



Ohio Healthier Hospitals

A Collection of Environmental
Leadership Case Studies



Prepared by





About OHA

OHA's Energy & Sustainability Program assists hospitals with energy procurement, advocacy, ENERGY STAR benchmarking, energy audits, pollution prevention and environmentally conscious sustainability programs.

In the five-year period ending June 2016, hospitals participating in OHA's ENERGY STAR benchmarking project saved enough money due to reduced energy use to hire 137 nurses, and reduced their carbon footprint equivalent to taking 22,168 cars off the road or the climate benefits of 2.7 million mature trees. The U.S. Environmental Protection Agency recognized OHA with a 2016 ENERGY STAR Partner of the Year—Energy Efficiency Program Delivery Award for the association's efforts to promote energy efficiency and adoption of energy-efficient products.

OHA advocates before the Public Utilities Commission of Ohio on behalf of hospitals, saving hospitals millions of dollars in rate cases and working to connect them with financial incentives offered by utilities and government to fund energy efficiency projects. Learn more at www.ohiohospitals.org/energy.

About OHA's Environmental Leadership Council

The Ohio Hospital Association Board of Trustees more than 15 years ago established a board committee named the Environmental Leadership Council. The Council's mission is

to lead Ohio hospitals toward the goals of environmental sustainability, regulatory compliance, energy efficiency and pollution prevention, all of which will result in healthier hospital workforces and communities.

About OHA Environmental & Sustainability Awards

Named after OHA Hall of Fame Inductee, Melvin Creeley, former CEO from East Liverpool City Hospital and past chair of OHA's Environmental Leadership Council, the Melvin Creeley Environmental Leadership award recognizes hospitals for promoting sound practices through environmental stewardship. Recipients of OHA's Melvin Creeley award are eligible to receive the John Chapman Award.

OHA's John Chapman Award recognizes a hospital or health system that demonstrates excellence in initiating or supporting pollution prevention programs. The award is named after John Chapman or "Johnny Appleseed," who planted thousands of apple trees across the Midwest during the 19th century.



About Practice Greenhealth

Practice Greenhealth is the nation's leading health care membership community that empowers its members to increase their efficiencies and environmental stewardship while improving patient safety and care through tools, best practices and knowledge. To learn more about Practice Greenhealth www.practicegreenhealth.org.

FOREWORD

Dear Ohioans and beyond,

Ohio hospitals strive to achieve the Triple Aim—better patient care, improved population health, and lower costs—and environmental stewardship has become an important strategic consideration to meet those aims.

To make environmental stewardship a strategic imperative, it is essential to have a systematic approach in tracking and reporting sustainability efforts. Both Ohio Hospital Association and Practice Greenhealth offer an opportunity to formally measure this effort through an awards process.

In Ohio, hospitals may apply for the Melvin Creeley and the John Chapman awards process through OHA. This awards process has been ongoing for the past 15 years. Nationally, hospitals may apply for the Practice Greenhealth Environmental Excellence Awards, an awards system in place for the last twelve years.

Our hope is Ohio hospitals are participating in every assessment and tracking process available.

Hospitals measuring and reporting sustainability data can benchmark their efforts with like facilities across the state and country.

This collection* of case studies describes the environmental efforts and successes of OHA Melvin Creeley and John Chapman award winners. Through the sharing of progress and best practices, the health care sector can continue to make the important improvements necessary to make our communities healthier, one hospital at a time.

Best,

Rick Sites
Energy and Sustainability Team Leader
Ohio Hospital Association

Sarah Manwell
Chief Membership Officer
Practice Greenhealth

**Unless otherwise stated, all information is based on 2015 data.*

INTRODUCTION

Ohio Leads the U.S. in ENERGY STAR Hospitals

ENERGY STAR Hospitals save an average of \$3,000 per bed, per year on energy costs. OHA offers participating hospitals access to the energy utilization database, enabling them to benchmark their energy efficiency and qualify for an ENERGY STAR rating.

Ohio ENERGY STAR hospitals:

- Adena Greenfield Medical Center
- Barnesville Hospital
- Firelands Regional Medical Center - South Campus
- TriHealth Good Samaritan Hospital - Cincinnati
- Mercy Medical Center – Canton
- Mercy Tiffin Hospital
- Mercy Willard Hospital
- Miami Valley Hospital South
- Ohio State University Hospital East
- ProMedica Bay Park Hospital
- Southern Ohio Medical Center
- Summa St. Thomas Hospital

The mission of a hospital has been expanding beyond the singular patient to populations for some time now.

As health care begins to tackle the idea of healing communities, environmental stewardship aligns very well to that new mission. The air a patient breathes, the food they have access to, the chemicals they are exposed to—all of this now comes into focus and must be considered when considering the new definition of health.

Additionally, the intersection of environmental actions as a mechanism for significant cost savings is another compelling reason:

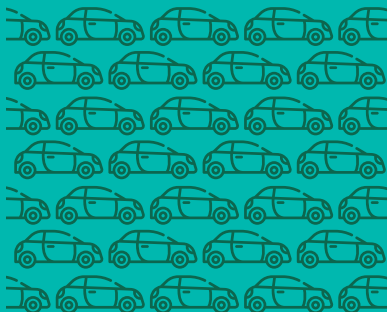
- ENERGY STAR for Healthcare reports that every \$1 a nonprofit health care organization saves on energy is equivalent to \$20 in new revenues.
- Practice Greenhealth’s Benchmark Report found that the median cost for Regulated Medical Waste is nearly 11 times more expensive than solid waste, and that award-winning members are saving \$75,419 per facility in avoided supply and waste costs by reformulating Operating Room kits.

