

HEALTH, WELLNESS, ECO-LIVING & DESIGN

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MAGAZINE

## ECO-HOME DESIGN

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#### **LIVING AND VIEWS**

The view from the living room is what really makes this home special. The glazing asymmetrically wraps and exposes the corners of the space, bringing in both light and views giving the owners and their guests unobstructed views from anywhere in the living room. The warm wood roof plane draws the eye outside while the glazing brings the horizon in, inviting the ocean—or the fog—to complete the dynamic fourth wall of the space.

Horizontal lines and orthogonal forms are traced in the bench beneath and beside the fireplace, in the linear fluorescent light fixtures and even in the horizon line in the painting above the fireplace. These horizontal reference lines continue throughout the space, extending out to the true horizon, and back in again.

# the TRURO HOUSE

Big, green, and beautiful sum up this spectacular oceanfront home situated on Cape Cod.

By **Emile Chin-Dickey**

Photography by **Eric Roth**



## COOKING AND DINING

The owners love to cook and asked for a large kitchen where the family could gather. ZED thought of the kitchen as the social epicenter of the living area; the entertainment side of the generously sized kitchen island provides space for seating and access to the wine refrigerator while the functional side is all chef's business.

The dining room is adjacent to the kitchen and can open up directly to the deck.

**A** client came to ZeroEnergy Design with an interesting proposition. They wanted to commission the design of an environmentally sensible beach home on Cape Cod. The trick was that they had some unusual space requirements, a narrow lot on an environmentally sensitive site, and a magnificent west-facing view.

The clients were a professional couple, each in different medical fields, with a large family including grown children and grandchildren. They resided in downtown Boston, but planned to spend their summers and weekends on the Cape. While their Boston residence accommodated some of their children, their new beach home would be the only place that would house all seven of them, including their significant others and the grandchildren, thus dictating the need for an extensive number of bedrooms. The entire family would gather over the entire summer and on holidays, while the couple would use the home by themselves during weekends throughout the year.

Planning for the extreme variation in occupancy was an issue ZeroEnergy Design dealt with from the start. The home is split into a 'Living Bar' and a 'Sleeping Bar.' The Sleeping Bar is the expansion module with numerous bedrooms & bathrooms to accommodate the entire family. The Living Bar includes the living and dining areas, as well as a secondary master bedroom—all that the couple needs when the children are away. This programmatic zoning allows the Sleeping Bar to be shut down during the majority of the year to decrease energy use.

The site has a spectacular west-facing view of the water and sunset. The area of west-facing orientation of the glazing used to capture this view certainly isn't ideal for energy performance. The narrow lot size, combined with the client's square footage requirements and the obvious desire to be able to take in the view from the primary living space made the un-ideal orientation of the glazing unavoidable. The rest of the building envelope certainly offsets the luxury view. Silvia and Silvia of Osterville built with double stud framing which allows a continuous layer of foam insulation (uninterrupted by studs). The geothermal system, coupled with a radiant heating system, supplies all of the heating and cooling for the year. Aside from energy efficient appliances and water heaters, ZeroEnergy Design worked with lighting consultant Light Ths to ensure that all of the spaces were sufficiently illuminated using energy efficient fixtures. The client also decided to minimize the home's reliance of fossil fuels. Propane is used only for cooking and a small ambient fireplace. There is no natural gas.



#### HIGH PERFORMANCE

This high performance home features a super-insulated building envelope, ground (geothermal) source heat pump, and 11.7KW of solar energy on the roof. The geothermal system, coupled with radiant heating and central air, will supply the home's heating and cooling needs throughout the year. A heat recovery ventilator provides fresh air throughout the year while exchanging heat between the incoming and outgoing air streams, minimizing the energy penalty of fresh air ventilation.

Since the home was designed as a vacation residence with varying occupancy, the program of the home is organized to decommission half of the home for the majority of the year to conserve energy. The home is split into two volumes—a 'Living Bar' and a 'Sleeping Bar.' The Sleeping Bar is the expansion module with numerous bedrooms and bathrooms to accommodate the entire family. The Living Bar includes the kitchen, living and dining areas, as well as a secondary master bedroom—all that the couple needs when the children are away.



The roof sports a large solar electric array which takes advantage of net metering to offset energy usage. A battery back-up and energy management system stores electricity from the solar array to ensure the basic functions of the home through blackouts without the use of a gas-powered generator. The combination of the energy efficient building envelope and systems with the solar array will allow the home to produce nearly as much energy as it uses over the course of a year!



Choices were also made to promote healthy indoor air quality. Flooring was limited to durable, hard surfaces, such as slate, bamboo, and polished concrete and omitted any carpeting that might capture dust, mites, mold, or moisture. The rapidly renewable bamboo flooring is bound with nontoxic glues. The insulation in interior walls and floor, used for sound insulation and to improve the performance of the radiant heating system, is formaldehyde-free. An air exchange and energy recovery system provides clean fresh air throughout the year.

Finally, the exterior cedar finishes are a tribute to the traditional Cape Cod style home and will grey as they age, blending into the dunes that surround the home. The site is vegetated with indigenous plants that prevent erosion and won't require supplemental irrigation. **OS**

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#### ARCHITECTURE

The form of the house, inspired by the unique topography of the coastal bank, tapers in plan and roof planes to allow for both a demure street presence and an explosive ocean view. The site, the highest point in Truro, rises to an elevation of 116' before sloping down to sea level. The Foyer, positioned between the two forms, provides direct access to the ocean-front deck, satisfying the client's desire to walk right out to the beach as soon as they arrive.