

Reducing peak demand with an ice thermal energy storage system

Case Study

Company Name:
New Water Street Corporation

Energy Storage Type:
Ice Thermal Storage
(16,000 ton hours)

Business Type:
Class-A Commercial
Office Building
53 floors (3.5 million sq. ft.)

Location:
Manhattan, NY

Project Highlights

Storage capacity:
Up to 12.6 MWh

Summer peak demand reduction:
Up to 2.1 MW

Annual benefits:
\$2.5 million

55 Water Street, built in 1972 and located in Manhattan's financial district, needed to reduce its electric demand during peak hours. The building owners wanted to reduce operating costs by lowering demand charges while maintaining its commitment to reducing its environmental impact. After consideration and comparison, an ice thermal energy storage system was selected. This enabled them to reduce their summer peak demand by 2.1 megawatts (MW), resulting in \$2.5 million in annual cost savings according to the project's developer.

The building owners worked with Trane® to replace a 3,700-ton steam-driven chiller and a 2,000-ton electrical chiller with the highly efficient ice thermal storage system. The project consisted of one 2,000-ton glycol chiller, three 200hp glycol pumps with variable frequency drives (VFDs) and CALMAC® ice storage tanks that are charged via a glycol chiller during off-peak hours. The ice that is produced over night displaces an electric chiller that would normally operate during peak hours. This approach results in a permanent peak demand reduction.

"We invested in the chiller plant upgrade and thermal storage system to meet our ongoing commitment to our tenants and the community to reduce the building's impact on the environment, provide resiliency, and create value. Since its implementation, the performance of the system has exceeded our expectations – reducing ongoing energy usage and improving the reliability of the electricity grid locally."

—Dan Palino, CFO New Water Street Corporation

Find information on energy storage value streams, project and feasibility funding, and technical assistance.

visit nyserdera.ny.gov/Energy-Storage or email energystorage@nyserdera.ny.gov