This is still a newer philosophy and strategy for hospitals, which is where organizations like OHA and Practice Greenhealth help spread the knowledge and best practices to accelerate the uptick of environmental stewardship in health care.

In 2016, Ohio hospitals saved enough energy to power **10,351** homes for a year.



It's the equivalent of taking **6,000** cars off the road.



The financial savings equate to salaries for **26** nurses.



P2 University Environmental Best Practices

OHA's Environmental Leadership Council provides support and technical resources to Ohio hospitals' efforts to reduce waste, prevent pollution and comply with environmental regulations through the Pollution Prevention University, or P2 University.

OHA's Pollution Prevention University takes a hands-on approach to evaluate waste systems. Participating hospitals learn how to identify cost saving opportunities for pollution prevention and waste minimization activities, review the requirements of the Joint Commission's Environment of Care Standards involving the safe management of hazardous materials and hazardous wastes, prepare pollution prevention plans and programs to increase compliance with state and federal laws, and conduct a thorough audit of a hospital waste stream.

The next step in evaluating waste streams is to report out on that progress following the education through OHA's awards process:

- **MELVIN CREELEY AWARD**

This award recognizes hospitals and health systems that demonstrate their commitment to environmental stewardship through implementing waste reduction programs, recycling initiatives and other activities to preserve the health of the planet for future generations.

- **JOHN CHAPMAN AWARD**

The John Chapman Award winner is selected from the Melvin Creeley nominees. This award recognizes a hospital or health system that has demonstrated leadership in guiding its facility toward the goals of environmental sustainability, regulatory compliance, energy efficiency and pollution prevention, all of which are proven to result in healthier hospital workforces and communities.

The following are case studies from Ohio hospitals that previously applied for OHA's Melvin Creeley Award.

- 88th Medical Group at Wright-Patterson Air Force Base
- Louis Stokes Cleveland VA Medical Center
- Mercy Health Youngstown Region
- Mount Carmel Health System
- TriHealth
- University Hospitals

This report highlights how these six hospitals and health systems have approached environmental stewardship and how they have found significant successes.

88th Medical Group at Wright-Patterson Air Force Base



88th Medical Group

Wright-Patterson Air Force Medical Center/Region V

Wright-Patterson Air Force Base, Ohio

57 Beds and 38 Clinics

ACCOMPLISHMENTS SINCE WINNING THE MELVIN CREELEY AWARD

- Employed the use of Xenex ultraviolet disinfection robots
- Base implemented the “Throttle Back” energy conservation initiative where over the weekends individuals are asked to unplug or turn off all nonessential electrical and electronic devices
- Installed drug take-back kiosks for patients to drop off expired or unneeded drugs
- Installed several “GUS” disinfection soak probe cleaning stations
- Discussing the use of “Tropon” hydrogen peroxide based cleaning station for cleaning ultrasound probes

SUMMARY

- The Wright-Patterson Air Force Base Medical Center enhanced installation sustainability by implementing recycling and waste management programs, diverting several hundred tons from the landfill each year.
- Because of the waste management programs, the medical center reduced regulated medical waste by 36 percent from the federal baseline.

THE OPPORTUNITY

The original Wright-Patterson Medical Center facility was built in 1956 and encompassed 297,000 square feet, with another 378,000 square feet added in 1987, for a total area of 784,452 square feet. The facility requires a 13,201 square foot central energy plant that controls all steam, water and electrical systems for the hospital. In addition, the hospital utilizes 26,000 gallons of water each day, including 8,000 gallons of hot water. Two boilers provide 8,200 pounds of steam every hour which is utilized to heat water, supply autoclaves, maintain sterilizers and operate kitchen equipment and humidifiers. Due to the age and size of the facility, Wright-Patterson Air Force Base recognizes the importance of improving efficiency across the entire facility.

THE STRATEGY AND IMPLEMENTATION PROCESS

WPAFB identified and established green initiatives structured to integrate and balance concerns related to the environment, economy and community. To meet the goals of these green initiatives, the WPAFB Medical Center committed to executing initiatives that promote greener government, business and personal practices that both ensures the environmental sustainability of the facility and enhances the quality of life for staff members and patients.



Solid Waste Reduction

The waste reduction policies and procedures in place are overseen by the WPAFB Environmental Management Office and Medical Center's Unit Environmental Coordinator, with a goal of diverting 50 percent of solid waste generation. Language has been written into all renovation contracts stipulating that contractors must conform to the recycling program procedures. WPAFB Medical Center's recycling program collected more than 400 tons of cardboard, 72 tons of paper products, over 8 tons of plastics, 2.5 tons of aluminum and glass, 400 wooden pallets, 300 ink and toner cartridges, 3000 ceiling tiles, 1500 fluorescent light bulbs, 700 light fixtures and 350 tons of various metals, which were collected in a 30-yard dumpster producing roughly 30 dumpster loads in a year's time. Additional programs include the installation of high efficiency ovens which have nearly eliminated grease and oil waste, and a food pulper, the waste from which may be used as compost in the future. WPAFB Medical Center utilizes reusable linens and the Defense Reutilization Marketing Office oversees the recycling of used furniture through a medical furniture and equipment redistribution system. To further reduce waste packaging, materials are reused and double sided copies are encouraged.

