10 Ways to Slash Energy Costs & Reduce Budget Uncertainty

A Special Report for Large North American Grocery Retailers

Introduction

This report provides 10 ideas that large grocery retailers can use to reduce energy costs and budget uncertainty.

It focuses on the retail grocery industry because it consumes the largest amount of energy of any retail segment. Grocery retailers also operate on the narrowest margins. Consequently they have both the strongest incentive and the largest opportunities to enhance profit through energy management.

The emphasis is on *large* grocers for two reasons:

- They have the biggest incentive to reduce energy cost and budget uncertainty because they spend so much on energy.
- Their operations are so complex that energy management presents unique challenges that smaller grocers do not face.

Grocery retailers have the complex challenge of reducing operational costs while maintaining a pleasant shopping environment for customers.

The ideas in this report are likely to be of interest to senior executives and hands-on managers in:

- Energy Management
- Real Estate
- Procurement
- Construction
- Facilities
- Finance and Engineering.

They may also be useful to IT managers who work with store operations and facilities-management teams.

Improvement Through Day-to-Day Operations Versus Large Capital Projects

This document focuses on opportunities to reduce energy cost and budget uncertainty through improvements in day-to-day operations.

Experienced energy managers know that store redesign, remodeling and retrofitting projects present the biggest opportunities to achieve dramatic changes in energy efficiency. Many of the ideas you read here can apply equally to such projects.

Many of the concepts discussed in this report also apply to other large retail industries including department-store retailers.

Lessons for Other Retail Segments

While the discussion here is aimed at grocers, most of the principles in this report also apply to other large retailers -- especially drug and convenience chains, mass merchants, discounters, department-store retailers and big-box specialty retailers.

Insights from the World's Leading Grocers

The perspectives offered here come from the experience of Verisae, Inc., a technology and services company that has worked with dozens of leading grocery retailers in the United States and Europe for over 10 years. Verisae's clients include some of the biggest names in the industry, including Supervalu, Tesco, Sainsbury's, Walmart, Target, A&P, Fresh & Easy Neighborhood Market, Costco, Ahold, Giant Eagle, Hy-Vee Food Stores, Ingles Markets, Marsh Supermarkets, Bashas' and Coborn's. Many of the ideas presented in this report originated from Verisae's work with these clients.

If You Still Have a Capital Budget

New-store design, refurbish and retrofit projects present the biggest opportunities to make dramatic and long-lasting improvements in energy efficiency and budget certainty. Unfortunately, the economy has forced most retailers to cut way back on such projects.

When a company is already committed to spending significant amounts of money on capital improvements, shrewd energy managers can ride that momentum and achieve dramatic improvements in energy efficiency. Often without spending much or any additional money, you can substantially reduce long-term energy costs.

If you are lucky enough to be in a company that is spending on these types of projects, they provide a chance to eliminate the design flaws of existing stores and fix bad business and broken processes. They also provide an opportunity to improve a store's operational efficiency because design decisions affect daily operating costs – including the cost of energy -- for as long as a store stays open.

Conversely, capital projects that are conducted poorly could create significant hazards. The decisions you make at these times can have consequences you and your successors may regret for many years. Rising energy costs will further magnify any short sightedness or errors in judgment that cloud your decisions. Thus, capital projects must be planned properly to avoid false economies.

Make Do on a Leaner Diet

Companies committed to continuous improvement have shown that a steady stream of small refinements can yield huge results over time. Considering the current tightness of budgets, fine tuning may be as much as you can hope to do until the economy improves.

Whether you plan to make modest incremental improvements to ongoing operations or much bigger changes through big capital projects, you need vision, imagination and insight that is guided by solid information. This report focuses on the kinds of detailed information you will need and how to obtain them.

