



Will self-sufficient solar house draw beam of approval?

Team North's home as well as the other entries must meet the basic requirements of an average home, as well as being scored on such criteria as architecture and market appeal.

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If all goes well, by this time next year in Washington, D.C., the sun will be shining on Ryerson professor Mark Gorgolewski and a team of students and faculty from three universities across Canada.

And if it goes really well, not only will the sun be shining, it will be creating enough electrical power for the team to grab top honours in a U.S. Department of Energy challenge set for them and 19 other teams to build and prove the concept of a self-sufficient home run by solar power.

Gorgolewski's team, drawn from Ryerson, the University of Waterloo and Simon Fraser University in British Columbia, is already hard at work designing the structure and inner workings of the 800-square-foot home, which will be built in modules. They will be assembled for testing, then dismantled and shipped to Washington's National Mall. The modules will then be reassembled and the home will stand with the other competitors' prototypes to create a "solar village."

This is the third Solar Decathlon and Team North, as the Canadians have dubbed themselves, is determined to turn a few heads.

"It's called a decathlon because there are 10 criteria by which you're judged," says Gorgolewski, director of the graduate program in building science in Ryerson's architectural science program. "It's not just the energy, there's aesthetics and other factors, too. We've also got to cook a dinner for a group of people."

Indeed, teams must not only meet the basic power requirements of the average home – to run a fridge, stove, heating, cooling and lighting – but they will also be scored on architecture; engineering; whether the house has market appeal; how good a job they do on communicating their concept via tours, handouts and a website; comfort; choice of appliances; hot water availability (does the shower run cold?); lighting efficiency; energy balance; and how much extra power they can divert to an electric car and how far that car can drive.

"We'll set up the house and then we'll be monitored over two weeks under the same conditions as the other houses to see how well we do," Gorgolewski says. This is Canada's first year competing, with the previous two years being won by a team from the University of Colorado.

Team North is multidisciplinary. While everything isn't fully nailed down yet, Gorgolewski says there will be 800 square feet of photovoltaic solar panels on the roof facing south, along with passive solar panels on the rear walls. They will be filled with a wax-like medium which absorbs heat and melts and then radiates heat as it cools and is more efficient than standard water-filled passive solar panels. It will also have batteries to store power and draw from in the evenings.

Other items include low energy LED lighting and a sophisticated centrally controlled system to raise and lower blinds for the right balance of light while blocking the sun's heat.

Local materials will be used wherever possible to reduce the home's carbon footprint and special features might also include vacuum windows – double glazed glass with a vacuum between the panes instead of the usual argon or low e gas.

After the competition, the house may be set up at the Vancouver Olympics site as a showcase of energy-efficient technology. Its final destination is the Kortright Centre just northwest of Toronto.