

## Mac building \$11M 'living lab' to study energy use

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*An \$11-million building scheduled to open at McMaster next year will be a demonstration project of community-based energy creation.*

An \$11-million building scheduled to open at McMaster next year will be a demonstration project of community-based energy creation and the only test facility of its kind in North America, say engineering officials at the university.

Mechanical engineer Jim Cotton, who is part of a multi-disciplinary team of 16 McMaster energy experts working on the project, says the design and construction of the building will be an opportunity for undergraduate and graduate engineering students to have hands-on experience.

The Gerald Hatch Centre for Engineering Experiential Learning will be a three-storey, 24,000-square-foot students' centre that will also function as "living lab" where engineers, scientists and students can research integrated energy systems for urban use.

"When you generate electricity ... there is an awful lot of lost energy during that production in waste heat," said Cotton.

He says as much as 70 per cent of potential energy is wasted when traditional, giant generation facilities create and deliver electricity. Those operations are unable to harness the thermal energy that's created, and energy is also lost as it travels through the grid from the generation facility to the user.

"When you factor in the impact on the environment, the lack of sustainability and our vulnerability to power loss due to weather, it's clear we need to improve how we use our energy resources," he says.

But in small generation systems — such as those that will be used in the Hatch Centre, powered by natural gas, wind or other fuel sources — the heat from the process can be harnessed.

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Cotton believes that developing smaller, community-based facilities is far more energy efficient, and he hopes the Hatch Centre will be able to prove it. He also hopes to develop technologies that could, someday, make existing community projects even more energy-efficient.

The research effort recently received a \$1.9-million award from the Canada Foundation for Innovation.

Community-based energy systems are common in some European countries.

In Hamilton, a multimillion-dollar community energy project provides winter heating and a portion of the electrical requirements of several buildings downtown, including FirstOntario Centre and City Hall.

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