Regulated Medical Waste Management

The volume of regulated medical waste strived for is less than 10 percent of total waste generated. While this provides a baseline of 112,000 pounds per year, the WPAFB produced only 72,000 pounds in 2014, resulting in a 36 percent reduction.

Universal Waste and Recycled Hazardous Waste

Electronics are all turned into Defense Reutilization and Marketing Office for recycling or reuse, and lead batteries are turned into the Base recycling center with all other

non-alkaline batteries going to the Base hazardous waste contractor. Recently the entire Medical Center was retrofitted with electronic ballasts and lower energy T8 light tubes, while all parking lot lighting was replaced with LEDs, recycling the old lighting components. Further reduction of hazardous waste has been accomplished through the installation of processors on the second floor that effectively recycle alcohol, xylene and formalin. The WPAFB Medical Center has implemented a paint, x-ray and lead apron recycling program as well as a Pharmaceutical Reverse Distribution, wherein all drugs not considered hazardous are sent back to the distributor.

Hazardous Waste Management

Hazardous waste at the WPAFB Medical Center is managed by the medical group unit environmental coordinator. WPAFB has been a mercury free facility since 2005. For other hazardous wastes such as pharmaceutical, chemotherapy and chemical, the WPAFB Medical Center utilizes the Enterprise Environmental, Safety and Occupational Health Management Information System.

Facilities Waste Management System and Preferable Purchasing

The WPAFB Medical Center has almost eliminated suction canisters that had to be disposed of as regulated medical waste through utilization of the Dornoch suction system, which ties into the sanitary sewer system. Digital imaging has eliminated film waste and reusable cleaning cloths are being utilized to reduce cleaning waste. The Base also requires that all products purchased be ENERGY STAR rated.

Energy Conservation Measures

During the recent renovation several air handling units, air distribution systems, air return fans, exhaust fans, air terminal variable air volume boxes, re-heat coil boxes,

dampers and controls were upgraded. As another energy conservation measure, a Progressive Water Softener System was installed. Unlike a timed system, which cycles water every 10 to 12 hours going through about 45,000 gallons a week, the progressive system cycles the water softener when the demand reaches a certain threshold. This improved system saves the WPAFB Medical Center thousands of gallons of water each week. Complimenting this upgrade was the installation of dual flush toilets, which reduces water consumption from 3.5 to 5 gallons

per flush to 1.6 gallons per flush. The occupancy sensors were updated, which automatically turn lights off when rooms are empty. In addition to the HVAC improvements, all steam and condensate insulation was repaired or replaced, and a maintenance program adopted for the hospitals cooling towers. Lastly the WPAFB has initiated an Employee Carpooling/Ride to Work Program. This program encourages carpooling while also reimbursing employees if they ride the bus to work, reducing the amount of greenhouse gas the WPAFB employees produce.

Benefits and Results

Chemicals	Energy	Waste	Purchasing	Food
Alcohol, xylene and formalin recycling Mercury free facility	Medical center retrofit with lower energy ballasts and T8 light tubes Parking Lot Upgrade to LEDs HVAC improvements Employee Car Pool Program	36 percent reduction in regulated medical wastes and a comprehensive recycling program Reusable linens and cleaning cloths Progressive water softener system saves thousands of gallons per week Reverse pharmaceutical program	Purchase ENERGY STAR rated products Contractor compliance with recycling program	Created a patient diabetic garden

Challenges and Lessons Learned

- Since Wright-Patterson Medical Center is a federal/military organization, it is bound by federal, state, Air Force, base and hospital rules, regulations and policies. Making changes must go through many levels of chain of command. Leadership is fully supportive in the Greening the government initiative, however everyone in the approval process has input or questions that need to be addressed.
- The renovation projects provided the opportunity to salvage outlets, switches, doors, cork boards, dry erase boards, hinges, and fixtures that were all deemed construction debris. These items were turned over to the Montgomery county recycling center for use in Habitat for Humanity projects.
- Another challenge the medical center encountered was finding adequate space for storage and transportation for the cardboard recycling. The recycling storage originally began in small bins, and as the program grew, moved to a flatbed truck then a 30-yard compactor. Although it required hiring a local waste hauler to transport the compactor to the recycling center, the 30-yard compactor was a good solution for the high volume of recycling.
- A major challenge was recycling old Xray films and computer disks with patient information on them. These could not be sent to the Base recycling center to be shredded due to the sensitive nature of the information they contain, so WFAB purchased a commercial shredder and installed it in a secure area in the medical center so authorized staff could shred these items.

Louis Stokes Cleveland Veterans Affairs Medical Center

Louis Stokes Cleveland VA Medical Center

660 beds

Provides care to 110,000 veterans

ACCOMPLISHMENTS SINCE WINNING THE MELVIN CREELEY AWARD

- Accomplished 93 percent diversion rate for construction and demolition debris, and a 38 percent recycling rate in 2016
- Working with a local food bank to start a CSA program for patients
- Working towards a 25 percent energy reduction by 2025

SUMMARY

- The Louis Stokes Cleveland VA Medical Center has employed a green environmental management system coordinator to oversee the implementation of environmental programs while ensuring that the facility is compliant with national and regional regulatory bodies such as the Ohio EPA, U.S. EPA, the Northeast Ohio Regional Sewer District, Cleveland Department of Public Health, Division of Air Quality and the Joint Commission.
- The GEMS coordinator position has expanded recycling, increased energy efficiency through continuous upgrading efforts and minimized the use of toxic and hazardous chemicals while maintaining health and safety standards for patients and employees.

