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**ENERGY SUSTAINABILITY IN
OPEN-AIR CENTERS: BEST
PRACTICES RECOMMENDATIONS
BASED ON PROVEN STRATEGIES
FROM RETAIL LEADERS**

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A. Executive Summary

This framework is intended to serve as a best practices guide for landlords and retailers to implement their own energy-focused sustainability plans. Although most of the topics addressed within this guide could have broad application for the retail real estate industry, it is mostly geared to helping owners of small-sized companies and individuals who manage real estate work towards operational sustainability within their open-air operating properties. The material included within this document is based on actual, effective case studies from proven retail leaders and includes additional resources needed to put a sustainable plan into practice. Key tools such as property benchmarking and building certification are also addressed in order to provide the necessary foundation to successfully embark on a green project.

Sustainability is a vital topic within the retail real estate industry. Although there are many easy ways to pursue green initiatives and to generate substantial long-term cost savings, the adoption of sustainability practices varies widely. Many large company landlords and retailers have dedicated resources to developing sustainability programs at their properties and as a matter of corporate practice; however, others still feel overwhelmed with the abundant information currently available and are looking for practical solutions they can trust to meet their needs and solve their critical challenges.

It is clear that there are many sustainability practices that can be broadly implemented—from a lighting retrofit to an energy management system to installing a solar project. The framework included here is the culmination of my research and discussions with industry experts over the past year. My research involving the Fiala Fellowship project was funded by the ICSC Foundation, which is intended to share best practices for the benefit of the industry. However, the interpretation of this research is my own, and I am including it in this framework for readers to make their own conclusions. Please note that the companies and resources included within the framework are meant for information purposes only and are not to be construed as endorsements of products, companies, or websites.

B. What Is Sustainability?

“Sustainability” is a widely used term that can mean various things to different people. Within a real estate context, it can be defined as maintaining the conditions of our planet and our real estate to help preserve the earth’s natural resources for future generations to enjoy as we do today without depleting resources that are necessary to maintain quality of life. For existing buildings, it boils down to operating properties in such a way as to minimize their impact on the environment for the long-term—from initial building design, through construction, and ultimately during regular operations with a focus on energy, water, and waste reduction.

Within the context of this best practices guide, the focus is primarily on identifying ways to monitor and reduce energy consumption in open-air operating properties, for both conservation of resources and economic reasons. The case studies included throughout this document cover sustainable initiatives that retailers and landlords have successfully implemented, while generating a long-term positive return on investment.

C. Why Sustainability Now?

The topic of sustainability has continued to grow in importance within the retail real estate industry for both economic and corporate responsibility reasons. Landlords are faced with the need to reduce operating expenses to boost net operating income (NOI), and there is also a greater pressure from stakeholders to preserve the planet’s scarce natural resources.

As of 2012, the U.S. had over 100,000 shopping centers totaling almost 7.4 billion square feet of gross leasable area (GLA).ⁱ Commercial buildings are estimated to use more than 60% of the country’s electricity and 30% of the country’s energy. According to the U.S. Green Building Council, retail buildings actually account for the greatest portion of commercial energy costs, totaling almost \$20 billion per year.ⁱⁱ Addressing energy efficiency within the retail industry is critical because changing practices to reduce consumption and support the preservation of resources can make a meaningful difference.

Historically, the shopping center industry has lagged behind other property types (office and residential) in making sustainable changes. However, retail is in a unique position to reach a broader audience since it affects consumers at a personal level and its success is tied to the interaction between the customer and the business. As such, implementing sustainable

measures should be a part of all shopping centers best practices to reduce long-term operating costs and improve value.

The need becomes even more apparent based on a review of the top 25 shopping center owners in the U.S., which represent approximately 21% of the country's total retail GLA (as of 2012). Less than half of these companies include a discussion of sustainability goals and initiatives on their company website or mention that it is a part of their corporate philosophy. While this does not necessarily mean that these firms are not undertaking green practices, it is important that they also share their policies with shareholders, tenants, and the communities where these shopping centers are conducting business. As retail real estate professionals, we must keep the issue of sustainability at the forefront of our thoughts as we make leasing, operations, and investment decisions, not only because these practices have the ability to improve our bottom line but because it is the responsible thing to do.

Our culture is transforming. Governments are mandating sustainable policies. U.S. states and cities are requiring public disclosure of energy use and performance in commercial buildings, and many other municipalities are actively reviewing new benchmarking and disclosure legislation. Public demand for green products and services continues to increase. Global companies like Wal-Mart Stores, Inc., are driving sustainable purchases into their supply chains not only by using detailed ranking and audit reviews but also by evaluating their suppliers based on factors including sustainability. Investing based on sustainable criteria is at an all-time high. In fact, in 2013 the first U.S. green property REIT index is under development jointly by FTSE Group, National Association of Real Estate Investment Trusts (NAREIT), and the United States Green Building Council (USGBC). From an education perspective, more colleges and business schools now have sustainability programs to teach people about this burgeoning industry. It is also becoming easier to take part in the green movement as new innovative technologies are being developed every day to make it less costly and more efficient to be "green."

Over the past few decades, there has been a large increase in the growth of sustainability practices at the corporate and property level in an effort to be more mindful of the health of the environment, climate change, and preserving the world's natural resources. In many cases, there are often financial and economic benefits to doing so. There may also be a competitive advantage and marketing benefit to pursuing green practices. Many of the companies described in this framework publish their own Corporate Social Responsibility (CSR) reports describing the initiatives they are undertaking and their long-term goals. These include a wide range of topics from social issues to environmental topics, including energy conservation, and are typically made public on the company website.

A transformation is going on now and there is a learning curve for everyone. But when society, policy, and building codes change, where on that learning curve does your organization want to be? Sharing ideas and best practices and discussing both successes and failures is critical in taking the next step forward. This framework is intended to serve as a foundation to begin this process and to share insights from some of the thought leaders in the retail sustainability field.

D. Barriers to Sustainability

Everyone has heard it is good to practice sustainability, but despite all the facts, there are many skeptics who don't understand why being green is important in a real estate context. To be fair, there are some legitimate barriers to implementing sustainable changes for a landlord or a retailer. Here are some of the issues:

- **Costs:** One primary concern is the availability of capital to pay for a sustainable project like a lighting retrofit or solar installation. Many of these projects can be fairly expensive and will need to compete for dollars in an operations budget to get approved. When critical needs such as roof replacement or parking lot paving must be done, these types of "optional" projects can get turned down. How to combat this? Many sustainable projects can reduce expenditures immediately and generate a positive return on investment. Analyze the long-term impact on the value of the real estate and the cost if an alternative is selected.
- **Landlord/Tenant Disconnect and Lease Recovery Challenges:** The lease can help drive or deter the economic decision to perform a sustainable project. Many tenant leases allow for the pass-through of capital costs, which can help incentivize landlords to pursue green objectives, particularly if projects are deemed proven to reduce operating costs. On the flip side, if tenants are on full triple net leases, some landlords may not feel the need to implement sustainable practices that reduce operating costs because there is no benefit to them. (For more information, see discussion on [Landlord-Tenant Collaboration and Green Leasing](#).)
- **Human Capital/Expertise:** It requires a skilled professional to implement most sustainability initiatives, which takes both time and money. Getting a full education in green practices, hiring staff in-house or bringing in a consultant to help guide the process is often a challenging or costly endeavor at the onset.

