



GEOTHERMAL MULTI-UNIT COMMUNITIES – LOW CARBON CASE EXAMPLES | MARCH 12th, 2020

INTRODUCTION

Adam Alaica P.Eng, MASc | Engineering Manager | GeoSource Energy Inc.

- *Solutions developer*
- *Innovation, implementation, project execution*
- *Motivated to change the way to handle energy*
- *Professional Engineer in Ontario*
- *Holds a Master of Applied Science in Mechanical Engineering*
- *Experience in district and single building solutions*



WHO IS GEOSOURCE ENERGY INC.?

Geosource Energy is Canada's leading full service commercial geothermal contractor bringing highly efficient, low carbon, sustainable energy solutions to our clients.

Pillars to our success:

- Quality of work and reputation
- Innovation in design and construction/implementation methods
- Industry leadership and advocacy



OVERVIEW

- Technology Deployment
- Project References
- Case Example: The Plant
- Third-Party Geothermal Utility – How it Works

TECHNOLOGY DEPLOYMENT

- **Community Energy (District Energy):**
 - Project examples:
 - Alexandra District Utility, Lulu Island Energy
 - Whisper Valley

• **Single Building Systems:**

- There is a strong set of project precedence in for single building GSHP in North America and abroad:
 - Residential & Multi-Residential
 - Commercial & Retail
 - Institutional



Source: <https://www.kensaheatpumps.com/blog-district-ground-source-heat-pump-systems/>

PATHS FOR IMPLEMENTING GEO

Building Owned & Operated

- Developer fronts the incremental capex for system
- O&M responsibilities borne by the building operator
- Building realizes full operational savings

Building Owned w/ O&M Support

- Developer fronts the incremental capex for system
- O&M through external operator
- Building realizes almost full operational savings potential

Third Party Utility Model

- Developer no longer builds the central energy plant
- Third Party Utility turn-keys geothermal infrastructure
- Building and Utility engage in 30-year energy service contract

GEOHERMAL UTILITY SYSTEMS

A shortlist of success stories:

Developer	Project	Building Type
Windmill Development Group	The Plant, Toronto, Ontario	9 storey condominium with ground floor mixed use
	The Eddy, Ottawa, Ontario	6 storey condominium with ground floor mixed use
	Arch Lofts, Toronto, Ontario	3 storey condominium
LCH Developments	Merge Condos, Scarborough, Ontario	11 storey condominium
COLLECDEV	Tretti Condos, Toronto, Ontario	13 storey condominium with ground floor mixed use
New Horizon Development Group	Mint Condos, Oakville, Ontario	8 storey residential building
Fram Building Group	The Roxborough Retirement Residence, Newmarket, Ontario	6 storey seniors living building
	Four Elms Retirement Residence, Thornhill, Ontario	6 storey seniors living building
Castleridge Homes	Clairington Condos, Brampton, Ontario	11 storey condominium building

pumps.com/blog-district-pump-systems/

CASE EXAMPLE: THE PLANT

The Plant is a luxury housing in the middle of Liberty Village Toronto. Development features:

- Sustainability is at its core.
- A *third-party owned geothermal utility system*. 49 holes to 613 ft.
- Inspired by urban agriculture, with self watering aeroponic plant stands, kitchen cart compost, and more.



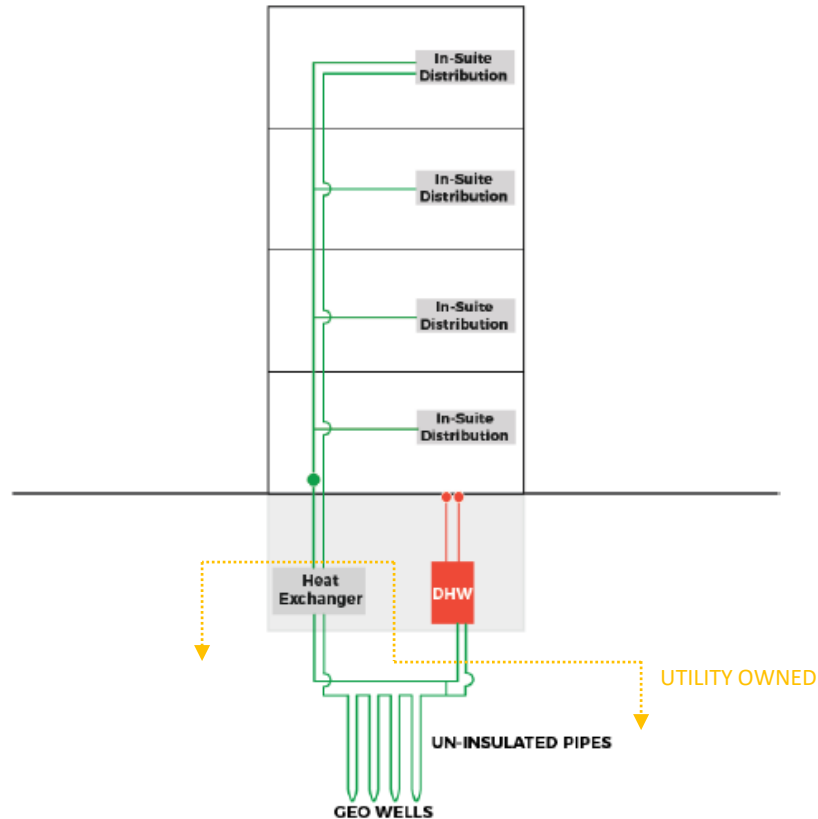
THE PLANT – SUCCESSES

This project's successes are:

- Geothermal HVAC system in operation, reducing up-to 90% of HVAC carbon emissions.
- About half a million in capital savings for the developer.
- No upfront capital cost to Tenants, with cost neutrality on day one.



