



## A Homeowner's Guide to Green Built Homes

Congratulations on your Green Built Home! Green buildings are designed and built to be energy efficient, environmentally conscious, comfortable, and long-lasting. It is a holistic approach to development that considers more than just the building itself. The landscape, site, location, local community, and impacts on the environment are all included in green building. Using sustainable practices during building and at home benefits your health, finances, the value of your home, and the environment.

This program offers a certificate for meeting green-building guidelines with multiple prerequisites and minimum point requirements in each section (Site, Water, Materials, Efficiency, Indoor Air, Appliances, Lighting and Renewables). Multiple levels of certification are available (Certified, Silver, Gold, Platinum, Net Zero Ready and Net Zero) based on the number of points earned. Each home has been modelled in a computer program to determine expected energy use and has been inspected for quality assurance. As an owner of a certified Green Built Home, use this manual as a resource to better understand the features, maintain the quality, health and efficiency of the home as well as further reduce your environmental impact.

Visit [www.GreenBuilt.org](http://www.GreenBuilt.org) to learn more about the program, access green building resources (all of the resources below and more are listed in the resources section of our website), blogs and information on community events and workshops or contact our hotline with your questions: [info@GreenBuilt.org](mailto:info@GreenBuilt.org).

### **HOME ENERGY RATING**

The Home Energy Rating System Index (HERS) is the nationally recognized system to measure your home's energy efficiency. As the owner of a Green Built Home, a certified Home Energy Rater has assessed your home and assigned it a performance score on a scale of 0 to 150, with lowest scores being the most efficient. The score is compared to a 'reference home' that is that same size and shape of your actual home built to code requirements so you can determine whether your home is more or less efficient in comparison to the average home. This will give you a better idea on how you can improve the efficiency of your home. If you don't know your home's HERS index you can access the information in the [national HERS registry](#) or contact us for more information about your home's score.

For more information about the HERS index:

[Residential Energy Services Network](#)





## **SITE OPPORTUNITIES**

### **Site Design and Landscaping**

Landscaping can be a major use of water for your home, and it can have significant impacts on the local ecology. Practices including conserving topsoil, not planting invasive species, using methods to control erosion, and incorporating more drought-tolerant plants will reduce the amount of water required and will have long term benefits for your yard.

Maintaining mulched areas prevents weeds, provides nutrients to plants, and helps keep soil moist. A few inches is generally adequate and needs to be added or replaced when needed. Features such as swales, rain gardens, dry wells, cisterns, and permeable paving allow water to infiltrate the ground below. They also ensure water is properly drained after a rainstorm, however they may need to be cleared of debris or built back up periodically. You can check with your local university agricultural extension office or botanical garden for guidance.

Avoid the pooling of rainwater on your property so water flows away from the foundation of your home, keeping it dry. Sloped areas on your property such as drainage systems, swales, terracing, or retaining walls will prevent water from flowing towards your house and weakening the foundation. Stormwater control measures such as these should be inspected regularly. If pooling of rainwater is evident on your property you may need to hire a landscaping professional to divert water away from your home.

Xeriscaping is a landscaping approach that uses small amounts of water but maintains a traditional look. While it was primarily used in the Western and Southwestern United States, it has developed and can be adapted to any climate and landscape. This technique “saves water, makes our yards less vulnerable to the ravages of drought and water shortages, and it allows us to develop a high-quality, beautiful landscape using ecologically sound landscaping practices” (NC Drought Resistant Landscape Guidebook).

[EPA's WaterSense Program](#)

[NC Drought Resistant Landscape](#)

### **Native and Edible Landscaping**

Native plants are generally low maintenance due to the fact that they are already well suited for the soil and climate in which you live. They also provide food and cover for native animals. It may be a good idea to have your soil analyzed for nutrient content. These results will give you specific recommendations for preparing your soil before planting and let you know





which native plants will grow best in your yard. Contact your local Cooperative Extension Center for instructions on this free service.

