal
- Greater efficiency when considering transmission line loss

One of the disadvantages of using electricity for heating is the amount of energy “lost” in transmission lines delivering the electricity from the power plant to the task. Gas, on the other hand, releases its heat only when ignited at the gas burner element. Keep in mind though, that electric source heat by its very nature does not emit combustion by-products

### Did you know?

Natural gas is typically one third the cost of electricity. However, this ratio may change from time to time depending on fluctuating demands for natural gas and coal.

such as carbon monoxide, nitrous oxide, and other airborne elements such as soot from burned dust that can be hazardous to inhale, or act as an allergy trigger. If you or anyone in your family exhibits an acute allergic reaction or sensitivity to airborne materials, you may consider living in an all-electric house as a possible solution among other options.

# Heating, Ventilation and Air Conditioning

According to the U.S. DOE (Department of Energy), heating and cooling your home may account for approximately 56% of your total energy use which typically results as the most expensive portion of your energy bill. For this reason, your heating, ventilation and air conditioning systems (HVAC) were carefully sized to fit the needs of your home using **ENERGY STAR**<sup>®</sup> approved software that calculates the proper size of your HVAC equipment. Because a great deal of energy is lost through improper sizing of these systems in residences it is important to use the proper software to calculate your homes' cooling, heating, and ventilating equipment size.

The heating, ventilation and air conditioning system in your home also has a higher SEER rating than required by code. The SEER (Seasonal Energy Efficiency Ratio) is a method of evaluating the efficiency of air conditioners. The higher number indicates less energy is required to cool the house to the same comfort level of house with an air conditioner with a lower SEER rating. Typical cooling systems in the Build San Antonio Green homes have a SEER of at least 14.5 SEER and as high as 16.5 SEER.

A similar rating system exists for heating called the AFUE (Annual Fuel Utilization Efficiency), which is based on ASHRAE standard 90.1. Your heating system has at least a 80 AFUE. If your house features an Air-Source Heat Pump, the system has a HSPF (Heating Seasonal Performance Factor) of at least 8.2. These energy efficiency factors on your systems simply mean that your house got equipped with very efficient systems for our climate zone which will result in a more energy efficient home overall. Detailed information about your HVAC's efficiency rating and capacity can be found in your home's energy reports or in your home's code compliance sticker usually placed in the front of your main breaker box.



A comprehensive energy audit was performed on your home, based on ENERGY STAR<sup>®</sup> guidelines, so you can be confident that your systems are efficient and your ducts are properly sealed.



## ENERGY STAR® Windows, Doors, and Skylights

### Did You Know?

If every American home replaced just one light bulb with an ENERGY STAR Compact Fluorescent Light (CFL), we would save enough energy to light more than 3 million homes for a year and prevent greenhouse gases equivalent to the emissions of nearly 800,000 cars - EPA ENERGY STAR®

The installation of ENERGY STAR® labeled windows, exterior doors, and skylights can significantly save energy in your home and lower your utility bill. For this reason, the windows in your home were required to be ENERGY STAR® Southern Climate labeled (or equivalent) which was specifically designed for our type of climate zone. These ENERGY STAR® labeled products can save you 7% to 24% in your energy bill according to the EPA ENERGY STAR® Website when compared to a typical window. These

windows feature double-pane glass with a special gas in between them which helps keep the heat out during the hot summer. In the winter, these windows will help prevent heat loss as well and keep your home warm and comfortable. Another feature of these types of windows is they can help protect your furniture and other articles in your home from fading due to a special coating on the glass.

All exterior doors and skylights may also be **ENERGY STAR®** labeled or may have an equivalent performance as **ENERGY STAR®** labeled ones to further maximize the energy efficiency of your home.

