



# Energy Answers for Grocery Stores

A typical grocery or convenience store spends \$3.74 per square foot for electricity. The good news is that store owners and operators can lower these costs by implementing simple energy efficiency measures. These cost savings go straight to the bottom line. According to ENERGY STAR®, a 10% reduction in energy costs for the average supermarket can boost profit margins by as much as 6%. This fact sheet offers strategies for reducing energy use and resources for additional information.

## Ring Up Savings Store-wide

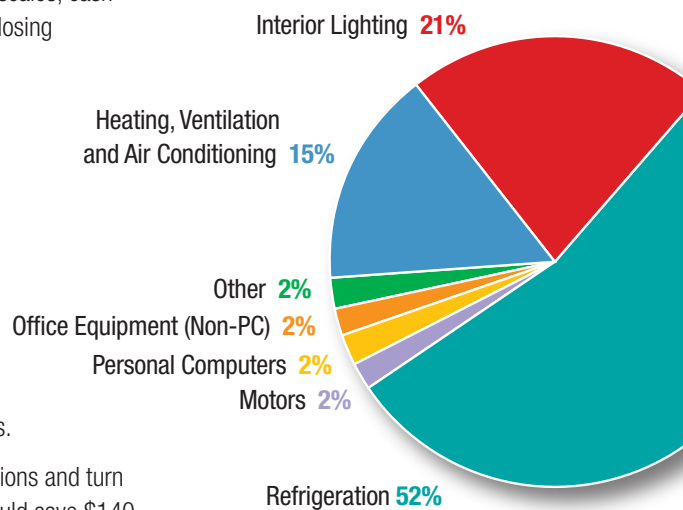
With one simple strategy you can start saving electricity from the check-out lanes to the loading docks: Switch it off. Turn off lights in break rooms, restrooms, and storage areas when unoccupied. Shut down computers and office equipment at night. Don't forget about vending machines, deli scales, cash registers, and anything else that's plugged in. Add these quick steps to your nightly store closing protocol. Get all the store associates involved to ensure success.

## Cut Your Losses

In Arizona, refrigeration accounts for more than 50% of the electricity bill for a large grocery store and almost 30% for a small store. Inefficient refrigeration shortens product life and increases waste. You can reduce this expense and improve the integrity of refrigerated products by implementing energy-saving strategies. Consider these measures:

- Replace old appliances with ENERGY STAR labeled commercial solid door refrigerators and freezers, which save up to 45% of electricity use compared to other models. Purchase high-efficiency ice makers and set production for off-peak hours.
- Install anti-sweat heater controls on display cases. These controls sense humidity conditions and turn the heaters off when unneeded, rather than allowing them to run 24 hours a day. You could save \$140 or more per sensor each year.
- Add energy-saving controls to reach-in beverage coolers to reduce energy use by an average of 40%.
- Install high-efficiency evaporative fan motors in refrigerated cases and walk-in coolers to reduce motor energy use by up to 70%. This measure also reduces the amount of heat generated by the motor that must be removed from the case.
- Add night covers to open cases to trap refrigerated air and keep food colder. The covers reduce electricity use by up to 40% and keep product temperatures lower for several hours after the covers are raised. This measure also reduces product loss and improves product integrity.
- Improve the efficiency of your walk-ins by adding strip curtains and checking floors for proper insulation levels. Switch incandescent lamps to ENERGY STAR qualified compact fluorescent lamps (CFLs) to reduce lighting energy use by 75% and cut the heat added by inefficient lamps. Install auto-closers on doors or use visible and audible "Door Open" signs to minimize loss of refrigerated air.
- Add glass doors to display cases to improve efficiency by 50%. Note: Seek professional assistance when conducting a retrofit to ensure compressor system is not oversized.

**Fig. 1 Electricity End-Use in a Typical Large Arizona Grocery Store**



## A BARGAIN ISN'T ALWAYS A BARGAIN

Purchase prices often drive procurement decisions, but you should keep the big picture in sight. Inefficient equipment may be the cheapest to buy, but it will cost more to operate. The lifetime operating cost of a small motor, for example, far exceeds the purchase price. Since a typical grocery store has 150-200 small motors, it makes good sense to choose an efficient motor and save up to 70% on operating costs.

