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Homes designed with the environment in mind can bring us many earthly rewards.

By Ernest Beck

As founder and chairman of Atlanta-based Interface, the world’s largest commercial carpet manufacturer, Ray Anderson has been on a mission for several years to transform his company into a totally “green” operation—one that is energy efficient and whose products are ecologically sound. Not surprisingly, he also designed his log-cabin getaway in the mountains of western North Carolina to meet equally strict environmental standards.

“I wanted to show that there is a more benign way to build a home,” Anderson explains. He planned a 2,500-square-foot mountain residence with five bedrooms and four bathrooms—a home that would be rustic, but with all the comforts of city living. Some of the ecologically minded accoutrements include solar and radiant floor heating, a solar-powered ventilation system that obviates the need for air-conditioning, and triple-paned windows for maximum thermal efficiency, a necessity in solar-heated houses.

Anderson’s plan reflects the growing popularity of eco-friendly residential technology across the country. When President George W. Bush renovated his ranch in Crawford, Texas, he chose to use geothermal heating and cooling units. He had a solar electric system installed on the White House roof last year. “Green buildings are becoming objects of desire,” notes Michael McDonough, a New York-based architect who has worked on ecologically sound residences for two decades. “It is part and parcel of a healthy lifestyle. It means extending the idea of living well into your home.”

Finding an architect for the job, tracking down the best environmentally sound building materials, deciding how green we want to be—and weighing the additional costs in time and effort—are hurdles we must consider. But these efforts are often well worth it; protecting the environment while conserving energy are immediate benefits, and an often-significant increase in our home’s resale value is the long-term payoff.

Real estate agents say environmentally friendly houses are becoming extremely popular. “There’s evidence that suggests a green home is definitely a plus in selling,” according to Walter Maloney, spokesperson for the National Association of Realtors. “If a buyer has an identical choice, being green could tip the balance.” Statistics are difficult to find, but John Picard, an environmental consultant, notes that only a few of these eco-edifices come on the real estate market each year. Three that he recently sold in California each garnered 50 percent more than other houses on the market.

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The term “eco-house” has become a catchall phrase covering a broad spectrum of philosophies, construction techniques and technologies. Eco-strategies span from something as simple as properly positioning a house to maximize its sunlight, to building a house from re-milled or recycled timber from dismantled barns, bridges or railroad trestles. Designers may also seek to improve indoor air quality by using materials and finishes that do not contain chemical additives. They often strive for a seamless connection between the house and the surrounding environment, usually through the extensive use of glass. Most enthusiasts see their designs as a holistic approach that considers the relationship between forms, shapes and materials and the forces of nature, McDonough says.

In Venice, Calif., the home of architect David Hertz and his family has been in progress for almost a decade. “We always wanted a green home, to live there and to use it as a working lab and showpiece to expand on ideas about green building,” says Hertz, a strong advocate of environmentally friendly design.

Built in two phases, the house today consists of a 4,700-square-foot family compound comprising four buildings. Three bridges and interlocking courtyards connect them; together, the structures create interior and exterior spaces
that constitute a climate-responsive system of natural cross ventilation in the hot weather.

One green material Hertz used extensively was a type of concrete called Syndecrete, which was developed by his own company. Made of natural minerals and recycled materials such as discarded carpet fibers, bottle glass and fiber ash, Syndecrete replaces the energy intensive component of regular concrete. In the Hertz home, Syndecrete is found everywhere—from the kitchen counter to the sink, dining room table, fireplace and even the showers. Hertz says it is a good example of how an eco-friendly product can be substituted for more commonly used materials.

Energy conservation is a common theme in the design of environmentally sound houses. Many eco-builders install climate-response systems that regulate ventilation and light when the weather changes, thus minimizing energy use. Eco-houses may use some form of solar energy and insulation made of recycled materials.

These amenities add to the cost. Builders and architects estimate that the budget for an eco-house, depending on its size and the extent of its eco-friendly accessories, can run 5 percent to 20 percent more than for a conventional building, mainly because of the added expense of the specialized materials. Certain hardwoods, such as mahogany, can cost up to 20 percent more than usual if an organization such as the Forest Stewardship Council has certified them as having come from a sustainable forest. Solar power technologies also remain relatively expensive, despite their growing popularity. Eco-aware architects do not usually charge more, but because their fees are based on overall costs of a project, their compensation may be higher because these projects tend to be more expensive.
He also wanted to avoid conventional heating and cooling systems. He installed quiet ceiling fans to circulate air and looped coils through the floors to circulate water warmed by the sun. Radiant heating of this nature is popular because it produces drier heat than other methods, such as forced-air heating, and minimizes mold growth.

Anderson ended up installing many of the features that architects and consultants say are in demand, such as energy-efficient appliances and solar power. He says it was a particular struggle to find experts to install the photovoltaic panels that convert sunlight to electricity, because so few engineers specialize in the field.

**DAYLIGHT SAVINGS**

Picard gravitated to eco-houses after a career as a builder and project manager for homes costing between $10 million and $70 million. When one house he built rang up a monthly utility bill of more than $300,000, Picard realized that he needed to find a more efficient method of harnessing energy.

The design for his 2,100-square-foot home, a few steps from the water in Manhattan Beach, Calif., grew out of that quest. Because his lot is relatively small—35 by 40 feet—Picard downsized the original plans to a more reasonable square footage, because he wanted the appropriate scale. For the interior, Picard and architect Tanya Chan devised light and ventilation systems, along with solar-powered radiant floor heating, that would illuminate and warm the home, which has high ceilings and a spacious, open floor plan.

Picard says the key to a successful eco-house is wringing several benefits out of each component. One notion is daylighting, in which natural light is used on a grand scale to save energy. In the kitchen, for example, a large floor-to-ceiling glass wall, which has a layer of prismatic plastic, allows a soft white light to flood the space. The $5,000 glass wall is the major light source for the entire third floor of the house, where the kitchen is located, and it significantly decreases energy usage, Picard explains.

Picard, like Anderson, had to surmount hurdles obtaining the materials he sought. He selected a special wood from South America, that comes from a sustainable forestry program wherein only the branches of the tree are harvested. The cost was about 10 times more than regular wood, he says, and it took over a year to secure delivery. Yet not all environmentally sound materials cost more; Picard used a line of eco-paints from Benjamin Moore, with organic compounds, which cost the same as standard house paint.

Picard says his goal was to build a high-end house that operates in a low-tech and sustainable way. It was also a good investment: The house cost approximately $800,000 to build; he recently sold it for more than $2 million.

Rick Joy, an Arizona-based architect who is building a 3,000-square-foot, off-the-grid home for Francis Ford Coppola in Rutherford, Calif., says he tries to assure his top-tier clients that they can “care about the environment and be environmentally advanced, and also have high-concept architecture.”

Combined, these attributes add up to an intangible and powerful statement about a commitment to the environment. “I proved that it could be done—that an eco-sensitive house could be built and that it doesn’t cost that much,” Anderson exults. “It’s a start.”

**ECO-ARCHITECTS**

Cara Battaglini, spokeswoman for the American Institute of Architects, says that although finding a green architect takes some digging, there are resources available that may help us locate a specialist. The AIA website (www.aia.org) has a sustainable-design category in its search engine.