



Photo courtesy of Lodge Logs

Green Building 101

Constructing high-performance homes is easy, once you understand a few fundamentals.

Environmentally responsible building in America increased by 20% in 2005 and 30% in 2006, according to the National Association of Home Builders (NAHB), indicating it was catching hold even before the slowdown in new home construction.

In this new housing economy, green building is one of the few bright spots in an otherwise dark time. It offers builders a way to dramatically differentiate their product from existing housing stock. Green homes, also called high-performance homes, often appeal to upscale buyers looking to upgrade their housing while treading lighter on the planet. How do you get started? Here's how to sort out your options.

● Green, Greener & Greenest

There isn't a single, rigid formula for building a green home. Rather it's a much more sliding-scale approach, based on the building site's opportunities, the client's budget, the local climate and a host of other factors. The greener the home, the more it costs—thanks to testing, certification and increased costs for higher-performing materials. Communicate this to your clients early in the buying process. Ultimately, green features end up competing with other amenities.

● Different Green Standards

The two main guidelines for green building were established by the U.S. Green Building Council's LEED Program (Leadership in Energy and Environmental Design) and the NAHB's National Green Building Standard. Plus, more than 60 local organizations have established their own guidelines for what it means to be green. See *Sorting Out Green Designations* on page 8 for more information.

● Home As A Complete System

A home is a system and has to be thought of as such when designing it. Often one component (such as a powerful exhaust range over the cooktop) can affect another seemingly unrelated feature (such as mold growth in the walls). In this case, the negative pressure of the exhaust fan can draw air and humidity from outside through the walls, fostering mold growth and leading to potentially catastrophic indoor air quality.

● Principles Of Sustainability

But regardless of which green standard a builder is following, the principles of green building focus on passive solar orientation, best use of space, an energy-efficient envelope, water efficiency, renewable materials, easier maintenance, better indoor-air quality, tighter ductworks and the use of less toxic materials.

● Energy Efficiency Is Paramount

Most homes in America today perform as if a window has been left open year-round. You can change this by opting for increased insulation in the homes you build, which will save your clients as much as 50% on their heating costs and eliminate the need for air conditioning in some latitudes. You will also have to upgrade your HVAC systems and pay close attention to sealing. Ductwork and blower door testing is routine in green building.

● Passive Solar Positioning

Orienting the home to benefit from passive solar gain can save you up to 40% on heating and cooling costs, says consultant Jerry Yudelson, author of three books on green building. Situating the house on a north-south axis is the most energy efficient. To achieve this in a subdivision, streets should be laid out from East to West as much as possible. With proper orientation, air conditioning costs can be nearly halved.

● Reduce Square Footage & Volume

Do you know which clients are prime prospects for green building? McMansion refugees, who are desperate to unload those square-footage behemoths with their super-size energy bills and poor comfort. Instead, they'll pay you handsomely to show how they can reduce their square footage to something far more manageable. While you're at it, eliminate those extra-high ceilings. When you enlarge a ceiling height from 9' to 12', your clients now have one-third more air to heat or cool. If you want height, try raising the ceiling in only one or two places to add drama to the design.

● Specifying Green Products, Appliances

Need a resource for specifying green building materials as well as Energy Star-rated appliances, electrical and plumbing fixtures? Consult the book *Green Building Products*:



Photo courtesy of Ferrer Builders

The GreenSpec Guide to Residential Building Materials (New Society Publishers \$34.95) for a comprehensive listing of options.

● Determining Roof Overhang & Window Sizing

Turn to the Sun Angle Calculator, which is available through Ball State University's Center for Energy Research, Education and Service. This handy tool provides a relatively simple method of determining solar geometry variables for roof overhangs, window sizing and shading devices, and for locating the position of the sun relative to a particular home site's latitude and time of year. A quick and accurate tool, it has been used extensively by educators, researchers and design professionals for the past 50 years. Visit sbse.org/resources/sac for the calculator.

● Other Resources & Tools

- For climate data: To sort out your job site's opportunities and weather challenges, contact the National Oceanic and Atmospheric Administration (NOAA) at 828-271-4800 or noaa.gov (for the full library, visit <http://lwf.ncdc.noaa.gov/oa/documentlibrary/clim81supp3/clim81.html>).
- Green building newsletter: Download the monthly Environmental Building News at BuildingGreen.com.
- For more information: Visit the U.S. Green Building Council, which established the LEED program, at usgbc.org. Check out the Green Home Building Guidelines from the NAHB at Nahbrc.org/greenguidelines. You can also find information from the Green Building Initiative at Thegbi.org. ●