In Buncombe County:

Buncombe County Cooperative Extension Center  
49 Mount Carmel Road  
Asheville, NC 28806  
828-255-5522

[List of Native Plant Species in North Carolina](#)

[List of Invasive Plant Species in North Carolina](#)

[Organic Growers School - Edible Plants](#)

## **Permaculture Landscape**

Permaculture is the development of agricultural ecosystems intended to be sustainable and self-sufficient. The goal of permaculture is to environmentally and socially transform human communities so that all life has the opportunity to grow and thrive and to create a landscape with the “most efficient layout that will have the greatest effect for the least amount of work” (Tenth Acre Farm).

Permaculture designers will determine an efficient layout of a property to make sure it is at its fullest potential for productivity. They will be able to point out the best locations for vegetable/herb gardens, chicken coops, swales, fruit trees etc., as desired. They will also be able to recognize opportunities for resource conservation, such as rainwater collection.

[Permaculture Institute](#)

[Tenth Acre Farm](#)

## **OUTDOOR WATER OPPORTUNITIES**

### **Rainwater Harvesting**

According to the Environmental Protection Agency, “rainwater harvesting has significant potential to provide environmental and economic benefits by reducing stormwater runoff and conserving potable water. It provides inexpensive supply of water, augments drinking water supplies, reduces stormwater runoff and pollution, reduces erosion in urban environments, provides water that needs little treatment for irrigation or non-potable indoor uses, helps reduce





peak summer demands, and helps introduce demand management for drinking water systems” (EPA, Municipal Handbook, Rainwater Harvesting Policies, 1).

In its most basic form, rainwater harvesting can be a rain barrel placed under the downspout of your home to collect rainwater for garden irrigation. There are more advanced systems that are incorporated into your home’s plumbing to provide water for flushing toilets, laundry, and even drinking water (in this case rain water will need to be treated before use).

The Canada Mortgage and Housing Corporation shows that all rainwater harvesting systems have the same basic components:

- A *catchment area* to capture the rainfall — this is typically the roof of the house.
- A *conveyance system* to move the water from the roof to a storage area — eaves troughs and downspouts, and maybe piping.
- A *storage system* to hold the rainwater for future use — a barrel, a cistern or a tank.
- A *distribution system* to get the water from storage to where it is being used — this can range from a watering can to full integration with the existing plumbing system in the house.

Depending on how much space you have, and what you plan on using the rainwater for, you can design your system accordingly.

[Canada Mortgage and Housing Corporation: Collecting Rainwater](#)  
[EPA - Rainwater Harvesting Policies](#)

## Outdoor Reuse of Greywater

Greywater is gently used water from your bathroom sinks, showers, tubs, and washing machines. It is not water that has come into contact with feces, but it may contain traces of dirt, food, grease, hair, and certain household cleaning products. Greywater may look “dirty” but it is a beneficial fertilizer and safe way to irrigate your yard. However, if greywater is released into bodies of water its components and nutrients can become pollutants. Reusing greywater is a major benefit for the local environment because it stays out of sewer and septic systems and will not pollute bodies of water.

One opportunity for greywater reuse and collection is from your washing machine. They already have an internal pump and the water can be easily diverted without affecting your existing plumbing. You can use that to directly pump greywater to your garden and plants with a “laundry-to-landscape” system where “the washing machine drain hose is attached directly to a diverter valve that allows you to switch the flow of greywater between the sewer/septic and the greywater irrigation system. The greywater irrigation system directs water through tubing with outlets directing water to specific plants” (Greywater Action). An inexpensive option is a laundry





drum system where the water is pumped into a large barrel or storage tank that has a hose attached to the bottom so you can irrigate your yard as needed.

It is important to note that untreated greywater is currently not allowed by NC Code. According to the North Carolina Plumbing Code greywater “may contain disease-producing organisms and should not be used to water plants such as trees, vegetable gardens or flowers. By law, this wastewater must be disposed of through a permitted treatment system, either a public owned treatment plant or a permitted septic tank system.”

[Greywater Action](#)  
[NCDrought.org](#)

## **INDOOR WATER OPPORTUNITIES**

Choosing ENERGY STAR-labeled appliances wherever possible saves more energy and/or water than conventional models. While these sometimes have a slightly higher cost, they will save money in the long-run because of lower energy or water bills. Also make sure that you buy the right sized appliance for your household.

