



# A Case Study for Food Waste Reduction at The Baltimore Convention Center

Published July 23rd, 2019

**Baltimore  
Convention  
Center**

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Center and Centerplate and  
prepared by Astrapto LLC



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## Contents

Introduction	1
Leadership Message	2
The Problem of Food Waste	3
Food Recovery Hierarchy	5
Food Waste Goals	6
Food Waste Prevention Strategies	7
Food Recovery for People	11
Buy Local	12
Feed the Pigs	14
Create Energy	15
Experimentation & Diversion	16
Spread the Word	17
Looking Ahead	18
Acknowledgments & Sources	19



# Introduction

Any endeavor to change the world requires a group of committed stakeholders. This project was no different and brought together several organizations.

In 2017, World Wildlife Fund (WWF), supported by the Rockefeller Foundation, partnered with the American Hotel & Lodging Association to study food waste reduction best practices in hotels. In November 2017, they released free resources, checklists, and training videos for the hospitality industry at [www.hotelkitchen.org](http://www.hotelkitchen.org).

In March 2018, WWF selected Baltimore to expand its HOTEL | KITCHEN program and to explore place-based dynamics in promoting food conservation. WWF chose Dr. Aurora Dawn Benton (Astrapto LLC) and Joan Plisko, PhD (Plisko Sustainable Solutions, LLC) to lead the HOTEL | KITCHEN Baltimore Expansion Project, which included plans to assist local hospitality organizations with implementation of WWF's suggested food waste reduction interventions.

A key goal from the onset was to identify ways to ensure the culture of food conservation become an ongoing feature of hospitality in Baltimore, particularly in banquets and events where waste is so prevalent throughout the industry. The project team engaged Visit Baltimore, The Baltimore Convention Center, and their catering partner, Centerplate, as the primary pilot study because these stakeholders interact with a majority of groups that come to Baltimore for events.

This white paper highlights key strategies and experiments undertaken by the team during the pilot project period and shows some of our early and promising results. Be sure to ask how you can learn more about these initiatives and reduce waste at your next event.





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Executive Director  
The Baltimore Convention Center**



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Centerplate**

# Leadership Message

The Baltimore Convention Center takes pride in the work we produce and the positive impact that work has on the City of Baltimore and State of Maryland. According to the Annual Baltimore Convention Center Impact and Fiscal Analysis reporting completed by Crossroads Consulting, on average, the business associated with the Center generates over 6,000 jobs per year and creates tax revenues in excess of \$59,000,000<sup>1</sup>. Some time ago we began to explore ways to increase our stewardship to the region by reducing our carbon footprint while addressing need in our surrounding community.

In 2015 Baltimore Convention Center created an environmental policy featuring seven cornerstones: waste management, energy conservation, environmental design, air quality, responsible procurement processes, continuing education, and community involvement. Through these tenants many programs have been created that partner with not for profit organization who utilize the byproducts of events to fulfill their own missions. When we were approached by Astrapto LLC to partner by being the East Coast site for the HOTEL | KITCHEN food waste reduction pilot program we immediately saw how the program could help us broaden our reach into the community by expanding upon many programs already in place.

Including our entire staff in the education process, from operations to sales, proved to be a key factor in creating awareness and excitement for the program. Discovering the harsh realities of food vulnerable populations in Baltimore and what impact a slight adjustment in our procedures could accomplish in addressing these realities ignited our staff. The newly formed policies have become an intricate part of the culture and the way we do business.

The opportunity to share the knowledge, techniques, and partnerships gained through the program with the hospitality community during the HOTEL | KITCHEN WORKSHOP was a high point in this process. Introducing frontline staff, culinary experts, students, and other industry stakeholders to the ways reducing food waste can help feed people, animals, and divert waste from landfills has positioned the Baltimore Convention Center as leaders in this arena. We look forward to continuing the conversation, growing the program, and shedding light on the importance of reducing food waste. We discovered the value and the importance of the telling of the narrative time and again to our local and national stakeholders it is this that ultimately allows us to become more impactful as a whole.



# Triple Bottom Line Impact

Food waste data is staggering! Studies show that globally 40% of food is wasted. The United States' contribution to the problem is more than 63 million tons per year<sup>2</sup>. Consumer-facing businesses, including hospitality venues, represent 40% of this loss, or 25 million tons<sup>2</sup>. In Baltimore, it's estimated that nearly 850,000 tons of food is thrown away each year<sup>3</sup>. While such numbers are alarming, they are even more significant when placed in context of social, environmental, and economic impact.

