

What Every Homeowner  
Should Know About

# Green Building





*Welcome* to our guide, What Every Homeowner Should Know About Green Building. WARM Training Center developed this manual to help more residents use Green Building practices in their home. It is intended as a basic primer. We hope you'll use this booklet to help make your own home a healthy and vibrant place.

This booklet is intended as only a general guide for Green Building basics in your home. If you are planning on building a new home or undertaking a major renovation, exciting possibilities are available that extend beyond the scope of this guide. Similarly, special circumstances such as an older home or historic districts provide specialized challenges and opportunities. Homes are constructed differently and residents' needs vary. It is highly recommended that you tap the resources listed in this booklet for more detailed information, and to make your home even greener.

Note that this guide is intended to supplement and enhance the standard maintenance and operation of your home. Most of the service and maintenance steps that are typically recommended for your house make up the first step in creating an efficient, safe and healthy home. Familiarize yourself with the requirements for your heating system and other equipment. Those recommendations should be followed along with the recommendations in this booklet.

## *What is Green Building?*

Green Building means making homes that improve the health and economic vitality of people and protect the environment. It's about making our homes and workplaces healthier, more comfortable, more durable, safer and more affordable.

Our homes aren't just a place to live. Our homes provide shelter and safety, a social haven, and a financial foundation for our families. To make our buildings work for the present and into the future, we have to consider "the triple bottom line": economics, social issues and the environment. This is what they call *sustainable development*.

To meet these varied goals, we must look at all the functions of our homes and explore how to make them work well together. Green building typically focuses on a few key areas, although these thematic areas influence many different and interrelated details of the house. These key areas are:

- **Energy**
- **Air (and Indoor Environmental Quality)**
- **Water**
- **Materials**
- **Site Integration**

Green Building is clearly here to stay, defining the field for businesses and homes and fulfilling our ability to make the future a better place for everyone. It is important for us all to know about Green Building for the following reasons: **1)** It is the right thing to do to realize financial savings, health benefits and a better quality of life for ourselves, our families and our communities; **2)** This is how we can tap the best innovations being developed to lead our society into the future; and **3)** We must take care of the earth if we want healthy lives for the children of the world.

Green Building simply makes homes better. Welcome to the future.

## Energy Rich

Energy is the place to start with Green Building, because it's where your investments will most clearly save you money that you can use for other improvements. Michigan imports most of its energy, so reducing your energy use keeps more money in the local economy. It also reduces pollution which contributes to asthma and many other health problems. Finally, energy improvements can help lessen the effects of climate change.

If you're wondering how to reduce your energy bills, you'll always want to look at these three areas:

- *The House Shell* (e.g. how much insulation, and places where heat and cooled air can leave the house);
- *House Systems* (e.g. your heating system, lighting, appliances, etc.);
- *Occupant Behavior* (e.g. leaving the TV on when not watching it).



Compact Fluorescent Light bulb

### Low-cost

**1. Improve the house shell** - eliminating air leaks in the home is crucial for lowering energy bills.

**2. Use compact fluorescent light bulbs** - These bulbs are more expensive to buy at \$5 each, but will save between \$35 - \$70 each. You can't beat that kind of investment!

**3. Turn off lights and appliances when not in use** - Also turn your furnace thermostat down or turn your air conditioning thermostat up when they won't be needed for 5 hours or more. A *programmable thermostat* can do this for you automatically. Every 1 degree that you turn down your thermostat for 8 hours saves approximately 1% off your heating bills.

**4. Use free heat and light from the sun** - Make use of the natural daylight that your home has available. Open curtains and blinds throughout the house for free light and the health benefits of natural light. Open curtains and blinds in south and west facing windows for free heat, or close them to keep cooler.

### Good investments

**5. Get a Home Energy Rating** - If you're planning a major renovation to the home or buying new, consider getting a Home Energy Rating. This rating will give you important information about the costs and savings associated with different renovation options. It's the smart way to save money and spend your renovation dollars wisely. A listing of local consultants is available from the Michigan Energy Office: [www.michigan.gov/energyoffice](http://www.michigan.gov/energyoffice).

