

**Union College
Category B: Design Study
NYSERDA PON 4614**

Schenectady County

Technical Lead:
CHA Consulting, Inc.



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The Site & Beneficiaries

Union College, a private college located in Schenectady, is designing a district energy system to supply low carbon heating and cooling to five campus buildings. The approximately 140,000 square feet of conditioned space will include residence halls and exhibit/event space. A previously completed scoping study, recommends two additional phases of the district system for future expansion. One key benefit to this first phase of the project will be the addition of cooling to the residence halls. This allows for increased summertime use and improved student comfort, in the face of increasing occurrences of extreme heat. Additionally, the historic Nott Memorial will benefit from dehumidification for the building.

Potential Thermal Resources

The primary thermal resource will be a vertical closed-loop ground heat exchanger. An 800-foot deep borefield will be installed in the Rugby Field to access the geothermal resource. The campus's existing steam system will supplement the district system to maintain an annual thermal balance because the system thermal loads are heating dominant.

Potential Configuration

The proposed system design is a one-pipe ambient temperature loop circulating a propylene glycol mixture, operating between 30°F and 80°F. It will serve heat pumps chillers at the connected buildings. An existing onsite combined cooling, heating, and power plant could provide back up power for distribution pumps. Demand response measures and electrical infrastructure upgrades are being considered.