

LEED for Homes
Operations and Maintenance
Manual For Tenants



U.S. Green Building Council

August 2010

Copyright

Copyright © 2010 by the U.S. Green Building Council. All rights reserved.

The U.S. Green Building Council authorizes you to use the LEED for Homes Operations and Maintenance Manual for your individual use. In exchange for this authorization, you agree to retain all copyright and other proprietary notices contained in the original LEED for Homes Operations and Maintenance Manual. You also agree not to sell or modify the LEED for Homes Operations and Maintenance Manual or to reproduce, display or distribute the LEED for Homes Operations and Maintenance Manual in any way for public or commercial purpose, including display on a Web site or in a networked environment. Unauthorized use of the LEED for Homes Operations and Maintenance Manual violates copyright, trademark and other laws and is prohibited.

Note that the text of the federal and state codes, regulations, voluntary standards, etc., reproduced in the LEED for Homes Operations and Maintenance Manual is either used under license to the U.S. Green Building Council or, in some instances, is in the public domain. All other text, graphics, layout and other elements of content contained in the LEED for Homes Operations and Maintenance Manual are owned by the U.S. Green Building Council and are protected by copyright under both United States and foreign laws.

Disclaimer

None of the parties involved in the funding or creation of the LEED for Homes Operations and Maintenance Manual, including the U.S. Green Building Council, its members, its contractors, or the United States government assume any liability or responsibility, to you or any third parties for the accuracy, completeness, use of, or reliance on, any information contained in the LEED for Homes Operations and Maintenance Manual, or for any injuries, losses or damages (including, without limitation, equitable relief) arising out of such use or reliance.

As a condition of use, you covenant not to sue, and agree to waive and release the U.S. Green Building Council, its members, its contractors and the United States government from any and all claims, demands and causes of action for any injuries, losses or damages (including, without limitation, equitable relief) that you may now or hereafter have a right to assert against such parties as a result of your use of, or reliance on, the LEED for Homes Operations and Maintenance Manual.

The builder (or primary project manager) is solely responsible for choosing LEED for Homes features that are appropriate for the home and for their proper installation. USGBC and its representatives are responsible only for verifying the completion of LEED for Homes requirements as set forth in the LEED for Homes Rating System; such verification in no way constitutes a warranty as to the appropriateness of the selected LEED for Homes measures or the quality of implementation.

In the LEED for Homes program, the Project Team must educate the homeowner (and/or tenants) on the specific LEED for Homes-related equipment installed (per prerequisite AE 1.1 of the LEED for Homes Rating System). This training includes the unique operations and maintenance requirements for that equipment. USGBC developed this manual to complement the educational activities of the project team. However, the information in this manual is general in nature and may not address all of the features in a LEED-certified home. Further, this information is not intended to supersede the Project Team's instructions.

U.S. Green Building Council
2101 L Street, NW, Suite 500
Washington, DC 20037

Trademark

LEED® is a registered trademark of the U.S. Green Building Council.
ISBN # 978-1-932444-09-4

Contents

Quick Look-Up	3
Part 1: Introduction to your Green Home	4
Why Green Homes?	6
Your Role in Keeping Your Home Green	8
Emergency Information and Safety Tips	9
Purpose and Structure of Manual	10
Part 2: How to Maintain the Green Features in Your Home	11
Indoor Pollutants	12
Interior Durability and Finishes	14
Lighting and Appliances	15
Heating, Cooling, and Ventilation Systems	17
Plumbing	19
Part 3: Suggestions on How to Live More Sustainably	20

Quick Look-Up

Summary of Suggested Operations and Maintenance Tips

A description of each of these tips is presented in Parts 2 and 3 of this manual.