For more information about these **ENERGY STAR®** labeled products, go to: [http://www.energystar.gov/index.cfm?c=windows\\_doors.pr\\_windows](http://www.energystar.gov/index.cfm?c=windows_doors.pr_windows)



## Light Emitting Diodes (LEDs)

This home may have been equipped with high-efficiency LED technology that will help drastically reduce the energy consumption needed to meet your lighting needs. LEDs have a number of advantages over conventional lighting that include a much longer life, lower operating temperatures, and very low energy consumption.

According to the U.S. EPA, LEDs can use up to 75% less energy and last up to 50 times longer than conventional lighting. In addition, they offer high quality lighting that may be preferable to fluorescent lighting and offer features like dimmability. While they were once prohibitively expensive for widespread use, the cost has come down drastically over time and is making for increased adoption in new homes.

### Did You Know?

The average household spends more than \$2,200 a year on energy bills; nearly half of which goes to heating and cooling. Homeowners can save about \$180 a year by properly setting their programmable thermostats and maintaining those settings.

- EPA ENERGY STAR®



## Compact Fluorescent Lights (CFLs)

Compact Fluorescent Lights are a type of fluorescent lamp that fits into a standard light bulb socket or plugs into a small lighting fixture. The most common CFLs appear as the same size as a traditional incandescent lamp, but shaped like a spiral tube. In comparison to incandescent light bulbs, CFLs have a longer rated life and use less electricity. CFLs may cost you more to buy, but save enough money in electricity costs to make up for their higher initial price within about 500 hours of use.

**Hint:** when looking for bulbs make sure you look closely at “color.” Warm white will compliment warm tones more and is more agreeable for indoor use, while cool white and day light will be more appropriate for outside lighting. Color should be indicated on the packaging. Also, make sure packaging has the **Energy Star**® label.

**Disposal:** When your CFLs burn out, don’t just throw them in the garbage, CFLs contain a very small amount of mercury. Take burned out CFL lamps to the City of San Antonio’s Hazardous Waste Disposal location on Culebra Road for proper disposal of the CFLs. You may also want to contact your local home improvement stores for additional CFL disposal options.

### Tip:

If you need to replace or purchase additional light bulbs for your home, make sure to check the CPS Energy SaveNow website for available rebates at <https://www.cpsenergy.com/en/my-home/savenow.html>





## Programmable Thermostat

Your home has been equipped with a programmable thermostat. By properly using this thermostat, you can save some energy in your home and this can also result in lower energy bills. One of the most important features of the programmable thermostat is that you can regulate your home's temperature when you are not at home or when you are asleep. You can control the temperature in your home by setting the thermostat at a higher temperature during the summer and a lower temperature during the winter when you are not home. The U.S. EPA **ENERGY STAR**<sup>®</sup> program recommends setting your temperatures to 78° during hot weather and to 68° during cold weather seasons.

Your programmable thermostat may also be a "smart thermostat" device which means the device is Wi-Fi enabled and can be managed remotely through an app. Some "smart thermostats" are "learning thermostats" that can establish whether you are home or not and adjust your temperature preferences accordingly. To find out if you have a smart thermostat, go over your thermostat's menu or look up your thermostat model online for more details about your specific device.

For more information about programmable and smart thermostats, visit the ENERGY STAR<sup>®</sup> and DOE website at: [https://www.energystar.gov/products/heating\\_cooling/smart\\_thermostats?qt-consumers\\_product\\_tab=0#qt-consumers\\_product\\_tab](https://www.energystar.gov/products/heating_cooling/smart_thermostats?qt-consumers_product_tab=0#qt-consumers_product_tab) and <https://www.energy.gov/energysaver/thermostats>

**Hint:** CPS Energy is currently offering the WiFi Thermostat Rewards Program. Through this program you would allow CPS Energy to remotely access your AC to properly cycle your compressor for a short period of time during “peak hours”. CPS Energy will remotely access your thermostat during “peak” times which usually are between May through September from 3:00 pm to 7:00 pm. CPS Energy will offer a \$150 bill credit if you enroll an eligible WiFi thermostat in their Wifi Thermostat Rewards program. Your participation helps prevent outages in our community and across the state. Following the summer season of each year, you’ll also earn a \$30 bill credit per business or household account.