E. Framework of Best Sustainable Practices

Overview

The most important factor to success is having a clear idea of what consumption is today, understanding how current systems in place are operating, and then establishing a baseline for

benchmarking purposes. Think about attainable goals to set against that baseline. This is the starting point to be able to monitor and ultimately reduce consumption.

Once the various initiatives have been reviewed and recommendations are determined, sustainable guidelines should be developed to manage the goals and put them into practice. Determine whether your company wants to review specific cost savings initiatives or set a long-term corporate goal for energy reduction and savings. Read about sustainable practices and review options that will work best for your situation. Don't take on too much at once. Try to tackle the areas that will make the most impact on your specific company first.

To help take that next step, there are many different service providers that can work with you to identify and quantify savings opportunities, perform energy audits and help compare products and services available. Some firms, such as [Green PSF](#) will work with your company to help analyze the providers and obtain competitive bids to get the best quote.

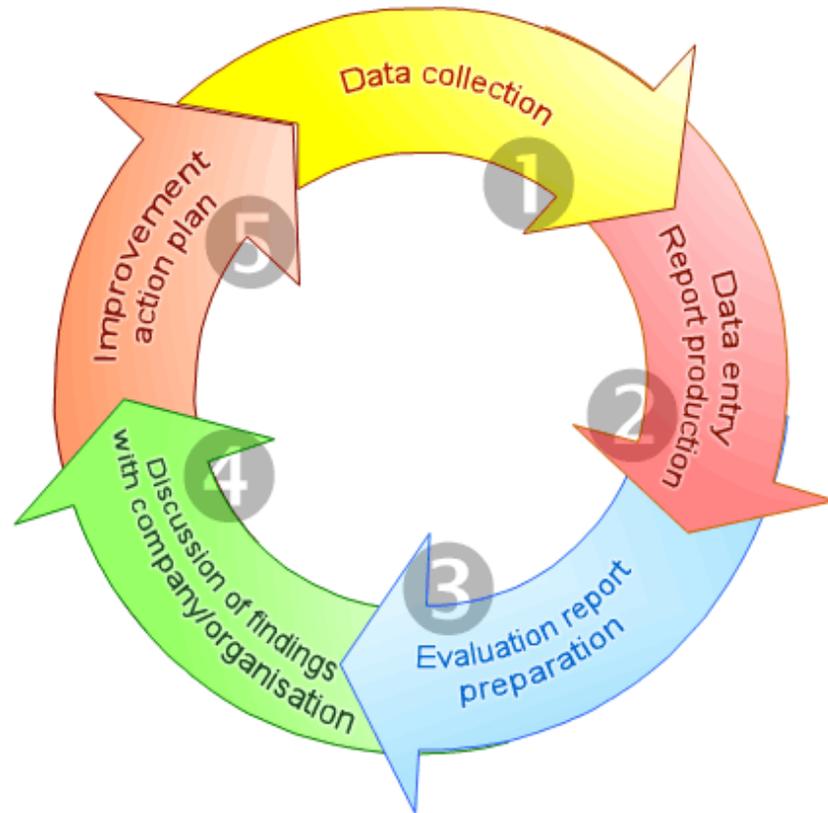
Best Practices

- I. [Benchmarking](#)
- II. [Lighting Retrofits](#)
- III. [Energy Management Systems, Controls, and Utility Procurement](#)
- IV. [Solar Installation](#)
- V. [Behavioral Modification](#)
- VI. [Equipment Optimization](#)
- VII. [Landlord-Tenant Collaboration and Green Leasing](#)
- VIII. [Other Ways to Address Energy Efficiency](#)

I. BENCHMARKING

Summary. This is step one for any sustainability program. If you aren't measuring consumption, you can't really do anything else. An operating baseline needs to be established to determine optimal performance. Tracking current usage will also help identify any spikes or abnormalities. The most important areas to measure include lighting, heating, ventilation and air conditioning (HVAC), and water usage, but can also extend to trash recycling or any other area that you want to monitor over time at a property or retail store. Benchmarking is critical to understanding performance today, comparing against other similar properties, and evaluating the impact of any retrofit or new sustainability project. More than just measuring consumption, benchmarking also

reveals the impact a property has on the environment as well as the economic cost associated with its operations. See chart that follows:



The Benchmarking Process ([e-benchmarking](#))

Question: How do I do this?

There are a variety of ways to begin the benchmarking process. The simplest way is to start collecting monthly bills, metering information and all relevant data for the areas you want to review. Then determine the best place to store this information. If there are not large amounts of data, inputting information into Excel or another spreadsheet function is a good start to be able to perform trend reporting and analysis over time.

For companies with significant data for multiple retail stores or shopping centers, there are other options to consider. To manage the information, there are third-party utility bill management

services companies (such as [ECOVA](#)), which are comprehensive data reporting systems that collect energy data directly from the utility provider. Whether collected internally or by a third party, there are tools available to review property data and compare against similar properties to understand efficiency and performance in a building.

Here are some suggestions:

1. [ICSC Property Efficiency Scorecard Tool](#)

Developed by ICSC, this tool is designed for shopping center owners and is under development as of this writing. It is designed exclusively for the shopping center industry by focusing specifically on consumption in the common areas, which are controlled by the landlord. The intent is to fill a void that the Energy Star and LEED benchmarking and rating systems do not address. The system will allow members to: (1) assess the sustainability performance of its properties against a set of standard, best practice efficiency measures, (2) establish a benchmark for a property or portfolio of properties, (3) improve property/portfolio performance efficiency measures against the benchmark, and (4) report property/portfolio performance against the benchmarked standard efficiency measures.

ICSC has hired contractors that are building the tool during the first three quarters of 2013 and beta testing it at several properties in the fourth quarter. ICSC plans to roll out the tool in January 2014. Although the tool is in the development phase, there is already widespread support within the shopping center community. The scorecard was developed by ICSC in conjunction with support and guidance from sustainability directors at some of the largest retail landlords (including Simon, GGP, Westfield, Regency, Kimco, Primaris REIT, and Inland among others). [Learn more about this initiative.](#)

2. [Energy Star](#)

Energy Star works well for tracking performance at the store level, either for a free-standing retail store or for a store within a shopping center. Benchmarking with Energy Star can work very well for many single tenant retailers but not necessarily for shopping center landlords. Multi-tenant retail centers are not eligible to earn the Energy Star designation, but mixed-use properties can be eligible. Energy Star does not offer retail-specific recommendations for improving performance but does offer a ranking compared to other properties and can provide a relative indication of building performance against a standard. See more information in the [Sustainable Buildings Certification](#).

