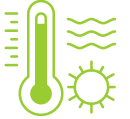




A PRODUCT OF:  
**MichaelsEnergy**

# REDUCING ENERGY USE in a Tropical Cold Storage Facility with IceRack™



## PROJECT SNAPSHOT

- **Role:** Engineering, commissioning, and performance verification
- **Technology:** IceRack™ Thermal Energy Storage
- **Facility:** Refrigerated Distribution Center
- **Refrigeration System:** Transcritical CO<sub>2</sub>
- **Location:** Central America
- **Size:** 70,000 sq ft



## THE CHALLENGE

Operating refrigeration systems in tropical climates presents unique challenges. High ambient temperatures and humidity increase condensing pressures and reduce system efficiency, driving higher energy costs.

A newly constructed 70,000 sq ft refrigerated distribution center in Central America sought a way to improve refrigeration performance while adding operational resilience.

## THE SOLUTION

The facility deployed IceRack™ thermal energy storage as part of its refrigeration optimization strategy. Michaels Energy served as solution advisor and commissioning lead, working with a local integration partner to implement the system and verify performance.

The installation included LoRaWAN wireless monitoring, enabling real-time tracking of refrigeration conditions, humidity, and thermal storage performance across the facility. Continuous commissioning tools provided visibility into system operation and helped identify operational issues such as dew point conditions and gas cooler performance during load shedding.

## RESULTS

- **159,766 kWh Annual Energy Savings**
- **\$54,600 Annual Cost Savings**
- **4.8 Years' Simple Payback\***
- **19% IRR 10-Year Return\***

*Measurement and verification performed using regression modeling aligned with ASHRAE Guideline 14 / IPMVP.*

*\*With tax incentives in the U.S., project improves to 2.9-year payback and 32% IRR.*

## KEY TAKEAWAY

This project demonstrates that **IceRack™ thermal energy storage can improve refrigeration performance and reduce energy costs even in high-temperature, high-humidity tropical environments.** When paired with continuous monitoring and commissioning, the system provides both measurable savings and improved operational visibility.