The Energy-Conservation Imperative

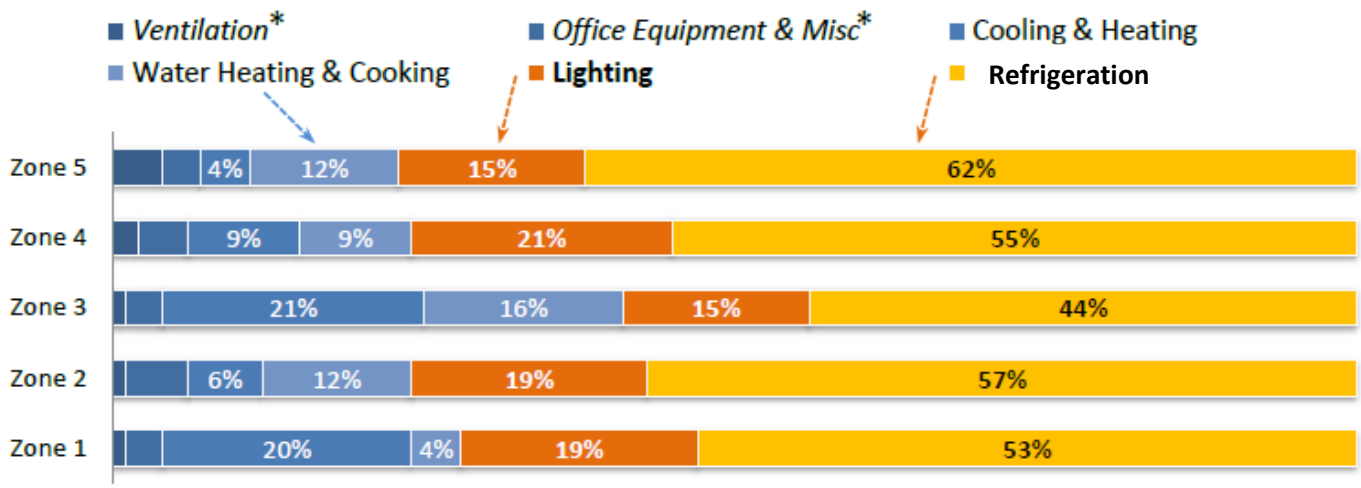
After payroll, energy is among the largest operating costs for any grocery retailer. Grocery stores in the United States spend an average of $3.94 per square foot on electricity and $0.24 per square foot on natural gas annually. The cost of utilities represents about 8% of Selling, General and Administrative Expenses (SG&A) and almost 2% of revenue.

Electricity is by far the largest component of utility costs. For the top U.S. retailers, it consistently represents 94% or more of total energy cost.

Chilling Numbers

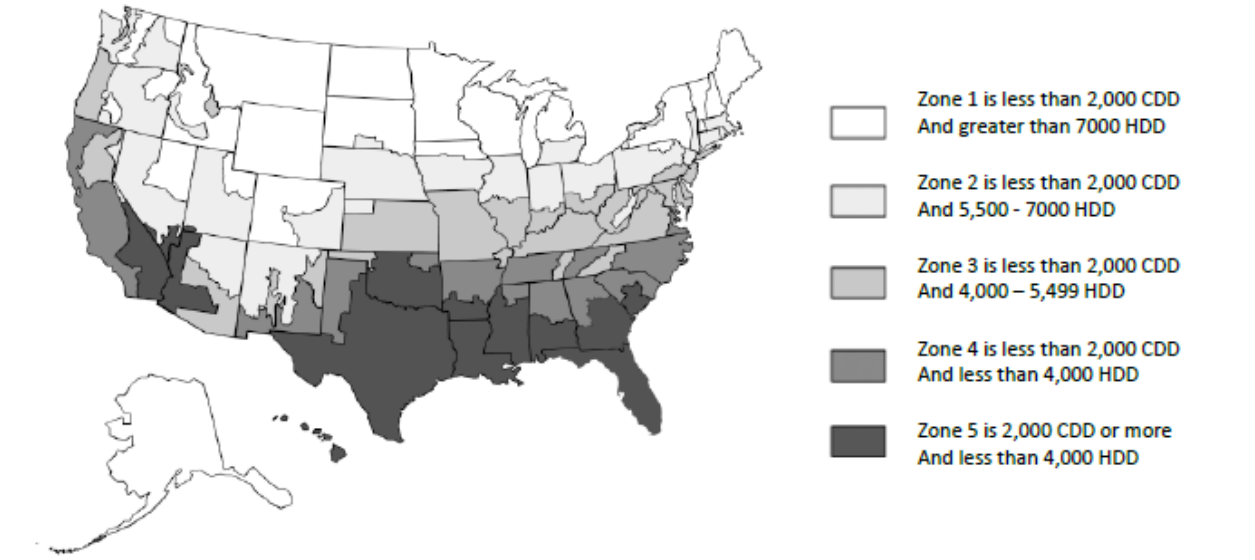
Refrigeration is clearly the largest single component of energy cost (Figure 1). Depending on climate zone (Figure 2), refrigeration may contribute from 44% to 62% of total energy consumption. The national average for refrigeration (Figure 3) is 54.2% across all climate zones.