### **Energy Efficient Washing Machine**

The most energy-efficient washing machines are horizontal axis (typically front-loading) machines. They use about one-third the water of a conventional machine to wash the same amount of clothes. These models also do not have agitators, which means they are gentler on clothes. They also spin clothes faster, which results in less drying time and costs. Using cold water during a wash will reduce the energy needed to heat water, it is also helpful that most detergents today are designed for cold water washing. Only wash full loads, for small loads adjust the water setting or load selection.

[Department of Energy - Laundry](#)

### **Energy Efficient Dishwasher**

Dishwashers are a more efficient way to clean dishes than hand washing which uses an excess amount of water and energy. Newer models are more efficient with water and energy and





tend to wash better. If you have a newer model, scrape food off dishes instead of rinsing before putting them in the dishwasher. They are designed to remove excess food so water does not need to be wasted on rinsing. Heating accounts for most of the energy used for dishwashers. You can conserve energy by lowering your water heater temperature from 140 degrees to 120 degrees. Only run your dishwasher when it is full and use the lightest wash setting possible for that load. Let your dishes air dry by turning off the control for automatic-air dry and opening the door slightly.

[Department of Energy - Kitchen Appliances](#)

[ENERGY STAR - Dishwashers](#)

## **APPLIANCES, LIGHTING, RENEWABLES**

Selecting the right appliances for your home can save energy and water and lower the cost on your energy bill. Selecting the right size appliance for your household is also important so that appliances are not overused and energy is not wasted. Placement of larger appliances is also important so that they are not using more energy than is necessary. For example, keeping the refrigerator away from the oven and direct sunlight so it doesn't have to use more energy to maintain the appropriate temperature. Choosing ENERGY STAR models wherever possible is ideal because they are usually 15 to 20 percent more efficient than the average models. While the upfront costs of these appliances are higher, it is a long-term investment that will save you money over the years.

### **Energy Efficient Refrigerator**

ENERGY STAR model refrigerators that are the appropriate size for your household are the best option. Larger models use more energy as well as ones that are under-utilized or overly full. Top-mounted freezers, as opposed to side-by-side, are more efficient and use 10-15% less energy. Automatic ice makers and through-the-door dispensers also increase energy usage.

[Department of Energy - Kitchen Appliances](#)

### **Energy Efficient Dryer**

Look for a dryer with a moisture sensor in the drum instead of a temperature sensor near the exhaust. This type of dryer is more accurate in sensing the drying time needed for clothes and will prevent over-drying. Drying towels, sheets, and other heavier items separately from





regular clothes and lighter items will save energy. Air drying is a great option that wastes no energy. Outdoor clothes-lines are great for warm weather and indoor drying racks work inside anytime. This will also extend the life of your clothes by not weakening the fabrics during the drying process.

[Department of Energy - Laundry](#)

## **Water Heater Efficiency**

If you're considering purchasing a new water heater, select a heating system that will provide enough hot water for the size of your household and preferably one that will save energy and costs over time. Options include standard tanks, tankless, heat pump and solar water heating. The Department of Energy has a great resources for helping you choose the water heater that is best for you.

[Department of Energy - Water Heaters](#)

[ENERGY STAR - Water Heaters](#)

## **Induction Cooktops**

Energy is wasted on gas and electric cooktops through heating the surface of the cooktop and the air around it. Appliance Canada explains that, "induction cooking uses electromagnetism to cook rather than just electricity. By using alternating current through a coil underneath the cooktop and a metal pan, electromagnetism interacts with that pan to produce heat. So the cooktop itself doesn't produce heat, the electromagnetism generated by the cooktop causes the metal in the pan to generate its own heat." They also explain that there is no open flame or hot surface for anyone to burn themselves making it a safer choice. They're much easier to clean due to the fact that you're less likely to boil over what is being cooked. If something were to spill, you can simply wipe it away with a damp sponge since it will not be baked on by heat. Other electric cooktops might burn off food or dust that smoke when heat is applied and release contaminants. Gas stoves generate combustion by-products such as nitrogen oxide and carbon monoxide which have detrimental health effects, which also offers better indoor air quality performance.

