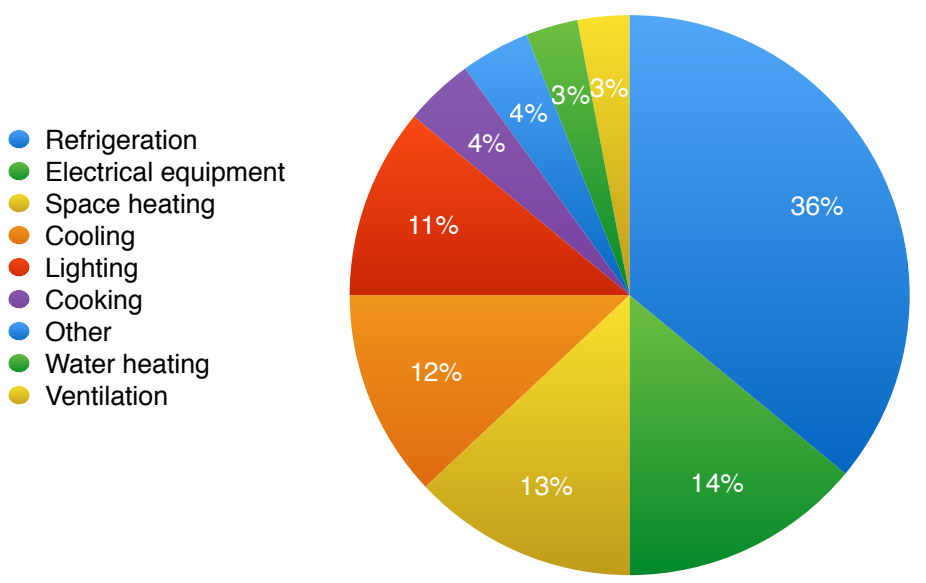
Energy Management For Grocery Stores

Sources: www.eia.gov/oog/info/ngw/ngupdate.asp
www.xcelenergy.com/
www.energystar.gov/

A typical Grocery store energy usage is as follows in the U.S.A.

Lighting	11%	
Space heating	13%	
Cooling	12%	
Sub total		36%
Refrigeration		36%
Electrical equipment	14%	
Cooking	4%	
Water heating	3%	
Ventilation	3%	
Other	4%	
Sub total		28%
Total		100%

Refrigeration	36%
Electrical equipment	14%
Space heating	13%
Cooling	12%
Lighting	11%
Cooking	4%
Other	4%
Water heating	3%
Ventilation	3%



Energy cost account for 15% of a grocery store's operating budget. 52.5 Kilowatt-hours (kWh) / square foot / year
Grocery stores in the U.S. use on average 38,000 Btu / square foot / year
Based on $ .10 / kWh
$6.50 / mmBtu

$5.45 / Square Foot / Year
217 kBtu / Square Foot / Year

No- and low-cost energy saving tips

Many grocery stores can benefit from low- or no-cost measures to reduce energy consumption.

TURNING THINGS OFF

* **Plugged-in devices.** Computers, cash registers, bar-code reader, deli scales or deli cooking equipment. "Smart" power strips with built-in occupancy sensors are available to shut off plugged-in devices.
* **Lights.** Turn off lights when they're not in use. Occupancy sensors can help.

TURNING THINGS DOWN

* HVAC temperature setbacks. During Closed hours, turn temperature settings down in warming seasons and up in cooling seasons.
* Special Use Rooms. Make sure that HVAC settings in warehouses, stockrooms, offices and other special-use rooms are at minimum settings.

CLEANING AND MAINTENANCE

* Check the economizer. An economizer that's stuck in the fully open position can add as much as 50% to a buildings energy bill.
* Change Filters. Change air conditioner filters every month.
* Clean condenser coils - Clean evaporator coils.
* Check for airflow. Hold your hand up to air registers to ensure that airflow is adequate. If there is little airflow or dirt and dust are found at the register, have a technician inspect your unit and duct work.
* Check temperature settings on refrigerated systems
* Add strip curtains to walk-ins
* Install occupancy sensors to walk-ins

UPGRADE TO MORE EFFICIENT LIGHTING. Changing refrigerated display-case lighting to light emitted diode (LED) light strips saves energy and has been shown to appeal to customers. LESs are more than 40% more efficient than T8 lamps.

OPTIMIZE REFRIGERATION

The optimization of refrigeration systems can reduce energy use by 24 percent relative to standard practice. The following measures yield the largest savings.

* Floating head pressure. Taking advantage of lower ambient temperatures to reduce refrigerat temperatures is a form of free cooling.
* Heat-recovery systems. Heat-recovery systems are available that capture waste heat from refrigerators to make hot water for use in the store. A 7.5 horsepower compressor can heat all of the hot water a midsize supermarket would use in its kitchen cleanup and bathroom sinks. Often enough waste heat is also available to supply hot water coils for space heating in cold weather.
* Anti-sweat heaters. The latest anti-sweat heater controls sense humidity in the store's ambient air and reduce the operation of their heaters in low-humidity conditions. They promise significant savings and quick payback, and they are relatively easy to install.
* "Smart" defrost controllers. When installed in walk-in freezers, a smart defrost controller monitors several variables and optimizes the number of daily defrost cycles. Adding these kits can save hundreds of dollars a year, depending on the size of the freezer.

USE SMART LIGHTING IN PARKING LOTS

Most parking lots are designed with far more lighting than the 1 foot-candle or lower average that the Illuminating Engineering Society of North America's Lighting Handbook (2000) recommends. Using lower-wattage bulbs can actually increase the safety of your lot - an overlit lot can be dangerous to drivers if their eyes cannot adjust quickly enough in the transition from highly lit to dark areas.