

# Energy Innovators Initiative Energy Innovators Case Study

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## CALGARY CO-OP: CO-OPERATING FOR ENERGY EFFICIENCY

Rod Peterson, C.E.T., R.P.A.  
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### Greener grocery shopping

Concern for the community is a guiding principle for the Calgary Co-operative Association Limited (Calgary Co-op), one of the largest retail co-operatives in North America. That's one of the reasons Calgary Co-op is slashing its energy use by up to 20 percent and, in doing so, reducing its greenhouse gas (GHG) emissions.

"Reducing GHG emissions is good for the community, the environment and the bottom line. Calgary Co-op has

always been conscious of the need to conserve energy and be more efficient in how it uses these resources," says Darwin Flathers, vice president of capital investment and development for Calgary Co-op.

"As a major food retailer and a developer that operates 18 grocery stores, many of which have a pharmacy, liquor store and gas bar, we knew we needed to implement a more organized structure to manage our energy use."

The impetus to do something comprehensive about energy management came when electricity prices tripled after



Exterior storefront of McLeod location



Natural Resources Canada  
Ressources naturelles Canada



the Alberta electricity market was deregulated in 2001. In early 2002, under the direction of Mr. Flathers, Calgary Co-op formed an energy management committee to identify and implement energy-saving initiatives.

Calgary Co-op is now on track to reduce its electricity use by 20 percent, thanks in part to assistance from the Energy Innovators Initiative (EII) of Natural Resources Canada's Office of Energy Efficiency. The EII works with commercial businesses and public institutions to increase energy efficiency and reduce GHG emissions that contribute to climate change. Calgary Co-op has been a member of the EII since June 2002 and has also registered with Canada's Climate Change Voluntary Challenge and Registry Inc. (VCR Inc.), a non-profit partnership between industry and government that keeps track of GHG emissions reductions.

### A co-operative plan to save energy

To assist with administration and training, Calgary Co-op hired an energy consultant to audit six of its stores. After studying operations at these stores, Calgary Co-op focused on lighting and refrigeration upgrades, since refrigeration accounts for over 50 percent of the electrical load.

Calgary Co-op's energy efficiency plans have been closely guided by the energy management committee, led by Calgary Co-op's purchasing manager, Rod Peterson; district manager, Marty Schaufert; and Beddington centre

manager, Doug Scott, who has direct, day-to-day experience working in the stores.

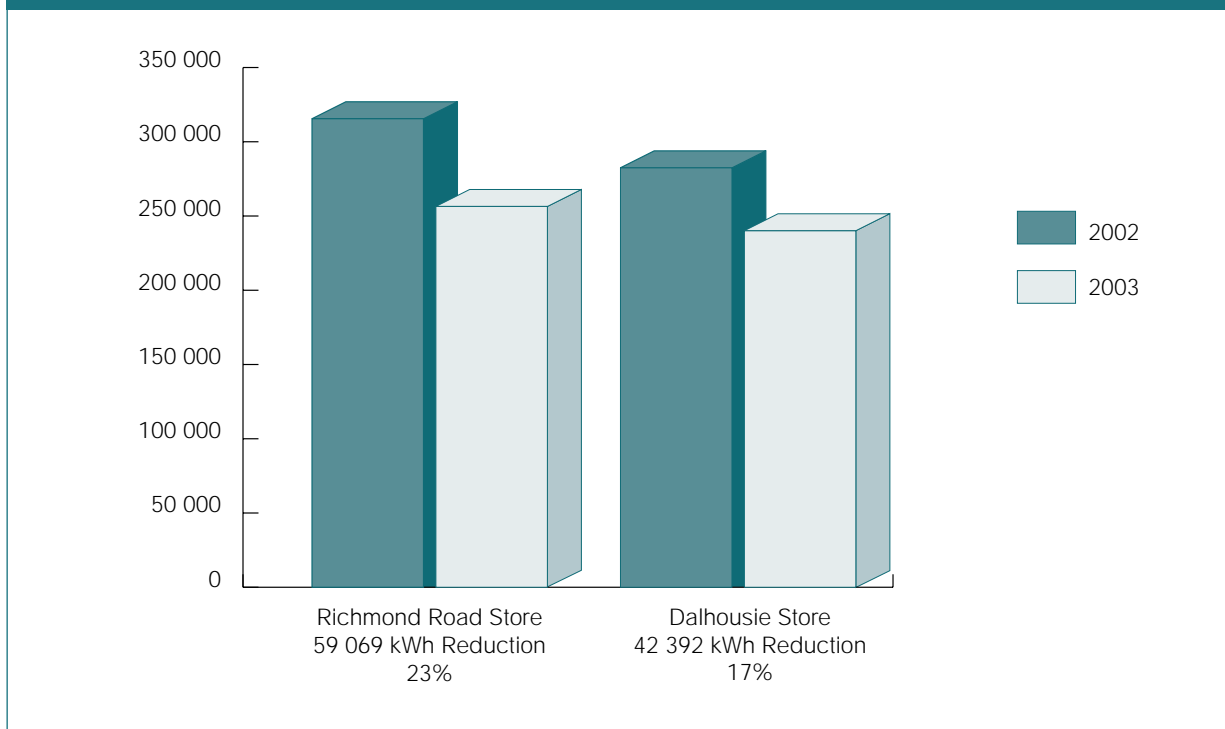
The six audited stores were scheduled to become a pilot energy retrofit project under the EII's Energy Retrofit Assistance. Scheduled for completion in 2003, Calgary Co-op will replicate the pilot project in seven additional stores in 2004. According to Mr. Peterson, Calgary Co-op invested about \$230,000 on new controls and a variety of lighting and refrigeration upgrades at its Richmond Road store as part of the 2003 pilot project – an investment that should pay for itself in just three years and lead to permanent savings after that. Every dollar that Calgary Co-op can save on electricity will benefit its bottom line and, ultimately, benefit members who share any profits through annual patronage dividends.

