

Nailing it down

A Perth architect and 14 carpentry students are building an affordable and energy-smart home that could be the building block for a mini-community

BY KATHRYN YOUNG

WITH ENOUGH cash to throw around, anyone could build an environmentally friendly house in a sustainable neighbourhood.

But the real question for Perth architect Geoff Hodgins is whether sustainability and affordability can walk hand in hand. And he's out to prove the answer is a resounding, "Yes!"

That's why he designed a compact smart home that's now under construction in a temporary location on **Algonquin College's** Perth campus by 14 students in their second and final year of the Construction Carpentry: Advanced Housing program.

"We've done it hypothetically — now is the reality," Hodgins said. "I'm hoping to prove that it's commercially viable. On paper it works, and to the framing stage, it works so far."

The final cost for the 1,560-square-foot home will be between \$160,000 and \$180,000, including land, but details are still being worked out — including a backup heating system to augment the wood and solar-powered systems. They have a buyer in mind, but papers have not yet been signed since the final price hasn't been set.

What has been determined is where the house will finally settle — on a former public works yard that's up for sale. The Town of Perth has agreed to Hodgins' plan to build a mini sustainable community on the 2.5-acre parcel of land, surrounded by Arthur, Cockburn, Wilson and Halton streets (with some existing homes along Wilson). Under Perth's existing building standards, the land could accommodate 17 houses.

But under Hodgins' plan, this smart home will join 30 to 50 townhomes, lowrise apartments and single-family homes that will appeal to people of all ages and stages of life.

"That seems to be going ahead. That's really good news," Hodgins said. "We want to demonstrate how you can make a coherent and supportive community."

Any truly sustainable house can't exist in isolation — it must be linked to the whole neighbourhood, to street planning, reduced lot sizes, common green spaces, pedestrian pathways and how storm water is handled.

"A key principle of sustainability is you have to link up with people and work together," he said. "You can't work in isolation."

Driving past the **college's** Perth campus on the outskirts of town about an hour's drive from Ottawa, you can see the contemporary styled two-storey energy-smart house taking shape — a long rectangle with a simple shed-style roof and an angled jutout on the back corner. It will be moved to its final address next summer.

By Christmas, the home was fully framed and the insulated sheathing installed on the outside. Windows and doors were to arrive this week as the students — aged 18 to 48 — came back from their holidays to resume work.

"My students have done a fantastic job," said carpentry professor Mark Bell. "They're very excited about it, thrilled to be working on something on this scale and scope. It's a bit of a philosophical shift from the standard way buildings are constructed. It's a first for most of them."

While many students began the course with a passion for the environment, others have got caught up in learning about sustainable development.

"That's the reward. It's to see this increased awareness and responsibility to the environment," said Bell, who has worked closely with Hodgins on the smart house.

Back in his Perth office, Hodgins lifted the roof off a scale model to show the floor joists, rather than rafters, used to support the roof.

While engineered floor joists are more expensive than rafters, labour is much cheaper because it's so simple. Shingling is straightforward and only 16 feet of eaves troughs are

needed. All that saved money can be directed toward super insulation and healthy, low-maintenance materials.

And that's the basic principle Hodgins is using to make the home affordable and sustainable — savings in one area are directed to energy-efficient features in other areas. For example, with all the home's dimensions in multiples of two, wood isn't wasted. They're carrying waste away in bags on a pickup truck rather than a dumpster.

Windows are configured to aid in solar heating, with only three tiny windows on the north side, and south-side windows with appropriate shading. While the angled jut-out on the back is the most complicated section to build, it allows windows to face due south.

Solar generation of electricity is more expensive, but there are enough solar panels for emergency backup, for example, to deal with another ice storm.

They'll make a larger battery system to tie into the government's imminent smart metering plan to charge differential rates for electricity — run the house during the day on batteries when electricity is expensive and recharge them at night when electricity is cheap. They plan to monitor the house's systems for two years.

