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[sus.tain'abil'i.ty]

1. meeting the needs of today without compromising the needs of future generations

2. improving the standard of living by protecting human health, conserving the environment, using resources efficiently and advancing long-term economic competitiveness

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Brought to you by:

Berks Nature

About Berks Nature

At Berks Nature, we believe that nature is essential to our quality of life. We are your local non-profit conservation organization and rely on contributions and donations from people like you to accomplish our work. Become a member today at www.BerksNature.org.

A 501(c)(3) conservation organization, Berks Nature has been serving the Berks County community since 1974. Our headquarters are located in the city's historic Waterworks Building on 11th Street in Reading. In September 2016, we began construction on The Nature Place, an environmentally responsible, aesthetically respectful education center in Angelica Park. The new education center, slated for completion in Summer 2017, will be an addition to the already existing one-classroom, 800 square foot structure (formerly the boathouse) in the park. Through this project, Berks Nature will create a working example of conservation principles and sustainable development in the region.

In addition to providing nature-based programming and our annual summer Eco-Camp, Berks Nature strongly supports Berks County's number one industry- agriculture- and the protection of our special natural areas. To date, we have permanently preserved over 8,000 acres through conservation easements, acquisitions, and transfers. As important as these land preservation efforts are, we also realize that a healthy community needs economic growth. By using our County's Comprehensive Plan as a guide, we continue to work with municipalities to promote growth in the proper places, such as areas surrounding existing development.

As we all know, our water resources are important to everyone in Berks County – residents, businesses, and visitors alike. We have spent the past fifteen years addressing our water resources and gaining support for the restoration and protection of these resources; particularly focused around drinking water supplies. Water will always be a major issue in Berks County and we are proud to be the leaders in addressing the issue.

Berks Nature currently has 1000 members and our membership continues to grow. Currently, we have six staff members that are governed by our Board of Directors.

STATE OF THE ENVIRONMENT

BERKS COUNTY, PA

The State of the Environment Program is an ongoing project of Berks Nature intended to raise awareness and appreciation of our exceptional natural resources in Berks, and to stimulate action and discussion to protect these resources. We invite you to learn something new, consider changing some of your behaviors as a result, and become engaged in our conservation work – the health of our community depends on it.

About the Author

A strategy consultant since 1993, Scot Case works with for-profit, non-profit, and government organizations to develop winning strategies and successful solutions for complex challenges. Throughout his career as a strategist, consultant, and sustainability expert, Scot has worked with organizations ranging from individual executives at small start-up organizations to the White House, U.S. Environmental Protection Agency, Walmart and other Fortune 100 companies, and federal, state, and local governments around the world. He lives in Berks County with his wife and two daughters. You can reach him at scot@springboardintl.com or www.linkedin.com/in/scotcase.

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Introduction

Sustainability as a Business Strategy

One of the most fascinating environmental trends of the past decade has been the global business community's embrace of sustainability. What began as an idea promoted by environmentalists to improve the environment has been adopted as a profitable business strategy.

According to a 2016 survey of more than 1,000 CEOs around the world, 97 percent believe sustainability is important for the future success of their company.[1] Sustainability has become important enough for investors that more than 81 percent of S&P 500 companies published sustainability reports last year.[2]

Large, well-known, and highly-profitable companies are embracing sustainability as a money-making business strategy, including:

- In 2005, Walmart announced three strategic sustainability goals: be powered by 100 percent renewable energy (e.g., solar or wind); produce zero waste; and sell more sustainable products. The three goals continue to drive corporate decisions more than a decade later. [3]

- Unilever, which owns brands such as Dove, Hellman's, Lipton, and Ben & Jerry's, has aggressive sustainability initiatives for each business unit. In May 2016, it reported that its sustainable living brands grew 30 percent faster in 2015 than any of its other brands and that those brands accounted for almost half of the company's total growth. [4]

- McDonald's launched efforts to buy recycled content products in the mid-1990s. It is currently focused on reducing its carbon footprint (i.e., its contributions to global warming) and improving the sustainability footprint of its beef, poultry, seafood, and dairy suppliers. [5]

- General Electric (GE) launched its Ecomagination program in 2005. The Ecomagination products, which include energy-, water-, and fuel-efficient products and products to tackle environmental issues like climate change, have generated more than $200 billion for the company since the program was launched. [6]

Companies that integrate sustainability considerations into their business strategy quickly recognize that their "sustainability footprint," a measure of a company's environmental, social, and financial impacts, is largely determined by the sustainability footprint of each supplier in its supply chain.

A company's supply chain can include hundreds of businesses that provide all of the products, components, materials, and services needed by the company. Each business within a supply chain, in turn, has potentially hundreds of businesses within its own supply chain.

As a result, when a few large, influential companies embrace sustainability as a business strategy, the impacts cascade quickly through supply chains into the broader business community, including into the local Berks County business community.

This Berks Nature report explores the local "green" economy and how sustainability strategies and concepts are being adopted by Berks County businesses.

This report does not attempt to identify all the Berks County companies that have embraced sustainability or that are making money "going green." It does not attempt to identify all of the ways they are doing it. It simply highlights some well-known local efforts as a way of illustrating some of the ways Berks County businesses are prospering in the global green economy.

If you know of other activities that should be highlighted in future Berks Nature reports, please contact the office of Berks Nature at 610.372.4992 or email info@berksnature.org.

Defining Sustainability

Sustainability was first popularized in a 1987 United Nations report highlighting ways to address global environmental threats. The authors of *Our Common Future* defined sustainability as the ability to meet "the needs of the present without compromising the ability of future generations to meet their own needs." [7]

As the term has been adopted by academics, politicians, environmentalists, and business leaders, its meaning has evolved to incorporate the related idea of the triple bottom line.

The triple bottom line measures business benefits along the following three dimensions:

- **People**
  How do business activities affect customers, employees, owners, neighbors, other communities, suppliers, and their children, grandchildren, and great-grandchildren?

- **Planet**
  How do business activities affect the Earth's ability to regenerate or continue providing the raw materials and resources necessary to support the business, including things like clean air, clean water, and a stable climate?

- **Profits**
  How do business activities enhance the long-term financial viability of the business?

The triple bottom line approach to sustainability has become an important business framework for understanding the social, environmental, and financial impacts of business planning and decision-making. It provides new insights into business opportunities, new metrics for measuring business success, and highlights the important role the business community plays in protecting and enhancing local and global environments and communities.

How Does Sustainability Create Business Value for Berks County Businesses?

Every company is different, but Berks County business executives suggested that their sustainability practices help:

- **Lower operating costs**
  Companies that focus on improving efficiency spend less on energy, water, fuel, materials, waste, packaging, transportation, and distribution.

- **Increase sales**
  Individual consumers and business customers want to buy more sustainable products from more sustainable companies.

- **Improve employee engagement**
  Companies with sustainability initiatives in place attract higher quality employees, reduce employee turnover, and benefit from a more engaged workforce.

- **Reduce risks**
  Companies can reduce the risk of accidents or fines and the associated risks of bad publicity on social media, within the local community, or in the press by proactively addressing issues identified and prioritized as part of a sustainability strategy.

Measuring Sustainability

There is an old business adage, attributed to numerous business gurus, that "what gets measured gets done."

Some of the earliest companies to adopt sustainability practices were unsure how sustainability would demonstrate business value. They were also unsure how to measure progress towards some of their sustainability goals. There are now standard reporting practices, including many industry-specific reporting standards and metrics, that make it easier for businesses to measure the value of sustainability.

The largest companies rely on sustainability reporting formats promoted by the Global Reporting Initiative (GRI), an environmental non-profit that developed a set of sustainability accounting metrics. The GRI approach is comparable to the Generally Accepted Accounting Principles commonly used in financial reporting. It defines the data that must be collected and the format for reporting the data.

None of the Berks County companies interviewed for this report have published a sustainability report using GRI guidelines, but many share environmental data. Several of the companies, including **Penske, R.M. Palmer Company, Misco, Giorgio Mushrooms,** and **RER Energy Group,** are routinely asked to provide information about their sustainability efforts so that their customers can include the information in their own GRI or related sustainability reports.

In addition to GRI's reporting approach, there are a number of industry- and product-specific sustainability guidelines and standards. Some of the guidelines and standards of most relevance to Berks County businesses include:

LEED

LEED is a set of green building standards developed by the U.S. Green Building Council (USGBC). The standards include a point-based system that can be used to rate the sustainability features of a variety of different building types. Buildings are rated as Platinum, Gold, Silver, or Certified.

Berks County has several LEED certified buildings including the **Berks County Community Foundation** (Platinum), **Albright's** Science Center, the Gaige Technology and Business Innovation Building at **Penn State Berks**, **Opportunity House Second Street Learning Center**, and a private residence that, among other impressive design features, includes a rainwater cistern to flush toilets and water the landscaping and a solar array to provide its electrical needs. The Nature Place, an environmental education center being built by **Berks Nature** in Reading's Angelica Park, is also expected to earn LEED certification.

Penn National Gaming developed two LEED certified properties during its recent expansion. The company is excited at what should be lower operating costs for the facilities.

The USGBC also tests and accredits professionals who demonstrate mastery of the LEED rating system. Several Berks County architecture, engineering, building and construction firms employ LEED accredited professionals (LEED-AP), including **Entech Engineering, Burkey Construction, Kautter & Kelley Architects, Fleetwood, Penske,** and **C.H. Briggs.**

Greener Product Standards

Product standards are used to identify more sustainable products. There are more than 450 environmental standard setting programs with greener product standards covering almost any product category imaginable. [8]

Two of the most well-known greener product standards are the U.S. Environmental Protection Agency's Energy Star standard, which recognizes the most energy-efficient products, and the USDA Organic standard for food, managed by the U.S. Department of Agriculture.

The USDA standard prohibits the use of specific pesticides and fertilizers, among other sustainability-related requirements. **Giorgio Mushrooms** is one of many local Berks County agricultural companies selling products certified to USDA's Organic standard. Local grocers, including **Redner's**, keep their store shelves well stocked with certified organic products, including many from local Berks County farms.

Other popular, but less well known, environmental standards organizations include ECOLOGO, Green Seal, and UL Environment. Each has sustainability standards for a wide variety of healthier, greener, and more sustainable products.

Their standards cover product categories from cleaning products to paper and tissue products, paints, carpets, appliances, office electronics and more. A similar program, Safer Choice, run by the U.S. Environmental Protection Agency's Design for the Environment program identifies safer chemical products.

Misco Products, which makes greener cleaning products, has products certified to these standards. They sell some under their own brands, but also formulate and manufacture products meeting the green standards for their clients to sell under their own brands. **Hitchcock Clean and Restore,** a Berks County cleaning services company, relies on these greener cleaning standards and a careful chemical review to ensure the cleaning products it uses are as sustainable as possible.

Industry Standards and Trade Associations

Almost every industry has sustainability standards, metrics, protocols, or recommendations that can be used to evaluate a company's sustainability initiatives. The following organizations can be helpful for Berks County businesses interested in measuring their progress against others in the same industry.

- **Colleges and Universities**
  The Association for the Advancement of Sustainability in Higher Education (AASHE) is an organization of more than 1,000 members working to ensure that the "world's future leaders are motivated and equipped to solve sustainability challenges." AASHE has a Sustainability Tracking, Assessment, and Rating System (STARS) used to evaluate college and university sustainability efforts on a point-based scale that awards Platinum, Gold, Silver, and Bronze recognition. **Albright College** is listed as a registered user of STARS. No other Berks County schools are listed, although Penn State Main Campus earned a Gold rating in 2014 and the Penn State campuses in Erie, Harrisburg, and Schuylkill are also registered users.

- **Green Sports Alliance**
  Founded in 2010, the Green Sports Alliance is a group of more than 300 teams from 20 different major- and minor-league sports that are incorporating environmentally preferable practices into their businesses. Teams focus on renewable energy, recycling, energy- and water-efficiency, safer chemical use, and wildlife conservation and preservation. The Philadelphia Eagles Go Green! initiative is widely recognized for its renewable energy, recycling, and composting programs. The Eagles proudly promote their efforts to fight climate change. The Philadelphia 76ers, Phillies, and Flyers are also Green Sports Alliance members along with the Penn State Nittany Lions. There are no local Berks County teams participating.

- **Grocery Stewardship Certification**
  The Grocery Stewardship Certification program has certified more than 500 grocery stores to its environmental standard, including all of the Weis Markets in Berks County. The standard identifies energy- and water-efficiency and waste reduction opportunities that save grocers more than $20,000 annually per store while creating environmental benefits and a marketing message that resonates with younger, millennial consumers. Redner's executives believe they are meeting and exceeding the standard in some areas. The **Redner's** sustainability approach, which is consistent with many of the Grocery Stewardship Certification cost-saving recommendations, focuses on "environmental initiatives that make cents." (See page 34 for more details on Redner's efforts.)

- **Transportation and Logistics**
  Any business that ships or receives product or materials has opportunities to improve their environmental performance. According to the U.S. Environmental Protection Agency, the U.S. transportation sector moved 54 million tons of product every day in the United States in 2012, which is approximately 60 tons of freight per person that year. It also used more than a billion barrels of oil and generated more than 500 million metric tons of global warming greenhouse gas emissions. [9] To help reduce the adverse environmental impacts of the transportation sector and those that rely upon it, EPA launched the SmartWay program in 2004. SmartWay establishes a consistent framework to measure fuel use and freight emissions throughout a supply chain. Businesses can use information from SmartWay partners to identify more efficient, less polluting, and less expensive transportation options. **Penske** is an award-winning SmartWay partner. (See page 40 for additional information on Penske's environmental programs.)

- **Banking, Finance, and Investment**
  There are a variety of standards and programs intended to help banks, investment advisors, and others in related financial fields to incorporate sustainability into their business practices. The United Nations Environment Programme's *Guide to Banking and Sustainability*, for example, identifies ways that banking executives can examine the environmental and social impacts of their lending decisions. There are also thousands of non-profit and investor-focused reports on environmentally and socially responsible investing for individual consumers and institutional investors seeking to maximize their investment returns while also addressing environmental and social issues. Some of the efforts date to the 1970s when some investors began actively avoiding companies connected with tobacco, alcohol, and military contracts. Local Berks County executives in these fields reported minimal interest from current customers, but have been fielding questions about the topics from some of their younger, millennial customers.

- **Healthcare**
  The healthcare community was an early adopter of sustainability standards. Healthcare professionals quickly recognized that environmental threats like global warming also represent human health threats. To enhance patient health, they began focusing on the human health and environmental impacts of their facility operations. It does not make sense, for example, for a healthcare facility treating cancer patients to clean the facility with cleaning products containing cancer-causing chemicals.

  There are lots of organizations helping hospitals to "go green," including hospital pollution prevention programs run by the U.S. Environmental Protection Agency and the State of California; projects like the Global Green and Healthy Hospitals Network, managed by Healthcare Without Harm; and organizations such as Practice Green Health and Physicians for Social Responsibility. All share recommendations to improve patient health by addressing sustainability-related issues at healthcare organizations. They provide guidance for healthcare facilities on topics like chemical use, waste reduction, energy- and water-efficiency, food, building operations and management, pharmaceutical waste, and buying safer, greener products and services. Berks County healthcare organizations do not appear to be actively involved in these networks.

- **Green Conferences, Hotels and Restaurants**
  ASTM, a well-known standard setting organization known for setting quality and performance standards for products ranging from automobile engine oils and coolants to batting helmets and other protective athletic gear, also has standards for green conferences. The ASTM standards address things like site selection, audio-visual and lighting equipment, lodging, and food and beverage. [10]

  Green Seal, the environmental standard setting and certification organization, has related standards for hotels and restaurants. [11] The Green Hotels Association makes recommendations for the hotel industry [12], the Green Restaurant Association certifies restaurants [13] , and the National Restaurant Association's Conserve Program [14] helps restaurants improve their sustainability performance. Tourism, conferences and conventions are a $800 million business in Berks County[15], but there do not appear to be any Berks County businesses certified by or actively participating in any of these sustainability programs.

APPLYING SUSTAINABILITY PRINCIPLES

Berks County Business Perspectives

The sustainability strategies adopted by Walmart, Unilever, McDonald's, GE, and others are as different as the businesses themselves. Just as no two businesses operate the same way, no two businesses apply sustainability the same way. Some companies focus on energy- and water-efficiency and others focus on recycling or zero waste. Some see sustainability as an engine of innovation; others see it as a series of cost-saving and efficiency opportunities.

Mirroring the broader, global business community, Berks County businesses look at sustainability in a variety of different ways. Some of the ways local companies answer the question "What does sustainability mean?" are described in this section.

Sustainability Means...

Improving Recycling Efforts

Every company contacted as part of the report expressed pride in their recycling program, although some are more careful about tracking and reporting their recycling numbers.

Some companies like **Cougle's Recycling Inc.** in Hamburg and **Zwicky Processing and Recycling** in Fleetwood are in the recycling business. They make recycling possible. Others like **EthoSource Office Furniture**, headquartered in Morgantown, or **Cartridge World** in Sinking Spring take a product, refurbish, and resell it.

EthoSource buys office furniture like desks, chairs, conference room tables and cubicle dividers from companies that are moving, going out of business, or downsizing. They clean, refurbish and resell the furniture to other businesses as a less expensive and more environmentally preferable alternative to buying new furniture. **Cartridge World** offers a similar service for ink jet and toner cartridges from printers and copiers.

Most Berks County companies are not in the recycling business, but they recognize that recycling is something that customers and employees expect from a well-managed business. Depending on commodity prices and recycling contracts, recycling can also generate additional revenue streams for a business.

Some of the recycling stories shared by Berks County business executives include the following.