## Why is food waste a problem?



## People

In the U.S., approximately 12% of our population lives in food insecure households<sup>4</sup>; however, the Baltimore hunger rate, which is 23.8%<sup>5</sup>, is nearly double the national average.

In Project Drawdown's list of 100 solutions to reduce carbon impact and cost to society, reducing food waste ranked #3!<sup>6</sup> Environmental impacts include:

- 8% of greenhouse gas emissions comes from wasted food.<sup>7</sup>
- 28% of global agricultural land is to grow food that is never eaten.<sup>8</sup>
- 21% of water usage in the U.S. is used to grow and produce food we toss.<sup>2</sup>

## Planet

## Profit

Throwing away food is throwing away money! A recent study from Champions 12.3 showed for every \$1 invested in food waste reduction in hotel foodservice, there was a \$7 return over a 3 year period.<sup>9</sup>

# Maryland Food Bank Partnership



## Hunger in Baltimore

In our community, 23.8% experience food insecurity.<sup>5</sup> Furthermore, more than 23% of Baltimoreans live in Healthy Food Priority areas (formerly known as ‘food deserts.’).<sup>5</sup> Such realities urge us to put food in the focal point of our community outreach and support.

We participate in outreach programs including volunteering at and sending food products to Maryland Food Bank and other not for profit organizations that support food vulnerable populations in Baltimore.



