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**Congratulations** and welcome to your new home! Your home is unique because your home is a **Green Built Home™**.

As the owner of a Green Built Home you have purchased a superior housing product that benefits you **and** the environment. Your home meets the standards of the Green Built Home Checklist, which means that it: has improved indoor air quality, conserves energy, water, and other natural resources, and was built utilizing resource-efficient construction materials and methods.

**The Homeowners Handbook will help you to continue to reap the benefits of your Green Built Home throughout its lifetime** by suggesting ways to practice resource-efficient living while serving as a model for others in your community. The Handbook has tips on how to:

- lower your home's operating cost
- maintain good indoor air quality
- protect the environment around your home
- conserve energy and other natural resources

Included are recommendations for lawn care, appliance selection, energy-saving heating and cooling practices and household hazardous waste disposal. You may also consult the Green Built Home Buyer's Guide for other ideas. We hope you will find these materials to be a helpful resource, as well as a starting point for further research.

Although selling your home in the future is probably the last thing on your mind at this moment, it is important to realize your Green Built Home is positioned for higher resale. Save this Handbook, the in-home certificate, your utility bills and any other pertinent information to document the savings and added value of a Green Built Home.

A completed and signed Green Built Home Checklist or Fact Sheet specific to this home should be included with this handbook by your builder. Should you need additional information on "green" buildings, visit the Green Built Home website at **[www.greenbulthome.org](http://www.greenbulthome.org)** or contact Green Built Home at:

Green Built Home - Program Director  
Wisconsin Environmental Initiative  
16 North Carroll Street, Suite 840  
Madison, WI 53703  
phone: 608-280-0360

## Yard care

We all hear of the dangers of runoff and erosion, most frequently in the context of agricultural land management. Runoff carries with it chemical fertilizers and pesticides, polluting the water bodies it enters, while erosion takes off layers of fertile topsoil and muddies lakes and rivers. Residential development can lead to some of the same kinds of problems. Paved streets and sidewalks can generate high volumes of runoff that carry lawn chemicals, motor oil and antifreeze, and unprotected soil from our yards and driveways through storm sewers directly to our lakes and streams. There are many simple ways to decrease the impacts of our gardens that will at the same time improve their health and appearance.

### Lawn care

We all enjoy our lawns and want them to be healthy and attractive. Lawns serve as a place for recreation, but they also improve our living environment by stabilizing the soil, cutting noise and absorbing solar radiation. Typically, homeowners invest copious amounts of energy and money developing and maintaining the “perfect” lawn. Time and resources are often spent needlessly on lawn care services, pesticides, herbicides and other chemicals. Not only do these services cost money, but the heavy application of chemicals has a significant impact on our environment. **Household lawns, on average, are treated with 6 to 10 times as much chemicals as farmland is on an acre per acre basis. Many of the chemicals used for lawn care are classified as possible carcinogens by the United State Environmental Protection Agency.** Not only are these chemicals harmful to human health, their damage to our environment is well documented. Most noticeable is the impact they have on our water quality, including our groundwater and water in our lakes and streams.

With all this in mind, you can still have a well-established, healthy lawn that requires less time and money to maintain. Below are some suggestions and helpful hints to lessen the environmental impact of your lawn and decrease the overall amount of time and money spent on it.

- **Let it grow.**

The easiest way to maintain a healthy lawn is to mow it properly.

Homeowners spend a great deal of time mowing, sometimes more than is necessary. Often we are out mowing our lawn faithfully every weekend whether the lawn needs it or not. **The ideal height for healthy grass is 2.5 to 3 inches.** This height allows the grass to grow a strong deep root system that will help it withstand drought. Keeping your grass at this height will shade the soil, preventing weeds from starting.

