

Promising Practices



Non-Profits

CCOC's Beaver Barracks big on energy efficiency, geothermal

The Centretown Citizens Ottawa Corporation (CCOC) is a non-profit housing organization whose mandate is to create, maintain and promote affordable housing to moderate and low income people.¹ The organization is community-based, with community members and tenants serving as volunteers on the elected Board of Directors.² The organization was formed in 1974 and currently owns and operates 51 properties containing over 1,500 affordable housing units, making it one of the largest non-profit housing corporations in Canada.^{3 4}

The Beaver Barracks is a new rental complex being built by the CCOC (the first phase of two was completed in December 2010, with 160 units) and is being touted as "the first green rental complex in Ottawa."⁵

While the Beaver Barracks has the traditional green building features such as bike parking, on-site composting, and rooftop gardening, the most interesting and innovative aspect of the Barracks is its power source. All of the space heating, cooling, and water heating is generated through the utilization of geothermal energy.⁶ In fact, it will have the largest residential geoexchange unit in Canada. Geothermal energy is generated by harnessing the heat beneath the earth's surface. The heat in the ground, typically around 8°C, is harnessed through a heat pump to heat water which is then transferred to air and circulated through the apartments.

Sylvie Trottier, a "Green Animator" at the CCOC offers a description of how geothermal energy will be utilized in the Beaver Barracks:

"By laying pipes below ground, a liquid running through them picks up that energy and brings it to a heat pump which concentrates it to about 21°C.

In the case of Beaver Barracks, heat exchangers in every building, coupled with a heat recovery ventilator for every unit, distribute that warm (or cool) air throughout the building – which tenants will be able to control through a programmable thermostat. Though some electricity is used to operate fans and heat pumps, geo-exchange systems are 3 to 5 times more efficient than conventional systems simply because they transfer heat from ground to building, rather than creating it from scratch."⁷



The Argyle building (foreground) includes a footpath that leads to the organic community garden in the centre of the site. In addition to all of the green building features, tenants at the Beaver Barracks sign a "green pledge", and a CCOC Green Animator provides education and outreach to help tenants do their part to live green.

Beaver Barracks also ensures energy is used as efficiently as possible by including top-quality insulation, windows, and doors. Windows are Low-E (for low emissivity), meaning they are glazed with a thin layer of metal oxide, allowing sunlight in while preventing heat from escaping. Energy efficient lighting was also installed, which uses 67% less energy. Factoring in low-flow water appliances, energy modeling predicts these units will be about

40% more efficient compared with a similar building, following the Model National Energy Code for Buildings.⁸

Beaver Barracks includes all the best practices in energy conservation such as Energy Star appliances, low flow water fixtures, low maintenance durable materials, and energy efficient lighting. “We wanted to make Beaver Barracks a really good example of green design,” said Ray Sullivan, Executive Director of CCOC.⁹ According to Sullivan, the CCOC wanted to demonstrate that sustainability and efficiency can result in housing that is affordable and accessible (there are 19 wheelchair accessible units in Phase 1). This is perhaps the most important aspect of the project as green initiatives are often seen as costly.

The CCOC is not limiting its implementation of green technology to new buildings; rather, it is doubling its efforts by incorporating green energy in many of its older properties. Its building at 520 Bronson Ave. in Centretown West and its 10 Stevens Ave. property in Overbrook will each host one of two 10 kW solar photovoltaic (PV) systems the CCOC is installing on its roofs. The solar panels will be connected to the electricity grid and will generate funds for the CCOC through a contract signed with the Ontario Power Authority (OPA) as part of the microFIT (Feed-In-Tariff) Program. At 258 Argyle Ave. in Centretown, the CCOC is installing 33 solar hot water panels and three water storage tanks. This will reduce gas needed for water heating, resulting in expected savings of \$2292 a year.¹⁰

CCOC’s work does not stop with renewable energy generation. Since many of its properties are older, it has focused on making them more efficient. At two of its properties—one in Sandy Hill, the other in Overbrook—built in the 1980s, the CCOC recently upgraded the building envelopes. The process included installing new insulation, windows, doors, siding and roofs. The projects reduced the heating needed in the buildings.¹¹

The CCOC’s work to complement renewable energy generation with energy efficiency is ideal from both an economic and environmental standpoint, and serves as an example to be emulated by non-profits across the region.

CONTACT INFORMATION:

Meg McCallum
Manager, Membership & Communications
Centretown Citizens Ottawa Corporation
Phone: 613.234.4065 ext. 240
Email: meg.mccallum@cchohousing.org

This Promising Practice was brought to you by
Ecology Ottawa on behalf of the
Community Energy Network of Eastern Ontario
*Encouraging the uptake of renewable energy and energy
efficiency initiatives*

www.community-energy.ca



The Network gratefully acknowledges the support of
the Ontario Trillium Foundation



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- ⁴ Supra note 2.
- ⁵ Spacing Ottawa. “Non-profit Beaver Barracks a model for sustainable housing.” October 1st, 2010. Website text. <http://spacingottawa.ca/2010/10/01/non-profit-beaver-barracks-a-model-for-sustainable-housing/>. Accessed March 2011.
- ⁶ Ibid.
- ⁷ Ibid.
- ⁸ Ibid.
- ⁹ Ibid.
- ¹⁰ CCOC. “Renewable Energy and Energy Efficiency.” *Sustainable Eastern Ontario*. May 2011. www.sustainableeasternontario.ca/Files/CEN/OttawaRetreat2011/CCOC.pdf. Accessed July 2011.
- ¹¹ Ibid.