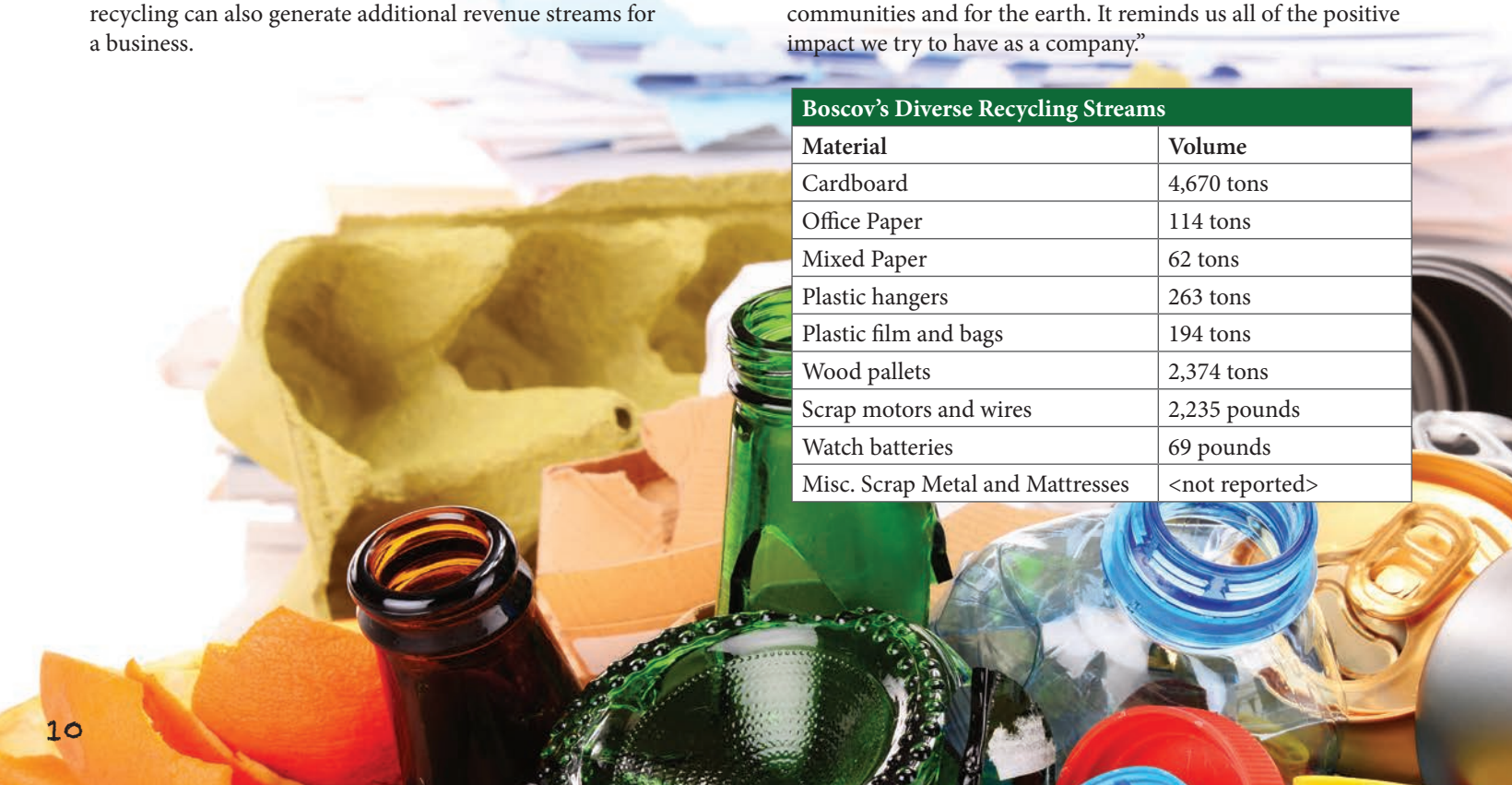
Boscov's focused its attention on recycling more seriously when executives learned that one of its retail competitors was turning its trash into cash with an aggressive recycling program. It did not take long before Boscov's management and employees throughout the 44-store retail chain embraced recycling with a passion.

The company worked with its waste hauling companies on the necessary logistics. The marketing department created a video to train employees how to recycle a wide variety of materials. Boscov's then launched an annual competition where each store and warehouse competes to reduce its waste and improve its recycling rate. "Our employees are very competitive," explained Jim Boscov, Boscov's Vice Chairman and CEO. "They want to be the best at everything they do and recycling is no different."

Last year, the recycling and waste reduction initiative at Boscov's generated thousands of dollars in additional revenue. "Generating revenue from items that would otherwise be hauled away as trash is certainly good business," Jim Boscov stated, "but more importantly, it's the right thing to do for our families, our communities and for the earth. It reminds us all of the positive impact we try to have as a company."

Boscov's Diverse Recycling Streams

Material	Volume
Cardboard	4,670 tons
Office Paper	114 tons
Mixed Paper	62 tons
Plastic hangers	263 tons
Plastic film and bags	194 tons
Wood pallets	2,374 tons
Scrap motors and wires	2,235 pounds
Watch batteries	69 pounds
Misc. Scrap Metal and Mattresses	<not reported>



The Reading Hospital manages 14 different waste streams, recycling as many of the streams as it can. Some of the waste streams are unique to healthcare such as pharmaceutical waste; biohazard waste from surgery and other medical procedures; and confidential medical records, all of which must be handled according to strict healthcare requirements. Other waste streams mirror the waste streams of any small city. The hospital recycled almost 560 tons of material including cardboard; plastic, aluminum, and glass beverage containers; printer cartridges; light bulbs; metal scraps; office paper; and more.

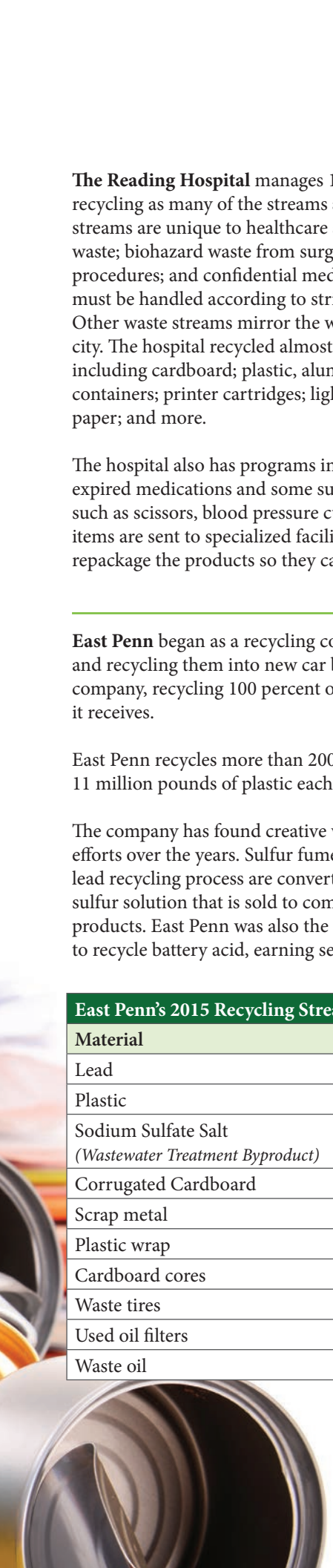
The hospital also has programs in place to safely recycle expired medications and some surgical medical equipment such as scissors, blood pressure cuffs, and scalpels. These items are sent to specialized facilities that clean, sterilize, and repackage the products so they can be used again safely.

East Penn began as a recycling company, taking car batteries and recycling them into new car batteries. It is still a recycling company, recycling 100 percent of each lead-acid battery it receives.

East Penn recycles more than 200 million pounds of lead and 11 million pounds of plastic each year.

The company has found creative ways to improve its recycling efforts over the years. Sulfur fumes generated during the lead recycling process are converted into a liquid nitrogen-sulfur solution that is sold to companies that make fertilizer products. East Penn was also the first company in the industry to recycle battery acid, earning several U.S. patents as a result.

East Penn's 2015 Recycling Streams	
Material	**Volume (lbs.)**
Lead	200,000,000
Plastic	11,000,000
Sodium Sulfate Salt *(Wastewater Treatment Byproduct)*	7,000,000
Corrugated Cardboard	3,246,810
Scrap metal	2,627,540
Plastic wrap	749,805
Cardboard cores	518,395
Waste tires	33,467
Used oil filters	20,400
Waste oil	22,448 gallons



The company also discovered an innovative way to recover sodium sulfate salt from its water treatment process. It now sells almost seven million pounds of the material a year for use in manufacturing glass products.

Recycling is big at **Redner's**, but according to Doug Emore, an executive and 23-year veteran at the company, "it isn't terribly innovative; everyone [in the grocery industry] does it." Redner's recycles as much as it can, including cardboard, plastic, aluminum, and some of the harder to recycle materials like plastic pallet wrap. The company recycled 238 tons of plastic bags returned by customers in 2014. Many of those bags are eventually turned into plastic lumber for decking, park benches, and picnic tables. It also recycled 7,264 tons of cardboard, which was sold to **United Corrstack** to turn into new boxes.

B&G Glass is a Reading-based company that assembles and installs mirrors, windows, glass showers, and automotive windshields and glass for residential and commercial customers. It recycles 20 tons of material a year. The company carefully separates different recyclable materials into different bins to maximize their financial value. There are bins for aluminum, rubber from the sealants used in some windows, and, in the employee break room, bins for glass, plastic, and aluminum beverage containers. Somewhat surprising to those outside the industry, according to B&G's owner Don Moll, is that broken windshields and windows are not recycled because the advanced performance coatings on that type of glass makes them unsuitable for recycling. Most of the volume and the most valuable material is the scrap aluminum generated when cutting 24-foot lengths of aluminum to fabricate commercial window frames to the desired size.

R.M. Palmer Company, a Berks County based candy manufacturer with locations in Exeter, West Reading and Wyomissing, earned more than $42,000 last year selling 1.7 million pounds of recyclable materials, which consist mostly of things like fiber drums, clear film, batteries, chip board, cardboard cores, cardboard, boxes, office paper, metal scrap, and plastic candy molds.

Sustainability Means...

Finding Better Ways to Do Things

Giorgio Mushrooms recycles more than 200,000 tons of organic material from local farms including corn cobs and straw bedding; cocoa shells, a by-product from local chocolate manufacturers; and leaves collected by local Berks County municipalities yard waste programs. The material becomes the compost Giorgio Mushrooms uses to grow its white, baby bella, portabella, shitake, and oyster mushrooms.

"Giorgio Mushrooms has been in the recycling business since the company was founded in 1928," explained Brian Threlfall, Executive Vice President of Sales and Marketing. "We recycle agricultural by- products and turn them into compost that becomes the food source for growing mushrooms."

While helping others recycle their waste products is impressive, it is not the most impressive part of Giorgio Mushrooms' sustainability story.

The company proudly reports on a variety of its sustainability initiatives:

- Recycling water in the mushroom growing houses multiple times to reduce overall water use.
- Operating a state-of-the-art water treatment facility that processes 500,000 gallons of water per day to protect local streams and waterways.
- Improving the energy efficiency of its operations with energy efficient lighting (reducing the energy required for lighting by 77 percent), motion sensors in the warehouse, and variable speed frequency motors to further reduce energy use.
- Recycling 500,000 pounds of corrugated cardboard and 80 tons of plastic every year with **Cougle's Recycling.**
- Recycling more than 500,000 cubic yards of its own spent mushroom substrate every year for use by farmers and gardeners to grow new crops.
- Buying recycled content office paper and paper products, remanufactured toner cartridges for the office printers and copiers, and green cleaning products for cleaning the office.
- Reducing fuel use in their trucking fleet by regulating the speed drivers can drive, rewarding drivers who use less fuel, and properly maintaining vehicles to maximize their fuel efficiency.

> "Sustainability just makes sense," explains Brian Threlfall. "It improves the environment, enables us to make a better product and helps reduce costs."

One of the most impressive part of the Giorgio Mushrooms sustainability story, however, is the company's innovative use of integrated pest management (IPM) to reduce the company's pesticide use by 90 percent.

With an IPM approach it developed in-house with its own IPM experts, Giorgio Mushrooms relies on the use of non-chemical approaches to prevent insects from damaging the mushroom crops.

Rather than using chemicals to control flies, Giorgio Mushrooms releases parasitic wasps that see the flies as a food source. Giorgio Mushrooms uses strips of sticky tape on the doors of growing house entrances to prevent insects from entering. Workers rinse their feet in a solution to prevent them from bringing mushroom pathogens into the growing houses. All of these efforts prevent the need to spray crops with pesticides to control pests.

In addition to using its IPM approach on 100 percent of the mushrooms it grows, Giorgio Mushrooms also grows organic mushrooms. The organic mushrooms are processed and packaged with additional requirements required by the U.S. Department of Agriculture's National Organic Standards.

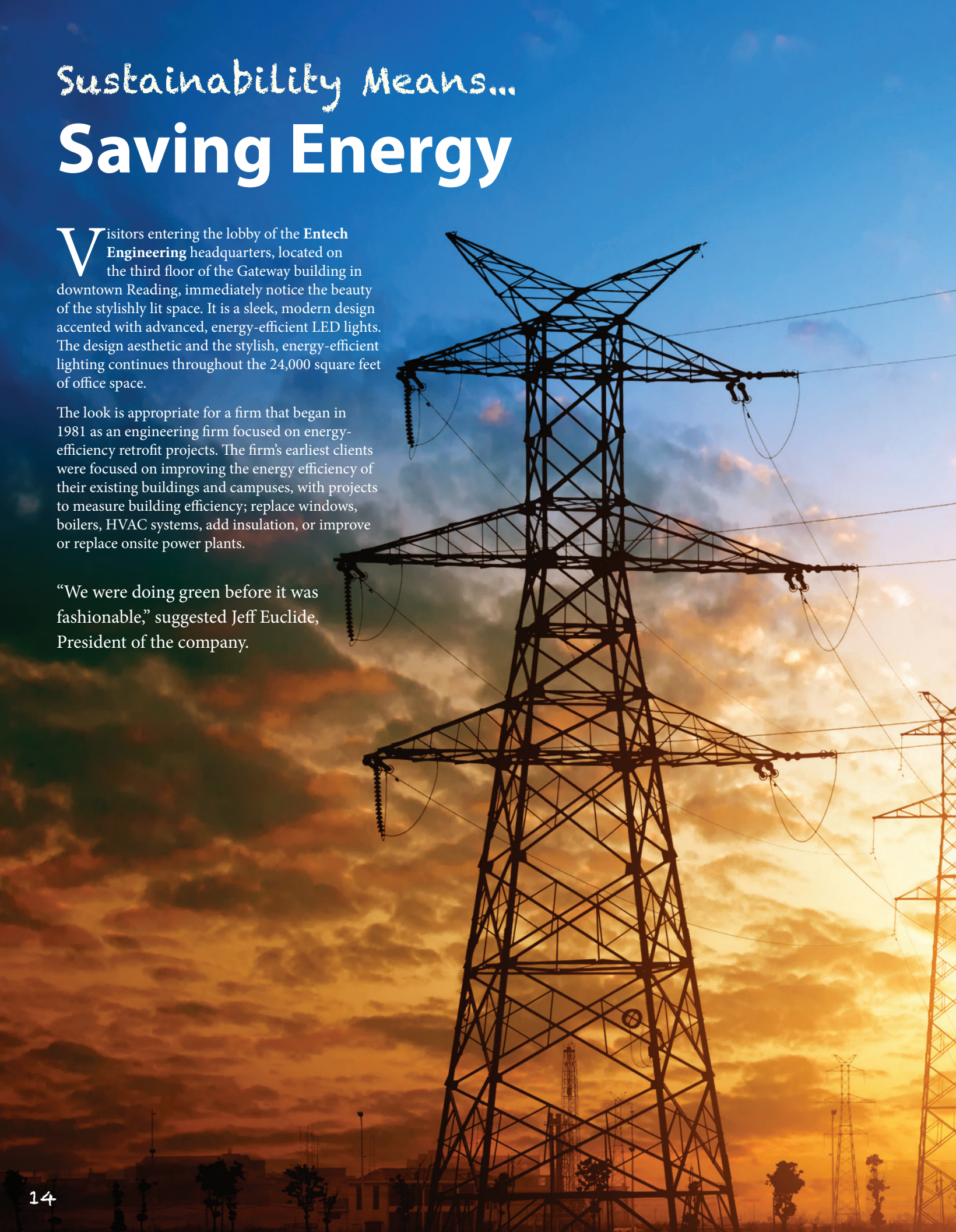
Sustainability Means...

Saving Energy

Visitors entering the lobby of the **Entech Engineering** headquarters, located on the third floor of the Gateway building in downtown Reading, immediately notice the beauty of the stylishly lit space. It is a sleek, modern design accented with advanced, energy-efficient LED lights. The design aesthetic and the stylish, energy-efficient lighting continues throughout the 24,000 square feet of office space.

The look is appropriate for a firm that began in 1981 as an engineering firm focused on energy-efficiency retrofit projects. The firm's earliest clients were focused on improving the energy efficiency of their existing buildings and campuses, with projects to measure building efficiency; replace windows, boilers, HVAC systems, add insulation, or improve or replace onsite power plants.

"We were doing green before it was fashionable," suggested Jeff Euclide, President of the company.



The firm continues to be known for its energy efficiency expertise but has expanded over the years to include, according to Euclide, "civil, water, wastewater, natural gas, environmental compliance, architectural, and structural, planning and design services."

Entech has worked on thousands of projects around the country including work for multiple colleges and universities, municipalities and government agencies, manufacturing plants, and oil and natural gas companies.

Among the well-known local projects, two stand out for Euclide:

- Helping **Kutztown University** replace an old coal-fired power plant in the middle of campus. The plant, dating from the 1950s, was still used to power the campus steam heating system. With Entech Engineering's support, the university replaced the coal burning system with a cleaner, more efficient natural-gas system that emits fewer greenhouse gases. The land where a coal power plant once stood is now Golden Bear Plaza, a popular spot with students in the middle of campus with a barbeque pit, basketball courts, and a statue of the school mascot, the Golden Bear.

- Handling all of the environmental permitting and some of the design work for the power plant **United Corrstack** built next to its recycled content paperboard manufacturing facility in downtown Reading. The power plant, operating as **Evergreen Community Power**, burns biomass like wood waste in an energy-efficient cogeneration process that produces both steam and electricity. Every megawatt of electricity produced by the 30-megawatt plant reduces te need to produce that electricity from a coal burning power plant. "We live here," explained Euclide. "We breathe the local air. We want that power plant to be as clean and as efficient as possible."

Entech Engineering has also worked on a number of exciting projects outside of Berks County, including helping the federal government reduce its energy bills. The firm conducted an extensive energy audit at the U.S. Capital complex in Washington, DC. Covering more than 18 million square feet of building space, Entech identified opportunities to improve energy efficiency and save money, including developing a prioritized list of deferred maintenance for the U.S. Capital Building, U.S. Supreme Court, multiple U.S. Senate and U.S. House of Representatives office buildings, and the U.S. Botanical Gardens.

Euclide also notices an increasing interest in sustainability issues in certain sectors of the economy. Colleges and universities, for example, are increasingly concerned about their carbon footprint, a measure of their contributions to global warming. Entech recently conducted an energy audit of the Lafayette College campus to identify ways for the college to save money. Part of the project included developing a climate action plan to ensure the college meets its public goal of reducing it greenhouse gas emissions 20 percent by 2021.[16]

In addition to its energy efficiency work, Entech also works on projects in the oil and gas sector. "Some people might not consider that 'green,'" explained Euclide, "but those industries are an important part of our economy. We want them to be as efficient and 'green' as possible."