What if I have more than one thermostat? Great, you’ll earn the \$150 one-time rebate for each thermostat you enroll.

There are several advantages to this program such as remote access and control to your thermostat through the internet and also, you can reduce your heating and cooling costs by 10% or more. Refer to the CPS Energy website for more information on the WiFi Thermostat Rewards Program: <https://cpsenergy.com/wifithermostatrewards>

## Energy Conservation and Your Lawn

Contact CPS Energy to determine whether their “Mow-Down Smog” program is still in effect. Under this program, CPS Energy will provide the homeowner with a bill credit up to \$60 for the purchase of a qualifying product such as epush lawn mower as well as electric edgers, blowers, and hedge trimmers. Even better would be to purchase a manual-powered lawn mower. These mowers are known by their helix-shaped blades and quiet operation. With easy annual lubrication maintenance and cutting blade sharpening, these mowers can last for many years. In addition to the lawn mower, consider replacing all your gasoline-powered and electric-powered lawn equipment with human-powered tools. Rakes and brooms are exceedingly more appropriate to use than gasoline-powered or electric-powered leaf blowers.

### Did you know?

Running a gasoline-powered lawnmower for sixty minutes can create the same pollution as driving a car up to 110 miles!

- CPS ENERGY

Refer to the CPS Energy website for more information on their “Mow-Down Smog” program at: <https://cpsenergy.com/en/my-home/savenow/rebates-rebate/mow-down-smog-rebate.html> [Smog/index.asp](https://cpsenergy.com/en/my-home/savenow/rebates-rebate/mow-down-smog-rebate.html#Smog/index.asp)

# Water Efficiency

## Tankless Water Heaters

Your home may have been provided with one or more tankless water heaters. They have been chosen and located in your home to provide dependable and constant supply of hot water needed. As with previous tank-style water heaters, use common sense to avoid activating excessive hot water demand from many different hot water fixtures running all at the same time. Refer to the manufacturers' operations manual for more information and regular maintenance requirements.

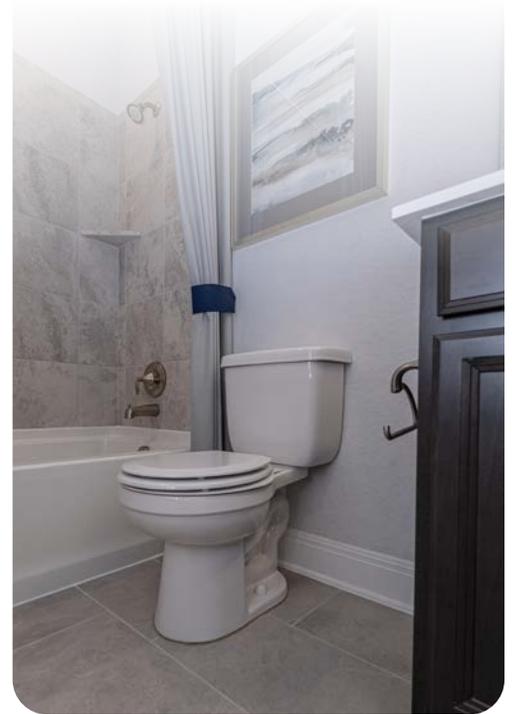


# EPA WaterSense High Efficiency Toilets (HET)

According to the EPA, toilets are the main source of indoor water consumption in your home and can account for 30% of your total indoor water use. Your home has been provided with the **EPA WaterSense** labeled toilets or with equivalent performing toilets.. These toilets are rated at 1.28 Gallons per Flush (gpf) and are so efficient that they can reduce the indoor water consumption by 20% when compared to a regular toilet. These significant water savings may also represent saving money in your water bill.

