

A Practical Guide to Sustainability and Energy Management in Retail Environments

by Meriah Jamieson and David Hughes

Executive summary

Retailers are seeking opportunities to improve margins while leveraging corporate sustainability to build their brand. Consumers want to know more about the brands they buy, and shareholders expect more transparency regarding product, social, environmental and operational sustainability. This paper outlines how retailers can leverage an energy management and sustainability strategy to create brand loyalty, increase margins, mitigate risk, reduce impact on the environment, and maintain competitiveness.

Introduction

“Leading retailers are looking to reduce costs and increase brand loyalty. Sustainable brands outperform the market by 120% and are more likely to increase sales during tough economic times.”

- Havas Media, Meaningful Brands report

Sustainability can create a competitive advantage

New consumer buying patterns are impacting retail sales per square foot across many retail environments. This paper discusses how retailers can use a sustainability and energy management strategy to create brand loyalty, increase margins, mitigate risk, reduce impact on the environment and maintain competitiveness.

The Retail sector has made significant advances developing and deploying sustainability programs. Leading retailers have added sustainability leaders to their executive leadership teams, established and publically reported on targets, improved the efficiency of their facilities, invested in renewable energy, improved product lifecycles, and actively managed the sustainability of their supply chains to ensure a lower impact on the environment.

New technologies and strategies have enabled retailers to achieve sustainability goals by implementing new best practices. Furthermore, sustainable brands have outperformed the market by 120%¹ and are more likely to increase sales during tough economic times

Energy Management’s high return on investment makes it the ideal cornerstone of a sustainability program

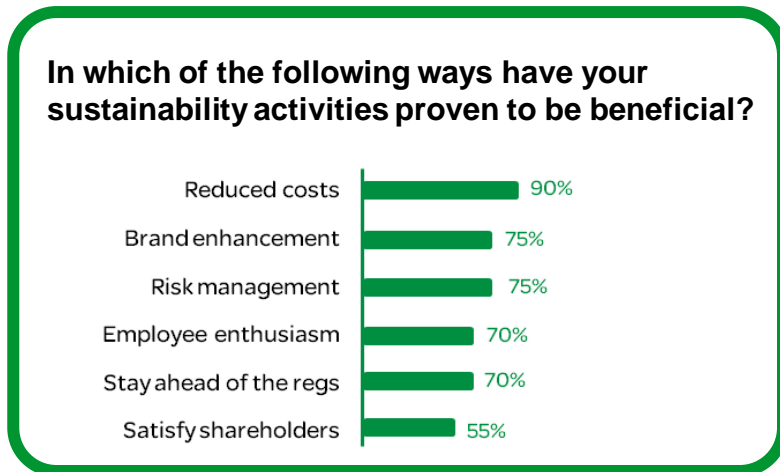
Sustainability and energy management are synergistic programs, and the strong return on investment of energy management initiatives can be used as a foundation to fund other sustainability efforts that may have less measurable payback metrics. Sustainability programs, in turn, have proven to be an effective strategy for further reducing costs (see **Figure 1**). The RILA survey referenced in Figure 1 reports on retail company feedback regarding benefits of sustainability².

Creating and implementing a comprehensive energy management program can be misconstrued, in some corners, as interfering with the execution of core business goals. In fact, ignoring energy management is no longer a “stay in business” option as declining foot traffic and online retail competition eat away at profits. A successful energy management program can pay for itself in less than 3 years with real reductions of 10-30% in energy consumption.³

Figure 1

Sustainability efforts are effective at reducing cost and risk, while enhancing brand image

-2013 Retail Sustainability Report, RILA



¹ Havas Media Group, “Meaningful Brands Report,” 2013

² Retail Industry Leaders Association, “Fueling Continuous Development,” 2013 Retail Sustainability Report, page 17, 2013, <http://www.rila.org/sustainability/sustreport2013/sustainability-report-landing-page/Pages/default.aspx>

³ Based on Schneider Electric customer case studies

Retail companies spend nearly \$20 billion on energy each year⁴ Energy represents a significant part of retail operating costs, and a 10% decrease in energy costs equates to an 8% increase in sales per square foot.