3. Other Options

There are a number of other alternative ways to benchmark and track performance. Some landlords and retailers have developed their own proprietary tracking systems in software programs such as Excel. If this task seems daunting, there are many companies that offer consulting services and will monitor usage and suggest recommendations. These types of providers will typically charge a fee for this service, so be sure to get references and understand exactly what will be provided and at what cost.

Benchmarking Resources

[WegoWise](#) is a consulting firm that benchmarks energy usage and provides recommendations.

[BuildingWise](#) is a company that offers consulting services for benchmarking and sustainability certification.

[EnergyCAP](#) is a company that allows owners to self-manage bill data collection but can also be used for analysis and performing business processes such as re-billing utility expenses to tenants.

II. LIGHTING RETROFITS

Summary. Lighting retrofits are without a doubt what every landlord and retailer seems to view as a good start to any sustainability and conservation plan. Because a lighting retrofit can be fairly straightforward (such as a simple relamping) and cost savings are immediate and can be significant, these types of projects are often considered to be the low-hanging fruit. If this is not something that your company is investigating, a lighting retrofit is one of the easiest and most cost-effective projects with the highest return on investment. The cost to implement a lighting retrofit is fairly low and there are many types of lighting technologies now available that can help meet your sustainability goals. Retail leases that allow for the amortization and recovery of sustainable capital improvements (such as lighting retrofits) can benefit both the landlord and tenant by encouraging incentives to landlords to implement these types of projects, which will in turn benefit the tenants. Some simple retrofits might include changing the light bulb to a lower wattage, changing a traditional incandescent bulb to a more efficient halogen bulb, and replacing the incandescent bulbs to compact fluorescent lights (CFLs) or light emitting diodes (LEDs). However, not all bulbs and ballasts are compatible with existing fixtures, so hiring a lighting consultant for commercial applications is advisable.

Taking control of your lighting to reduce long-term costs is achieved by reducing the power the lamp consumes (wattage) to generate the desired level of light lumens. This can be achieved by adopting more efficient bulbs and fixtures, uniformity of lighting, optimizing lighting levels, generating less heat and reducing the amount of time the bulbs are in use. It is important to look at lighting in terms of “lumens,” i.e., light levels not just wattage. A large portion of wattage consumed by traditional incandescent bulbs is used to radiate unnecessary heat rather than simply produce light. Many newer bulbs can produce the same amount of light as traditional bulbs but use much less energy. This equipment, combined with the use of occupancy sensors and other monitoring devices, can have a substantial impact on reducing energy consumption.

In addition, seeking out ways for greater uniformity (consistency of light levels by eliminating dark spots) can often help achieve even greater energy savings because the area may appear better lit even with less light. This is often the case for parking lot lighting. Similarly, much of the lighting inside and in the exterior of buildings is wasted because it is not always properly directed. Exterior lighting should always be directed downward rather than upward, which disturbs natural habitat.

Case Studies

The case studies that follow, representing both shopping centers and retail stores, highlight various successful ways to implement lighting retrofits and make a substantial impact in energy usage and expense savings.

Parking Lot Lighting Retrofit. Casto, a private real estate firm, has a comprehensive sustainability plan in place. The program, known as *CastoConserves*, is designed to highlight the importance of green practices at the corporate office and at the properties and to encourage creativity in the development of innovative, cost-saving, sustainability solutions. One example of a successful project completed was a parking lot lighting retrofit at Deerfield Towne Center, a property managed by Casto in Mason, Ohio.

- In August 2008, digital clock timers were installed, which allowed for the zoning of the common area lights into four zones. The one-time cost to retool the connectors and timers in the mechanical room was approximately \$4,000, and now common area lights are controlled based on need. The project has yielded total savings around \$12,000, a three-fold payback per year.
- Following the success of the lighting timer installation in 2012, the property embarked on a larger project to upgrade and retrofit all of the parking lot and sidewalk lighting with the help of **Power Patriots**. The project cost approximately \$30,000; however, about 12% of the project costs were offset by an energy efficiency rebate. This project included replacing the existing 1,000 watt metal halide ballasts and lamps with new natural white, high-efficiency, 575-watt, pulse start–type ballasts and lamps (86 in total). The sidewalk lighting was also upgraded by replacing 175-watt metal halide ballast and lamps with new, natural white, 100-watt, pulse start–type ballast and lamps.

Based on annual readings from before and after the installation, this resulted in an additional savings of approximately \$8,500 per year (or 21%). The estimated payback on the initial retrofit cost is expected to be less than three years.



Retrofit Lamps Used at Deerfield Towne Center

In-Store Lighting Retrofit. **Starbucks** was a pioneer in this area and started its in-store lighting retrofits in 2009. Back then, most LEDs didn't have a sufficient warm light and were not suitable from a design perspective for Starbucks' needs. The company worked with General Electric to develop a bulb color that was similar to soft white incandescent light and was the first of its kind. Starbucks has completed lighting replacements in over 7,000 stores.

- Installing the LED lights saved about 7% on average in the stores' electricity consumption. A new LED bulb requires 7 to 10 watts, depending on light output and replaces 50 to 60 watt equivalent lumen bulbs, either incandescent or halogen.
- One of the company's corporate sustainability goals is to reduce energy consumption in all company owned stores by 25% by 2015. Starbucks' efforts have been paying off and the company has been able to decrease electricity usage by 7.5% since 2008. Starbucks' is also implementing LED lighting in their signage because of its lighting

efficiency and durability compared with neon, which retailers traditionally used in exterior signage.

In-Store Lighting Retrofit. Target is very well known for its green efforts and corporate responsibility. It reduced greenhouse gas emissions by 5% in 2011 (against a 2007 baseline) and has goals to cut consumption by 10% per square feet of retail by the end of 2015. One of the ways Target has been able to make strides in attaining these goals is through lighting retrofits.

- The largest lighting retrofit Target has taken on has been a sales-floor lighting retrofit program. Target converted existing 4-bulb overhead fixtures to more efficient low-wattage 2-bulb fixtures, which consumed 48% less energy while providing the same amount of light.
- By the end of 2011 this retrofit was implemented in over 1,100 locations (or about 62% of the stores). The project has led to energy savings of approximately 10%.