"Switching to natural gas technologies," he continued, "provides immediate environmental benefits as we continue developing long term energy solutions using renewable energy and advanced energy efficient equipment."

Sustainability Means...

Building Green

Kevin Kozo launched **Turnberry Custom Homes** in 2005 when national interest in green building was growing rapidly. He hoped his green building construction training and experience, including his recognition by the National Association of Home Builders as a Certified Green Professional, would help him differentiate his home building projects from his competitors. What he found, however, was that very few Berks County customers were aware of the environmental or financial benefits of greener homes.

Clients continue to express interest in specific green building features like geothermal heat pumps, which pay for themselves almost immediately through lower heating and cooling costs. For many of Kozo's clients, these are "no-brainer" sustainability decisions.

Other environmental features, like additional insulation and more energy efficient windows, sealed duct work, the use of wood certified from sustainably managed forests, or recycled-content materials remain less interesting to clients. Kozo sees two key factors at play:

1. Many of the energy efficiency benefits that defined the early green building movement are now part of local building codes. Insulation requirements for new homes, for example, now require 2-inch by 6-inch exterior studs to allow for additional insulation. This is a significant "green" improvement that is now required rather than optional.

2. Consumers are understandably trying to stretch limited dollars to buy the most house they can afford. For most consumers, this means maximizing the square footage of the house or spending money on "benefits you can see." Kozo explained that "consumers will pay more for a granite countertop because you can see it. Unfortunately," he continued, "energy efficient windows don't look any different to their friends so they are less of a priority for many people."

> Clients continue to express interest in specific green building features like geothermal heat pumps, which pay for themselves almost immediately through lower heating and cooling costs.

The Reading Hospital incorporated a number of advanced green features into its new 470,000 square-foot, $346 million addition.

Although the hospital chose not to pursue formal LEED certification, the new addition includes environmental features such as:

- Innovative building materials that are easier to clean. The Nora rubberized flooring will require a third less maintenance to maintain. The lower maintenance needs will generate financial and environmental benefits.

- An 88,000 square-foot rooftop garden on the seventh floor with flowering plants, trees, and grasses will be the third largest green roof in the U.S. health care industry. The rooftop garden helps insulate the building, preserve natural environment and serve as a meditation garden for hospital patients, visitors, and staff.

- Advanced energy efficiency upgrades including low-e, energy-efficient glass windows; variable frequency drive motors; super-efficient heating, ventilation, and air conditioning (HVAC) equipment; occupancy sensors to control lighting and HVAC; and other equipment meeting the U.S. government's Energy Star standard. The new addition will be so energy efficient that the hospital campus will not need to increase its emergency generator capacity despite a 29 percent increase in total building square footage.

Conversations with local architects and building professionals, however, suggest that local interest in more sustainable, greener, and efficient buildings is lower than in other parts of the country.

Eric Burkey, President of the **Burkey Group**, sees similar challenges with the local green building industry. Lots of clients express interest in greener buildings, but they rarely choose to invest their construction budget in 'invisible green' features unless they pay for themselves within a short amount of time. The return on investments might vary with each client, but anything over five years can shift their decision making on green investments. Burkey estimated that around 30 percent of clients ask about green, but only about 5 percent actually pursue LEED certification.

Burkey and several members of his staff are LEED accredited professionals. It is one of the ways it differentiates itself from local and regional competitors. Burkey has been involved in many of the LEED certified building projects in Berks County, including:

1. **Berks County Community Foundation** Building LEED Platinum
2. **Opportunity House Second Street Learning Center** LEED Gold
3. **The Holleran family home** – LEED Gold
4. **Berks Nature** (under construction now) LEED Silver (expected)

The company has also been involved with numerous local building projects that, while not LEED certified, did incorporate a number of energy-efficient and other environmentally preferable features including the addition to the **C.H. Briggs** headquarters building and some of the recent and ongoing construction at **Alvernia University**.

Burkey adopted the same approach when it renovated its own headquarters building in 2008. They did not opt for LEED certification, but did invest in energy efficiency with new windows, insulation, siding, and lighting improvements reducing the building's electric bills by 35 percent.

Burkey believes that most LEED certified building projects allow building occupants to make a clear statement about the importance of environmental issues to their individual or organizational mission. It is why, he believes, most LEED certified buildings are built by governments, school districts, non-profit organizations, or the corporate headquarters of large multi-national companies.

Other clients, Burkey explained, are less interested in investing in LEED. Many clients like environmentally sound materials, equipment and practices but are less interested in public recognition. They are more focused on creating a space to meet their physical needs and staying within their budgets.

Like others in the local Berks County building sector, Eric Jenkins, a Director with the company, said that interest in green building materials rises and falls with the economy.

C.H. Briggs, a Reading-based distributor of specialty building materials, began almost 50 years ago when Harry Briggs started selling hardware from the trunk of his car. The company is now one of the largest independently-owned distributors on the east coast. It carries more than 40,000 products ranging from hardware, board and panel products, and premium surfaces in warehouses from Reading to Atlanta.

Part of the reason for its success is the company's intense focus on solving customer problems, a focus driven by CEO Julia Klein. As architects' and builders' interest in greener, more sustainable buildings products grew, C.H. Briggs was there with solutions.

Like others in the local Berks County building sector, Eric Jenkins, a Director with the company, said that interest in green building materials rises and falls with the economy.

Jenkins' personal interest in greener products and the personal interest of others within the company means C.H. Briggs is well positioned to sell greener products when customers are interested. The company profiles its sustainability initiatives on the company website and relies on LEED accredited employees to help architects and builders meet their environmental needs with products in the C.H. Briggs inventory. The company sells a number of FSC-certified, recycled content, and low-VOC products.

"Some, but not all of the greener product are more expensive than their less sustainable counterparts," explained Jenkins. "It depends on the project owner to determine the priority. Often, lifecycle costs and benefits to the environment and building occupants make the sustainable product the best choice."

Michael Kautter, President of **Kautter & Kelley Architects** (K&KA), has a slightly different take on green building design. He believes that "green design is good design and all clients want and deserve good, sustainable design." Unfortunately, from Kautter's perspective, K&KA has found that the added effort and cost of documenting LEED credits may discourage LEED's use.

K&KA's role is to "embed as much environmentally responsible sustainability into every design," explained Kautter. K&KA strives to "put as many sustainability elements into every design as the budget will allow while still meeting the client's needs for a fully-functional, aesthetically appealing, physical space." This means, according to Kautter, that "Sustainability begins at project planning and continues through design and construction and ultimately considers post construction maintenance requirements."

Flipping through the K&KA design portfolio, Kautter discussed a number of projects, many that predate the existence of LEED, that include innovative green design elements:

- All of the firm's historic renovation projects, including the **Canal Street Pub**, save significant environmental and financial resources by reusing buildings that might otherwise have been demolished. The firm actively promotes the renovation or adaptive reuse of existing buildings whenever practicable.

- A number of projects, including the Eastern Regional Corporate Headquarters for Heat & Control, Inc. in Lititz, maximize available daylight to improve lighting, reduce lighting costs, and protect the environment. The new construction effort incorporates cantilevered sun shades to reduce cooling needs in the summer while enabling passive solar to help with heating needs in the winter.

- The **Reading School District's Amanda E. Stout Elementary School** building is a K&KA renovation and addition project. It includes extensive daylighting and energy efficiency upgrades. It also includes environmentally friendly features like a groundwater capture system to flush toilets, a rooftop garden, and a variety of recycled-content and reclaimed building materials and strict VOC emissions to protect indoor air quality. The Reading elementary school project received several awards for design excellence including the 2014 Urban Renewal School of the Year from the U.S. Green Buildings Council Central PA Chapter, even though the District did not pursue LEED certification for the project, and the Urban Land Institute Philadelphia Chapter inaugural Willard Rouse Award for Excellence.

According to Kautter, green buildings are not a new concept. "Good architecture," Kautter maintained, "has incorporated sustainability since the Amish arrived."

Sustainability Means...

Finding Better Solutions

Liberty Environmental is a full-service environmental engineering firm headquartered in Reading with additional offices in Lancaster, Philadelphia, New York, and Atlanta. They specialize in regulatory compliance reviews and mediation, site assessment and cleanup, air and water quality controls and permitting, and greenhouse gas emission inventories.

One of the secrets of the firm's growth, according to Jim Cinelli and Gavin Biebuyck, two of the firm's principals, is staying on top of innovations in the industry and having the expertise to bring innovative solutions to their clients when needed.

As an example, they reference a groundwater remediation project at a convenience store in Chester County. Local underground water had been contaminated by MTBE, a gasoline additive, that leaked from sources at the convenience store. Traditional methods for removing the contaminant would require an expensive filtration system using activated carbon necessitating constant and costly monitoring and maintenance. They could also have used an air stripper, an approach requiring an energy intensive blower at a cost of $1,000 a month in electricity plus additional monitoring and maintenance costs.

Instead, the Liberty Environmental project team proposed an innovative trickling filter bio-reactor as a more effective approach. A bio-reactor system pumps the contaminated water into a reactor vessel built to contain specific microorganisms that are known to breakdown the contaminants and purify the water.

The project was innovative enough to earn the company an environmental award from an adjoining county, winning an Environmental Action Award from the Bucks County Audubon Society.

Even more importantly for the business, the project positioned Liberty Environmental as an expert in the field of bio-remediation. The success of the initial project led to multiple similar projects that further enhanced the firm's reputation and increased revenues.

Another example cited by Cinelli and Biebuyck involves a large chemical products client that was asked by a major retail partner to report its greenhouse gas emissions. The client had not previously been focused on these issues but already worked with Liberty Environmental because of the firm's air quality expertise.

Liberty Environmental was aware that organizations were beginning to report on greenhouse gas emissions and had been tracking the issues closely. They saw environmental reporting as a potential growth avenue for the firm. When their existing client asked for help, the Liberty Environmental team was able to meet the need.

Tracking greenhouse gas emissions and helping clients reduce their contributions to global warming is now part of a growing segment of Liberty Environmental's business. The firm is helping companies develop plans to reduce their carbon footprint, including recommending changes in how products are transported and what energy sources companies are using to power their operations.

Their expertise has led to work with the U.S. Environmental Protection Agency's Climate Leaders Program and the Carbon Disclosure Project, a group working with business, government and not-for-profit leaders to address climate change issues.

Sustainability Means...

Financing the Future

Around Earth Day 2016, the Wyomissing-based **Utilities Employees Credit Union (UECU)** lent $45,000 to a credit union member in South Carolina to install a solar panel system on his home. While for all practical purposes the loan was just a typical homeowner loan and the Earth Day timing was coincidental, it does highlight the role financial institutions play in a sustainable future. Money enables things to happen.

Founded in 1934, UECU is a full-service, not-for-profit, member-owned financial services institution. Members have checking, savings, and credit card accounts; borrow money for homes, cars, college tuition, and small businesses; and rely on financial advice and services for future retirements, educational expenses, or other long-range financial goals.

Unlike community credit unions, UECU is not open to the general public. Membership is available to select employers, primarily U.S. utility and energy sector employees and their families. The executive management team at the credit union sees three dimensions to UECU's role in the green economy:

1. Supporting a Rapidly Growing and Changing Utility Sector: UECU supports members who work for more than 550 companies in the utility/energy sector. Due to the deregulation of the energy markets in recent decades, there has been rapid growth in the number of energy companies with employees who are eligible for UECU membership.

   Many of the new member companies focus on renewable energy, including NRG, a New Jersey-headquartered company that is expanding rapidly in the renewable energy sector.

2. Promoting Green While Lowering UECU's Operating Costs: UECU tackled energy and water efficiency during the 2008 construction of their Wyomissing office building as an investment in both cost savings and environmental benefits. The building includes low-flow toilets, energy-efficient lighting, energy efficient windows on the exterior, and office window shades on automatic timers to prevent the sun from overheating the offices during the summer. The four energy-efficient HVAC units are run independently of one another, only as needed, based on information provided by the building occupancy sensors throughout the offices. They also have a natural gas generator for backup power to keep the building running in the event of a power outage.

3. Lending Money to Support Member Needs: Like the member who borrowed money to install solar panels on his roof, UECU lends money for a variety of 'green' purposes like fuel efficient cars, energy efficiency projects, and vacations at eco-resorts along with meeting more traditional lending needs. UECU continues to expand lending opportunities in these areas to support member needs, while making valuable contributions to the green economy.

Sustainability Means...

Having Green Power Options

FirstEnergy delivers electricity for more than two million customers in Pennsylvania, including 160,000 customers in Berks County through its distribution company, Met-Ed. In response to consumer interest and to meet regulatory requirements, the company launched its "The Switch is On" campaign to raise awareness about the ability for its customers to buy less polluting, renewable energy through FirstEnergy.

It is possible for FirstEnergy customers, both residential and commercial, to buy renewable and other green-certified electricity without changing providers.

The Switch is On website includes information about FirstEnergy's strategies for reducing its global warming carbon emissions. It includes access to the company's sustainability report and information about innovative partnerships like helping the Cleveland Indians power their baseball stadium with renewable energy. [20]

Sustainability Means...

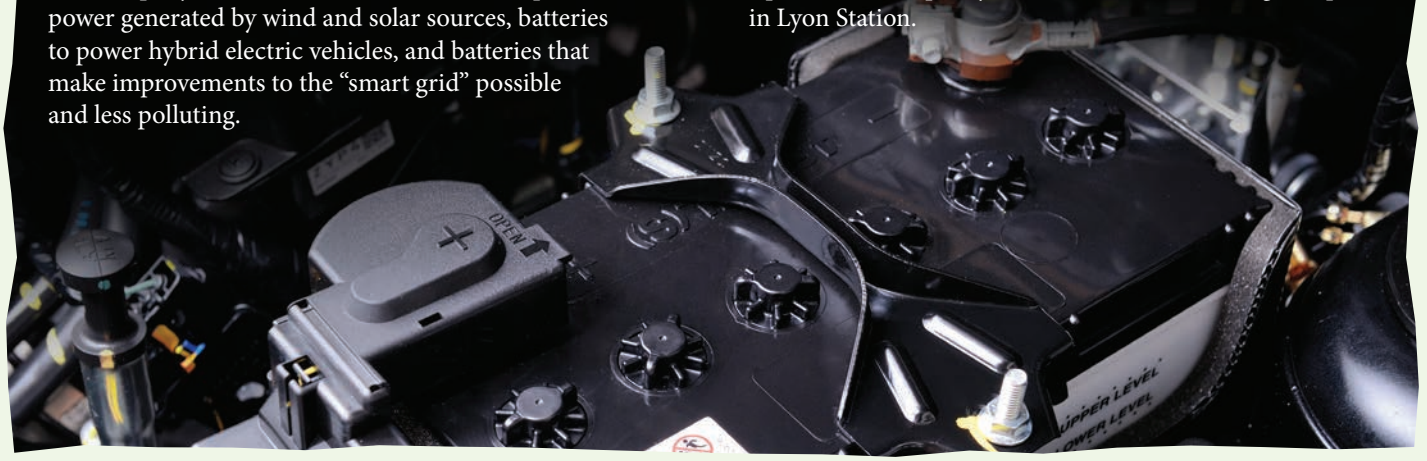
Embracing a Battery Powered Future

East Penn began in 1946 as a company focused on rebuilding lead-acid car batteries. While battery manufacturing and recycling remains a major portion of the business, East Penn has grown to become a significant player in battery research and development. They are designing and manufacturing batteries that will power the future.

The company makes batteries that store and optimize power generated by wind and solar sources, batteries to power hybrid electric vehicles, and batteries that make improvements to the "smart grid" possible and less polluting.

East Penn batteries also provide critical back-up power for hospitals, telecommunications, and data centers that are highly dependent on continuous power.

East Penn is one of the largest lead battery manufacturers in the world with more than 450 product designs ranging in size from 6 to 50,000 pounds. To meet the demand of a battery-powered future, East Penn recently added 590,000 square feet of capacity to its main manufacturing complex in Lyon Station.



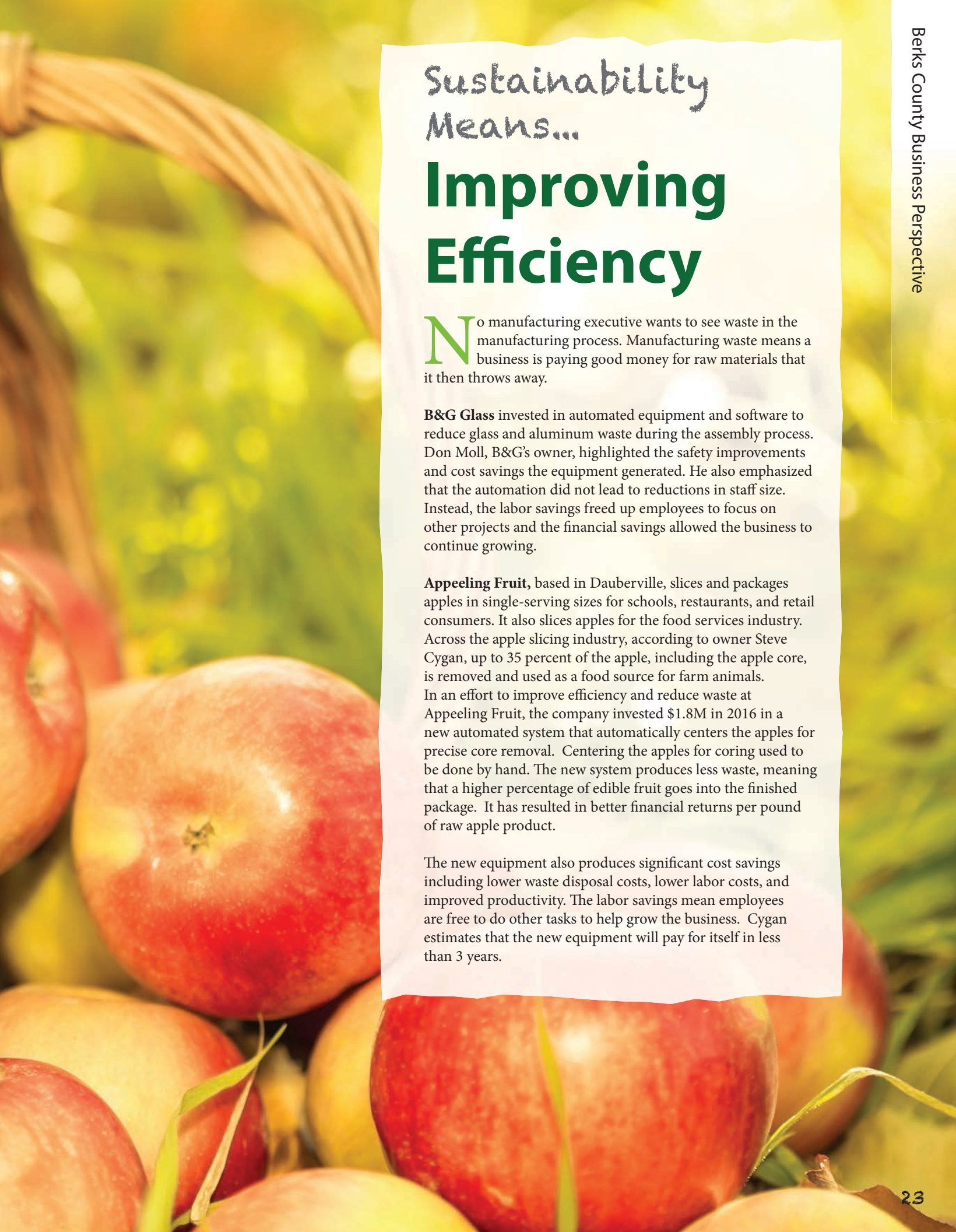
Sustainability Means...

