

BREATHING SPACE



Backyard oasis: pool and deck provide summer fun, while solar panels do the work of heating and cooling efficiently.

Three stunning residences prove that indoor air quality can partner perfectly with superb design.

BY JENNIFER VAN EVRA

1 | WELLESLEY GREEN HOME

WELLESLEY, MASSACHUSETTS From birthday parties to sleepovers to summer soirées, social situations can be tough for tweens and teens with serious allergies. So when the owners of the Wellesley Green Home laid out their “must haves” for ZeroEnergy architect Stephanie Horowitz, one of the biggest was to create a warm, open social space for their kids – one of whom must manage a food allergy – where they could safely entertain friends as they headed into high school.

The home is located in a heritage-rich neighborhood, so Horowitz borrowed from the more traditional East Coast vernacular and seamlessly blended it with a clean, contemporary style.

HEATING/COOLING Extensive insulation, tight air sealing, triple-glazed windows and passive solar gain all mean the need for heating and cooling is minimal; in fact, the home uses 89 percent less energy than a new home built to code. But for those chilly eastern winters and steamy summers, a ducted mini-split system provides warm or cold air, and an energy recovery ventilator (ERV) keeps fresh air flowing in. HEPA filtration also keeps pollens and other particles from making the rounds.

EVERY HOME HAS A STORY. They are witness to many of our biggest moments, and the smallest ones too, and they shape how we live in myriad ways. Every year, *Allergic Living* features inspiring homes that were built with health in mind, and this year, each of the chosen three comes with a remarkable story. A home with an allergic teen becomes a hub for his family to safely entertain, while another with especially fussy clients has to serve as a model of healthy green building. Another houses a new life for a family who lost everything in a fire.

Along the way it becomes clear how widely available materials that are less toxic and less irritating to the airways have become, and how sometimes healthy building simply comes down to old-fashioned common sense.

FLOORING Having a home that's easy to clean and low on allergens and irritants such as volatile organic compounds (VOCs) was essential to the owners, so hard-surface flooring was the go-to throughout the house. Most of the living areas feature solid white oak with a clear low-VOC Bona finish, while low-maintenance tile is used in the bathrooms and entryways.

CABINETS AND COUNTERTOPS Shaker-style cabinets made from formaldehyde-free plywood and coated with a low-VOC finish give the kitchen and bathrooms a timeless look, while Caesarstone quartz countertops offer contemporary cool – and serious durability. A large peninsula between the kitchen and living room adds extra counter space and better defines the living room, which gives it a cozier feel. No- or low-VOC adhesives and caulking were used throughout.

WALLS AND FINISHES Generous ceiling heights make the living spaces especially open and airy, and Benjamin Moore's no-VOC Natura in Winter White offers a sharp look without sacrificing indoor air quality. "The choice of a neutral paint color allows the walls to become a clean backdrop for the architecture, furnishings and artwork," says Horowitz.

INSULATION The exterior of the LEED platinum home is wrapped with ZIP sheathing, which keeps walls airtight, and surrounded

by thick rigid foam insulation. Inside, cellulose insulation in the attic and walls adds yet another layer of warmth; in fact in a winter power outage, it would take multiple days for the indoor temperature to drop to 60 degrees.

EXTERIOR The tilt-style windows have a wonderful old-world look, but their triple-pane glass offers new-world energy efficiency. Also, pollen counts can be high in the area, so Horowitz made sure the windows were outfitted with screens on the outside. The roof is made of coated aluminum, which she finds "great in terms of durability and lifespan, as well as the ability to clip the solar panels to the seams of the roof without creating multiple penetrations."

EXTRAS A backyard swimming pool and rooftop deck mean extra summer fun, while open kitchen and living areas are ideal for entertaining. Meanwhile, an array of solar panels keeps bills down and energy efficiency high.

"It was definitely a successful project, and the clients have been really pleased with the performance and the comfort, and with the infrequency with which they run their heating system in the winter," says Horowitz. "There is a sealed gas fireplace and there have been long stretches in winter when they'll turn that on for ambiance, and it heats the whole house."

Roof overhangs keep hot summer sun out while in other areas large windows welcome it in. Below, easy-to-clean solid walnut floors, coated with Rubio Monocoat, line much of the home's interior.



2 | DEER HAVEN RESIDENCE

GRAND RAPIDS, MICHIGAN When Evan Mathison set out to design the Deer Haven Residence in Grand Rapids, Michigan, he knew it would be especially tough to please the exacting and detail-oriented clients – Mathison and his wife. Since they wanted a healthy environment in which to raise their kids, every choice had to be something they could live with, literally.

But the 3,000-square-foot residence wouldn't only act as the family home; it would serve as a model of what happens when health and commonsense sustainability drive the design. It would also be a place where Mathison and his fellow architect and partner in Mathison/Mathison Architects – his dad – could show clients a different way of doing things.