This paper describes how retailers can begin to implement sustainability best practices within their organization, and details proven strategies that can help organizations reduce their energy costs by 10-30%.

Drivers for energy and sustainability management

Increased requirement for transparency

Retail customers want to know more about the brands they buy, and are pressuring retail organizations to reveal more about the specifics of their manufacturing and operations processes. Non-governmental organizations (NGOs) such as the Global Reporting Initiative are demanding that retailers better disclose and manage the energy and environmental impact of their facilities, their suppliers, and their products. Retailers are examining their supply chains to identify risks such as conflict minerals, resource scarcity, and human rights concerns. They are also identifying opportunities to improve sourcing, to minimize supplier disruption risks, and to enhance product design.

For retailers that conduct business in a sustainable manner, transparency can go a long way in building positive relationships with stakeholders and in proactively bolstering consumer confidence.

Declining sales and foot traffic, higher mobile commerce

Consumer buying habits are evolving, and mobile commerce is forecast to reach 17-21% of total retail sales by 2016⁵. As adoption of mobile commerce increases, many retailers are experiencing declining foot traffic in their stores, and lower sales volumes (a 5% sales productivity decline in the 5 years between 2005 and 2010).⁶

Physical store locations will remain an important channel in the future, but with sales per square foot expected to decline while costs remained unchanged, retailers are focusing on better integrating both physical and virtual channels. Channel integration helps to enhance the buyer experience by linking both the online and in person shopping experience. Those retailers who are unable to fully integrate their physical store and virtual store strategies are at higher risk of lower sales and profit.

Unique Retail requirements

Energy and sustainability management planning requires a unique approach for each individual organization and does not lend itself well to a “one-size-fits-all” model. Retailers face unique challenges that affect the planning and deployment of sustainability and energy management programs.

Global footprint, multiple stakeholders - Global retailers are spread across a wide range of locations and cultures. They manage a host of differing constraints at the global, regional, and local levels. The sustainability and environmental teams, procurement, retail and facilities personnel, energy managers, operations personnel, store managers, and store employees all influence the effectiveness and success of energy and sustainability programs. Programs cannot simply be mandated, they need to be adopted across all levels of the organization, and robust change management strategies must be in place to drive and sustain the

⁴ <http://www.sba.gov/content/energy-efficiency-retail-stores>

⁵ Deloitte Digital, The Dawn of Mobile Influence, page 3

⁶ Overstored, How Retailers Can Retain a Profitable Physical Store Network in the Face of Growing Migration to Digital Channels, Accenture 2012, page 4

evolution. The high volume of locations and variety of stakeholder groups resident in most large retail operations makes this a significant challenge.

Diversity of facilities, including stores, corporate buildings, and data centers – Across the various facility categories, topologies may be unique from location to location. For example, physical infrastructure such as lighting, HVAC and, power distribution can be configured differently based on the type of facility. Property and management models can differ as well (owned vs. leased, integrated vs. franchise). The energy profiles of each region / location can also be quite diverse (i.e. variations in availability and price of electricity, gas, fuel, water).

Business continuity requirements - Retail businesses must remain open for their customers, and any installation of equipment required cannot disrupt operating hours, customer comfort or the appearance of the sales floor area.

Agility is paramount - Retailers must launch new stores quickly and efficiently, which requires scalable and pragmatic deployment models. Also, if the energy and monitoring technology is to be replicated throughout the portfolio of real estate assets, a phased implementation plan for rapid deployment should be developed.

Program integration into business varies greatly – Many retailers are beginning their journey to become more sustainable. These retailers are in the planning process, identifying necessary program resources and starting to build internal buy-in. Other retailers have technology and processes in place, have proven the financial return of investment, and have gained buy-in throughout the organization. A sustainability and energy management program needs to be scalable, building on incremental initiatives.

