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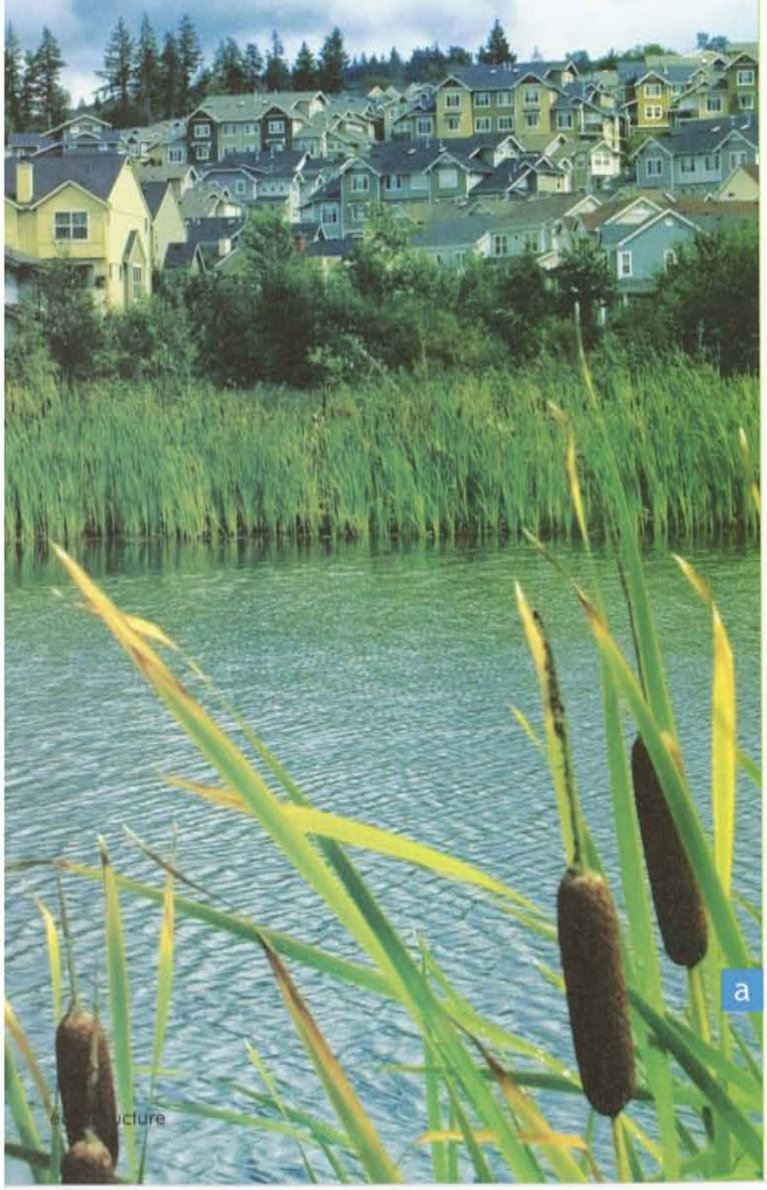
the residential green revolution



By Robin Rogers, LEED-AP

GREEN BUILDING IS AROUSING BUILDERS, DESIGNERS AND HOMEOWNERS TOWARD MAINSTREAM GREEN HOUSING

HALFWAY UP A SNOW-CAPPED VOLCANO IN THE CASCADE MOUNTAIN RANGE, I peer at mountain views through large expanses of west-facing glazing as electric heat pours out of distribution vents below the windows. What could be more inefficient than heating single-pane glazing that faces away from the sun for most of the day with hydroelectric power generated by a dam several hundred miles away in the chill of winter? This wooly mammoth of a building fortunately is becoming extinct as the housing industry reinvents itself in a more sustainable cloak.

Green home builders across the United States are building for improved energy efficiency while employing water and resource conservation measures, promoting indoor environmental quality and comfort for the long-term health of occupants. These builders, who often are following green-home-building guidelines, also are using recycled, salvaged and renewable materials and protecting the natural environment.

A major remodel uses a sophisticated home automation system to help save energy in this design.