WHAT THE GEOTHERMAL UTILITY OWNS



VALUE TO DEVELOPER

The values are as follows:

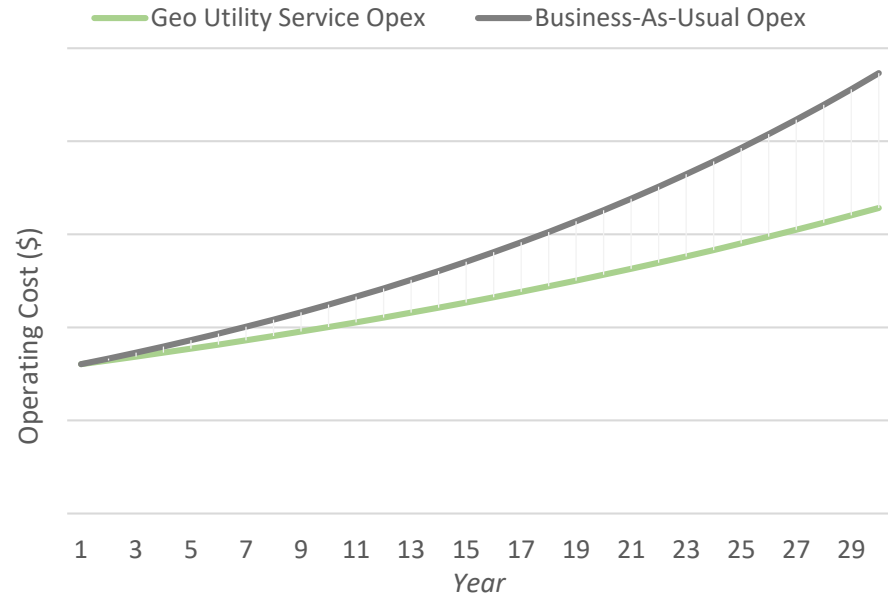
- ***Avoided Capital Cost & Penthouse Space***
- ***Future Proofed & Sustainable***
- ***Building Performance***

Itemized Incentives	
Total Avoided Plant Cost	✓
TGS Tier 2 Rebate	✓

VALUE TO TENANTS

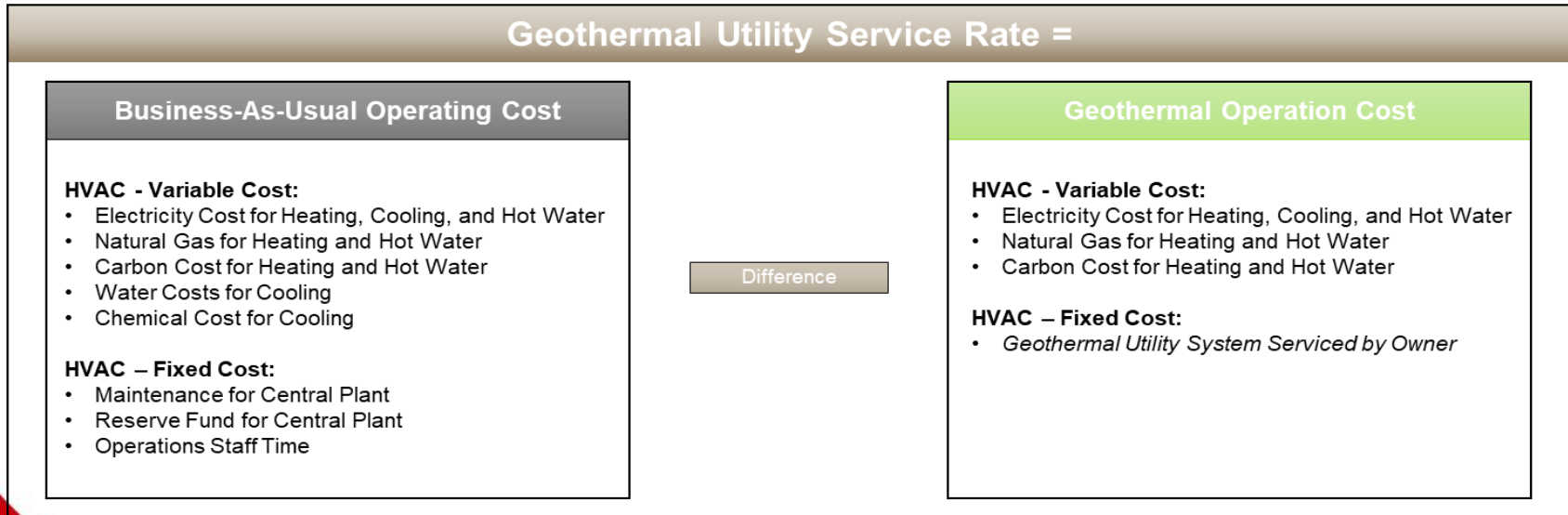
The values are as follows:

- ***Future Proofed & Sustainable***
- ***Cost Stability & Reduced Risk Building Performance***
- ***Partnered with Energy Experts***



UTILITY CONTRACT & RATES

Capacity contracts, fixed annual fee, fixed escalation, 30-year term.





THANK YOU



@geosrcenergy