



## GREEN LIVING

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# Century-old farmhouse goes green

Enterprising homeowner experiments with techniques that could also soon enter the new homes market

**LISA FATTORI**

Special to QMI Agency

**T**hom Mills and his wife are turning their 170 year old farmhouse into an energy efficient home of the future, complete with a ground floor age-in-place granny suite for Mills' parents.

A two-storey 2,000 sq. ft. addition and the existing home feature several new green features and retrofits that, together, enable the house to achieve peak performance.

"When we started planning for the renovation, we knew that this was an opportunity to be environmentally conscious, which is how my family has always lived," says Mills. "This is the home that I grew up in and my parents live with us, so the house has a lot of history."

For an air-tight envelope, the addition was constructed using insulated concrete forms that extend to the roof. In the basement, three inches of insulation was laid, prior to pouring the concrete slab, and the attic was insulated with a sprayed foam.

Improving the insulation of the existing part of the home proved more challenging. In 1965, the house underwent renovations and had new insulation installed. The Mills didn't want to re-insulate the interior or insulate the exterior and lose the original brickwork.

## WELL-INSULATED

The field stone walls in the basement, however, were insulated and the attic insulation was topped up to an R-value of 15. The better insulation, for both the addition and the existing home, reduced the heat re-

quired by one third.

"Once you've insulated well, then you can keep the heat in," Mills says. "Next, you can consider some renewables for heating, such as passive solar energy."

The existing home's oil furnace was replaced with radiant floor heating for the three levels of the addition, a wall-hung propane boiler and fans that force air through the existing ductwork of the original house.

Two solar panels, called Solar Sheats, are mounted on the homes' exterior wall, to add active solar hot air to the home's heating system. Triple-pane low E<sub>C</sub> windows are framed using fiberglass, rather than vinyl, a material that expands and contracts at the same rate as the glass, so that there is no gaping.

Solar panels that are mounted on the ground supply 80 to 90% of the

home's domestic hot water needs. This, combined with a grey water system and a Power-Pipe drain-water heat recovery system, reduced both water consumption and energy use.

"The combination of all of these systems means that you can have a guilt-free shower," Mills says. "Integrated mechanicals is an idea that you see more and more in the new homes market."

## SHARING THE EXPERIENCE

After three years of renovating, the structural and mechanical work for the Mills' home is complete, and work has begun on the home's interior. In keeping with the objective of conservation and country living, finishes will include hardwood flooring from wood that has been cut and stored for years on the property. Wood beams, milled from the

property's 400-acre bush lot, low VOC paint and other natural products will also be used.

Mills shares his extensive research and experience in green building features on a web site that he has created, called [www.greenhometv.org](http://www.greenhometv.org). Green Home TV chronicles various stages of the Mills' home renovation, using a combination of editorial and video clips. Viewers can learn about different products and processes that were incorporated into the home.

"There are so many details to consider and we wanted to provide this information to other homeowners," Mills says. "Part of our message is that you want to insulate well, to heat less. Also, people should look at the products and techniques that can give them fairly immediate returns."