## Community Service

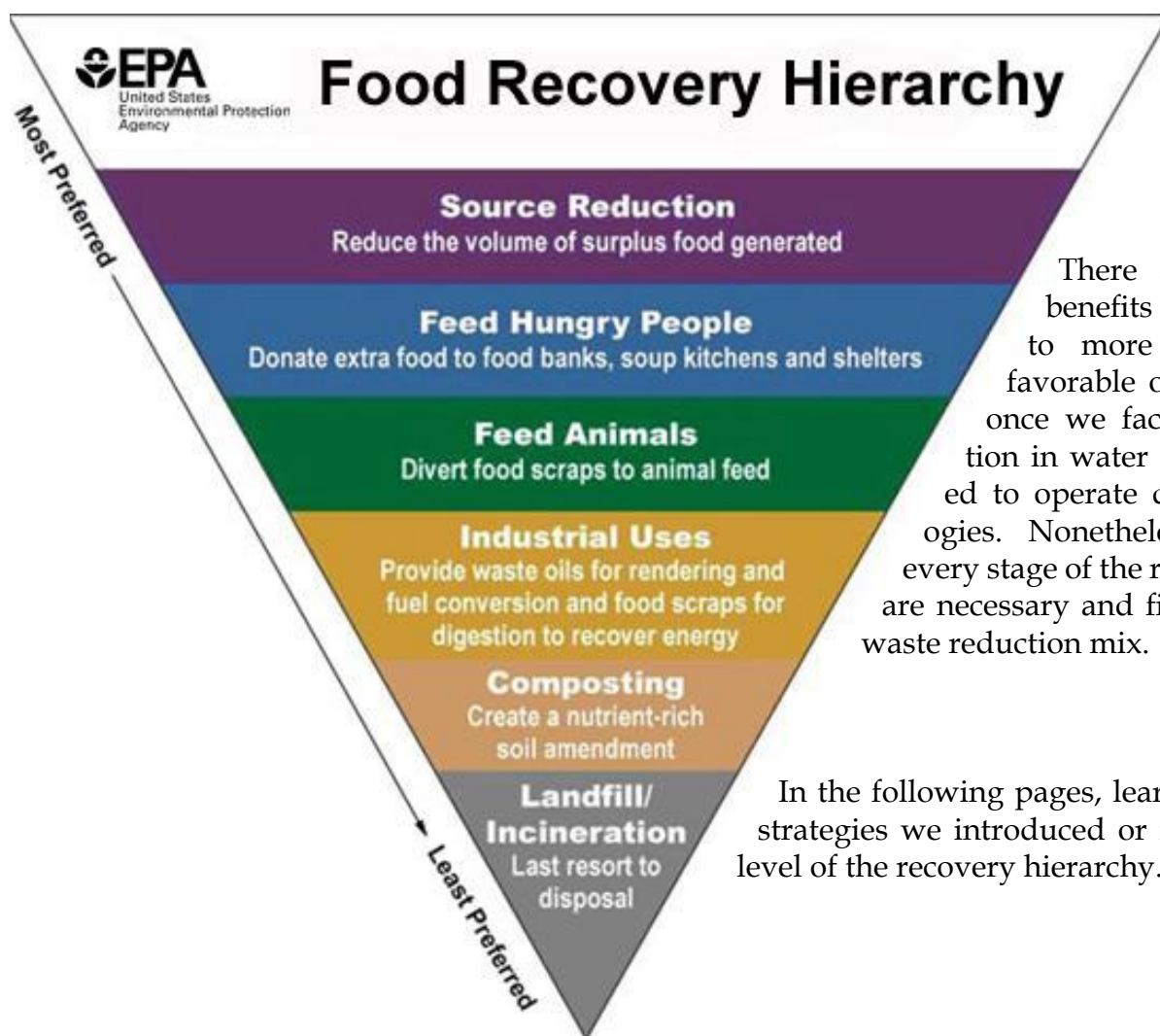


# Food Recovery Hierarchy

The Environmental Protection Agency's (EPA) Food Recovery Hierarchy is a guide for how organizations can reduce food waste. The prioritization is based on the greatest potential for triple bottom line impact.<sup>10</sup> We were pleased to discover how much we were already doing to reduce food waste. When we began this project, we had a robust donation process in place, we were recycling grease, and composting. As we learned more about the complete recovery options, we saw tremendous opportunity to expand our initiatives, particularly in source reduction.

## How can we address food waste?

We realized that while our efforts such as composting were a positive step in the right direction, it was necessary to shift our landfill diversion up the hierarchy into initiatives with greater social and environmental return.



There are compounded benefits in shifting food to more environmentally favorable options, especially once we factor in the reduction in water and energy needed to operate diversion technologies. Nonetheless, solutions at every stage of the recovery hierarchy are necessary and fit into our overall waste reduction mix.

In the following pages, learn more about the strategies we introduced or improved at each level of the recovery hierarchy.

# Practical & Aspirational

To launch this endeavor, we set the following goals:

- Create a Food Recovery Dashboard.
- Train staff at all levels, in all departments.
- Educate customers and industry stakeholders.
- Formalize our donation policy.
- Increase donations of prepared foods.
- Establish a food waste to farm program.
- Improve diversion rates.

## What are our food waste reduction goals?

### Catering & Concessions

2017  
Pounds

2018  
Pounds

Source  
Reduction

Efforts such as strategic menu  
planning, buy local, and more

Feeding  
People

9339

13548

Feeding  
Animals

N/A

5534

Industrial  
Use

7500

10300

Diversion  
(e.g. composting)

14720

6560\*

Landfill

15496

3242

83%

increase in do-  
nations on a per  
attendee basis!

Food formerly heading  
to compost and land-  
fill was redirected to a  
more beneficial source:  
pigs!

73%

decrease in waste  
to landfill per  
attendee!

One of our first tasks was to set up a food recovery dashboard. We knew collecting, tracking, and reporting on our efforts would be imperative to change behavior and prove the business case. We started with data collection and grew in our expertise and sophistication and complexity of our reporting. For example, we put the data in a "per attendee" context to glean more intelligence.

\*Composting data published in other reports may include multiple categories of waste that are now broken down into the hierarchy categories and during a period of experimentation with different equipment and technology. Data here reflects changes within the scope of the projects described in this report.

## What's next?

Now that we have more data and intelligence about our food waste and recovery results, we are ready to take it to the next level and explore waste by event type (e.g. trade show/fair, conference, banquet/gala, meeting).



# Shift the Culture

The key to prevention is to foster a culture of food conservation through training and empowerment. As our teams became more aware of the problem, they became more passionate and committed to solving it. They began to proactively identify and implement ideas that have made us more efficient and sustainable. Our commitment extends from the highest levels of the organization to our frontline employees, who are instrumental to the success of these initiatives.

## How can we prevent food waste?



More than 45 Baltimore Convention Center, Centerplate, and Visit Baltimore staff, from every department and every level of the organization, were trained in full-day workshops.