Being Creative About Treating Manufacturing Waste

Appeeling Fruit has been creative about finding cost-effective ways to reduce its waste disposal costs. The company's largest waste stream by volume is the water used to rinse the apples before and during the slicing process. The local water authority could not handle the sugars and solids in the rinse water. It requested that the company install an expensive water treatment system to break down the sugars before entering the local sewer system.

Seeking a more cost-effective solution to the problem, Appeeling Fruit installed a 10,000-gallon tank to collect the rinse water. A local farmer hauls the water in a large tanker truck to water his pigs and cattle. Appeeling Fruit reduced its costs, the local water authority avoided challenges with its water treatment and sewer system, and the farmer's animals enjoy a sweet treat.

R.M. Palmer Company found a similar solution to reduce the cost of disposing of some of its waste. A local farmer collects chocolate that cannot be remelted, sold, or donated and feeds it to his pigs. Steve Weltman, R.M. Palmer Company's environmental coordinator, joked "our waste chocolate is the reason the nearby pigs are so happy and the reason our local pork tastes so sweet."



Sustainability Means...

Improving Efficiency

No manufacturing executive wants to see waste in the manufacturing process. Manufacturing waste means a business is paying good money for raw materials that it then throws away.

B&G Glass invested in automated equipment and software to reduce glass and aluminum waste during the assembly process. Don Moll, B&G's owner, highlighted the safety improvements and cost savings the equipment generated. He also emphasized that the automation did not lead to reductions in staff size. Instead, the labor savings freed up employees to focus on other projects and the financial savings allowed the business to continue growing.

Appeeling Fruit, based in Dauberville, slices and packages apples in single-serving sizes for schools, restaurants, and retail consumers. It also slices apples for the food services industry. Across the apple slicing industry, according to owner Steve Cygan, up to 35 percent of the apple, including the apple core, is removed and used as a food source for farm animals. In an effort to improve efficiency and reduce waste at Appeeling Fruit, the company invested $1.8M in 2016 in a new automated system that automatically centers the apples for precise core removal. Centering the apples for coring used to be done by hand. The new system produces less waste, meaning that a higher percentage of edible fruit goes into the finished package. It has resulted in better financial returns per pound of raw apple product.

The new equipment also produces significant cost savings including lower waste disposal costs, lower labor costs, and improved productivity. The labor savings mean employees are free to do other tasks to help grow the business. Cygan estimates that the new equipment will pay for itself in less than 3 years.

Sustainability Means...

Asking for Help

In 2005, **Wade Havens** returned to Berks County with his wife and newborn daughter. He left life as a veterinarian in Central California to come home, live near his parents, and raise his own family on a newly purchased dairy farm.

"I didn't much care for life in California," Havens explained. "I earned enough money as a veterinarian to mostly pay off my vet school bills, but I wasn't happy. It wasn't the life I wanted. I wanted to come home, back to the east coast."

They first rented and then later purchased a 92-acre farm with a farmhouse in need of some repairs. They bought a herd of 50 dairy cows and began learning the dairy farming business. They bought another 50 cows a few months later.

"I knew how to take care of the animals," remembered Havens, "but I had a lot to learn about grazing and running a successful farm."

An early concern was making sure that the waste produced by the cows was properly stored and managed in ways that did not create a health hazard on the farm or pollute local water ways. They built a large, open-housing composting barn and a concrete lagoon to hold the manure. As typical on many dairy farms, the lagoon is emptied periodically by spreading it in liquid form over the farm fields as fertilizer.

This approach, while legal, effective and affordable, bothered Havens. As an animal lover who wants to protect wildlife and the natural world, Havens understood that spreading liquid manure on fields can have unintended consequences.

It can also wash off the fields during heavy rains where it flows into local streams that become the drinking water for Philadelphia.

As Havens continued learning the dairy farming business and the farm became more financially successful, he looked into ways to enhance the environmental performance of the farm. He wanted to find ways to better protect local water supplies and to begin transforming the farm into an area that both supported his family and served as a habitat for local wildlife.

Havens explored composting the dairy cow waste as an alternative to spreading the liquid manure on the fields. Composting is an effective method with significant environmental and cost savings, but the upfront investment costs can be significant.

"Finally, I just asked for help," laughed Havens. "I called everyone I could think of that might be able to help."

Berks Nature turned out to be the most important call he made.

Larry Lloyd, the senior ecologist at Berks Nature, visited the farm and talked with Havens about what he wanted to do.

"Wade wanted to protect our water supply and make his land more attractive to wildlife," according to Lloyd. "That's part of our mission at Berks Nature. We were glad to help."

Lloyd introduced Havens to the US Department of Agriculture's (USDA's) Natural Resources Conservation Service (NRCS).

Originally created as the Soil Conservation Service in 1935 in response to the dustbowl, NRCS is a U.S. government agency tasked with protecting soil and water quality.

Working with Lloyd and Nick Ramsey, an NRCS official in Berks County, Havens applied for government grants to fund the environmental improvements he wanted to make.

"They helped with all of the bureaucratic paperwork," explained Havens, "and got me the money I needed to build a covered feed area for the cows."

The covering provides shade for the cows with ten large fans to circulate air and automated water sprayers to keep the cows cool.

The floor is covered in sawdust. Waste from the cows is mixed with the sawdust and turned daily, converting it into a rich compost that is spread on the grass fields as fertilizer.

The compost is high in organic material that helps the soil retain moisture and resist compaction allowing more water to be absorbed and less runoff. It also releases nutrients slower than applying liquid fertilizer so the fields can absorb more of the nutrients over a longer period of time. The fields where the cows graze are now healthier and more productive.

Composting is also less expensive than maintaining and pumping liquid manure from the concrete lagoon. The cost savings means the farm is more profitable than before. In addition, composting makes it less likely that the nutrients applied in the fields end up as contaminants in the local streams or water supplies. It is a more sustainable approach.

Havens used additional government grants to build fences to prevent the cows from damaging the banks of the stream that runs through the farm. To further protect the stream and improve water quality, Berks Nature planted many native trees and bushes along the stream bank as a riparian buffer.

As a result of the environmental investments made on the farm, Havens has seen the farm transformed. It is more profitable than it was. It is also full of wildlife. He has seen larger numbers of red tail hawks, osprey, wood ducks, blue heron, green heron, white heron, king fisher, muskrats, minks, and large turtles.

"All of this wildlife is proof that the eco-system is improving. The farm is healthier than it was when I bought it," smiled Havens.

There was a lot of government paperwork to get the sustainability projects at **Bliss Haven Farm** underway. "I sometimes felt like a ball in a pinball machine, bouncing around among federal, state, and local government folks," laughed Havens, "but Berks Nature and NRCS really came through for me. These government programs work. You just have to ask."

"Those tax dollars could have been spent in other parts of the country or other parts of the state," explained Lloyd. "We're happy to see them spent here in Berks County to protect our local water and to enhance our local environment."

"Sometimes you just have to ask the right people to help," nodded Havens.

Sustainability Means...

Going Solar

"Solar project prices have fallen 70 percent from when we started in 2009 and incentives still cover the majority of the costs," explained Kurtz. "This means long-term, predictable solar energy costs and savings of 10- to 50-percent or more versus other sources."

When many people think about a sustainable future, solar panels on every building is one of the first images that come to mind. Local Berks County companies are embracing solar for a wide variety of reasons such as:

- Lowering electricity costs.
- Mitigating financial risks associated with a volatile energy market; companies would prefer to lock-in affordable prices for solar electricity rather than risk higher future electricity prices.
- Seeking marketing advantages by portraying themselves as a "greener" company.
- Reducing their carbon footprint, a measure of their contributions to global warming.

Berks County is home to one of the country's leading solar energy companies. **RER Energy Group**, founded by Jim Kurtz and headquartered in Muhlenberg, has developed solar projects for more than 100 clients totaling more than 30 Megawatts of solar generating capacity. That is enough to power approximately 5,220 typical U.S. homes. [17]

"Solar project prices have fallen 70 percent from when we started in 2009 and incentives still cover the majority of the costs," explained Kurtz. "This means long-term, predictable solar energy costs and savings of 10- to 50-percent or more versus other sources."

One of the unique advantages **RER Energy Group** offers clients is access to proprietary software that helps identify the best solar financing options, considering current federal and state tax credit, depreciation and other incentives available to make it more affordable for individual companies, farms, and local communities to go solar.

Some RER Energy Group clients want to maximize their rate of return, viewing solar as an investment strategy that generates low cost electricity. Others are looking to switch to solar power while minimizing or even eliminating out-of-pocket expenses. Some clients can take advantage of federal and state tax credits to lower the cost of solar, while others need to partner with third-parties to leverage the same credits.

The RER Energy Group software, client evaluation and education process helps its customers identify the smartest and most cost effective way, according to Kurtz, "to tap into the value created from the free fuel from the sun."

RER Energy Group also matches organizations or communities wishing to install solar panels with investors looking to invest in solar power. "We can help clients find outside investors willing to defray the costs to put up solar panels," Kurtz elaborated.

In addition to helping customers understand and navigate the financial aspects, RER Energy Group manages the installation.

Solar Power World magazine ranked RER Energy Group as the number one solar developer in Pennsylvania [18] and number 28 in the country. [19] With $10 million in projected 2016 revenue, the company has projects across the country, including Iowa's largest community solar project and a project for New Age Industries, a Pennsylvania tubing and hose manufacturer, that is one of the largest solar installations in Pennsylvania. The company has also helped a number of Berks County companies, including:

- **Boscov's** first solar project was a power purchase agreement (PPA) in New Jersey that put solar panels on the roof of a Boscov's store. Under a PPA someone else owns the solar panels even though they are installed on the Boscov's roof. Boscov's buys the electricity at a 30- to 50-percent cost savings from the owner of the panels.

  After the initial solar project, Boscov's invested directly in additional solar projects to achieve even greater savings than buying solar energy through a PPA. The up-front costs of the additional solar projects were offset by significant federal tax credits and accelerated depreciation benefits. With the Boscov's owned solar projects, the retailer is able to generate much of its own electricity, reducing its electric bill substantially.

  After including the immediate payback from the tax credits and accelerated depreciation and the long-term electricity cost savings, the projects make good financial sense with an internal rate of return consistent with other Boscov's capital projects.

  Today, there are three solar powered Boscov's stores: Vineland, NJ; Westminster, MD; and Woodbridge, NJ; with another array for their Toms River, NJ store currently being built.

- In 2010, **Misco** added 1,300 solar panels to the roof. The switch to solar reduced its electricity purchases by 30 percent and cut Misco's carbon footprint, a measure of the company's greenhouse gas (global warming) emissions, by 18 percent.

Some of the other local RER Energy Group projects include those in the table at below.

RER Energy Group Solar Energy Projects in Berks County		
Company	**Location**	**Size of Solar Array (Measured in Killowatts)**
Adelphi Kitchens and Cabinetry	Robesonia	279.9
Cougle's Recycling	Hamburg	200.3
Hafer Equipment	Reading	98.7
Kuzan's TruValue Hardware	Shoemakersville	174
L & H Signs	Reading	102
Manatawny Creek Winery	Douglassville	6.9
Penn State Berks Educational Array	Spring Township	2.8
Radius Corporation	Kutztown	47.8
Sunrise Dairy Farm	Richmond Township	46.9

Sustainability Means...

Educating the Future

Lex McMillan, the outgoing president of **Albright College**, wanted sustainability to be embedded into the fabric of every student's college experience. In 2010, he created the President's Committee for Sustainability and Stewardship to create a campus-wide sustainability plan. His goal was to make sure environmental issues are "considered in all aspects of the College's decision making."

Under his leadership, environmental and broader sustainability issues were included throughout Albright's 2011 strategic planning process, which resulted in an updated strategic plan released in 2012.

As part of its strategic plan, Albright commits itself, among other more traditional academic goals, to a "carefully planned program of facilities maintenance and renewal…that are judged to be of the highest priority based on health and safety needs, architectural accessibility, environmental stewardship and sustainability [emphasis added], and considerations of aesthetics and creature comfort." [21]

The strategic plan also includes requirements for annual sustainability goals and the use of LEED certification or other environmental standards for all new construction and renovation. Albright's environmental initiatives serve multiple purposes, including:

- Attracting new students, most of whom are from a generation of students with strong interest in sustainability issues.
- Seeking new sources of funding, including tapping into federal, state, local, and foundation funding sources for sustainability initiatives.
- Engaging new donors who are interested in sustainability, specifically the role colleges both teaching and modeling more sustainable behaviors.
- Reflecting the College's mission statement, which includes "a commitment to the best of human values."

As part of the effort to attract new students, Albright has two sustainability majors -- Environmental Science and Environmental Studies. One is more science-focused and the other is more focused on public policy, psychology, and anthropology. Both address student interest in the topic while preparing them for future employment.

To further engage Albright students outside of the classroom and in the residential learning community, Albright's Residential Life program supports the Sustainability House, one of several affinity houses where students who share an interest or activity may live together. The Sustainability House adjoins Albright's on-campus organic garden and houses five undergraduates who attempt to live more sustainably. The students maintain a blog tracking the associated challenges along with their recycling efforts, energy- and water-use, and the amount of trash they generate.

In addition to the educational and student focus, Albright's sustainability efforts also focus on campus operations, including:

- Replacing an outdated oil heating system with an efficient combined heat and power (CHP) cogeneration plant that provides the campus with electricity, hot water, and cooling. With costs subsidized by an $843,000 grant by the Pennsylvania Energy Development Authority, the CHP project paid for itself in a year thanks to the $450,000 in annual cost savings. In addition to the cost savings, the project also generated significant environmental benefits, reducing the campus carbon footprint by an estimated 43 percent.
- Building a LEED certified science building that opened in 2010. The building received its formal certification from the US Green Building Council in 2013.
- Switching to "green" cleaning products campus-wide to reduce the risks to human health and the environment associated with traditional cleaning products.
- Eliminating trays in the student cafeteria as an effort to reduce food waste and to save water and energy for cleaning. Albright was one of the first colleges in the country to adopt this approach.
- Adopting use of recycled-content paper products in the cafeteria. Also started using Forest Stewardship Council (FSC) certified papers, when possible, for Albright printed publications.
- Improving lighting efficiency across campus with the installation of more energy efficient lights and motion sensors.
- Reducing water use with the installation of more water-efficient flush valves in toilets.

Alvernia University embraces sustainability as part of its Franciscan mission, a mission based on the teachings of Saint Francis, the Catholic patron saint of the environment. Among the Franciscan attributes embraced by Alvernia are service to others in the local and global community, reverence for all creation, care for the environment, commitment to social justice, and sense of responsibility to others. [22]

The importance Alvernia places on sustainability is reflected in its strategic plan. As an academic institution, Alvernia's strategic plan focuses on aggressive growth of the physical infrastructure, academic programs, and faculty development. It also references sustainability with a desire for the new campus entrance through Angelica Park to become "a major environmental destination and a catalyst for Alvernia's sustainability efforts." [23]

The rapidly changing campus has seen significant expansion in its physical infrastructure with numerous new buildings and renovations. While the buildings are not certified to green building standards such as LEED, the buildings include cost-effective, energy-efficiency upgrades to lighting and HVAC systems along with additional insulation and energy-efficient windows to protect the environment, improve building comfort, and reduce operational costs.

Alvernia's sustainability efforts can be grouped into three focal areas:

- Education: As part of its desire to create "ethical leaders with moral courage," Alvernia offers a Master's in Leadership for Sustainable Communities for those interested in bringing sustainability concepts into the business, government, and non-profit sectors. It also has a major in Environmental Biochemistry and a minor in Community and Environmental Sustainability. Many of the courses provide students with opportunities to take the knowledge they learn in the classroom and apply it to real-world situations in the local community.

  Community: The Holleran Center for Community Engagement has a full-time Sustainability Initiatives Coordinator to promote sustainability on- and off-campus with academic courses, environmental education programs, awareness events, research projects, and service activities. Alvernia's Bog Turtle Creek Farm Project, for example, is an almost 1-acre, student-led farm. It provides students with hands-on experience raising sustainably grown vegetables that are then shared with the local community through produce sales at Reading's Penn Street Market, donations to local food pantries, and to members of the Alvernia community that have bought shares of the harvest. The coordinator also promotes sustainability on campus such as promoting recycling during student move-in and move-out when the greatest volumes of waste are created and initiatives that occur throughout Campus Sustainability Week.

  Alvernia students volunteer time to support local sustainability-related projects, including helping Berks Nature with tree plantings, environmental education projects for local schools, and creating community gardens so Reading residents can grow their own food.

- Operations: Alvernia is incorporating energy- and water-efficiency features in all of its new construction and renovation projects. It uses green-certified cleaning products in all campus buildings. Printers have been set to double-sided printing and are stocked with recycled-content paper. Alvernia has an on-campus recycling program and is working with its current waste and recycling provider to develop a composting program. The dining hall removed dining trays, which helped reduce food waste by 15- to 20-percent. It also installed a high-efficiency dishwasher that is 67 percent more efficient than its predecessor, saving 100,000 gallons of water per semester.

Sustainability Means...

Making 'Greener' Products in 'Greener' Ways

The Rose Corporation is a Reading-based custom steel manufacturing company specializing in custom-engineered equipment. Some of the projects that have brought it international recognition include manufacturing the largest components of Disney World's Mission Space ride at Epcot, a 1.4-million-pound runway testing machine for the U.S. Federal Aviation Administration, and components for construction of New York City's Freedom Tower at the World Trade Center site.