[Appliance Canada](#)





## [Green Built Alliance - Induction Cooktops](#)

### **Efficient Lighting Fixtures and Lamps**

A simple and cost-effective change everyone can make is switching from incandescent light bulbs to compact fluorescent bulbs (CFLs) or Low-Emitting Diodes (LEDs). CFLs use up to 75 percent less energy than traditional bulbs and can last up to 10 times longer. The EPA states, "If every home in America replaced just one incandescent light bulb with an ENERGY STAR qualified CFL, in one year it would save enough energy to light more than 3 million homes. That would prevent the release of greenhouse gas emissions equal to that of about 800,000 cars." CFLs also reduce the amount of mercury released into the environment due to the lower amount of electricity required. LEDs are 90% more efficient than incandescent and have an incredibly long lifetime. LED technology has improved substantially in recent years and can now be used in most general lighting applications.

[EPA CFL FAQ](#)

[LED Basics by ENERGY STAR](#)

### **Daylighting**

Daylighting is the use of windows and skylights to bring natural light into the home during the day. This also reduces the need for artificial light without affecting heating and cooling of the home. According to the Department of Energy, "the sizes and locations of windows should be based on the cardinal directions rather than their effect on the street-side appearance of the house, for example. South-facing windows are most advantageous for daylighting and for moderating seasonal temperatures because they allow most winter sunlight into the home but little direct sun during the summer, especially when properly shaded. North-facing windows are also advantageous for daylighting because they admit relatively even, natural light, producing little glare and almost no unwanted summer heat gain. Although east- and west-facing windows provide good daylight penetration in the morning and evening, respectively, they should be limited because they may cause glare, admit a lot of heat during the summer when it is usually not wanted, and contribute little to solar heating during the winter."

[Department of Energy - Efficient Lighting Strategies](#)





## **Switchable Automatic Outdoor Lighting Controls- Motion/Photo Sensors**

Turning lights off when they are not needed is clearly the best way to save energy. However, using lighting controls to turn them on and off as needed, especially outside, is also a good option for when we forget. Photosensors sense light conditions and prevent outdoor lights from being used during daylight hours. Motion sensors automatically turn outdoor lights on when motion is detected and turn them off a short time after. They are particularly useful for security. A combination of motion and photosensors might be ideal for your home because some lights are only needed when it's dark and people are present.

[Department of Energy - Efficient Lighting Strategies](#)

[Department of Energy - Lighting Controls](#)

## **Whole-Home Automation System**

Home automation is a convenient way to control appliances through a device to make your home safer and energy saving easier. This will allow you to control appliances such as your thermostat, heating and cooling systems, stove top/oven, lights, blinds, and alarm system. You will be able to access the controls (usually) through your cell phone so you can manage your home from literally anywhere. With advances in technology, whole-home automation systems are becoming more affordable and accessible for the average household.

[Home Automation System Design](#)

## **Whole-Home Energy Monitoring System**

Whole-home energy monitors provide detail on your home's energy use. They connect the main breaker panel (and sometimes the wireless network) of your home and show how much energy your appliances are using. They also show you where you are using the most energy so you can identify where there are inefficiencies and can cut back on energy usage in a more exact way.

[Department of Energy - Electronics and Appliance Energy Use](#)





[Energy Monitoring Systems](#)

[Knowledge is Power](#)

## **Renewables**

Many Green Built Homes are built ready to have renewable technologies installed. Review the “Renewables” subsection of your checklist to determine what features your home already has. Even without having “solar-ready” features, Green Built Homes can install renewable energy systems economically because they are designed to be so efficient that they have reduced the amount of renewable energy needed. There are also many incentives available, making renewable energy more cost effective to be installed.

[Homeowners Guide to Going Solar](#)

[List of Renewable Energy Company Members of the Green Built Alliance](#)

[Database of State Incentives for Renewables and Efficiency](#)

## **INDOOR AIR QUALITY**

### **Carbon Monoxide**

Carbon monoxide (CO) is a colorless, odorless gas that is generally released during combustion (e.g., burning of a fuel in equipment like cars, gas-fired appliances, and fireplaces). Since there is no way to detect it, dangerous levels can build up in your home. At high levels, CO can cause health problems, such as headaches and nausea. At very high levels, CO will cause death.

