

# CLAM eliminates heating costs by using Passive House technology

by Andrew DeFeo

Sealed inside of the newly renovated "blue house," everyone was checking for a leak. An affordable housing organization spent the last four months renovating a house in Point Reyes Station with Passive House technology, which creates an airtight, easily heated home. Contractor Terry Nordbye ran his fingers along the baseboards, an architect placed his palm against the drywall, feeling for a cool spot, and Andy Wahl, a house efficiency expert, walked around the living room with an infrared camera looking for slight changes in temperature.

"We are remodeling a Hummer into a Prius," said Terry Nordbye. "The future tenants-along with the community and planet-will reap the benefits."

When the numbers measuring the efficiency of the building were calculated on a laptop, everyone began to clap and pat each other on the back. The 850 square-foot house is expected to use only 20 percent of the energy of a typical new house. A normal house that size produces 3.5 tons of carbon emissions annually from heating alone, but the eco-friendly home will need almost no additional heating.

The Community Land Trust Association of West Marin (CLAM) renovated a 1920's house as an opportunity to reduce carbon emissions. The \$100,000 cost was subsidized by private donors and covered major renovations, which included replacing the foundation and removing the exterior walls.

"What's so significant about this house," said CLAM director Rae Levine, "is not only that it's based on green building, but that this is an affordable home. This shows that energy conservation can be available to everyone." The design will benefit low-income renters by eliminating heat expenses each month.

The house is CLAM's second property and was retrofitted along the lines of a certified Passive House, a relatively new architectural design that is leading the way in "deep-green" energy efficiency.

Most of the first Passivehaus buildings were constructed in Darmstadt, Germany in 1990 based on designs pioneered by Professors Bo Adamson of Sweden and Wolfgang Feist of Germany. The method caught on, and there are now more than 15,000 passive homes worldwide. Most of these homes are in

German-speaking countries and cost only five to seven percent more than a traditional new home to construct. But in the United States, in part due to a lack of materials, only a few houses have been certified according to the European standards.

In 2005, Berkeley resident Nabih Tahan renovated his drafty two story bungalow under the guidelines of Passive House standards. The house, which has since been featured in Home Energy Magazine, sparked local interest that led to the development of the Passive House California Group. "This is great," said Tahan upon learning about the CLAM house. "Now maybe people will stop calling me about coming to my house for a tour. Now they can go to West Marin."

Although not a certified Passive House, CLAM's retrofitted home employs the same technology, based on a nearly airtight shell and a filtered ventilation system that recycles warm or cool air.

When temperatures drop, the house absorbs heat from all available sources including the sun, the kitchen stove and the steam produced from showering. Because the leakage once equivalent to an open window is now less than 2 square inches, the temperature inside the house stays relatively constant.

"In a normal home, up to half of all energy loss is due to leakage," said Graham Irwin, a certified Passive House consultant. "Imagine most houses like blocks of Swiss cheese-there are holes everywhere."

Although the house is tightly sealed, the ventilator, which Nordbye calls the iron-lung, recycles the filtered air.

Levine plans to have residents in the home by the end of October. Low-income applicants are asked to pay between 950-1150 dollars a month in rent, with no more than 30 percent of their income spent on rent and utilities.

The house, located a few hundred yards north of West Marin Elementary will be a stop on CLAM's green home tour taking place Sunday, October 4. Visitors can also check out the plot next door, upon which CLAM hopes to build the first certified Passive House in California.

## McPhail Fuel Company

Over 120 Years of Customer Satisfaction



- Safe, Courteous & Reliable Drivers
- Competitive Rates with No Hidden Fees
- Residential & Commercial Appliance Service
- Long Term Employees



Providing Propane Gas & Service for Home, Farm, and Business In Marin and Sonoma Counties

[www.mcphails.com](http://www.mcphails.com)

### Is It Time For A Change?

Have McPhail's Change Out Your Propane Service. New Customer Specials Available. Give Us a Call Today!