- **Stay sharp.**  
Dull mower blade tear grass, rather than cleanly cutting it. The ragged edges of the leaves offer an entry point for disease, and increase water loss resulting in a brown-looking lawn. Sharpen your mower blade at least twice a year.
- **Don't drown it.**  
Cutting your lawn at 2.5 to 3 inches will result in a healthy lawn that needs minimal watering. **Lawns generally don't need more than 1 inch of water per week**--this includes both rain and the sprinkler. Should you choose to water your lawn, it is best to water it once a day, rather than several times a day. The optimal time to water is in the morning. Dampness can cause disease, and morning watering allows ample time for the grass blades to dry. A good method to determine you lawn's need for water is to walk across you lawn; if the footprints linger for several hours it is a good sign that your lawns needs water.
- **Fight weeds with your bare hands.**  
Should a weed establish itself, the best thing to do is to dig it out by hand. Dig 3 to 5 inches deep to remove the entire root of the weed. **Hand digging the occasional weed actually saves time and money, and is healthier for the environment than chemical treatments.** If your lawn is well established there will be minimal opportunity for weeds to establish themselves. Should you need to use chemical applications, take precautions so as not to over-apply.
- **Recycle grass.** Rather than bagging your lawn clippings, use them as mulch in your garden or leave them on the lawn to return nutrients to the soil naturally. Doing so will also increase the effectiveness of those costly chemical treatments

## Flower and Vegetable Gardening

Whether you have a turf lawn, a vegetable garden, or are planning a yard entirely composed of flower beds, these tips can help you take maximum advantage of resources already available to you.

- **Go Native.** Native species are capable of withstanding drought, are more pest resistant, and ultimately require less watering and maintenance. **You don't have to undertake major prairie restoration to take advantage of the low-maintenance beauty of the many wildflowers native to your area.** Ask your local nursery for suggestions of native species that are appropriate for your soil and conditions.

- **Let it rot.** Establish a compost pile/bin to speed up the decomposition of organic material and reduce the need to landfill. What can be composted? Yard waste, grass clippings and household material. Don't include animal products such as meat or bones--these will attract rodents. However, fruit and vegetable waste are appropriate.
- **Make rain work for you.** Rain barrels allow you to catch and store water from your roof after a rainfall and use it for watering plants. Rain barrels can be purchased from lawn and garden retailers.
- **Watch where you point that thing.** Direct downspouts onto lawn areas or provide an infiltration system. This practice reduces the runoff from paved and impervious surfaces that contributes to flooding and washes pollutants from our roadways into our lakes and streams.
- **Plant a rain garden.** Rain gardens provide an excellent infiltration system to deal with water from downspouts and runoff from sidewalks and driveways and would be a beautiful asset to your yard.

# Energy Use

According to the EPA, power generation for residential use is responsible for 20% of the pollutants released into the air. Fortunately, technology continually offers us new ways to minimize energy use without sacrificing comfort in our homes. The following sections offer tips on how to optimize energy usage in your home so that you save energy **and** save money.

## Appliance selection:

**Appliances account for the majority of your home energy bill.** Therefore, you should carefully compare and evaluate different appliances before purchasing new ones for your home. **There are two costs to consider when purchasing an appliance: the initial purchase price and the operating cost. What may cost less up front could be more expensive in the long run when energy costs are considered.** This may seem like a lot to think about while considering refrigerators or dishwashers. Fortunately, the EPA offers consumers a tool to aid in their decision-making—the yellow Energy Guide label. Exercise caution when looking at the Energy Guide label—it **does not** distinguish the most efficient appliance. Rather, it estimates the annual operating cost of that particular appliance. Using this information and the formula below, you can determine how long it will take to recoup the initial higher cost of a more efficient appliance.

**When selecting new appliances or products, use the simple formula below to calculate the years to recoup higher initial costs.**

### Purchase Price (A):

High-efficiency model    \$ \_\_\_\_\_

Low-efficiency model    -\$ \_\_\_\_\_

**A** = \$ \_\_\_\_\_

### Yearly Operating Cost (B):

Low-efficiency model    \$ \_\_\_\_\_

High-efficiency model    -\$ \_\_\_\_\_

**B** = \$ \_\_\_\_\_

**A** divided by **B** = years to recoup extra cost of high-efficiency model

**ENERGY STAR® appliances are 10-50% more efficient than federal guidelines. Substantial energy savings can be realized by using ENERGY STAR appliances or appliances that perform in the top 50% of the Energy Guide rating.** ENERGY STAR rates clothes washers and dryers, dishwashers, refrigerators, heating and cooling systems, water heaters, light fixtures and

bulbs, and a wide variety of home electronics including TVs, computer monitors and DVD players.