**6. Buy Energy Efficient Equipment** - When you buy equipment or appliances for your house, seek energy efficient options by looking for the Energy Star label.

**7. Renewable Energy** - Consider using renewable energy where appropriate. Remote locations, such as lawn lights or some outbuildings, are good candidates for solar or wind power. Also, solar domestic hot water systems are an excellent investment in Michigan. The savings can pay for the system in approximately 8 years, which is a 12% simple return on investment. Solar pool heaters pay for themselves in 4 years when compared



Franz/Schouler Stained Glass Sundial

to natural gas varieties, providing an incredible 25% return on investment.

Geothermal heat pumps are an excellent upgrade for your heating system which can drop your heating and cooling costs so dramatically, you'll be the envy of your neighbors.

#### **Energy Resources:**

- *DOE Efficiency and Renewable Energy Website*  
eere.energy.gov
- *Michigan Energy Office*  
www.michigan.gov/energyoffice, 517-241-6228
- *Alliance to Save Energy*  
www.ase.org
- *Energy Star*  
www.energystar.gov



## *Air and A Healthy House*

Every home should be a haven. We expect our homes to be a place of safety and security. Yet, many people's homes actual cause health problems. Increases in asthma, cancer, allergies and other health problems are sometimes linked to toxins at our home. What can you do to make sure your house is a healthy one for your family?

Maintain your home with air quality in mind. Your maintenance choices will have a large impact on the health of your house. This is especially important with children or seniors in the home.

**1. Nontoxic cleaners and bath products** - These are one of the biggest sources of toxins we're exposed to in our homes. Many cleaners and beauty and bath products contain carcinogens and other health threats. Fortunately, it's also one that's easy to fix. Many alternatives are available that perform great and are often less expensive too.

**2. Proper ventilation** - Make sure you understand your home's ventilation system and use it appropriately. It's especially important to ventilate whenever you're creating a lot of moisture (bathing, cooking, etc.) or using toxic materials (like most commercial glues, paints, solvents).

**3. Carbon monoxide detectors** - Carbon monoxide is produced by gas-burning appliances or can enter a house through an attached garage. At least one detector should be placed on every floor that has a finished bedroom.

**4. Healthy paints and finishes** - Most paints and finishes contain VOCs (Volatile Organic Compounds) which are toxic and off-gas that "fresh paint smell". Low-VOC or No-VOC paints and finishes are available from a variety of manufacturers, including some of the major paint brands. These paints are comparably priced and healthier for your home.

**5. Purify the air with household plants** - Most common household plants help purify the air for you, in addition to adding beauty to your home. These leafy, green plants remove common household toxins like formaldehyde, trichloro-ethylene, benzene and others.

**6. Less carpeting** - Carpeting can be comfortable, but it's a haven for toxins, allergens and biological contaminants. Also, when you smell that



*non-toxic household cleaning supplies*



*Household plants can purify the air in your home*

“new carpet smell” it’s actually toxins being off-gassed into your air and lungs. Area rugs provide the same comfort, but are easier to clean. Smooth floor alternatives like cork provide comfort and cushioning while staying durable and easy to clean.

#### Healthy Air Resources:

- *American Lung Association's Healthy House program*  
[www.healthhouse.org](http://www.healthhouse.org)
- *EPA's Indoor Air Quality pages*  
[www.epa.gov/iaq](http://www.epa.gov/iaq)
- *Non-toxic Home Cleaning*  
[eartheasy.com/live\\_nontoxic\\_solutions.htm](http://eartheasy.com/live_nontoxic_solutions.htm)

## Water For Living



Clean water is essential for life, and it’s increasingly rare in many parts of the world. The Great Lakes are one of the largest reserves of fresh water in the world. It is our responsibility and a wise investment to take care of this precious resource. Here are a few ideas to make sure your home doesn’t waste our water supply.