Preventing CO build up can be done by installing CO monitors, at least one per floor. A CO detector was required in your Green Built Home if you already had combustion appliances installed. Checking and replacing batteries regularly in these monitors is necessary for effectiveness. If the alarm goes off, contact a professional to find and fix the problem immediately. Low level CO monitors will detect CO at very low levels to help you determine if there is an ongoing problem, as numerous studies suggest that low levels of CO can also have impacts to health.

[EPA: CO](#)

[Low Level CO Monitors](#)

### **Radon**





Radon is a radioactive gas that comes from the natural decay of radium that is found in soil. It moves up through the ground to the air and enters your home through cracks and other holes in the foundation. If there is no ventilation for the radon to escape your home, it gets trapped. It does not matter whether your home is new or old, has a basement or not, all homes are at risk for radon exposure. Even if your neighbor tests their house for radon, your home could have a different level of exposure. The main risk of living with high levels of radon is lung cancer.

A soil suction radon reduction system is the most common method for reducing radon in that it does not require major changes in your home. This method uses a vent pipe system and fan to pull radon from underneath your home and vent it to the outside. Sealing foundation cracks and other openings makes this system more efficient and cost-effective. Check your Green Built Homes checklist to determine if your home has a radon ventilation system.

All Green Built Homes are required to pass a radon test before certification, however, the EPA recommends getting a test done every two years as conditions change over time. Radon test kits are available online and at hardware stores. If you find that you have high levels of radon, you will want to contact a radon professional, for more information you can visit the [EPA's website](#).

### [A Citizen's Guide to Radon](#)

### **Alternative Termite Treatment**

There are many strategies you can use to avoid pest damage to your home without the use of toxic chemicals that are harmful to your family and pets. Prevention is the basis for these strategies so that pests do not have the opportunity to enter or nest in your home. Since pests are attracted to food, water, and shelter, keeping your home and yard dry and well-kept will discourage them. Some general maintenance strategies are as follows:

1. Keep plantings at least 24" away from your home and trimming any branches so that they are further from your home.
2. Having at least 12" of exposed concrete on exterior walls will enable visual checking for termites from the soil to any siding or wood present.
3. Keep firewood at least 20 feet away from your home and off the ground.
4. Avoid over watering your yard, standing water can attract insects.
5. Avoid using toxic chemicals for pest control and fertilizer as they can harm people and pets. If you are at high risk for termites, an annual termite inspection might help along with low toxicity insect and pest control systems.





## [Non-Toxic Termite Control](#)

### **Volatile Organic Compounds**

Volatile Organic Compounds (VOCs) are gases emitted from solid or liquids that have short- and long-term adverse health effects. They are in many VOCs in household products and they are released into the air when they are used or stored. Some products that contain VOCs include paint, cleaning/disinfecting products, waxes, varnishes, pesticides, furniture and bedding. Building materials such as furniture and carpets that are introduced into your home can contain high levels of VOCs and will slowly emit them into your home over time. In these cases, it is best to keep windows and doors open for as long as possible while avoiding that room, or to air out furniture outside before bringing them into your home.

If you must use products that emit VOCs, increase the ventilation and open windows while in use. Store products such as paint and pesticides away from your home in a detached shed or garage if possible. If you buy new products that smell, they're giving off VOCs and you should let them sit outside for a period of time. If paint is needed for the interior of your home, use low or zero emitting VOC paints. The Green Seal Standard program labels products that have a low VOC content.

[EPA - Volatile Organic Compounds](#)

[IAQ Perspectives](#)

[Choosing Green Materials](#)

[Sustainable Interior Design](#)

### **Ventilation**

Your Green Built Home has been sealed tight to save energy and prevent unhealthy air and moisture from entering your home. However, to make sure that the home has enough air exchange to dilute pollutants that do enter the home and to maintain healthy air quality while maximizing energy efficiency, an ASHRAE approved ventilation system has been installed. Your home will either have a supply, exhaust or balanced system. Review your Green Built checklist to determine what type of system you have and make sure it is working properly and is maintained as necessary.