Maintenance Task		Season				Every Few Years
		Winter	Spring	Summer	Fall	
Indoor Pollutants						
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				●	
Interior Durability and Finishes						
12	Check /repair caulking/grout in and around showers/baths			●		
13	If paint is needed, use only low emission paint					●
Lighting and Appliances						
14	If replacing lights, use only ENERGY STAR labeled lighting					●
15	Use power strip to reduce phantom loads from chargers, TV, etc.					●
16	Clean lint screen and dryer vent	●	●	●	●	

Quick Look-Up (cont'd)

Summary of Suggested Operations and Maintenance Tips

A description of each of these tips is presented in Parts 2 and 3 of this manual.

Maintenance Task		Season				Every Few Years
		Winter	Spring	Summer	Fall	
Heating, Cooling, and Ventilation Systems						
17	Adjust thermostat for season change	•	•	•	•	
18	Clean in and around grills and registers					•
Plumbing						
19	Report leaks immediately in pipes, appliances, etc.	•	•	•	•	

Part 1

Introduction to Your Green Home

- ✓ What are Green Homes?
- ✓ Your Role in Keeping Your Home Green
- ✓ Emergency Information and Safety Tips
- ✓ Purpose and Structure of this Manual

What are Green Homes?

Generally speaking, a green home is designed and built to be:

Healthy,
Comfortable,
Durable,
Energy efficient, and
Environmentally responsible.

A common misconception is that all new homes, built to the minimum building codes, are high quality and high performance homes. However, many new homes do not achieve several of the benefits listed above. Green homes are built to substantially exceed the performance levels offered by conventional, code-compliant new homes.

Also, while many new homes may claim to be green, they differ in how thoroughly they achieve the benefits above. In other words, they achieve different degrees of green, depending on the degree to which they deliver these benefits.

Why Green Homes?

Homes have a very significant environmental impact. According to the U.S. Department of Energy, all homes in the U.S. account for:

22% of the total energy consumed; and
21% of carbon dioxide emissions.

Also, certain indoor air pollutants can often be four to five times higher than outdoor levels. Construction and demolition waste (including both residential and commercial buildings) represents 40% of the solid waste in the U.S. Homes also have a significant impact on the amount of water consumed, on the amount of chemicals (e.g., fertilizer, pest control chemicals) that can damage nearby water bodies, and other consequences.

Shifting towards the design and construction of more sustainable homes can have enormous benefits for the environment, as well as for the occupants.

What is LEED for Homes?

LEED for Homes is a voluntary rating system administered by the U.S. Green Building Council (USGBC). USGBC is a non-profit organization that promotes the design and construction of high performance green buildings. To be certified under the LEED for Homes program, a home must:

- Include several required green measures (“prerequisites”) (e.g., achieve energy efficiency at least 15%¹ better than conventional homes), and

¹ Homes must be 15% more efficient in mild & moderate climates and 20% more efficient in cold climates.

- Include many additional green measures. These are chosen by the builder from a variety of optional measures (“credits”) to earn points. A project must earn a minimum number of points to achieve certification.

The program includes several additional requirements as well, such as verification by a LEED for Homes Green Rater. The LEED for Homes Green Rater is not associated with the project team (i.e., this person is a “third-party”) and he or she has training in verifying green homes. In the verification process, the LEED for Homes Green Rater confirms that:

- All of the required green measures are installed in the home (by visual inspection), and
- The performance level of the home meets the program requirements (by physical testing of the home’s air leakage, duct leakage, etc.).

For more information on the LEED for Homes program, go to:

www.usgbc.org/LEED/homes

Your Role in Keeping Your Home Green

Most people know that cars need regular maintenance, like periodic oil changes and keeping tires properly inflated. Regular maintenance helps to keep a car running longer, more safely, and more efficiently. Similarly, your home needs regular maintenance to prevent equipment malfunctions, minimize health risks, and keep it operating as efficiently as possible.

A green home may also have special features that you may be unfamiliar with. Some of these special features have operations and maintenance requirements that will help to ensure that your home remains environmentally responsible and resource efficient throughout its lifetime.

This manual provides operations and maintenance tips on how to keep your new LEED-certified home healthy, comfortable, durable, efficient, and environmentally responsible.

