



# Innovative Homes

by Dan Rafter 2007



Five trendsetting homes showcase today's best building practices



TOP TO BOTTOM: The Built Green Home at Suncadia in Washington; Cranberry Ridge in Maine; Heather's Home in Texas; a zero-energy home at Hamilton Park in California.

Two forces — buyers and builders — are driving the construction of today's most innovative homes.

As buyers become better informed, they are starting to shop for homes that boast low monthly energy bills. They want contractors to build homes efficiently, recycling waste materials and reducing the consumption of natural resources. And more and more, buyers want these energy-efficient homes to be functional rather than showy.

At the same time, builders are experimenting with new systems and products, and are showcasing those elements in the homes they're constructing. Not only are they listening to savvy homeowners, responding to the needs of the marketplace, but they also are often driving the change themselves by first creating efficient, earth-friendly homes on spec and then searching for buyers for those homes.

The good news is that these two forces — knowledgeable homeowners and forward-thinking builders — are meeting in the middle, and the result is beneficial for everyone. Buyers are getting healthier, more efficient homes, builders are becoming more familiar with smart construction practices, and as the market for greenbuilding grows, the costs associated with building such homes are starting to drop.

The five homes presented on the following pages showcase today's best building practices. Each home has a different story behind it, but they all have something in common: They show what's possible when buyers and builders are willing to embrace new concepts to create something that's truly innovative.



RIGHT, LEFT and BELOW: An indoor air filtration system, geothermal heating and cooling, and an insulated concrete form foundation are some of the components of the lodge-style Built Green home.

## The Built Green Home

CMI Homes  
Cle Elum, Washington  
The Built Green Home at Suncadia, a resort area about 80 miles east of Seattle, Wash., near the city of Cle Elum, is a custom-built mountain lodge-style home. And although it is energy efficient and environmentally friendly, it looks pretty much like any other high-end, newly built home.

This, says Grey Lundberg, president of Bellevue, Wash.-based CMI Homes, is what builders must do if they want the principles of greenbuilding to catch on with the general public. "One of the purposes of building this house was to demonstrate high-level energy efficiency and innovation in a typical luxury home," Lundberg says. "This house proves you can have a beautiful, high-end home and still have it be

green. This isn't a fringe design. You wouldn't change anything about this design."

During construction, CMI had to follow strict rules as a participant in the local Built Green program. CMI crews made sure they impacted the surrounding environment as little as possible. They sent trees taken from the site to a nearby mill, where the logs were transformed into wood the builder used in the construction of the home. In addition, they used insulated concrete forms for the foundation and metal roofing to cut down on the amount of raw lumber needed for the home. Pre-finished shingles, flooring and woodwork were used to speed construction time, which saved money, and construction waste was recycled.

As far as energy efficiency is concerned, the Built Green

Home features a geothermal ground source system, radiant floor heating, and Energy Star-rated appliances and light fixtures. As a result, the new owners should save \$200 to \$300 every month on utility, heating and cooling bills.

To maintain high air quality, the home employs an advanced indoor air-filtration system. And interior surfaces are designed to be easy to clean and maintain, so the owners will have to rely less on chemical sprays.

Once completed, the Built Green Home served as an educational tool by being open to the public for tours last summer before it was put up for sale. Lundberg says he is already taking lessons he learned from the home's construction and applying them to other CMI Homes projects.

"The market for this kind of building is increasing — no question about it," he says. "We're just at the beginning stage of a real demand for energy-efficient homes."

[www.thebuiltgreenhome.com](http://www.thebuiltgreenhome.com); 425-644-9595.



## Smart SUMMARY

### The Built Green Home

- Limited site disturbance
- Geothermal ground source heating system
- Radiant floor heating and Energy Star appliances
- Non-toxic paints, caulks, sealants and insulation
- Management of construction waste for recycling





## Smart SUMMARY

### Heather's Home

- Near zero-energy home
- Energy-efficient Daikin HVAC system
- Solar water heating system
- Low-flow sinks and shower faucets
- 3,000-gallon holding tank provides water for both irrigation and waste



**LEFT:** A precast structural insulated panel is lowered into place. **FAR LEFT:** Heather Ferrier in her award-winning home.