Areas of high energy savings potential

Energy management provides a high return on investment. It can be an excellent way to increase margin through reduced operating expenses or a good selection for an initial project to prove the initial ROI of broader sustainability program.

Understanding the complete makeup of the building portfolio is an integral part of an energy and sustainability strategy. Warehouses, offices, data centers, stores in malls, small and medium stand-alone stores, and “big boxes” all feature different energy consumption profiles.

Building portfolio impacts strategy

Table 1

Specialized strategies must be employed to control energy in small stores which typically manage only 30-40% of their energy costs

Store type and definition	Control of consumption	Energy initiatives	Total energy reduction potential
Big Box & Street Shop Owned building, responsible for/ able to control energy consumption	100% control	Can reduce consumption by 20-30%	20-30%
Store in Mall, Strip Mall Leased, control lighting and HVAC	30-40% control	Can reduce consumption by 10-25%	3-10%

As illustrated in **Table 1**, the potential for energy risk management and energy savings is significantly greater in owned “big box” and street shops as opposed to leased stores located in malls. Big box stores are often responsible for their building equipment and electrical

rooms. In “strip malls” and indoor mall stores, on average only 30-40% of energy consumption is controlled by the retailer, whereas much of the remainder is managed by the retailer’s landlord who ultimately has responsibility for the energy management of the building. While there can be opportunities to work with landlords to reduce consumption further, **Table 1** details average reduction potentials of typical big box and mall stores.

As **Figure 2** illustrates, building size has an impact on per square foot electricity costs.

Medium-size buildings have the lowest per square foot electrical costs (\$.90 per square foot) as opposed to \$1.42 per square foot for small buildings and \$1.40 per square foot for large buildings. Because of small buildings’ high energy costs, a lower percentage of which are controllable, specialized strategies must be put in place across the portfolio to make a significant impact.

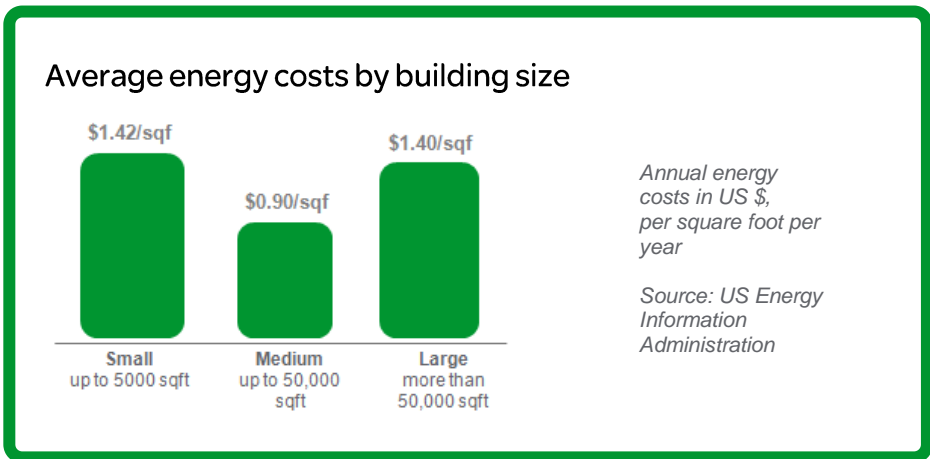


Figure 2
High energy consumption in small and big box retail facilities makes them attractive targets for energy cost reduction

The U.S. Energy Information Administration reports that average retail electricity consumption in the US is 14 kWh per square foot per year and average cost of electricity is \$.10 per kWh⁷. That means a retailer with an installed base of 100 stores with 10,000 square feet of floor space each could expect to generate an energy bill of \$1.4 million per year. **Figure 3** illustrates a breakdown of energy consumption categories for big box retail stores (non-food retailers only).