Emergency Information and Safety Tips

This section offers emergency and safety tips that are important for any home. These tips are meant to be a brief summary and not a complete list. For more detailed emergency and safety information, go to:

U.S. Fire Administration www.usfa.dhs.gov/citizens

Home Safety Council www.homesafetycouncil.org/index.asp

Emergency Information

Immediately after moving into your home, take a few minutes to do the following. Don't wait until you have an emergency!

- Locate central shut-off valves for each of the following:
 - ✓ Water supply;
 - ✓ Electricity supply; and
 - ✓ Heating fuel (e.g., gas, oil, propane).
- Find the number for your local poison control center, especially if you have small children.
- Locate the nearest hospital emergency room(s).
- Contact local authorities for emergency suggestions for local and regional natural disasters (e.g. flood, hurricane, tornado, earthquake). Identify fire escape routes, particularly in large homes or multifamily buildings.

Safety Tips

- Regularly replace batteries in smoke alarms and check that they are functioning.
- Periodically check electrical cords, plugs, outlets, and other equipment for damage, and replace as needed. Also, don't overload electrical circuits.
- Keep the area around furnaces, hot water heaters, and other combustion equipment clean and free of clutter to help prevent fires.
- Never use any unvented combustion equipment inside your home or garage, such as barbeque grills, camping stoves, kerosene heaters, etc. These can release large amounts of deadly carbon monoxide inside your home.
- Inspect your hot water equipment annually for rust, disconnected vents, or other signs of a problem. For example, the pipe carrying exhaust from a hot water heater may become cracked or disconnected over time, which can cause carbon monoxide to be released into the home, or a fire.
- Set your hot water heater at or below 120° F. This is recommended by the Home Safety Council for safety², and it will also save energy.

² http://homesafetycouncil.org/SafetyGuide/sg_water_w003.asp

Purpose and Structure of this Manual

A list of all of the measures installed in your LEED-certified home is shown in the Project Checklist in Appendix A of this document. Further information on these measures can be found in the LEED for Homes Rating System³. Note that builders have some flexibility in which green measures (or LEED credits) they install in each LEED-certified home. Some of the features described in this manual may not be included in your LEED-certified home. Review the LEED for Homes checklist that was filled out specifically for your home to find out which features are installed.

The purpose of this document is to:

Part 2. Highlight the operation and maintenance procedures for the LEED for Homes measures that are installed in your home. Note that many of the LEED for Homes measures installed in your home should not require any operations or maintenance. For example, insulation that is more effective than what is required by code is installed behind the drywall. This and other measures installed behind the drywall should provide their intended benefits throughout the life of your home, without the need for maintenance. Features that do not require maintenance are not included in this manual.

Part 3. Describe operation and maintenance information for special LEED features that your builder has installed in your home. Your builder has included these special features to substantially improve the overall performance of your home.

Part 4. Suggest resources if you decide to do a renovation or addition to your home.

Part 5. Provide green lifestyle tips. Your LEED-certified home includes many measures for *efficiency* (i.e., getting more useful output, such as light, hot water, etc. for the amount of energy supplied). You can further reduce energy and water bills, and your environmental footprint, by following basic measures for *conservation* (i.e., using less energy, water, and other resources). In addition, the day to day behavioral choices that you make in other areas of your life, such as transportation, cleaning, and purchasing, can greatly affect your overall environmental footprint. The green lifestyle tips suggest behavioral choices that will help you live more sustainably, and that will often help save you money as well.

³ The LEED for Homes Rating System can be downloaded at no charge from www.USGBC.org/LEED/homes.