# Measuring & Tracking

Source reduction is the most challenging of the EPA recovery hierarchy strategies because it requires a shift in the pervasive industry practice of overproduction. In hospitality, we never want to run out of food so measures are taken to ensure there is always enough. Unfortunately, there is always *too much*. To combat this, we have embarked on several initiatives that enable us to collect and share better data about food waste.

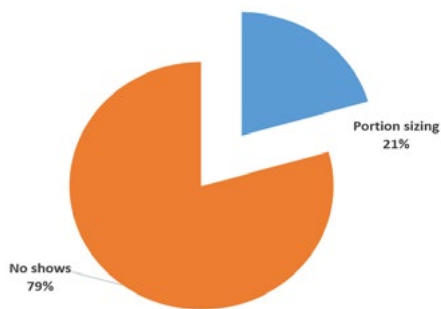
## How can we prevent food waste?

### Centerplate Audit Results to Understand Overproduction



An audit of an evening reception: portion size error

Audit of an opening day meal: large number of no-shows



In food waste audits, we sometimes find waste is the result of portion sizes. In one example, such as demonstrated in the graph on the top left, we audited a reception and found most of the waste came from one menu item. This revealed an opportunity to improve both quality control and training to ensure greater accuracy in the future. Other times these results point to small menu adjustments for more efficiency. No shows, however (as shown in the graph on the bottom right), are harder to predict or control. From this we recognized two opportunities: to recover as much of that as possible through internal repurposing and increased donations to local organizations in need of food to serve their populations, and work with planners to better understand event dynamics that lead to uneaten food (see following page).

Centerplate has conducted dozens of food waste audits since launching this initiative. This not only gives us greater insight into where the problems occur, it provides us with tools we can use to prompt open dialogue among sales, purchasing, operations, and kitchen staff.

Audits and our new dashboard enable ongoing measurement and tracking of:

- Breakdown of food waste by type (e.g. produce, prepared, etc.)
- Report of recovery strategy progress (e.g. donation to people, donation to pigs, composting, digester, landfill), by food type
- Cost of food waste as a percent of sales
- Assessment of the entire menu (portion sizes, serving vessels, ingredient yields, specialty meal production, etc.)
- Sources of overproduction (e.g. no shows, portion sizing, etc.)



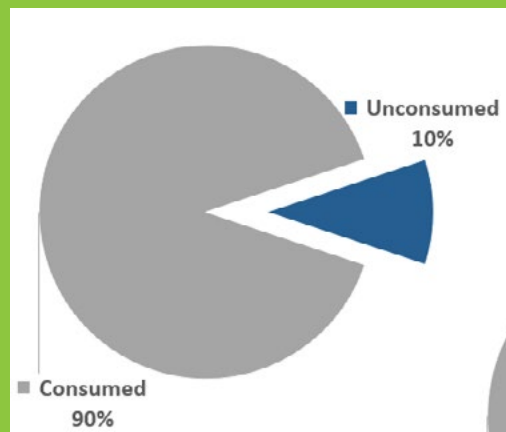
# Measuring & Tracking

## How can we prevent food waste?

A regular practice of food waste audits means continually searching for new angles from which to view food waste. With each audit, we evolve in our level of sophistication. For example, in a recent plate waste audit, we discovered a serving vessel complicated the audit and distorted results. The next audit will have greater precision and accuracy. Ultimately, we will overlay results with demographics and other data to make smarter choices in menu design, portion sizing, serviceware, and other aspects of foodservice that impact waste.

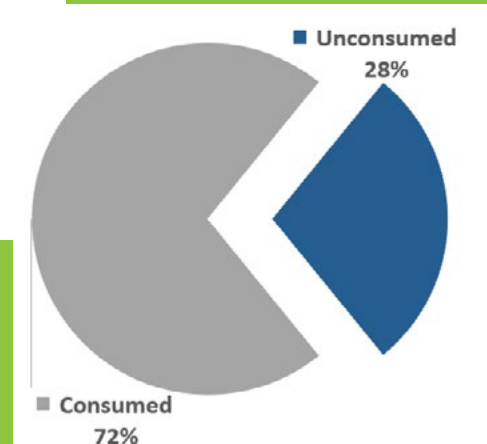
At a recent multi-day event, we audited two consecutive lunch services and found a difference in consumed versus unconsumed. This could be explained by a number of factors we can now explore. For example,

- Do attendees of this event prefer steak (served Day 1) over chicken (served Day 2)?
- Do attendees moderate their food consumption more on Day 2, knowing there was an upcoming reception and dinner?
- Are there other programming elements preventing attendees from attending lunch on Day 2?



