
BALTIMORE FOOD WASTE & RECOVERY STRATEGY

Developed by The Baltimore
Office of Sustainability



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INTRODUCTION

In recent years, cities everywhere have begun to grapple with the problem of food waste. In the United States, where an estimated 40% of food is wasted each year, the problem is particularly acute. The US Environmental Protection Agency has recognized this problem in recent years by releasing a flurry of tools and programs including their Food Recovery Hierarchy, an online Excess Food Opportunities Map, the Food: Too Good To Waste Toolkit and Guide, and the Food Recovery Challenge.

The Baltimore City Department of Planning's Office of Sustainability (BOS) launched the Waste To Wealth Initiative in Summer 2014 with the aim of creating economic development through smarter waste management in Baltimore City. Based on research into specific waste categories with the greatest opportunity for economic development, BOS created the Waste To Wealth Report, which includes recommendations to target three waste streams: wood waste, construction and demolition debris, and food waste. For food waste, the report recommended creating a citywide strategy for addressing the complex issues inherent in food waste management.

In Summer 2016, BOS partnered with the Institute for Local Self-Reliance to create this strategy with a deep emphasis on stakeholder engagement. In September 2016, we kicked off the effort with a Food Waste Summit at the Department of Planning. The all-day summit drew over 75 attendees from a wide range of sectors, and produced a first draft of recommendations for the final strategy. Following the summit, working groups were established to further develop the strategy in four broad categories: Food Waste Reduction & Recovery, Composting at Home & In The Community, Food Waste Management in K-12 Schools, and Creating Scalable Composting Infrastructure.

From November 2016 through March 2017, BOS and ILSR staff convened all four working groups numerous times for strategy development sessions. In these sessions, working group members discussed the relevant issues, difficult challenges, and most promising solutions to the food waste issues in their sectors. BOS and ILSR staff distilled these sessions into the set of goals and strategies outlined in section two of this document.

Working group partners include representatives from the following:

- Baltimore City Department of Public Works
- Baltimore City Public Schools
- Baltimore Office of Promotion and Art
- Baltimore City Department of Recreation and Parks
- Maryland Department of The Environment
- Northeast Maryland Waste Authority
- Johns Hopkins University
- Civic Works
- Blue Water Baltimore
- The Food Recovery Network
- The Franciscan Center
- Various food waste hauling companies
- Various community garden projects throughout the city

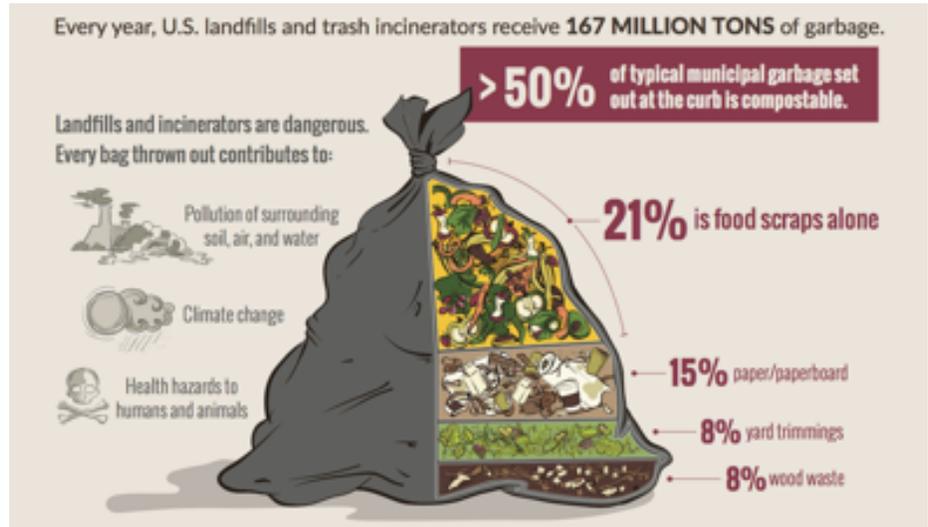
WHY RESCUE EDIBLE FOOD,
RECOVER FOOD SCRAPS,
AND COMPOST?