THE OPPORTUNITY

As a Federal Government Agency, the Louis Stokes Cleveland VA Medical Center must conform to sustainability executive orders to conduct business in an environmentally, economically and fiscally sound manner that is integrated, continuously improving, efficient and sustainable while also making the reduction of greenhouse gas emissions a priority. The Louis Stokes Cleveland VA Medical Center created a strategy to manage and coordinate the



environmental programs while maintaining compliance with current regulations without sacrificing the facility's exceptional patient care.

THE STRATEGY AND IMPLEMENTATION PROCESS

Green Program and Team Formation

The Louis Stokes Cleveland VA Medical Center manages environmental programs under GEMS based on continuous improvement through the ISO 14001:2004(E) standard. To complement this system, the Louis Stokes Cleveland VA Medical Center employed the services of a GEMS Coordinator beginning in 2008 and has been free of significant violations since the coordinator's arrival. In 2012, VA Headquarters in Washington, D.C. initiated its Green Routine program as a way to motivate staff participation in facility efforts to improve sustainability performance. This program was adapted by the Louis Stokes Cleveland VA Medical Center Green Team, and headed by the GEMS Coordinator. Since its initial introduction the GEMS Coordinator has expanded the Green Routine program and established the Green Routine Award, which is presented monthly to the winning department or employee. The coordinator continues to drive attention to these recycling efforts through monthly newsletter coverage, the Digital Announcement Network, the Cleveland VA Official Digital Signage System, Green Routine events and outreach events sponsored by the facility.

Advancing Waste Prevention and Recycling

Through these various efforts, the Louis Stokes Cleveland VA Medical Center has developed a robust recycling

program. In 2014, the recycling program at the Louis Stokes Cleveland VA Medical Center achieved a diversion rate of 29 percent by recycling the following: 266 pounds of electronic ballast, 6,880 pounds of batteries, 76,440 pounds of comingled recyclables, over 1 million pounds of construction and demolition waste, 232,800 pounds of corrugated cardboard, 168,000 pounds of electronic waste, 7,200 pounds of cooking oil, 2,122 pounds of fluorescent lamps, 4,560 pounds scraps of food waste, 194,200 pounds of shredded paper, 18,000 pounds of scrap metal, 38,262 pounds of regulated medical waste from sharps containers, 1,629 pounds of Styrofoam and 44,000 pounds of wood pallets. Further supplementing the facility's recycling accomplishments was the purchase of two recycling units for ethanol and xylene. These units were purchased with green initiative funds and have saved the VA Medical Center 75 percent from product purchasing and waste disposal services.

Reducing Facility Energy Intensity

Aiding the GEMS Coordinator is an energy engineer who researches and develops ways to improve energy efficiency, thus reducing greenhouse gas emissions through reduced energy intensity. Projects include the installation of a Smart Building System, which integrates all stand-alone building automation control systems, as well as smart electrical and mechanical meters. Equipment upgrades were performed for energy efficiency in air handling units, heat exchangers, pumps and variable frequency drives, process chillers and distribution loops, and steam unit heaters. Boiler Plant upgrades include flue gas economizers on water-tube boilers, blow down recovery system, low nitrogen oxide burners, motors and variable frequency drives. The lighting in the parking garage was converted to LED and operated by motion sensor reducing energy intensity by 50 percent. In 2014, the Louis Stokes Cleveland VA Medical Center was able to reduce over 4.4 megawatts electric load during the American Transmission Service, Inc. performance event.

Increasing Renewable Energy and Renewable Energy Generation at the Facility Level

The Louis Stokes Cleveland VA Medical Center's Transient Resident House has been equipped with a photovoltaic system. As a result, PV and Combined Heat and Power feasibility studies have been completed for the medical center's main campus.

Promoting Sustainable Acquisition and Purchasing

The Louis Stokes Cleveland VA Medical Center utilizes the General Service Administration’s online shopping and ordering system, GSA Advantage. This platform provides instant access to millions of products and services that meet VA approval. As such all Louis Stokes Cleveland VA Medical Center employees responsible for purchasing products and services receive mandatory training in using the platform, streamlining the process of purchasing items that are compatible with the environmental programs being implemented.

Safer Chemicals

The Chemical Management and Pollution Prevention Program is coordinated through the Chemical Hygiene Committee, which is overseen by the GEMS coordinator and industrial hygienist. The goal is to reduce the risk to human health from hazardous and toxic chemicals. The MAXCOM program is a chemical management system based on the new Occupational Safety and Health Administration’s Globally Harmonized System of Classification and Labeling of Chemicals. This system provides employees with user friendly tools for the acquisition, handling and storage of hazardous and toxic chemicals. The MAXCOM system

automatically applies acquisition and procurement practices in order to meet statutory mandates requiring purchase preferences for less toxic and hazardous chemicals. In addition to MAXCOM, the Louis Stokes Cleveland VA Medical Center has a pharmaceutical waste management system that is considered a best practice by the EPA. In 2014, this waste management system diverted 10,000 pounds of pharmaceutical waste from waterways and landfills.