**1. Low-flow faucets and showerheads** - A simple 1.5 gallon per minute (gpm) faucet aerator only costs \$2, but can save a lot of water. Get a showerhead that uses 1.5 gpm to save water in the shower. These are easy to install, provide a pleasant shower and typically cost \$15.

**2. Watch for leaks** - A leaky pipe, faucet or toilet can cost hundreds of dollars in wasted water. To test a toilet, pour food coloring in the toilet tank, then watch to see if the colored water moves into the toilet bowl.

**3. Water catchment** - While some homes set up cistern’s to store rainwater for all their needs, you can tackle a simpler version with a rain barrel. Rain barrels are connected to a gutter downspout. They conserve water and help preserve the Great Lakes for future generations, help your plants thrive by giving them chlorine-free rainwater, provide water for car-washing, and help manage stormwater by putting more water back into the ground instead of into the sewers. When the sewers get too full during heavy rains, a mix of stormwater and wastewater is released into local waterways before it is treated.

Another variation on this is to plant a *rain garden*, a garden that can absorb and filter large amounts of water, so that you can purify rain water as part of your landscape instead of sending it into the sewage system.

**4. Dual-flush toilets** - Consider a dual-flush toilet that has an improved design that flushes most waste with only a half-flush, but still has a full flush available when you want it. These models only cost a little more than a standard toilet, but can save around \$50 a year.



household rainbarrel

#### Water Resources:

- *Water Saver House*  
[www.h2ouse.org](http://www.h2ouse.org)
- *Rain Harvesting*  
[www.harvesth2o.com](http://www.harvesth2o.com)
- *Rain Gardens of West Michigan*  
[www.raingardens.org](http://www.raingardens.org)



## Materials

The materials that we use in our home, from furniture to flooring, from consumables to construction supplies, all have a life that extends far past our use. They start as raw materials, are manufactured into goods, packaged, used by us, and then discarded. If we look at where those materials come from, and where they go to later, we can make wiser choices that will improve our world.

**1. Recycle** - Call your local county or city to find out about household recycling options. Your community may have pickups, drop-off sites or other options. Re-use centers are another option to put clothes, furniture, appliances and more into homes that need them instead of into the waste stream. Finally, be sure to create easy-to-use sorting bins to make recycling simple for your family. It's easiest to sort when you toss it, not later.

**2. Compost** - Composting is a great to keep kitchen, lawn or garden scraps from being trash and instead turn it into nutrient rich fertilizer!

**3. Reduce trash** - Even better than recycling is just reducing the amount of trash your home produces. For example, buying food or products with less packaging can greatly reduce the amount of trash a home produces.

**4. Buy green when renovating** - When you buy new products for your home, watch for items that are local, recycled, toxin-free, or come from sustainably harvested sites. Whether remodelling or just buying new sheets, shop for healthier options.

### Materials Resources:

- *Michigan Department of Environmental Quality's environmental assistance center* - for local recycling options  
1-800-662-9278  
[www.michigan.gov/mdeq](http://www.michigan.gov/mdeq)
- *How to Compost*  
[www.howtocompost.org](http://www.howtocompost.org)
- *Green Guide* - for household products  
[www.thegreenguide.com/reports](http://www.thegreenguide.com/reports)
- *Green Home Guide* - for remodelling and construction products  
[www.greenhomeguide.com](http://www.greenhomeguide.com)
- *Habitat for Humanity ReStores* - for re-used construction supplies  
[www.habitat.org/env/restores.aspx](http://www.habitat.org/env/restores.aspx)

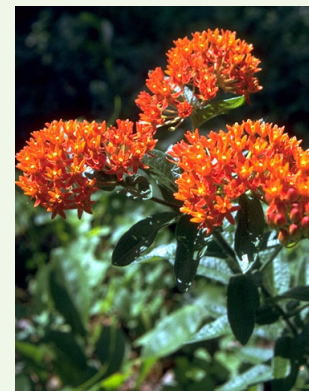


*Recycling bin*

## Site Integration

Of course, your home isn't a self-contained bubble, floating in space. While our homes give us shelter from the world outside, they can also connect us to the wider world around in wonderful ways. Site integration recognizes that our homes are part of a wider context. What can we do to build upon that context, now that the home is there?