It also makes critical components for air pollution control equipment. One of its largest customers, representing about one-third of the company's revenue, is a German company that designs and sells regenerative thermal oxidizers (RTOs).

RTOs remove volatile organic compounds (VOCs), carbon monoxide, nitrogen oxides and other hazardous air pollutants from factory emissions in order to meet U.S. Environmental Protection Agency (EPA) and other international air pollution requirements. RTOs are common at automobile and automobile parts factories, printing and paper mills, and any factory with large-scale painting operations or processes that require a lot of glues and adhesives.

The Rose Corporation makes other "green" products too, including components for large wind turbines to generate "green" electricity and cogeneration equipment, another "green" technology that allows power plants like those found in office parks, college campuses, and hospitals to generate both electricity and heat simultaneously.

In addition to manufacturing "green" products, The Rose Corporation also works to improve its own environmental performance. It has, for example, significantly reduced its own VOC emissions from its painting operation by switching to lower VOC paints and coatings. Rather than installing expensive pollution control equipment, the company found that it could achieve the same high-quality results in its painting operations by switching from solvent-based paints and coatings to water-based paints and coatings. This approach is also better for the health and safety of its employees. "Our solution made both EPA and OSHA [U.S. Occupational Health and Safety Agency] and our CFO [Chief Financial Officer] happy," smiled Tom McDevitt, an executive with The Rose Corporation.
The Rose Corporation's expertise with low VOC paints and coatings is now an important differentiator in the marketplace. It helps them retain existing and win new customers because it allows them to tell their sustainability story and to help their customers "go green."

When customers ask for a specific paint that doesn't meet The Rose Corporation's low-VOC standards, the company explains the benefits of low VOC to the customer. Most customers elect to switch to the low VOC alternative even when the cost is slightly higher.

Almost all of the sustainability efforts at The Rose Corporation are employee led. As part of its embrace of LEAN, a Japanese method for constantly seeking and implementing ways to improve the manufacturing process, The Rose Corporation employees are rewarded for finding ways to improve health and safety, reduce operational costs, and improve efficiency and productivity.

Over the past 11 years since The Rose Corporation adopted LEAN principles, they have completed more than 600 projects totaling 1,300 improvement impacts. The cumulative financial benefits from the improvements helped the company survive the recent economic downturn.

In addition to the financial benefits, many LEAN projects also produce environmental improvements including:

- Replacing the mercury-vapor and halogen lights previously used to illuminate the shop floor with more energy-efficient T-6 lights. The more energy efficient lights cost less to operate and they improve the light quality on the shop floor, which improves worker safety. The new lights last longer before needing replacement, which reduces the labor costs and safety risks associated with changing the bulbs. They also use less electricity, which means less pollution is created to generate the electricity.

- Redesigning the work flow for a series of processes to reduce the distance parts need to move through the five buildings on The Rose Corporation 8th Street Reading campus. The redesigned process, which required rearranging equipment throughout the factory, reduced the distance parts traveled by 1.5-miles. The process is now contained within a single building. The redesigned work flow is more efficient, saving time and money. It also reduces wear and tear on and the pollution created by the diesel-powered tow motors used to move the parts from one part of the factory to another.

- Redirecting excess heat from one of the manufacturing processes to safely heat an adjoining work space during the winter. This effort reduced the heating bill during the winter, saving money and reducing the associated pollution from the fuel source used to heat the space previously. It also earned the employees who proposed the idea The Rose Corporation's infamous "Big Duh!" award for identifying an opportunity that others should have identified and implemented years earlier.

- Purchasing more energy efficient welding equipment. The new equipment is 25 percent more efficient than the equipment it replaced, which means the upgrade quickly paid for itself.

- Retrofitting and repurposing old truck trailers to move large projects throughout the factory. Rather than buying new equipment, employees bought used trailers that were no longer safe for use on the road. They modified the trailers for their own needs, saving money and finding an innovative way to recycle an old trailer.

- Purchasing the overhead crane from owners of The Works when they were converting the old factory site into the restaurant and entertainment complex. The crane was disassembled, moved, repaired, and installed at The Rose Corporation. It is another example of creative reuse generating both financial savings and environmental benefits.

The sustainability efforts are also creating a new benefit. The Rose Corporation has noted that more and more of its prospective customers are asking potential suppliers about their own sustainability efforts. The Rose Corporation has a wonderful green story to tell in response and it is helping them win more customers and grow the business.

Sustainability Means...

Saving Money

Linda and Jerry Stricker, the owners of the Sinking Spring **Cartridge World** franchise, do not know for sure whether their customers use the service because it saves money or because it is good for the environment. Either way, their local ink jet and toner cartridge recycling and remanufacturing businesses is booming.

Customers can drop off their ink jet and toner cartridges for recycling and pick up replacement cartridges that cost 30 percent less than brand new ones. The cartridges come with a 100 percent guarantee that the cartridges will perform as well as, if not better than, the original equipment manufacturer cartridges. The guarantee even protects the printers and copiers using the remanufactured cartridges.

In addition to collecting spent cartridges from its customers, Cartridge World partners with schools, churches, civic groups, libraries and others to collect them. The organizations earn money based on the quantity and type of cartridges they collect. Cartridge World repairs, refills, and resells the cartridges it can and recycles the others.

About 70 percent of Cartridge World's customers are local businesses with the remaining 30 percent individual consumers. For large customers, including **Conrad Weiser** and other local school districts, Linda or Jerry will pick up used and drop off refurbished cartridges without charging a delivery fee.

Last year, the local business collected more than 9,400 cartridges, weighing 13,000 pounds. Approximately 6,000 pounds of the cartridges were reused. The remaining 7,000 pounds were recycled.

In response to the deregulation of the electricity industry, **The Reading Hospital** saw an opportunity to reduce its electricity costs. It installed two five-megawatt, natural gas fired cogeneration systems that generate electricity and hot water at a lower price than they could purchase the electricity from the local utility. The hospital can run on a single generator if necessary.

When the hospital originally installed the equipment, they estimated that it would take 3.5 years to recoup its investment. The project actually paid for itself much sooner because the price of natural gas decreased. The hospital has even made money selling electricity to the power company.

From an environmental perspective, the electricity the hospital generates on its own is "cleaner" with fewer global warming greenhouse gas emissions than the electricity generated by burning coal at the local utility.

Edge Insights is a Wyomissing-based company that helps companies reduce the costs they pay for energy, telecom, and waste disposal. Projects begin with Edge Insights consultants reviewing a company's contracts for the three areas. They review several years of bills looking for any billing errors or discrepancies with the contract. They also look for opportunities to save money by consolidating spending with a single supplier or by switching suppliers.

While the Edge Insights consultants are focused on generating financial savings, they focus on a company's recycling efforts as a reliable source of savings.

Some companies launch recycling programs as a source of revenue or to "do the right thing." As a result of the recycling program, the amount of waste going to traditional dumpsters decreases. Many companies, however, fail to reduce the size of the dumpster or the number of dumpster pickups they pay for on a monthly basis. This is a missed cost saving opportunity Edge Insights flags for customers.

Other times the waste hauling company mistakenly fails to pay the company the full value of the recyclable materials it collects. The value of different recyclable materials rises and falls with commodity markets. Most contracts for recyclables promise to pay any increases to the customer, but this requirement is frequently overlooked by both parties. Edge Insights identifies these kinds of discrepancies by comparing the price haulers have agreed to pay with the historical value of the recyclable materials and the actual money paid to customers in rebate checks.

These kinds of billing oversights exist, according to Emmett Lien, President of Edge Insights, because "no one person inside most companies really owns all waste streams and the entire waste process." Most companies treat their waste bills as a cost of doing business rather than as a variable cost or potential revenue stream. As a result, there are opportunities for savings or new revenue streams for most companies.

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Sustainability Means...

Putting the Customer First

Redner's executives do not consider the company to be a "green" company, but they have certainly embraced a lot of green initiatives. "Our focus is on the customer and our employees," explained Ryan Redner, grandson of Earl Redner, the company's founder. "Sometimes doing what is best for the customer and for our employees means we are doing 'green' things."

"We are always looking for innovative ways to save customers money while improving the customer experience," explained Redner.

The focus on the customer, the employee, and saving money has led to Redner's reputation in the industry as an innovative company. It was the first company in Pennsylvania to launch an employee stock ownership program. The company is 100 percent employee owned.

The company was also one of the first to have scanners, self-checkout lines, in-store pharmacies, salad bars, and prepared meals to go.

It was also one of the first to launch a recycling program. Redner's recycles as much as it can, including cardboard, plastic, aluminum, and some of the harder to recycle materials like plastic pallet wrap.

"Our customers don't see all of the recycling and might not even care that we do it," suggested John Flickinger, a 22-year company veteran. "But we do it anyway."

"We recycle because it is the right thing to do," explained Dianne Herr, a 30-year Redner's executive.

"It just makes sense. And," she smiled, "it makes cents."

The chase for cost savings and other customer benefits has led to lots of innovative 'green' ideas at Redner's, many with environmental benefits:

- Rewarding customers who bring their own reusable shopping bags: "We've done it for decades to save our customers and the company money and then it became environmentally fashionable and really took off," explained Eric White, a 16-year Redner's employee.

"We recycle because it is the right thing to do," explained Dianne Herr, a 30-year Redner's executive. "It just makes sense. And," she smiled, "it makes cents."

- Selling local food products: Large grocery chains promote their sales of local products as an environmental benefit because they do not require as much fuel to truck them to the store. Redner's executives recognize that buying local is "carbon smart and customer smart."

  The company buys local to support the local community, because the local products are higher quality, and because their customers like it. "Everything we sell would be local if we could, but there are no farms in Berks County growing bananas," laughed Doug Emore. "There are some things we just can't buy locally."

- Improving energy efficiency: Reducing energy use is another "carbon smart and customer smart" opportunity that Redner's takes seriously. When the company renovates existing or builds new stores, it installs some of the most energy efficient refrigerated cases available to the industry.

  Old refrigerated cases included doors that had to be heated to minimize frost. They included display lights that actually generated heat.

  "We paid good money to keep things cold, but then put heat sources inside the cases to display the products better. It made no sense. It made no cents either," quipped Emore.

  The new refrigerated cases use 68 percent less energy. They are more efficient, better insulated, and the lighting inside illuminates the products better, which helps increase product sales.

The additional insulation even helps lower risk and expense on the rare occasions when the power goes out. The refrigerated cases stay colder for much longer; they can hold the temperature steady for hours.

"This means that we don't have to have a flash sale on ice cream when the power goes out," laughed Ryan Redner. "The ice cream will stay frozen for much longer."

The company has adopted a variety of other energy efficiency upgrades, including converting to more efficient LED lighting in stores, signs, and parking lots and including motion sensors in offices, warehouses, and stores.

- Reducing food waste: Redner's works hard to minimize food waste. The company does not ever want to order more food than it can safely sell. At the same time, it wants to make sure that customers can always find what they are looking for when they visit a store. These competing goals means that there is always some unsold food that is close to the "sell by" date or food that is not as "pretty" as most customers want, a misshapen pear, for example. Customers might not want it, but the food is still good. Redner's works closely with the Greater Berks Food Bank to ensure the food goes to those who need it and that it does not go to waste.

- Turning food waste into energy: Some food and food scraps is not suitable for human consumption. Redner's works with local farmers who feed some scraps to their animals. Others have tried composting it for use as fertilizer. These approaches, however, can be logistically challenging for the company.

  Searching for the most efficient, reliable, and "best use" for expired food and food scraps, the company is working with a new technology to turn waste food into electricity. The system has been deployed in steeltwo stores as a pilot. It is now diverting 3.5 tons of food waste from landfills each week, turning it into useful electricity instead. [24]

Reflecting on the number of sustainability related innovations at Redner's, Ryan Redner acknowledged that the company is doing a lot.

"We're not a 'look-at-me' company. We're not bragadocious," he explained. "Some of our competitors are making a big deal about these kinds of activities, but we're keeping our focus on our customers and our employees."

Sustainability Means...

Finding a Competitive Advantage

Reading Truck Body found a way to turn its green practices into a competitive advantage. When the company was founded in 1955, everything it manufactured was made of steel. Now about 25 percent of the truck bodies it manufactures are made of aluminum, a lighter-weight and more durable metal that differentiates the company's products from its competitors. The aluminum products are also more profitable.

Reading Truck Body began experimenting with aluminum components to meet the needs of its "aerial division." The aerial division makes the "bucket trucks" one sees lifting workers up to trim trees or reach the tops of telephone poles.

The bucket trucks were already very heavy, approaching the maximum carrying capacity of the truck's engine and suspension, because of the weight of the bucket crane and the motors that enable it to raise and lower the bucket and rotate the base.

In an innovative effort to increase the truck's storage capacity without significantly increasing weight, Reading Truck Body began building components out of aluminum. Switching to lighter-weight aluminum meant Reading Truck Body's customers could carry more, which remains a significant competitive advantage.

After gaining experience working with aluminum, Reading Truck Body released its first all-aluminum truck bodies in 1981. While aluminum is more expensive than steel, its weight-to-strength ratio is better than steel, providing a lighter-weight alternative without sacrificing durability.

Until recently, aluminum bodied trucks were less important for many of the company's customers. That began to change as more customers began focusing on the fuel efficiency and durability of their truck fleets for both financial and environmental reasons.

Aluminum trucks are lighter weight and so they are more fuel efficient and less expensive to operate. More fuel efficient trucks also generate less air pollution, including fewer climate changing greenhouse gases.

The lighter-weight truck bodies can also create additional cost saving opportunities beyond the obvious fuel-efficiency savings. A lighter-weight truck body means that a customer might be able to buy a smaller truck at a significant cost savings. Rather than buying a truck with a 1-ton chassis to meet its payload needs, a customer might be able to buy a less expensive ¾-ton truck instead.

Being able to buy a smaller truck creates a lot of cascading savings and environmental benefits for the customer, including lower insurance costs, lower maintenance, lower taxes, and lower driver wages because the smaller trucks do not require a driver to have a commercial driver's license (CDL).

Aluminum bodied trucks are more durable than steel bodied trucks, especially in parts of the country where the roads are sprayed with a salt mixture during the winter ahead of a snow or ice storm. The chemicals used to prevent the roads from freezing are highly corrosive to steel. A more durable truck lasts longer, is less expensive to repair, and is less taxing on the planet's natural resources.

Durability is important because Fortune 500 companies are now keeping trucks longer. They used to replace them every 3- to 5-years, but they are now keeping them 7- to 10-years.

"There is a slightly higher cost for the aluminum but when you combine it with the savings on a smaller truck or even the increased durability, the ROI for the customer is amazing," explained Craig Bonham, VP of Sales & Business Development. It is also more profitable for Reading Truck Body.

The fuel-efficiency and durability of aluminum bodied trucks is now spreading to the broader consumer truck market with Ford Motor Company's 2015 introduction of the all-aluminum F150 truck. The new design is 700 pounds lighter, which helps improve fuel efficiency between 5- and 29-percent depending on engine size and other factors. [25]

The company is further distancing itself from its competitors with additional sustainability initiatives using the LEAN continual improvement process to reduce lead time, waste, cycle time, cost, and product defects, all of which have environmental benefits for the company.

Some of the initiatives include:

- Improving product design to find ways of improving product strength while using less material.
- Seeking safer, less polluting alternatives to welding, which can be a notoriously dangerous and dirty process. The company is exploring alternative bonding technologies like adhesives or rivets to reduce the need for welding.
- Eliminating the use of primers on aluminum truck bodies. Modern powder coating painting processes for aluminum do not require the use of primers, eliminating costs, material use, and an air pollution risk.
- Switching to lower VOC paints and coatings to reduce air pollution risks.
- Installing solar-powered, energy-efficient LED lights in the parking lot. The sun charges batteries during the day and the batteries power the LED parking lot lights at night, a cost-efficient way to improve employee safety and "to brighten the night with sunlight."

The sustainability initiatives are creating cost savings for Reading Truck Body, but they are also helping increase sales. Some of the largest customers ask all of their suppliers about their green initiatives as part of their supplier qualification process. For some customers, it is because they are looking to their suppliers to help them with their own sustainability initiatives. For other customers, a supplier's sustainability initiatives are just a good indicator of a supplier with a well-run business that is likely to be around for the long haul. Whatever the reason, Reading Truck Body has a lot to report when current or potential customers ask about the company's sustainability initiatives.

"It's proving that going green can be profitable," explained Craig Bonham.

Sustainability Means...

Responding to Retail Trends

When KEEN, the outdoor apparel and footwear company known in part for its eco-friendly image, wanted to ensure its products stand out on crowded retail store shelves, it turned to **Fleetwood (formerly Fleetwood Fixtures)**, the Ontelaunee Township custom fixture company.

KEEN wanted the fixtures it used to display its products to reflect its image as a sustainability leader. Fleetwood, a certified green company that has won local environmental awards, was able to help them with their needs. Relying on LEED accredited professionals, a network of sustainably-minded supplier partners, and a portfolio of more sustainable materials from which to choose, Fleetwood designed, built, and deployed KEEN retail fixtures at hundreds of retail outlets around the country.

"Yes," answered Kelli Hoffman, marketing manager at Fleetwood. "Yes, an outdoor apparel company based in Portland, Oregon, a part of the country known for its culture of sustainability, turned to a Berks County company for help 'greening' its brand."

About a decade ago, Fleetwood recognized consumers' growing interest in greener products. It knew retailers would respond to the trend. The company, which prides itself on predicting retail trends, developed a set of sustainability design standards and materials they could use to help its customers improve their environmental performance while still maintaining the design intent and aesthetic of their brands.

The greener materials Fleetwood designated as part of its sustainable materials portfolio include wood certified by the Forest Stewardship Council (FSC), natural materials like cork and bamboo, paints and coatings with lower VOCs, energy-efficient LED lighting, and components made from recycled materials, including wood recovered from barns and other buildings.

A variety of Fleetwood clients, including Aveda, REI, Starbucks, Urban Outfitters, and Anthropologie, included design elements from Fleetwood's sustainability offerings.

Executives at Fleetwood noted that client interest in greener options was higher before the economy dipped in 2008. They hear a lot of clients talk about sustainability, but very few brands actually implement it. Some retail clients seem really committed to sustainability, but other clients appear to ask about it only because it is a company policy.

One of the Fleetwood project managers expressed some frustration about the focus on price and speed. "Green is much more affordable if you can plan ahead," she explained, "but if you don't plan ahead then green is usually more expensive."

Standard requests for information (RFIs), a formal request from a client for pricing and other information, still regularly include sustainability related questions, but it appears to be standard, boilerplate language. Clients ask about sustainable materials and FSC certification, but there is not a lot of activity.

