

A Solar Powered Lap Around the Sun

Equinox House First Anniversary



Ty Newell – December, 2011

Newell Instruments, Inc

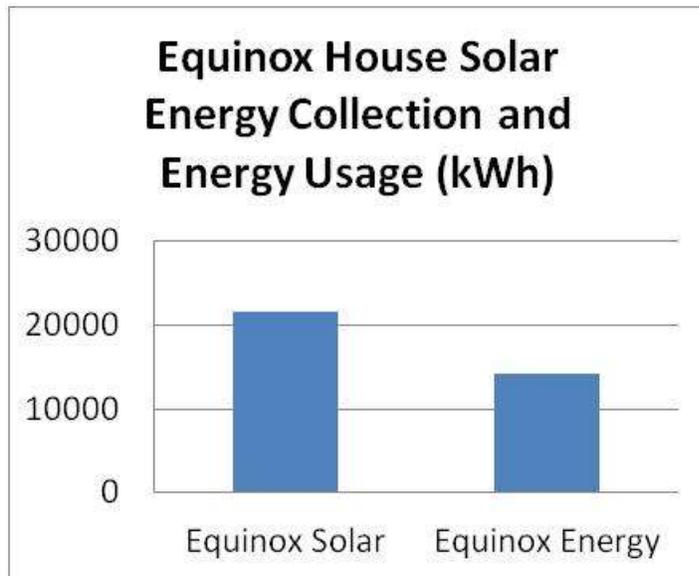
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Thanksgiving 2011 was our second Thanksgiving and our first anniversary in Equinox House. Similar to our first Thanksgiving, we had a house full of guests for the delicious dinner made by Deb and family members. And, all of it cooked by the power of the sun. We gave thanks for good health, the opportunity to be together, the birth of our grandchild Blaire, our milestone year of solar powered living, and a year without utility bills. Here are some highlights of our year.

Energy

Visitors to Equinox House (we estimate 1000 to date) are amazed to the point of disbelief that our home is 100% powered by solar energy. Even more amazing to them is our solar system's average daily cost of only \$3! Yes, you read that correctly. All of our daily energy needs costs less than a cup of Starbucks. When you realize that solar energy can power your living needs for only \$3 per day, other considerations move to the top of the list of important things. Three things come to mind: keeping indoor air fresh, food preservation, and living on a sustainable source of water. Poor indoor air makes people sick, with associated costs that are much more than \$3. Our daily food cost is more than \$3. Can you live without water?

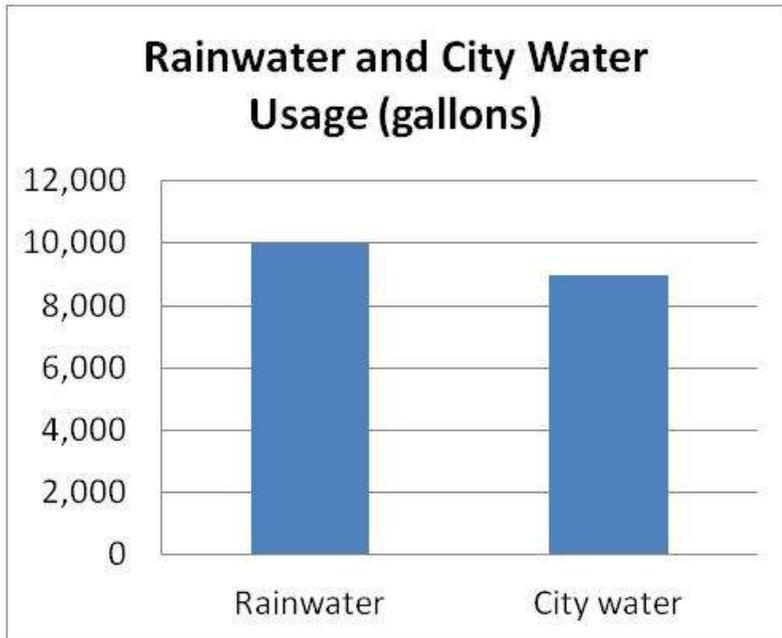


Our solar energy collection system has produced more than we have needed since it was first activated on February 23, 2010. We've over-produced our needs to date for two reasons. First, the solar energy collection system was turned on 6 to 7 months before we switched the house "on". And second, the solar energy system is also designed to provide us with an average of 8000 miles of electric vehicle driving per year. We will acquire an electric vehicle in 2012 as more models become available in our area.

Where did the energy go? The bulk (12,000kWh) of the energy went to operating the house. 2000kWh was used to build Equinox House. Some of the excess (3000kWh) has been "donated" to the local utility due to current Illinois law, and the remainder (4000kWh) is an energy credit we will use this winter.

