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LEARNING FROM THE GROUND UP

GeoMicroDistrict Pilot: Installation, Evaluation and Research

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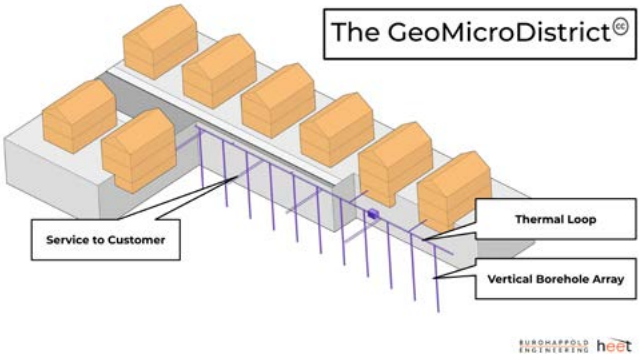
GeoMicroDistrict

HEET is an award-winning Massachusetts nonprofit that developed the GeoMicroDistrict concept and that aims to achieve two goals over the three-year project period:

1. **Evaluate the pilot GeoMicroDistrict capacity** a) meet annual heating and cooling demands for an approximately 100,000 sf dense, mixed-energy-use street segment b) minimize energy use and costs through optimization and management of bidirectional borehole thermal energy storage c) positively interact with the electric grid to increase resilience and reduce overall cost.

2. **Establish a standard method of GeoMicroDistrict research and evaluation** to inform policy makers and utilities of significant engineering and economic considerations and impacts of GeoMicroDistricts. By driving down costs and risks, the aim is to develop a business case for utilities to install networked geothermal systems, driving rapid market transformation.

GeoMicroDistricts use bidirectional borehole thermal energy storage (BTES) as the prime source of thermal energy for buildings. A subsurface ambient temperature water loop, maintained at 40-80°F across seasons, delivers that temperature through service lines to buildings. The use of an ambient-loop interface between the BTES and the buildings permits utility-scale thermal management while reducing total energy load needed through load sharing and load cancelling. GeoMicroDistricts interconnect like Lego® blocks, building thermal energy grids that combine the efficiency of utility-scale load with the ability to island.



As the utility Eversource constructs a pilot, HEET plans to lead a team that:

- Develops physical and system models to optimize design and assess performance, verified through in-field measurement (UC Berkeley, LBNL, NREL)
- Evaluate health and safety impacts (Harvard)
- Measure baseline and projected grid interactions (NREL, MIT)
- Analyze actual and projected financial data (Buro Happold Engineering, MIT).

GeoMicroDistricts can be a safer, better business model for gas distribution companies, provide equitable access to renewable heat for customers, and drive electrification to meet state goals without overburdening the grid.