*When the people you serve are your friends and neighbors, you want them to be happy.*

Family Owned Since 1884  
Call for a free on-site proposal 707-285-3525

Since 1946  
Propane Gas Distributors  
**DE CARLI'S**  
Appliance Sales and Service

POINT REYES  
Phone 415-663-1341  
First and A Streets

PETALUMA  
Phone 707-762-4511  
423 Wilson Street

### WEATHER

Date	High	Low	Rainfall	
			Wood.	Inv.
Sep 17	88	57	0.00	0.00
Sep 18	95	59	0.00	0.00
Sep 19	81	52	0.00	0.00
Sep 20	91	49	0.00	0.00
Sep 21	93	50	0.00	0.00
Sep 22	98	49	0.00	0.00
Sep 23	87	50	0.00	0.00

Temperature measurements from Woodacre  
Inverness rainfall since July 1: 21.26 inches  
Inverness average since 1925: 37.83 inches

### TIDES

Date	HIGH		LOW	
	A.M.	P.M.	A.M.	P.M.
Sept 24	6:02 3.6	4:28 4.9	11:03 3.1	---- ----
Sept 25	7:28 3.6	5:26 4.7	12:15 0.4	12:21 3.3
Sept 26	8:43 3.7	6:33 4.5	1:24 0.5	1:45 3.3
Sept 27	9:35 3.9	7:43 4.4	2:31 0.6	2:56 3.1
Sept 28	10:14 4.1	8:48 4.5	3:27 0.6	3:51 2.7
Sept 29	10:43 4.3	9:44 4.6	4:13 0.6	4:37 2.3
Sept 30	11:08 4.4	10:34 4.6	4:52 0.6	5:16 1.9

These tide heights and times are accurate for the town of Marshall.



Contractor Terry Nordbye inspects the ventilator, which circulates air throughout the sealed Passive House, remodeled by CLAM. Photo by Sasha Portis.

**KRCB presents**  
*Live From Carnegie*  
*Hall Specials*

*From The Top: Rhythm & Strings*  
Sixteen-year-old musician player  
Justin Jones of Chicago finds rhythm  
all around him, sometimes even while  
doing his household chores. Also  
featured is 12-year-old violinist Anna  
Lee, from Queens, New York, who also  
appears as one-third of the  
Maggie's Trio.

Saturday, September 26 at 7:30 PM



*From the Top: Star Quality*  
Renowned violinist Gil Shusterman  
joined by 10-year-old violinist and  
Red Sox fan Alice Ivy-Perfection.

Saturday, October 3 at 7:30 PM

**KRCB**  
Celebrating  
25 Years  
www.KRCB.org



**Channel 22**  
Broadcast  
Satellite  
Cable

# Toxic Away Day 2009 - Bolinas

40 Cars Maximum - by Appointment Only\*



Dispose of Your Residential Household Hazardous Waste **Safe & Free**

Also, bring all your old computer monitors, all AAA - D size and cell phone batteries

**Saturday, September 26, 2009 9am to 1pm**

Next to Bolinas Fire Station 100 Mesa Road, Mesa Park parking lot

## DISPOSAL OF MATERIALS SUCH AS

- Paints, stain, shellac, solvents, thinners, roof patch
- Garden sprays, fertilizers, ant traps, pesticides, herbicides, rat poison
- Adhesives, caulk, motor oil, batteries, antifreeze, pool chemicals, bleach, cleaners

**Maximum deliverable amounts: 15 gallons liquid or 125 pounds dry.**

**For Combined loads, liquid weighs 8 1/2 pounds per gallon.**

Please keep these quantities in mind and help your neighbors with their waste.

**FOR AN APPOINTMENT CALL: 1-800-207-8222**

**FOR INFORMATION CALL: 415-485-5648**

Sponsored by: Marin County Solid and Hazardous Waste Joint Powers Authority, City of San Rafael Fire Department, Marin Recycling, Bolinas Public Utility District, Bolinas Fire Department

\* If you do not have an appointment, your waste will not be accepted. Please do not bring waste to the event if you do not have an appointment.