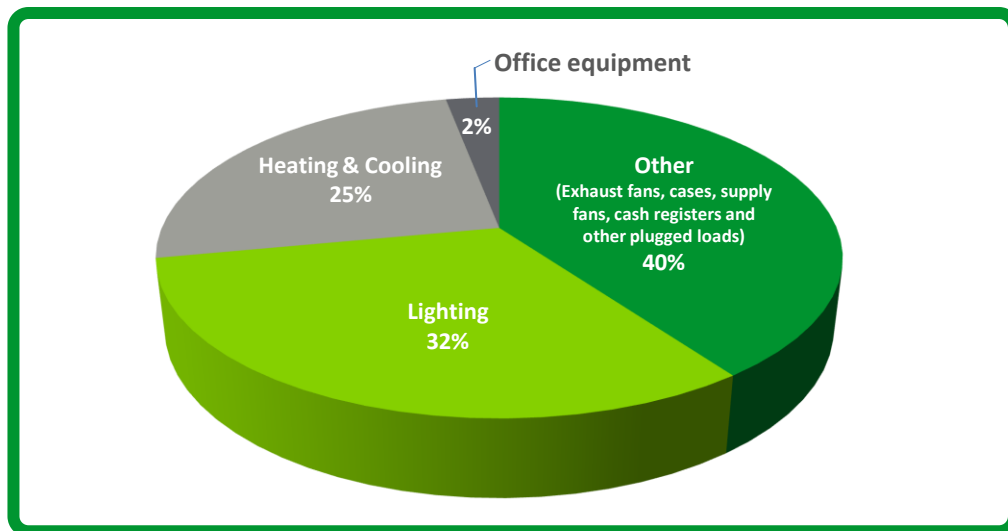


Figure 3
Lighting and cooling make up the majority of energy consumption (>50%) in non food and beverage big box retail operations

⁷ U.S. Energy Information Administration (EIA), http://www.epa.gov/statelocalclimate/documents/pdf/table_rules_of_thumb.pdf

Best practices

Leading retailers are achieving their energy and sustainability goals by implementing the following best practices:

- Tracking internal metrics (energy, resources, waste, supplier compliance)
- Communicating sustainability efforts through website, intranet, social media
- Reporting sustainability metrics internally, with evolution to external reporting

Table 2
Best practices drive work streams which will achieve the highest savings and efficiencies

Step	Best Practice	Business impact
Sustainability strategy development	<ul style="list-style-type: none"> • Develop sustainability goals that compliment organizational goals, identify resources, create an action plan 	Generates multiple stakeholder buy-in. Provides structure and process to measure success and increases likelihood of attaining goals.
Energy procurement	<ul style="list-style-type: none"> • Implement strategic energy sourcing • Optimize energy purchases, rates, and tariffs. Perform market research to identify opportunities to save, establish risk management practices. 	Reduces energy supply cost and mitigation of energy price risk. Potential to leverage savings in supply to develop demand reduction project fund.
Streamlined bill management	<ul style="list-style-type: none"> • Streamline utility bill data collection, payment and track budgets 	Increases efficiency, views energy and other resource invoices and consumption by store or region, eliminates late fees through automated bill payment
Risk identification	<ul style="list-style-type: none"> • Examine your supply chain using a platform that allows you view supplier characteristics, compliance and ratings 	Reduces risks that can affect sales, brand image and supply chain costs
Energy and data collection infrastructure	<ul style="list-style-type: none"> • Determine the business KPI's to be measured and define infrastructure required to collect this data 	Monitors energy and resource consumption to benchmark current performance, eliminating inefficient manual processes
Energy and resource data reporting and analytics	<ul style="list-style-type: none"> • Collect and aggregate device data (meters and sensors) across all sites and perform analytics to recommend initiatives 	Identifies anomalies and inefficiencies via energy and carbon reports. Reduces consumption and lower costs, increasing ROI of projects
Efficiency assessment and project initiation	<ul style="list-style-type: none"> • Identify energy and resource conservation opportunities via on-site or remote audits and workshops 	Reduces costs by finding short and long term efficiency opportunities
Energy project planning and prioritization	<ul style="list-style-type: none"> • Consolidate sustainability initiatives onto one platform and determine the most cost-effective and sustainable opportunities 	Identifies projects with the highest ROI
Sustainability effort communication	<ul style="list-style-type: none"> • Share sustainability metrics through website, intranet and social media 	Gains market share, builds brand, satisfies investor concerns and galvanizes employees

