ICERACK™
Resiliency for Refrigeration

A PRODUCT OF: MichaelsEnergy

REDUCING ENERGY USE in a Walk-In Freezer with IceRack™

PROJECT SNAPSHOT

- Evaluation Method: Weather-normalized M&V (ASHRAE Guideline 14)
- Technology: IceRack™ Thermal Energy Storage
- Facility: Food Production Facility
- Location: Midwest United States
- Application: Walk-In Freezer
- Freezer Size: 500 sq ft

THE CHALLENGE

Many energy technologies are designed for large refrigeration systems, but smaller commercial and industrial freezers also face rising energy costs and reliability concerns.

A food production facility in the Midwest wanted to evaluate whether thermal energy storage could reduce refrigeration energy use in a 500 sq ft walk-in freezer without requiring changes to its existing system controls.

THE SOLUTION

IceRack™ thermal energy storage modules were installed directly inside the freezer. The system operates passively, charging and discharging thermal energy as the refrigeration system cycles, without requiring additional controls or changes to freezer setpoints.

To evaluate performance, engineers developed a weather-normalized baseline model using daily energy consumption and outdoor air temperature. The model showed strong statistical performance with CV(RMSE) of approximately 4.3% and negligible bias, meeting ASHRAE Guideline 14 standards for measurement and verification. Post-installation energy use was then compared against the modeled baseline to determine the impact of the IceRack™ installation.

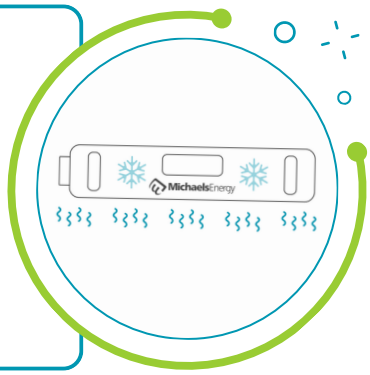
RESULTS

- **23% Average**
  Daily Energy Reduction
- **Up to 30%**
  Energy Reduction on Some Days
- **4.3% CV(RMSE)**
  Baseline Model Accuracy

Measured performance showed consistent reductions in refrigeration energy consumption.

KEY TAKEAWAY

This project demonstrates that **IceRack™ thermal energy storage can deliver meaningful energy savings not only in large cold storage warehouses but also in smaller refrigeration systems like walk-in freezers.** Because the system operates passively and does not require control changes, it can integrate easily with existing refrigeration equipment while still delivering measurable performance improvements.



Explore more at MichaelsEnergy.com/IceRack