Most retailers can offer a list of ENERGY STAR labeled brands and models. To locate additional information on ENERGY STAR labeled appliances, visit the following websites:

- [www.energystar.gov](http://www.energystar.gov)
- [www.eren.doe.gov/consumerinfo/energy\\_savers/appliances.html](http://www.eren.doe.gov/consumerinfo/energy_savers/appliances.html)

Following are considerations for the major appliances most households use.

### **Clothes Washers**

**A typical household does nearly 400 loads of laundry per year, using about 40 gallons of water per full load with a conventional washer. In contrast, a full-size ENERGY STAR clothes washer uses 20-25 gallons per load. You could save as much as 7,000 gallons of water per year plus the energy needed to heat that water.** This adds up to savings for you and a big boost for the environment.

There are two clothes washer designs: top-loading and front-loading. Both designs will get clothes cleaner and take better care of your fabrics while using less water and energy than standard washing machines.

- **Front-loading** ENERGY STAR models are similar in design to washers used in laundromats. These horizontal-axis or tumble-action machines repeatedly lift and drop clothes, instead of moving clothes around a central axis.
- **Top-loading** ENERGY STAR washers use sensor technology to closely control the incoming water temperature. To reduce water consumption they spray clothes with repeated high-pressure rinses to remove soap residues, rather than soaking them in a full tub of rinse water.

ENERGY STAR clothes washers come in a range of capacities from about 1.6 cubic feet up to 2.9 cubic feet. A typical large-capacity washer, found in most households, is about 2.7 cubic feet.

**Because washers are most efficient when they are fully loaded, you should choose a size that most closely matches your laundry needs.** For a family that does a lot of laundry, one of the larger models probably makes the most sense. For an individual or couple who do less laundry, a small model will be the most economical.

**Approximately 80-85 percent of the cost of washing clothes comes from heating water.** Two ways to reduce washing cost are to use less water or to use

cooler water. Switching the water temperature setting from hot to warm will reduce the amount of energy per load in half.

## **Refrigerators**

**The refrigerator is the single biggest power consumer in most households.**

The older your refrigerator is, the more power it burns. For example, A typical refrigerator made around 1990 uses over 900 kilowatt hours per year - that's the same amount of energy you would use by leaving a 1,250 watt hairdryer running for a month! ENERGY STAR refrigerators incorporate a number of advanced features to save energy while keeping your food fresh. To make a better refrigerator, ENERGY STAR manufacturers use:

- Better insulation
- More efficient compressors
- Improved heat transfer surfaces.
- More precise temperature and defrost mechanisms

Improved insulation means that the compressor needs to run less often. Because the compressor produces heat while it is running, improving its efficiency keeps the kitchen cooler as well. ENERGY STAR refrigerators exceed minimum federal standards for energy consumption by at least 20 percent.

**Make sure your refrigerator is operating under optimal conditions to maximize energy efficiency.**

- The recommended temperature for refrigerators is 37° to 40° Fahrenheit for fresh foods and 5° Fahrenheit for the freezer.
- Monitor frost build up. Frost build up decreases the energy efficiency of the refrigerator. Limit frost build up to ¼ inch.
- Clean your refrigerator coils at least once a year.

## **Dishwashers**

Dishwashers use built-in electric heaters to heat water to a temperature high enough to clean the dishes effectively. This allows you to lower the temperature setting on your water heater. See **Water Heating** tips for the recommended temperature setting. In addition to other efficiencies, ENERGY STAR dishwashers minimize the amount of water needed, saving the energy required to heat it. ENERGY STAR dishwashers must exceed minimum federal standards by at least 13%. **Remember to run the dishwasher only when full to maximize efficiency.**

## **Home Electronics**

Home electronics that can be operated with remote controls are often still on even after you have turned them “off.” This is because your TV or DVD player must remain in standby mode so that it can be turned on at the push of a button.



ENERGY STAR now labels home electronics including TVs, DVD players, VCRs, audio equipment, computers, monitors, printers, and other home office equipment. In most cases, ENERGY STAR labeled electronics use less energy in operation and in standby mode, and often enter “low power” modes during periods of inactivity. Consult the ENERGY STAR website for a list of labeled electronics at [www.energystar.gov](http://www.energystar.gov).

