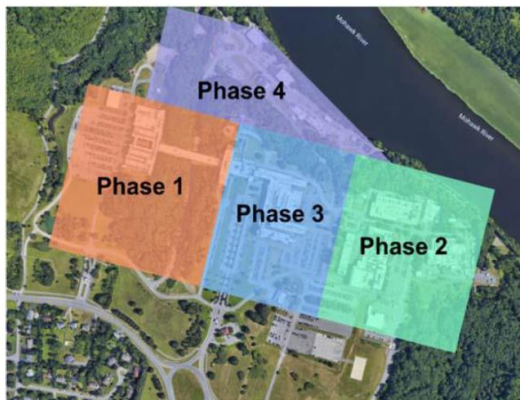
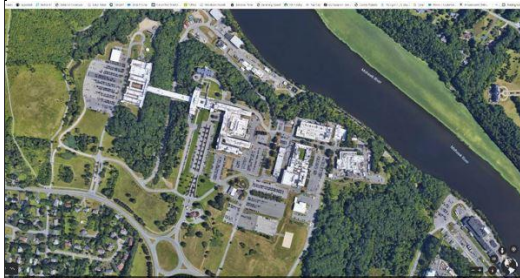


**GE Research Campus
Community Heat Pump
Project, Niskayuna, NY
Category A Feasibility Study
NYSERDA PON 4614**

Schenectady County

Technical Lead: Aztech Geothermal
and ME Engineering

Anticipated completion of
study/availability of final report:
December 2022



V1 6/2022

The Site & Beneficiaries

GE Research with Aztech Geothermal and ME Engineering will assess site-wide building HVAC electrification on a district ambient loop supported by geothermal fields for one of the world’s most diversified industrial research labs supplying innovative technology for all GE businesses. The site consists of 22 buildings totaling 1.5 million sf over 550 acres and encompasses labs, offices, common, production, and mechanical spaces. GE Research seeks to reduce overall site GHG by 50 percent by 2030 by converting to highly efficient geothermal heat pumps, which can also provide a level of on-site and regional electric resiliency. The system will allow for curtailment during demand response periods, contributing to peak electric load reductions and serving as a model for industrial and corporate campuses.

Potential Thermal Resource

GE Research presently has a district-style central steam and central chiller plant with several building-specific chillers to cover intermittent process loads. The campus is a prime example for load diversity with adjacent buildings having very different load profiles due to the buildings’ primary purpose, a changing research focus, and sometimes with accompanying large variations in occupancy. With separate heating and cooling, the broader application of heat pumps will allow for heat recovery and simultaneous heating and cooling opportunities within buildings.

Potential Configuration

A networked ambient temperature loop (ATL) will allow sharing of energy between buildings whenever load profiles are complementary. With a history of large shifts in usage patterns for buildings, individual ground loops may be underutilized, oversized, or undersized, while the impact of the change on a larger networked system can be more easily absorbed. There are also several hundred tons of underutilized cooling tower capacity that can be employed to modulate the ATL during high heat rejection periods. Based on load profiles, historical usage patterns, and building proximity, the project team anticipates a significant reduction in areas such as vertical closed loop boreholes due to the ability to shift thermal energy where it’s needed and the ability to reject heat through what are presently building-specific cooling towers.