Promoting Electronics Stewardship

The electronic stewardship addresses the life cycle management of electronics from procurement to disposal. The Louis Stokes Cleveland VA Medical Center Electronics Stewardship Program ensures procurement preference for Electronic Product Environmental Assessment Tool designated electronic products, which is certified and ENERGY STAR approved. This enables power management, duplex printing and other energy efficient or environmentally preferable features. When disposing of electronics, the Louis Stokes Cleveland VA Medical Center employs environmentally sound practices for the disposition of excess electronics through its partnership with UNICOR.

Benefits and Results

Chemicals	Energy	Waste	Purchasing	Food
<p>Eliminated volatile organic compounds in paints</p> <p>75 percent savings on xylene and ethanol purchasing and disposal</p>	<p>Shed 4.4 megawatts</p> <p>Photovoltaic installation, led retrofit in parking garage</p> <p>Smart Building System integrating climate regulating functions</p>	<p>29 percent Waste Diversion Rate</p> <p>38,262 pounds radioactive mixed wastes diverted from landfills</p> <p>10,000 pounds of pharmaceutical waste diverted</p>	<p>EPAT and ENERGY STAR certified electronics</p> <p>MAXCOM program</p>	<p>Healthy Teaching Kitchen Garden</p>

Challenges and Lessons Learned

- Communication continues to be a challenge, especially with waste responsibilities. New employee orientation reviews waste disposal, and soon there will be staff re-training to clearly communicate the waste disposal process.
- As with most sustainability projects, culture change of everyone being an environmental steward takes time. It does not solely live with the GEMs coordinator, and projects are underway to address the culture change that must happen.

Mercy Health Youngstown



Mercy Health—Youngstown Region is a three-hospital system within Mercy Health

Represents 930 beds

1,400+ physicians and dentists

SUMMARY

- For over 100 years, Mercy Health Youngstown Region has held steadfast to its mission of providing excellent care and serving the surrounding community. In late 2009, Mercy Health leadership decided to expand the servant ministry mission by attempting to fully appreciate the environmental impact that provided services have on the surrounding community. Upon review, a significant opportunity was identified to become better stewards of the environment by reducing the organization’s ecological footprint.
- In 2010 Mercy Health started its journey towards embracing and practicing systems, processes and metrics that will drive continuous improvement towards achieving environmental sustainability.
- As an organization, sustainability has become a core component of the culture and a key factor in all decisions. The following describes the six year journey Mercy Health has taken towards finding sustainable solutions to reduce its impact on both the environment and the surrounding community in the Mahoning Valley.

THE OPPORTUNITY

Mercy Health’s environmental mission calls for the promotion of environmental stewardship by establishing and monitoring metrics for environmental initiatives that are reported to the leadership team.

THE STRATEGY AND IMPLEMENTATION PROCESS

To accomplish its environmental mission, Mercy Health has identified different priorities and goals that foster a greener community through environmental protection. The priority of

greater community health has manifested in two goals: the diversion of medical waste and elimination of lead poisoning in children.

Reducing Pharmaceutical Waste

To divert pharmaceutical wastes from wastewater and landfills, Mercy Health is participating in Stericycles Pharmaceutical Waste Compliance Program via the RX Waste Compliance Service, which helps Mercy Health manage prescription waste in compliance with federal regulations. Mercy Health continuously educates the community and hosts prescription drug take-back events in partnership with the Drug Enforcement Administration. Mercy Health initiatives to reduce pharmaceutical waste seek to remain compliant with best practices.

Decreasing Lead Poisoning in Children

Eliminating lead poisoning in children is addressed through lead screening clinic at the St. Elizabeth Youngstown Hospital, aiming to increase the number of children screened while adhering to best practices standards. The Mercy Health group provides support for the Mahoning County’s Lead based paint Hazard Control Program, demolishing blighted structures and remediation of contaminated yet sound structures.

Promoting System-Wide Energy Efficiency

Complimenting Mercy Health’s two community health goals are the hospital-wide recycling program and the hospital-wide reduce and reuse initiatives that limit the total number of printers and promote two sided copies as well as black and white printing. Mercy’s conversion to Electronic Medical Records via Carepath Software has eliminated paper records, while the cafeteria has eliminated the use of disposable plates. Energy efficient upgrades include LED fixture installation and the optimization of HVAC.

Recently Mercy Health has been enrolled in the Healthier Hospital Initiative’s Leaner Energy Challenge with the goal of reducing greenhouse gas by reducing weather adjusted energy intensity from metered energy use by 3, 5 and 10 percent.

The Environmental Services Department at Mercy Health designs and reviews the usage of green and sustainable chemicals throughout the system’s facilities. They have used the LEED EBOM IEQc3:3 to oversee the transition in purchasing practices resulting in 87 percent green product usage. Further green management practices address noise performance, environmental performance, integrated pest management and supply chain management.

The greatest energy and sustainability accomplishment is the new construction of the St. Elizabeth Boardman Hospital. The 125-patient bed was recommissioned, which resulted in a 15 percent reduction in energy costs, as well as 80 percent of construction waste recycled.