HEATING/COOLING Windows and doors were meticulously placed to maximize solar gain in winter and cross-ventilation during the area's steamy summers. When additional heating and cooling are required, it comes courtesy of a geothermal loop that feeds a filtered forced-air system – and heats or cools the main level's concrete radiant floors. Because the home has passive house-level air sealing, an ERV keeps humidity down and adds a steady supply of fresh air.

FLOORING Upstairs, eco-friendly cork adds warmth and sound absorption to the bedrooms, while easy-to-clean solid walnut, coated with Rubio Monocoat – a favorite no-VOC alternative to stains and

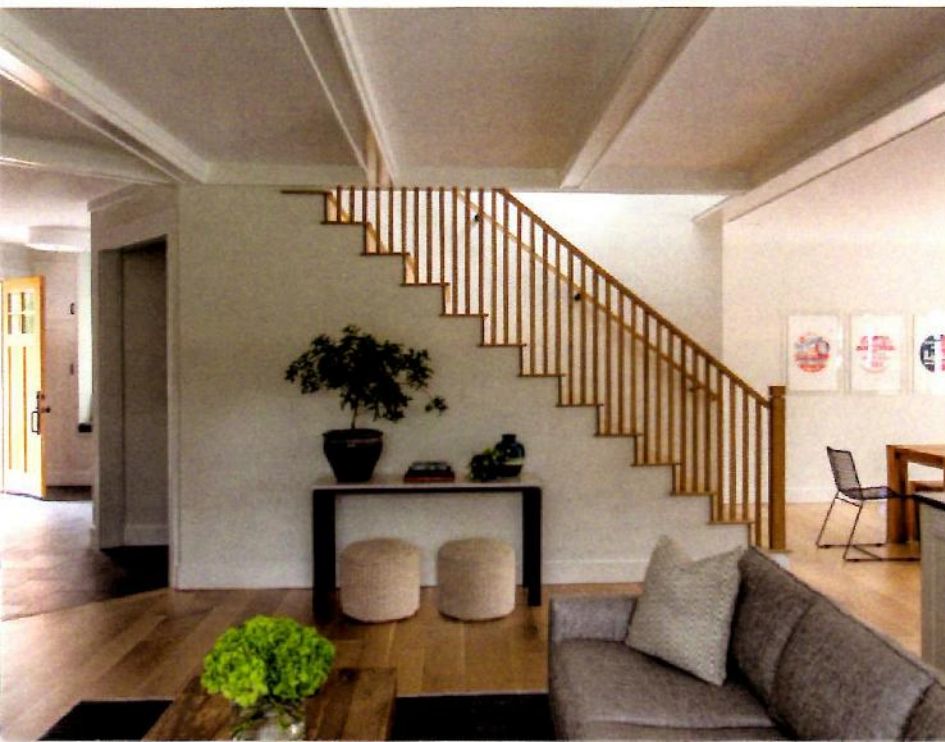
finishes that off-gas chemicals – lines much of the house. Other areas are concrete, styled in a way that cuts the chill. "We didn't want it to look too polished and industrial," says Mathison. "So we did a hand-troweled look with a wax finish that we can reapply when it starts to wear off. Very simple and completely natural." Bathrooms feature porcelain tile.

CABINETS AND COUNTERTOPS Mathison chose a local manufacturer for all of the cabinets and countertops. The cabinets are made from formaldehyde-free plywood, and the countertops are quartz, a perennial favorite since it's durable, relatively affordable and doesn't off-gas. "We were looking for something that was cost-effective and kind of bullet-proof," says Mathison, who also likes quartz's clean look. "It really satisfied everything we were looking for."

WALLS AND FINISHES Mathison selected Benjamin Moore Natura paint inside and out. "We didn't want any VOCs, so that was the most important thing," says the architect, who focuses on keeping air quality high. "And our local painter loves working with it." Natural Western red cedar accents were coated with a no-VOC stain.

INSULATION The entire house is insulated with thick prefabricated polystyrene panels – known as Structural Insulated Panels, or SIPs – that are more than six inches thick around the walls and 10 inches on the roof. Another layer of two-inch rigid foam around the exterior adds even more

Living areas feature white oak with low-VOC finish, while bathrooms and entryways employ low maintenance tile flooring.



Photos: left and previous page: Eric Roth Photography; right: Jason Keen





R-value. Because nearly all of the insulation is outside the walls, it has no impact on indoor air.

EXTERIOR A green roof area off the master bedroom is home to beautiful dune grasses, black-eyed susans, sedums and songbirds. European-style tilt and turn windows make visitors ooh and ah, while the triple-pane glass keeps cold air out. The cladding, or siding, is made of fiber cement, which is renewable and low-maintenance. Carefully calculated overhangs keep the hot summer sun out; in other areas large windows welcome it in. While many houses have windows spread out evenly, “we found if we put 80 percent of them on the south, 20 percent of the north and had deep overhangs, the house would perform 60 percent better,” Mathison says. “So why not do that?”