Figure 1. Energy Consumption in U.S. Grocery Chains, by Climate Zone



Source: U.S. Energy Information Administration, 2002, E Source Co, LLC

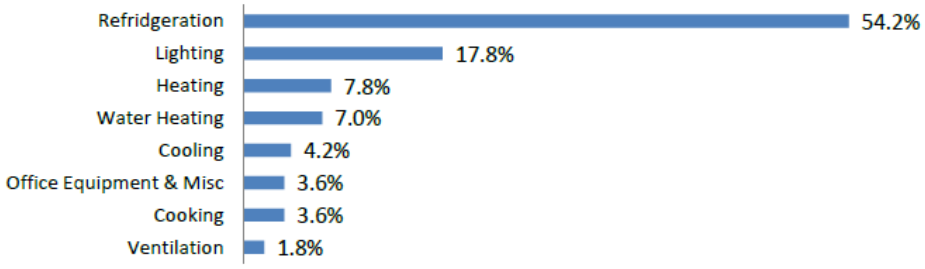
Figure 2. U.S. Climate Zones



Note: CDD = cooling degree day; HDD = heating degree day

Source: U.S. Energy Information Administration, 2002 E Source Co, LLC

Figure 3. Average Energy Consumption in U.S. Supermarkets



Source: U.S. Energy Information Administration, 2002, E Source Co, LLC

On average, lighting accounts for 17.8% of energy consumption and heating for 7.8%. The other major components include water heating, cooling, cooking, ventilation, office equipment and miscellaneous.

The Crucial 2%

According to the Food Marketing Institute (FMI), the average U.S. grocery retailer earns net profits of 1.91% (based on data from fiscal year 2006-2007). This means energy cost may amount to roughly half or more of net profit. It also means that a 10% reduction of energy cost can increase net profit by 5% to 10%.

It also means that an unexpected increase in energy cost will slam profit to the same degree.

The average U.S. grocery retailer earns net profits of only 1% to 2%. This means energy cost may amount to roughly half or more of net profit. It also means that a 10% reduction of energy cost can increase net profit by 5% to 10%.

Recent events and current trends suggest that energy costs will continue to rise. With the advent of real-time energy pricing – which is already a reality in a growing number of markets -- prices can increase dramatically for operators who are unprepared. As energy costs rise, they will become an even bigger component of total operating cost. Conversely, rising energy prices can make energy efficiency an even more important contributor to profit.

The Important and Sometimes Elusive Goal of Budget Certainty

Considering the big effect of energy cost on company profit, energy-cost volatility poses a serious threat to financial stability. For large retailers whose stock is publicly traded, variable energy cost poses additional hazards. It not only affects cash flow and income statements, but it can also present a very substantial risk to stock valuation, market capitalization, shareholder value, and consequently the value of whatever equity you and your executives may hold.

All of these factors make it a very high priority to predict and control energy cost.

Energy cost, like the cost of any commodity, depends on two fundamental economic factors -- supply and demand. On the supply side, energy markets, regulations and your own procurement practices all affect the price you pay per unit of energy. The first two of these are mostly outside your control or influence; procurement is the only one you can expect to influence from quarter to quarter. On the demand side, energy consumption is the sole determinant of your energy cost. And with commitment, you can manage it very effectively from day to day.

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The ideas you read here focus mainly on gathering information that will help you manage energy on the demand side. Apart from brief mention, this report does not address the topic of energy procurement. But the data we suggest you gather can also help you do a better job of buying energy.

How Fresh & Easy Did It

If other U.S. grocers were to match Fresh & Easy's energy efficiency, they could increase their net profit by 15% to 30%.

