

# ZERO

THE NEW HERO

*The movement forward in green building*



BY JACQUELINE MARIOTTE



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**For a home to be considered Net-Zero the total amount of energy used by the house and its occupants equals the amount of renewable energy created on the site.**



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Stick around for seven or more decades and you're apt to become the focal point of some stereotypes before you're done. However, in the case of today's true Green Building movement, the stereotypes of zero energy costs for the average homeowner are more outdated than one would think. With continuously rising energy costs, building a home is less about sticks and mortar and more about the true science of building.

Homeowners Phil and Velma Helfaer, who are 80 and 77 years old respectively, enjoy

shattering stereotypes. They're progressive, and push the limits of what it means to be green. When the Helfaers learned that PVC fabrication can be toxic, they decided to use recycled PVC instead of negatively impacting the environment where it is manufactured.

When they dreamed of their home in Pittsboro, North Carolina, the owners of this meadow lot wanted the dwelling to address their "concern for creating a healthy house environment in which to live." Phil says, "To

us, this is at least as important as the energy efficiency features."

And like an ever-increasing amount of homeowners, they meant it.

They gathered a design team that shared their passion for going beyond the mainstream - a team familiar with energy conservation and aging-in-place design. Together, they created a retreat that may place NC in the forefront of Passive House Design.

Kevin Murphy, owner of Newphire Building and Certified Passive House Builder, says, "We wanted to create a home that combined the application of the most up-to-date energy modeling and building science with an artful, modern aesthetic."

Researching appropriate materials and building practices were essential to achieving this goal. So the homeowners and their team, including architect Arielle Schechter, started at the beginning - the land.

The home is situated on a gentle south facing slope, embracing both the warmth of the sun and the pastoral beauty of "Happy Meadows," as the owners refer to their home. The team designed Happy Meadows to properly work with the sun's energy to heat and cool passively while at the same time providing a beautiful view to the south.

Despite the stereotype of how air-tight homes could be plagued by poor indoor air quality, the homeowners wanted to maximize energy efficiency while ensuring the healthiest indoor air possible. They succeeded through the use of a state-of-the-art Conditioning Energy Recovery Ventilator (CERV unit) and participation in the EPA Indoor Air Plus Program. In fact, Happy Meadows follows every EPA recommendation for indoor air quality.

One of the most difficult aspects of qualifying for Passive House certification is meeting the rigorous energy-saving air leakage requirement. "A Passive Home has over ten times less leakage than a code-built home," says Kevin Murphy. In order to achieve this difficult goal, Newphire Building hired Air-Tight-Seal to apply Enviro-Dri around problematic air leakage areas, and had the results third party verified.

"Passive House Building Systems can be applied to any style or type of building, even commercial structures. Passive Houses are estimated to cost only about 10 percent more than standard 2 x 4 construction. This extra cost is quickly recouped with reduced or non-existent energy bills," says Architect Arielle Schechter.

"Passive House is so named because the system uses "passive" ways to achieve extreme efficiency. But Passive Houses work well in tandem with "active" systems like solar



**The kitchen is made from purebond zero voc plywood. The cabinets are zero voc cabinets and the floor is cork.**

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panels if the goal is to reach “Net-Zero,” says Schechter. “I encourage all clients to design for net-zero or at least to be NZE-Ready ‘net-zero energy ready.’”

For a home to be considered Net-Zero it means the total amount of energy used by the house and its occupants is equal to the amount of renewable energy created on the site. The Happy Meadows Courtyard house takes Net-Zero one step further into “Net-Positive,” meaning they will produce enough extra energy to power a small electrical vehicle.

The Helfaers’ home has been recognized nationally and has received the highest rating by the National As-

sociation of Home Builders (NAHB) Green Builders’ standard, the Emerald Rating. The house has been certified as Passive House Plus, a Department of Energy Zero Energy Ready Home and an Energy Star home.

“If you have budgeted \$200 a month for your electric bill and place that towards your mortgage instead, you could have over \$40,000 to spend on more insulation, better windows and a PV array,” says Murphy, “You can give that \$200 per month to the power company forever, or invest it in a better, healthier, net-zero home for your family instead!”

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