Say goodbye to heating bills

Riverdale snags Canada's first net-zero-energy housing project

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From the outside, it will look like any other new duplex with fresh landscaping and pristine paint. Only the roof lines offer a hint that this house might not be as ordinary as it appears.

Construction has begun in Riverdale on Edmonton's first net-zero-energy house, one which generates 100 per cent of its electricity and heating needs on-site, averaged over the course of a year.

Last February, 12 homebuilding teams were announced as winners of Canada Mortgage and Housing Corporation's Equilibrium housing competition. Selected from an initial field of 72 applicants, the 12 teams will build Canada's first net-zero-energy homes, one of which is to be located in the heart of Edmonton's river valley.

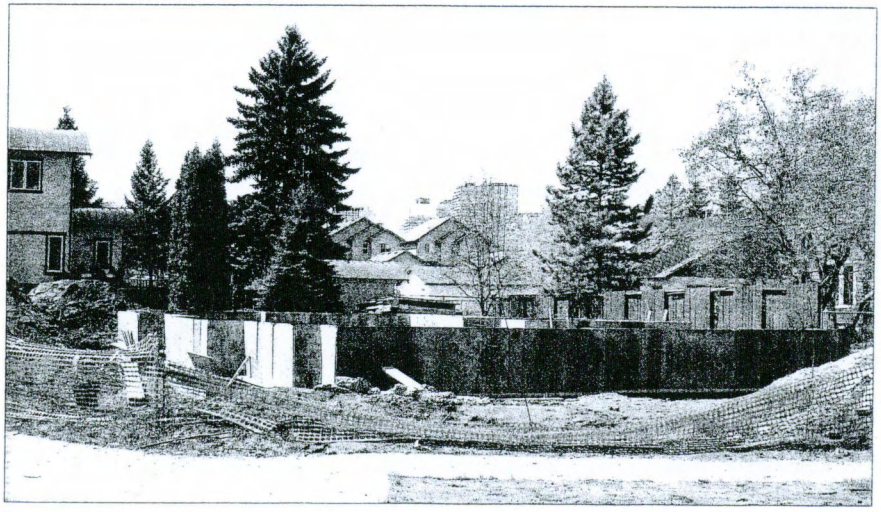
Peter Amerongen, vice-president of Habitat Studio & Workshop and builder of the Riverdale NetZero Project, had been interested in constructing a net zero home for many years. When the CMHC competition came up, he jumped at the chance to put a team together and prove that energy-efficient housing is feasible, even for Edmonton's challenging northern climate.

"I had been working on energy-efficient housing all my life and thought that it was time to take things further," says Amerongen. "I had bought the lot and began writing an outline for it .... When the competition was announced, it was remarkably well-timed."

The Riverdale NetZero Project includes a team of 40 Alberta specialists in home design and building, engineering, materials, landscaping, solar equipment, the environment, and numerous other fields.

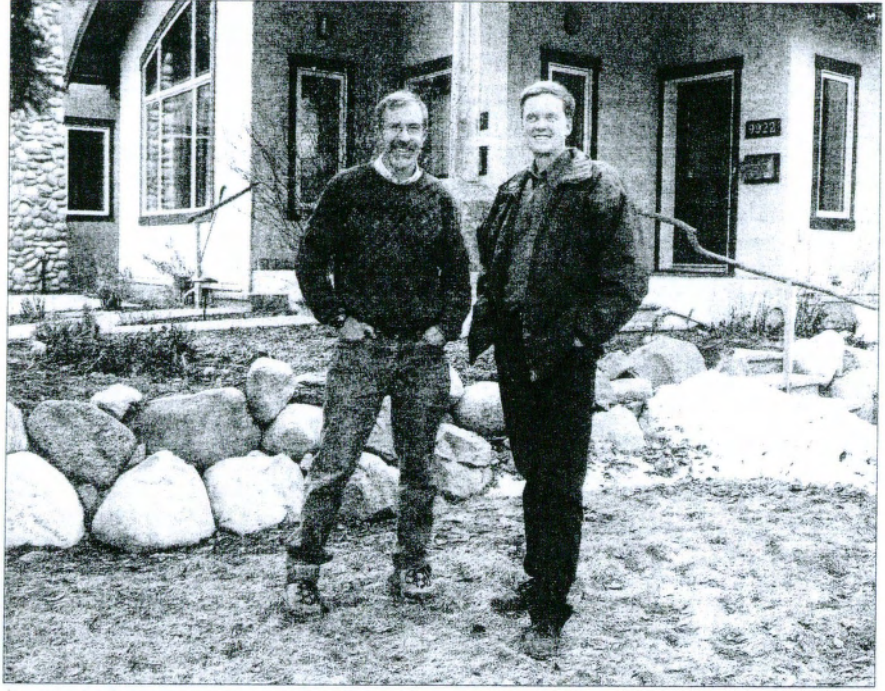
An intensive, three-day team workshop was held last autumn to kick off the design of the NetZero project. The workshop set the direction on the strategies and materials this world-class team would refine to reach their zero-energy goals.