### **Heating and Cooling**

Heating and cooling account for almost half of a household’s energy use. Your new home is been designed and built with materials to improve heating and cooling efficiency. Following are some tips to help maintain a high level of efficiency.

- Clean or replace filters on furnaces at least once a month or more frequently as needed during the heating season and at least every three months or as needed during the cooling season.
- Clean warm air registers and make sure they are not blocked with furniture or carpeting.
- Install or utilize a programmable set back thermostat. **A savings of as much as 10 percent a year on heating and cooling bills can be obtained by simply turning your thermostat back 10 to 15 percent for 8 hours each day.** Do this in the evening or when you are not home during winter months. During the summer months, do this during the day or when you are not home. Or, simply turn the A/C off when you’re not at home.
- Don’t forget to have your furnace or air conditioner serviced annually. Household air conditioners need routine service, just as car air conditioners do.
- Close drapes at night to keep heat in the house.

### **Water Heating**

- Set the thermostat on your water heater at 115 to 120 degrees. This is adequate for dishwashers as most dishwasher come with a heat booster.
- Insulate the hot and cold water pipes a minimum of first three feet from the water heater.
- Drain a quart of water from the water heater every 3 months to remove sediment. Sediment build up will reduce heat transfer making your water heater less efficient.

## Lighting

- Install compact fluorescent bulbs in place of the standard incandescent bulbs in fixtures that are used most often. **Fluorescent bulbs last 6 to 10 times longer than regular incandescent bulbs do and are more energy efficient.** Yes, they do cost more initially, but the long term energy savings will pay for the extra cost long before they need replacement.
- Decorate the interior of your home with light colors to reflect light.
- Install motion detectors on outside lights.
- Install solar-powered sidewalk lights.

## Water Use

Fresh, drinking-quality water is a world-wide environmental issue, and is causing increasing concern in the United States as we deplete current supplies and alter the means by which those supplies are replenished. There are many simple steps to reducing water usage in your home that will conserve water and save you money on your water bill.

### Inside your home:

- Install a “low flow” or aerator shower head. Install a shower head that is rated at 2.4 gpm or less at 80 psi. **This will reduce the amount of water used for a shower by 60 percent.**
- Install an aerator faucets or smaller washer to reduce the water flow to 1.5 gpm or less. **This will reduce water use in faucets by 60 percent.**
- Replace your top loading washer with a front loading, horizontal axis, clothes washer.
- Fix drips. A small drip can waste as much as 25 gallons of water a day.

### Outside your home

See the yard care section for ways to reduce your dependence on municipal tap water for lawn and garden irrigation.

## Household Chemicals

## Indoor Air Quality

Your new Green Built Home has been designed to offer superior indoor air quality with good ventilation and materials that contain low levels of volatile organic chemicals (or none at all.) The products you use to care for your new home can affect the quality of the air inside the home. **The EPA's studies have shown that when people are using cleaning products containing volatile organic chemicals, they can expose themselves to very high levels of these pollutants. In some cases, levels of common volatile organic pollutants are 2-5 times higher inside a home than outside, regardless of location.** These chemicals can cause eye and respiratory irritation and nausea and could potentially trigger asthma and allergy attacks. Other cleaning products such as chlorine bleach and ammonia can cause similar reactions. The EPA offers the following recommendations when using any of these products:

- use cleaning products according to manufacturer's directions
- ventilate your home well while using cleaning products
- buy products in small quantities; dispose of unused quantities safely
- never mix household cleaning products except as directed.

## Environmental pollutants

Many typical household cleaning products contain chemicals that are considered pollutants when they enter the environment via the waste stream. While the quantities we rinse down the drain are minuscule compared to inputs from other sources, every effort made to reduce pollution helps. An example of pollutants commonly found in household cleaning products is phosphates, which are often used in laundry and dish detergents. **Phosphates soften the water, increasing the cleaning power of the detergent, but they also act as fertilizers when introduced to aquatic systems, causing rapid growth of algae and depletion of the oxygen content in waterbodies.** This process, called eutrophication then leads to a variety of other problems, including large-scale fish kills. Phosphate-containing laundry detergents have been banned in most states, but many powdered dishwashing detergents do still contain phosphates.