WHY RESCUE EDIBLE FOOD, RECOVER FOOD SCRAPS, AND COMPOST?

Reducing food waste and composting are ways to build community empowerment, resilience, workforce skills, and address pressing food desert challenges in Baltimore. Almost half the typical garbage set out at the curb each week in the city consists of food waste and other organic materials that could either be rescued to feed people or converted into compost, a valuable soil amendment. Each year more than 430,000 tons of municipal trash are generated; the lion's share is burned at the City's trash incinerator.

Unsustainable patterns of wasting drive climate change, resource depletion, habitat destruction, and a range of other environmental crises. At the same time we throw away valuable organic materials, our soils suffer from topsoil loss and erosion, which in turn leads to severe watershed problems. Shifting toward a decentralized recycling infrastructure addresses these environmental threats and forms the basis for strong local economies that operate in harmony with nature. Advancing composting and compost use

is a key sustainability strategy to create jobs, protect watersheds, reduce climate impacts, improve soil vitality, and build resilient local economies. Distributed food recovery solutions such as community-scale composting are rapidly expanding across the country and represent an opportunity to create food recovery capacity in the short term in a way that specifically engages community. Centralized composting will undoubtedly be needed but local composting – backyard composting and community composting at gardens, schools, urban farms, and empty lots – could be encouraged as a first priority. In Baltimore, home composting and community-based composting could be the foundation for larger scale public and private sector efforts, as they build critical culture of composting know-how and engagement.



Compost to Improve Soil & Protect Watersheds

One-third of the world's arable land has been lost to soil erosion and continues to be lost at an alarming rate. In the US, 99 million acres (28% of all cropland) are eroding above soil tolerance rates, meaning the long-term productivity of the soil cannot be maintained and new soil is not adequately replacing lost soil. Erosion reduces the ability of soil to store water and support plant growth. Much of the soil that is washed away ends up in rivers, streams and lakes, contaminating waterways with fertilizers and pesticides.

Amending soil with compost has the following benefits:

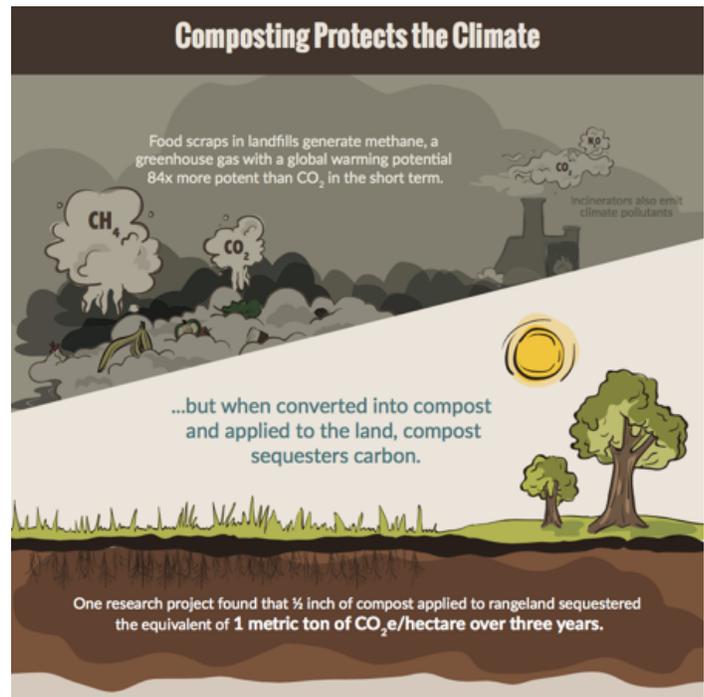
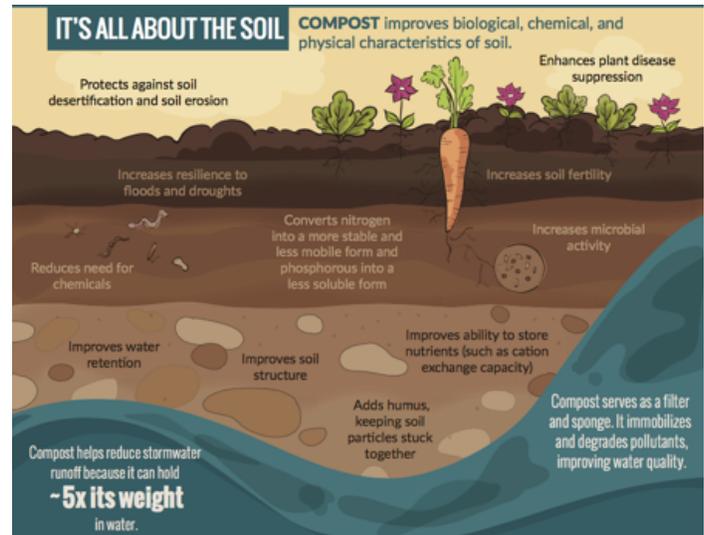
- Improved soil quality and structure
- Erosion and sedimentation control
- Improved water retention
- Reduced chemical needs
- Cutting non-point source pollution