The general trend in the retail space, particularly the fast fashion sector where new clothing styles are introduced several times a month rather than a few times a year, is how quickly and how inexpensively companies can get products into the stores. If greener fixtures are not immediately available and lower priced, clients are generally not interested.

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One sustainability trend that remains is the use of reclaimed wood, particularly in the fixtures for high end brands. There is debate within Fleetwood about whether it is only an aesthetic choice by some clients, whether it is the expression of a clear environmental interest, or whether it is an aesthetic choice because of a broader consumer interest in sustainability.

In addition to helping clients with their green initiatives, Fleetwood also focuses on its own employees and operations. The Fleetwood Green Committee focuses on its version of the Triple Bottom Line – people, planet, and performance.

The company has an internal green team from departments across the company that focuses on ways to improve the company's sustainability performance. The committee self-funds projects through sales of outdated fixtures that are no longer needed by clients and that previously would have been bound for the landfill. The fixtures include shelving, display racks, tables, chairs, components and more. Any client branding is removed, and the items are sold to the public in a monthly sale on the third Saturday of each month.

Jessica Nelis, Fleetwood project manager, Green Committee co-chair, and LEED accredited professional, laughed thinking about some of the smaller Berks County retailers that have managed to furnish their entire stores with fixtures purchased at the monthly sales. "How's that for a recycling story?" she asked.

The Green Committee has used money it raises from the monthly fixture sales for environmental initiatives like:

- Expanding the recycling program
- Updating shop lighting with more energy efficient LED bulbs
- Adding window coatings to improve their energy efficiency rating
- Adding motion sensors on lights
- Putting hand dryers in the restrooms
- Adding low flow faucets
- Buying Fair Trade Coffee in the lunch room, using Green Committee funds to pay for the slight additional cost of Fair Trade certified products.

Fleetwood also rewards employees and visitors who drive hybrid electric or electric vehicles or those who carpool with designated parking spots near the front entrance. Bike racks are located even closer. To encourage employees to take public transportation, Fleetwood worked with the Berks Area Regional Transportation Authority (BARTA) to re-route an existing bus route slightly so there is a bus stop just outside the parking lot.

As a result of the Green Committee's efforts, Fleetwood earned Green Plus certification in 2011, acknowledging efforts the company has made to improve its environmental performance. The company was also recognized as a Best Workplace for Commuters in 2015.

Sustainability Means...

Building the Company of the Future

Penske is a global transportation and logistics company that helps some of the world's largest companies achieve their business goals and objectives. When customers begin focusing on sustainability as a business strategy, Penske is there to help, advise, and deliver.

"Going green is becoming more and more important to many of our current and future customers," explained Andrew Cullen, Penske's Senior Vice President for Fuels and Facilities, "and every company prefers to do business with like-minded companies."

Among the world's most successful companies, 66 percent of the Global 100, 60 percent of the U.S. Fortune 100, and 43 percent of the U.S. Fortune 500 companies have programs in place to reduce their global warming greenhouse gas pollution. [26] [27]

"When these companies look at ways to reduce their carbon footprint, they learn that 26 percent of the U.S. carbon footprint is transportation," stated Cullen. "And that makes it a big deal for Penske."

As a result, Penske has become one of the most critical and respected players in the global green economy.

The $6 billion company with more than 26,000 employees operates more than 233,900 vehicles. It is headquartered just outside of Reading in Green Hills. The location seems appropriate for a company with Penske's green reputation.

Penske divides its sustainability initiatives into two main areas – (1) helping its customers "go green" and (2) improving Penske's own environmental performance.

Helping Customers Go Green

Penske helps its customers meet or exceed their environmental goals in four key ways:

Maximizing Freight Efficiency

As an end-to-end logistics company, Penske has sophisticated routing software that allows it to maximize efficient use of both fuel and cargo space whether that means moving cargo by ship, by rail, or by truck. When shipping by truck, Penske ensures that the optimal vehicle is used and that it is rarely empty or only partially full.

"A partially full truck or an empty truck are missed opportunities for Penske to make money or to save our customer money," explained Mike Costanza, Penske's Director of Environmental Services. "It is also a waste of fuel, which has environmental impacts."

Penske's transportation efficiency expertise and other environmental commitments have led to recognition by the U.S. Environmental Protection Agency. It won EPA's Clean Air Excellence Award in 2015 and was recognized by EPA's SmartWay program four years in a row (2012 – 2016). The SmartWay program helps and rewards companies for reducing global warming and other air pollution emissions from freight transport.

Improving Vehicle Efficiency

Penske also helps its customers reduce fuel use and related tailpipe emissions by using the most fuel-efficient and reliable vehicles and ensuring they are maintained properly to ensure peak performance.

"Every gallon of diesel fuel burned comes at both a financial cost and an environmental cost, so helping our customers reduce their fuel use and related emissions is crucial to driving both their sustainability strategy and their business strategy," explained Matt Krasney, Director of Fuel Strategy and Alternative Fuels. "A gallon of diesel generates 22.38 pounds of greenhouse gas emissions in the form of carbon dioxide, so the impact of fuel efficiency improvements can be significant."

Penske's close relationships with vehicle manufacturers, knowledge of vehicle engineering, and its large purchasing volume ensure its customers have access to the latest and most fuel efficient vehicles. The fuel efficiency improvements include powertrains optimized for fuel efficiency, idle-reducing auxiliary power units, and the latest in aerodynamics.

> "Going green is becoming more and more important to many of our current and future customers," explained Andrew Cullen, Penske's Senior Vice President for Fuels and Facilities, "and every company prefers to do business with like-minded companies."

Providing Alternative Fuel Options

Companies looking to further reduce their greenhouse gas emissions rely on Penske's alternative fuel program for support. Penske helps companies move freight using a variety of alternatively fueled vehicles including hybrid electric trucks powered by traditional fuels and assisted by batteries, trucks that run fully on electric batteries, and vehicles powered by propane or natural gas. Each fuel choice offers corporate branding and environmental benefits to Penske customers.

While Penske has alternative fuel customers across the United States, there are some local examples:

- Bimbo Bakeries, a locally famous bread manufacturer, is using propane powered vehicles in some markets with help from Penske. The bakery made the switch as part of its commitments to reduce its global warming greenhouse gas emissions.

- Wegmans Food Markets and NFI, a New Jersey-based supply chain company, and other local Penske clients are using Penske compressed natural gas (CNG) trucks for deliveries throughout Berks County and beyond. They are operating from a refueling station and natural gas vehicle repair facility in Pottsville, PA. Penske expanded the repair facility to accommodate the growing interest in CNG vehicles.

- Emerald Brands, which manufactures and distributes a variety of "environmentally friendly" products, leases CNG trucks from Penske to help reduce its environmental footprint and to enhance its image as a greener company.

Advising and Reporting on Environmental Performance

To help customers measure and predict the results of their sustainability efforts, Penske has a benchmarking tool that allows companies to compare themselves to others in similar industries. The tool includes financial factors such as miles driven, cost per pound of freight per mile, and maintenance costs. It also includes a variety of environmental factors, including fuel efficiency, greenhouse gas emissions per pound of freight per mile, and total carbon emissions.

Penske uses the tool to help companies maximize financial savings and environmental efficiencies. It compares companies with aggregate data from others in similar industries, which is possible because Penske has such a large, diverse, and global customer base. It allows Penske to determine the most effective way to save its customers money and reduce their carbon emissions.

Companies can learn a variety of things using Penske's tool such as:

- Modifying driver behavior can improve fuel efficiency. By comparing each driver's fuel-efficiency performance, compensating for differences in vehicle specification, weight, and other factors, Penske can identify opportunities to improve specific driver behaviors. "This is a low-cost and high-impact way to drive [miles per gallon] improvement," explained Krasney.

- Improving maintenance practices can save money. Properly maintained trucks are more fuel efficient. Proper maintenance also reduces downtime to further improve efficiency.

- Optimizing delivery routes reduces fuel use. Planning delivery routes in a manner that maximizes the volume of product delivered while minimizing the number of miles driven saves time and money, reducing both fuel use and air pollution.

- Converting fleets to more efficient vehicles can save money. Even with well-maintained older vehicles, it often makes sense from both financial and environmental perspectives to operate newer more fuel-efficient vehicles. By leasing their vehicles, Penske's customers can replace their fleet on a schedule that allows them to take advantage of the latest technology.

- Switching fuel types can reduce pollution. Switching to alternative fuels such as natural gas can significantly reduce a company's global warming emissions. Penske can help companies measure and evaluate the potential costs and benefits.

Penske is also helping some customers understand what types of public environmental commitments they can make. By analyzing a customer's greenhouse gas emissions associated with its transportation needs and identifying the various ways customers can cost-effectively reduce those emissions, Penske can help customers safely commit to carbon dioxide emission reductions by a specific date.

Companies are also able to use data provided by Penske to further refine their sustainability programs and measure and report the impact from the transportation portion of their business. Penske provides information on miles driven, fuel consumption, transportation efficiency, and related global warming emissions.

Improving Penske's Environmental Performance

Penske is not only helping its customers improve their environmental performance. It also focuses on improving its own. Some of the efforts underway at Penske include:

Incorporating green building principles into new buildings

Penske includes green features in all new buildings and as part of the ongoing maintenance and upgrades at other buildings. Features include:

- High-efficiency fluorescent and/or LED lighting to reduce energy consumption
- Motion sensors to reduce lighting in vacant spaces
- Light sensors that dim the lights when sufficient sunlight is present
- Low-flow plumbing fixtures to reduce water consumption
- Rain water sensors on automated irrigation systems to prevent water use when it is raining
- Water-based paints to improve indoor air quality
- Efficient in-floor heating systems to reduce energy and provide employee comfort
- Programmable thermostats to reduce heating/cooling load during non-working hours
- Reflective roof membranes to reduce cooling loads
- Carpets purchased from a company that certifies them as "carbon neutral," meaning the company offsets any global warming pollution created by making the product

Managing an efficient recycling program

In addition to recycling office paper, aluminum cans, and plastic bottles at its office buildings, Penske recycles cardboard, scrap metal, and electronic equipment.

It recycles 2.5 million gallons of used oil and 13,000 drums of used oil filters annually. It also retreads 230,000 tires every year.

Purchasing renewable energy

In 2014, Penske joined several of its major customers in EPA's Green Power Partnership program when it began purchasing wind energy as a way of reducing its carbon footprint. The 4,000 renewable energy credits (RECs) purchased in 2014 cover a portion of the electricity used at Penske facilities across the country. Penske continues to invest in renewable energy purchasing an additional 4,600 RECs in 2015 and 10,000 RECs in 2016.

"In 2016, we are avoiding approximately 7,028 metric tons of CO2 emissions which are the equivalent of CO2 emissions from consuming 790,791 gallons of gasoline," explained Costanza.

"We are doing a lot at Penske to help our customers meet their environmental goals while also meeting our own environmental goals," Cullen stated. "We know that we and others have a long way to go, but we are stepping up and doing our part."

Sustainability Means...

Answering Customer Questions

R.M. Palmer Company is a candy confectioner and seasonal chocolate novelties manufacturer headquartered in West Reading that specializes in the lower priced value market. Their products can be found at large retailers like Walmart, CVS, Walgreens, Kroger, Dollar Tree, and Dollar General particularly around Valentine's Day, Easter, Halloween and Christmas.

The company does not position its brands as a premium brand like Hershey, Godiva, or Dove, although the company does manufacture some products for the premium brands. In these cases, R.M. Palmer Company uses recipes, ingredients, chocolate molds, and packaging provided by the brand owners.

Some of the premium chocolate brands R.M. Palmer Company has as customers prioritize sustainability attributes such as:

- Fair Trade certification, which provides assurance that the workers who picked the cocoa beans are paid a living wage;
- USDA Organic certification, which ensures the ingredients are grown to strict environmental standards including zero pesticide use; or
- Certified Palm Oil, which ensures that the palm oil used in the products was grown according to strict agricultural standards, including requirements protecting orangutan habitat and other land with high conservation value.

As a result, R.M. Palmer Company responds to routine sustainability-related questions from its private brand customers and from its retail channel partners. They want to know that R.M. Palmer Company is adhering to best manufacturing practices, including Safe Quality Food Institute certification. They also want assurance that R.M. Palmer Company is helping them meet specific Corporate Social Responsibility (CSR) benchmarks the companies require of their suppliers.

The benchmarks include requirements for labor and environmental practices, which means Steve Weltman, R.M. Palmer Company's Human Resources and Environmental Health and Safety Director, spends a lot of time responding to customer and retail channel partner questions. He and Logan Smith, Technical Services Director, also respond to the various government, customer, and certification auditors who regularly tour their facilities.

Sustainability Means...

Driving 'Greener' Cars

Any concerns car enthusiasts have about the lackluster performance of eco-friendly cars disappeared when BMW, the German automaker known for its high-performance, luxury automobiles, first introduced its i-series in 2013.

Available at **Tom Masano's BMW of Reading** dealership, the BMW i3 and i8 are designed to be the most stylish and sustainable vehicles of the future. The exterior panels of the cars are made entirely of light-weight carbon-fiber materials that are stronger than steel. The carbon-fiber material is made in a Washington state factory that is powered by carbon-neutral hydro-electricity. The luxurious car interior includes parts made from hemp, recycled-soda bottles, leather tanned in an eco-friendly process using olive leaves, and eucalyptus wood that was planted, grown, and harvest by BMW on its own property. The car itself is manufactured in a wind-powered factory in Germany.

"The cool materials and eco-friendly factories are important things most people don't really think about yet," Ben Will excitedly explained, "but they will. It's the future of business."

Will is a product specialist at the dealership. He is also a 2011 graduate who studied business and political science at **Albright College**, which is known for its focus on sustainability both on the campus and in the classroom. He is now earning his MBA at **Penn State Berks**, which is also known for integrating sustainability into the total student experience.

"These are the cars for anyone who wants to be stylish and green," smiled Will.

The BMW i3 is an all-electric vehicle with a 60- to 80-mile range, well within the 29.2-mile range the typical U.S. car owner drives in a day. [28] For comparison purposes, the i3 gets the electric equivalent of 124 miles-per-gallon.

The BMW i8 is a performance sports car powered by either the electric motor under the hood or the fuel-efficient gasoline engine in back. The i8 can travel 25-miles in electric-only mode or average 76 miles-per-gallon when combined with the gasoline engine.

While both carry a BMW price, $40- to $50-thousand for the i3 and $130- to $150-thousand for the i8, they prove that it is possible to combine luxury, style, power, and sustainability.

Other electric and hybrid-electric cars, which combine a small gasoline engine and a battery-powered electric motor, are available at Audi, Chevrolet, Ford, Honda, Hyundai, Kia, Lexus, Nissan, Toyota and Volkswagen dealerships throughout Berks County.

"The cool materials and eco-friendly factories are important things most people don't really think about yet," Ben Will excitedly explained, "but they will. It's the future of business."

Sustainability Means...

Designing 'Greener' Products

Misco Products is a private label manufacturer of cleaning products. They do not sell many products under their own brand name; they manufacture products for customers to sell under their customers' own brand names. Misco currently manages more than 90 brands with more than 2,000 unique formulations for products like glass, general purpose, bathroom, and floor cleaners. The products are shipped in more than 20 different packaging types with the customers own unique brands and labels.

The company started researching and manufacturing "greener" cleaning products in the late 1990s.

At that time, there was growing concern among consumers, commercial building owners, and government officials about the potentially harmful chemicals being used for cleaning. Concerns were being raised about both the human health and environmental risks associated with specific chemicals.

"We saw the early indicators that our customers' customers would soon be asking for greener products," explained Pete Gable, Vice President for Sales and Marketing. "We wanted to be ahead of the curve. We saw it as a market opportunity and a chance for us to differentiate ourselves from our competitors."

Misco began evaluating alternative chemistries and designing cleaning products to reflect the best practices recommended by the U.S. Environmental Protection Agency and to meet environmental product standards developed by Green Seal, a Washington DC-based non-profit group.

When a small handful of Misco customers began asking about greener options, Misco was able to respond quickly.

"We were one of the first companies to offer Green Seal certified products," Gable recalled, "which meant our customers were some of the first to be able to offer it to their own customers."

Misco also kept selling traditional products, which meant they were maintaining a large traditional product business and managing a rapidly growing green product business. Green products were growing at 150% a year for a while.

The green cleaning market did not disappear, it just gradually replaced the existing market.

Green cleaning products became the norm for many applications even when the products are not advertised or promoted as "green."

During this time, there was lots of concern in the cleaning industry that "greener" cleaning products did not work as well as traditional products. Competing manufacturers without green cleaning product lines were particularly vocal about the supposed poor performance of greener cleaning products.

Misco and others continued developing, refining, and testing greener offerings. Green product performance improved and sales of green cleaning products continued to grow. Misco began capturing market share from its eastern seaboard competitors.

As more companies began offering competing green products, Misco opted to further differentiate itself by greening the company. Misco wanted to be able to sell "greener products from a greener company."

The company adopted an aggressive focus on energy efficiency and recycling to save money and to generate environmental benefits. They also began looking at ways to reduce the amount of packaging required to ship its products. Reducing packaging volume reduced costs, a financial benefit, and reduced the resources needed to make the packaging, an environmental benefit.

In 2010, Misco added a 300-kilowatt solar array to power its facility. The 1,300 solar panels now generate 30% of the company's electric needs and cut the company's electric bill even more by reducing demand during parts of the day when electricity is most expensive for commercial customers.

The switch to solar cut Misco's carbon footprint, a measure of the company's greenhouse gas (global warming) emissions, by 18 percent. Other sustainability efforts like installing natural gas fired boilers and heating units to replace those using heating oil further cut the carbon footprint by 8 percent.

While interest in measuring and reducing corporate carbon footprints continues to grow, interest in greener cleaning products began to level off shortly after 2010. Customers did not lose interest, but the market shifted with more and more cleaning products becoming greener. What had been a "green" cleaning product a few years ago was quickly becoming a "traditional" cleaning product as companies removed chemicals of concern and reformulated products. Some of the attributes that defined a green product during the early years such as reduced volatile organic compound (VOC) content, for example, were becoming legal requirements.

The green cleaning market did not disappear, it just gradually replaced the existing market. Green cleaning products became the norm for many applications even when the products are not a dvertised or promoted as "green."

Misco's green product legacy and green corporate image continue to provide financial benefits. It retained much of the market share it captured during the early phase of the green cleaning movement. Some local customers, including the **Reading Hospital**, chose Misco products because of their environmental and human health profiles.