How to Calculate the Value of Energy Savings for Lighting

1. Count the number of bulbs, as some fixtures may have multiple bulbs and all must be counted.
2. Calculate the number of kilowatts being used.
 - Formula: Watts / 1,000 = Kilowatt (kW)
 - Example: 2 light bulbs that are 60 watts each on for 1 hour
= 2 * 60 / 1,000 = 0.12 Kilowatts
3. Determine the cost of electricity per kilowatt hour during peak and off peak times.
 - Formula: Kilowatt (kW) x Hours Of Use = Kilowatt Hour (kWh)
4. Calculate the cost
 - Formula: Kilowatt Hours (kWh) x Kilowatt Rate = Cost of Usage
 - Example: If the two 60 watt bulbs are turned off for 1 hour a day for 365 days per year, and the rate of electricity is \$0.05 on average, then the total annual savings for the two light bulbs would be \$2.19.
= 2 * 60 / 1,000 * 365 * \$0.05 = \$2.19

Lighting Resources

[U.S. Energy Department's FAQs on lighting choices to help save money.](#)

[WLS Lighting Systems](#) is a provider of lighting solutions including manufacturing and wireless controls and completed work in various shopping centers throughout the U.S.

[Profile Systems LLC](#) is a purveyor of affordable web-enabled lighting control systems.

III. ENERGY MANAGEMENT SYSTEMS, CONTROLS, AND UTILITY PROCUREMENT

Summary. To put it simply, an Energy Management System (EMS) is a combination of automated integrated devices that allow users to monitor and control energy consumption either on-site or remotely, including heating, ventilation, and air conditioning (HVAC) and lighting. Depending on the type of equipment, it can be very simple or complex with customized features. For landlords and retailers of open-air centers, energy management systems can have the potential to make a large impact on expenses. These systems allow for benchmarking and trending energy usage, and they can also provide an automatic control to events. Once a system is in place, regular maintenance and/or re-commissioning to survey and test the equipment can be important to ensure that performance remains optimal over time and to reduce inefficiencies. This type of system is ideal for retail stores with large and mostly standardized operations but does not work as well for smaller or decentralized retailers operating with stores that have unique needs.

Commissioning when a building is developed (or retro-commissioning if the building is already operational but is the first time it is being reviewed) is a systematic process for investigating and analyzing a building to optimize performance. In the case of retro-commissioning at a later date, this can help identify problems and inefficiencies. HVAC systems typically account for a significant amount of building operating costs, so retro-commissioning of HVAC systems often results in the most substantial impact for cost and energy savings. A detailed review of the heating and cooling system, humidity, automation system, and pressurization controls areas should also be reviewed.

Based on an interview with the head of energy and sustainability at a large U.S. retail owner/developer, implementing energy management systems installations had the greatest impact on their shopping center portfolio in terms of overall expense savings. About 80% of the company's retail projects now have an energy control system in place, which has saved the company 20% savings on average. By retro-commissioning they have seen 15% savings on

average. The combination of these efforts has allowed the company, which prefers to remain anonymous to operate more efficiently and identify problems in the systems it may not have been able to find otherwise.

Case Studies

The following case studies explain some of the ways landlords and retailers have implemented energy management systems installations successfully in their operations.

Nike, Inc. is one of the leaders in sustainability and has committed to pursue LEED certification in all new retail stores and set a corporate-wide target for a 20% reduction in carbon emissions by 2015 versus a 2011 baseline. One of the efforts that was undertaken to achieve this goal is installing centralized lighting and HVAC controls in 130 stores with the help of **Comfort System USA**.

- These Energy Management Systems (EMS) utilize Novar-based technology and are remotely monitored and activated with the store security system. They control the timing and set points for the HVAC systems, exhaust fans, and lighting levels for both inside and outside the store.
- In addition to energy assessment and analysis, the system also monitors daily alarms remotely, which can help avoid the need for onsite technicians and save on labor costs.
- The systems Nike put in place cost \$20,000 per store on average initially with a total investment of \$2.5 million across Nike's portfolio. By implementing this initiative, Nike has been able to achieve energy savings of 10-20% per year. The payback on investment is generally about three years and has generated approximately a 20% return on investment.



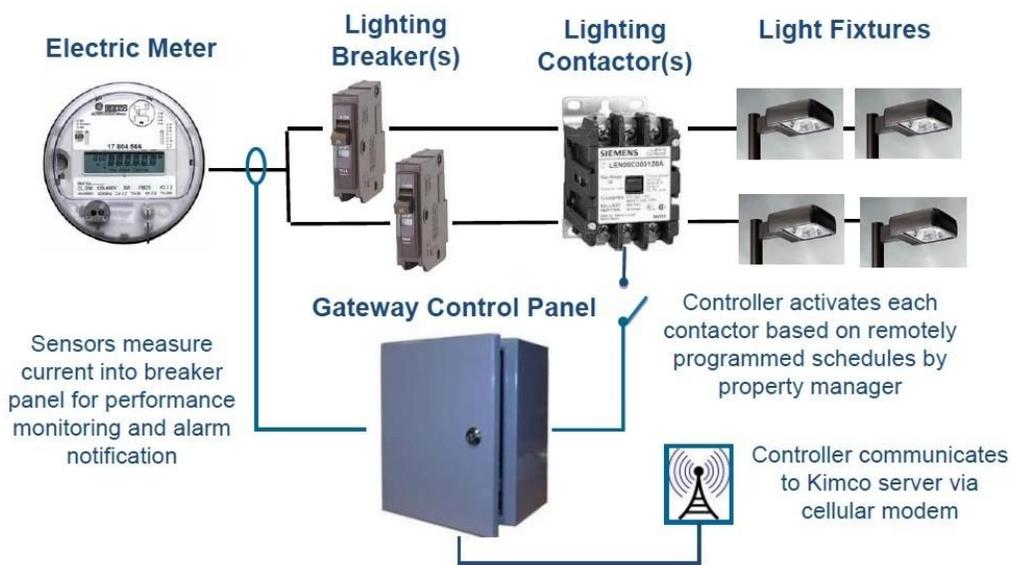
Nike Energy Management System (courtesy of Nike)

Kimco Realty views green initiatives as a high priority and has successfully implemented numerous sustainable projects that are generating long-term cost savings. Kimco also has a great [corporate responsibility/sustainability blog](#), which provides updates and in-depth insight on some of the work the company is spearheading on the sustainability front. One of the areas Kimco is highly focused on and sees as a big future opportunity is remote-based energy and lighting control management systems. Kimco calls this initiative their “Gateway Building Controls Program.”

