

# Cost Effective Green Building

**Reducing energy is one of the best ways to start going green.**

By Steve Easley

It seems as if everyone is talking about “green” these days. One of the most frequent questions I get is, “What are some cost-effective ways to build greener homes?”

Green building is at the forefront just about everywhere today—and it certainly is a top interest in the construction industry. More and more consumers are asking builders to describe what green features the builder is using in their homes.

For many consumers and builders, what comes to mind when you mention green building are the newer products such as bamboo countertops, recycled glass flooring tiles, or even solar panels.

But often builders and consumers overlook some of the most practical and cost-effective things a builder can do to reduce the carbon footprint of a home. One of the greenest things a builder can do is to reduce a home’s energy use.

The “built environment” in the U.S. accounts for 36% of America’s total energy use and 30% of the country’s greenhouse gas emissions! For every kilowatt-hour of electricity we use, we deposit 1 pound of greenhouse gas into the atmosphere. The average home uses about 10,000 to 12,000 kWh of electricity per year, so reducing energy by even 15% can have a huge positive impact on the environment. It isn’t uncommon for America’s building industry to build 1 million homes per year, so if each one were 15% more efficient, that would reduce greenhouse gasses by 1,500,000,000 pounds—that’s 1 billion, 500 million pounds of greenhouse gas emissions every year!

Reducing energy use by 15-20% is pretty easy for most builders. Air infiltration alone in most homes accounts for 25-30% of space conditioning costs. Just paying close attention to sealing all those unnecessary cracks and gaps can go a long way towards reducing air infiltration, and saving energy and emissions.

Paying attention to insulation may not sound innovative but it’s tried and proven. When selecting insulation, it’s important to understand some basic laws of science and how insulation works.

1. First, heat always flows from warmer areas to colder areas.

2. The greater the temperature difference, the greater the heat loss or heat gain. If it is 70°F inside and 68°F outside, you don't have much heat transfer. But if it's 70°F inside and 0°F outside, it's obvious that you have much more heat loss and energy use.

3. The greater the surface area of a building envelope, the greater the heat loss or gain will be.

Insulation works by its ability to trap air. Fiberglass, for example, has thousands of strands of spun glass that create air gaps that trap air. Cellulose has densely packed paper to trap air. Foam insulation has millions of bubbles that retard heat flow.

The more air pockets or bubbles, the better the insulation is at resisting heat flow. Hence the term R- value.

Another cost-effective way to build a home is to employ the Energy Star Homes guidelines. They are 30% more efficient than the 2003 IRC energy code and 15% more than the 2006 energy code.

Energy Star guidelines now require that builders pay more attention to how insulation is installed and specify quite well how to reduce the energy-robbing effects of thermal bypasses. (Go to [www.energystar.gov](http://www.energystar.gov) for more information.)

Much of the emphasis is on how to reduce air infiltration, proper air barrier placement, and how to install fiberglass insulation correctly. For videos on how to install insulation correctly, go to [www.codecollege.com](http://www.codecollege.com).

If you're looking to help your builders build greener homes, go for the basics first. Saving energy not only helps the environment; it also puts more money in your customers' pockets.

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