GREEN BUILDING

NATURAL ENVIRONMENT

From defining the passive house to breaking down VOC vernacular, we shed the (green) light on eco-friendly home building

BY SHEILA CAIN

WHEN "GREEN" REALLY ARRIVED on the Seattle scene some 15 years ago, building a green home meant using solar panels and bamboo flooring. While those elements remain a sign of green building, today's earth-friendly abodes go much further than that. Seattle is settling into its eco-friendly lifestyle with an awareness that relies less on bells and whistles and more on built-in sensibilities to create more energy-conscious and environmentally responsible dwellings. "The main thing clients ask for is an energy-efficient structure," says Dan Whitmore with Hammer & Hand, a residential building contractor with offices in Seattle and Portland, Oregon. "Building energy consumption has a massive impact on our local and global environment."

Whitmore is a Certified Passive House Consultant (CPHC), which means he is an expert on structures that are designed to optimize energy consumption while significantly reducing energy-gobbling active systems, such as electric heat and air conditioning. Whitmore compares the approach to one taken while camping in the woods in the winter. "You bring heavy socks and a really warm sleeping bag," Whitmore says. "[In passive homes], you're essentially wrapping the house in a really warm blanket."

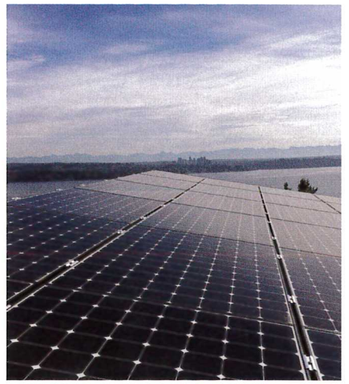
A passive house commonly requires a heating system just one-twentieth the capacity of that in a traditionally built home, says Whitmore, which drops the annual heating needs by as much as 90 percent. Twice as much insulation is built into the walls as traditionally constructed homes, capturing heat. Energy is further saved through efficient windows—often with high-performance triple panes—which greatly reduce heat loss. All of the home's ambient heating can be derived from a hot water heater and distributed through the ventilation system, so no furnace is needed. "Older homes have to reheat cold air inside a drafty building," says Whitmore. "Not so with these homes."

While incorporating energy efficiency into a home's construction is one of the most effective ways to build green, sustainability—a key component of building green—also can be achieved through other means. Many builders, including Hammer & Hand, follow guidelines set forth by the Forest Stewardship Council (FSC). Just like agencies that certify organic foods, the FSC sets standards for forest products in an effort to guide architects and builders toward sustainably sourced building materials, such as certified lumber and flooring. "Because of the sheer quantity of wood in most residential projects, it's one of the ways in which we can hold contractors accountable for the materials they source in regards to both construction lumber and finished cased goods and paneling," says Max Mahaffey, project manager and designer with Seattle's Shed Architecture & Design.

PASSIVE PERFECT
Designed by Shed Architecture & Design, the Madrona Passive House combines contemporary design with energy efficient building systems, creating a home that's eco-friendly to both its environment and its owners

The cost of optimizing a home's energy efficiency runs a little more than a traditionally built home; generally, from 5 to 10 percent more, says Whitmore. The payoff is in the long run, with super-low energy costs over the life of the home and the additional benefit of being kind to the environment. "Energy-efficiency measures have a relatively small immediate return, but the cumulative environmental impact can be tremendous," says Whitmore. The heating expenditure for Hammer & Hand's passive house in Madrona was less than $45 for January through March last year.

There are also plenty of options that allow owners to be green with their interior finish choices. Prentis Hale, co-owner of Shed Architecture & Design, often encourages his clients with single-family homes to consider long-lasting, high-performance finishes such as Caesarstone, a quartz countertop material that is responsibly sourced and manufactured; and eco cork, a natural and sustainable flooring product that is renewable because its source is the bark of the cork oak tree, which can be harvested several times in the tree's lifetime. His firm also leans toward products with low or no volatile organic compounds (VOC), such as Benjamin Moore's Aura line of paints and water-based hardwood floor finishes from German retailer Berger-Seidle.



HEATING THINGS UP
A rooftop solar photovoltaic array will provide enough energy for the Madrona house to offset almost all of the home's energy consumption each year

It isn't always necessary for Hale to play the role of go-to expert for earth-friendly finishes; customers will often come to him already well versed in sustainable products. "I find that there aren't too many uneducated clients in this town," says Hale. "There are folks that come through our door who have done tons of research." In those cases, Hale points them toward local retailers such as Seattle's Greenhome Solutions (*ghsproducts.com*) or Small Planet Supply (*smallplanetsupply.com*) in Tumwater for their abundant stocks of materials geared toward the layperson.

While the cost of eco-conscious finishes can be higher than their non-sustainable counterparts, it's not insurmountable. "In the whole picture, finishes are only a portion," says Hammer & Hand's Whitmore. "You can increase the budget [for finishes] and just cut back elsewhere, like scaling back on landscaping."

With both single-family and multifamily housing construction on the rise in Seattle, it's more important than ever to build with sustainability in mind. Whitmore ranks energy-efficient design and construction efforts above those made toward creating cars that can optimize fuel usage.

"[Those cars] will be replaced in five, 10, maybe 20 years," says Whitmore. "The house will be there for generations, so spending additional effort and resources to meet the long-term needs of society becomes more prescient." ■

PHOTOGRAPHS BY MARK WOODS

BUILD YOUR GREEN VOCAB

CONFUSED BY VOC, FSC, LED?
Our cheat sheet will have you sounding like an eco-building expert in no time

Advanced framing: A structural framing technique used with energy savings in mind. It reduces the amount of lumber needed and increases the amount of insulation material used (using an average of 30 percent less lumber) to improve the energy efficiency of the home.

Forest Stewardship Council (FSC): A nonprofit group that promotes responsible management of forests. The organization sets standards by which forests and companies are certified. The FSC label is used on a number of products—including wood building materials—and aims to give consumers the option of supporting responsible forestry. *us.fsc.org/en-us*

Green home: When describing earth-friendly, energy-efficient homes, "green" can typically be used interchangeably with "sustainable" or "environmentally friendly." A green home is one that uses less energy, water and natural resources than a conventional home, both in its construction and its operation.

Low- or no-VOC materials: VOC stands for "volatile organic compounds," and conventional paints, adhesives, wood finishes and carpets contain VOCs that may be harmful to a home's inhabitants and the environment. Low-VOC materials contain a reduced number of VOCs per liter; no-VOC products contain none.

LED lighting: LED (light-emitting diode) lighting is highly efficient, versatile and long-lasting. LED lights can be five times more energy efficient than incandescent and halogen sources.

Net-zero Home: A net-zero home produces as much energy as it consumes through the use of solar panels, energy-efficient building systems and advanced design techniques. They are designed and built to be highly efficient.

Northwest Energy Star: A certification program that instructs builders on how to implement energy-efficient features and construction techniques. Builders follow a checklist that includes improvements such as effective insulation systems, high-performance windows, efficient heating and cooling, and approved lighting and appliances. The program claims that an Energy Star home is at least 15 percent more efficient than standard code homes. *earthadvantage.org/certification/northwest-energy-star*

Passive house: A passive house is one built following a methodology that minimizes heating and cooling loads through passive measures, such as orientation, massing, insulation, heat recovery and solar shading.

Sustainable: As it relates to design and construction, the term "sustainable" is used to refer to practices that emphasize energy efficiency and reduce the need for heating and cooling systems.

Triple-paned windows: Highly efficient windows with three panes of glass separated by spacers. Often argon or krypton gas is injected between the panes to increase energy efficiency.