**Hint:** When replacing a toilet, always look for the **EPA WaterSense** labeled toilets.

For more information about these efficient toilets visit:  
[www.epa.gov/watersense/products/toilets.html](http://www.epa.gov/watersense/products/toilets.html)



## Sink Fixtures

Your home has come with sink fixtures that are low-flow. Normal sink fixtures have a rating of 1.5 gallons per minute (GPM), but can go as low as 1.0 GPM. Your home has been equipped with lavatory sink fixtures that are **EPA WaterSense** labeled or equivalent and are rated at 1.5 GPM or less. The kitchen sink fixtures are also rated at 1.5 GPM. These low flow fixtures help to cut down on the amount of water flowing through the faucet at any given time.

### Low-Flow Basics:

Sink and lavatory faucets:  
1.5 gallons per minute or less.

**Showerheads:**  
1.75 gallons per minute.

**Maintenance:** When replacing all sink fixtures, make sure you purchase low-flow rated fixtures of 1.5 gallons per minute or less. For all shower heads you want to install a fixture that is 1.75 GPM or less. This will help you conserve water and lower your monthly water bills. Refer to your local water utility website to see if they are offering any incentives or rebates for water fixtures. The SAWS website is: [www.saws.org](http://www.saws.org)

**Hint:** When buying low flow fixtures, price does matter. If you buy fixtures that are “bottom of the line” your water pressure will seem inadequate. However, this type of low pressure water can be avoided by carefully choosing fixtures that are well made. The upfront cost may be a little more (depending on which fixture you choose) but your cost savings in water will make up the difference.

### Did you know?

Generally, a shower uses less water than a tub bath. Especially when using low-flow showerheads, a shower uses less water than a tub bath. More importantly, consider how you take a shower. If you stand in the shower with the water flowing while you are lost in thought for an extended period of time, too much water can be lost also. It's better to turn the shower on long enough to get wet, shut the water off while lathering and shaving, then turning the water back on again to rinse.

# Site Development

## Native Plant Landscaping

Your home may have been landscaped with plants from the SAWS approved plant list. These approved plants are native to Texas and are able to withstand our hot and dry climate. This makes them ideal for lengthy summers with water droughts. Using plants that are native to Texas helps to reduce your water consumption and can reflect a cost savings in your monthly water bill.

**Maintenance:** When planting trees, shrubs, grasses or flowers please refer the SAWS approved plant list. As you add to your home's landscaping, please refer to the SAWS approved plant list for examples of drought tolerant and/or native trees, shrubs, grasses, or flowers.

### Landscaping Guidelines:

- Use only SAWS approved plants.
- Utilize BSAG's Landscape Care Guide.
- Consider xeriscaping.
- Check out SAWS' Seasonal Irrigation Program.

### Did you know?

The average 8,000 square foot lawn uses nearly 3,500 gallons every time it is irrigated in mid-summer.

The SAWS Conservation Program & Rebates website page has a list of landscaping incentives or rebates that are currently being offered. For more information, please go to the SAWS website at:

<https://www.saws.org/conservation/>

**Hint:** To learn more about how to properly care for your plants and conserve outdoor water visit the SAWS website to subscribe to their SAWS Watersaver Newsletter to receive free tips advice on water conservation and landscaping:

<https://www.saws.org/conservation/garden-style/>

# On-site Vegetation

Your builder took great care to preserve as many trees as possible on your site. Trees are an important element to any neighborhood because they provide shade for homes and yards, filter out air pollution, provide habitat for birds, produce oxygen, and increase your property value. Trees also help reduce the overall temperature of the neighborhood that is increased by asphalt, concrete and other hard surfaces. Cooler neighborhoods put less demand on your air conditioning system and do not add to the “heat-island” effect that robs us of rainfall. Your builder has also complied with the San Antonio Tree Protection Ordinance (TPO) that protects local trees from being cut down. Please do your part and abstain from cutting down trees unnecessarily.

Trees, shrubs and other vegetation that may have been removed from your site during construction may have been mulched and left on your home’s site. By doing this, your builder has helped decrease the amount of waste that was taken to the landfill while adding a beneficial element to your flower beds or around your trees, or to stabilize your soil.