Just one month after completing the first upgrades at the Richmond Road store, electricity use was 23 percent lower than it was during the same month the year before. At the Dalhousie store on Shaganappi Trail, energy use was down by 17 percent (see Table 1).

### Freezing out energy waste

Dramatic energy savings have been found through improvements to cooler and freezer sections. Replacing reach-in freezers in the grocery and meat departments with new glass-door freezers is projected to save about \$17,000 per year in energy costs at the Richmond Road store. These improvements also give stores a more modern appearance

Table 1. Energy retrofit results (kWh)





Freezer section



Meat section

and make working and shopping in the freezer aisle a lot more comfortable for employees and customers.

“Employees and customers were a little uncomfortable in the open freezer aisles,” says Mr. Peterson. “We had a hard time compensating with heating in these areas of the store. We were amazed at the difference the glass doors made. They exceeded our expectations.”

Installing head pressure reduction controls on the refrigeration compressor system should reduce energy costs at the same store by a further \$10,000 a year. On doors to the walk-in freezers and coolers, where groceries are stored, Calgary Co-op is installing alarms that sound and flash blue light after the door has been left open for more than 15 minutes.

“Employees are in and out of the coolers many times during the day, and often leave the door open,” says Mr. Peterson. “When the door is left open, the refrigeration equipment has to run much harder to maintain the temperatures inside.”

With these changes, refrigeration compressor run time is reduced, resulting in a substantial reduction in maintenance costs and potential savings of \$15,000 per year for each of the pilot-project stores.

## Lighting the way to energy savings

One straightforward opportunity for energy savings comes from simply turning off some lights. The general sales-floor lighting in some stores was so bright that track lighting over the produce was not highlighting the product the way it was intended. At the Richmond Road store, for example, two fluorescent tubes were removed from each of the four-tube ceiling light fixtures, saving about \$2,500 a year. Additional savings were found by grouping sales-floor lighting in zones and installing switches.

“In the past, those lights have been on 24 hours a day,” says Mr. Peterson. “Today, we’ve rezoned the circuits and connected them to a time clock, leaving only enough light for the cleaning crew after hours.” The result is a 50 percent reduction in lighting during off hours.

Motion sensors are replacing all light switches in washrooms, meeting rooms, offices, lunchrooms and walk-in freezers and coolers. The sensors are set to turn off lights after 10 minutes of inactivity.

“In these areas, some lights had previously been left on 13 hours a day, others even 24 hours a day,” says Mr. Peterson. The sensors could save up to \$3,000 per year in electricity costs at a single store.



*Outdoor global power regulator*

Outside streetlights and wall sconces are all being upgraded with energy-efficient light bulbs, for savings of about \$1,000 a year per store.

The pilot project also calls for testing new power regulators on inside and outside lighting. These units correct power and reduce, by a set percentage, the amount of electricity that a light uses, which also dims the lights slightly. This retrofit is being monitored to ensure maximum power reduction while ensuring sales do not decrease.

“It’s a fine line between reducing power and light output,” says Mr. Peterson. “But if the power-regulator technology does not dim the lights too much, it could help reduce lighting costs by 15 to 20 percent, which would save about \$3,000 per year at the Richmond Road store.”

Calgary Co-op is also experimenting with light-emitting diode (LED) signage on the exterior of buildings.

## A wide selection of energy savings

Also part of the pilot project is the installation of programmable day and night set-back thermostats with locking covers – projected to save about \$5,000 per store in reduced heating and air-conditioning costs every year. Thermostat covers that lock will ensure that optimal set-points on unit heaters in the vestibules and warehouses are maintained and temperatures remain consistent.



*Head pressure reduction controls for refrigeration compressor system*

Finally, Calgary Co-op is researching ways to recover heat from refrigeration systems.

“When we refrigerate something, we are removing heat, and most of the heat removed is expelled to the outside through condenser fans,” says Mr. Peterson. “We’re looking into ways to re-use that heat inside the stores. The opportunities for heat recovery look promising.”

## Bringing employees inside

In the spirit of co-operation, Calgary Co-op is involving its 3500 employees in efforts to become more energy efficient. Energy efficiency plans and results are posted on employee bulletin boards, in the employee newsletter and in the member newsletter, *Co-op News*.

“We are trying to excite our employees and involve them in what we’re doing,” says Mr. Peterson. “Managers are sending in other ideas for reducing power, and our employees are excited about the changes they are seeing and hearing about.”

In fact, it was thanks to an employee suggestion that light controls were hooked up to motion sensors in walk-in freezers, not just in office areas. Employees also responded enthusiastically to a Calgary Co-op logo contest for this program. The winning logo will be used on the energy management bulletin boards at all Calgary Co-op locations, letterhead and program materials.

The winning slogan was “A Greener World is in Our Hands” – a slogan that Calgary Co-op and its employees have taken to heart.



*Interior aisle of Co-op store*

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## For more information

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*Leading Canadians to Energy Efficiency at Home, at Work and on the Road*

The Office of Energy Efficiency of Natural Resources Canada  
strengthens and expands Canada's commitment to energy efficiency  
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