- These systems are web-enabled controllers that give property managers the ability to control lighting remotely through any web browser or iPad. Kimco has installed this technology at over 50 sites and plans to continue the rollout on an even broader basis in 2013.
- Because the system is weatherproof, the technology can be installed either indoors or outdoors. It connects to the property’s lighting electric system and replaces the function of a typical photocell or time clock that would normally signal the lights on or off.
- The intuitive graphic dashboard allows property managers to precisely monitor and control outdoor lighting. Schedules automatically adjust to the sunrise and sunset times each day, while night-lighting schedules allow a portion of the lights to be turned off during the late-night hours. It also includes an energy-savings forecast tool to assist in optimizing performance by providing instant feedback on how scheduling adjustments impact the annual energy performance. There is also an alarm feature that will email or text property management if there is a power outage or other electrical malfunction, which can improve security and safety through faster resolution.
- Kimco has found that the ability to control lighting with greater precision has paid off. An adjustment of just 15 minutes at both dusk and dawn can yield savings of 4% per year. An additional 15–30% in savings can be achieved through night-lighting schedules, which reduces the lighting load by up to 50% for three to six hours each night. Thus far, the first phase of installations has averaged approximately 25% in energy savings (around \$2,000–5,000 in savings per property) with an expected two- to four-year payback. Kimco believes there are additional long-term energy-saving implications for the portfolio if the Gateway platform is rolled out to other applications, including sub-metering, irrigation, interior lighting, HVAC, etc.



Gateway Control Panel (courtesy of Kimco)



Gateway System Program Design (courtesy of Kimco)

There are other types of control devices that this framework does not address in detail, but may be worthwhile exploring. These include:

HVAC Retrofits. Retrofitting or replacing HVAC units with new high-efficiency systems can be costly, but may be an appropriate solution when an existing HVAC system is reaching the end of its useful life. Some newer models now offer controls and monitoring capabilities, which can improve indoor comfort in addition to performance reliability.

Variable Frequency Drives (VFD). Standard motors in an HVAC system lack precision in the control measures that adjust the speed. Adding a Variable Frequency Drive helps reduce the amount of energy consumed by electric motors and control the frequency of electrical power. These are attached to pumps and may often be subsidized by the utility company. VFDs may also be known as inverters or variable-speed drives (VSD). They are commonly found in chiller pumps, cooling tower fans, air handlers or other large motors or pumps. Depending on the type of VFD installed, there is the possibility to generate a payback between one and two years.

Utility Procurement. The ability to buy energy in the open market varies by geographic region. The regulations around utility procurement and the cost to do so can be fairly complicated. Understanding the basics on the supply side of what you can do within your retail store or shopping center portfolio is required to identify whether cost savings can be achieved. Retailers and landlords new to this area may need to bring in outside expertise to help guide them through the process. In a deregulated market, prices are generally competitive, but they will be volatile and subject to price fluctuations resulting from market conditions.

Controlling utility rates by looking for competitive providers as well as reducing consumption will compound the impact of sustainability efforts and boost savings. Although managing rates is technically not sustainable on its own merits, it does save on expenses. An ongoing review of short- and long-term energy goals driven by market fundamentals is key to a successful energy management strategy. There are various approaches to buying energy in the open market. Many are too complex to discuss within this framework; however, the most basic types include:

1. **Block (Fixed) Price.** This is a purchase structure where a user purchases electricity at wholesale “block” rates to stabilize portions of the electric price. This offers stability and price certainty to manage risk because you are locked in at a fixed price, but if energy prices fall, you pay more.
2. **Index (Floating) Price.** This consists of buying energy based on the real time market (e.g., commodities futures exchange, NYMEX) and may achieve a lower cost, but it can be volatile based on supply/demand drivers.

3. Call Options. Gives the purchaser the right, but not the obligation, to buy the commodity at a set price. There is a cost associated with having an option, but it offers the flexibility to hedge against future price increases.

There is also the option to utilize some combination of strategies. To accomplish this, determine a target percent of usage you want to fix in the forward market and let the rest float via an index. This creates a partial hedge for price increases in the future. In either case, make sure to audit your energy bills to verify that you are getting what you are paying for.

Energy Management Resources

[Novar](#) is one of the leaders in multi-site energy management and technology that controls and manages HVAC and lighting systems for businesses with multiple locations. Many retailers have used their services (The Home Depot, PetSmart, Lowe's, Toys R Us, etc.).

[ECOVA](#) handles sustainability and energy management for many major landlords and retailers, often by helping monitor and provide utility payment systems.

[U.S. Energy Information Administration guide to status of electricity restructuring by state](#) offers information on state policies and incentives regarding energy from the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy.

[Advanced Energy Retrofit Guide – Practical Ways to Improve Energy Performance](#) is a great source of information for retail facilities prepared by the Pacific Northwest National Library with input from the U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy (EERE), through the Building Technologies Program.

IV. SOLAR INSTALLATION

Summary. Incorporating alternative energy solutions by adding solar in a retail store or shopping center is a great way to be sustainable and generate cost savings (and possibly earn income)! There are numerous ways to approach a solar project, and it's important to understand the options available. The most common ways are either to own the entire system by financing or purchasing the solar project outright, lease the system from a third party, or use a power

purchase agreement (PPA) to pay for the electricity generated on site, which is operated by a third party. The decision on which option to implement depends on the amount of capital you have available to invest, the level of control you want to have for the system in place, and how comfortable you feel with the vendor.

Taking on a solar project is often an expensive proposition, but the increase in demand for solar energy, along with technological advances, are starting to bring down the cost. It is important to research any financing or government incentives available (see [Solar Resources](#)). In addition to incorporating clean energy into a project, solar can also provide for revenue-generation opportunities. Projects with large flat roofs and useable square footage along with locations in dense areas that will be beneficial to utility companies are ideal. Peak solar energy production is typically correlated to peak demand-based power prices, which helps make the economics more favorable. Aside from the environmental and economic benefits, incorporating alternative energy like solar can provide for good backup for facilities in the event of power loss in a natural disaster, such as a hurricane.

Many utilities as part of their interconnection process, do require that systems automatically disconnect from the grid in the event of power loss in order to prevent service crews from encountering live wires in an area that loses power due to a natural disaster. In that case solar power would not be possible.

Although solar energy is the only type of renewable energy addressed within this framework, other sources of alternative energy such as wind power or hydroelectric energy can also be used by buildings for supplemental energy. Solar is the most widely adopted by retailers and can be installed on site.

Case Study

Regency Centers became involved in sustainability efforts in 2007 before many of their REIT counterparts. The foundation of Regency's green pursuits came from believing sustainability is a natural extension of standing for quality as a long-term holder of real estate. The company also had the foresight to see that this was the direction the future of the business was headed. Regency's program, **Greengenuity**, focuses on ways to reduce operating costs and reduce the environmental impact of their properties. One recent project Regency Centers implemented was a solar installation at the Shops at Saugus.

- Completed in 2011, this solar project at the Shops at Saugus in Massachusetts included 1,064 rooftop solar panels, supplying approximately 65% of the electricity needed to power Trader Joe's, the grocer at the property. It generates an estimated 263,000 kilowatt hours of renewable energy per year and creates a new source of income for the company while providing Trader Joe's with reliable and cost-effective electricity with a hedge against future rate increases.