In Baltimore, much of the urban soil is severely contaminated with lead and other heavy metals. One 2016 study found that 10% of soil in Baltimore is above the EPA standard of 400 ppm. This standard is apparently pretty high compared to many other areas of the world, so the study also used the CA Office of Environmental Health Hazard Assessment standard of 80 ppm, and found that 55% of soil sampled was above this standard.

Compost is valued for its ability to enhance soil fertility and cut runoff of urban pollutants by binding heavy metals. Because compost can hold many times its weight in water, when added to soil, it serves as a filter and a sponge, preventing non-point source pollution. Compost-amended soil can reduce contamination of urban pollutants by an astounding 60 to 95%. Some studies indicate that using compost protects against the danger associated with lead in urban soils.

Compost to Protect the Climate

When landfilled, biodegradable organic materials are a liability as they break down and produce methane, a greenhouse gas 84 times more potent than carbon dioxide in its short-term global warming strength (over a 20 year time horizon). Compost protects the climate in two main ways: it sequesters carbon in soil and it reduces methane emissions from landfills by cutting the amount of biodegradable materials disposed. It also cuts the climate pollutants emitted by trash incineration. There is a significant and growing body of evidence that demonstrates the effectiveness of compost to store carbon in soil for a wide range of soil types and land uses.



Compost to Reduce Waste

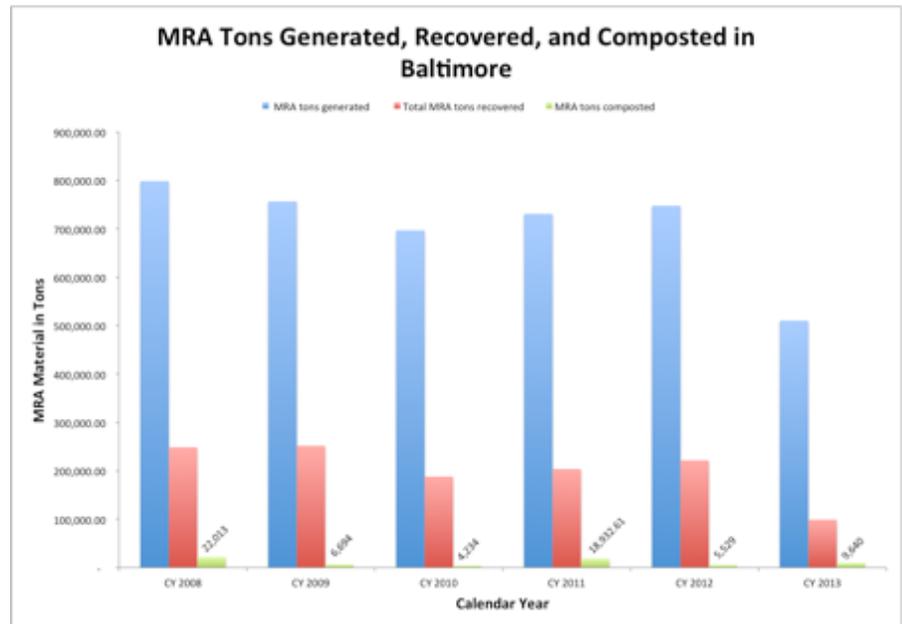
The potential to expand composting is enormous. Very little of Baltimore's yard trimmings and food scraps are recovered. The chart below shows historical data for the amount of municipal trash generated, recycled, and composted. The tonnage composting (in green) is barely visible. Many communities have proven the ability of convenient composting programs to achieve high diversion levels.

