

# HOME

## A little energy is all it takes

### GreenMax program awards grants to build reliable, sustainable homes

By LYNN WELCH  
For the State Journal

**S**TOUGHTON — Outside, the winds howl, but with the thermostat set at 65 degrees inside John and Rebecca Scheller's new country home, it feels absolutely comfortable.

"I'm really sort of stunned," said John Scheller of the efficiency of his home's geothermal energy system. "And my wife is really shocked. She doesn't like it cold. It's really incredible how comfortable the house is and how little we notice the system running."

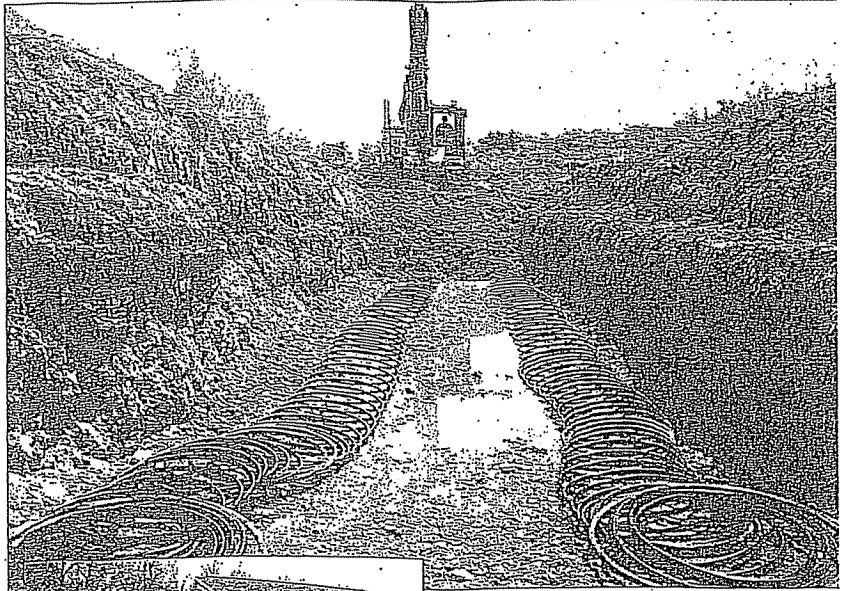
This 4,000-square-foot New England saltbox house tucked along Lake Kegonsa Road in rural Stoughton is the region's first Net Zero Energy home, also known as a GreenMax Home. Through use of energy-efficient construction techniques and renewable energy systems, a Net Zero building has the laudable goal of producing as much energy as it uses.

Shaw Building & Design Inc. in Stoughton broke ground in July on the \$600,000 house, which is part of Wisconsin Public Power Inc. Energy's GreenMax Home initiative. The program gives grants to homeowners and builders to build or remodel homes using reliable, sustainable energy systems. WPPI also offers technical assistance and measures the building's energy and environmental impacts once construction is done.

The Schellers' house, completed last month, is WPPI's second such dwelling in the program; the first was constructed in Black River Falls last year. WPPI is now accepting applications for its third round of grants with a Feb. 26 deadline from which WPPI aims to choose three projects.

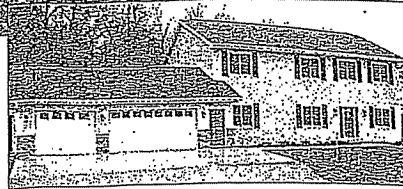
"This home, in particular, shows what average homeowners

Please see ENERGY, Page J4



Shaw Building & Design photo

Above: Buried coils with water running through them use heat from the earth to bring warmth into the house in a geothermal heating system.



WPPI photo

Left: John and Rebecca Scheller's home was built using GreenMax guidelines, which aim to make the structure as energy efficient as possible.

# Energy

Continued from Page J1

can do," said WPPI spokeswoman Patty Schenker. "It promotes great energy savings which will provide a good cushion when they're into the winter time and demand is more and they consume more."

For the Schellers' project, WPPI funded \$42,000: \$18,000 when construction began, \$18,000 when construction was completed and another \$6,000 expected in a year when an analysis is done to assure the house meets energy goals. The house was able to take advantage of other incentives, too: \$17,000 from Focus on Energy and a \$24,000 federal tax credit. WPPI estimates that it cost \$99,000 to make this home a Net Zero building, instead of simply highly efficient. Of that, grants and incentives will eventually pay for \$83,000.

To achieve energy goals, this house uses a number of strategies, all of which have been chronicled in a blog on the GreenMax site put together by Jace Jontz, a project superintendent with Shaw who led the construction team.

Two large, pole-mounted solar panel arrays situated to the east of the home's front door follow the sun to generate the maximum amount of electricity. Through a renewable energy buy-back agreement with Stoughton Utilities, this 5.76-kilowatt solar system hooks into the utility's grid to sell power at \$.29 per kilowatt and buys it back at \$.09.

"This is really how Net Zero is possible," Jontz said.

A geothermal heat pump uses thermal energy from the earth to keep the house warm in winter and cool in summer. Geothermal energy also heats water through an on-demand pump system. The bathroom and kitchen have spot exhaust fans as well to eliminate moisture and contaminants directly. An energy recovery ventilator provides overall background ventilation, reducing the amount of energy needed to condition indoor air.

The south-facing house has high-efficiency Energy Star-rated windows to take most advantage of the sun, while a northern wooded lot shelters the house from wind. The simple, saltbox-style architecture provided advantages that made the building

## Related links

GreenMax Home:

<http://www.greenmaxhome.com>

WPPI Energy:

<http://www.wppienergy.org>

National Association of Home Builders

National Green Building program:

<http://www.nahbgreen.org>

BIBS Insulation:

<http://www.getbibs.com>

easier to seal and insulate.

Attention to details in the insulation installation resulted in a blower door test — which determines where air leaks from the house and helps to attain ultimate energy efficiency — that exceeded even the highest expectations, Jontz said. The house uses 2-inch, R-10 insulation on the exterior of the basement walls and under the basement floor and R-5 insulation on the exterior walls. BIBS (or Blow-In-Blanket) insulation is blown into the walls' interior, plus closed-cell foam is used in the box sill framing as air sealing and insulation.

Energy data collected over six months at the Black River Falls GreenMax house shows that the building can generate two to three times more energy than it uses. But as it went into a higher consumption period last month, the house used just less than 800 kilowatts — its highest usage so far — while generating more than 500 kilowatts. According to the U.S. Energy Information Administration, an average U.S. home in 2007 used 936 kilowatts of electricity monthly.

For the Schellers, incentives were key in their decision to go GreenMax.

"Given all the recent news about green initiatives and the government credits, we were more motivated to look into this," Scheller said. "Since we were building a new house, we had a unique opportunity and good timing in terms of what was going on in the marketplace."

Jontz said in addition to meeting GreenMax construction standards this project achieved a Gold rating from the National Association of Home Builders National Green Building program. The program's four threshold levels — Bronze, Silver, Gold, and Emerald — spans entry-level green building to the most sustainable, with energy savings of 60 percent or more.

"With this project, we have made ordinary building extraordinary," Jontz said.