Part 2

How to Maintain the Green Features in Your Home

Operations and Maintenance Tips for:

- ✓ Indoor Pollutants
- ✓ Interior Durability and Finishes
- ✓ Lighting and Appliances
- ✓ Heating, Cooling, and Ventilation Systems
- ✓ Plumbing

How to Maintain the Green Features in Your Home

This section includes operation and maintenance tips for LEED for Homes features installed in your home that require some upkeep or user operation. Keep in mind:

- The maintenance requirements for your home are specific to the types of systems that are installed in your home. It is very important for you to be familiar with the product manufacturer's specific recommendations for each system (see Appendix B).
- Many of the features in your LEED-certified home will not require maintenance, so they are not described here. But many still require that you use them properly in order to fully reap their benefits. For example, if your LEED-certified home includes dual flush toilets, this feature will only conserve water if everyone in your home uses the partial flush feature when appropriate. Review the LEED for Homes checklist (Appendix A) that was customized for your home to familiarize yourself with which green measures are installed in your home.

This section is organized by the systems in your home. Each section includes information on:

- Why this system is important;
- Tips for operating and maintaining the system; and
- Websites that provide additional information and maintenance tips for the system.

2.1 Indoor Pollutants

There are many potential sources of pollution in any home. For example, combustion equipment (anything that burns fuel, such as a gas-fired water heater or wood stove) releases carbon monoxide. Fireplaces and cooking can release small airborne particles, which can cause breathing problems, especially for people with asthma.

In general, indoor pollution can be controlled by:

- Reducing the amount of pollutants that are generated (for example, by not having a fireplace, or by using a fireplace that is cleaner burning); and
- Diluting pollutants once they are created, by bringing in fresh air (ventilation) or removing polluted air with exhaust fans and vents.

Combinations of these pollution control methods are used in LEED-certified homes. But you can further reduce pollutants in your home through operation and maintenance.

This section includes suggestions to help to control the following indoor pollutants:

- Carbon monoxide;
- Radon; and
- Airborne particles.

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). At high levels, CO can cause health problems, such as headaches and nausea. At very high levels, CO will cause death. LEED-certified homes include CO monitors, which can help warn if there are dangerous levels in your home.

As mentioned in the Emergency Information and Safety Tips, **never bring an unvented combustion source, like a barbecue grill, into the home.** Vented combustion sources, such as hot water heaters, have a pipe that carries carbon monoxide and other combustion pollutants out of your home. Equipment, such as barbecue grills, camping stoves, kerosene heaters, etc., will create carbon monoxide and other dangerous pollutants. Because the equipment is unvented, the pollutants cannot escape the home. The carbon monoxide can quickly build up in the home and become dangerous.

Operations and Maintenance Tips

The following general maintenance strategies are highly recommended.

1. *Check/Replace batteries in smoke and carbon monoxide alarms.* Replace the batteries regularly in your carbon monoxide alarm. If the alarm goes off, contact a professional to find and fix the problem immediately.

Airborne Particles

Airborne particles are common pollutants in the home. Airborne particles eventually settle out of the air and become dust on a surface. But small particles take a long time to settle out, and they can easily be kicked up into the air again (i.e., re-suspended) with activity. Airborne particles can be inhaled, causing health problems such as asthma. Some particles contain allergens, lead, or other components that can cause additional health problems.

LEED-certified homes include several measures to reduce airborne particles:

- One way that particles are transported into homes is by people tracking them in on shoes. Many LEED-certified homes include walk-off mats and shoe storage areas at each entryway.
- Cooking – especially frying – generates particles⁴. All LEED-certified homes include kitchen exhaust systems that exhaust particles, humidity, and other pollutants from your home. Use this fan whenever you cook.

Your use and maintenance of features installed in your home are important in keeping them working effectively.

Operations and Maintenance Tips

The following general maintenance strategies are highly recommended.

1. *Clean or replace walk-off mats at all entries.* Walk-off mats are designed to trap dirt and keep it out of the home, and by helping to remove dirt from shoes. However, if not cleaned and replaced regularly, walk-off mats can become a source of particles.

⁴ Wallace, L.A., et al. Environmental Science & Technology. 2004 Apr 15;38(8):2304-11. “Source strengths of ultrafine and fine particles due to cooking with a gas stove.”