Cut Wasted Food to Address Food Insecurity

According to Feeding America, the level of food insecurity in Baltimore is 23.8%. Food insecurity describes a household's inability to provide enough food for every person to live an active, healthy life. It is one measure of the risk of hunger. In the United States, 1 in 8 people struggle with hunger. Poverty, unemployment/under-employment and inconsistent access to enough healthy food are the underlying causes for food insecurity. Rescuing edible food to feed people can help alleviate food insecurity.

Converting inedible food waste into compost at community gardens and urban farms can help close the

healthy food access gap. Indeed, many urban farms that compost don't have a mission to reduce trash or produce compost but rather to provide equal access to healthy and affordable food to communities often neglected by traditional food and distribution networks. Growing Power in Milwaukee has been doing this longer than any other entity. ECO City Farms in Edmonston is another example in Maryland. And in Baltimore, Civic Works' Real Food Farm is a model.



Compost to Create Jobs

Jobs are sustained in each phase of the organics recovery cycle. In addition to the direct jobs at composting facilities, the use of compost supports new green enterprises and additional jobs. Most of the end markets for compost tend to be regional, if not local. Each recycling step a community takes locally means more jobs, more business expenditures on supplies and services, and more money circulating in the local economy through spending and tax payments.

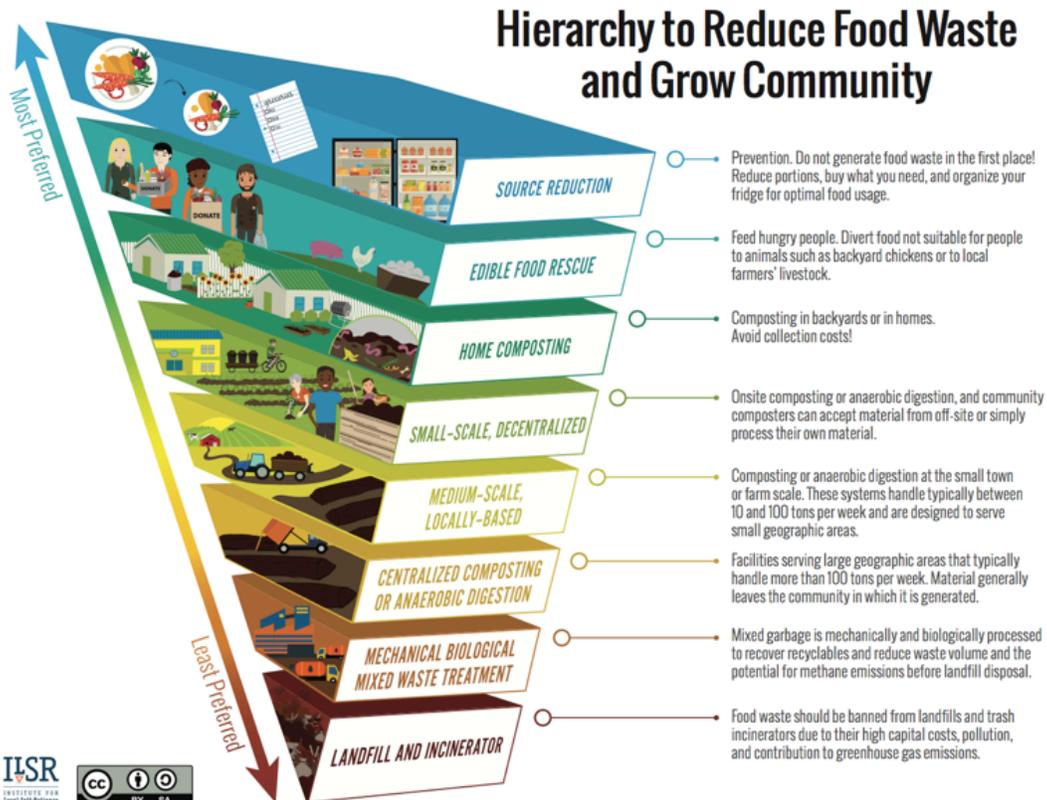
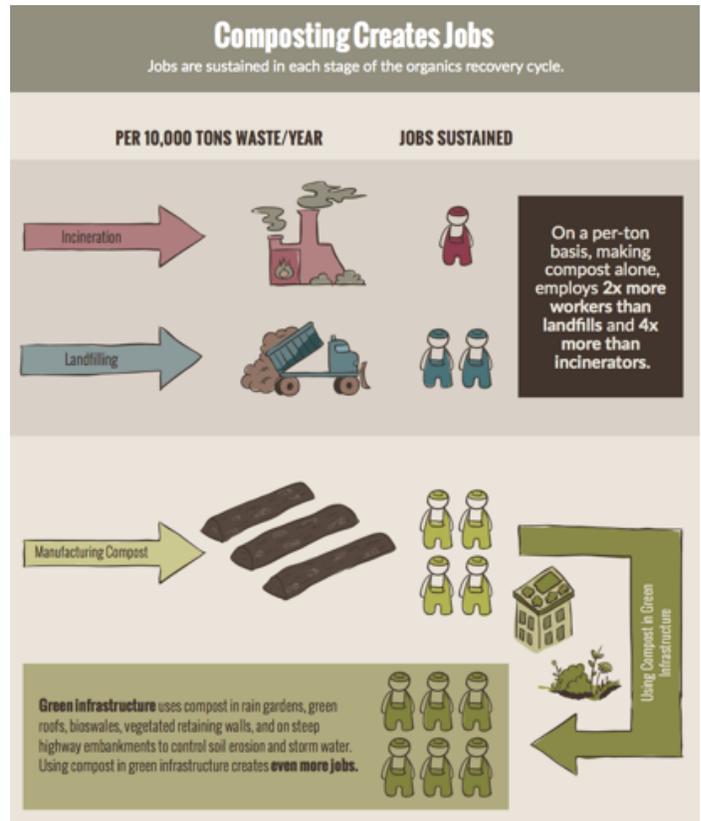
- On a per-ton basis, composting sustains two to four times the number of jobs as landfill or incinerator disposal.
- In addition to manufacturing compost, using compost in "green infrastructure" and for stormwater and sediment control creates even more jobs. Green infrastructure represents low-impact development such as rain gardens, green roofs, bioswales, vegetated retaining walls, and compost blankets on steep highway embankments to control soil erosion.
- An entire new industry of contractors who use compost and compost-based products for green infrastructure has emerged, presenting an opportunity to establish a new made-in-America industrial sector.
- Utilizing 10,000 tons of finished compost annually in green infrastructure can sustain one new business. For every 10,000 tons of compost used annually by these businesses, 18 full-time equivalent job can be sustained.
- For every 1 million tons of organic material composted, followed by local use of the resulting compost in green infrastructure, almost 1,400 new full-time equivalent jobs could potentially be supported. These 1,400 jobs could pay wages from \$23 million to \$57 million each year.
- Composting and compost use represent place-based industries that cannot be outsourced abroad.