Fresh & Easy Neighborhood Market, a grocery retailer that operates about 180 stores in the southwestern United States, is among the most energy efficient grocers in the United States. Although they operate in one of the hottest climate zones and have a higher concentration of refrigeration than most grocers, they have reduced energy costs by 30% compared to similar supermarket operations. They have done so largely by building energy-efficient stores from the outset.

For detailed information about how Fresh & Easy has achieved their results through both innovative store design and effective day-to-day operations, see the Verisae document *Lessons in Energy &*

Maintenance Management from One of the Best in the Grocery Business. The document can be accessed at: www.verisae.com/energy-lpc02.

How to Achieve Energy Efficiency Without a Big Investment

Short of starting fresh with new stores like Fresh & Easy did or investing in big capital projects involving retrofits or refurbishing, you can achieve greater energy efficiency and budget certainty through small improvements to daily operations.

While all of the following 10 ideas are likely to involve some level of investment, you can achieve all of them for much less money than you would spend on construction projects.

1. **Understand the energy efficiency of all the equipment in your stores.** The energy consumption of a single model of equipment can vary dramatically from manufacturer's specifications and third-party performance ratings. It can also vary from one store to another, depending on climate zone, usage, local working environment and other factors.

   An individual asset consumes energy differently under different loads, at different times of the day.

   For these reasons, you should know the actual energy-consumption of every piece of equipment in every climatic zone where your stores operate. Without this information, you must rely on averages and published numbers. To the extent that the actual performance of key assets varies from external norms, your best plans and projections will be inaccurate.

2. **Submeter your stores.** It is not enough to know how much electricity you use at a store. You also need to know how much electricity is used for refrigeration versus HVAC systems, lighting and other uses. If you can monitor the energy use of specific departments within locations, you can focus your conservation efforts where they will drive the biggest benefits.

3. **Monitor energy consumption in real time.** You can eliminate past problems and avoid future ones by gathering and analyzing equipment status and energy-use data in real time.

   Such data enables you to make same-day decisions that eliminate sources of energy waste before you incur the cost.

   The experience of several large grocers suggests that this capability alone can save as much as 2% to 5% of total utility costs. The return on investment for real-time monitoring of equipment status and energy use can be good, depending on how much energy you typically use per store.

   It may make financial sense to monitor the performance of compression valves in refrigeration cases, which is critical to the operation of refrigerators. It also makes sense to monitor the temperature and humidity of refrigeration cases so that you can see when they are on defrost cycles and when they may have malfunctioned.

   Real-time data from lighting systems can tell you when internal or external lights have been left on after store hours. Bashas', a 120-store grocery chain in Arizona, discovered they could save about $12,000 a year in each of several dozen stores when a real-time light-monitoring system alerted the central staff that lights were left on after hours.

   When you can watch your equipment remotely to see if it is performing optimally, you can do a much better job of providing preventive maintenance. Degradation of energy performance often signals the need for maintenance. It may also predict a pending failure.

4. **Understand the effects of weather on energy demand.** Even for identical the stores in the same climate zone, energy consumption can vary dramatically from one week to the next because of changes in weather. Temperature and humidity are especially important factors.

For these reasons, it is important for you to understand how prevailing weather conditions and unusual weather events or seasonal occurrences affect local energy consumption. You can understand these relationships much more easily if you have a business-intelligence system that incorporates weather data.

It is important to understand how unusual weather events or seasonal occurrences affect local energy consumption.

5. **Benchmark energy use across your operations.** To help make sense of the energy-use data you gather from disparate store locations, normalize your data by benchmarking the energy performance of stores that have similar equipment and physical characteristics. You can then compare the performance of stores with different characteristics. The similarities and anomalies you sell will help you understand causes and effects.

   To prepare useful benchmarks, gather and compare data from similar stores in the same climate zone. Identify similar stores by considering physical characteristics such as total store square footage; square footage devoted to functions such as bakery, refrigeration cases, etc.; roof type; store age; store revenue; types of equipment used; and so on.

   With benchmark data in hand, you will be better prepared to evaluate the likely effects of your new-store designs, store by store.

You can use benchmark data to determine which combination of store design and store equipment provides the best balance of energy-efficient operations and a customer-friendly shopping environment.