Hodgins borrowed freely from Flex House principles developed by the Canada Mortgage and Housing Corp. so that houses could be reconfigured as a family changes.

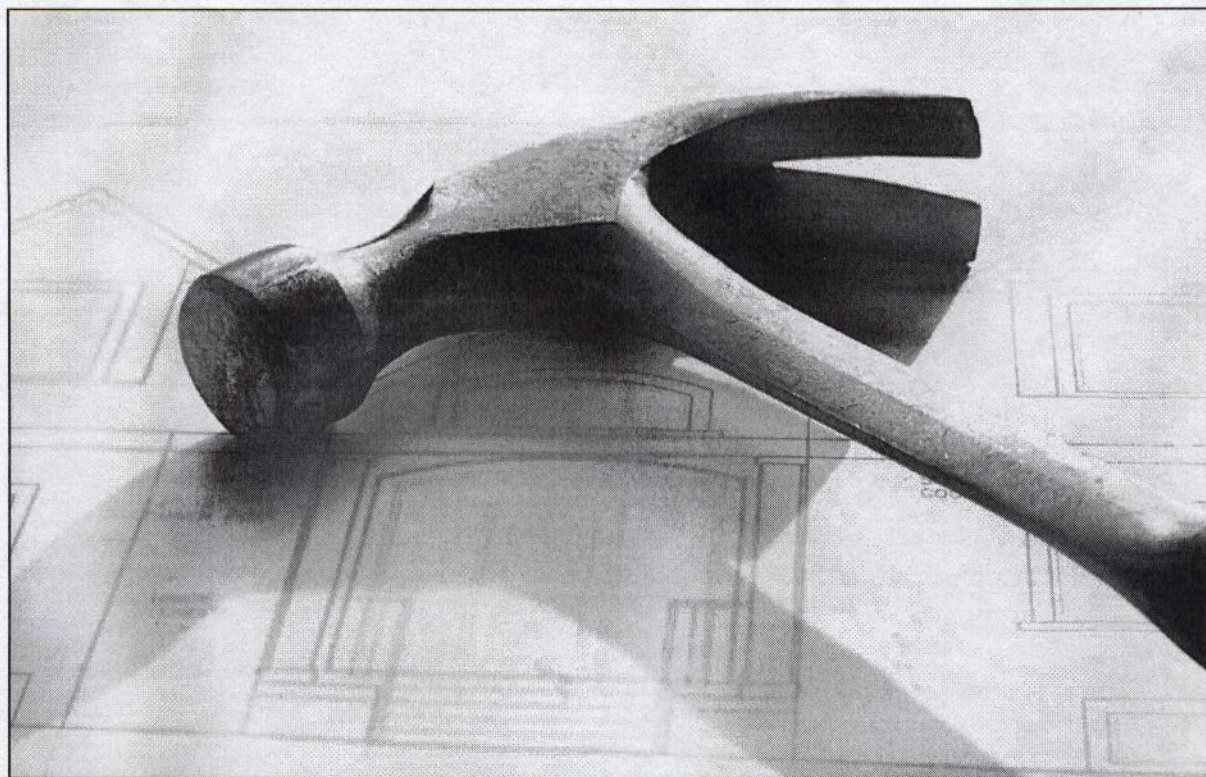
There's only one load-bearing wall, around the stairwell, that can't be moved. The 16-foot by 48-foot space downstairs is completely open, although it could be divided. Upstairs, there are two bedrooms and a den that could become a third bedroom.

While most of the work Hodgins does is adaptive reuse — taking older buildings and breathing new life into them — he has a lot of experience designing buildings with green features. He has done some straw-bale building and another project is a high-end home that's completely offgrid, solar-heated. But it costs \$400,000.

