

make it home

| **architecture** | **renovation** | **gardening** | **real estate** |

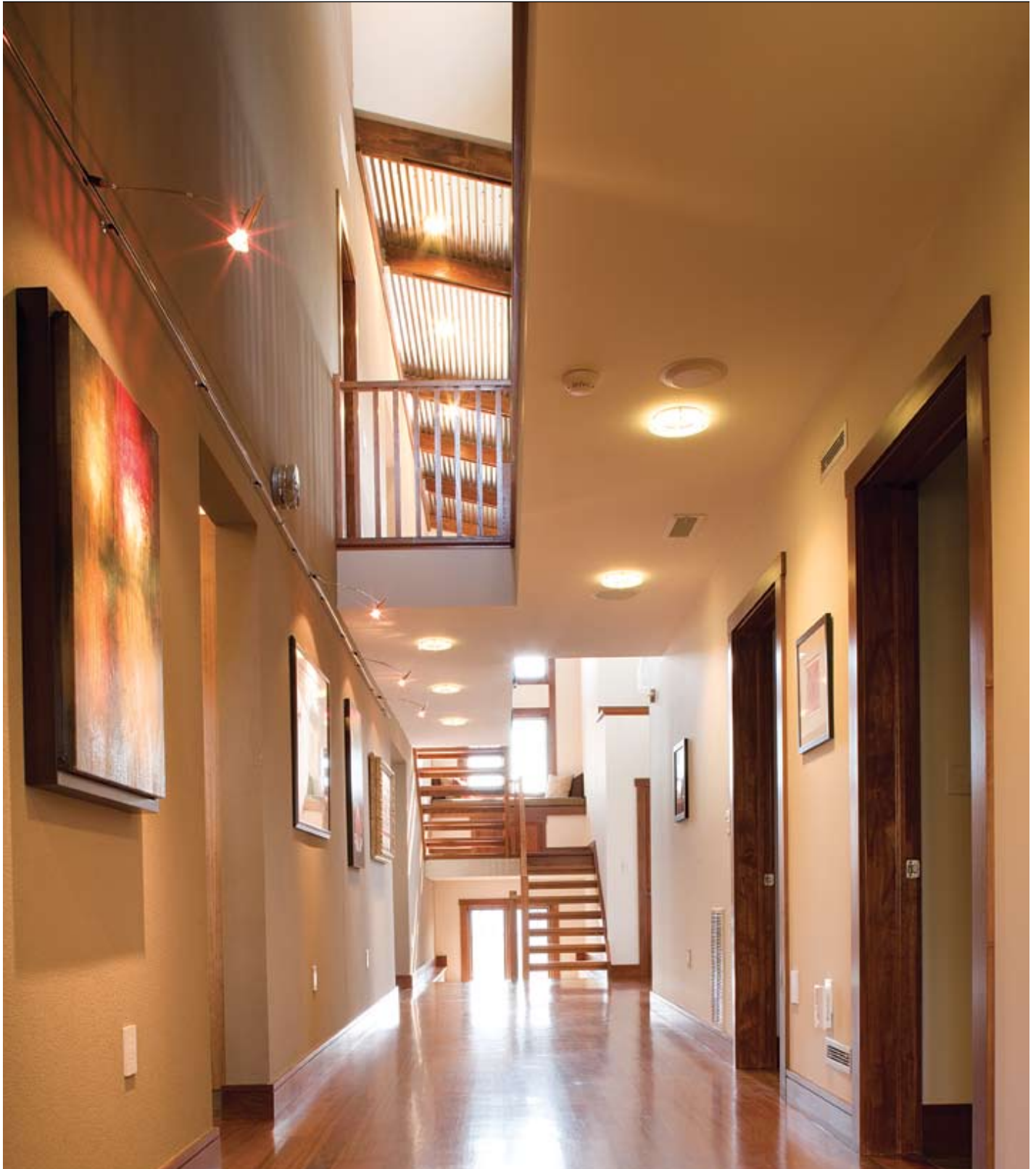


PHOTO: JOHN STERLING RUTH



PHOTO: WILSON BLACK

Bakers' Treat

A couple in the Lehigh Valley turned to science and architecture to build their own green home.

