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taking the leed

an insider's tips for meeting residential green building standards.

by steven winter, faia

What defines a "green" home? There are certain adjectives we associate with green building: high-performance, energy-efficient, durable, sustainable, healthy, environmentally benign, and so on.

As early as the mid-1990s, innovators in the residential building market began to recognize the value of establishing certification programs to make green a quantifiable attribute. Examples such as the Green Building Program in Austin, Texas; Built Green Colorado; and Atlanta's EarthCraft House resonated with developers, builders, and home buyers to transform regional markets. But with more than 70 regional green home programs operating across the country, the definition of green still varied. Beginning in 2005, green residential-certification programs took to the national stage for the first time with the introduction of LEED for Homes.

In the past several years, the U.S. Green Building Council's LEED products for commercial buildings have emerged as the dominant brand in green building, and LEED itself has become the dominant national environmental design standard.

As the former chair of USGBC, I am a leader of LEED for Homes, the council's first foray into the residential sector. The LEED for Homes program is currently in its pilot phase in select markets around the country. The pilot rating and delivery systems will be revised as needed, based on feedback from pilot-participants and the public, and will be balloted by USGBC before the fully chartered program begins sometime this summer.

Under the LEED for Homes system, builders are ultimately responsible for ensuring that the materials and practices installed in the field meet stringent criteria aimed at rewarding the top 25 percent of homes with best-practice environmental features. But good green buildings ultimately begin with design. In fact, the teams that have been approved by USGBC to administer the program and certify homes—officially designated as LEED Providers—are finding that the impetus for green building often comes from the

architect. LEED for Homes and other green home standards give designers a framework for creating a building that maximizes occupant comfort while minimizing impact on our natural resources and the surrounding environment. The following guidelines are intended to give architects a taste of what to expect when designing to meet established green home standards.

small but strong Design for durability. To the uninitiated, the mention of a "green" home brings to mind glamorous products

and technologies—bamboo floors, cotton insulation, photovoltaics, and ground-source heat pumps, for example. Designers might be surprised to learn, however, that virtually every green home standard we have encountered places far greater emphasis on durable construction techniques that are later hidden from view than on flashy finish products. Proper details for flashing, drainage, and pest resistance ensure that the building materials have the longest possible useful life. Low-maintenance design of

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LivingHomes/CJ Berg

The LEED for Homes pilot program's first Platinum-rated residence is a prefab model house in Santa Monica, Calif. Designed by Ray Kappe, FAIA, and developed by LivingHomes, the modular house was installed on its site last April.

everything from flooring to landscaping ensures that less time and money and fewer chemical products are consumed throughout the life of the home. Green building standards offer significant incentives for homes designed for maximum durability. Architects wishing to learn more about durable home design can seek out building science research from such sources as the National Association of Home Builders, the U.S. Department of Housing and Urban Development's Partnership for Advancing Technology in Housing (PATH) database, and the U.S. Department of Energy's Building America program.

Design for space efficiency. Yes, home size is client-driven. But bear in mind that larger homes require more natural resources to build and maintain, as well as more energy to light, heat, and cool. Under LEED for Homes, houses that are larger than the national average (based on the number of bedrooms) must earn more points to achieve the same level of certification as smaller homes. Though it may sound challenging, the beauty of a national standard is that it allows the suburban trophy homeowner and the urban apartment

dweller to have a discourse about sustainable living relative to the same scale.

air control

Design for energy efficiency.

Most green home standards require energy performance equivalent to those standards set forth by the U.S. Environmental Protection Agency's Energy Star homes program, and LEED for Homes is no exception. Architects can earn LEED credits based on a Home Energy Rating System (HERS) Index that outperforms the minimum required for Energy Star. Or they can follow a prescriptive path to meet and exceed criteria for insulation R-value and installation quality; window U-values and solar heat-gain coefficients; heating, cooling, and hot water equipment efficiencies; lighting and appliances; and so on. Architects should become particularly familiar with the new Energy Star Thermal Bypass Inspection Checklist, which requires (among other things) that all insulation be in full contact with an air barrier on six sides. This affects typical design details such as dropped ceilings, window seats, and bathtubs and staircases on exterior walls. A local Energy Star provider can supply a full



Photos: LivingHomes/CJ Berg (above); courtesy Steven Winter Associates (below)
Kappe's LivingHomes model achieved its LEED Platinum rating in part by using low-VOC paints and stains, Energy Star appliances, and efficient heating and cooling systems, as author Steven Winter, FAIA, recommends.

explanation of the checklist requirements, which can be found at www.energystar.gov.

Design for health. Indoor environmental quality receives a significant amount of attention (and therefore points) in LEED for Homes. Proper whole-house ventilation, localized exhaust, supply rates of conditioned air, separation of garages, and a host of other issues are either required or strongly recommended for superior occupant health and comfort. Low-VOC, no-formaldehyde alternatives for insulation, paints and coatings, and floor coverings add to LEED point totals at low or no added cost. For more information on healthy building practices, search online for the Energy Star Indoor Air Package (IAP) specifications. GreenSpec and similar resources include a host of options for healthier materials selection.

These strategies for achieving durability, efficiency, and health are by and large invisible in a completed green home, but they represent the most significant, cost-effective steps toward achieving success under LEED for Homes. Architects interested in designing to meet the pilot program criteria can visit the USGBC Web site (www.usgbc.org) to contact a LEED for Homes Provider for more details or to enroll a project in the pilot program. ■

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