

Zero energy bills is the goal for planned 'passive home'

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EGG HARBOR TOWNSHIP – When Bergen County resident Ray Evangelista was planning a move to Egg Harbor Township, he wanted to make sure his new home would be energy efficient.

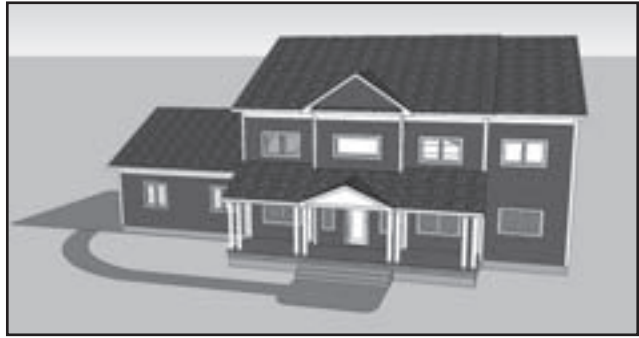
Evangelista owns 411 Energy Services LLC, a company that specializes in energy audits and insulation retrofitting, so cutting back on energy costs and helping the environment with green technologies was important to him. When local homebuilders would not allow Evangelista to install his own insulation, he decided to go all-out and build New Jersey's first ever passive home.

"It's a super-insulated building that uses one-tenth of the energy to heat and cool it as a traditional building," Evangelista said of the planned Pine Avenue house.

The two-story 4,400-square-foot home will be just the 17th of its kind in the nation. It will look and function just like a normal home, but can achieve an overall energy savings of 60 to 70 percent and a heating and cooling energy savings of 90 percent. Those numbers can increase to 100 percent once a small solar array is installed on the roof, Evangelista said. At that time, the house will achieve "net zero" status, meaning no energy will be used from the electric grid to power the home.

"It basically operates at a level of carbon neutrality, which means it doesn't use energy at all because the solar generates more energy than you consume," he said.

The main aspect of a passive home is its airtight nature. The style is popular in Europe, but has yet to catch on in America, where citizens are less concerned about energy costs, Evangelista said. The passive house is so well sealed



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This digital rendering depicts what the two-story, 4,400-square-foot passive home on Pine Avenue will look like when construction is completed. With solar panels on the roof, the house will achieve "net zero" status, meaning it will not take any energy from the electric grid.

and insulated it does not need a traditional heating or cooling system, a feature that saves money for Evangelista and saves the environment from harmful carbon emissions.

"The primary factor is making the house airtight," Evangelista explained. "The second factor is just very well insulated walls and ceilings."

The walls of the home will be 13 inches thick, a vast increase over typical home walls which measure at around 4 inches. In addition, windows and doors will be thicker and sealed more efficiently than in a traditional house.

Evangelista said just a few tea candles would be enough to warm the home if he were feeling a bit chilly, but he plans to install a small heat pump that can also function as an air-conditioning system in case he needs to adjust the temperature inside. Even on the coldest of winter nights, the pump would only need to run for about 30 minutes.

Most of the time, Evangelista said that pump will not be needed, as the house comes complete with an "energy ventilation recovery unit."

The unit exchanges inside air with outside air, but makes sure to maintain the temperature of the house with a heat exchanger.

For example, Evangelista

said if the temperature inside the house is 70 degrees and the temperature outside is 30 degrees; the 30-degree air coming back into the house would undergo a heat transfer with the inside air and enter the home in the 60-degree range. It is that kind of technology that makes the passive home so efficient.

While a house built to such standards will cost around 7 to 15 percent more than the average home, Evangelista said the energy savings over time make it worth the extra expenditure.

"The goal is to try to be as efficient as possible," he said. "With a passive home, instead of having low energy bills I will have no energy bills."

Evangelista said he designed the home himself and hired architect Bill Severino of Little Ferry to develop the actual plans.

Construction is set to begin in the next few weeks, and Evangelista said the house should take around six months to complete. He is currently in talks with three other potential home owners who are considering a passive house, including another in Egg Harbor Township.

For information on Evangelista's project and to learn more about passive homes, see www.njpassivehouse.com.