Compost to Build Community

When composting is small scale and locally based, it has the potential to build and engage the community. Locally based composting circulates dollars in the community, promotes social inclusion and empowerment, greens neighborhoods, builds healthy soils, supports local food production and food security, embeds a culture of composting know-how in the community, sustains local jobs, and strengthens the skills of the local workforce.

Composting done in conjunction with community and school gardens provides a full soil-to-soil loop that few students would experience otherwise. Young composters grow into old composters, and students are instrumental in spreading compost awareness and experience throughout the entire community. Investment in training and education of today's youth will have a long-term payback for composting efforts in the future.

The Institute for Local Self-Reliance has developed a new hierarchy of food waste reduction and recovery that prioritizes home composting and community scale composting after source reduction and edible food rescue, but before development of more centralized and larger scale facilities.



POTENTIAL SOLUTION CATEGORIES

FOOD WASTE REDUCTION AND RECOVERY

Food waste is a massive problem throughout the entire country; 40% of food in the United States is never eaten, which means that on average, every American throws away 24 pounds of food each month. When uneaten food is thrown away, it's not just the food that is being wasted. The average American family of four is spending \$1,500 each year on food that they never eat. Additionally, wasting food also wastes the water and energy required to produce and transport those products—for instance, the amount of water required to produce one pound of beef is equivalent to running the shower for over six hours.

The vast majority of food waste ends up in landfills, creating three distinct problems. First, it is a missed opportunity to create nutrient-rich soil through composting or natural gas through anaerobic digestion. Second, it takes up valuable space in landfills. Every landfill's capacity is limited, and the faster they fill up, the shorter amount of time they can be used. Third, when food waste decomposes in a landfill it produces methane, a major contributor to climate change. Many landfills, including Baltimore City's Quarantine Road landfill, capture methane and convert it into electricity, but this is a highly inefficient process when compared to alternative options like anaerobic digestion.

Despite all this wasted food, millions of Americans struggle with not having enough food. In 2015, 12.7% of Americans experienced food insecurity. There is a real disconnect between wasted food in the United States and the number of food insecure people. The problem is even worse in Baltimore, with 23.8% of residents experiencing food insecurity, almost double the national rate. Edible food rescue not only prevents food from going to landfills; it can also be a valuable source of food to those who experience food insecurity in the city.

The Institute for Local Self-Reliance has created a hierarchy for reducing food waste, which this plan utilized when developing potential solution categories. Source reduction and edible food rescue are at the top of the hierarchy, as the top priorities should always be to reduce the amount of food wasted and the resources wasted along with it, and then to feed hungry people. These two waste reduction strategies also mainly address two different types of producers. The majority of food waste comes from consumers, not from grocery stores or other food providers, but rescuing food from each individual consumer in order to feed it to others is not really feasible. Thus, source reduction is the best way to address consumer food waste. Source reduction strategies include efforts such as the Ad Council and the National Resources Defense Council "Save the Food" campaign, which provides consumers with ideas and guidance on how to reduce their own food waste, such as the best methods of storing food to make it last, and how to use parts of food that are typically discarded. Considering the large amount of money that Americans spend on food they do not consume, this approach also has value in helping families save money. Source reduction is certainly still relevant to larger producers of food waste; one of strategies in the K-12 schools section is to upgrade to software that will increase efficiency in ordering. However, as seen with the two case studies, large producers can be an excellent resource for edible food rescue. The Goucher Food Recovery Network and the Franciscan Center are saving food from cafeterias and grocery stores in order to give it to Baltimore residents in need.

CASE STUDY: GOUCHER UNIVERSITY FOOD RECOVERY NETWORK

The Food Recovery Network (FRN) was founded in 2011 at the University of Maryland College Park. Its mission is to divert food waste from landfills by recovering un-eaten food from college dining halls and bringing it to food kitchens. Since 2011, it has grown to include over 200 college chapters. The Goucher College Chapter of the Food Recovery Network was started in Fall 2013 by students who were interested in addressing food waste on campus.

