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# CHP for Condominiums

By Luigi Benetton

Can Ontario condominiums get into combined heat and power (CHP)? At first blush, probably not. But certain entrepreneurs are striving to change the rules of this game.

## What is Combined Heat and Power?

When a generator resides in the same place where the electricity it produces is consumed, the location gets two types of usable energy: electricity and heat. The heat can take care of hot water and winter heating needs, while the electricity powers everything else. As a result, CHP systems can boast efficiency ratings upwards of 80 per cent. (The efficiency of a generator is the percentage of mechanical energy that gets turned into electricity.)

## Shortcomings of the Grid

Ontario condominiums get electricity from “the grid.” At one end, natural gas-fired power plants toil far from the vast majority of people who consume the electricity they generate at the other end. They attain between 32% and 38% efficiency. Much of the power they do generate gets lost as it travels hundreds of kilometres of transmission lines.

To top this, the heat energy produced dissipates uselessly into the atmosphere. As a result, utilities that locate power plants hundreds of kilometres away from where power is consumed end up burning far more fuel to generate that power than they would if they closed the distance gap.

## Why go CHP?

Many organizations, condominium corporations included, are considering the installation of generators to power buildings independently of the grid. One of the main arguments for doing so is that modern condo owners want to keep their iPhones and Teslas fully charged, even in the event of a power outage. (It should be

noted that, should a power outage occur, CHP-equipped condos would enjoy what experts call “sustained occupancy.”)

To determine if this is the best way to achieve its goals, boards may want to investigate the spark spread, which is the difference in cost between generating electricity on site and the price charged by their local utility. Presuming it costs less to generate electricity on site using natural gas, embedded power generation could result in significant cost savings.

## What does CHP cost?

The counter-argument to the cost-savings scenario is that finding the money to acquire generators can be difficult. It isn't unreasonable for generator capacity that can power mid-size to large condo buildings to cost hundreds of thousands of dollars to buy and install.

The cost makes sense. These generators would power a variety of systems, including hot and cold pressurized running water, fridges, stoves and heat, of course. Then there are the operating costs to consider, such as: natural gas, maintenance, repairs, and so forth. Finally, the condo must increase its reserve fund contribution to save for a replacement generator.

There's a silver lining in this cost cloud: if a generator powers life safety systems, it ensures the building meets provincial building code without the need for a separate generator. That makes for a combined heat and emergency power (CHeP) system.

## Financing CHP

*So where could the money come from?*

The Ontario *Condominium Act* obliges condominium corporations to set aside money for repair and replacement of existing assets. It irks many directors that this reserve fund can't be used to acquire new assets, but that's the law.

Condos also maintain operating accounts to pay recurring bills. These are (ideally) kept in the black, but only just. Many condos don't tend to keep anywhere near enough money in their operating accounts to purchase generators.

Any directors who try to implement a savings program for a fund outside reserve and operating using substantial increases in common element fees must be ready to face vehement opposition, no matter how good their intentions.

*What about borrowing the money? Would owners agree to take on long-term debt for this?*

Government incentives, like Ontario's “Behind the Meter Generation” incentive, that provides either 40% of the capital cost or \$200/MWh saved per year, whichever is less, can help condo corporations acquire generators. However those incentives just aren't enough.

To further discourage directors looking into natural gas generators, energy from non-renewable sources like natural gas doesn't qualify for feed-in tariff incentives. Therefore, even if a condo could “front” the money, it couldn't sell the energy it generates back to the grid.

Without a doable acquisition plan, major initiatives like this are difficult to sell.

## A New CHP Financing Model

While most condo corporations can't come up with the money to buy generators, certain CHP entrepreneurs can.

Model plans are being developed where condos don't pay a cent for acquisition and installation. Instead, they enter into energy service agreements (ESAs) with CHP providers. The CHP provider installs, maintains and owns the generators.

*How does the provider make money?* Condos buy all the useable energy (elec-

tricity and heat) that the generators can produce at market rates (or a little less – some providers may sweeten the pot by selling electricity generated at a discount). In essence, the CHP provider becomes a second electric utility to the condo.

The CHP provider's costs include the generators, installation, the gas its generators use, repairs, maintenance and monitoring. (These costs may be offset by government incentives.) Such contracts last more than a decade to both cover the cost of the generators and provide a return to the CHP provider.

The condo should be able to count on prompt, effective service and repairs. CHP systems "fail over" to the grid when generators stop, so residents will not notice. If they fail, the CHP provider must notice. Any downtime means lost revenue for the provider, so the incentive is there to fix any problems as quickly as possible.

Keeping the equipment running in good condition ought to prevent such problems in the first place. And if the condo owns the generators at the end of the contract, the CHP provider may sell maintenance and repair services to the condo presuming it has performed well during its ESA.

CHP exists in many contexts, but it's still new to the condominium industry. Condo boards will need to grapple with cost and financing models if they're serious about powering their own homes. ■



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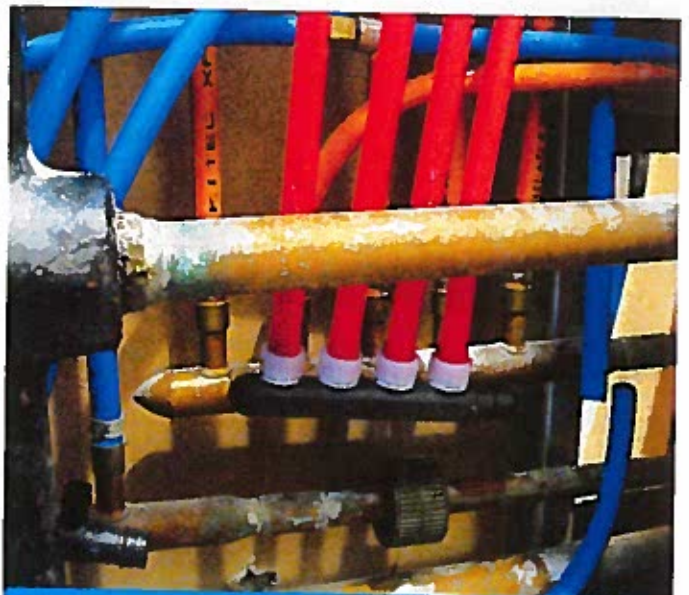


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