Day 1 Lunch

Day 2 Lunch



Every department has been involved in a food waste audit so the level of employee engagement and awareness has increased. We notice less food in the garbage overall. Furthermore, audits provide visibility for kitchen staff on food consumption patterns they normally do not see or experience. Clients are learning about these initiatives in the sales process and are inquiring to see results so they feel confident in where waste goes and can improve their own planning and procedures.

### What's next?

We recognized that overproduction data is not punitive, but rather an opportunity for improvement. Now our challenge is to evolve sales conversations and processes to incorporate food recovery values. This is not only a goal for our internal teams, but our responsibility to lead the city's event hospitality industry. Ultimately, we want clients to see Baltimore as a community committed to this cause.

# Repurpose & Innovate

One of the best options a foodservice operation has is to utilize ingredients and prepared components internally. This can be accomplished through recipes for stocks, pickled items, garnishes, and composed dishes. We put this into action with a "Chopped" style game in which 4 chefs were challenged to make dishes from food that remained from a recent event. The competition generated ideas and energy among staff and led to a change in our internal staff meal ordering that saves us money and taps into this culinary creativity for new sustainable menu designs. This creative approach to food waste leads to more variation in our menus without sacrificing efficiency and cost.

## How can we reduce food waste?

### The Winning Dish

#### Ingredients:

- 12" Flour Tortillas
- Marinara
- Taco Seasoning
- Shredded Cheddar Jack Cheese
- Smoked Pulled Chicken (fully cooked)

#### Method:

1. Mix taco seasoning and marinara until desired taste.
2. Lay out Tortilla. Spread sauce lightly to cover tortilla. Add a layer of chicken and a layer of cheese.
3. Roll tortilla fully; hold in place with toothpick.
4. Spread layer of sauce on bottom of a pan.
5. Slice rolled tortilla into 2" segments and position in baking pan tightly enough to keep the pinwheel shape intact.
6. Repeat procedure with more tortillas until the baking pan is filled.
7. Ladle a layer of sauce on top of the pinwheels followed by a layer of cheese.
8. Bake until hot throughout.



### What's next?

The concept of repurposing food is associated with terms like "leftovers" and "waste." We want to lead the way in transforming how clients and guests perceive food conservation by highlighting innovation, flavor development, and triple bottom line impact.

*In the second half of 2018, we saved **more than 3000 pounds** by reutilizing food for employee meals.*



# Embrace Technology

When it comes to feeding people, we already had a robust food donation partnership with the Maryland Food Bank, through which we have donated 26155 pounds of catering food over the last 5 years. Despite our generous donation track record, we saw areas where food currently going to compost could be used to feed people. The challenge was size of the donations; it's much easier to donate 5 cases of lettuce leftover from a banquet than 5 yogurt parfaits leftover from our retail concessions. To solve this problem, we signed up with MEANS Database, an online donation matching platform for prepared foods. We log our smaller donations and notices go out to dozens of local partners. The first to respond wins!

## How can we increase food donations?



This endeavor is not without challenges. It required new processes, overcoming some technical barriers, personal outreach, and tenacity. But once we made that first donation, there was no turning back.

On a larger scale, this approach faces the obstacle of general resistance to donation due to fear of liability. Many in hospitality still believe donating food leads to lawsuits. For more than 20 years, the Bill Emerson Good Samaritan Act has protected hospitality companies that donate in good faith. Furthermore, this act has never been tried in court. We are well-positioned to bust this myth, advocate for recovery initiatives, and encourage others to join the cause. As donors increase, food donation platforms will have greater success attracting smaller recipients and increasing overall food recovery systems.

*This out of the box thinking exposed us to new outreach opportunities and allowed us to recover **an additional 834 pounds**, with plans to substantially increase this in 2019.*

## What's next?

As we increase our usage of MEANS, we want to drive adoption of innovative solutions and help solve transportation and donation logistics challenges. Centerplate staff have recently joined the Baltimore Food Policy Action Coalition and hope to be a driving force in local food recovery.