- In Massachusetts, The Green Communities Act of 2008 established a Solar Carve-Out in the Commonwealth's Renewable Portfolio Standard (RPS), which serves as an incentive for solar development. The RPS Solar Carve-Out is a market-based incentive designed to support development of solar photovoltaic. Regency is exploring incorporating solar elsewhere in its portfolio if the incentives/rebates provided make economic sense.



Solar Panels at Shops at Saugus (courtesy of Regency Centers)



Trader Joe's at Shops at Saugus (courtesy of Regency Centers)

Solar Resources

[The Database of State Incentives for Renewable Energy \(DSIRE\)](#) is a great website that provides detailed information on local, state, and federal incentives and policies regarding solar energy (and is funded by DOE). Includes policy guides, news, library, etc.

[The U.S. Environmental Protection Agency \(EPA\)](#) is a website on clean energy. This website provides plenty of useful information on clean energy programs, state and local information, and other tools and resources.

[Alta Energy](#) helps owners invest in solar, obtain bids and understand the incentives available based on region.

V. BEHAVIORAL MODIFICATION

Summary. Educating property and store managers to think and behave *green* can make a meaningful difference. Simple things like turning off the lights when leaving a room, keeping the temperature set to moderate levels and shutting the door in extreme temperatures are well known best practices, but they are not always followed. These “basic” habits can have a significant impact on the bottom line and the environment. Many landlords prepare sustainable guidelines for tenants to help them achieve their corporate goals, and many retailers distribute sustainability handbooks on green practices to employees. If this is not something your company is doing, this is one of the easiest (and least expensive) areas to address.

Case Study

As a purpose-led company, ANN INC. knows that its clients and associates expect strong corporate social responsibility performance. In 2009, the company launched an internal program focused on energy conservation in its stores called “Ann Conserves Energy” (ACE). The program provides energy awareness training to associates as part of their initial orientation process. In addition, every store location is provided with guidelines describing sustainability best practices and procedures. Recommendations include:

- Temperature settings and controls
- Guidelines for lighting timers
- Best practices for use of equipment and procedures regarding doors



(Photo courtesy of Ann Inc.)

This type of operations sustainability training is fairly common among landlords and retailers, but the ACE program has worked particularly well because associate incentives were also incorporated. When the program was launched, the highest-performing stores were recognized.

The training, coupled with the associate recognition, has paid off for ANN INC. Since the baseline year of 2008, the ACE program resulted in a 3% decrease in kilowatt hours per square foot. Some of the most successful stores were actually able to reduce energy consumption by up to 26% through this program. Most importantly, ANN INC. has saved a significant amount in energy costs since 2008. The program costs very little to implement but in order to make it work, associate engagement and ongoing communication has been essential.

Now that the ACE program has been in place for some time, it is standard operating procedure. The program is fully integrated into the store operations and is a best practice requirement.

Behavioral Modification Resources

["Close the door"](#) discusses energy savings that can be achieved just by keeping doors shut

VI. EQUIPMENT OPTIMIZATION

Summary. Equipment optimization encompasses any practices that are designed to put the most efficient systems and equipment in place to keep the store or shopping center running effectively and at the lowest cost. This can include occupancy sensors in common areas (bathrooms or shared conference rooms), which can cost as little as a few hundred dollars to implement. This is a very broad “best practice” intended to cover a wide range of projects. As you are thinking about how your store or shopping center is operating, review the areas that are using the most energy. Are there better alternatives to what you currently have, and if so, what is the cost to put it in place? One case study on a successful equipment optimization strategy follows.

Case Study

Publix views resource conservation as a key objective within the company’s culture. The company developed the “Green Routine” program over 10 years ago, which provides sustainability education and helped lay the foundation for store operations and real estate green ideas. Publix’s sustainability program includes an “Energy Roadmap” with approximately 50 different conservation efforts that could be implemented company wide. This is particularly appealing because it has allowed Publix to evaluate various ways to control store operations and save money over the long-term. For a grocer such as Publix, refrigeration is one particularly important part of its operations to seek energy savings. Some best practices include:

- Case alarm monitoring. Refrigeration alarm monitoring gives stores real-time warning if the cases have a large change in temperature to save energy and avoid loss.
- Secondary coolant technology. Some locations have secondary cooling technology that reduces the total amount of refrigerant charge.
- LED lighting. Over 500 Publix stores have LED lighting on the refrigerated door cases. This is saving the company nearly 100,000 kilowatt hours annually per store.
- Night Shades. Publix is also looking at night shades on the refrigerator cases to reduce energy during the hours when the store is closed.
- Case temperature. Refrigerated cases use non-ozone depleting refrigerants.

Based on these achievements, a total of 14 Publix stores have also received the GreenChill certification, which is awarded by the Environmental Protection Agency (EPA) for stores that meet benchmarks for cutting emissions of refrigerants. This is a partnership with food retailers to decrease the impact to the ozone layer and resulting climate change.

Resources

[PRSM](#) (Professional Retail Store Maintenance Association) is a membership organization empowering retail facilities professionals by delivering industry best practices, education, forums and partnerships.

VII. LANDLORD-TENANT COLLABORATION

Summary. Green leasing aligns landlords and retailers by incorporating language into the lease document that makes it easier to carry out sustainable practices in shopping centers. Addressing green provisions at the time of lease negotiation makes sustainability easier and has the potential to generate additional energy savings by aligning landlords and tenants.

The Retail Industry Leaders Association (RILA), the International Council of Shopping Centers (ICSC), and the Professional Retail Store Maintenance Association (PRSM) have collaboratively engaged retailers and developers in a dialogue to identify and address these challenges in a way that makes sustainability improvements mutually beneficial to both parties. These challenges can be addressed proactively by updating new leases with sustainability measures that are good for the tenant as well as the landlord.