**Maintenance:** When pruning trees or uprooting old shrubs, please take your clean brush to one of the many recycling centers around town. Places like the City of San Antonio Bitters Road Mulching Facility and Garden-Ville will take clean brush for free or a minimal fee. They will grind up brush and resell to homeowners for a small price (usually 3 cents per pound). Places like these reduce the amount of tree branches and shrubs that would otherwise be filling up our landfills. During the winter months, help support these types of businesses by purchasing mulch from them in order to keep your flower beds and trees warm.

The City of San Antonio Bitters Road Mulching Facility

1800 Bitters Rd

San Antonio, TX 782

Dial 311 for basic questions or go to: <https://www.sanantonio.gov/swmd>

## Tips:

- Mulch clean brush through one of the many programs in town.
- Purchase mulch from one of these centers.
- Stay in compliance with San Antonio’s Tree Protection Ordinance.
- Remember: trees not only look good, but provide shade and cooling effects.

## Did you know?

Planting native plants is better than planting non-native plants, even when the non-native species (like ligustrum) appear to do extremely well in our climate and soils. Why? Very aggressive non-native plants, which are also called “invasive non-native” plants can damage existing ecosystems wiping out native plants and destroying wildlife habitat. Some may even consist of toxins that when consumed by local wildlife can be deadly.

# Health

## Non-Toxic Pest Control

If your home is built over the Edwards Aquifer recharge zone, your builder has treated your home with a non-toxic termite barrier. Some builders also choose to provide non-toxic pest control for homes not located over the recharge zone. These types of pest controls prevent pest infiltration without adding toxic pesticides which could be harmful to the people and pets living in the home or affecting the ground water. There are many types of all alternative and less harmful pest control options to consider when treating your home for termites and other damaging pests.

### Did you know?

Good grades of diatomaceous earth consist of small fossils that have sharp edges. Ants, termites, fleas and other garden pests cannot move through diatomaceous earth without being cut. It's not unlike trying to walk barefoot over a pile of sharp knife blades. Check with your natural gardening specialist for details.

## Types of Non-toxic Pest Control:

- Traps for all types of pests from insects to rodents.
- Pheromones to lure creatures into the traps.
- Biological control or using certain types of plants or creatures to repel or get rid of pests. Some cats make very good roach and rodent killers.
- Herbal and growing plant repellents.
- To prevent pests from entering, make sure to keep your home clean, utilize screens on windows and doors, and seal any cracks, especially in the kitchen or bathroom.
- Inspect the ground around the perimeter of your house on a regular basis for signs of ants or termite infestation. If your house features a brick or stone veneer, do not seal intentional mortar gaps located at the foundation. These are "weep holes" that allow excess moisture to be removed from the wall cavity.
- Borate treatment by a licensed applicator.



**Maintenance:** When it comes time to treat your home we recommend alternatives to toxic chemically-based conventional pest control. These types are non-toxic and better for your yard, and especially recommended for families that have pets and small children.

## Indoor Air Quality

your home. Read below for more information about the IAQ features of your home. . Improving your indoor air quality (IAQ) benefits the health of you and your family. This is accomplished by minimizing the amount of construction materials and furnishings which produce harmful elements into the air.

Improving IAQ ,lessens the chance of bacterial growth, and helps to reduce the amount of allergens entering and staying inside your house.

It is also important to exercise common sense when maintaining the house with your choice of furniture, toys, cleansers, air fresheners, adhesives, and pest control. One family of chemicals present in homes, businesses, and even that "new car smell" is a category of chemicals called volatile organic compounds (VOC's). These types of chemicals are harmful,

especially to children, and have been shown to cause respiratory problems, asthma, fatigue, and headaches. Some airborne toxins are also endocrine disruptors potentially causing other poor health conditions depending on the chemistry, intensity, duration of exposure, and one's resistance to these chemicals.

