

A Net Zero home - a response to the climate crisis.

By Suzy Hodgson

In July, I visited Spencer Putnam outside his Weybridge home and asked him several questions about his net zero house.

Can you describe what a net zero house is?

A **net zero house** is one that produces approximately the amount of energy that it consumes over the period of a year. So our house, which is all electric, is connected to the electric grid but it generates electricity with solar panels on the roof.

What were your main motivations and influences for building a net zero house?



Climate change has been a slow-moving train wreck; we're now further down the track. Those who were tuned in understood the catastrophe they had on their hands. I'd been involved with [Vermont Businesses for Social Responsibility](#) for many years and was the Executive Director until 2007. That got me exposed to a lot of people who were very interested in sustainability, efficiency and environmental issues in general. While I grew up in a family concerned with environmental issues, VBSR is where I was really exposed to experts.

As I was nearing retirement, I discussed with my wife several things. One was to downsize our house but also, we really wanted to reduce our carbon footprint. We were aware of using electricity or energy as efficiently as possible but also as sparingly as possible, so we designed the house keeping in mind that we wanted to use as little energy as we could get by with.

We also wanted to make a public demonstration of a net zero, solar powered, and highly efficient house. Over 200 people toured our home in several open houses we held during our first year of occupancy, learning about the special technology and design features we had incorporated.

There's no time to wait for the best technology as it's always changing.

What professional and technical advice did you seek?

I pushed the idea of having a super-insulated net zero house because of my experience of working with people who specialize in sustainability, and at VBSR I came into contact with member Chuck Reiss. We knew Chuck was building similar high-performance houses in Hinesburg so we learned more by touring those houses. After agreeing to build a similar house for us, Chuck gave us architect's drawings which we adapted to our use and preferences.

How does your home compare to your former house? Any surprises?

In 2007, the final year in our old home, we paid \$3000 in utility bills including oil for heat and electricity for lights and cooking. The next year, 2008, in our new net zero home, we paid only \$300 for electricity, which covered all of our utilities. Our net zero super insulated home is 1,800 square feet designed with open space and oriented to the south for passive solar, compared to our older home at 2,700 square feet. The roof overhang keeps the sun out during the summer, but during the winter, the sun comes in to help warm the house.

One surprise is that in our super insulated house, we do not have rodents – they don't get into the house. No need for mouse traps!

The house has easy-to-clean tiles floors and more efficient storage areas. With 20-year life siding and easy-to-clean floor tiles, the house is, essentially, low maintenance. While we currently use our two floors, the house is designed so that we can live on one level and age in place.

Another pleasant surprise is that in a super-insulated tight home, there are no drafts. The ground-source radiant heat is very evenly distributed, so temperatures are uniform throughout the house. For ventilation, we have an energy recovery air exchange unit. While we have a wood stove for ambiance, our home would function fine without one.

The transition to a net zero home heightened our awareness of energy usage as it came equipped with monitors to track energy production and consumption, and we'd go around turning lights off assiduously. Limited storage space does require discipline to reduce what we buy and keep. We've been reasonably successful with very efficiently designed storage space.

Anything you'd do differently today, if you were starting on this project? In other words, what recommendations would you give to your neighbors?

If you wait for the latest technology, you'll wait forever as things are always changing. We were aware that there would be changes and that the cutting-edge technology in 2008 would be superseded by improvements. Some things we've been able to adapt. For example, we started out with compact fluorescent lights and we've been replacing them with LED lights. In 2008 when we built the house, air-to-air heat pumps were not yet available for Vermont's cold

climate. But if we'd waited, we would have lost five to eight years of living in our house. So my advice is you build the house when you're ready and use the technology that's available.