6. **Understand the effects and implications of energy trends.** You are of course, well aware of local and national trends in energy supply and demand. If you believe the cost of electricity is likely to rise faster than the cost of natural gas, for example, it may be an important consideration as you plan what kinds of bakery ovens to put in new stores.

   If you expect real-time energy pricing and demand response programs to prevail in the states where your stores do business, you should probably plan ways to cut back on energy demand during hours when energy costs are highest.

7. **Understand the effects of facility and equipment-maintenance activity on energy cost.** Facility and Equipment Maintenance has a huge effect on energy consumption. Equipment that needs maintenance is likely to consume more energy. Every time a service technician resets a thermostat or a timer in a store, energy consumption goes up or down.

   Conversely, rising energy consumption for a piece of equipment may signal the need for maintenance and may be an early predictor of pending failure.

   Link your data on real-time energy-consumption to your maintenance records, including detailed call reports and action codes. The data will help you see correlations that may provide opportunities to reduce both energy and maintenance costs.

   Reveal what triggers alarms, details of these events, circumstances or the failure associated

8. **Understand the changing relationship between energy demand and cost.** Real-time energy pricing has already arrived in some utility markets, and it appears to be on its way in many

more. As real-time energy pricing becomes more prevalent, all energy users will pay more for the energy they consume during hours of peak demand.

In many cases, your stores will pay much more for energy unless they can shift their energy consumption to lower-priced times of day. If you anticipate such changes, you can deploy technologies that will enable you to shift energy demand throughout the day, in response to changing rates.

9. **Capture and analyze complete and accurate data from your utility bills.** Many grocers collect some of the data from their utility bills, but few collect all of it. And many grocers find that the data they collect from their utility bills has a high percentage of errors.

Utilities also make mistakes in billing you. Their meters sometimes malfunction. In fact, industry studies show that 1% to 3% of all utility bills contain billing errors.

You can save money by comparing the data from your utility bills to the data you collect through real-time energy metering.

10. **Use energy-use data from the past to reduce future needs.**

Data on past energy use can be used to identify anomalies in current consumption, which may present opportunities for improvement.

If you have collected energy-performance data for previous months or years, you can identify anomalies that may present opportunities for further efficiency. Think of your own medical history. Each time you see a doctor, a nurse records your weight, body temperature, pulse rate and blood pressure. By looking at changes in

these vital signs over time, medical professionals can quickly see whether your health is improving or declining.

A grocery retailer in the northeastern United States found value in analyzing energy use, carbon emissions, waste production and other environmental-performance metrics. Managers analyzed the historical performance of each of several hundred stores. At an annual meeting, they presenting best performing stores and the 10 worst performing stores. They engaged the managers of these stores in a competition. In the first quarter of the competition, half of the bottom 10 stores had moved off the list. Companywide savings reached 3% in a single quarter.

Managers at Fresh & Easy Neighborhood Market estimate that the company saves the equivalent of 0.5% of corporate net margins by alerting maintenance managers when energy consumption drifts out of line for an individual asset.

When Fresh & Easy's real-time energy-monitoring system spots an unusual change in energy consumption, it automatically dispatches an appropriate technician to investigate the cause. Technicians know in advance when an energy alert has triggered a call. They are well trained to find the most likely faults and to apply the best remedies.

If you clearly understand your past energy-consumption patterns, you can buy energy at the best available rates, consistent with your projected needs.

You will also be better prepared to take advantage of demand-response programs and real-time energy pricing as they become more prevalent.

Conclusion

Energy costs appear likely to continue rising. They may even do so at alarming rates.

Because energy use is so central to the health of your business, rising energy costs can also pose significant risks.

You can mitigate some of these risks by planning now to increase your energy efficiency in the coming years. Your best opportunities involve the application of thoughtfully designed new stores and in the retrofitting and remodeling of existing ones, but you can also achieve cost savings through applying simple operational changes.

The decisions you make for these projects will affect your company's energy efficiency for many years to come.

In addition to the risks posed by rising energy cost and changing tariff structures, sharp managers will also find big opportunities. If you correctly anticipate the coming changes and plan well for them, you can achieve powerful cost advantages over competitors that have not.

Your best ally, besides imagination and vision, is good information. And to gather and analyze useful date from your complex operations, you need information technologies that are vastly more sophisticated than spreadsheets.

