CARMEL PASSIVE HOUSE

CARMEL-BY-THE-SEA, CA

66% reduction in irrigation demand

85% better than IECC standards

88% reduction in construction waste

LEED® Facts

Carmel Passive House
Carmel-by-the-Sea, CA

LEED for Homes
Certification Pending

Platinum	**99***
Sustainable Sites	20.5/22
Water Efficiency	10/15
Energy & Atmosphere	25/38
Materials & Resources	8/16
Indoor Environmental Quality	18/21
Locations & Linkages	10/10
Awareness & Education	1/3
Innovation & Design	6.5/11

**With a Home Size Adjustment of +4*

CARMEL PASSIVE HOUSE

Thinking Outside the Box

This farmhouse-style home meets Passive House standards without compromising aesthetics

PROJECT BACKGROUND

After years of moving around the country, the owners of Carmel-by-the-Sea's soon-to-be most energy-efficient house decided to settle down in the Monterey Penninsula and build the home of their dreams. But when the project team initially proposed their idea to the local planning commission, they encountered significant resistance. The tight-knit community envisioned this sustainable house to be nothing more than a box with south-facing windows – a threat to the beauty of the neighborhood. Instead, this Passive House became a building that not only exceeded the aesthetic expectations of its neighbors, but also won design awards for its energy performance and green attributes.

STRATEGIES AND RESULTS

A twist on a traditional farmhouse design, the building, designed by Justin Pauly, incorporates both rustic elements and natural lighting that show off the home's open floor plan. The builder, Rob Nicely with Carmel Building & Design, wanted to make the best use of resources and incorporated Advanced Framing principles such as 24" stud spacing and appropriately sized, insulated headers. He also planned ahead by pre-insulating components such as doubled I-joists to ensure all assemblies would be fully insulated without interruption. Additional measures, including reclaimed 110-year old oak flooring, low- and no-VOC finishes, ENERGY STAR appliances and WaterSense fixtures, LED lighting, drought-tolerant landscaping, and a rainwater catchment system contribute to the home's LEED Platinum achievement.

To meet the strict Passive House heat requirement, extremely air-tight and well-insulated building assemblies were required. Walls are filled with open-cell spray foam and covered with 2" of continuous exterior polyiso insulation, and phase-change materials (PCM) are installed in wall and dropped ceiling assemblies to soak up the sun's heat from large south-facing windows and release it for passive heating once temperatures cool down. Triple-pane, high solar heat gain windows maximize passive heat gain in the area's mild climate while minimizing losses at night. At .58 air changes per hour at 50 Pascals, the house exceeds the strict air tightness standards of Passive House. Additionally, the house uses a heat recovery ventilator to provide continous fresh air while recycling waste heat and minimizing space heating demands. A hydronic coil heats the incoming air when needed. In all, the house uses about 70% less energy than its traditional counterpart would.

ABOUT PAULY DESIGNS

In 2005, Justin Pauly started the Pauly Design firm to create quality houses in and around the Monterey Peninsula. The firm designs buildings that cater to the client's specific location, needs, and desires, and has won awards such as the 2013 Best New Home award from Fine Homebuilding magazine. Pauly's designs consistently feature green building techniques that minimize environmental impact.

ABOUT CARMEL BUILDING

Founded in 1992, Carmel Building & Design has developed a reputation for building durable, sustainable homes throughout California. Carmel Building & Design is continuously updating their techniques to the newest building methods, and believes that sustainable design is the most practical and beautiful approach to construction.

"We feel a responsibility as stewards of this Earth, and we wanted to build a home that was respectful of the environment and its precious resources. We also learned that good design and modern aesthetics were compatible with the kind of energy we were seeking and we couldn't be more pleased."

- Homeowners Mica and Laureen Hill

Architect: Justin Pauly, Pauly Designs
Commissioning Agent: Earth Advantage
Contractor: Carmel Building & Design
Landscape Architect: Missy Jensen Design
LEED for Homes Consultant: Earth Avantage
Passive House Consultant: Beyond Efficiency
MEP Engineer: Lockwood Mechanical
Structural Engineer: Duckbrew Inc.
Project Designer: Rob Nicely, Carmel Building & Design
Project Size: 1,568 sq.ft.

Photographs Courtesy of: Rick Pharoah
Rick Pharoah Photography

ABOUT EARTH ADVANTAGE

Earth Advantage provides verification services related to the LEED for Homes program. As a LEED for Homes Provider, they possess experience and expertise to assist project teams in the construction of high performance, sustainable homes. A LEED provider has several roles in the community they serve.

earthadvantage HOME CERTIFICATION

U.S. GREEN BUILDING COUNCIL LEED USGBC

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