The Baltimore Convention Center has the ultimate goal of being a true farm-to-table destination. Below, you will read about key initiatives that enable us to increase local procurement *and* reduce food waste. Ask us about our local farm menu options for your next event. Pictured left is our Chef at the local Farmer's Market. The photos below showcase the beauty and diversity of sustainable, local foods served at the Baltimore Convention Center.





# Buy Local

Procuring both raw and value-add food products from local vendors not only eliminates waste from long supply chains, but it

- Provides us the freshest seasonal ingredients
- Supports local entrepreneurs and farmers
- Shows guests what is uniquely Baltimore and Maryland
- Gives us access to custom products that differentiate our menus
- Enables us to access innovations in food happening in our own community

## How can local businesses & farms help?



*"Increasing consolidation across the food supply chain unfortunately means fewer opportunities for local businesses. By looking at our procurement potential on a local level, we have the opportunity to reinvest our purchasing dollars back into our communities - therefore creating vibrant, thriving small businesses. This is as an opportunity to benefit end-consumers and create goodwill in sourcing from local vendors. With procurement budgets in the millions, a tiny fraction of an institution's spend can propel a small business in a huge way."* -Kim Bryden, Cureate Connect Founder

We work with Cureate Connect, a local startup helping institutional buyers procure from small businesses with greater ease in ordering and billing. We access creative entrepreneurs with unique offerings, particularly minority and women-owned business, such as City Weeds micro-greens and Le Monade drink mixers. We also source from local produce purveyors as well as specialty cheese makers and more. Ask how we can create a farm to table menu for your next event.

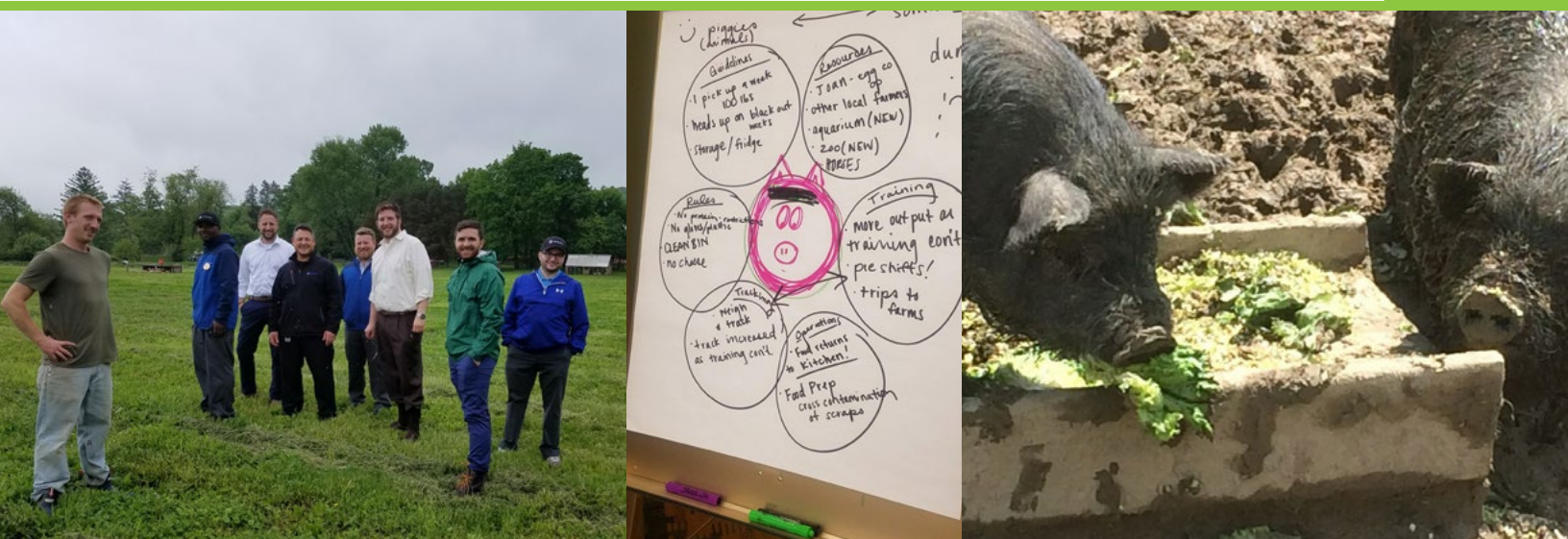
### What's next?