- Focusing on reduction of energy consumption
- Developing a multi-year strategic planning and goal setting strategy
- Identifying risks in supply chain and tracking and reporting on supplier energy, environmental and social performance metrics

Each of these best practices can involve multiple steps and are more easily managed when organized as part of an overall strategy. **Table 2** (previous page) illustrates some of these steps and explains how each can lead to increased efficiency and/or optimization of business performance.

How key technologies contribute

Retailers have access to an enormous amount data from their buildings, stores and supply chain. The challenge is to convert this “big data” into useful information that can lead to improved business performance. Energy and sustainability data may be available at the facility or store level but making it available in a usable format at the enterprise level requires the proper tools.

Energy and sustainability management software can serve as a powerful enabling tool for efficiently monitoring and analyzing data, eliminating error-prone manual methods. The right software solution enables users to view, store and analyze energy and resource data across a retail enterprise. Below is a summary of energy management and sustainability software attributes that help retailers make the most of their energy resources:

Modular infrastructure architecture that grows with the needs of the business – This allows enterprises to invest in a “pay as you grow” approach to infrastructure technology purchases. It avoids heavy up-front investment and reduces the risk of underutilized assets.

Open and connected software designed for operational efficiency – This allows for simple, low cost integration of data from distributed locations. It can also incorporate, security, energy management, building automation, and data center management software, further enhancing opportunities for cost efficiencies

Software as an enabler of efficiency

In the retail environment, efficiency efforts are supported by a software architecture that rests on three important pillars of functionality: data collection infrastructure, monitoring and control, and advanced analytics.

Data collection functions are enabled by devices such as meters, and sensors. These devices perform the fundamental work of gathering data and forwarding it to management software for processing. Managed services such as validating and monitoring data collection can further enhance data quality

Monitoring and control - Managers require some means of consolidating critical information about the performance of their store or office building. Once aggregated, the user needs to visualize the data in a manner that is meaningful and actionable.



In fact, the conversion of raw data into usable information can allow them to visualize and predict future problems, reducing downtime and unpredictable emergency expenses, and increasing asset life (see **Figure 4**).

Figure 4

Sample dashboard collects energy data across all buildings and centralizes information in one or more user interfaces. In this example users can quickly compare performance of individual sites.



Operational dashboard data, for example, may include usage for several resource streams, global weather alerts and a summary of any facilities with critical alerts.

Some operators who are responsible for controlling their own energy costs may be provided with customized data depending on user profiles, allowing the operator to prioritize alerts based on current conditions. For instance, although the data used by the store manager may not resemble the data utilized by the warehouse operator, both extract important information from the system based upon the individual user's role and priorities.

Advanced analytics – New advances in software now allow the use of advanced algorithms and cloud-based capabilities to continuously monitor and analyze real-time data. This enables historical trending from building sensors, control systems and utility meters, which are automatically pulled from the building management system (BMS). Automated fault detection and diagnostics (FDD) identify building operational deficiencies and generate comprehensive customized reports. These detailed analytics reports provide specific cost- and energy-saving opportunities that are prioritized by impact on energy use, cost savings and tenant comfort. Diagnostics can also document performance measurement and verification (M&V) for award programs, such as LEED and utility incentives.

Developing a customized program

Below is a sample progression for a retail organization that implements a sustainability and energy management program (see **Figure 5**). Each retailer should choose an appropriate path that dovetails with the requirements of their business. Steps taken to achieve sustainability goals depend on whether the organization has chosen to be a sustainability leader or follower, the organizational mission, available resources and funding and sustainability goals. Energy management has a big financial impact and can be started early in the process to prove the value of a sustainability program.