Since the workshop, the Riverdale NetZero team has spent countless hours designing, computer modelling and refining the concept of the duplex to make it energy neutral for Edmonton's chal-



ANDREA PELLAND

Downtown provides a backdrop for the Riverdale construction site.



ANDREA PELLAND

NetZero team leaders Peter Amerongen of Habitat Studio and Workshop and Gordon Howell of Howell-Mayhew Engineering in front of one of Habitat's existing homes.

lenging climate. Finally, a realistic and practical solution was developed.

Construction of the home began in mid-April and is slated for completion in January 2008.

The super energy-efficient duplex will integrate commercially available on-site renewable energy systems such as passive solar heating, solar water heating, solar generated electricity, and high-performance lighting and electrical devices.

While the duplex will be connected to the city's electricity grid, it has been designed to produce as much energy annually as it consumes. Excess energy will be fed back to the grid on any sunny day and an equal amount will be drawn out on cloudy days and at night, the result of which will be zero energy use per year.

Each of the three-bedroom duplex units will be built as sustainably as possible, using regional, renewable or abundant construction materials. This will help cut down material transportation, CO2 emissions, and the use of raw materials and resources.

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TO LEARN MORE

There are several opportunities to learn more about the Riverdale NetZero Project:

On Monday, Gordon Howell will be giving a presentation about the Riverdale NetZero Project in the Margaret Zeidler Star Theatre, located in the TELUS World Of Science, at 7 p.m. For more information about this lecture, call 439-5608.

The Riverdale NetZero duplex now under construction will also be part of Edmonton's 8th annual Eco-Solar Home Tour on June 9th. For more information, please visit www.ecosolar.ca.

Read more about the Riverdale NetZero Project by visiting their website at www.riverdalenetzero.ca.

Energy-efficient house to be monitored

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For example, the insulation will be made up of recycled newspaper that is readily available in our market. To ensure the clean indoor air quality, the team avoided using any materials or finishes with volatile organic compounds or formaldehyde that are known to produce harmful emissions or byproducts.

Highly insulated 16-inch-thick walls and triple-glazed and quadruple-glazed argon-filled windows ensure that the duplex will be tightly sealed, while energy efficient appliances and lighting will further reduce energy needs.

Even though the net-zero duplex will function using advanced energy-efficient technology, Amerongen is quick to point out that nothing they're doing is off the beaten path — it's just being put together in an innovative way.

"In its operation we're going to make it as close to an ordinary house as we can; it will be very comfortable," says Amerongen.

The house will be monitored for a couple of years by the CMHC, but this will be relatively unobtrusive. As for potential homeowners, Amerongen says, "I'm hoping they're proud of the house and they're willing to talk to people about it.

"I don't think it will be much different from living in any other house, except that you have the comforting feeling that you've got a much lighter load on the planet than anyone else you know."

The Riverdale NetZero Project will provide an example of how to reduce greenhouse gas emissions, promote healthy living in sustainable environments, and lower the energy consumption of Canada's housing sector.

The project will not be without its detractors, but core team member and electrical engineer, Gordon Howell, is not worried.

"Typically in life we don't learn from our successes, we learn from our mistakes," Howell says.

Setting a new benchmark in energy-efficient housing means that the team will be monitored for those mistakes.

The Riverdale NetZero team will be presenting the successes and challenges to CMHC in an effort to help the housing industry create even better homes in the future.

Despite the $50,000 awarded by the CMHC to the winning teams, each 1,800-square-foot unit in the Riverdale duplex will likely sell for about $600,000. Initially, it was at a level Howell believed was high when projected last year, but should just cover their costs in today's market.

"Prices in Edmonton have risen 55 per cent since last year, so what was $400,000 last year is $600,000 this year," Howell laments.

By next year, $600,000 may seem like a steal for a home which will cost the owners virtually nothing to run. Howell also points out that as the demand for solar technology increases, the prices will decrease.

"Canadian prices are coming down very nicely. American prices have only come down one per cent in the last 10 years, but the Canadian prices have come down 60 per cent for solar power."

Andrea Pelland is a master's degree candidate at the University of Alberta focusing on sustainable communities. Shafraaz Kaba is a partner with Manasc Isaac Architects Ltd., a firm specializing in sustainable design.