A well-constructed older home is often said to have “good bones”—and, metaphorically speaking, that’s about as biological as homes used to get. It’s different now. A modern home’s innards are almost as complex as our own: Homes have highly evolved systems for circulation, communication and, ahem, excretion. Homes can sense and react to what’s happening around them. Homes breathe. Some homes—the “smart” ones—even have a brain.

And at their best, homes, like us, can be “healthy.” That’s what Brian and Elizabeth Baker wanted — for themselves, for their growing family, and oh yes, for the rest of the world. So when the newly married couple, both natives of Bethlehem, Pa., decided to return to the Lehigh Valley four years ago, it was a conscious choice in more ways than one. Today, they proudly occupy what they call a “high-performance, healthy home,” a residence as physically fit, energetically superior, and pure as a steroid-free Olympian.

“There are a lot of things this house focuses on from a green standpoint,” says Brian, 33, who earned a master’s degree in architecture at the University of Maryland. “It’s all rooted in building science—not just energy efficiency, but also water efficiency, and trying to treat the site as sustainably as we can, and also material choices—we tried to use local products, or if they’re not local, maybe from a well-managed forest—and recyclable or recycled products. Also materials like paint with low VOCs.” (That would be *volatile organic compounds*, which even to a nonscientist doesn’t sound like something you really want in your house.)

continued

Story by **Patti Schuldenfrei** | Photography by **John Sterling Ruth**





The insulative qualities of triple-pane glass allow the home to take advantage of its lofty, panoramic views without sacrificing energy efficiency. Opposite: The Bakers, with 2-year-old Brooke and Bichon-poo Bentley, relax in the great room.



Next to the open, guest-friendly kitchen, the informal dining room space is defined by an overhead "light cloud" housing dimmable fluorescents.





Above: Aware that guests seated in the sunken great room would be nearly eye-level to the kitchen island's base, Brian had it tiled to match the backsplash. **Right:** A corrugated steel ceiling adds a high-tech aesthetic to the great room.

Equally important to the Bakers was that the home's form would be as beautiful as its functions. Even Brian, whose passion for the house seems to peak when he's down in the basement, communing with the ultra-efficient HVAC unit and the swirling manifold of color-coded PEX (cross-linked polyethylene) water-supply tubes, sums it up simply: "What good is green," he asks, "if it doesn't look nice?"

Fortunately, consciousness and creativity came together in the 4,000-square-foot home as seamlessly as the air-tight "building envelope" that encloses it. The wide-planked hardwood flooring is made of natural Brazilian cherry certified by the Forest Stewardship Council. The floor-to-ceiling windows that frame the great room's dramatic hillside views are made of triple-pane glass, argon-insulated glass that lets natural light pour in but filters UV rays. The fireplace has a completely sealed combustion chamber that eliminates the age-old problems of heat-wasting updrafts and indoor air pollution, while providing both warmth and ambiance.

And what about the really cool-looking corrugated steel that lines the wood-beamed cathedral ceilings? "It's mostly cosmetic," Brian concedes, although he notes the decorative metal does provide some heat-reflective assistance to the insulation above it.

It's no accident that the Bakers' house was the first in Pennsylvania to be awarded LEED (Leadership in Energy and Environmental Design)

Silver certification. From the start, Brian and Elizabeth had turned their respective professions—she's an electrical engineer—toward building themselves a home on the cutting edge of sustainability. At a time when being green was still something most people associated with Kermit the Frog, the young couple's experience in commercial construction gave them unusual insight into the environmental wave of the future.

"When we were designing this house, going the energy-efficient route was not as prominent as it is today," says Elizabeth. "So the products that were out there were somewhat limited. It helped that I had a knowledge base in the commercial world, so I could translate what could be usable in the residential world."

