

**Union College
Category A Feasibility Study
NYSERDA PON 4614**

Schenectady County

Technical Lead: CHA Consulting



The Site & Beneficiaries

Founded in 1795, Union College was the first college chartered by the Board of Regents of the State of New York. Union College is a small, independent liberal arts college committed to integrating the arts, humanities and social sciences with science and engineering. The campus has more than two million square feet and more than 100 buildings. The study will review two different campus building clusters: the northeast and western sections of campus, primarily campus residences. The study of the western cluster will look at the feasibility of including off campus customers such as Schenectady Fire Station #4 and Golub Corporation headquarters. The study of the northeastern cluster will look at the feasibility of including a campus fieldhouse and ice rink. Each cluster will therefore have differing loads and periods of use. An additional, third project phase is also being considered, which looks to provide geothermal to support heating and cooling of the Nott Memorial as well as potentially additional adjacent residence and chapel buildings.

Potential Thermal Resources

The primary heat source and sink will be loop fields installed under campus green space. Utilizing waste heat from on-campus wastewater will also be investigated.

Potential Configuration

The project will explore the replacement of standalone natural gas hot water boilers with a two-pipe, ambient loop community heat pump district system. An ambient loop system would circulate variable temperature water to connected buildings via supply and return pipes. Pumping equipment at the central plant would dynamically match the ambient loop's thermal demand. Additional configurations will be considered in specific areas of each district, where potential distribution of chilled and hot water may be more appropriate such as for the existing dormitory quads, the Fox and Davidson facilities, which are currently served by a central mini-plant.