### Did you know?

Materials, paints and adhesives that contain VOC's continue to emit fumes once dry and in some instances for months after application. Thus, your indoor air quality is still being contaminated after application or installation. Because people spend more than 90% of their time indoors, maintaining healthy indoor air quality is essential to promote healthy living.

Many things can contribute to poor IAQ such as paints, sealants, adhesives, gas fixtures, cleaning products, fiberglass insulation and air fresheners, even the material used in cabinetry and carpeting can be problematic. Improving the air quality will save your family money with a potential for fewer illnesses, less asthmatic and allergic reactions, better attendance at school, fewer missed days from work, and decreased medical costs.

### Tips to Keep Your Home Healthy:

- Use organic and/or unscented cleaning products to avoid irritation.
- Use only non-toxic pest control.
- Check all finishes on furniture, floors, and walls to make sure they are low-or no-VOC.
- Keep the difference between outdoor temperature and indoor temperature as little as comfortably possible large differences create humidity which leads to mold growth.

## Garages

One of the best ways to minimize toxic elements in your home is to separate your living space from the garage. Your home may have been designed with a detached garage or with no garage at all. Garages can be detrimental to your indoor air quality. Harmful exhaust fumes from your car, as well as chemical product off-gassing from pesticides and similar stored materials become trapped in garages and can migrate into the home through adjoining walls, ceilings and any cracks around doorways. Unfortunately, builders often place children's rooms above garages (in two story construction) and children receive the most exposure. By earning an **ENERGY STAR**® for Homes program rating for your house, it demonstrates an improved separation between your garage and the rest of your house. Keep this separation maintained over the years by checking the condition of the door seals and keeping the garage well ventilated.

## Proper Ventilation

Your builder has taken precautions to build your home with proper ventilation. All gas fixtures, except for the gas cook top and oven if you have them, have fresh air intakes and have been vented to the exterior which reduces the chance of combustion by-products contaminating the air in your home. Mechanical ventilation in bath and laundry rooms help remove excess moisture and stale air. If your home was built so tight that the typical air leakage through walls and the roof have been almost eliminated, your home may include a separate means to allow fresh air to enter the house replacing stale air. If your home has an energy recovery ventilation (ERV) system installed, read the manual on the unit thoroughly to understand its basic operation. Maintenance is extremely light, but must be adhered to in order to maintain the best health conditions for your family.

## Dehumidification System

In our climate, humidity can be problematic. Most of the time, moisture levels are kept at comfortable levels by a properly sized air conditioner, exhaust fans, and by encouraging natural ventilation. However, in some high-performance homes, high levels of trapped humidity may remain indoors. It may be necessary to install a humidistat to determine whether a separate de-humidifier is warranted. Contact an air conditioning specialist or a design professional knowledgeable in air quality and green building concepts if you suspect your home feels uncomfortably "damp".

### Did you know?

An airtight woodstove with an outside combustion air supply is considerably more efficient than a fireplace. If you are considering purchasing a woodstove, buy one manufactured since 1997 to make sure it is built in response to the latest EPA requirements for efficiency.

## Fireplaces

If your builder installed a fireplace in your home, it is equipped with a fresh air intake and glass doors that minimizes the chance that harmful smoke and fumes may escape into the living area. Please keep these doors closed at all time to ensure that harmful gasses do not

contaminate the air in your home. It is also important to keep doors closed to help maintain the indoor temperature of your home. This will prevent your HVAC from working harder to heat or cool your home. Keep the chimney damper closed and well sealed when the fireplace is not being used.

## Carbon Monoxide Detectors

Your builder has installed carbon monoxide detectors in your home. Carbon monoxide is also referred to as the “silent killer,” as it is an odorless gas and your family will not be able to detect carbon monoxide, but will start feeling symptoms of fatigue, headache and nausea. Overexposure can be fatal.

### Maintenance:

Please test your carbon monoxide detector(s) and fire/smoke alarms regularly according to the manufacturer’s recommendations.