BUILT GREEN OF KING AND SNOHOMISH COUNTIES

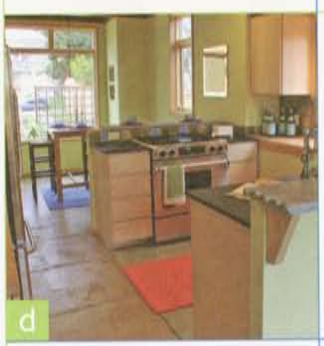
In Seattle, green home building has evolved to cover virtually every facet — urban infill, multifamily, affordable, large-tract developments, custom, single-family production, additions, remodels, high- and low-rise, and townhomes. These projects span the spectrum of materials and methods of construction — stick-frame, insulated concrete forms, structural insulated panels, brick, straw bale, advanced framing, stone, concrete and steel frame. What they all have in common is the act of improving our community through sustainable building and development practices.

(a) More than 150 acres (61 hectares) of wetlands and 1,400 acres (567 hectares) of open space are preserved in the Built Green™ community of Issaquah Highlands, Wash. *(b)* This remodel expands the view from the kitchen to the living room and outdoors by using structural steel to reinforce the stairway wall and provide a cut-away. *(c)* Small, 1,100-square-foot (102-m²) cottages encircle a common courtyard in Redmond, Wash. Many of these homes incorporate lumber for porches and flooring milled from trees cleared on the site. *(d)* By optimizing the use of space, this 1,270-square-foot (118-m²) home seems larger with open interiors, daylighting, bright-colored low-VOC paint and large-pattern concrete flooring.

The desire to build green started because of Seattle's potential wooly mammoth in the waters surrounding Puget Sound: Salmon were listed as endangered species. In response, the Built Green™ program for residential green building was developed in 2000 by the Master Builders Association in partnership with county governments, state agencies and environmental groups. These groups wanted to protect critical habitat areas with responsible development.

Since then, Seattle's program has experienced unprecedented expansion as more than 17 percent of homes permitted in King and Snohomish counties during 2004 were certified as Built Green with a total of 5,400 homes certified since the program's inception.

To reinforce the growing popularity of green homes in the Seattle area, more than 8,000 visitors toured a Built Green demonstration home during nine weekends last year. Designed by Mithun, Seattle, and built by Bennett Homes, Bellevue, Wash., in the Built Green-certified community of Issaquah Highlands, Wash., it features passive heating and cooling, along with many other green items. (The Built Green Development Program focuses on community-site issues, such as erosion control, water quality, infiltration, transportation, pedestrian access, etc. Issaquah Highlands has been certified under this program.) Visitors to the home ranked Built Green certification sixth in importance on a list of green features behind clean air from controlled ventilation, use of recycled and renewable resources, clean air from low-E materials, clean water and a water conservation package, and operating-cost savings from energy-efficiency features.



(e) This home won a 2005 Homebuilder Award in the Built Green Seattle Design Competition. Features include low-VOC paints and radiant heat in concrete flooring. *(f)* South-facing glazing, concrete under slate floor tiles and gypsum-board scraps in the walls capture the sun's energy to passively heat the Built Green™ Idea Home.

WHAT'S DRIVING THE PROGRAMS?

Because consumers enjoy the credibility and predictability of rating programs, the housing industry, utilities, municipalities and nonprofit groups have established 40 green-home-building rating programs, such as Built Green in Washington, Colorado and Hawaii; Austin, Texas's Green Building Program; Earthcraft Homes in Atlanta; and EarthAdvantage in Portland, Ore. (For more information about the Austin Green Building Program, see "special," March/April 2004 issue, page 62.) Each local program publishes green-home building guidelines. In addition, national guidelines are available from the National Association of Home Builders (NAHB) and the Sustainable Buildings Industry Council and soon will be released by the U.S. Green Building Council. Most of the rating systems award points for green features — the more points, the greener the project.

In recent surveys by NAHB, homebuyers revealed their desires for amenities that are standard features in many green homes and communities — walking, jogging and biking trails; trees; parks; lakes; and highway and pedestrian access. About 90 percent of respondents to

a *Professional Builder* magazine survey called energy efficiency and IAQ extremely or very important to them.