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Paul Hepperla, Vice President of Product Strategy

Paul Hepperla has more than 17 years of experience helping clients use the least amount of resources for the lowest possible cost in terms of regulatory compliance, environmental management, operational efficiencies, or related energy risks. At Verisae, Paul has been the main catalyst and business leader for Verisae's carbon and energy offerings. He is the co-author of Verisae's energy and carbon emissions patents. He is in charge of the development and direction of the entire suite of Verisae's SRP products with the goal of maximizing reductions in operating costs for Verisae's clients. Paul commands an extensive understanding of the sustainability journey organizations are currently facing. Prior to joining Verisae, Paul was the Manager of Energy and Operations for SUPERVALU, one the largest US grocery retailers where he helped reduce resource use and costs for the corporate locations as well as the independent retailers affiliated with SUPERVALU's wholesale business. His experience also includes time with Xcel Energy and Johnson Controls. Paul has a Bachelors of Science degree in Aerospace Engineering from St. Louis University.

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Art Quinn is a Program Management/Project Management/IT Management professional who has more than 18 years of business and technology experience. He has a strong background in implementing business solutions, ranging from HRMS/CRM custom solutions that address core business issues, to redesign and execution of business strategies that involve change management, consolidation, and organization effectiveness. Art's management experience from within multiple industries; the hospital, retail, transportation, and finance sectors, augmented with his ability to effectively communicate customer needs with IT professionals, makes him an effective manager for mission critical initiatives.

Manage Energy, Maintenance & Environmental Performance at Lower Cost, with Higher Productivity, Less Risk & Higher Profit

Large retailers face special challenges in managing energy, maintenance and environmental performance:

- They operate hundreds or thousands of locations.
- They manage many kinds of facilities.
- Their stores operate in many climate zones.
- Their stores contain many kinds of equipment or assets.
- They must collect, manage and analyze huge amounts of data.
- Responsibility and accountability is usually divided across functional groups.
- The performance of each functional group affects the performance of each other.
- Each functional group operates its own systems and maintains its own data.
- The systems can rarely share data all the useful data they contain across the functional groups that could use it.
- Retailers work with many service providers, both internal and external.
- Large numbers of people are involved.
- The people who most influence the retailer's performance have widely varying levels of knowledge and skill.
- Retailers work with many different utility companies, each with different rate structures.
- Utility rate structures are on the verge of changing to real-time pricing and other innovations that can massively affect operating costs
- Retailer's operations open cross multiple regulatory jurisdictions and political boundaries.
- They may also cross cultures, languages, currencies and time zones.
- The combined cost of managing energy, maintenance and environment performance often runs into the tens of millions, hundreds of millions or even billions of dollars.

Despite these challenges, many retailers manage energy, maintenance and environmental performance with tools that are not much more sophisticated than spreadsheets. And most are understaffed to do a better job, considering the technologies they use.

Verisae provides technologies and services that help large grocers and other retailers manage four closely interrelated areas of their operations:

- Energy;
- Facility and equipment maintenance;
- Asset tracking; and
- Environmental performance (including carbon, water and waste).

More productive and efficient management of these areas can provide the following benefits:

- Lower energy cost;
- Lower energy consumption;
- Lower risk of budget uncertainty;
- Reduced carbon emissions;
- Compliance with environmental regulations;
- Reduced financial and regulatory risk; and
- Stronger brand.

Verisae serves more than 45 clients. Most are large grocery chains. Some operate globally, across national borders, time zones, languages, cultures and currencies. Discover how your grocery business can benefit from Verisae's experience and technologies. For more information, please visit www.verisae.com/assets-002.

About Verisae

Verisae helps measure, manage and reduce equipment and energy costs including the related business and environmental impacts of carbon emissions. The Sustainability Resource Planning ("SRP") platform improves operational efficiency, protects brand integrity, and helps ensure regulatory compliance for distributed enterprises across many industries. Verisae delivers a broad range of sustainability solutions to over 45 clients globally with more than 65,000 daily users including a network of more than 7,500 third-party suppliers. Verisae's integrated sustainability platform actively tracks over 2.5 million assets across more than 20,000 sites worldwide.

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