**1. Transportation Options** - Where your home is located, and how it is designed affect how you get places. How many choices do we have for our transportation that can meet different needs? Driving a car can be convenient, but it can also be expensive and detrimental to your health. Automobile use is also a large contributor to global climate change. Using other travel options is one of the best ways to reduce pollution and build



*butterfly weed, a native plant*



*Riding the bus*

community. Some of the options to explore include biking, walking, using public transportation or carpooling and ridesharing.

**2. Native landscaping** - Lawn watering can account for as much as 10,000 gallons of a home's annual water usage. Native plants, which are naturally part of Michigan's environment, require little to no watering, fertilizing or pest prevention. They can also attract birds and butterflies to your yard.

**3. Plant trees** - In general, plant deciduous trees toward the south side of the house to provide shading in the summer and evergreens to the north to block cold northern winds in the winter. In addition, trees provide fresh air, beautiful views, shade for sidewalks or driveways that otherwise overheat, and in some cases food.

**4. Avoid adding more pavement** - When rain falls on standard concrete or asphalt surfaces, it isn't absorbed into the ground, which is part of nature's water filtering process. If you need a hard surface, try permeable (or porous) paving that still allow water to pass through. They also help avoid some of the erosion problems that can occur "downstream" of solid surfaces.

#### **Site Resources:**

- *Public Transportation Systems*  
[www.publictransportation.org/systems](http://www.publictransportation.org/systems)
- *Commute by Bike*  
[commutebybike.com](http://commutebybike.com)
- *Travel Matters*  
[www.travelmatters.org](http://www.travelmatters.org)
- *Gateway to Michigan's Native Plants*  
[www.macd.org/rollovers/nativeplants/nphome.html](http://www.macd.org/rollovers/nativeplants/nphome.html)
- *Tree Planting in Michigan*  
[www.globalreleaf.org](http://www.globalreleaf.org)
- *Permeable Paving*  
[en.wikipedia.org/wiki/Permeable\\_paving](http://en.wikipedia.org/wiki/Permeable_paving)

## *Where do I start?*

Start with the proper maintenance of your home and equipment as specified in the manuals and instructions provided by your builder.

Then tackle the items that are easiest to incorporate into your life. For some people, this will mean adopting small measures, such as switching more lights to compact fluorescents. For others, it might be a bigger step that fits with other personal goals, such as biking to work once a week when already planning a fitness regime. Remember why you want a green home, and decide which steps make the most sense to you.

Finally, if you're planning a remodel, be sure to work with contractors who have experience with green building.

## More Resources:

- *Michigan Department of Environmental Quality's environmental assistance center*  
[www.michigan.gov/mdeq](http://www.michigan.gov/mdeq)  
1-800-662-9278  
(For information on local recycling centers, water and air quality, native landscaping and more....)
- *U. S. Green Building Council*  
[www.usgbc.org](http://www.usgbc.org)
- *Greenbuilt Michigan*  
[www.greenbuiltmichigan.org](http://www.greenbuiltmichigan.org)
- *Rocky Mountain Institute*  
[www.rmi.org](http://www.rmi.org)
- *Oikos*  
[www.oikos.com](http://www.oikos.com)
- *WARM Training Center*  
[www.warmtraining.org](http://www.warmtraining.org)



## What do you think?

**Please let us know what you think of this booklet.** Your feedback will help us improve it for other homeowners. Please send any comments to us via:

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Thank you for your time and thoughts.



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Promoting Sustainable  
Affordable Communities  
Since 1981.

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