Goucher FRN recovers food from campus dining halls twice a week. They also organize a few events focused on food waste and hunger, including a food audit event at one of the dining halls. Micah Heaney, a founding member of Goucher FRN who now serves on its eboard, credits the Goucher chapter's success with developing a good relationship with Bon Appetit, the food service provider on campus. They pick up from two dining halls, and the staff helps them package and label all the food. Once collected, students drive the food to Project PLASE, an organization in Baltimore that provides housing and other support services to the city's homeless population. Goucher FRN is proud of their strong relationship with Project PLASE, and continually works on strengthening the relationship, through events such as lunches with their staff members and residents, or repainting rooms in the building that need work. Heaney believes it is important to cultivate a meaningful relationship with their partner organization, beyond just dropping food at the door.

Getting students to consistently commit to volunteering is a major hurdle for any small, student-run organization, but Goucher's chapter includes a rotating group of ten to twelve student volunteers per semester, in addition to the four members of the executive board. Moving forward, the organization hopes that events on campus will increase their visibility and attract more student volunteers, which would allow the group to recover food from the cafeterias more days a week. The group believes there is enough food waste at the cafeterias to make recovery every day of the week possible, and enough demand at organizations like Project PLASE to make an increased supply of food extremely desirable. Goucher's chapter, as well as the entire Food Recovery Network, hope to continue growing and expanding, in order to, as their motto says, "Fight waste and feed people."



CASE STUDY: FRANCISCAN CENTER

The Franciscan Center strives to be a “one-stop shop” for Baltimore’s most vulnerable residents. Anyone in need can come to the center for services such as free meals, emergency financial assistance, medical procedures, and job training. Food recovery has become an important component of the Center’s free meal program.

The Center’s soup kitchen has a history of being on the cutting edge of addressing diet-related health issues (it was the first soup kitchen in the country to institute Meatless Mondays). In 2017, the soup kitchen served 108,000 meals, and the need for free meals only continues to grow. Food reclamation is an essential part of the Center’s operational model. Their robust collection system recovers leftover food from restaurants, bakeries, grocery stores, and other food producers. Until recently, The Center was unable to accept donated or recovered food in need of refrigeration. That changed in 2017 when they received a grant for the purchase of a refrigerated van. Having a refrigerated van means the Center will be able to collect more food, and take advantage of more sources of food (especially perishable foods like dairy products, meat, and fish), since these foods are no longer at risk of spoiling in transit.

Going forward, the Franciscan Center wants to continue its legacy of creating innovative programs that help Baltimore’s neediest residents, and to continue growing in order to reach even more people. In addition to expanding its reclamation program with the help of the new refrigerated van, the Center also plans on addressing food injustice and educating the public on healthy foods and diet issues, in order to improve public health in Baltimore and increase awareness of important food issues in the city.



COMPOSTING AT HOME AND IN THE COMMUNITY

Following source reduction and edible food rescue on the hierarchy are home composting and small-scale, distributed composting. One of the goals of this report is to help reframe food “waste” as the resource it can be. Home composting and small-scale composting, such as at community gardens, keep the food waste in the community where it originated, which allows the producers of food waste to directly see and experience the benefits of composting. Composting at home or at a community garden allows the compost to be used where it was produced, enriching the soils of that community. Keeping food in the community, instead of hauling it to a central location, also has the advantage of reducing energy use and hauling costs. Furthermore, small-scale composting requires individuals to become more engaged with the process, providing a valuable opportunity for individuals to learn more about the issues of food waste and the solutions composting offers. It can also be a community-building tool, as it brings neighbors together under the common goal of creating compost that can then be utilized by the community.