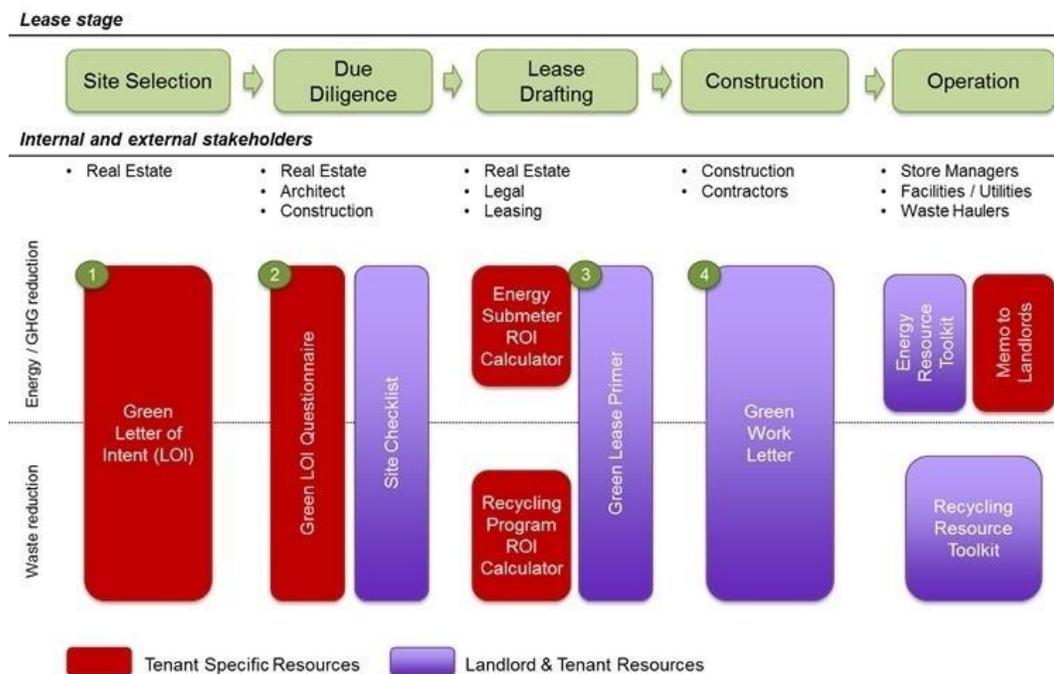
The unique nature of every company and retail location requires that every lease be addressed with a case-by-case approach. Introducing sustainability measures into leases requires educating both parties' real estate teams on the importance of green features, the cost-saving opportunities, and each party's specific priorities. Internal education and alignment is crucial for successful green feature negotiations.

Thus far, RILA, ICSC, and PRSM have coordinated numerous working group calls and in-person meetings to understand the opportunities and challenges faced today, identify mutually beneficial solutions, develop tools that integrate into existing workflows, and educate internal and external parties on the opportunity.

RILA has developed and published a two-page [RILA Green Lease Primer](#), with the help of the Institute for Market Transformation, to educate Real Estate or Leasing teams on the possible elements of a retail green lease.

ICSC, with the cooperation of its members and RILA and PRSM members, will be publishing its own version of the *Shopping Center Study Green Lease* in Fall 2013.

Some other tools that RILA and ICSC have been developing integrate into the traditional retail lease cycle, and include those listed in the diagram below.



A Green Lease Process

Green leasing can accomplish a number of goals to help facilitate sustainable energy practices, but it can also address various other green aspects to improve shopping center sustainability, cost savings and long-term performance. One way landlords and retailers are working together to pursue sustainable endeavors is through recycling efforts.

Case Study

As stewards of the planet and with sustainability as a core value, **EDENS** believes it is responsible to do all it can to “Reduce, Reuse, and Recycle.” This mantra has had an overwhelmingly positive affect on the environment. By recycling, they remove organic waste from landfills, in turn reducing the largest source of methane gas, a greenhouse gas 25% more potent than carbon dioxide. In addition, recycling can reduce transportation costs and will typically satisfy state and local regulations. How did EDENS get there?

As a commercial retail pioneer, EDENS has been actively recycling for many years and is always looking for new and better ways to do things. In 2012, EDENS set out to test innovative recycling methods at several of its centers. The company is working to actively engage tenants in the recycling process and initiate a pilot program by testing new methods that make the process easier and more user friendly, with the ultimate goal of increasing the amount of recycling done at EDENS properties.

The three centers chosen to pilot the program were a neighborhood center and two separate mixed-use projects. As EDENS rolled out these initiatives, they encountered several challenges, including space constraints, tenant mix and waste types, local recycling facilities, tenant buy-in, and training and education. With some creativity, EDENS was able to come up with several innovative solutions to many of these opportunities. EDENS utilized custom-made compactors that process both trash and commingled recycling, and they used vertical compactors (also known as Vert-I-Pack) in areas with extremely limited space. Management even had some receptacles outfitted with a solar panel as a supplemental energy source. In larger, multi-building properties with limited space, EDENS utilized decentralized collection points for trash and recycling and a cart system to transport to central compacting centers. EDENS is partnering with its waste management company to address the issues of continuous training and education.

Overall, EDENS has made some good progress and has learned how to make the program more successful going forward with other centers.

The results through the first quarter of 2013 are:

- 13 tons recycled per month at Mosaic (Merrifield, Va.) and 50% diverted from landfills
- 5 tons recycled per month at Trenholm Plaza (Columbia, S.C.) and 10% diverted from landfills
- 3 tons recycled per month at Bishops Corner (West Hartford, Conn.) and 32% diverted from landfills

After EDENS completes its initial pilot program, it plans to roll out comingled recycling in phases to its entire portfolio by 2015 with the goal of recycling 50% of the shopping centers' waste.



Solar Compactor and Cardboard Recycling (courtesy of EDENS)



Vert-I-Pack Compactor (courtesy of EDENS)

Landlord-Tenant Resources

[RILA's Retail Sustainability Report](#) is a great resource and industry guide. The full report is available to download.

[Online Green Lease Library](#) provides guidance, resources, and examples to take advantage of green leases.

VIII. OTHER WAYS TO ADDRESS ENERGY EFFICIENCY

Summary. The ways energy efficiency can be addressed in open-air shopping centers are almost endless.

Other areas that have not been previously addressed but can be reviewed include:

Daylighting: Daylighting simply means looking for ways to increase natural daylight in interior space without resorting to using lamps or electricity for artificial lighting. This typically is done by adding skylights or increasing the number of windows to provide maximum lighting in the retail space. This may be more difficult to achieve for an existing building versus a new development. The orientation of the retail can also have an impact. For example, southern exposure can best take advantage of daylight and provide heating in the winter. In warmer environments, it may be advantageous to try to get a western exposure, which would help avoid the sun to reduce the cost of cooling a building.

Other active daylighting measures can also be explored; however, the cost of non-traditional natural lighting may be expensive. One leading outdoor sports retailer, REI, explored the use of solar tubes, which were placed on the roof to channel a larger amount of light into the interior of the space. REI's store in Round Rock, Texas, has over 100 "Solatubes", which gather sunlight and focus it into the store. A benefit to solar tubes is that they require less surface area to implement and can have similar impact as skylights.



Solar tubes from [REI](#)

Roofing Projects: There are many types of roofing projects that can be implemented to better maintain the roof of the building and promote sustainability and generate long-term savings. Environmentally friendly roofing projects help to reduce the “urban heat island effect”, which is caused by the sun heating up dark surfaces including the roof of a building and paved parking areas. The heat island effect leads to higher temperatures in developed areas and increased cooling costs.

One of the most common ways to reduce the heat island effect and create a sustainable roof is to look for materials with a high Solar Reflective Index (SRI). The SRI ranges from 0 to 1, with 0 being the lowest (black) and 1 being the highest (white). These materials can include white coatings, white paint, or white cement tile. Although there are different ways to implement a white roofing project, many of these can be very simple and cost effective.