Develop a sustainability strategy

In this first step of this example (**Figure 5**), a baseline is set to track sustainability progress and a plan of action is developed to meet goals. A competitive review of the market is conducted, and interviews are held to determine desired market positioning. The output of this step is a sustainability roadmap document with detailed goals, benefits, and risks.

During this process, commitments to sustainability are formalized, core metrics are established, and baselines are evaluated. Then a database of successes is compiled, performance is validated versus market benchmark data and an internal workgroup is formed to review sustainability issues or energy savings gained. A periodic review of performance is conducted, internal stakeholders are engaged and educated, and a communication plan for progress is established.

Benefits: One retail drug store chain who engaged in this first step developed a detailed sustainability strategy and benchmarked and recommended certifications for 4,600 stores.

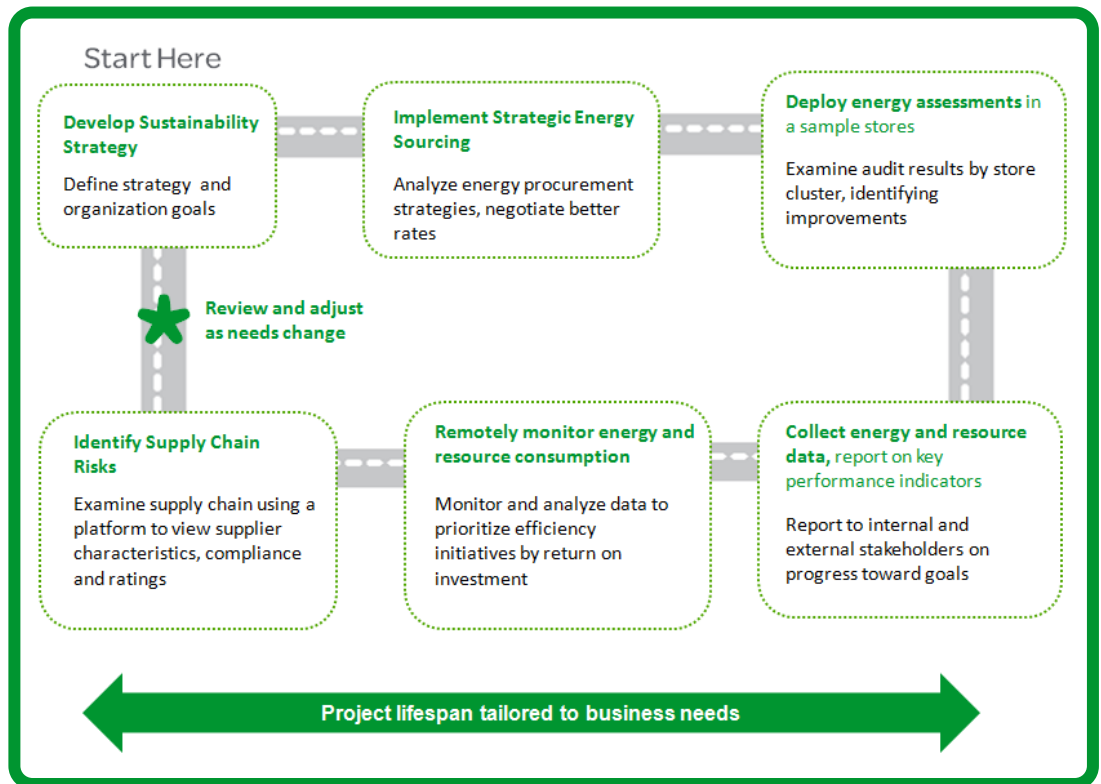


Figure 5

Sample step by step strategic approach to building an energy and sustainability management program

Implement strategic energy sourcing

In the second step, “Implement strategic energy sourcing,” market information across multiple geographies is analyzed to identify savings and reduce operating expenses. During this step, aggressive negotiation to improve contract terms and rate structures is conducted, rates and tariffs are analyzed, energy market research is performed, and risk tolerance is determined. Ongoing reports on contracts, market changes and opportunities are produced which include clear recommendations on how to move forward.