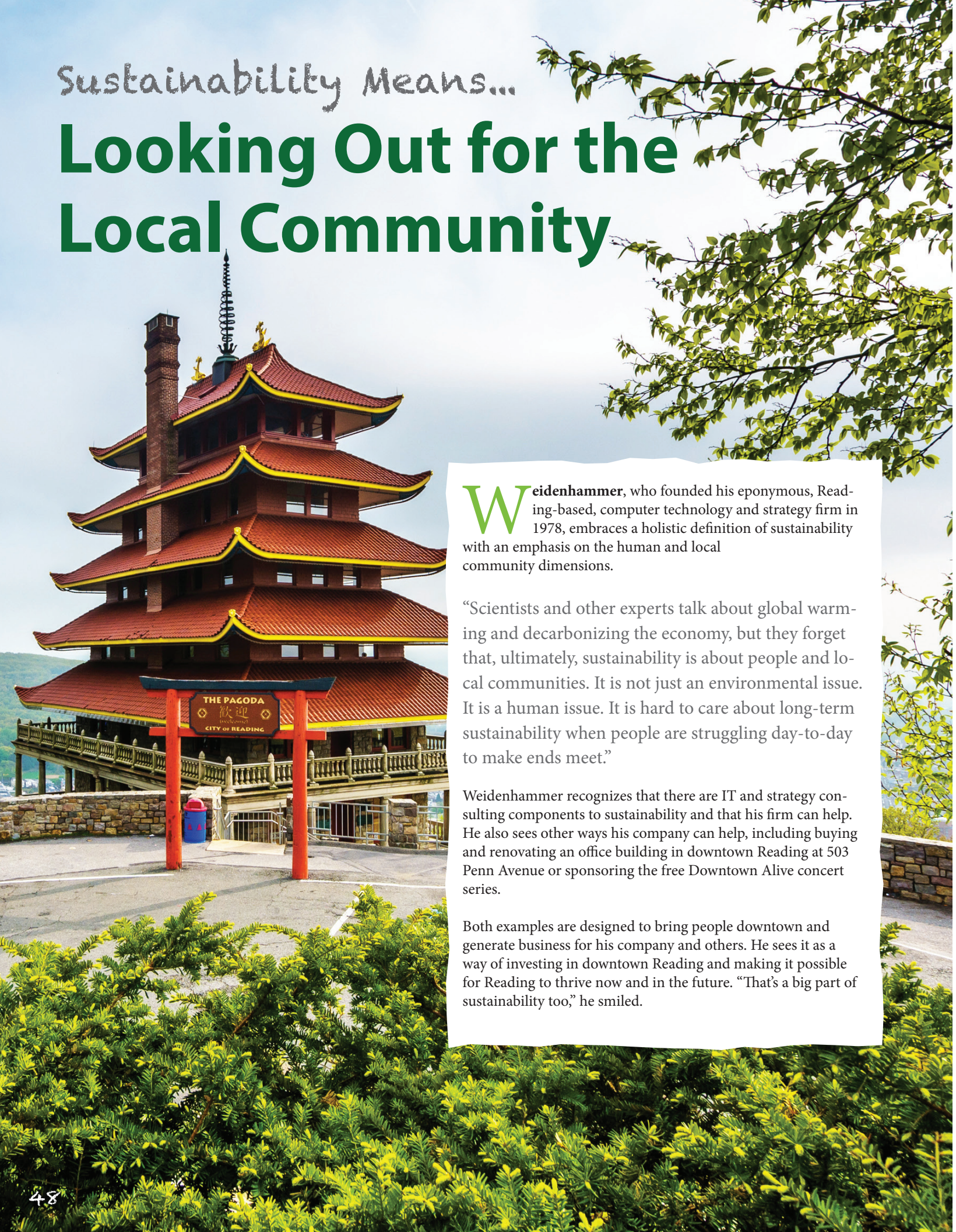
In addition, the geographic distribution of Misco customers is expanding westward from its largely east coast base. There are several manufacturers and distributors encouraging Misco to enter the California market more aggressively. California is a large, lucrative market with a strong preference for greener products and services.

As Misco examines ways to compete successfully in the California market, the lessons it learned from its earlier green initiatives is paying dividends. Misco is currently evaluating ways to further reduce the amount of packaging required to safely ship its products. It is also looking for additional ways to further improve the human health and environmental performance of its products in order to respond to the more sophisticated sustainability requirements of California clients.

"It looks like we will be riding the green roller coaster again," Gable laughed.

Sustainability Means...

Looking Out for the Local Community



Weidenhammer, who founded his eponymous, Reading-based, computer technology and strategy firm in 1978, embraces a holistic definition of sustainability with an emphasis on the human and local community dimensions.

"Scientists and other experts talk about global warming and decarbonizing the economy, but they forget that, ultimately, sustainability is about people and local communities. It is not just an environmental issue. It is a human issue. It is hard to care about long-term sustainability when people are struggling day-to-day to make ends meet."

Weidenhammer recognizes that there are IT and strategy consulting components to sustainability and that his firm can help. He also sees other ways his company can help, including buying and renovating an office building in downtown Reading at 503 Penn Avenue or sponsoring the free Downtown Alive concert series.

Both examples are designed to bring people downtown and generate business for his company and others. He sees it as a way of investing in downtown Reading and making it possible for Reading to thrive now and in the future. "That's a big part of sustainability too," he smiled.

Sustainability Means...

Using Safer Products to Sell Safer Services

Hitchcock Clean and Restore is a Ruscombmanor Township-based cleaning and restoration business. Founded by Lu Ann Seyler, her father, and brother in 1984, Lu Ann explained that the business has always focused on "greener" cleaning because of her severe allergies and sensitivity to some of the cleaning chemicals used by others.

As a result of her allergic reaction to traditional products, Hitchcock Clean and Restore has always looked for healthier and greener cleaning products.

Seyler considers herself a "canary-in-the-coal-mine," referencing the way early coal miners carried caged canaries into the mine. "If the canary died, the air quality was too poisonous for the miners and they better get out," she explained. "I figure that if I'm getting sick using certain chemicals, I should avoid them for my own health and for the health of my customers."

When they started the business, greener cleaning products were harder to find. Many of the early peroxide-based cleaners available were safer, but they were more expensive and did not clean as effectively. The products are now much more affordable and effective.

According to Seyler, "The current green products work just as well as traditional products 90 percent of the time, but you might have to apply them or use them differently."

Her staff is specially trained to use the greener products, which requires slight differences in how long you allow a product to remain on the surface being cleaned or whether you apply the product directly to the surface or to the cleaning cloth or whether it is automatically diluted and applied with special equipment.

The greener cleaning chemicals Hitchcock Clean and Restore uses are slightly more expensive per gallon than traditional products, but the vast majority of the cost for any cleaning service is the labor costs, not the chemical costs. The chemical cost is only 3- to 6-percent of the cost of any job. As a result, Hitchcock Clean and Restore uses green cleaning products for all of its commercial and residential clients whether the client asks for them or not.

"Our services might be slightly more expensive than some of our competitors, but it is because we are offering a higher quality of service," suggested Seyler.

> She knows Hitchcock Clean and Restore has won some new clients because of their use of greener products, but she wishes everyone, including all of her competitors, would make the switch. "It's just better for all of us."

"Using greener cleaning products is only part of the higher quality we offer our clients."

Hitchcock Clean and Restore does not, however, actively promote their use of greener cleaning products because they do not think enough local customers care. They believe price, reliability, consistency of service, and overall quality are the most important part of their value proposition.

She does recognize that residential clients, particularly new parents, are more likely to ask about the products being used. "They are always pleasantly surprised to learn that we only use the safer, greener products," explained Seyler.

Some of their industrial clients are also very concerned about the chemicals being used to clean their facilities. They are required to monitor any potential contaminants in the water leaving the facility. "Those clients," she stated, "want to make sure that the chemicals we use are not going to get them in any legal trouble. They love that we are using safer chemicals."

While the use of greener cleaning products is not something she aggressively promotes, Seyler noted, "Green isn't the most important part of our Berks County market, but you ignore it at your own peril."

Sustainability Means...

Eating Better Food

Mainstream consumers are expressing increasing interest in how the food they eat is produced and prepared. Consumers look for USDA organic certification, GMO-free, gluten-free, pesticide-free, preservative-free, antibiotic-free, cage-free, grass-fed, and humanely treated options when perusing a grocery store aisle or reviewing a menu.

Consumer interest is changing the way grocery stores buy and display products, the way major brands prepare pre-packaged food, and the types of food restaurant chains serve to their customers.

Redner's displays information in its stores about which local farmer grows the fruits and vegetables it sells and it stocks more organic products than ever. Competitors like Walmart, Wegman's, Giant, and others are doing the same.

Purdue, one of the largest poultry growers in the country, has announced improvements in the ways its birds are fed and housed.

McDonald's requires its fish to be certified by the Marine Stewardship Council to ensure the fish is sustainably caught; eggs are from cage-free hens; chickens are raised according to new animal welfare standards; coffee is from environmentally sustainable farms and is Fair Trade certified; beef meets emerging sustainability standards; palm oil comes from sustainable sources; and more.

New restaurant chains like Chipotle grew rapidly on the basis of their pledge to provide healthier and more sustainable ingredients.

Consumer interest in these trends is evident here in Berks County and it is already changing the way some farmers operate.

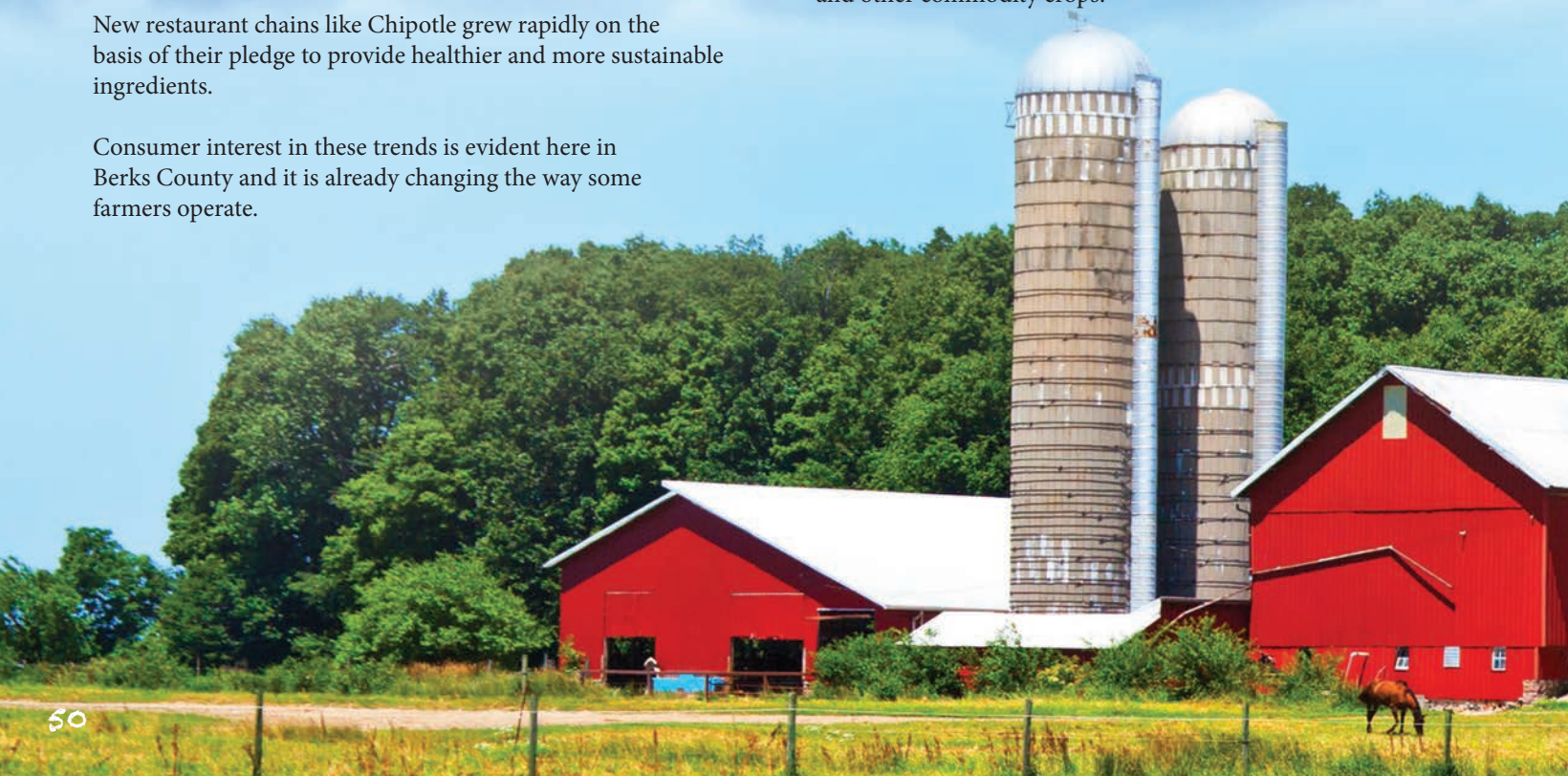
According to Dave Philips, the owner of **Irish Creek Excavating** and someone with deep roots in the local farming community, "It's not McDonald's or Walmart driving these trends here in Berks County; it's local farmers and their customers."

Will and Kelly Smith, owners of **Deep Roots Valley Farm** in Mohrsville and niece and nephew to Dave Philips, agree. They live on the 150-acre farm where Kelly grew up. The farm has been in the Philips family since her great-great-grandfather purchased it in 1911. She is the fifth generation in her family to farm the land and, like each generation before her, she and her husband are adopting the latest best farming practices.

At the time her father began farming, growing commodity crops was a good way to earn a living and raise a family. Given low prices for many commodity crops today, farmers with less than 200-acres frequently find that they need a non-farming job in order to support their "farming habit."

Will and Kelly want to live and work together on the farm while raising their children together. They do not want either of them to need a non-farm job to make ends meet.

Rather than adopting the chemically-intensive, single-crop farming methods popular when her father began farming the land, Will and Kelly are embracing modern sustainability-based agricultural approaches that might have appeared familiar to her great-grandfather. They are slowly transforming the farm, moving away from an earlier generation's focus on growing corn and other commodity crops.



Instead of corn, the farm now raises 45 – 60 beef cattle, 5,500 chickens, 1,100 egg laying hens, and 20 pigs.

With the help of the National Resource Conservation Services (NRCS), the local Berks County Agricultural Center, and the U.S. Department of Agriculture's Environmental Quality Incentives Program (EQIP), Will and Kelly are slowly returning much of the farm to natural grasslands where they are raising beef cattle, pigs, free-range chickens and turkeys, and collecting eggs.

There have been lots of sustainability-related changes at Deep Roots Valley Farm:

- Installed booster pumps and frost-free water lines to water the animals;
- Improved cattle walkways to prevent erosion (stone paths for the cattle to use);
- Planted more than 500 trees to establish a riparian buffer to protect the Irish Creek, which flows through the farm where it eventually joins the Schuylkill River and becomes the water source for Philadelphia; and
- Placed additional fencing near the creek to prevent the cattle from polluting it.

Deep Roots Valley Farm sells its grass-fed beef cattle, humanely raised pigs, free-range chickens and turkeys, and cage-free eggs as part of a Community Supported Agriculture (CSA) venture in which consumers pay in advance for weekly products from the farm. It also sells through local farmer markets in Phoenixville and Collegeville and at retail outlets like **Dundore & Heister** in Wyomissing.

Kelly admitted, "Our meat is expensive compared to industrially farmed meat, but I wish people would stop asking why farm raised meat is so expensive and start asking why industrially farmed meat is so cheap."

Some Berks County consumers are willing to pay more for the security of knowing where their food originates and how it was raised.

"People prioritize what is important to them and pay accordingly," Kelly explained. "For some people, fancy cars and big televisions are important; for others its high quality food and knowing where their food originates."

Several local restaurants in the area prize the products of Deep Roots Valley Farm, partly because the farm's sustainability story helps the restaurants tell their own sustainability and locally sourced stories. **Shorty's Sunflower Café** in Pottstown and The Dutch in Philadelphia, for example, both rely on Deep Roots Valley Farm and highlight the local and seasonal aspects of the food on their menus.

Will and Kelly believe that their sustainability-focused approach to farming is what allows them to meet both their personal and financial needs.

Sustainability requires a focus on the future. Will and Kelly hope their three children and their children's future great-great-grandchildren will enjoy the farm as much as they do.

"Our job right now is to leave the land healthier, better, and more prosperous than when we began farming so that we too can pass it on to the next generation the way it was passed onto us," explained Kelly. Glancing at her young children sipping lemonade after helping their father in the field, she smiled and continued, "And we want them to be able to pass it along to their children."

Sustainability Means...

Growing Family Businesses

ProAsys, based in Shillington, sells water treatment programs and chemicals to companies with boilers, cooling towers, and wastewater management systems. They also sell water treatment chemicals for drinking water, odor control and grease trap maintenance and equipment for water pretreatment, system monitoring, and filtration.

"My grandfather [Fred Keeler], who founded the business in 1953 as The Keeler Company, created a green business," according to Tim Keeler, the current owner and company president. "He just didn't call it a green business."

The company began selling, installing, and maintaining steam boilers. The boilers are used to heat a building or to generate steam for other industrial purposes. They use an energy source like coal, electricity, or natural gas to generate heat. The heat is transferred through a heat exchanger to pipes carrying water or another liquid to absorb the heat and distribute it as needed.

A cooling tower uses a similar process working in the opposite direction to reduce heat. The pipes carrying hot water (or other liquid) passes through a condenser where a cold water source cools the pipe (and the liquid inside) through the process of evaporation. The evaporation process creates the water vapor one sees being released from the tops of many commercial buildings and industrial facilities.

The green aspects of the original business emerged from its focus on helping customers properly maintain the boilers and, eventually, cooling towers. If not properly maintained, a thin build up of scale can coat the pipes passing through the heat exchangers and condensers. The scaling reduces the efficiency of the heating or cooling process. Reduced efficiency means more energy is required for heating, more water is needed for cooling, and more electricity is required to move the water (or other liquid) through the pipes.

Improving the efficiency of the equipment helps customers save money by lowering energy and water use and prolonging the life of the equipment. Lower energy use means lower costs and less pollution.

While the sustainability benefits of the original business are obvious when looking back, the environmental and human health dimensions did not emerge as business objectives until the 1970s when Tim's father, Bob Keeler, ran the business.

During that time, the U.S. Environmental Protection Agency banned the use of some of the chemicals used to prevent scaling and corrosion on the pipes in the boilers and cooling towers. This forced the business to identify and develop new "greener" chemicals that were as effective as the traditional chemicals while being more protective of human health and the environment.