- Conduct regular maintenance. Recharge low refrigerant. Clean condenser and evaporator coils. Replace torn or loose door gaskets. Insulate bare suction lines.
- Check current temperature settings with an accurate thermometer and adjust to manufacturer's recommendations as necessary. Check the defrost settings to prevent cycle from running longer than needed. A typical cycle is 15 minutes, four times daily.

## See Super Savings

Simple lighting improvements can produce significant savings. Lighting represents the second largest electricity expense for large grocery stores and the third largest for small stores. In addition, waste heat from inefficient lighting can add significantly to the cooling load. Consider these strategies for improving efficiency:

- Replace overhead T12 fluorescent lamps and magnetic ballasts with T8 fluorescent lamps and electronic ballasts to reduce lighting energy use by 15%-25%. T8s have superior color rendering than T12s, and new fixtures with electronic ballasts eliminate annoying flicker and emit less heat.
- Replace high output ballasts in refrigerated cases with "cold weather" electronic ballasts and install T8/T5 fluorescent lamps.
- Install occupancy sensors in restrooms, break rooms, storage areas, and walk-in refrigerators to save an average of 40% of lighting energy.
- Save \$20 per year for each incandescent exit sign you replace with an ENERGY STAR qualified model. These products also last up to 10 times longer.
- Consider installing skylights with daylight controls. Skylights reduce lighting energy use and create a more spacious feeling for customers. You can save 50% or more on lighting energy by implementing daylighting strategies.
- Use ENERGY STAR qualified CFLs with reflectors for spotlighting.
- Reduce lighting maintenance costs by 25% or more by replacing all lamps (group relamping) when they reach 70% of their expected life, rather than on a spot basis.

## Clip Cooling Costs

Consider these strategies for cutting cooling costs and maintaining comfort:

- Set a programmable thermostat to 79°F or higher during the day and use fans to feel five degrees cooler. Program the thermostat to raise the temperature even higher when your business is closed. For each degree you raise the temperature, you'll save 2-3% on your cooling costs.
- Larger facilities should consider installing a centralized energy management system. These systems provide more precise control over HVAC and other equipment, which can improve efficiency, reduce maintenance, minimize peak demand usage, and create a more comfortable environment.
- Add variable speed drives to air handlers to save 75% of energy use.
- Don't wait until it breaks! Schedule regular maintenance and tune-ups to keep air conditioning equipment running smoothly. Change filters regularly.
- Replace your aging or inoperable air conditioning system with an ENERGY STAR qualified model. Be sure the system is properly sized. Bigger isn't always better.

## SHARE YOUR SUCCESS STORY

Tell your customers and the community about your efforts to save energy and help the environment. Encourage employees to find ways to save energy at home. Become an ENERGY STAR partner.

### Can We Help?

APS offers incentives for qualified efficiency measures. Learn more about the Solutions for Business program at [aps.com](http://aps.com)

## Recommended Resources

APS: Solutions for Business, Energy Survey and "Ways to Save" Technology Fact Sheets  
[aps.com](http://aps.com)

ENERGY STAR: Appliances, HVAC, lighting, office equipment, and partner resources  
[www.energystar.gov](http://www.energystar.gov)

DEPARTMENT OF ENERGY:

Cost calculators for energy-efficient products  
[www1.eere.energy.gov/femp/procurement/eep\\_eccalculators.html](http://www1.eere.energy.gov/femp/procurement/eep_eccalculators.html)

Operations and Maintenance Best Practices Guide  
[www1.eere.energy.gov/femp/operations\\_maintenance/om\\_bpguide.html](http://www1.eere.energy.gov/femp/operations_maintenance/om_bpguide.html)

New Buildings Institute, Advanced Lighting Guidelines  
[www.newbuildings.org/ALG.htm](http://www.newbuildings.org/ALG.htm)