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## Living Off the Grid in Suburbia

Story and photography by Mike Speltz

**F**rom the general contractor to the crane operator, they all called it simply “The Green House.”

It began with two extended and parallel conversations. The first conversation, with my wife, had to do with too much housework, too much yard work, and just too much house. Though we firmly believed that 60 is the new 40, we were ready to downsize.

The second conversation, with my colleagues at the Forest Society, had to do with carbon footprints, environmental ethics, and the engineering behind a green house. Thus did a practical necessity, a moral imperative, and a technical and aesthetic challenge push us over the edge.

After putting our home and landscaping efforts of 18 years on the market, we found a developer willing to let us bend and twist a perfectly good design into our green dream home. Mesiti Development had two things we needed: a lot in Londonderry with clear southern exposure to maximize solar gain, and a compact, open space subdivision.

Steve Reddy of Zetland Homes, an expert in green building, pointed us to the key system design features. The sun, for the most part, powers the house, two-thirds of which rests over a concrete slab, and one-third over a conventional basement. Twenty-one photovoltaic panels on the south-facing roof generate about 30 kilo-

watt hours on a sunny day—nearly twice what we use, but enough to make up for cloudy days and nights.

The sun heats fluid in five hydronic panels on the roof that deliver their heat to two 80-gallon hot water storage tanks in the partial basement and to a large earthbank below the slab portion of the foundation. The quarter million BTUs stored in the earthbank carry us through cloudy days. The hot water in the storage tanks is delivered to the propane-fired water heater that only fires up if additional heating is required. The hot water heater also serves as the boiler, delivering heated water to plastic tubing embedded in the slab and



**Left:** Twenty-one photovoltaic panels on the south-facing roof generate about thirty kilowatt hours on a sunny day. The sun also heats fluid in five hydronic roof panels that deliver their heat to hot water storage tanks in the partial basement.

**Right:** The hot water heater delivers heated water to plastic tubing embedded in the slab beneath the floor over the basement. The warmed floors then heat the house.

under the floor over the basement. The warmed floors then heat the house.

The limited heating capability suffices because the house is super insulated and airtight. The combined insulation value of the windows and thermal blinds approaches that of conventionally insulated two-by-four walls.

The south end of the house is mostly glass. The passive solar gain through these windows meets about a third of our heating needs on a sunny day. It also provides an important aesthetic element to always have the sky and the towering pines in sight.

Roughly one quarter of the 1,707 square-foot home is devoted to a master suite. Another quarter includes a guest bedroom, bath, and the study. These are on a separate heating zone and kept a bit cooler.

The remaining half of the house is an open area with spaces that might be called kitchen, family room, and sunroom. These “rooms” are separated by materials, by vertical separation, and by lighting rather than by walls. A two-sided fireplace, roughly centered, provides both a focal point and a boundary between spaces. The

“outdoorsy” sunroom side of the fireplace is tiled in pebble stone, while the family room side has more formal split stone and a geometric design.

The “living space” in our new, little house is much larger than was the case in our old, big house. The ten or so acres of open space surrounding our new home are much greater than the one and a half acres surrounding our old one.

We’re discovering that less really can be more, that taking from the Earth an amount closer to one’s fair share does not have to mean impoverishing oneself. We are blessed with the technology to live both well and wisely. ♪

*Mike Speltz is a land protection specialist with the Forest Society. He and his wife Pat moved into their new “green house” on Friday, February 13.*

More photos and information available at [www.forestsociety.org/news/greenhouse](http://www.forestsociety.org/news/greenhouse).

### MIKE’S RECOMMENDED READING LIST

*The Passive Solar Energy Book* by Edward Mazria has all the information you need to successfully design an effective passive solar heated building.

*Radical Simplicity* by Jim Merkel asks the question: If we Americans are first in line at the global buffet, and if we can take as much as we want of the Earth’s products, how much should we take? The rest of the book translates that question into cold, hard numbers.

*The Not So Big House* by Sarah Susanka is an illustrated guide to trading quantity for quality, to getting more out of less, and to turning a house into a human habitat.

*Your Green House* by Alex Wilson contains just about everything you need to tell a contractor what and how much green home you want.