## HVAC Filters

Your builder has placed a good quality filter in your HVAC unit. HVAC filters are rated by the expected amount of removal of particles of various sizes that enter your system’s return air ducts. The efficiency of filters is measured on a MERV (Minimum Efficiency Reporting Value) scale. Although MERV values range from 1-16, the best range for households is from 8-11. Anything greater is much more expensive and would require a more powerful fan to push air through the filter.

### Filter Comparison:

- Standard disposable synthetic filters: MERV ratings from 1 to 4, meaning they are less than 20% efficient.
- Paper pleated filters: MERV ratings from 5 to 8 are 20% to 35% efficient.
- Using MERV 8 to 11 filters increase filtering efficiencies more than 40%

**Maintenance:** Replace your HVAC filters at intervals recommended by the HVAC manufacturer’s instruction manual. When shopping for replacement filters, take the time to read the back to find out what services each filter provides. Some filters are better for families with sensitive allergies, while others are good for families with pets. Purchase filters that have MERV ratings between MERV 8 and MERV 11. These types of filters can be found at your local hardware stores.

# Materials



## Low VOC Paints

The wall paint used in your home is formulated as low-VOC (volatile organic compound) paint. This type of paint releases less toxic chemicals than conventional paint and therefore improves your indoor air quality. VOC's may be harmful to everyone in your family, but children, pets, elderly people, and people with respiratory problems or compromised immune systems are particularly vulnerable.

### Possible Dangers of Volatile Organic Compounds (VOCs):

- Eye, nose and throat irritation.
- Headaches.
- Loss of coordination.
- Nausea.
- Liver damage.
- Kidney damage.
- Central nervous system damage.
- Known to cause cancer.

**Maintenance:** When repainting in your home, choose paints with low or no VOCs. Low VOC paint lines such as the Harmony line by Sherwin-Williams and the Air-Care line of paint by Coronado Paint can avoid the problems associated with volatile organic compound exposure. Both of these paint formulations as well as many other low to no-VOC paints can be found at area hardware stores. However, be aware that low VOC paint can sometimes still have other types of airborne chemicals such as ammonia, halogenated solvents, formaldehyde, and other harmful chemicals.

### Did you know?

A primary opportunity for irritants, pollens and chemicals to enter the home is on your shoes. Consider having a no-shoe household where shoes are removed when entering the house. Especially after working in the yard, it is good practice to change your clothing as outdoor chemicals, pollens and other irritants can easily move from our clothing to carpeting and furniture.

If you are looking for paints that don't contain any VOC's or other hazardous chemicals, brands such as Safe Coat, Chem-Safe, Walker Paint, and Best Paint are some of the recommended paint lines in this category. These types of paints may be harder to find, but they are the most ideal to use in your home, especially in children's rooms. Look online for locations that supply these products.

## Carpet and Adhesives

If your home has been provided with installed carpeting, your builder has selected carpet, carpet padding and carpet adhesives that have been certified by the Carpet and Rug Institute's Green Label. These selected Green Label brands release less VOC's than conventional materials and helps to reduce the amount of potentially harmful off-gassing that are caused by carpets.

**Maintenance:** When replacing carpets in your home, please refer to the Carpet and Rug Institute's Green Label list to ensure you maintain the quality of your indoor air. Also consider the use of cork, bamboo, concrete, recovered wood, and tile flooring. These types of materials are considered environmentally superior to conventional flooring because they do not need to depend on the logging of trees or using non-renewable resources in order to produce the flooring. The growing time for harvesting cork and bamboo is considerably less than harvesting wood from trees. When possible, we encourage these types of flooring because of their durability. Bamboo and cork come in a variety of stains and patterns.

### Did you know?

Some harmful chemical additives do not produce an odor. These chemicals may be used as a substitute or as a mask for evaporative aromatic solvents. Because of this, one cannot rely on odor alone to determine the impact of products on air quality.



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