2. *Vacuum all carpets at least weekly, clean annually.* While it is common knowledge that carpets should be vacuumed, most homeowners vacuum far less frequently than what manufacturers recommend (at least once per week, and more often in high traffic areas). The Carpet and Rug Institute also recommends that carpets be professionally deep cleaned every 12 to 18 months.

2.3 Interior Durability and Finishes

The previous section highlighted the importance of maintaining the exterior structure of your home. The interior of your LEED-certified home is carefully designed and constructed as well. This section includes operations and maintenance suggestions related to the interior features of your LEED-certified home, including:

- Interior Durability (control of moisture); and
- Paints and Coatings (control of chemical emissions).

Interior Durability

Just as rain can cause damage if it enters your home's exterior, leaks and moisture originating within the home can also damage the structure. Your LEED-certified home includes measures such as proper drainage and drain pans for appliances that help prevent water from pooling on surfaces in your home. You should check periodically that everything is in working order (e.g., draining freely), and that materials such as bathtub grout are in good condition. This will help keep water from damaging materials below, and help reduce mold and mildew.

Operations and Maintenance Tips

The following general maintenance strategies are highly recommended.

1. *Check for water leakage around water heaters, clothes washers and dish washers.* A small drip or leak is a sign that the appliance needs repair. Usually small leaks quickly evolve into major leaks that can cause major damage. If there is evidence of a leak, contact the appropriate equipment repairman immediately.

2. *Run bathroom fan for 30 minutes after showering.* Always turn on your bathroom fan while showering or bathing, and allow it to run for 30 minutes after you stop. By using this fan, you help remove moisture that can lead to mold and mildew, and that can damage the structure of the building. You should also run your kitchen fan while cooking, to remove pollutants and odors.

Related LEED for Homes Measures

For more information on this LEED measure, please look-up the following credits:

Innovation and Design (ID) 2: Durability Management Process

2.4 Lighting and Appliances

According to the US Department of Energy's Residential Energy Consumption Survey (2001), lighting and appliances use 34% of energy consumed in homes and account for 47% of the energy costs. Many LEED-certified homes include energy efficient lights, and ENERGY STAR-rated appliances. You can help to control your energy bills by replacing these products with similar energy-efficient products as needed. You can also conserve energy by turning off lights when they are not in use, and by reducing the energy used by home electronics in stand-by mode by unplugging appliances, or by using power strips.

This section includes operations and maintenance suggestions related to your home's:

- Lighting; and
- Appliances.

Additional sources of information on maintaining your lighting fixtures and appliances are listed at the end of this section.

Lighting

Collectively, interior and exterior lighting typically accounts for 5% to 15% of a new home's total energy use. Energy efficient bulbs and fixtures can use 50-75% less energy, and can emit the same amount of light. These also require less frequent replacement.

Operations and Maintenance Tips

The following general maintenance strategies are highly recommended.

1. *If replacing lights, use only ENERGY STAR-labeled lighting.* Choose bulbs and fixtures with the ENERGY STAR label, such as ENERGY STAR-labeled compact fluorescent lights. These bulbs may have a first cost that is more expensive than traditional, incandescent bulbs, but you will recover any cost difference quickly because of the bulbs' longer life and lower energy use. ENERGY STAR-labeled bulbs also achieve high standards for comfort issues (e.g., less flicker than other bulbs).

Appliances

Household appliances typically use 20-30% of a home's total energy use and about 25% of a home's indoor water use. Many LEED-certified homes have ENERGY STAR-labeled appliances, which can use 10-50% less energy and water than standard models.

Operations and Maintenance Tips

The following general maintenance strategies are highly recommended.

1. *Connect appliances (e.g., televisions, chargers) to a power strip and switch it off when not in use.* "Phantom loads" refer to energy that appliances (e.g., televisions, cell phone, laptop chargers) continue to draw when they are turned off. The U.S. Environmental Protection Agency estimates that households spend \$100 per year to power devices in this standby mode¹. Unplug appliances when they are not in use, or connect them to a power strip and turn off multiple appliances when they are not in use. Some power strips also serve as surge protection for appliances.

