

Making your house energy efficient

by **Gordon Douglas**
Illustration by **Jean Douglas**

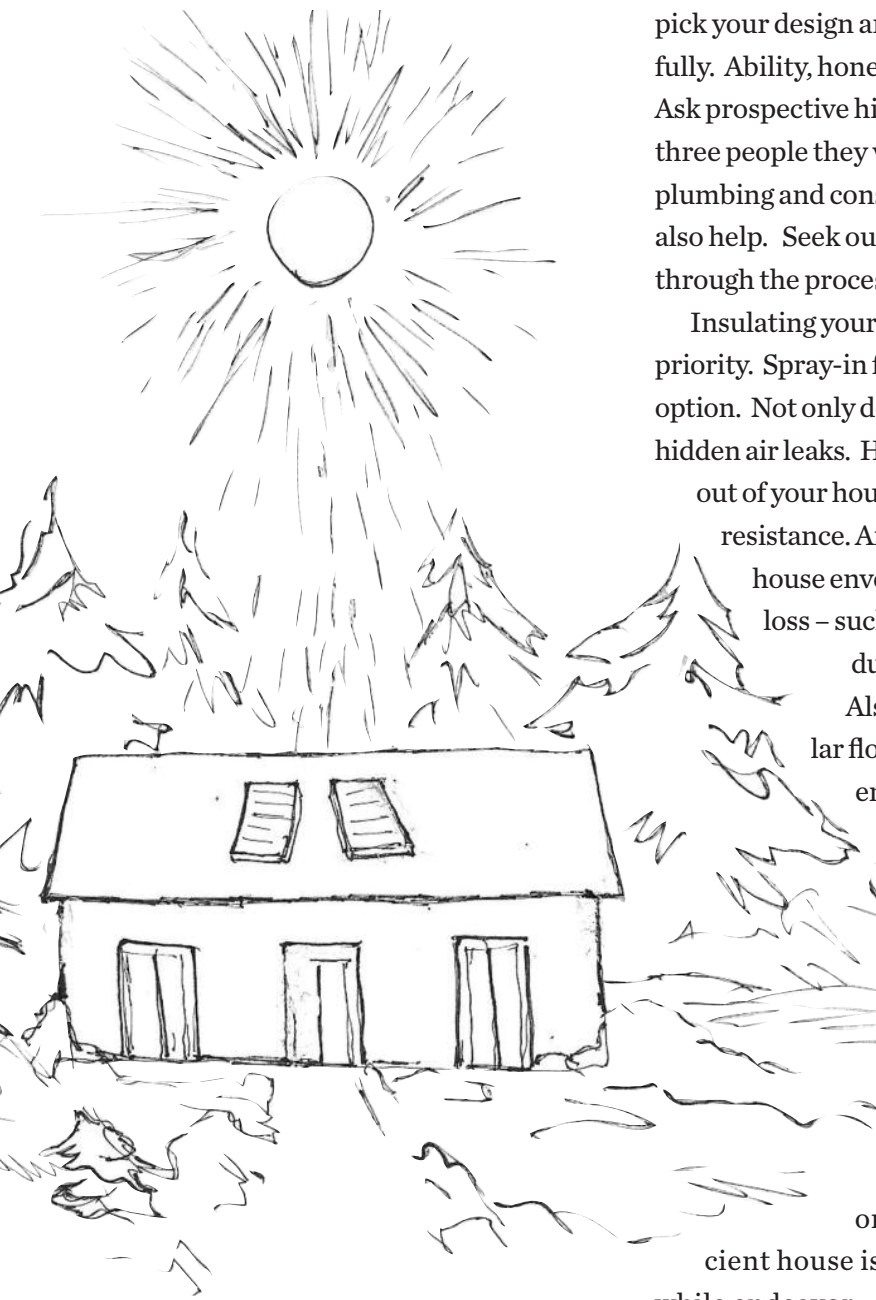
The NYSEG meter reader arrived at our house last week bringing with her a new meter, which she installed in a few minutes. It had two digital readouts that switched back and forth frequently. One readout registered the electricity coming into the property from NYSEG while the other recorded electricity being sent to the grid from our newly installed array of 48 solar panels.

The solar panel installation represented the last major energy saving device of the recently finished ground floor addition to our house. The panels are located at the sunny edge of the meadow behind our barn. Our house's roof is too shaded by evergreens planted long ago to be suitable for solar panels. Putting solar panels on the ground has the advantage that you can align them to the best angle for catching the sun's energy, rather than being constrained by the pitch of the roof.

Now that our addition is essentially finished I would like to pass on to the reader some of the lessons we learned during the planning and construction process. May I say that we are very satisfied with the outcome.

Building a new energy efficient house or addition, as we did, is easier than trying to upgrade an older house, especially one dating from the 1840s like ours.

Start planning for energy efficiency from the very beginning. There are different systems and options and you need to pick what is suitable for your project as early as possible. For example, geothermal heating and cooling, which takes advantage of the fact that the ground a few feet down is always around 50 degrees Fahrenheit, saves up to 75% of your heating and cooling costs. However, while most sites are suitable for geothermal, some are not. If there were rock



with mica in it under your house, the insulating qualities of mica would negate the temperature transfers your system relies on. Only 3% of new homes use geothermal energy. This is a shocking waste of our nations energy resources. Be very careful when vetting geothermal installers. It is critical that you have an installer who is competent and honest.

In order to get an understanding of what building an energy efficient house entails, I urge you to start by going to the "Passive House" website. This is an off-shoot of an energy efficient institute based in northern Germany, which in my view is 10 years ahead of us in creating comfortable energy efficient homes — and at lower cost. Next

pick your design and construction team — carefully. Ability, honesty and teamwork are critical. Ask prospective hires for the names of the last three people they worked for. The opinions of plumbing and construction supply houses can also help. Seek out people who have already been through the process.

Insulating your basic house envelope is a top priority. Spray-in foam is almost always the best option. Not only does it insulate but it also fills in hidden air leaks. Heat is like water; it tries to flow out of your house wherever it meets the least resistance. Anything that goes through the house envelope can cause significant heat loss — such as pipes and electrical conduits. They are called "bridges." Also, don't fail to insulate the cellar floor and walls. With a tight hose envelope heating and cooling is minimal no matter what heat source you use. Radiant heat is also an energy saver and at the same time it is extremely comfortable.

I think that you will find improving the energy efficiency of an old house or building a new energy efficient house is an interesting and worthwhile endeavor.

Today the study of the animal brains (including ours) is moving at a fast pace. Some of the most exciting current research involves attaching tags to neurons so that they light up when the neurons fire during the process of thought. Perhaps when we learn more about our brains and those of other animals we will be better able to harmonize human civilization with the other wonders of Nature and with all life on Earth.

GORDON DOUGLAS is a writer and environmentalist. He may be contacted at pawling5@gmail.com.

*Reprinted with author's permission.