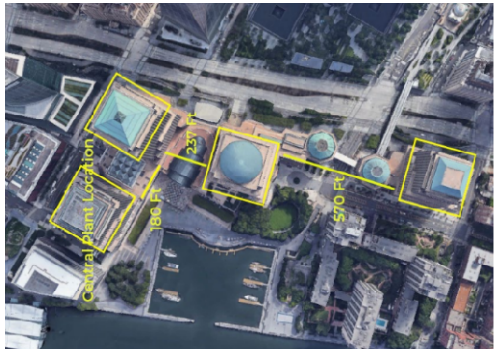
Brookfield Place
Category B: Design
NYSERDA PON 4614

New York City County

Technical Lead: Smith Engineering



The Site & Beneficiaries

Brookfield Place, covering eight million square feet in lower Manhattan, comprises four buildings (200 Liberty Street, 225 Liberty Street, 200 Vesey Street, and 250 Vesey Street). Constructed in the 1980s, these buildings have a central utility plant located at 250 Vesey Street, which makes it easier to support shared power. The existing system utilizes river water for heat exchange and has undergone upgrades to support thermal storage, variable frequency drives (VFDs), and modern building automation. A Community Heat Pump feasibility study assessing two options (centralized, decentralized) was performed by Smith Engineering on behalf of Brookfield Properties. The study consisted of a survey of existing equipment and infrastructure, an energy model for proposed system operations, cost-benefit evaluations, and a proposed schematic for modifications. The cost-benefit analysis of doing four decentralized heat pumps proved to be less cost-effective.

Potential Thermal Resources

The chilled water plant at 250 Vesey Street currently consists of 10 chillers, thermal storage tanks, and river water heat exchangers for heat rejection. Steam is delivered via ConEd Steam, with multiple locations across the buildings. Proposed modifications discovered in the study include installing 2 central heat pump plants, replacement of select steam coils with heating hot water coils, steam to hot water domestic hot water heaters, and replacement of two 1980s chillers with modern heat pumps.

Potential Configuration

The feasibility study previously performed, analyzed a centralized and decentralized heat pump system into the group of buildings. The study found that replacement of two 1980s chillers with two 1250 Ton Heat Pumps, using a centralized approach, was found to have the greatest cost-benefit and energy efficiency.