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MPV2
An EcoUrban Community

# GEOEXCHANGE

## FREQUENTLY ASKED QUESTIONS

ANSWERS TO IMPORTANT
**QUESTIONS**

# FAQ

## ABOUT GEOEXCHANGE

### What is a geoexchange system?

The mid-rise condominiums at MPV2 utilize geoexchange technology, an energy-efficient, low-carbon heating and cooling system that leverages the steady annual changing temperatures of the Earth to draw or expel heat from the ground as needed. In the winter months, the system provides heating by extracting warmth from the ground and distributes it into the building, and in the summer months, provides cooling by expelling heat from the building back into the Earth.

### What are the benefits of a geoexchange system?

- Geoexchange systems lower the carbon footprint of your home by reducing the amount of natural gas needed for heating and hot water. These systems are swapped for high-efficiency electric systems.
- Reducing energy consumption reduces exposure to escalating utility costs.
- Highly resilient against extreme weather. Since the temperature of the Earth fluctuates much less than the air, the system can offer more consistent heating and cooling, even on the hottest and coldest days of the year.
- Less heating and cooling equipment than a conventional building, therefore requiring less maintenance. This can also reduce the condominium's insurance premium.

### How much will I be reducing my home's carbon emissions?

This system reduces fossil fuel consumption for heating and hot water and contributes to the overall reduction of 40% in greenhouse gas emissions.

### What components of the condominium are serviced by the geoexchange system?

The mid-rise residential units, mid-rise common areas and shared amenities are serviced by the geoexchange system. Heating, cooling and hot water for the townhouse units are not serviced by the geoexchange system.

# ANSWERS TO IMPORTANT **QUESTIONS**

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### What equipment is required in each residential unit to support the geoexchange system?

Each suite will have heat-pump(s) that supply on-demand heating and cooling to the residential unit. On demand heating and cooling is possible because the heat-pump uses compressors to either extract or reject heat at will from the building heating/cooling distribution loop that is connected to the geoexchange system. Heat pumps are quiet and compact and are controlled by a programmable digital thermostat. Similar to a conventional system, the in-suite mechanical equipment is the responsibility of the homeowner.

### What equipment is required in the condominium to support the geoexchange system?

The system comprises of series of 59-vertical, closed loop underground pipes and pumping equipment that carry a heat transfer fluid (a non-toxic chemical, glycol, mixed with water) through the underground loops to exchange energy with the building heating and cooling distribution loop. The building heating/cooling distribution loop flows through residential unit and common-area heat pumps to supply heating and cooling. Excess heat in the geoexchange loop is also used to pre-heat the mid-rise tower's water to save energy in the domestic hot water boilers.

### Is 'geoexchange' the same as 'geothermal'?

Both terms have been used to describe this technology. However, 'geoexchange' is the more accurate term, since thermal energy is not extracted from the Earth, only 'exchanged' back and forth to supply low-carbon heating and cooling. 'Geothermal' is often used interchangeably, but more accurately refers to extracting the heat energy from deep within the Earth's crust (think of volcanic hot springs in Iceland).

### Where else has geoexchange technology been implemented?

Geoexchange systems are becoming increasingly common due to the rising popularity of low-carbon alternatives to natural gas but is by no means a 'new' technology. Over the past 30+ years, geoexchange technology has been and used in over 100,000 commercial buildings, multi-family and single-family residential homes across Ontario[1].

[1] Canadian Geoexchange Coalition. 2012. Canadian Geoexchange Heat Pump Industry Technology Roadmap: Final Report.

# ANSWERS TO IMPORTANT QUESTIONS

FAQ

### Is the geoexchange system safe to operate?

Geoexchange technology is extremely safe and can even be considered safer than conventional boiler and cooling tower technology since the on-site combustion of natural gas is reduced, and removal of some rooftop equipment including cooling towers. The fluid within the system is water mixed with glycol, a natural non-toxic liquid.

## COSTS, OWNERSHIP & RESPONSIBILITIES

### What will my monthly costs be as a homeowner?

As a homeowner, the geoexchange service is already included in your maintenance fees and your unit's electricity will be individually metered, as usual.

### How does geoexchange impact my maintenance fees?

The Geoexchange Capacity & Services Fee included in the condominium operating budget, is anticipated to be equal to or less than the projected savings in utility consumption and maintenance from the geoexchange system. Over time, it is anticipated that the annual savings increase due to the system's resiliency and energy savings compared to rising energy prices.

### What are my responsibilities as a unit-owner?

Your responsibilities are the same as with a conventional system, where any repair required to the in-suite mechanical equipment is the responsibility of the homeowner.

### What are the condominium's responsibilities?

The condominium is responsible for proper use and maintenance of the building's mechanical equipment. Your building's HVAC system will be professionally managed and maintained, just like any other heating and cooling system. There is redundancy built into the design of any multi-residential building to ensure timely service during the event of maintenance or repair. The energy used to operate the geoexchange system will be the responsibility of the condominium.

# ANSWERS TO IMPORTANT **QUESTIONS**

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### What are the geoexchange provider's responsibilities?

The geoexchange system itself will be monitored and maintained by the Geoexchange Services Provider to ensure smooth operation and longevity.

### If a buried geoexchange pipe is damaged what will happen?

The geothermal infrastructure is built with high-quality, high-density polyethylene piping, with a 50-year warranty, with an expected operating life much longer than this, making it a highly reliable system. In the unlikely event a repair is required, you could expect a similar timeline to one associated with a comparable issue affecting a conventional natural gas line. The Geoexchange Services Provider would be responsible for restoring heating and cooling within a timely manner or supplying a supplemental source of heating or cooling if loss of service occurs for an extended period.

### What happens during a power outage?

In the case of a power outage, a disruption to heating or cooling in the suite will occur until electricity is restored, similar to any multi-residential building with a conventional heating and cooling system. The backup generator to life safety services is still powered by natural gas, similar to a conventional building.