Another sustainable type of roofing project is a “green roof,” which is a roof covered with flats of vegetation. These also help reduce the heat island effect, absorb storm water due to the vegetation, hold hot/cool temperatures, and may also improve the building acoustics. However, these types of roofing projects require a lot of planning and can also be very expensive to install, so it is important to review and understand all the facets of this type of installation along with any ongoing maintenance that would be required. Most retail projects prefer white reflective roofs rather than green roofs.

It is also important to monitor the total building envelope (at least annually). Significant savings can be achieved by improving insulation to maintain indoor temperatures from excessive heat or cold. These can be achieved through proper insulation and air filtration.



GreenGrid Roof on Apple Store in Chicago www.greenroof.com

Other Resources

RoofPoint is a green rating system developed by the Center for Environmental Innovation in Roofing to help building owners choose roof systems based on sustainable standards including long-term energy and environmental benefits.

F. Sustainable Building Certification

Energy Star. The Energy Star for Retail Stores designation can only be received by single stores that are larger than 5,000 square feet and is not intended for multi-tenant shopping centers. Uses that fall within the applicable retail type include department stores, banks, and warehouse clubs, among others. Retail stores located within a larger mixed-use project may also be eligible to receive an Energy Star rating. To receive the designation, the building's performance must score at least a 75 out of 100 points, meaning that the building is within the highest efficient 25% compared against similar facilities. However, any building or project can be entered into the Energy Star database (at no cost) and it can serve as a repository for information for establishing benchmarks. Energy Star is a project of the U.S. Government through the EPA and the DOE for individuals and businesses to promote energy efficiency and protect the environment. Energy Star continues to be one of the best tools available for operating properties for measuring efficiency, whereas some of the other building certification

standards (such as LEED) have generally been more geared toward the green design and construction process.

LEED. A building doesn't have to be LEED (Leadership in Energy and Environmental Design) certified to be sustainable, but getting the LEED designation provides third-party validation, which many public entities and investors recognize. LEED for Retail can offer certification for projects in two significant ways, either through New Construction & Major Renovation or through Commercial Interiors. To earn the LEED certification, either at the base, silver, gold, or platinum level, points must be earned based on specific criteria in various categories. According to the U.S. Green Building Council, as of early 2013 just over 250 retail projects are certified for the LEED for Retail New Construction designation, with an additional 383 projects registered.

BREEAM. BREEAM is short for the Building Research Establishment Limited's Environmental Assessment Method, which sets the standard for best practices in sustainable design. This assessment method was launched in 1990 in the U.K., but provides for country-specific schemes throughout Europe and in many locations around the world. BREEAM can be used to review and assess the environmental performance of any type of building, and credits are awarded based on the amount of environmental impact, responsible sourcing of materials, construction practices and performance measures, which are reviewed against standard benchmarks. A BREEAM assessment ranks properties between 0 to 100%, which is based on specific criteria including management, health and well being, energy, materials, and ecology, among other areas. A score above 30% is considered a passing property.

Green Globes. This is another environmental assessment, education, and rating system that is an alternative to LEED. Green Globes is a growing certification program within the U.S. but is considered to be a primary sustainability standard in Canada. Green Globes was developed using the principles outlined in the BREEAM assessment. Similar to LEED, there are four levels to earn between one and four green globes. One of the reported benefits of this certification is that it offers a bit more flexibility with no prerequisites and partial credit options. It can also be more affordable.

Green Star. Green Star is a comprehensive sustainability rating developed by the Green Building Council of Australia (GBCA) and covers all types of projects. Developed in 2003, the Green Star tool helps reduce the environmental impact of buildings by supporting health, cost savings, and building design practices that encourage sustainability. Similar to most of the other designations, Green Star uses a credit rating system (with a total of up to six stars) to determine total scoring.

CASBEE. Developed in 2004, Comprehensive Assessment System for Building Environment Efficiency (CASBEE) began through the support of a joint project between the Japanese government, academia, and the real estate industry. The guiding principles behind CASBEE are to award a wide range of superior-performing buildings, taking into consideration issues unique to Asia and Japan. Unlike many of the other industry certifications, there are no checklists or point ratings. The system is designed to be simple and achieve a broader goal of improving environmental quality and reducing the environmental burden.

Sustainable Building Certification Resources

[International Facility Management Foundation](#) (IFMA) offers a guide covering green building rating systems, comparison, and case studies.

[Co-Star](#) offers a paper comparing differences in international sustainability standards

[Building Owners and Managers International Association](#) (BOMA) is a primary source of information on building management and operations and offers information on sustainability.

Additional Training and Education Resources

[Association for Energy Affordability](#)

[Green Education Services](#)

[Urban Green Council's Green Professional Building Skills Training \(GPRO\)](#)

G. About the Fiala Fellowship, the ICSC Foundation, and Author Adria Savarese

The Fiala Fellowship is awarded each year by the ICSC Foundation to an individual under the age of 35 to pursue a project that both promotes the retail real estate industry and makes a long-lasting contribution. This award is made possible by a generous gift from Regency Centers in honor of Mary Lou Fiala. The Fellowship combines mentoring, education, networking, and industry-wide exposure. The focus for the 2012–2013 Fellowship year was to broaden the industry's knowledge and understanding of sustainability, develop a framework for green initiatives that can be widely implemented within open-air shopping centers, and to persuade landlords to adopt green practices as part of their corporate philosophy. Part of the Fellowship included a mentorship from Liz Holland, CEO of Abbell Associates, and Rudolph E. Milian, SCSM, SCMD, SVP of ICSC, along with support from the ICSC Foundation throughout the year.

The ICSC Foundation promotes and rewards community support efforts and provides educational scholarships to undergraduate and graduate students and retail real estate practitioners. The Community Support Award program is designed to recognize exceptional contributions by shopping centers or shopping center companies within their communities. Established in 1988, the ICSC Foundation is the non-profit public charity of the International Council of Shopping Centers, Inc. (ICSC).



ADRIA SAVARESE, Vice President, is a member of the retail sector of J.P. Morgan Asset Management—Global Real Assets. An employee since 2006, Adria manages a portfolio of retail and mixed-use properties across the U.S. The role focuses on determining the overall investment strategy including leasing, operations, development, financing, valuation and disposition. She has a B.S. in Policy Analysis and Management from Cornell University. Adria is a Certified Leasing Specialist (CLS) and received the LEED Associate designation. Adria is an active member of ICSC and has taught and presented at various ICSC events, including the Executive Learning Series and at the University of Shopping Centers. Adria is the ICSC Foundation’s 2012–2013 Fiala Fellow.

NOTES

ⁱ Reference ICSC -- <http://edata.icsc.org/tablesandcharts/index/cat/1>

ⁱⁱ Reference USGBC -- <http://www.usgbc.org/ShowFile.aspx?DocumentID=10561>