



# guide to green building

by Susan Conbere

Build green. It's almost an industry mantra. While it's a great marketing advantage, and is increasingly promoted and sometimes mandated by local ordinances, green building involves careful environmental consideration at every phase of the construction process. If you're never done this before, where do you begin?

Enter the Partnership for Advancing Technology in Housing, which has just released its Guide to Green Building, a compilation of eight previously issued Tech Sets that encompasses the principles of green. (Visit [www.pathnet.org](http://www.pathnet.org) and click on "Tools.")

Each PATH Tech Set puts the most important building innovations together in one systems-based package, taking the guesswork out of how to choose efficient and cost-effective technologies that can deliver a market advantage. The Guide to Green Building compiles the applicable Tech Sets to present the essential com-

ponents of building a green home, such as low-impact development, resource and waste management, energy-efficient system integration, resource-efficient plumbing and good indoor air quality. And don't forget homeowner education.

The Guide to Green Building can be used to help builders meet the requirements of any green building program. To give an idea of how this works, this article shows how points are assigned to each building product or practice based on the National Association of Home Builders' new Model Green Home Building Guidelines (GBG). The GBG assigns points for sustainable alternatives to traditional materials or practices: 237 points merit a Bronze rating, 311 a Silver and 395 a Gold.

Whether you use NAHB's guidelines or any other, always start with the no- and low-cost elements. There are likely to be quite a few.

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### Low-impact development

Use LID strategies to design and locate the site to preserve the natural environment and reduce stormwater runoff. By planning for terrain, vegetation and soil features that handle stormwater on site, you can avoid costly storm drain systems and water treatment.

Limiting impervious areas or using permeable pavement or paved surfaces that run off into bioretention gardens and vegetative swales are some of the ways to implement LID practices on suburban lots.

Plan to save naturally vegetative areas and large trees, and have a qualified person on site to see that these measures are implemented. Minimize slope and site disturbance; re-establish groundcover within 14 days of disturbance; and retain the natural topography, flora and fauna.

GBG points awarded for a single lot development:

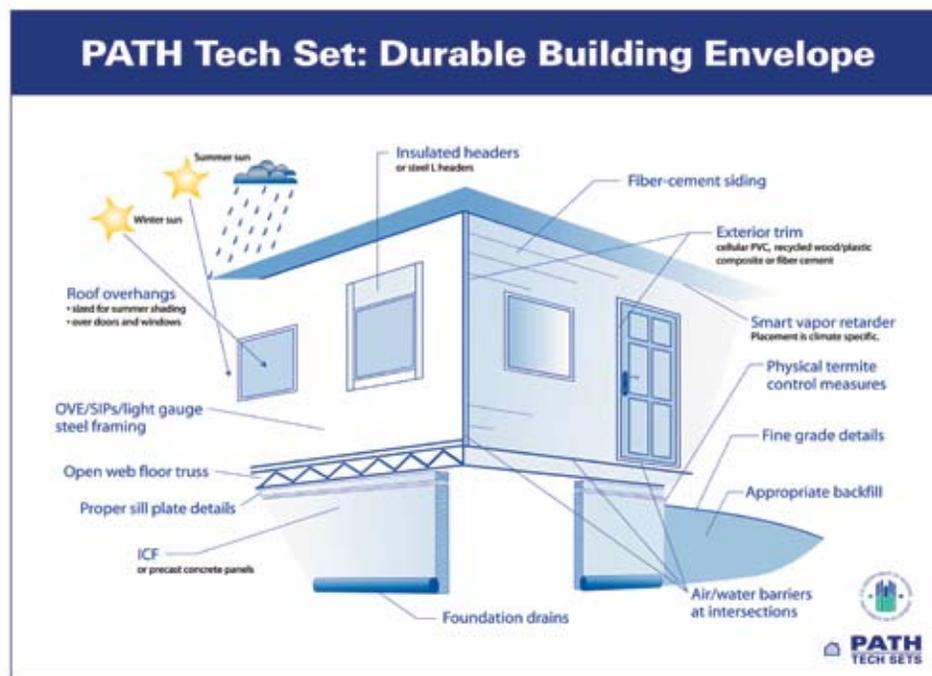


### Resource and waste management

Resource efficiency means using fewer materials to achieve the end result. Design a compact structure with advanced framing details, such as 24-inch on-center spacing of structural members and an architectural design based on 4-foot modules. I-joists and roof trusses are other material-saving details that won't compromise the structural integrity of the home.

