

Grocery and Specialty Food Stores

National food retailers reduce their energy spending and GHG emissions amid turbulent times

Heating and cooling are among the highest areas of energy consumption for every retailer. With extreme weather patterns increasing and natural gas prices surging, the costs associated with HVAC-related energy consumption will continue to rise. Managing HVAC energy use is especially challenging for grocery stores because they must balance peak demand and refrigeration loads with shopper comfort. Supermarket refrigeration alone can account for 50% of total energy use due to its massive size and continual freezer door openings. Because of this, lean facility teams tend to focus their maintenance efforts on these energy-intensive systems while HVAC systems understandably go undermaintained.

This case study examines how two well-known grocery chain customers with different store sizes and HVAC systems can automate HVAC energy savings and fault detection with scalable technology deployments.

Encycle demonstrates how it can help grocery store chains achieve substantial savings on their HVAC energy costs.

Client Challenge

- Achieve reductions in HVAC energy costs and consumption, especially during peak demand, without compromising comfort
- Increase management's ability to anticipate, prioritize, and schedule HVAC maintenance activities
- Reduce overall operational costs associated with HVAC rooftop units (RTUs) being undermaintained
- Meet greenhouse gas (GHG) emission reduction targets
- Maintain comfort in different climate zones, such as in-store kitchens and hot food self-serve displays that generate heat plus typical cool refrigerated aisles

Swarm Logic® Solution

For national food retailers with varying building sizes and cooling load capacities, Swarm Logic AI-enhanced technology can be integrated with existing building automation systems, enabling HVAC rooftop units (RTUs) to operate most efficiently in response to changing conditions such as outdoor temperature, building occupancy levels, and RTU performance. This Energy-as-a-Service (EaaS) approach allows customers to:

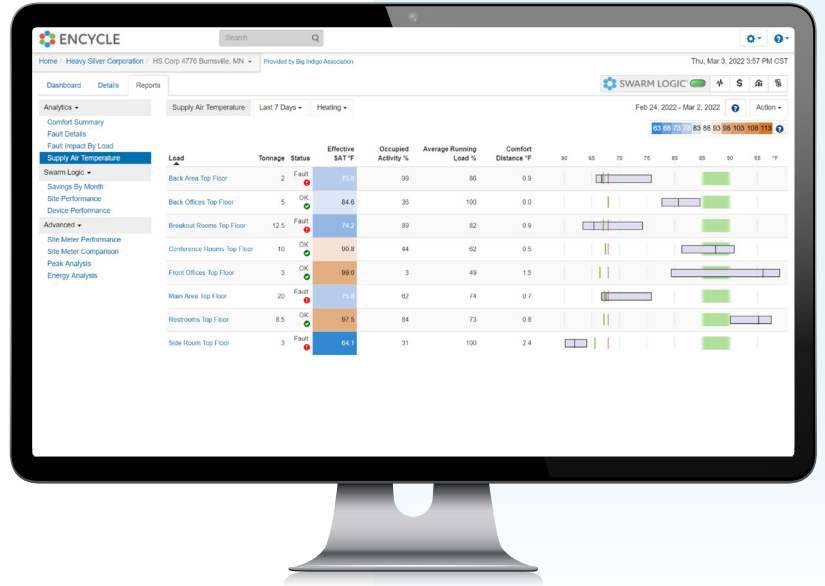
- Achieve a low cost of deployment
- Realize an attractive and almost immediate financial payback period
- Reduce peak electrical demand without affecting customer comfort



Swarm Logic energy management software allows micro-climates like kitchens to be assigned a higher priority. Being subscribed to Swarm Logic also provides customers with access to Swarm IQ™, Encycle's **automated RTU fault detection tool**. Swarm IQ identifies HVAC unit issues early on, so they can be remedied before refrigeration systems must work harder to make up for any cooling differences.

Swarm Logic Results

Both customers' sites are located in California, where outdoor temperatures often exceed 90° Fahrenheit. The table below illustrates the energy and emissions savings attainable for different building sizes and cooling load capacities.



Swarm IQ moves customers into proactive, preventive maintenance practices, leading to improved enterprise asset management and energy efficiency.

	Large Location	Supermarket	Small Format
Building size	78,000 ft ²	56,800 ft ²	31,075 ft ²
Cooling load capacity	171 tons	72 tons	44 tons
Peak demand savings	94 kW	45 kW	25 kW
Peak demand reduction	9%	10%	9%
Consumption savings	29,283 kWh	9,395 kWh	8,800 kWh
Consumption reduction	14%	8%	13%
Energy cost savings	\$ 4,750	\$ 2,569	\$ 1,400
CO₂ reduction (approx.)	22.9 tons	7.3 tons	6.9 tons

Encycle's multi-patented Swarm Logic® technology brings proven savings opportunities forward. Swarm Logic harnesses artificial intelligence (AI) to save grocery stores 10%-20% on HVAC-related energy consumption and emissions while providing intuitive insights into the health and operations of HVAC assets across entire buildings and portfolios.



Encycle Corporation
 420 N. Twin Oaks Valley Road #1028
 San Marcos, CA, USA 92069-9998
 1 855-875-4031
info@encycle.com
www.encycle.com