To demonstrate, Brian points to a niche beside the entrance to the great room, where a large, red Chinese vase stands bathed in the soft light of a tiny fixture recessed above it. Surprisingly, that warm glow emanates from an LED, an extremely energy-efficient light source whose popularity has suffered from its lingering reputation as being too cold and harsh for home lighting. The Bakers' home makes full use of them, along with compact fluorescents, another cost-cutting bulb still fighting homeowner prejudice due to years of hanging out in blaring-white office spaces. Contrary to popular belief, both types are now available in

continued





Above: A freestanding walk-in closet separates the master bedroom's sleeping area from the unusually open master bath. Right: The master bath's tub and curving glass-block surround join the kitchen island as the only non-angular design elements in the home.

warm, homey tones and dimmable versions perfect for energy-saving residential use. The Bakers knew about these bulbs way back when, although the closest place to buy them was Canada.

Lighting, of course, is only one aspect of the home's design that marries aesthetics and practicality. In the kitchen, stainless-steel Energy Star-qualified appliances were placed to visually break up the expanse of locally sourced Pennsylvania cherry cabinetry, and a corner designated as the "grocery triangle" conveniently locates a countertop landing space between the fridge and pantry, all three in close proximity to the garage door. Brian points out that the ultra-efficient induction cooktop, which boils a pot of water in about two minutes, requires a smaller exhaust hood than a gas range; that not only allows for a sleeker design, but also helps the cook enjoy an unobstructed view through the adjoining great room's windows.

Enthused as he is about the home's technological toys, Brian also applied an architect's eye for scale, balance, and visual appeal to the home's modern, unconventional design.

"The house is pretty much asymmetrical in almost every way," Brian says, "except for small, local symmetries." For instance, each wall of the great room features a variation of a balanced three-bay set-up: The French doors to the deck are flanked by a pair of towering windows, as is the fireplace-entertainment center on the adjacent wall; opposite that, the opening to the main foyer and the bridge above it (which, interestingly, is not supported by posts but suspended by steel rods from the ceiling) are centered between twin display alcoves; and the step-up into the kitchen features built-in shelving units on either side "Those are things people don't notice right away, but I think it helps ground the design," Brian says. "It gives a sense of order, so it's not just all ad hoc."

A central wall that Brian calls the "spine" of the house, stretching from end to end and from rooftop to basement, divides the overall layout into two contrasting geometries: on one side, a narrow hallway lined with doors to the private rooms, on the other side, broad, open living and entertaining spaces. Walking from room to room, Brian pats the ever-reappearing, leathery-textured finish that covers the wall and describes the anchoring effect of its presence, saying: "You always know where you are in this house."

Naturally, a home this smart has not only a spine but a complete central nervous system as well. Every light in the house can be radio-controlled from a single panel of dimmer switches in the kitchen—one of Elizabeth's favorite "energy-efficient-slash-luxury" features—while a digital keypad on another kitchen wall controls just about everything else, from the security cameras to the whole-house audio system. A controller in the basement allows intricately timed programming of exterior lights, with a time clock and sensors helping it choose, on its own, the right lighting at any given time.

And just when it seems like everything is perfectly under control, 2-year-old Brooke embarks on a toilet-flushing spree, grinning impishly as she works the chrome buttons of a dual-flush commode devoted—until this moment—to water conservation. Brian glances down at a section of carefully stewarded Brazilian-cherry floor that has been randomly scratched by a large canine cousin of the Bakers' adorable Bichon-Poo, who is currently draped across the back of the great room's leather sofa, admiring the view. "Oh, well..." Brian says, accepting the vicissitudes of babies and beasts with a shrug and a smile. After all, even the smartest home has to have a heart. ■



Resources

Green Builder

studio26 homes

610-391-0100, studio26homes.com

Fiber Cement Siding

James Hardie at Bradco Supply

610-866-6700, bradcosupply.com

Lighting Controls

Lutron at Fromm Electric

610-434-4881, frommelectric.com

Home Automation

HAI at Worthington Distribution

570-451-4700, worthingtondistribution.com

Appliances

Thermador at Trexler-Haines

877-873-9537, trexlerhainesgas.com

Plumbing Fixtures

Toto at Eastern Penn Supply Company

800-860-3538, easternpenn.com

Windows

Pella at Gunton Pella

800-688-6889, guntonpella.com

Central Vacuum

Beam at Gordon Vacuum Systems

215-766-2114, gvsbeam.com