[Whole House Ventilation](#)





## **BONUS OPPORTUNITIES**

### **Local recycling and household hazardous waste contacts in Buncombe County:**

Buncombe County Landfill

85 Panther Branch Road, Alexander, NC 28701

Buncombe County Transfer Station

190 Hominy Creek Road, Asheville, NC 28801

Fluorescent and Compact Fluorescent Light Bulb Recycling

Home Depot and Lowe's Home Improvement also collect expired, unbroken, compact, fluorescent bulbs at the returns counter at any store.

This Asheville based non-profit organization holds "[hard 2 recycle](#)" events throughout the year at different locations in the area.

Asheville Greenworks

2 Sulphur Springs Road

Asheville, NC 28806

### **Common Hazardous Household Materials and Instructions for Their Proper Handling and Disposal**

Car batteries and antifreeze

- Some car fluids like antifreeze can be processed and recycled into new fluids at a recycling center. Car batteries should be turned into the dealership or store where purchasing their replacement and be recycled by the establishment.

TV's, cell phones, and electronics, single-use batteries

- You are able to recycle small and large electronics and appliances at a recycling center. When it comes to cell phones you can trade them in when purchasing a new one, if possible, the battery should be removed as it will be transported separately.

Paint and paint products

- Oil-based paint cannot be recycled and need to be disposed of through a household hazardous waste (HHW) program. If there is not a HHW program available to you consider donating the paint to a local school, theater group, or non-profit. If all else fails, dry out the paint using shredded newspaper, mulch, or kitty litter and throw it in the trash.
- Water-based paint might be recyclable at a transfer station. If not, dry out the paint just as you would with oil-based paint.





- Latex paint is not hazardous and therefore not included in HHW programs. However, HHW collection sites and recycling centers might collect unwanted paint and offer events or programs that will make sure they get used or disposed of properly.

#### Aerosol cans and household cleaners

- Check to see whether you can recycle aerosol cans with other cans at your curb-side pickup, or if they are considered HHW to determine how you will recycle. Also check to see if they will accept the cap or not. In Asheville, they accept both at your curb-side pickup.
- Most household cleaning products are designed to go down the drain as part of their usage. Make sure to check for a label with disposal directions if provided. If you cannot find any instructions contact the product manufacturer or call your local waste disposal center.

#### Medications, mercury thermometers, and thermostats

- Unwanted or expired medications are not recyclable so follow any disposal instructions on the medication package, which will have the most current recommendations. If there aren't any, pour medication into a sealable plastic bag. If the medication is a solid add water to dissolve it then add kitty litter, sawdust, coffee grounds, or shredded paper (to make it less appealing for pets and children) to the plastic bag. Seal the plastic bag and put it in the trash.
- Items containing mercury are not recyclable but should be carefully disposed of using your local household hazardous waste (HHW) facility.

#### Pesticides, herbicides, and chemical fertilizers

- Pesticides themselves can never be recycled. If you need to dispose of unwanted pesticides or chemicals check the "storage and disposal" label on the container, though it will most likely have to be disposed of as HHW. Pesticide containers can be recycled but they will need to undergo special treatment and will have to be recycled separately from your average household recyclables.

#### Computer printers and printer cartridges

- The best way to recycle your computer is to take it to a local retailer with a computer recycling program.
- Staples, OfficeMax and Office Depot all have recycling programs for printer cartridges.

For specific recycling locations visit [Earth911.com](http://Earth911.com)

### **Organic Pest Control, Fertilizers, De-icers, and Cleaning Products**





Staying away from synthetic pesticides is important to maintain the health and ecology of your yard. While pests may be present, few of them are unfavorable and damage plants. While common pesticides kill unwanted pests, they also damage plants and beneficial life in your yard. They can also consequently cause invasive species, weeds, and pests to build up a resistance and become stronger. Synthetic pesticides are also harmful to humans, especially children, and can cause health problems that range from mild to more serious depending on exposure. According to the Natural Resources Defense Council (NRDC), “Integrated pest management, or IPM, focuses on preventing infestations before they start and using pesticides as a last resort. It’s a low-cost, environmentally friendly solution that has been proven in studies to slash pest-removal costs by one-third—and pest complaints by 90 percent.” The IPM method consists of first sealing your home up well to prevent pests from entering your home directly. Second, keeping your home clean so that pests are not attracted and have shelter in your home. Lastly, using environmentally friendly alternatives first and then chemical pesticides sparingly as a last resort. You can visit [Northwest Center for Alternatives to Pesticides](#) to find how to safely and organically manage specific pests.

