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## A green house for a cold climate

UW students part of team building house for international Solar Decathlon

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RECORD STAFF

CAMBRIDGE

Going green could be as easy as listening to your prefabricated solar house telling you how to save energy, say three architecture students at the University of Waterloo.

Their dream house would automatically react to what you do daily, making decisions to save money by turning appliances on and off, closing a window or adjusting a thermostat.

Or it could send a message after you went to work, asking if you want the blinds closed to keep the house cool.

It may all sound like science fiction, but these master's of architecture students in Cambridge are ready to make it science fact, as part of the international Solar Decathlon competition.

They expect their ideas will become the norm in a near future where environmental concern is pervasive and energy is scarce.

"This building will be a failure if we just build a building . . . it needs to be an agent of change," Andrew Haydon said.

Teachers and students at UW's schools of architecture and engineering, will work with counterparts from Ryerson in Toronto and Simon Fraser in British Columbia to design, create and build a full-size house. It will be tested against 19 others in Washington, D.C. in October, 2009.

In the last competition, a German team won and two U.S. schools were runners-up.

The contest is held every two years to encourage widespread development and adoption of solar technology.

Fifteen universities chosen for the next competition are from the U.S. There's one from Germany, Puerto Rico, Spain. The only other Canadian team in is one from University of Calgary and Mount Royal College in Alberta.

After the full-size trial homes are built on the National Mall in Washington, the buildings will be tested for a week.

Teams are judged in several key areas: architecture, livability, marketability, comfort and power generation for heating, cooling, lighting and appliances.

After the competition, the UW-Ryerson-Simon Fraser house will be shipped west for display at the 2010 Winter Olympics in Vancouver. Then it will be move east to be part of the permanent display at the Kortright Living Centre near Toronto.

Each team gets \$100,000 from the U.S. Energy Department, then must raise the remaining funds necessary to complete the project.

The UW team estimates their house will cost about \$1 million to design and build. They hope to raise the necessary cash through corporate sponsorships and donations.

While making solar mainstream is key in the competition, the goal is not to forgo the modern reality of labour-saving devices in the home.

"Strangely, it's not about modifying your lifestyle," student Lauren Barhydt said. "It's all about your modern conveniences."

For now, the students have a concept and a drawing of the 1,000-square-foot "North House."

There's nothing new about designing solar houses. What's different is that the UW-Ryerson-Simon Fraser team intends to design one for a northern, Canadian-style climate.

"That's the edge we're bringing to it," Haydon said. "It's relatively easy to design a solar house that gets 250 sunny days a year."

The architecture students are acting as project managers. Engineering students and faculty at the Waterloo campus will handle the solar



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PETER LEE, RECORD STAFF

technology. Ryerson will focus on energy efficiency, using a "net-zero" philosophy where buildings use no more energy than they produce.

Simon Fraser will develop the human-building interface, perhaps with hand-held remote controls or a cellphone.

The human-house connection is key to the project's success to conserve energy, students say.

"This is probably the most out-there idea we're including," Barhydt said.

"You would clearly know what is going on with the house. You would know its efficiency. . . . You're able to modify your behaviour."

The house will also be able to watch the actions and habits of its inhabitants.

"If you alter your behaviour, the house will react," Spencer Rand said.

Marketability and ease of manufacture are also key, said Geoffrey Thun, lead faculty member on the UW team in Cambridge.

Pre-fabricated construction of homes is growing. Sections -- or whole houses -- are built in factories and delivered to building sites, he said.

"We're very interested in advancing this kind of technology in solar homes," Thun said.

"In the next short while, there will be a radical change in customer expectations of what the building can do."

As a learning exercise, the Solar Decathlon is about as real as it gets for students, Thun said.

"It's extremely real in terms of a designing the project, the fundraising, how they will bring all the ideas and parts together, ship it there and build it in Washington 10 days," Thun said.

On the Net: [www.solardecathlon.org/](http://www.solardecathlon.org/)

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