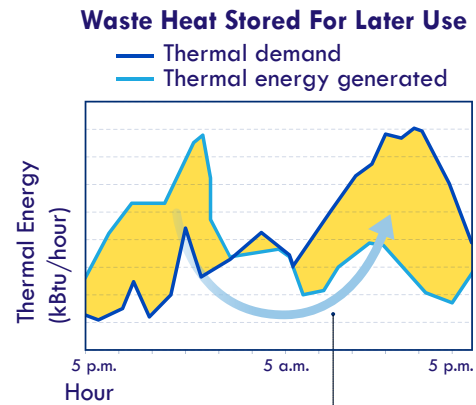
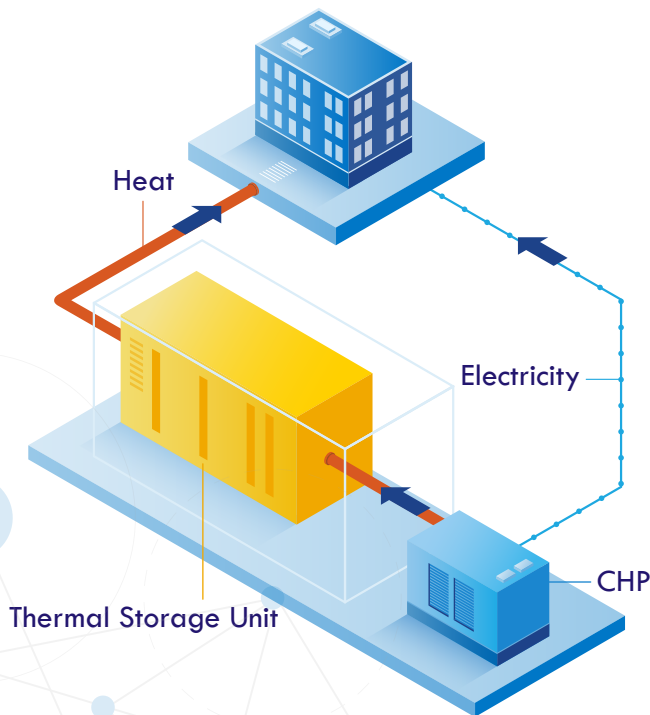


GETTING THE MOST OUT OF CHP

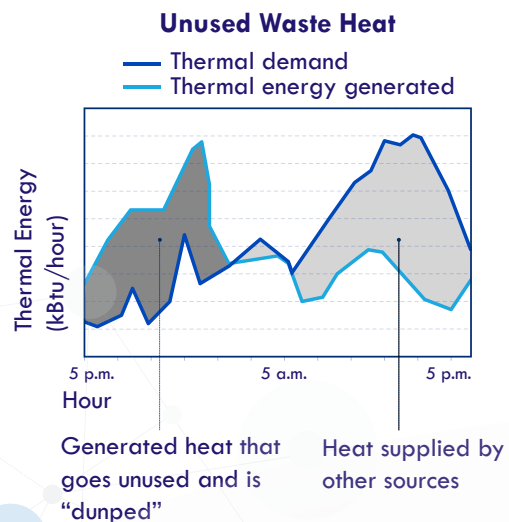
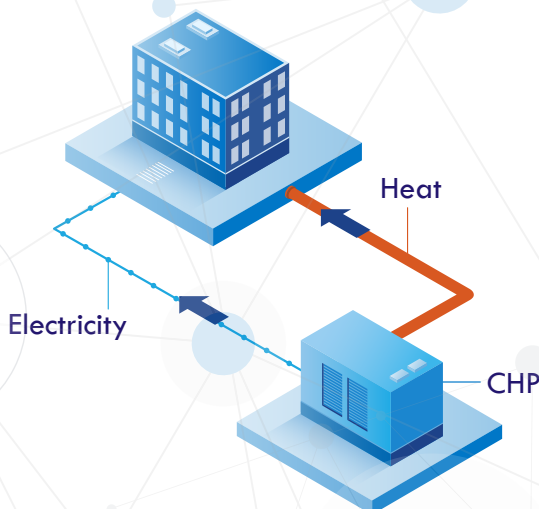
INTEGRATING THERMAL ENERGY STORAGE WITH A COMBINED HEAT & POWER SYSTEM (CHP)

CHP + THERMAL STORAGE SYSTEM



Excess generated heat is put into thermal storage and used during peak thermal demands

TYPICAL CHP SYSTEM (WITHOUT THERMAL STORAGE)



GETTING THE MOST OUT OF CHP

INTEGRATING THERMAL ENERGY STORAGE WITH A COMBINED HEAT & POWER SYSTEM (CHP)

The New York Power Authority (NYPA) is partnering with Brenmiller Energy, an Israeli developer and manufacturer of thermal energy storage systems, on a joint research and development project to develop and demonstrate a thermal energy storage-based combined heat and power (CHP) system as a means to increase energy efficiency and reduce greenhouse gas emissions. The project will help achieve Governor Andrew M. Cuomo's goal of a cleaner and more resilient energy system and accelerate progress toward the Governor's initiatives to deploy 1,500 MW of energy storage by 2025 and to reduce greenhouse gas emissions by 40 percent from 1990 levels by 2030.

A CHP system combines power generation with heat recovery. With its ability to recover the thermal energy (heat) produced when generating electricity and normally lost through the exhaust system, a CHP system achieves both fuel savings and reductions in greenhouse gas (GHG) emissions. The heat recovered by a CHP system must typically be used when the electricity is produced.

This means the most efficient CHP applications are those where CHP is operated continuously at a facility with continuous thermal demand that coincides with electrical demand.

However, many facilities don't operate in this manner, and the efficiency of a CHP system can be significantly reduced if part of the recovered heat is lost when the electricity demand and thermal demand do not coincide. Innovative thermal storage solutions can address this issue and improve CHP system efficiency by storing thermal energy that would normally be wasted and using it when there is increased thermal demand.

NYPA and Brenmiller Energy's groundbreaking project will investigate thermal energy storage as a means to improve the efficiency of a typical CHP system. The project's goal is to refine Brenmiller's storage system and integrate it with a new CHP system on the campus of Purchase College, State University of New York. When complete, it will consist of a thermal storage unit paired with a typical CHP system. The innovative demo system will supply electricity and heating to the physical education building and will serve as a reference for potential future installations of such systems in the U.S.

Preliminary estimates indicate that the CHP and thermal storage system will provide an annual energy savings of 10,000 MMBtu (million British thermal units) and an annual greenhouse gas reduction of 550 MTCO₂e (metric tons of CO₂ equivalent emissions).

The project is supported by a \$1 million award from the Israel - U.S. Binational Industrial Research and Development (BIRD) Foundation Energy Program, which is funded by the U.S. Department of Energy, Israel's Ministry of Energy, and the Israel Innovation Authority. The BIRD Foundation matches U.S. and Israeli companies and researchers in technology related work and offers funding for promising projects that have commercialization potential, ability to lead to energy savings, and a significant impact on the environment.

The partnership between NYPA and Brenmiller Energy introduces Brenmiller's advanced storage technology into the U.S. energy market and moves both entities further toward their energy, climate and resiliency targets. A leading international collaboration, this effort to develop and refine energy storage innovation will benefit both the U.S. and Israel, supporting mutual goals in energy independence and efficiency.



**NY Power
Authority**