Organic fertilizers come from plant or animal sources, or rock powder. Organic nutrients are released gradually promoting microbial activity and production of organic matter.

During winter weather avoid damaging de-icers on hardscapes. Shoveling sidewalks and driveways soon after snowfall will prevent ice build-up and adding sand will provide traction. De-icers all contain chloride products that damage vegetation, but if you must use them select ones that contain magnesium chloride or calcium chloride as opposed to sodium chloride or potassium chloride. These options are less damaging to concrete or other manufactured surfaces.

While cleaning products are necessary to maintain a healthy home, they can also be harmful to humans and the environment. You can buy safe organic cleaning products at certain stores or online, or you can make your own with household products you might already have. Soap, water, baking soda, vinegar, lemon juice, borax, and a coarse scrubbing sponge can take care of most cleaning needs.

[Natural Resources Defense Council](#)

[EPA - Cleaning Products Guide](#)

[Chemical vs. Organic Fertilizer](#)

[Worldwatch Institute - Cleaning Products](#)

**Maintain Humidity Levels in the range of 30-60%**





Monitoring the relative humidity of your home is important to avoid mold or mildew growth, rot or other damage to the building's structure. Humidity monitors are inexpensive and available at most hardware stores. In general, the recommended relative humidity in the home should be between 30 to 60%.

Using fans and dehumidifiers will help keep the relative humidity in this range. If the relative humidity is often above 60%, or if your home shows other signs of high humidity, first check that exhaust fans are being used properly. If humidity levels remain high a dehumidifier, or additional one, might be required.

## **NC GreenPower Program**

NC Green Power is a 501(c)3 non-profit that aims to improve the state's environment by "supporting renewable energy, carbon offset projects and providing grants for solar installations at K-12 schools" (NC GreenPower). Any North Carolina resident can contribute to the program for as little as \$4 by signing up through their electric utility provider. "That \$4 will add a block of 100 kilowatt-hours of renewable energy to North Carolina's power supply or mitigate 500 pounds of carbon dioxide" (NC GreenPower). The program is voluntary and set up for monthly contributions but one-time donations are accepted as well.

[NC GreenPower](#)

## **Appalachian Offsets**

Appalachian Offsets is a program through Green Built Alliance that uses carbon offsetting to reduce carbon emissions and helps local schools, nonprofits, and affordable housing providers to fund energy efficiency and renewable energy projects. On the website you can calculate your carbon footprint, then contribute to the program to offset your carbon footprint. You will receive a tax-deductible receipt for your donation and they will highlight your support and projects on their "Supporter" page.

[Appalachian Offsets](#)

## **Composting**

Compost is organic material that can be added to soil to help plants grow and increase nutrient content. Twenty to thirty percent of food scraps and yard waste are thrown away and end up in landfills where they take up space and emit methane. According to the EPA you need to have a combination of greens, browns, and water. Greens include food waste (e.g. fruit and





vegetable scraps, egg shells, coffee grounds, and tea bags) grass clippings, and houseplants. Browns include dead leaves, cardboard, newspaper clippings, wood chips. Having equal parts brown and green is optimal and the addition of water will help breakdown the organic matter.

[EPA - Composting](#)

## **Outdoor Composting**

Select a location in your yard that is dry, preferably shady, that has easy access to a water source. Add brown and green materials as they are acquired, making sure that large pieces are broken up or shredded. Add water to moisten dry materials. Turn your compost periodically to make sure it is exposed to air. When your compost is dark in color and looks like soil it is ready to use for your lawn and garden. Depending on the size this can take anywhere between two months and two years.