### Heather's Home

Ferrier Custom Homes Lake Weatherford, Texas Don Ferrier has a soft spot for Heather's Home, the near-zero-energy home he helped build near Lake Weatherford, Texas. This should come as no surprise, though, since Ferrier built the home for his daughter.

Ferrier, president and chief executive officer for Forth Worth, Texas-based Ferrier Custom Homes, never thought he'd build a near-zero-energy home. But that was before his daughter, who doubles as Ferrier's office manager, asked him to do just that.

Heather had one other request: She wanted the house to be as affordable as possible. "We wanted to take Heather's Home to a place where the average American family could visualize themselves living in that house," says Ferrier. "Heather is 26. She's single. This is the perfect energy-efficient home for her."

How efficient is Heather's Home? Her average heating

and cooling bill will come in at about \$15 a month.

It took Ferrier Custom Homes about two-and-a-half months to build the 2,000-square-foot, two-level home, which achieves its near-zero-energy status thanks to a number of special features, starting with a Daikin HVAC system. The unit's compressor can run as many as five separate blowers at a rate that is 90 percent as efficient as a geothermal heat pump. And the unit's cost is less than that of a typical geothermal unit, helping keep the cost of the home down.

Other features of the home include a solar water heater that provides plenty of hot water; low-flow sink and shower faucets; a 3,000-gallon holding tank that provides water for both irrigation and waste; and drought-resistant native plants in the home's yard, which help reduce the need for maintenance and watering.

By building efficiently, Ferrier says, he and his crew were able to build Heather's Home for about \$235,000.

The home met its twin goals of efficiency and affordability so well that it has since been named a prototype for the LEED for Homes pilot program. The program, sponsored by the U.S. Green Building Council, is designed to encourage

homebuilders to use more sustainable construction practices.

Ferrier admits that not every buyer would appreciate the ultra-modern look of Heather's Home. But the builder has since used many of the same energy-saving tactics in the more traditional homes his company builds.

"We've had tremendous interest in this project," Ferrier notes. "I'd say that 80 percent of our customers have been looking for a builder who does this [type of building]. They want a house that is as energy efficient and green as they can afford. They know it might cost a bit more up front, but in the long run they know it will be a wise investment." [www.ferriercustomhomes.com](http://www.ferriercustomhomes.com); 817-237-6262.



**ABOVE and LEFT:** Affordability and energy efficiency, as well as a contemporary look, were some of the goals for Heather's Home.



Photos by Thomas J. Story/Sunset Publishing Corporation

### Hamilton Park

Clarum Homes Menlo Park, Calif.

John Suppes believes that green and energy-efficient homes don't have to look different or cost more than their traditional counterparts. With his Hamilton Park residential development project in Menlo Park, Calif., he has the chance to prove this on a large scale.

Suppes, who is the president of Clarum Homes, based in Palo Alto, Calif., is overseeing the construction of 47 zero-energy homes in Menlo Park, a community located in the San Francisco Bay Area. Each of the homes will produce its own energy using photovoltaic solar panels on their tile roofs. Any excess energy generated by the homes will be sent back to the area's main power grid and sold to the local utility.

Suppes believes that affordability is a key aspect of greenbuilding, so 20 of the homes at Hamilton Park will

be priced inexpensively and reserved for teachers and city employees. Prices will start at \$795,000 for the remainder of the homes, which will range in size from 1,635 to 1,975 square feet. The homes will be ready for occupants early this year.

The Hamilton Park project

may be a big one, but it's nothing new for Suppes.

"These kinds of homes are our trademark," he says. "There's an excellent market here for homes like these. It's booming. It's the future of homebuilding, as far as I'm concerned."

[www.clarum.com/hamilton.html](http://www.clarum.com/hamilton.html); 650-566-0066.



**ABOVE and LEFT:** Solar electric home power systems, high-efficiency lighting, water-conserving fixtures and eco-flooring are some of the green and efficient features of the Hamilton Park homes.

## Smart SUMMARY

### Hamilton Park

- 47 zero-energy homes
- 1.5 to 3.2 kilowatt solar energy systems
- Recycled-content building materials
- Tankless water heaters and dual-flush toilets
- Affordable for teachers and city employees



ABOVE: Insulated concrete forms were used for the home's foundation.