One of the obstacles to a Buy Local program is overcoming corporate purchasing policies based on economies of scale. As we demonstrate client demand and ease of operations, we will expand our menu of local options.

# Partnerships & Pigs

## How can local businesses & farms help?

In our efforts to shift food waste up the hierarchy into more preferable options, we discovered a portion of food waste going to compost was fit for farm animals. Through Dr. Plisko's relationship with Gaylord Clark, owner of Two Oceans True Foods and Carriage House Farms, we piloted a program starting in May 2018 with 100 pounds per week of vegetable trimmings and food scraps to feed pigs. After visiting the farm and building a relationship directly with our team, we quickly scaled to multiple pickups and as much as 300 pounds per week, *which led to more than 5000 pounds total in our first (partial) year.*



As true with any new initiative, a spirit of experimentation and a willingness to receive feedback are vital. The relationship and frequent communication among Centerplate's Executive Chef, Chief Steward, and the farmer ensured we could make adjustments as needed. For example, we altered the vessel size for easier handling and worked toward no contamination by eliminating rubber gloves, plastic wrap, and foods deemed inappropriate by local state of Maryland regulations. A unexpected benefit of this new program was the impact it has had on staff. As we began to launch other food waste reduction initiatives, the "piggies" created a positive buzz and brought a sense of levity and joy to a subject that can be difficult.

### What's next?

In 2019, we will hold a celebratory farm-to-table event at the Carriage House Farm. This event will be an opportunity to raise awareness of food sustainability with key VIP stakeholders, as well as show our gratitude to staff and community partners who are essential to the success of this program.

*The farmer has reported saving \$200 to \$300 per week in pig feed and that the pigs love the healthier and more varied option we provide.*



# Convert to Energy

After all the solutions above are implemented successfully there is still food left that cannot be repurposed for human or animal consumption. One example of this is fryer oil. Beginning in 2017, we contracted with FiltaFry for grease recycling pickup, along with a regimen of regular and responsible filtration and cleaning. When used cooking oil goes down the drain it negatively impacts the local water supply and sewers, habitats and wildlife, and shorelines. The oil collected is converted to biodiesel for added environmental benefits.

## How can we divert from the landfill?



In 2018, we saved 2,713 gallons of oil by using this service. But it doesn't stop there. Our efforts also resulted in the following savings in farming, processing, packaging, and transportation:

- 27.4 million gallons of water
- 38.8 acres of land
- 256.6 kWh of electricity
- 697.7 pounds of plastic
- 465.1 pounds of cardboard

Fryer oil filtration has many business and workplace benefits as well, such as

- Increased efficiency of fryer oil usage
- Reduced odor
- Improved employee safety and satisfaction
- Cleaner and well-maintained equipment
- Costs savings



*The oil collected in 2018 resulted in a carbon offset equivalent of planting 1,397 trees!*

## What's next?

With the rise in awareness food waste comes new solutions and technology. As a leader in our community in reducing food waste, we are eager to learn about the next evolution of waste to energy options.

# Experimentation & Diversion

There are a variety of services, technology, and equipment that can be used to divert food from landfill, once it is deemed that it is not fit for human or animal consumption. In recent years we have experimented with dehydrators, digestors, and composting. Experimentation captures the attention and imagination of our staff. We have noticed that while composting and diversion options are near the bottom of the food recovery hierarchy, they were the first thing our staff wanted to talk about. This "trash talk" engaged every level of the organization and raised awareness of how each department plays a role in our overall efforts.

## How can we divert from the landfill?



Each of the technologies we have tried requires a different process and each handles food and compostable serviceware differently. In the end, we decided not to use some of these options, not because they do not have a place in the food recovery, but because for us the interventions outlined in the previous pages enabled us to reduce the amount of food left for diversion and currently composting is our preferred method. There are other environmental considerations. For example dehydrators use energy and water (1 pound food requires 1 pound water; bake time is about 22 hours). Also, the output still needed an amendment to be usable as soil. We decided to rely on the professionals at Waste Neutral to do it right and get it to the people who need it.

Another aspect of experimentation has been in understanding exactly how to define and measure diversion. This has led to having more in-depth discussions with our various diversion vendors about their

processes. Studying diversion in the context of the EPA food hierarchy further reinforces the notion that not all diversion is created equally and some methods are preferable to others. The process of uncovering and reporting the data in this report was in and of itself a significant accomplishment.