Benefits and Results

Chemicals	Energy	Waste	Purchasing
<p>Increased lead screening</p> <p>LEED EBOM IEQc3:3</p> <p>Resulting in 87 percent Green Chemicals used</p>	<p>Healthier Hospital Initiative Leaner Energy Challenge</p> <p>LED retrofit</p> <p>\$120,000 in energy efficiency savings</p>	<p>Biosystems Sharps management system</p> <p>Eliminated paper records/ electronic medical records</p> <p>Removal of disposable plates from the cafeteria</p> <p>80 percent recycling rate of construction rate</p>	<p>LEED EBOM IEQc3:3</p>

Challenges and Lessons Learned

With any large-scale program and implementation process, there are bound to be speedbumps along the way. Some of the challenges revolved around the aging infrastructure of Mercy Health’s buildings.

- Both St. Joseph and St. Elizabeth use a labor-intensive method to collect and segregate waste. It is a large enough undertaking to collect solid and regulated medical waste—then you start to add in hundreds of pounds of recyclables each week, it can become cumbersome to manage. With the uncertainties in health care these days, resources are at a premium, and as a department/ organization, you need to make the decision to become more efficient in other areas to not compromise the sustainability program.
- Staff turnover can quickly become an agent that stalls your program. When key stakeholders of your sustainability

program either leave the organization, or go onto other duties, it is vital that you reel in those folks’ replacements or find new, passionate folks who share in the mission of the program. Ultimately, this is not the work of one person or one group of people, the entire organization needs to buy into it.

- With that said, it is acceptable to go through a “restart”. Understanding the weaknesses of the program will ultimately allow you to give an honest assessment of where you are at, and where you need to go. Through time, the accessibility of assets (or actual recycle bins) becomes aged. You must make the commitment to put the dollars aside to pay for new access points to ensure recycling is easy for everyone, both employees and public alike.

Mount Carmel Health System



MOUNT CARMEL

Mount Carmel is a four-hospital system

Central Ohio

10,900 colleagues

2,100 Physicians

900+ volunteers

SUMMARY

- Mount Carmel Health System created a system-wide green team, committed to all six Healthier Hospitals Challenges and created a shared goal/purpose statement.
- As a result of these efforts, Mount Carmel became an early participant in a by-product synergy network.
- Recycling efforts at Mount Carmel East in just one year have saved the equivalent of 2,298 barrels of oil, reduced the equivalent of 386.4 metric tons of Greenhouse Gas emissions, resulting in a Net Energy savings of 7,573.5 British Thermal Units and saved the equivalent of 3,463 trees.

THE OPPORTUNITY

The Catholic health ministry is called to act responsibly toward the environment to show respect for all creation and to promote the health of communities and the world.

THE STRATEGY AND IMPLEMENTATION PROCESS

The first step towards energy efficiency and sustainability was to develop the first Mount Carmel Health System Green Team. Practices relative to environmental sustainability and good stewardship of resources were already in place at Mount Carmel, but there weren't mechanisms to support these activities and report. Mount Carmel needed a team that could pull the activities together to avoid duplication and assign to the right stakeholders for follow-thru.

Developing the Green Team

The Green Team is comprised of representatives from multiple hospital departments to include representation from the entire health system. There are currently 20 members, which include one consultant from the Ohio By-Product Synergy network.

The team meets bi-monthly and is approved by the senior vice president of Mount Carmel’s Human Resources department.

The Mount Carmel Green Team’s mission is to continuously improve the health of communities. The Green Team builds organizational awareness to develop an environmentally conscious culture in the pursuit of lowering environmental impact through sustainable use of resources. The Green Team will pursue and take actions involving green initiatives and new opportunities for strengthening Mount Carmel’s commitment to environmental sustainability.

Mount Carmel Green Team accomplishments

- Participation in the Healthier Hospitals Initiative
- Member of the Ohio By-Product Synergy Network
- Representation on the OHA Environmental Leadership Council and in 2014 served as P2 University faculty
- Hospital garden at Mount Carmel St. Ann’s that can be used for diabetic education and harvesting foods to donate to food bank
- Reduced paper consumption by 40 tons annually
- Solvent Reuse Program which reuses the material as a product to clean railroad cars
- Mount Carmel West has received ENERGY STAR recognition and is participating in AEP’s Continuous Energy Improvement
- 2014 Mount Carmel Medication Disposal Day
- Ohio collected 21,197 pounds of medication for disposal. Several Green Team members participated. Mercury thermometers were also collected. Mount Carmel had two collection points. Mount Carmel Health System’s headquarters collected 57 pounds and Mount Carmel St. Ann’s collected 137 pounds
- MORPC: Be Air Aware in Central Ohio—Mount Carmel is working with MORPC and will be receiving air quality alerts for projected poor air quality days in 2015. These alerts will be sent the day before, so Mount Carmel hospitals are advised and colleagues can act to help reduce the impact.
- Recycling partnership with Green IT
- System-wide meatless Mondays
- Executed a Green Team website

Benefits and Results

Chemicals	Waste	Purchasing	Recycling	Food
Solvent reuse project	20 percent reduction in food waste and hospital garden 5-10 percent radioactive mixed wastes diverted from landfills Reduced paper waste by 40 tons per year	Hospital garden	25-36 percent with goal of 40 percent	System-wide meatless Mondays Hospital garden used as a diabetic patient education space

Challenges and Lessons Learned

- Since turnover or staff changes occur, especially among key contract staff, be sure to have at least three organizers for managing the Green Team or related events.
- To encourage engagement and participation, ensure that a minimum amount of time is spent by members at meetings.
- Communicate in such a way that colleagues understand environmental sustainability in order to adapt to related/ requested changes (i.e. utilizing paper recycle containers, turning off lights) and telling the story in a compelling manner.
- Ensure coordination with all those that are involved in event planning, sustainable changes or consultant work, including housekeeping, dietary, property management, design and constructions and communications department. A coordinated effort with all stakeholders is necessary for this work.