## Smart SUMMARY

### Cranberry Ridge

- Part of the LEED for Homes pilot program
- Framing lumber certified by the Forest Stewardship Council
- Grid-tied solar energy system
- Radiant floor heating
- Super insulated

### Cranberry Ridge

Wright-Ryan Construction  
Freeport, Maine  
Tom Wright, co-owner of Wright-Ryan Construction in Portland, Maine, admits to having had some worries about Cranberry Ridge, a 3,200-square-foot home his company built just up the road in Freeport, Maine. The



Photos courtesy Wright-Ryan Construction

like a traditional high-end home. It's only upon closer inspection that its green elements become evident.

For starters, the home features an array of solar photovoltaic panels on its roof, so it can generate its own electricity. During the sunny summer months, owners will be able to sell the excess energy the home produces back to the power company. The four-bedroom home also features a solar water heating system, triple-glazed fiberglass windows, a high-tech air-recovery system and cellulose insulation, all designed to reduce energy consumption.

home is the first his company has built under the LEED for Homes pilot program, which is designed to showcase environmentally friendly construction methods and energy-efficient building. Would the house meet its energy goals? Would it look "traditional" enough to attract buyers? Would the cost of building the home soar?

Turns out, Wright had little reason for concern. The home, which Wright-Ryan crews finished building in October, has become a showcase example of how greenbuilding doesn't have to result in a futuristic-looking, ultra-expensive home.

Sitting on nearly three wooded acres near a state park, Cranberry Ridge looks

For Wright-Ryan, the home is a success. It's also given the company a chance to experiment with new techniques it will now use to build other energy-efficient homes.

"Building this house was really an education process for the subcontractors and for our own people," says Wright, who notes that a lot of care was taken to make sure everything fit together properly. "It doesn't do any good to have good insulation if the sheathing on the building isn't installed correctly. You have to get everybody onto the same page." [www.wright-ryan.com/residential/cranberry-ridge.html](http://www.wright-ryan.com/residential/cranberry-ridge.html); 207-773-3625.

ABOVE and RIGHT: Cranberry Ridge features solar electric and solar water-heating systems on its roof.



RIGHT and BELOW RIGHT: Structural insulated panels, which have an R-value of 24, were used for the exterior walls and roof of Energy House III.



Photos courtesy Northwoods Custom Homes

### Energy House III

Northwoods Custom Homes  
Elk River, Minn.

Greg Holst, owner of Northwoods Custom Homes, jumped at the chance to build Energy House III. And though the construction of the energy-efficient demonstration home in the Minnesota community of Elk River wasn't the easiest process, Holst says he has no regrets now that the house is standing.

"We wanted a model [home] so people could come from all over the world to see what having an energy-efficient house really means," he says. Energy House III will remain open to the public for two years, after which it will be sold.

The house is a joint project overseen by the Suburban

Northwest Builders Association, which formed a committee to make sure the project adhered to strict greenbuilding guidelines. During construction, Holst had to gain approval from the committee at every step, which was the toughest part of the building process, he admits. "It was a real eye-opener, but I did use a lot of the committee's input."

The house was built with structural insulated panels (SIPs), which consist of rigid foam insulation sandwiched between two structural skins of oriented strand board. Building with SIPs, which were used for the home's walls, roof and floors, was a change for builders used to working with traditional stick framing. But the SIPs helped speed build time, and will

result in lower energy bills.

The house boasts a number of high-tech features as well. For instance, the future owners will be able to monitor and control the home's geothermal heating system and lighting systems remotely over the Internet to ensure optimal energy efficiency and comfort.

"We really are hoping there is a big market for this kind of energy-efficient home," Holst says. "We've watched energy prices rise over the last few years. It's become the No. 1 issue people talk about when looking for a house. We think it's going to be a very good market."

[www.energyhouseonline.com](http://www.energyhouseonline.com); 763-441-4967.

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## Smart SUMMARY

### Energy House III

- Structural insulated panel (SIP) construction
- Geothermal heat pump heating and cooling system
- Radiant floor heating system
- Non-toxic flooring, paints and decking
- Remote home management via the Internet



LEFT: An Econar geothermal heat pump system provides heating and cooling for the home.

