



Case Study

Whole Foods Market

San Jose, CA

Whole Foods needed an energy solution that would support its sustainability goals. Unison Energy's highly efficient CHP installation, combined with an innovative natural refrigerant system, puts the San Jose store ahead of similar stores in achieving these goals.

Whole Foods Market is among the most recognizable brands in America, known as much for fresh and high-quality food as it is for corporate responsibility, especially in regard to the environment. The Whole Foods team in San Jose, California, sought an energy solution for its grocery and brewery that would reduce operating costs and fit its site limitations, while achieving ambitious corporate sustainability goals. In particular, this solution needed to integrate with the store's specialized CO₂ refrigeration system, which accounts for close to 60% of its total energy use.

In 2015, Whole Foods partnered with Unison Energy to implement a custom combined heat and power (CHP) system that could operate as a microgrid during utility outages. Roof-mounted to save space, this CHP system features two 160 kW reciprocating natural gas engines that cover over 95% of store energy needs and continue to operate even during grid failures, preventing costly food spoilage.

Moreover, the CHP system has proven to be an effective solution for running the store's CO₂ refrigeration system. CO₂ is increasingly used for refrigeration because traditional refrigerants, like R407A, are hazardous to the environment if a leak occurs. However, CO₂ systems require colder ambient temperatures — otherwise, they become less efficient and

320 kW of installed electric capacity
operating at 69% efficiency

55db sound enclosure

Patented absorption chiller integration
with HillPhoenix CO₂ refrigeration
system using all natural refrigerants

Roof-mounted to save on space

Load following and island mode
capabilities

Carbon footprint reduced by 14%
or 230 tons per year*

480 V operating voltage

*EPA non-baseload emissions data (eGRID 2016)



Unison Energy's CHP system enabled one of the most energy-efficient natural refrigerant systems at any Whole Foods.

consume enormous amounts of power. Unison Energy designed the Whole Foods CHP system to utilize the waste heat with a lithium bromide absorption chiller, which sends chilled water to the CO₂ refrigeration system to keep it at its most efficient operating point.

The resulting system has an energy consumption rate of about 1.3 kWh/MBH, making it one of the most energy-efficient natural refrigerant systems that any Whole Foods has installed to date, according to a 2017 internal study performed by DC Engineering. What's more, this innovative solution for refrigeration earned a patent (Patent No. 9709302). The CHP system also integrates with the HVAC so that waste energy can heat water used in the store and the brewery. Unison Energy worked closely with Whole Foods to ensure the project was a success not just for the store, but for the community as well. Because this Whole Foods location is surrounded by apartments, it was critical that the store took steps to avoid noise complaints from the neighbors. Unison Energy installed sound enclosures that kept the system's operating noise at just 55 db, a noise level that allows for normal conversation while standing right next to the equipment.

Tristam Coffin, Director of Sustainability and Facilities for Whole Foods Market, noted that using cogeneration to power the natural refrigerant-based system offers not just energy efficiency, but also helps sustain operations even if the grid goes down. Thanks to Unison Energy, this Whole Foods location now has a resilient, efficient, and sustainable energy solution.

Unison Energy

Who We Are



We own and operate distributed generation systems that operate as microgrids.



We operate systems in CA, MD, NJ, and NY, with additional projects underway.



We finance projects on our balance sheet, with no outside capital required.



We design and implement our systems using internal engineering and project management teams.



We operate our sites using in-house field service technicians, engineers, and a 24/365 staffed monitoring center.