## What can I do?

**The best way to solve the problem of pollutants and toxics in your home is to be an educated consumer. Read the labels on the products before you buy them to find out what chemicals they may contain.** Many alternative cleaning products are becoming widely available that contain no organic chemicals or phosphates and that are biodegradable. Be sure to look closely at the ingredients in "environmentally friendly" or "environmentally-safe" products, as these terms are not always accurate indicators of the toxicity of the product. The EPA has extensive information on their website about household cleaners and health and safety.

# Hazardous Waste/Materials Disposal

In light of rapidly changing information regarding the toxicity of hazardous materials and appropriate disposal practices, homeowners are cautioned to contact their local county extension office, district DNR office or local municipality to obtain proper disposal procedures.

This handbook includes disposal practices for common household products. In addition to the using methods listed below you can contact your local municipality to determine if they operate a disposal site for household hazardous waste.

Anything poured into a storm sewer will eventually end up in an area lake or stream. **Do not dispose of any materials down storm sewers.**

- **Paint:** Water may be evaporated from latex paints and the remaining solids disposed of with the household trash. Once the paint has dried and solidified it can no longer leach into the soil, lakes or streams. Remember, **do not pour paint into the storm sewers.**
- **Oil and other automotive products:** Oil, batteries and many other automotive products can be recycled. Locate the nearest recycling center near you that accepts these products.
- **Solvents:** Solvents are best disposed of at a designated facility. Small quantities of solvents may be evaporated, but that is discouraged. Caution should be exercised when flammable materials are left open. In addition to the risk of fire, evaporation of the chemicals is not recommended for the environment. The chemicals can contribute to a reduction of the ozone layer.

## Resources and References:

**Green Built Home Website**, which can be accessed through the Wisconsin Environmental Initiative's website at [www.wi-ei.org/GBH/index.htm](http://www.wi-ei.org/GBH/index.htm). The Resources section offers many valuable links to green building-related sites.

**University of Wisconsin - Extension Publications:** The UW-Extension Publications offers a large selection of helpful publications at a minimal cost or no cost to Wisconsin residents. The publications concerning lawn care and rain gardening may be of particular interest. Many of the publications can be viewed online at [www1.uwex.edu/ces/pubs/](http://www1.uwex.edu/ces/pubs/) or call 1-877-947-7827 (toll free) to obtain a list of their publications.

**Great Lakes Great Lawns, A Homeowners Guide to Growing Lawn Without Pesticides**, produced by Wisconsin's Environmental Decade Institute, 122 State Street, Madison, WI 53703 (608)-251-7020

**Green Built Home Buyer's Guide**, produced by the Wisconsin Environmental Initiative, 16 North Carroll Street, Suite 840, Madison, WI 53703. The checklist can be viewed online at [www.wi-ei.org](http://www.wi-ei.org) or call 608-280-0360 to request a copy.

**Owning Waterfront Property: A Checklist**, produced by the Wisconsin Environmental Initiative, 16 North Carroll Street, Suite 840, Madison, WI 53703. The checklist can be viewed online at [www.wi-ei.org](http://www.wi-ei.org) or call 608-280-0360 to request a copy.

**Conservation Tool Book**, produced by Madison Gas & Electric. Call (608)252-7117 or visit [www.mge.com](http://www.mge.com) for more information or to request a copy of this guide.

**Energy Savers: Tips on Saving Energy & Money at Home**, available from the U.S. Department of Energy (DOE) online at [www.eren.doe.gov/consumerinfo/energy\\_savers](http://www.eren.doe.gov/consumerinfo/energy_savers) or call 800-363-3732.

**Healthy Housing: Practical Tips**, produced by the Canada Mortgage and Housing Corporation, 613-748-2367.

**Power Smart: Easy Tips to Save Money and the Planet**, produced by the Alliance to Save Energy. To obtain a copy write Consumer Information Center, Pueblo, CO 81009 or online at [www.ase.org/powersmart/](http://www.ase.org/powersmart/)

**Energy Star Programs**, U.S. Environmental Protection Agency, Energy Star Programs, 401 M Street, SW, Washington, DC 20460, 1-888-782-7937, [www.energystar.gov](http://www.energystar.gov)

**The Environmental Protection Agency** administers a website with extensive information about indoor air quality, water quality and household chemicals and health at [www.epa.gov](http://www.epa.gov).