Benefits: One retailer used a combination of strategic energy procurement and management to save \$15.8 Million over 3 years. One key to success was to secure cost effective contracts which increased the use of alternative energy.

Deploy energy assessments in a sample of stores

In the third step, “Deploy energy audits in a sample of stores,” stores are organized by categories such as building type and age, or by equipment installed. Only a sampling of stores undergoes in depth assessments to find inefficiencies, which is much more cost effective process than auditing all stores. Audit findings can be used to find inefficiencies in similar categories of stores with similar characteristics.

Benefits: *One retailer achieved 6% yearly energy reduction and 10-month payback from energy audits. The audit process revealed power factor tariffs (charges for ineffective utilization of electrical power) and non-optimized HVAC and lighting loads.*

Collect energy and resource data

In the fourth step, “Collect energy and resource data,” a metering infrastructure which uses existing data collection infrastructure is designed and commissioned for new and current stores. Monitoring systems are defined to meet business-specific requirements.

Energy and resource consumption data is collected and reports generated to provide enterprise wide visibility into disparate data sources to internal and external stakeholders.

Benefits: *At one retailer, inefficiencies were discovered, documented and corrected, resulting in year-over-year energy consumption reduction of 20%.*

Remotely monitor energy and resource consumption

In the fifth step, “Remotely monitor energy and resource consumption to make improvement recommendations,” energy and resource data is aggregated and centralized in a “software as a service” platform and reviewed by remote energy experts to discover inefficiencies and recommend initiatives to optimize process or equipment. Expert recommendations are prioritized to improve efficiency based on organizational goals. If required, site visits can be performed to implement initiatives in selected stores.

Benefits: *A retailer saved the equivalent of the annual energy bill of 100 stores over 4 years by implementing expert recommendations from energy monitoring and analysis.*

Identify supply chain risks

In this sixth step, “Identify Supply Chain Risks,” supplier information is analyzed in an online application to identify potential risks. Risks will vary from one retailer to the next based on what is most material to the business.

Suppliers add their information to the database and suppliers are ranked according to characteristics, survey responses or compliance. This simple approach allows the retailer to compare and evaluate prospective suppliers’ sustainability profiles in an effort to minimize risk and promote compliance with identified sustainability targets.

Benefits: *Industry leaders are using resources such as the Higg Index (<http://www.apparelcoalition.org/higgindex>) to document and evaluate their suppliers. This resource is a self-assessment tool that enables users to identify environmental sustainability hot spots and improvement opportunities and is a starting point for collaboration among stakeholders.*

Conclusion

“A 10% decrease in energy costs provides a similar margin impact to an 8% increase in sales per square foot.”

Sustainability programs often encounter internal barriers to secure the funding required to deploy initiatives. A well-planned energy management program can reduce energy costs by 10 to 30%. The measurable impact to the bottom line can help fund sustainability initiatives with harder-to-measure metrics such as organizational efficiency, customer brand loyalty, reduced environmental impact and productivity. These programs can also mitigate risk of decreasing sales and increasing costs.

From the outset, sustainability and energy management needs to be recognized by employees, partners and customers as an ongoing process, and not as a single project. Knowledgeable consultants with experience in the fields of energy management and sustainability can add value by building an integrated, step by step strategy and execution plan that meets organizational goals while building a more profitable enterprise.

Sustainability successes can help a company to outperform competitors, improve margin, increase customer goodwill and employee engagement, and reduce overall resource consumption.



About the authors

Meriah Jamieson is a Customer Segment Manager at Schneider Electric, specializing in energy and sustainability management services. She graduated from British Columbia Institute of Technology and has spent 8 years working with energy management solutions. Meriah is also the author of a popular energy and sustainability blog: <http://blog.schneider-electric.com/author/meriahjamieson/>

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