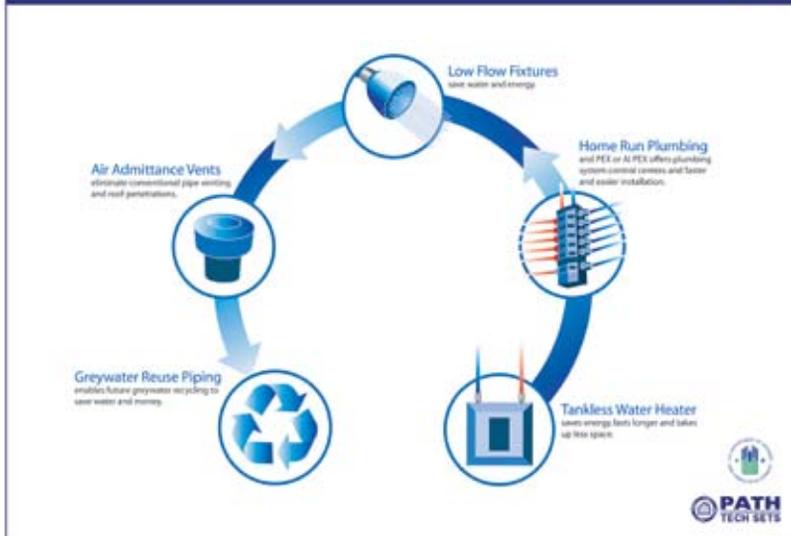
Try a prefabricated building system, such as structural insulated panels or panelized walls. Precision cut in the factory, they waste little material and lead to a more durable structure. Or select other building systems that reduce material waste, such as insulating concrete forms, which provide formwork that remains in place after the concrete foundations and walls are poured.

Insulate the foundation and save concrete with a frost-protected shallow foundation. Stamp or stain a slab to create a decorative concrete floor finish



PATH has 8 Tech Sets that encompass the principles of green building. Each set puts the most important building innovations together in one systems-based package.

## PATH Tech Set: Resource Efficient Plumbing



Each Tech Set takes the guesswork out of how to choose efficient and cost-effective technologies that can deliver a market advantage.

fully integrate the roof drip edge, ice and water dam barrier, and flashings. Install a weather-resistant barrier between walls and cladding. Provide for foundation and footing drainage.

Waste management includes recycling or reusing the roughly 4 pounds per square foot of construction debris that results from building a house. Reduce trash piles by specifying cut-to-length material packages. Install products with high recycled content such as concrete aggregate substitutes, slag wool insulation batts or recycled content carpet.

**GBG points awarded for conventional wood-framed construction**

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rather than installing carpet or tile.

Products that are prefinished in the factory — like some vinyl windows, siding, shutters and cellular PVC trims — are also resource efficient because they require no additional materials for finishing.

Durability is key to using resources efficiently: the less maintenance and replacement necessary over the life of the home, the fewer materials used. Design for the weather events in your region. Preserve the cladding and structural components of a house with covered entries, roof overhangs and gutter details that channel stormwater away from the building. Care-

### *Integrate energy-efficient systems*

Take a comprehensive approach to air sealing, thermal design and air conditioning. Design, size and install HVAC using ACCA manuals J, D and S. Install ducts and equipment within conditioned space and specify high-efficiency equipment. Have certified technicians commission the system and verify building air infiltration,

(See PATH, page 28)



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duct tightness and system air flow. Specify Energy Star-qualified lighting, appliances and windows, as well as efficient water heating. Incorporate daylighting and passive solar design elements to take advantage of the sun's free light and heat.

**GBG points awarded using a conventional gas furnace and electric air cooling system:**



### Resource-efficient plumbing

Specify PEX tubing laid out using a manifold design and, if your local code allows it, gray-water reuse piping. Add in low-flow fixtures, high-efficiency toilets, and a water-saving Energy Star-qualified dishwasher and washing machine.

**GBG points awarded:**



### Good indoor air quality

Promote good indoor air quality by minimizing indoor pollutants. Install direct-vent combustion equipment and fireplaces. Design for mechanically controlled exhaust from baths and kitchen range and provide for controlled ventilation. Control moisture and dust accumulation during construction by masking ducts in the house. Store stockpiled materials out of the weather to keep them dry and minimize the possibility of mold growth. Air seal between attached garages and living areas.

Build healthier homes by specifying paints, caulks and adhesives with low volatile organic compound content.

**GBG points awarded:**



Overall indoor air quality Low VOCs

### Homeowner education

Provide a homeowner manual detailing the goals of the project and the measures you took to construct a green building. Acquaint the owner with the home, equipment and maintenance guidelines.

**GBG points awarded:**



(Susan Conbere writes about better building practices on behalf of the Partnership for Advancing Technology in Housing. PATH is administered by the U.S. Department of Housing and Urban Development. Learn more at [www.pathnet.org](http://www.pathnet.org) **VAB**)

**Visit PATH's Technology Inventory at [www.toolbase.org](http://www.toolbase.org) to learn more about the technologies in this article. Prepared in collaboration with the NAHB Research Center, the inventory provides a detailed description of more than 180 proven technologies that demonstrate great potential for improving housing performance.**

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