

400 McLevin Avenue

Residential

The Challenge

Nearly a decade ago, the high-rise condominium complex at 400 McLevin Avenue in Scarborough, Ontario was struggling with serious financial challenges. A sizable complex with 222 condominium units, the site's electricity and gas accounted for roughly \$550,000 CAD, nearly 60 percent of operating expenses. Faced with rising expenses and an additional budget pinch that included a 28 percent increase in facility maintenance fees, the owners of the complex needed to take some significant steps to bring down costs.

The first priority involved engaging the community in reducing their energy consumption, achieved through suite metering and automation, switching to LED lighting in common areas, and implementing various energy efficiency equipment. The next step of the strategy was to install an on-site-combined heat and power (CHP) system that could displace the purchase of utility-provided electricity. The new system, provided by Capstone Green Energy Distributor Vergent Power Solutions Inc. and installed by Vergent's installation partners, was one of very few installations of its kind in residential condominium buildings and a first to use Capstone CHP with absorption chilling in a condo application in Canada.



CHP has been a game-changer in our drive to control energy costs. We are very satisfied with our decision to choose Capstone microturbines, as we have minimal maintenance requirements and no complaints of noise or vibration from our residents"

— Zahir Antia, Secretary
MTCC 971

Power Profile

Customer

400 McLevin Avenue
residential facility

Location

Scarborough, Ontario, Canada

Commissioned

Phase 1 in 2017; Phase 2 in 2020;
Phase 3 in 2021

Fuel

Pipeline Natural Gas

Technologies

- 2 C65 Microturbines
- 1 PLC Remote Monitoring system
- 1 100-ton absorption chiller

Capstone Green Energy Distributor

Vergent Power Solutions, Inc.

A photograph of a modern high-rise residential building with many balconies, tinted in a solid green color. The building is set against a dark background.

**Smarter Energy
for a Cleaner Future**



Two C65 ICHP microturbines fueled by natural gas provides 400 McLevin, located in Scarborough, Ontario, reliable power while also reducing energy costs.

The Solution

Installed in 2017, the original system replaced an old boiler with a Capstone C65 ICHP microturbine unit, which generated electricity for over half of the electricity needs for the common areas. During the generation process, the waste heat provided the building and its residents with both hot water year-round and heat during the cold months of the year.

Building on the success of the CHP system and recognizing the potential for even greater energy savings and efficiency, the McLevin operations team decided to pursue a more robust trigeneration system. In 2020, they added a second C65 ICHP unit, and in the fall of 2021, they added a 100-ton direct exhaust absorption chiller capable of producing 81 tons of refrigeration from the combined exhaust of the two C65 microturbines. The result is an extremely efficient combined cooling heat and power solution that provides nearly all of the electricity for the common areas and is able to utilize all heat produced year-round. This includes air conditioning beginning in the summer of 2022, which, by offsetting the existing inefficient electric chiller, will result in even more savings.

Because the microturbines are compact and quiet, they were an ideal solution for this residential complex that has high requirements for seamless, non-intrusive delivery of electricity. Due to the compact design, the installation fit into their existing penthouse boiler room without the need for changes to the mechanical equipment layout or other structural modifications.

The Results

The reduction in energy costs for the complex has been dramatic. Savings on utility power alone reached \$90,000 CAD/year, and the nearly 75 percent average system efficiency

reduced electricity usage by 94 percent. Those reductions also translate to a lower carbon footprint and reduced emissions—something owners and tenants can feel great about—not to mention the overall system reliability, which delivers a 99 percent uptime with only scheduled maintenance requirements. Combined, the two C65 systems have operated for more than 40,000 hours and have generated more than 2,200 MWh during that time.

As energy costs continued to rise in the region, McLevin's electricity and gas budget decreased to \$210,000, less than half of what it was previously. As a result, energy costs fell to 21 percent of the complex's overall operating expenses. Combined with \$250,000 CAD in government incentives, the ongoing savings have yielded an attractive return on investment.

Capstone C65 ICHP Microturbine



A C65 Microturbine provides up to 65 kW of electrical power while the UL-Certified C65 ICHP provides up to an additional 150 kW of thermal power for CHP and CCHP applications.