The U.S. EPA has also begun to identify some products, such as power adaptors, with the ENERGY STAR label. Look for this label to identify products that are more efficient than conventional models.

2. *Clean lint screen after every use. Periodically clean dryer vent.* For dryers, cleaning the lint screen after every use helps reduce energy use, and it reduces the risk of fire. Also, periodically check the exhaust vent for the dryer on the outside of your home. Make sure that the vent screen is clean and free of leaves, debris, etc., so that exhaust can freely escape to the outside.

Related LEED for Homes Measures

2.5 Heating, Cooling, and Ventilation Systems

Well designed heating cooling and ventilation systems are essential elements of a comfortable and healthy LEED-certified home. More importantly, they also provide for significant energy savings (at least 30% in most LEED-certified homes).

This section includes 2 related topics:

- Heating and Cooling Systems; and
- Ventilation Systems.

Additional sources of information on these systems are listed at the end of this section.

Heating and Cooling Systems

Heating and cooling systems are required to maintain comfortable temperatures within a home. They are also one of the major causes of excessive energy use in homes.

LEED-certified homes have heating and cooling equipment that is often 20 to 30% more efficient than equipment that meets the minimum efficiency standards. It is also correctly sized, based on the size of your home, how well your home is insulated, and other factors. This translates into lower energy bills.

Operations and Maintenance Tips

The following general maintenance strategies are highly recommended.

1. *Adjust thermostat for season change.* Set your programmable thermostat to “reasonable” set-points to conserve energy. LEED-certified homes generally have programmable thermostats which allow you to set different set-point temperatures at different times of the day. Example settings are provided below.

Example Temperature Settings for Programmable Thermostat

Season	Time of Day	
	Night	Day
		Occupied Un-Occupied

Winter	60	70	60
Summer	75	75	85

2. *Clean in and around grills and registers.* For forced air systems (i.e., systems that blow hot or cold air through ducts), annually remove the heating registers and vacuum inside the ducts that are within reach.

3. *Check / adjust humidity levels.* As described in the section on Durability, wet building materials can lead to rot or other damage to the building's structure, and lead to mold or mildew growth. Monitor the relative humidity in your home. Relative humidity monitors are inexpensive and available at hardware stores. In general, the recommended relative humidity in the home should be between 30 to 60%. Use your home's systems (e.g., fans in wet rooms, and dehumidifiers, if present) to keep the relative humidity in this range. If the relative humidity is often well above 60%, or if your home shows other signs of high humidity (such as windows with condensation on the inside or a damp basement):

- First check that everyone in the household is using local exhaust fans properly (e.g., turning on bathroom fans during bathing and kitchen fans when cooking); and
- If your home still has high humidity, consider installing a dehumidifier (if your home does not already have one).

If your home has low humidity levels, you may choose to install a humidifier. Continue to monitor the relative humidity closely. Do not operate a humidifier while the air conditioner is running.

1. *Check operation of local exhaust fans.* At least once a year, check all of the exterior vents (e.g., kitchen, bathroom) where air exits from your home. These are located on the roof, or may be located on exterior walls. Make sure that they are clear of leaves, debris, etc., and that the damper (the flap covering the opening) can move freely.

Also, periodically check that your exhaust fans are operating: Hold a piece of toilet paper up to the exhaust fan in the bathroom while the fan is running. The paper should be held firmly against that fan grille, after you let it go. If you find a problem, contact a ventilation specialist.

Related LEED for Homes Measures

For more information on this LEED measure, please look-up the following credits:

- Indoor Environmental Quality (IEQ) 4: Outdoor Air Ventilation
- Indoor Environmental Quality (IEQ) 5: Local Exhaust

2.6 Plumbing

Water is an important resource, and it takes considerable energy to move, treat, and heat water. The average family of four can use 400 gallons of water every day, and, on average, approximately 70% of that water is used indoors⁵.

