

*house.*

# GREEN GOALS

Chatham couple works with Boston-based Zero Energy Design to bring their energy-efficient vision of a house overlooking a salt marsh to life.

**I**n 2014, Jeff Berg and Debra Paget purchased a slice of land remarkable for its Nantucket Sound and salt marsh views. Their plans for the property included building their “forever” home—a place characterized by green design features. To realize their vision, they turned to the principals of Boston-based Zero Energy Design (ZED) with whom they had a longstanding relationship dating back to their student days at Cornell University. It was the firm’s deep understanding of sustainable building strategies that made the couple keen on working with them.

*Written by* **KILEY JACQUES**

*Photography by* **ERIC ROTH**



The placement and height of the windows capitalize on the water views and ensure a naturally bright interior year round.

The floor plan for the 2,800-square-foot Cape-style home was key to the overall design. All habitable space was to be located on one level, and the need for stairs limited. They also wanted to be able to add ramps, if necessary. "They were looking for true single-floor living, which is something they had searched for but were unable to find in an existing home on the Cape," says lead architect Stephanie Horowitz, adding that the couple's energy-efficiency goals are nearly impossible to achieve in homes on the market.

Strict attention was paid to the building envelope, mechanical systems and renewables. "We've always been interested in doing the right thing for the environment," says Berg, a solar power proponent and electric car owner. Though net-zero was not an initial goal, the couple soon realized its feasibility and decided to go all the way despite living in the house only six months of the year. Given they will likely be in the house for 20 to 25 years, and the payback for solar is estimated at seven years, the upfront investment made sense to them. In addition to using a renewable energy source, energy-saving measures include: dense-packed cellulose and continuous rigid insulation; high-performance, triple-glazed windows and doors; a high-efficiency HVAC system comprised of an air source heat pump and an energy recovery ventilator (ERV); and Energy Star appliances. The result is an all-electric home that produces 91 percent of the energy it consumes annually. "It has the benefit of keeping itself warm and minimizing utility costs when we aren't there," says Paget.


In terms of aging in place, the couple viewed this project as a special opportunity to plan for potential mobility issues. Little did they know their plans would be put to the test sooner rather than later. After Paget took a fall that resulted in a broken kneecap, it was clear that being able to move around the house independently was a priority. Paget recalls how getting in and out of the shower was easily done, and how the shower bench proved a tremendous asset. On the whole, the single-floor layout made transitioning from room to

room very doable. "I didn't think I would need those features of the house for another 20 years," she says.

Privacy was imperative, too. The master suite and guest bedrooms are separated by the open-concept main living space—notable for its cathedral ceiling, generous fenestration, locally sourced timber flooring and beams and built-ins. The placement and height of the windows in the great room capitalize on the water views and ensure a naturally bright interior year round. They also capture passive heat gain to keep the home warm during winter months, and they bring in cool fresh air in summer—maintaining thermal comfort at all times. The kitchen is distinguished by its rain forest granite island, which was inspired by a bar top the couple fell in love with at Bluefins Sushi & Sake Bar. The stone's leather-like look and deep tones add drama to the room (and elicit many a comment).

A strong connection to the outdoors was another design driver. Though the house is linear in shape, the elevated deck has a more natural form—a response to the setting and conservation commission setbacks. "It became a nice point of departure between the structured part of the house and the more organic nature of the landscape," says Horowitz.

The home's sustainable design elements impact daily life in some unexpected ways, too. For example, the ultra-thick and tightly sealed windows serve to soundproof the house. "You don't appreciate how well insulated the house is until you open the windows and hear all of what is going on around you," says Paget. Berg notes how people get a kick out of the fact that he often eats breakfast wearing sunglasses to screen the deluge of natural light that floods the interiors.

All told, this is a home for the ages. It belongs to Berg and Paget at present, and promises a smart, environmentally sound dwelling for future inhabitants. "They realized they were building a home that is going to outlive them," says Horowitz, "and they built the right home for the environment." 



Although the house is linear in shape, the elevated deck has a more natural form—a response to the land and salt marsh views.



*house.*

The all-electric home produces 91 percent of the energy it consumes annually.



The kitchen is distinguished by its rain forest granite island, inspired by a bar top at Bluefins Sushi & Sake Bar.



"We've always been interested in doing the right thing for the environment," says homeowner Jeff Berg, a solar power proponent and electric car owner.

## SUSTAINABLE DESIGN STRATEGIES

- Solar array
- Dense-packed cellulose and continuous rigid insulation
- Triple-glazed windows with tilt-turn function
- Continuous air barrier
- Air source heat pump
- Heat pump hot water heater
- Energy recovery ventilator
- Low- or no-voc finishes
- Highly durable materials



Energy-saving measures include triple-glazed windows with tilt-turn function.