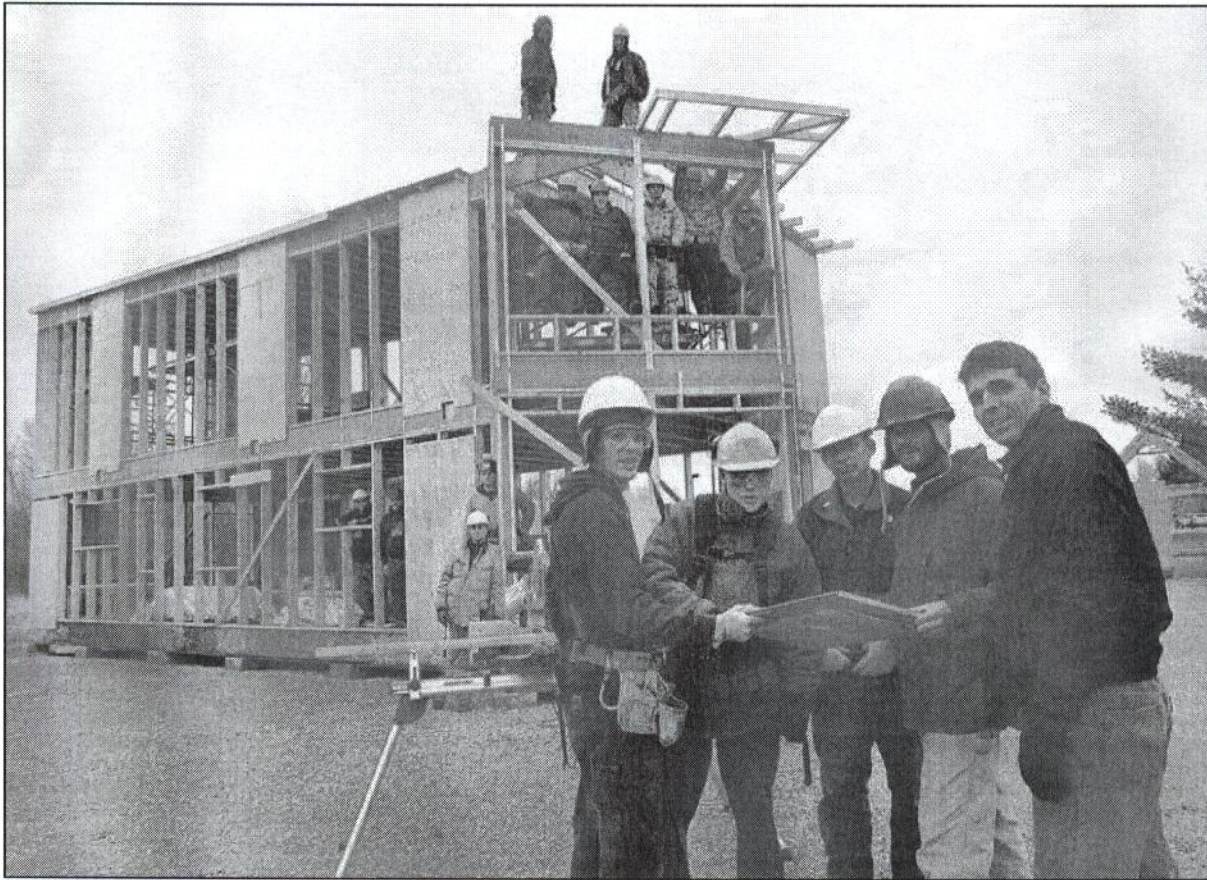
And that's the problem: Most green projects are owner-driven, custom, expensive homes.

"Really, sustainability becomes a luxury for the elite who can afford it," he said. "We wanted to take it back to first principles and see if we could create something sustainable and affordable."

Kathryn Young is a regular contributor to Style Weekly Homes.



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ROD MACIVOR FOR STYLE WEEKLY HOMES Perth architect Geoff Hodgins, right, has designed a compact energy-smart home to prove sustainability and affordability are compatible. Carpentry professor Mark Bell, second from right, and 14 of his students are building the 1,560-square-foot home on **Algonquin's** Perth campus.