TriHealth Good Samaritan and Bethesda North Hospitals

TriHealth Good Samaritan Hospital

TriHealth Bethesda North Hospital

ACCOMPLISHMENTS SINCE WINNING THE MELVIN CREELEY AWARD

- TriHealth Bethesda North is now at a nearly 25 percent recycling rate and Good Samaritan Hospital at 19 percent, in part due to the waste efforts such as:
- Implemented a single-stream medical materials recycling program that began in the operating rooms that includes all clean plastics (blue wrap, peel packs, Tyvek, basins, trays and bags), foil packaging and instrument and supply boxes
- Expanded the device collection program to include invasive devices from the operating rooms for reprocessing
- Strengthened community engagement through annual sponsorship and volunteering at the Ohio River Sweep, a cleanup effort for the Ohio River and hosting an annual community recycling drop-off event that includes universal waste, electronics, medication disposal and document shredding
- Provided educational opportunities to team members through Lunch and Learns on the following topics: Backyard Composting, Sustainable Backyards and LEED 101
- Eliminated hand soaps that contain Triclosan
- TriHealth Bethesda North achieved a 63 Energy Star rating and Good Samaritan Hospital achieved Energy Star certification in 2016 with a 78 rating
- Achieved Practice GreenHealth's Making Medicine Mercury Free award

SUMMARY

- TriHealth Good Samaritan and Bethesda North hospitals developed strategic sustainability plans and system budgets.
- TriHealth received a local county grant to implement and expand mixed recycling programs.
- Given leadership support for these efforts, TriHealth achieved such results through the coordinated effort of the sustainability manager.

THE OPPORTUNITY

TriHealth recognized the savings opportunity as well as the community benefit by having a focused effort on sustainability. After a pilot program to demonstrate the value of a dedicated sustainability employee, leadership moved forward with a full-time sustainability manager.

THE STRATEGY AND IMPLEMENTATION PROCESS

The Green Committee expanded and split to form two site committees, one at Bethesda North Hospital and one at Good Samaritan Hospital. The team reviewed and amended the Environmental Commitment Statement to include aspects of sustainability beyond waste management such as energy and water conservation, chemicals and food. A strategic planning session was held in the fall of 2014 to develop an organizational strategy and goals for sustainability. Progress and goals were shared with the CEO, vice presidents and directors at a leadership meeting.

Community engagement efforts were taken on by hosting two Earth Day volunteer events for Cincinnati Parks, participating in Green Umbrella (a local sustainability non-profit), becoming a member of the Greater Cincinnati Green Business Council and supporting the Taking Root campaign on Make-A-Difference Day in October with planting trees on six TriHealth sites. The internal sustainability webpage now includes resources for staff to engage at work and home, highlights internal success stories and has a reusable furniture and



equipment forum where TriHealth staff can first look for items to be reused before deciding to purchase new.

TriHealth received a large grant from Hamilton County to implement basic recycling programs across a dozen of its facilities. This has involved a lot of planning, education and strategizing before TriHealth moved to the implementation

phase. In addition, TriHealth was awarded the Recycling at Work Program of the Year Award from Hamilton County’s Recycling and Solid Waste District for programs with recycling blue wrap and diverting medical supplies, metal furniture and equipment. TriHealth was also awarded the Making Medicine Mercury Free award from Practice Greenhealth for eliminating all sources of mercury in the hospital.

Benefits and Results

Hospital	Food	Recycling	RMW	SUD Reprocessing Savings (2013–2014)
TriHealth Good Samaritan	Farmer’s Market	13.98 percent	8.3 percent	n/a
TriHealth Bethesda North	n/a	17.3 percent	9.83 percent	\$645,202

Challenges and Lessons Learned

- In a large organization, making significant changes takes patience and time as many departments and leaders are involved in the process. Effective and timely communication is the key to successful programs and minimal delays. Input in the beginning and clear understanding drives initiatives forward and maintains the momentum.
- Since sustainability touches every function of a hospital, narrowing the focus on a few programs and changes at a time rather than many topics and small projects that differed between sites, proved to be more effective.
- A major challenge was finding space to stage recyclables. Solutions for this issue were site specific and required creative thinking with vendors and other stakeholders.
- Talking to waste vendors about sustainability goals created new opportunities and outlets for materials. For example, the blue surgical wrap recycling program happened by reaching out to vendors and asking if they would accept the product for recycling.
- The recycling rate dropped at Good Samaritan Hospital in 2014 because of equipment failure with the cardboard compactor and the lengthy process to get capital approved for repair. The hospital could see that the recycling program was saving money with the ability of data tracking of the recycling rate and increased cost of recyclables going to the landfill when the cardboard compactor wasn’t working.
- Having a data tracking software program served as a valuable resource, not only to detect change but to also provide a clear baseline and the ability to set goals.