Sustainable Water

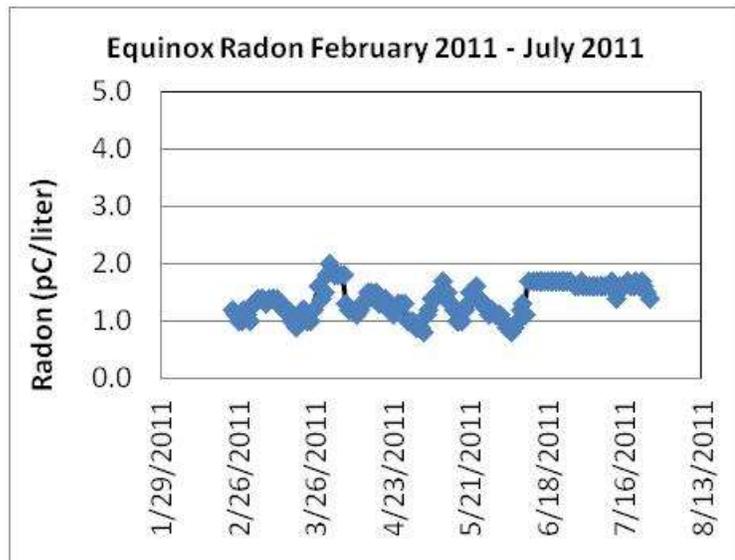
Rainwater harvesting has been a great success with 10,000 gallons collected and used in our house and gardens since September, 2010. We are the first house in Illinois approved to use rainwater indoors for toilets within a municipality, but hopefully not the last. Over the same time period, we used 9000 gallons of “city” water in the house for an annual usage of 19,000 gallons of water. Our 1700 gallon cistern has never been less than half full, indicating that we will be able to supply nearly 100% of our household



water needs at a future time when further rainwater usage is approved. Average biological activity in our untreated rainwater is less than 40 total coliforms per 100ml (swimming pools should be less than 200), with no fecal coliforms based on our monthly test results. Living on rainwater makes you happy on cloudy days!

Indoor Air Quality

Maintaining fresh indoor air is essential to good health. Our fresh air conditioning system we call the CERV (Conditioning Energy Recovery Ventilator, pronounced “serve”) keeps the air in Equinox House at an exceptional quality level. Illinois is a region with very high radon levels, with many homes in our area exceeding the recommended maximum radon level of 5 “picoCuries per liter”. The adjacent figure shows Equinox House averages 1.5 pCu/liter. In addition, our CERV fresh air conditioning system has kept Equinox



House continuously purged with fresh air, minimizing carbon dioxide and VOCs (volatile organic compounds). Odors never build up. The wonderful aromas from Deb’s cooking are removed each day to make way for the next day’s culinary delight.

The Future

We have a lot of exciting activities coming up in 2012 that we hope will provide others with the knowledge, understanding and inspiration for living a sustainable, solar powered life! Newell Instruments will be making some announcements shortly on restructuring ourselves to better serve the residential design and construction communities. I can give you a hint of the new foundations we are establishing within our company. Our website will provide more detail in the near future as these changes are implemented.

Three new divisions are being formed to manage our sustainable residence activities:

- 1) Education: Our software design tools for sustainable living (fresh air ventilation design, building energy modeling, solar energy system design, and rainwater collection) are being converted from “engineering” models into a “user friendly” web-format that can be accessed by interested individuals, design professionals, and building contractors. We are also developing electronic educational media that is coupled to the design models that may be used by individuals or incorporated into curricular materials for workshops, college building technology courses, and engineering design courses.
- 2) Consulting and Analysis: Our consulting and analysis division will provide services for assessing and aiding the design of sustainable residences, and developing solutions to a client’s needs. Among our services will be a novel indoor air quality assessment service for determining the health, odor, and comfort conditions of one’s indoor environment.
- 3) Solutions: Our solutions division includes products we have developed, such as our CERV fresh air ventilation system for active monitoring and maintaining an exceptionally fresh indoor air environment, and other important product solutions for living a sustainable life, including electric power circuit management, rainwater harvesting components, and wireless switching products.

We will continue to turn our Newell Instruments laboratory facility into a net zero energy and rainwater supplied facility to demonstrate that sustainable living doesn’t end at home. Our laboratory is currently 30% solar powered, and with continued improvements in building efficiency, the addition of a bit more solar PV capacity, and installation of a rainwater harvesting system, our lab should be net zero energy and water in the new year. We are remodeling our facility to make it a fun and interesting place to visit and learn about solar powered living whether you are young or old, novice or expert. Visit us at newellinstruments.com to follow our progress.