## What's next?

A focus on diversion draws attention to our material waste related to foodservice so we are switching to more compostable products such as lids, straws, and reducing single use condiments and packets.



# Lead the Way, Spread the Word

What else  
can we do?

On July 11th, we hosted an industry event to raise awareness and inspire others. In addition to educating the local hospitality community (hotels and caterers), we welcomed government and state officials, culinary students, and other food conservation service providers and vendors (listed below), including 4 local food companies featured in the event's menu. By hosting this event, we sent a message that we are proactive thought leaders in community care, sustainability, and food waste reduction.



## Exhibiting Vendors

- Biohitech Digestors
- Cureate, a local one-stop-shop for institutional buyers to procure local value-added food products. Two of their vendors were present and featured in the F&B served at the event: City Weeds and Le Monade
- Filta Fry grease recycling service
- FoodBridge food donation platform
- Maryland Environmental Services composting services
- Maryland Department of the Environment Green Registry Program
- Maryland Food Bank and Foodworks culinary training program
- Keany Produce (local vendor)
- LeanPath food waste tracking technology
- MEANS Database food donation platform
- ORCA Digestors
- Reduction In Motion waste management consultants
- Regreen Organics food waste to energy solution
- Waste Neutral food waste haulers

# Looking Ahead

## What else can we do?

Thank you for your interest in this project. Please visit our website ([www.bccenter.org](http://www.bccenter.org)) for updates on this and other sustainability projects, including the documentary video seen [here](#). The Baltimore Convention Center and our catering partner, Centerplate, are always looking for ways to take our commitment to sustainability to the next level. In the spirit of continuous improvement, we have already held additional training sessions, ensuring staff at every level are familiar with our values and processes related to food waste reduction. Centerplate has endeavored to spread the lessons learned here to other locations around the country.

As we continue efforts to reduce food waste and be thought leaders in the industry, will:

- Offer regular educational opportunities for clients, employees, and external stakeholders
- Invite feedback from our stakeholders through an open and transparent process
- Improve our efforts to introduce food conservation into proposals, the sales process, and event planning activities
- Revisit this study in 2020 to reinforce results and continue updating stakeholders such as our Board of Directors and Customer Advisory Board
- Evolve our dashboard, reporting, and metrics around food waste
- Install technology that improves or automates food waste reduction practices
- Review processes and staffing for continued efficiency
- Grow our 'buy local' commitment with 'farm to table' aspirations
- Integrate food waste reduction further into our overall sustainability goals and programs
- Working with the local community on food waste education through mentorship and special programs

We see our responsibility to change the culture of food conservation as extending beyond our walls. As we work closely with Visit Baltimore, local hotels, and other event venues, we hope to raise the level of awareness, consistency, and accountability related to food waste reduction and recovery throughout the hospitality industry of Baltimore. We will continue to partner with organizations like World Wildlife Fund and others to be a case study and thought leader, locally and beyond.

**Choose the Baltimore Convention Center for your next event and join us on our food waste reduction and recovery quest!**



## Acknowledgments

The Baltimore Convention Center would like to thank the many people who helped make this project possible:

- World Wildlife Fund Food Waste Team for choosing Baltimore.
- Drs. Aurora Dawn Benton and Joan D. Plisko for approaching us with this idea, connecting us with important food waste reduction partners, and driving us forward.
- The Centerplate team of chefs, stewards, servers, and others who went above and beyond to create and implement new food waste reduction processes. Special thanks to Charles Schlagenhauf, Director of Operations, and Donyell Lewis, Executive Steward.
- The Baltimore Convention Center's Director of Client Services Phillip Costa.
- Gaylord Clark of Two Oceans True Foods and Carriage House Farms for partnering with us in a pig feed pilot.
- The Maryland Food Bank for being a continued community partner in the fight against hunger.
- Visit Baltimore, the City Office of Sustainability, the Mayor's Office for their official support of our sustainability efforts.
- Our Special Event Speakers: Molly Crouch, Sustainability Director at Centerplate at Orange County Convention Center and Sarah Buzogany, Food Resilience Planner with the Baltimore Office of Sustainability.
- Anne Rosenthal for research and workshop assistance.

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