[EPA - Outdoor Composting](#)  
[Backyard Composting](#)

## **Indoor Composting**

There are several types of containers you can compost indoors with depending on the space you have. You can make your own or buy them at a local hardware or garden supply store. Follow the same basic composting guidelines previously stated, however you may want to make sure your food scraps and brown material are cut down into smaller pieces so they can break down faster. Once your container is full, only mix about the top half so the bottom can finish composting. If properly managed, your compost should not smell or attract pests. If it does adding newspaper or wood chips should help. Some areas also have local curbside compost pick up, similar to trash and recycling services.

[Ohio State University - Indoor Composting](#)





The following checklist from the [LEED for Homes Operations and Maintenance Manual](#) is a great overview of basic maintenance tasks that should be performed periodically to sustain your home's efficiency and extend its lifetime.

Maintenance Task		Season				Every Few Years
		Winter	Spring	Summer	Fall	
<b>Indoor Pollutants</b>						
1	Check/Replace batteries in carbon monoxide alarms		●		●	
2	Clean or replace walk-off mats		●			
3	Vacuum all carpets at least weekly, clean annually	●	●	●	●	
4	Check/clean fireplace and chimney				●	
<b>Exterior Structure</b>						
5	Clean debris from gutters and downspouts		●		●	
6	Remove excess snow from roof to prevent ice dams	●				
7	Inspect basement/crawl space for seepage/leakage		●			
8	Check / repair roofing and flashing for signs of wear or damage		●		●	
9	Check / repair all cracked or missing exterior caulking			●		
10	Check / repair air leakage inside: replace weather-stripping					●
11	Check /repair damaged shingles			●		
<b>Interior Durability and Finishes</b>						
12	Check /repair caulking/grout in and around showers/baths			●		
13	If paint is needed, use only low emission paint					●
<b>Lighting and Appliances</b>						
14	If replacing lights, use only ENERGY STAR labeled lighting					●
15	Check if exterior automated lighting controls are working		●		●	
16	Use power strip to reduce phantom loads from chargers, TV, etc.					●
17	Clean lint screen and dryer vent	●	●	●	●	
18	If replacing appliances, use only ENERGY STAR labeled ones					●





Maintenance Task		Season				Every Few Years
		Winter	Spring	Summer	Fall	
<b>Heating, Cooling, and Ventilation Systems</b>						
19	Clean or replace furnace filter	●		●		
20	Adjust thermostat for season change	●	●	●	●	
21	Have air conditioner and heating system serviced					●
22	Remove leaves, debris around air conditioning condenser				●	
23	Clean in and around grills and registers; vacuum inside of ducts					●
24	Clean in and around radiators					
25	Bleed valves for radiator	●				
26	Check / adjust humidity levels; Air out damp basement	●	●	●	●	
27	Check that roof/soffit vents are open and debris-free if vented				●	
28	Check/clean mechanical ventilation system	●	●	●	●	
29	Check that exhaust fans are unobstructed and working	●				
30	Check / clean air intakes and exhausts for debris	●	●			
<b>Plumbing</b>						
31	Fix leaks immediately in pipes, appliances, etc.	●	●	●	●	
32	Prevent pipe freezes: Turn off outdoor faucets	●				
33	Keep water heater temperature at 120F	●		●		
34	Check hot water heater for mineral buildup, drain, and refill					●
<b>Your Garage</b>						
35	Check seal between garage and home, if exists. Keep door closed		●		●	
36	Remove unneeded chemicals stored in garage		●		●	
<b>Your Yard</b>						
37	Check landscaping sprinklers to ensure proper flow		●			
38	Check that landscaping sprinklers do not spray on home		●			
39	Replace and repair landscaping - mulch, permeability features					●
40	Store fire wood off the ground, away from home	●				
41	Maintain proper grades for drainage on all property		●		●	
42	Winterize irrigation system: turn off water, drain				●	
43	Avoid damaging de-icers	●				
44	Keep all plants at least 24" away from home			●		
45	Avoid toxic chemicals for pest control and chemical fertilizer	●	●	●	●	