EXTRAS The house opens onto a 1,000-square-foot deck, which adds to the seamless indoor-outdoor feel. “We get five months of really nice weather a year,” says the owner-architect. “We want to maximize that time, so we’re always outside.” As the cold winds return, an array of solar panels supplies 60 percent of the energy, and a magnificent locally sourced walnut dining table makes for a cozy gathering spot.

It’s been a bit of a learning curve, but the family is thoroughly enjoying their new home. “We’re still figuring out the best ways to use the natural ventilation,” says Mathison, who adds that the home breathes beautifully and offers year-round sunlight in every room. “When it’s opened up, it really feels like you’re outside, which we love. And the light has been transformative.”

3

KAWARTHA HIGHLANDS NET-ZERO ENERGY HOUSE

The cladding and roof are made of maintenance-free steel, which is super durable, affordable and safe in case of fire or sparks.

PETERBOROUGH, CANADA After a freak lightning strike sparked a fire that destroyed their original home, Melanie and Neil, the owners of a stunning lake-side property in Ontario, found themselves starting over from scratch.

For the recently retired couple, the one small silver lining was that they could build exactly the home they wanted: something modern, and so energy efficient that it would actually produce more energy than it uses. Creating a home that was healthy, says architect Christine Lolley of Toronto’s Solares Architecture, was just as important as keeping costs down.

HEATING/COOLING The owners were unwavering in their commitment to a net-zero energy house and, with the exception of a gas fireplace, they opted to go fully electric, which is a trend that Lolley says is becoming increasingly popular. (She jokes that this is “the Tesla of houses.”) An air-source heat pump provides heating and cooling through a forced air duct system, and the vents are located in the ceilings, which help keeps dust and other particles out. In the meantime, a heat recovery ventilator, or HRV, keeps fresh air coming in.

FLOORING The owners wanted hardwood, but were concerned about splurging on pricey engineered wood, only to have their dogs scratch it up. So instead they opted for a formaldehyde-free laminate from Torlys with a click-lock system that allows individual boards to be replaced. Bathrooms and entranceways were lined with simple porcelain tile by Olympia.

Photo: Derek Menson

wonderful together.



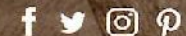
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Affordable kitchen cabinets are from IKEA while (below) flooring is formaldehyde-free laminate. Crisp white Benjamin Moore zero-VOC paint was used throughout the home.

CABINETS AND COUNTERTOPS Custom cabinets can cost a bundle, so Solares often opts for kitchens by IKEA, which are attractive, flexible and have no added formaldehyde. (The cabinets are still made of particle board, which means adhesives are present, although not formaldehyde.) Also to save on cost, at least for now, the couple opted for laminate countertops, as well as solidly healthy IKEA butcher block. “They

really wanted Caesarstone, but they had to save money,” says Lolley. The counters, she advised, could be replaced later; other areas were non-negotiable. “You can’t go back and put more insulation in your walls. That ship will have sailed.”

WALLS AND FINISHES Benjamin Moore’s Aura was the paint of choice, and Lolley used her go-to crisp white: Chantilly Lace. “I find Benjamin Moore’s paint to be of very good quality. It’s a little bit pricier, and yet if it can last a little bit longer, then it’s probably a good thing overall.”

INSULATION The exterior of the house has two parallel stud walls, and in-between is an astounding 13 inches of dense-packed cellulose insulation. In the ceiling, there’s an additional 24 inches of cellulose, making the house evenly temperate and remarkably efficient. “Cellulose is a great insulation for these really thick walls because it’s relatively affordable, completely inert, fire resistant and very sustainable,” says Lolley.

EXTERIOR Windows in the great room are floor-to-ceiling, which seamlessly connects the home’s interior with the stunning surroundings. Locally made triple-glazed fiberglass windows from Fibertec help to maintain the home’s high efficiency, while triple-locking doors make an extra tight seal against the elements. The cladding and roof are maintenance-free steel. “I just love it. It’s made locally with recycled products, it’s affordable and it’s super durable,” says Lolley. “It’s also safe if there is a fire or sparks.”

EXTRAS Solar panels help the owners toward their goal of living as energy efficiently as possible and, since the home is almost entirely electric, they can track exactly how much they’re generating and how much they use.

Lolley says the clients regularly tell her how happy they are with the home: how they love the view through the large windows, the light that flows in, and the way the spaces flow together. Already the family is creating new memories, with their daughter’s marriage taking place at the home last December.

“She had this lovely wedding and they had a house full of people,” says Lolley, who worked on the home with designer and architect Elyse Snyder. “It was a marvelous way to wrap up the project.” ◦

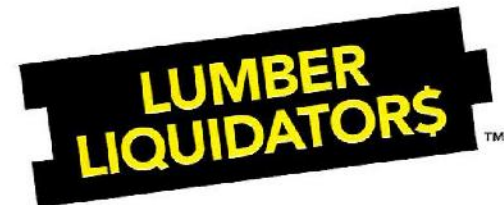


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