University Hospitals Health System

University Hospitals Health System

15 hospitals

24,000 employees

ACCOMPLISHMENTS SINCE WINNING THE MELVIN CREELEY AWARD

- The Employee Energy Challenge to reduce energy use at work and at home had over 1,000 employees participate. Home solar programs were promoted through partnership with Geostellar and local Cuyahoga County solar aggregation program.
- LED Retrofit plan designed for health system started incremental adoption beginning in late 2016.
- There was a strong focus in 2015-2016 on transportation initiatives as opportunities to positively impact the social determinants of health in the communities UH anchors, including title sponsorship of the Cleveland and Cuyahoga County bikeshare system, called UHBikes, community focused bike rides with UH bike medics and regular participation in local and regional transportation planning partnerships.
- The local and Sustainable percent of total food spending for 2016 was 9.55 percent.
- In 2016, 95 percent of the system surgical kits were reviewed saving the system \$109,050.20 in tools and equipment removed from the kits.
- Triclosan-free soap has been adopted by UH Rainbow Babies & Children's Hospital as well as in administrative buildings as part of antimicrobial stewardship.

SUMMARY

- Routinely convened a system-wide sustainability council, committed to all six Healthier Hospitals Challenges and created a shared goal/purpose statement
- The Greening UH program earned significant leadership support, resulting in an expansion to a team of three in the Sustainability Office
- Significant improvements and progress through the pledge to purchase flame retardant free furnishing in sprinkler areas, improvement in antibiotic free meat purchases and a 31 percent system-wide recycling rate

THE OPPORTUNITY

University Hospitals is committed to sustainability to enhance the health and wellbeing of patients, employees and the local community, and to steward the natural environment. For the past few years, the system has undertaken a series of sustainability-driven initiatives to drive quality outcomes within the hospitals and throughout the communities served.

THE STRATEGY AND IMPLEMENTATION PROCESS

In 2014, UH sought to demonstrate progress through the development of the second annual Progress Report on Sustainability, which details the system's initiatives, opportunities and priorities through 2013. As the report suggests, the mission is to integrate environmental, social and economic considerations into every aspect of business practices to advance the health system's commitment to quality, safety, efficiency and wellness.

In addition to documenting improvement within the 2014 Progress Report on Sustainability, dozens of other efforts



were made to drive sustainability-related outcomes such as pollution prevention, safer working and healing spaces, and environmentally preferable purchasing. Below is a brief description of some key highlights for the year:

Engagement in Healthier Hospitals

In late 2012 all of University Hospital’s major medical centers signed on to all six of the Healthier Hospitals Initiative Challenge Areas, which has provided a health care community-supported framework for organizing, tracking and reporting sustainability efforts from 2013 onward. The value these efforts is the motivation and reinforcement University Hospital’s received from being part of a nationwide movement around tracking sustainability efforts in health care. Goals based primarily around these initiatives are implemented and reported through the coordinated sustainability structure from department-level Green Teams to facility level Sustainability Committees to the system level Sustainability

Council to System Senior Leadership. This organizational structure was developed thoughtfully using a model similar to preexisting successful models in our health system, such as the Community Benefit program.

UH’s partnership with a regional company, established in late 2012, to utilize tracking software around the sustainability priority areas has been pivotal in recording the state of the system and projecting future progress. Utility and purchasing data is tracked and expressed in dashboard format with this software, allowing for concise and meaningful reporting of sustainability efforts to the C-suite and other stakeholders.

Qualitative sustainability goals are also organized and tracked with this software using Sustainability Scorecards that measure real time progress on any initiative. UH has developed scorecards for all HHI outcome areas to compare progress internally amongst facilities and organize communication during regular sustainability meetings.

Benefits and Results

Chemicals	Food	Waste	Energy	Purchasing
79 percent green cleaners	20 percent antibiotic free meat purchases	31.86 percent recycling rate	450 employees participated in Energy Competition	100 percent EPEAT registered electronics
71 percent flame retardant free furnishing purchases	5 percent local food purchases	6.23 percent RMW	LED retrofits in 50 percent of ORs	Increased spending on DEHP/PVC free products by 40 percent

Challenges and Lessons Learned

- Contract obligations in supply chain currently limit UH’s agility in reprocessing devices, a large financial savings and positive environmental impact opportunity being pursued by hospitals nationwide. UH Sustainability is working with supply chain leadership on how to address contractual limitations to this and other impactful opportunities related to purchasing, such as the procurement of additional DEHP/PVC-free medical products and medical furnishings free from five targeted chemicals of concern.
- The initiatives expand the system’s impact not only through incremental improvement and implementation, but also in leaps and bounds. UH Sustainability has learned that continuing conversations with key stakeholders, especially with unanticipated slow progress, can suddenly result in a great leap forward in an effort—such as transportation. Relationship cultivation within the organization as well as with closely connected key external stakeholders such as the GPOs, vendors, other community anchors and peer hospital groups help raise the boat in moving the marketplace forward to help UH achieve its goals, and in keeping sustainable health care a successful reality.



Congratulations 2016 OHA Energy Cup Winners

LARGE HOSPITAL

**Southern Ohio
Medical Center**

Finalists:

Mount Carmel East

Mount Carmel St. Ann's

SMALL HOSPITAL

Barnesville Hospital

Finalists:

Mercy Willard Hospital

**Trinity Hospital Twin
City (Dennison)**

NON-HOSPITAL

**Woodley Medical
Center (Toledo)**

Finalists:

**Twinsburg Family Health
& Surgery Center**

**Marymount Medical
Center (Garfield Heights)**

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