Leaky pipes and fixtures can result in large amounts of wasted water, and cause damage to structures below. Plumbing can also serious damage it not maintained during the winter.

This section includes operations and maintenance suggestions related to your plumbing equipment.

Indoor Plumbing Fixtures and Fittings

All LEED-certified homes include measures that should reduce water use, relative to conventional homes that are built to the minimum building code. Measures that reduce hot water use will save both energy and water. Many of these measures will not require any special maintenance. For example, many LEED-certified homes include low flow fixtures (e.g., low-flow faucets or showers, dual-flush toilets), or the plumbing has been designed so that the hot water tank is close to the fixtures that require hot water.

⁵ <http://www.epa.gov/watersense/pubs/indoor.html>

Operations and Maintenance Tips

The following general maintenance strategies are highly recommended.

1. *Check / fix leaks immediately in pipes, fixtures, and appliances.* Immediately report any leaks in pipes, equipment (e.g., water heaters, clothes washers), and plumbing fixtures (e.g., toilets, sinks). According to the U.S. EPA's WaterSense program, leaky faucets that drip at the rate of one drip per second waste more than 3,000 gallons of water each year.¹ Over time, water leaks may lead to structural problems.

If your hot water tank is leaking, shut off the water supply to the tank, and shut off the fuel input (or electricity) until a plumber can repair or replace the system. The pressure relief valve may be clogged or not working, or there may be some other problem that should be addressed.

Part 3

Suggestions on How to Live More Sustainably

This section includes a summary of suggestions for living more sustainably, such as conserving water and energy, reducing waste, and protecting local bodies of water. Many of these suggestions will also save you money. These lifestyle suggestions can be adopted by residents of any home, whether LEED-certified or not. However, several of the lifestyle suggestions overlap the information provided in other sections of this manual.

While the list provided here is a good start, there are countless other opportunities. There are additional resources listed after the table with websites that can provide further discussion of some of the tips in the table, and offer new tips.

Green Lifestyle Tips

Suggestions
Energy Efficiency
Purchase green power (generated by renewable energy)
Use ENERGY STAR programmable thermostat
Keep unoccupied rooms closed (doors and heating / cooling vents)
Keep radiators and vents clear of furniture, rugs, etc.

Use occupant sensors for lighting in areas that are used infrequently
Use insulated draperies
Use energy-saving mode for electronics when not in use, or powerstrips
Turn off lights in rooms when not in use
Use cold/warm settings for laundry

Water Efficiency

Take shorter showers
Use dish- and clothes-washers only when full
Turn water off while teeth brushing
Adjust programmable irrigation settings for rainfall

Waste Management

Properly recycle gas, kerosene, paint, and other hazardous waste
Donate items instead of throwing them away
Buy second-hand products, or products with recycled content
Use re-usable shopping bags
Reduce paper waste (e.g., use cloth napkins)
Use unbleached coffee filters, paper towels, etc.
Opt-out of junk mailings if possible
Find out what can be recycled in your area and recycle these products

Indoors and Cleaning

Use nontoxic, biodegradable detergents and cleaners
Have home tested for radon
Buy furniture and furnishings with low VOC content.

Food Purchases

Purchase locally grown, and organic food
Participate in a Community Supported Agriculture (CSA) program
Eat less meat
Purchase seafood from sustainable seafood programs

Green Lifestyle Tips (cont'd)

Suggestions
Transportation
Bike or walk for short trips Use public transportation Carpool and/or run errands in fewer trips Avoid idling cars unnecessarily Regularly maintain cars, other vehicles Purchase carbon offsets from flying or commuting
Home Office and Study
Use electronic format instead of paper as much as possible Recycle paper, used print cartridges, and old electronics Use recycled paper, and recycled print cartridges

Many local or state government offices, water districts, and utilities provide local or regionally specific recommendations. Contact these organizations or find their websites to discover information specific to your area.

[Template]