In addition to the environmental issues, a human health crisis also emerged. Legionnaire's Disease, first discovered in Philadelphia in 1976, became a national concern. The outbreak was traced to a bacteria growing in the cooling tower water at the hotel where the initial victims stayed. This prompted the Centers for Disease Control to warn companies across the country to inspect their cooling towers for potential presence of the disease.

The company grew rapidly as it found a niche helping companies address the operational, environmental, and human health issues associated with their boilers and cooling towers.

In 2003 when Tim Keeler joined the family business, after earning a degree in Environmental Science, he saw the business through a sustainability lens.

"I was busy learning the business," he explained. "I was busy learning how hard my grandfather and father worked to build and grow a successful business. I was busy learning the industry, the engineering, the chemistry. I was busy meeting the customers and learning about their needs. But I also realized that what fascinated me most about the business was that I was getting paid to improve the world. My family business is helping address global environmental issues."

The connections to global issues are obvious to Tim. Reducing and mitigating the threat of global warming requires drastic improvements to energy- and water-efficiency. There are also safer chemicals and processes being developed that reduce the adverse human health and environmental risks associated with older chemicals. His family company is addressing all of those needs.

In 2012, Tim bought the company, that his grandfather Fred started, from his father Bob. With the family's blessing, Tim rebranded the company as ProAsys to focus the company on its future rather than its past.

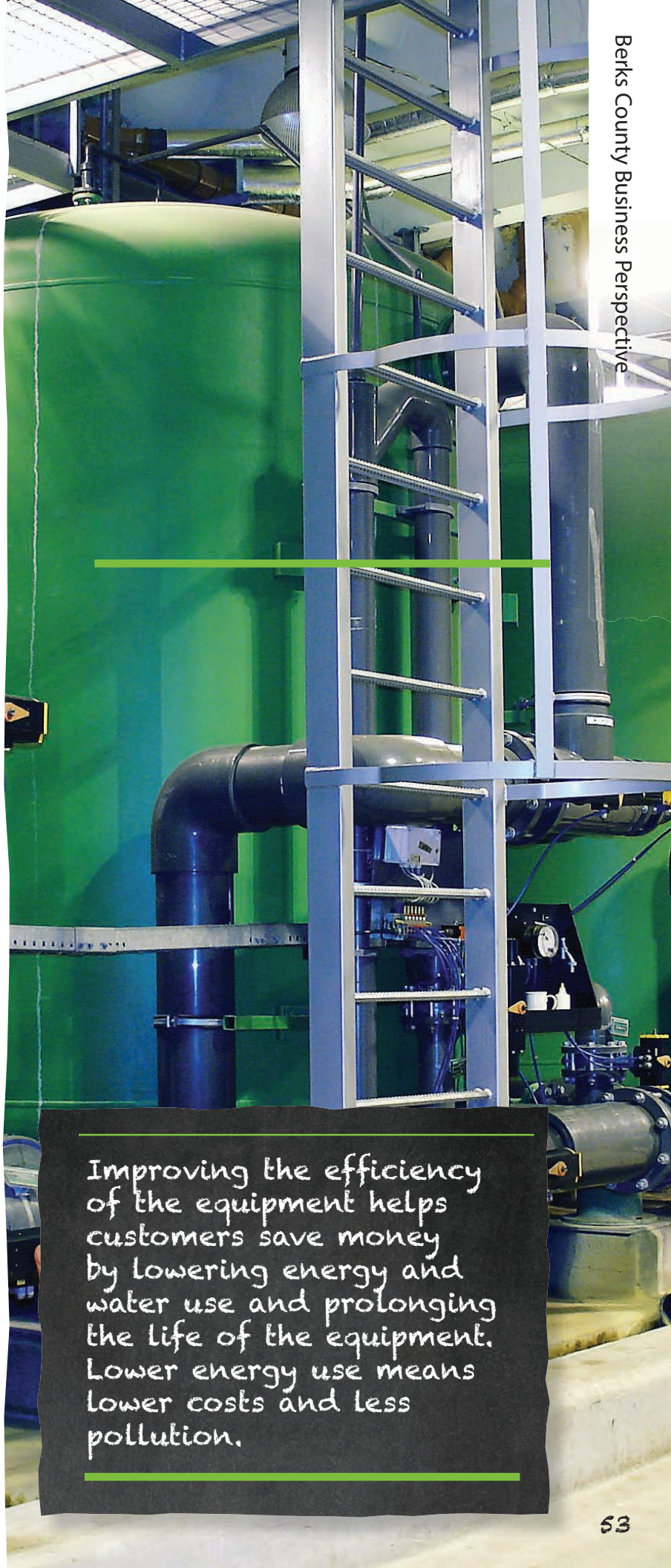
Part of the rebranding includes proactively marketing some of the company's more sustainable product offerings. While all of its boiler and cooling tower products and services generate financial and environmental benefits by improving energy- and water-efficiency, some of its offerings generate additional environmental benefits.

Through its partnerships with new suppliers, ProAsys is able to offer even more effective scale inhibitors and descaling technologies using safer and biodegradable chemicals. The greener chemicals are slightly more expensive, but can generate additional long-term savings. The greener chemicals are also more appealing to certain customers. It is an approach that is already winning new business.

More than one local college in the Lehigh Valley has sought out ProAsys because of its reputation for using greener, biodegradable chemicals. Working with ProAsys allows the colleges to deliver on the environmental commitments they are making to students and alumni while also saving money.

ProAsys business is also growing because colleges, hospitals, and other businesses are paying closer attention to the ongoing threat of Legionnaire's disease. The release of ANSI/ASHRAE Standard 188, a new standard for minimizing the risk of Legionellosis, has ProAsys' customers asking for help to meet the standard.

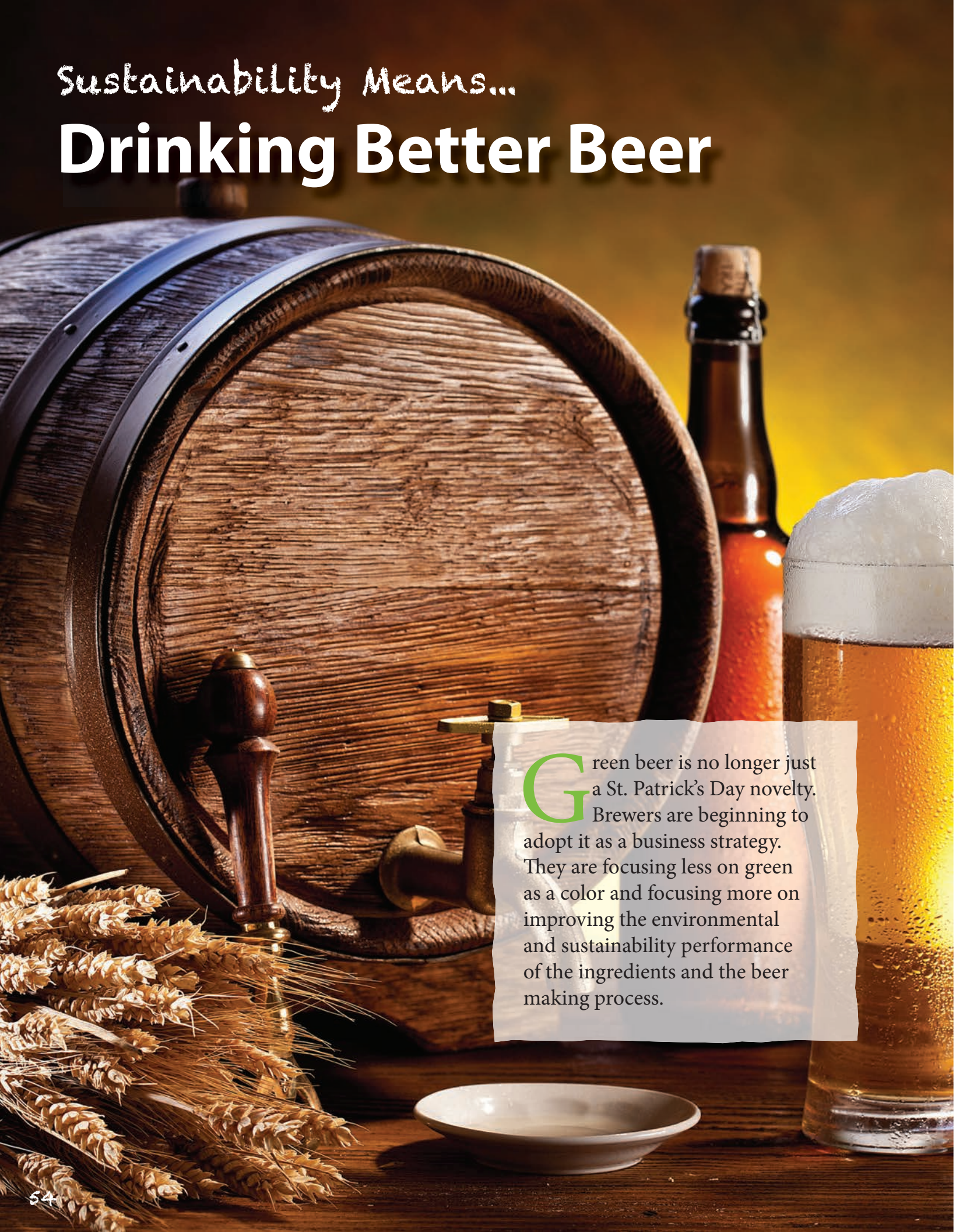
"The family business has been 'green' since the beginning. It just wasn't understood as such or as important to the customers," Tim suggests. "Now, our business is growing because people understand the human health, environmental, and financial benefits of what we're doing and we're better at talking with our customers about all three dimensions."



Improving the efficiency of the equipment helps customers save money by lowering energy and water use and prolonging the life of the equipment. Lower energy use means lower costs and less pollution.

Sustainability Means...

Drinking Better Beer



Green beer is no longer just a St. Patrick's Day novelty. Brewers are beginning to adopt it as a business strategy. They are focusing less on green as a color and focusing more on improving the environmental and sustainability performance of the ingredients and the beer making process.

New Belgium Brewing Company, for example, reuses or recycles 99 percent of the waste it generates. Sierra Nevada Brewing Company has one of the largest solar arrays in the United States. It also just built a brewery in North Carolina that earned a LEED Platinum rating, the highest green building rating awarded by the U.S. Green Building Council.

Both companies publish sustainability reports highlighting their use of organic ingredients, their energy- and water-saving efforts, their efforts to reduce their contributions to global warming, and other initiatives to improve their environmental performance.

The largest brewers, including the makers of Budweiser and Coors, also publish similar sustainability reports that identify goals for reducing their global warming emissions.

Yuengling, America's oldest and Pennsylvania's most famous brewery, shares similar information on its website including a desire to reduce its contributions to global warming. The company recently completed a project that enables it to generate electricity from some of the byproducts of the brewing process. Yuengling also promotes the importance of protecting water quality because "good water makes good beer."

Protecting water quality and making better beer is part of the founding philosophy of the **Saucony Creek Brewing Company** in Kutztown. Founded in 2013, Saucony Creek Brewing Company is a small, craft, micro-brewery and pub serving more than a dozen types of beers that are brewed onsite along with an extensive restaurant menu.

One of the more popular Saucony Creek beers is its Stonefly IPA. In addition to being tasty, a portion of the proceeds from every batch of Stonefly IPA goes to support the Schuylkill Action Network, a non-profit organization focused on protecting and restoring the Schuylkill River watershed.

Stonefly IPA is named after the stonefly, a water-borne insect that is highly sensitive to water pollution. It is only found in clean, cool flowing streams. The stonefly is a sign of clean water; Stonefly IPA helps keep the water clean.

For Matt Lindenmuth, founder of Saucony Creek Brewing Company, beer is more than a beverage. It is a way to build community. Every aspect of the brewpub is designed to reflect and enhance the local community.

Many of the beers, for example, reference the local community. In addition to the Stonefly IPA, Saucony Creek's Kutztown Lager and Schnickelfritz Chocolate Stout are popular. The Kutztown Lager is named after Lindenmuth's hometown. The Schnickelfritz Chocolate Stout pays homage to the local chocolate industry and includes a Pennsylvania Dutch reference to a naughty or rebellious person.

Even more importantly, Saucony Creek Brewing Company is focused on building a network of local businesses that support one another. The company buys local grains needed to make beer from nearby farmers. It sells the used grains from the beer making process to local dairy and pork farmers as animal feed. Those same farmers sell some of their product back to Saucony Creek as ingredients for the food it serves in the restaurant.

The Saucony Creek Gastropub restaurant proudly lists many of the local Berks County Farms that provide the ingredients for the menu items:

- **Blue Market Bread Co.**, baked bread, Kutztown
- **Global Libations**, local coffee roaster, Kutztown
- **Primordia Farm**, mushrooms, Lenhartsville
- **Red Earth Farm**, organic farm, Kempton
- **Shady Mountain Market**, organic produce, Fleetwood
- **Sun Trap Farm**, organic farm, Kutztown
- **The Nesting Box**, cage free eggs, Kempton
- **Valley Milkhouse,** artisan cheeses, Oley
- **Wild Fox Farm**, organic farm, Bally

"We want local businesses supporting other local businesses," explained Jennifer Dillow, manager of the Saucony Creek Gastropub. "It's an important part of sustainability."

The next time you toast the success of the local business community or raise a glass of green beer on Earth Day or St. Patrick's Day, consider one of the offerings from Saucony Creek Brewing Company.

Sustainability Questions

All Business Owners Should Ask:

What are my customers asking about sustainability?

What are my competitors saying about their sustainability initiatives?

What kinds of sustainability initiatives are my suppliers promoting? (If your suppliers are promoting sustainability, it must be important to their other customers, some of whom might be your competitors.)

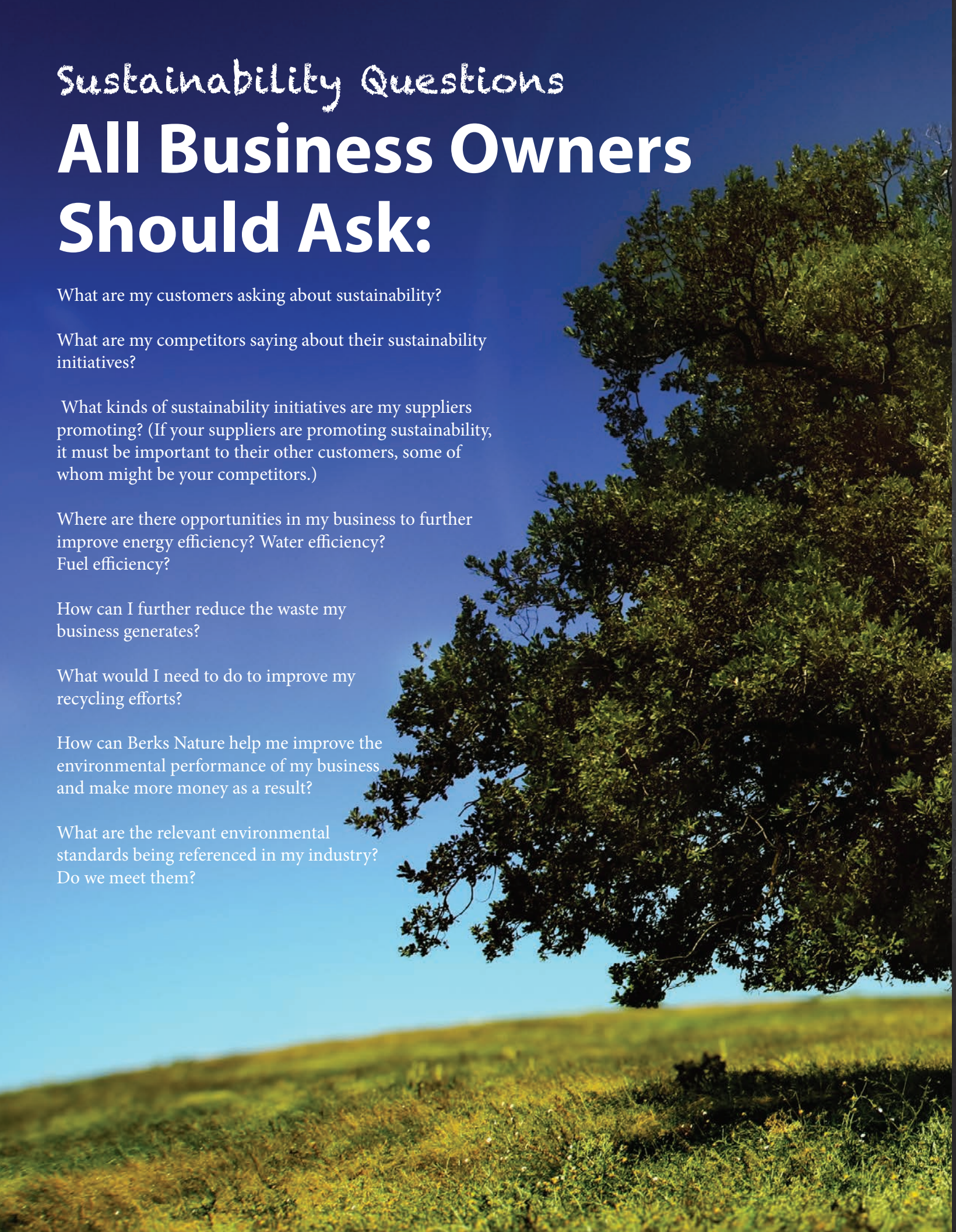
Where are there opportunities in my business to further improve energy efficiency? Water efficiency? Fuel efficiency?

How can I further reduce the waste my business generates?

What would I need to do to improve my recycling efforts?

How can Berks Nature help me improve the environmental performance of my business and make more money as a result?

What are the relevant environmental standards being referenced in my industry? Do we meet them?



Conclusion

While few, if any, Berks County businesses have developed formal sustainability strategies or published sustainability reports to track their efforts, it is clear that the companies highlighted in this report are integrating environmental and other sustainability concerns into their business practices.

They are finding ways to save money and reduce their adverse environmental impacts. They are responding to shifting consumer interest in healthier, greener, and more sustainable products. They are developing greener products and greener services. They are inventing or exploring new technologies that can help solve global environmental challenges. They are learning to talk with their customers and prospective customers about sustainability issues. They are making money selling greener solutions. And they are building businesses that generate profits, create jobs, and protect the environment.

Berks County is lucky to have them.

There are also, as always, opportunities for businesses and other organizations to do more. Berks Nature is happy to share its expertise and to work with the local business community to find additional, profitable ways to protect the environment. Please let us know how we can help.

Index of Berks County Businesses Referenced in the Report

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Sustainability

Meeting the needs of today without
compromising the needs of future generations.

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