Built Green conducted surveys for its Idea Home, which was designed as a mainstream home with features that are achievable for production builders with a budget of no more than $20,000. Controlled ventilation for cleaner air ranked first among respondents.

Homeowners also want bigger homes and bigger lots. This presents an obvious challenge because it's generally considered greener to build small, which saves materials, water, land and energy. If a home has a large footprint and square footage because of homeowner preferences, builders following Built Green guidelines compensate by ensuring materials are sustainable, certified, salvaged or made with rapidly renewable resources. They also use energy-efficient construction, heating systems and appliances. Water-conserving fixtures and landscaping that save water also are installed.

Also driving the green-home rating programs are environmental concerns that can affect the 2.2 million homes that were built last year and approximately 200 million existing U.S. residences. Of all U.S. buildings, houses consume half the energy, produce a fifth of the carbon dioxide emissions and consume 75 percent of the water. Residential construction waste accounts for about 43 percent of all building construction and demolition debris. The U.S. Environmental Protection Agency estimates indoor air in buildings may be two to five times more polluted than outdoor air.

In a perfect world, we will all get what we want whether it's a bigger house that operates more efficiently than a small house; a house built with highly durable, nontoxic materials that can be recycled and reused; a small house that feels large because of its design; access to open space; an integrated house that is suited to its site and climate; a house that is movable or adaptable depending on need; an environment that is healthy for all living things; or a smart house that applies technology to maximize the structure for materials and its intended use and operation, etc.

NATIONALLY, THE NATIONAL ASSOCIATION OF HOME BUILDERS REPORTS MORE THAN 40,000 HOMES HAVE BEEN CERTIFIED GREEN UNDER ALL THE RESIDENTIAL GREEN-BUILDING PROGRAMS.

A 25-foot- (8-m-) wide Seattle infill lot challenged the builder to create a narrow, vertical Built Green™ mixed-use building with an office and living space on several stories and photovoltaic panels on the rooftop.

The ancient wooly mammoth provokes a certain curiosity, but would anyone really complain if the unresponsive, energy-consuming houses were an endangered species?

Robin Rogers is the director of Built Green of King and Snohomish Counties, a program of the Seattle-area Master Builders Association in partnership with King and Snohomish counties, Wash. She can be reached at rrogers@mbaks.com.

GREEN HOME-BUILDING GUIDELINES

- SEATTLE AREA BUILT GREEN RESIDENTIAL RATING PROGRAM | www.builtgreen.net
- NAHB GREEN HOME BUILDING GUIDELINES | www.nahbrc.org/greenguidelines
- AUSTIN (TEXAS) ENERGY'S GREEN BUILDING PROGRAM SOURCEBOOK | www.ci.austin.tx.us/greenbuilder/srcbk_1.htm
- BUILT GREEN COLORADO | www.builtgreen.org/default.htm

GREEN HOME TECHNOLOGIES

- GREEN ROOF PROJECT FOR RESIDENTIAL IN SEATTLE AREA | www.hadj.net/green-roofs
- NORTHWEST SOLAR CENTER CALCULATORS | www.northwestsolarcenter.org
- U.S. ENVIRONMENTAL PROTECTION AGENCY GUIDE TO IAQ IN HOMES | www.epa.gov/iaq/pubs/insidest.html
- U.S. DEPARTMENT OF ENERGY ENERGY EFFICIENCY & RENEWABLE ENERGY PROGRAM | www.eere.energy.gov
- BUILT GREEN IDEA HOME NEAR SEATTLE | www.issaquahhighlands.com/ideahome

GREEN-BUILDING PRODUCTS

- ENVIRONMENTAL HOME CENTER | www.environmentalhomecenter.com
- OIKOS GREEN BUILDING SOURCE | oikos.com/products/index.lasso
- RECYCLED CONTENT PRODUCTS LISTED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY | www.epa.gov/cpg/products.htm
- GREEN SEAL CERTIFIED PRODUCTS | www.greenseal.org/certproducts.htm

A Built Green™ home on a Seattle infill lot features a partial vegetative roof and at least one-third of the l is covered by pervious materials. These attribut reduce storm water entering the local sewer system.