

AT HOME ON CAPE COD

Home Builders & Remodelers Association of Cape Cod

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FALL/WINTER 2021

POSITIVE ENERGY



A Sandwich couple works with design and building experts to create their dream Passive House—a well-insulated modern structure that sets the gold standard for energy efficiency.

BY LISA CAVANAUGH
PHOTOGRAPHY BY DAN CUTRONA

The focal point of the kitchen is the single piece of cut stone called "Blue Explosion," mined to order from Chile.



Builder:
The Valle Group
70 East Falmouth Highway, Suite 3
East Falmouth
508-548-1450, vallegroup.com

Architect:
Kaplan Thompson Architects
102 Exchange St., Second Floor
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207-842-2888, kaplanthompson.com

Hints of the home's green qualities can be seen on the exterior, which features a large solar array on the roof. The design incorporated sustainably grown larch wood and Cembrit, a fiber/cement composite façade product, which had to be precision cut off-site and then pieced together at the location. "It was like a puzzle," says job superintendent Chris Girard of The Valle Group and certified passive home builder.

For new retirees Denis and Diane Boucher, living in a Net Zero Energy home had been a long-standing goal. "Denis and I had been looking for over five years for the right place to build our dream home, which was a net-zero home," says Diane Boucher. "We've been interested in green building for many years."

The couple, who previously owned energy-conscious homes in central Massachusetts, including a circa 1892 house renovated to be as close as possible to living off the grid, turned their sights toward the coast, and eventually settled upon a property in Sandwich that bordered Upper Shawme Pond. There, they hoped to build a home with the highest degree of energy efficiency possible, known as a passive house.

Their search for the right team that could bring their vision to life brought them to Phil Kaplan, principal with Kaplan Thompson Architects of Portland, Maine, and The Valle Group, a family-owned custom home builder headquartered in East Falmouth, each of which had experience and expertise with passive house design and construction.

Passive house construction, originally introduced in America during the energy crisis of the 1970s, became popular in Germany



The inviting three-season room, surrounded by walls of windows, brings one closer to nature.





Many of the qualities that earned the passive house certification aren't visible to the naked eye. These include super-insulation with double thick walls packed with 16 inches of dense cellulose, true air tightness achieved through meticulous sealing of every gap and a state-of-the-art energy recovery ventilation system.



and is beginning to see a resurgence in the United States, especially with more awareness of climate change. Valle Group's Chris Girard, who was the job superintendent for the Boucher home project and is a certified passive home builder through the PHIUS (Passive House Institute of US), explains that passive house building aims to optimize every aspect of a structure's energy efficiency by incorporating five specific building-science principles: super-insulated and thermal bridge-free construction; envelope airtightness; balanced ventilation; optimized windows; and minimal use of space conditioning.

The first step for the design team was deciding how to situate the Boucher's new home on their property. "Their land is in a historic district, so we had to remain aware of that element," says Kaplan, "as well as specifically choosing an orientation on the plot that would support passive house design." The home needed south-facing windows to optimize the radiant heat from the sun, but Denis and Diane also wanted views to the east,



"Our firm is built around sustainable architecture," says Phil Kaplan, principal with Kaplan Thompson Architects of Portland, Maine. "We believe in doing our part to help save the planet," he says, "and that is a matter of choosing quality materials and investing in building a better home."



facing the pond. “These requirements, along with the Bouchers’ desire for a contemporary feel, gave the house its design,” says Kaplan. “I loved the conversations we had in the planning phase. They are wonderful people and I respected their budget while meeting their energy goals and aesthetic needs.”

The Bouchers wanted an open kitchen/dining room, a study and their bedroom to be at the far end of the house. “Phil was very impressive, literally starting to draw as soon as we told him what we wanted,” says Diane. Denis adds that the most important focus was making the home Net Zero, so they let Kaplan use his expertise in Passive Home construction to lead the design. “Phil is a wizard when it comes to green energy.”

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The homeowners wanted a study, open kitchen/dining room and their bedroom to be at the far end of the house. “Phil (Kaplan) was very impressive, literally starting to draw as soon as we told him what we wanted,” says homeowner Diane Boucher.



That is where good, environmentally conscious builders like The Valle Group, which has now won three awards for passive construction, come into play. “They have the knowledge and problem-solving experience,” says Kaplan. “They have a really solid team that has the clients’ best interests in mind the entire time. Girard was able to think through complicated intersections throughout a multi-angled form with various ceiling conditions and many crucial alignments.”

The Boucher house is essentially shaped like a trapezoid, with a pond-facing wall of windows along the back, and a traditional-style gable on the street-facing side. “It was not a typical build on Cape Cod,” says Girard, who points out that The Valle Group was an early adopter of passive house building practices and was one of the first in the region to commit to sustainable building. “So it was exciting to be part of it and an overall fantastic experience.”

Girard’s capacity to foresee problems and create solutions also impressed the homeowners. “Chris is an ideal supervisor with great respect for his craft, the people he works with and clients,” says Denis Boucher.

The home features a large solar array on the roof, triple-pane glazing throughout and a state-of-the-art energy recovery



Environmentally conscious builders The Valle Group in East Falmouth have now won three awards for passive construction.



The first step for the design team was deciding how to situate the Bouchers' new home on their property as well as choosing an orientation on the plot that would support passive house design.



ventilation system. Locally sourced building materials were selected for their low Embodied Carbon assessment, and all chemical sealants, paints and caulking carried strict V.O.C. off-gassing limits.

Constructed with double thick walls packed with 16 inches of dense cellulose insulation, the design incorporated Cembrit, a fiber/cement composite facade product, for the exterior of the home. "It has a very clean look and is very durable," says Kaplan. The panels had to be precision cut off-site, and then pieced together at the location. "That siding was new to us," says Girard. "It was like a puzzle. Each piece corresponded to its own specific spot on the building. It was a longer build process, but such a high level of quality."

Even despite the challenges presented by a pandemic-constrained supply chain, the home was completed by May 2021, and the Bouchers are delighted with the result—and their low energy costs. "They are already on track for net zero," says Kaplan. "It is so fun to see a bill that says no balance due," he

The primary design challenge included working within a tight, triangle-shaped section of land to create a design that maximized natural views, provided privacy and achieved the passive house construction requirement of a south-facing bank of glass.





Homeowners Denis and Denise Boucher are living the dream in their passive house. “It’s better than our dream in a lot of ways,” says Diane. “I never want to leave and I’m always happy when we come home.”



adds, referring to a recent utility bill that Diane shared with him. “That is the kind of thing we like to post on Instagram as much as a pretty photo.”

Kaplan is proud that his firm, together with The Valle Group, created a home so well suited to the Bouchers. Christian Valle, President of The Valle Group, agrees. “This passive house is a great example of what is possible when the desires of the homeowner, the approach of the architect and the builder’s own commitment to sustainable construction are so perfectly aligned,” he says. “The Valle Group is proud to have played a role in delivering a beautiful, highly energy-efficient home. One that the client loves and that is also good for the environment.”

Denis and Diane Boucher are completely thrilled with their unique home. “It’s better than our dream in a lot of ways,” says Diane. “I never want to leave and I’m always happy when we come home.”



This ultra-modern bathroom is the definition of luxury.