Backyard composting comes before small-scale composting because it truly keeps composting as local as possible. However, small-scale composting is incredibly important, and even necessary, in any distributed system, as many people may not have the space or resources required to start backyard composting. Thus, the ideal distributed composting system will include the use of very small-scale composting methods, such as vermicomposting bins, for those who are able, in addition to larger bin systems, like the five bin system at Real Food Farm, which can handle significantly more of the community's food waste. There are some challenges that come with community composting; for instance, it's necessary to address some of the stigmas, such as odor and vermin issues that many associate with composting, in order to reassure the community that a local system is a good thing. In fact, when handled appropriately, separation of food waste can actually help prevent vermin issues by eliminating their food supply. Local engagement is a key ingredient for distributed composting infrastructure, as the community is providing the feedstock for composting, and frequently is needed to be an active participant in the process, such as seen in the Real Food Farm model of requiring volunteer hours in order to participate in the compost cooperative.

There is a lot of potential for community composting in Baltimore. The city already has a number of community gardens, and has several City Farms run by the Recreation and Parks Department. All of these locations could potentially host small-scale composting systems. For both Real Food Farm and Whitelock Community Farm, composting was never the initial goal, but simply was a natural extension of their existing operations. This highlights another benefit of small-scale composting—it can be relatively easily integrated into the city's existing green space.

CASE STUDY: REAL FOOD FARM

Real Food Farm (RFF) is an urban farm on eight acres in Clifton Park, managed by the non-profit Civic Works. With assistance from the Institute for Local Self-Reliance, RFF has become a model for community composting in Baltimore with strong community engagement and educational outreach programs.

RFF had a small-scale community composting program for a number of years however, when the system developed rodent problems, RFF stopped accepting food waste drop-offs. Not wanting to give up on the system entirely, Civic Works reached out to the Institute for Local Self-Reliance (ILSR) for help. With the support of ILSR, elbow grease from Real Food Farm staff, the expertise of Urban Farm Plans, and designers of the "Compost Knox" system, improvements were made that resolved the rodent problem. Now the farm is able to process hundreds of gallons of food scraps in their five-bin "Compost Knox," a rodent-resistant composting system.

After working together to revamp the farm's composting system, ILSR and Real Food Farm partnered with ECO City Farms, an urban farm based in Washington, DC, to bring the Neighborhood Soil Rebuilders (NSR) Composter Training Program to Baltimore. The NSR, a "train-the-trainer program" based on the Master Composter model, was developed by ILSR and ECO City Farms in 2014 and pioneered in the DC area. The NSR is tailored for people composting in community settings: schools, urban farms, community gardens, community centers, etc. Participants learn the ins and outs of composting in order to run a successful site. Real Food Farm hosted the training, and a number of their staff and community members participated in the course.

Real Food Farm held its very first Compost Co-op training in December 2016, in order to facilitate community engagement with the farm. Approximately 25 members of the community attended the training, where they learned what materials can and cannot be composted and how materials should be dropped off at the site, so that they could participate in the new community food scrap drop-off system. The staff, with some help from volunteers, closely monitors the system throughout the entire composting process. With the success of this system, Real Food Farm is now poised to act as a community composting demonstration site for Baltimore.



CASE STUDY: FILBERT STREET GARDEN/BALTIMORE COMPOST COLLECTIVE & YOUTH EMPLOYMENT

The Filbert Street Garden in Curtis Bay is dedicated to promoting urban agriculture and providing educational opportunities to the community. A long industrial history has left Curtis Bay with a legacy of environmental contamination and associated avertable health impacts. This reality, coupled with high unemployment, high levels of family poverty and a general lack of basic infrastructure has created a situation where residents lack both economic opportunity and access to fresh food. Yet, in spite of these steep challenges, the community is coming together to forge a more self-reliant path forward.

In 2016, the Institute for Local Self-Reliance joined with the Filbert Street Garden and the Chesapeake Center for Youth Development (now defunct) to create the Baltimore Compost Collective, a food scrap pickup and composting service. This composting program also provides employment and mentoring to local youths year round. In 2017, United Workers became the nonprofit host for the project.

The Baltimore Compost Collective collects food scraps primarily from residents of Federal Hill and Pure Raw Juice, a local juice bar. Other serviced areas include Curtis Bay, Riverside Park, and Locust Point. Once collected, the youth employees compost these food scraps at Filbert Street Garden using a rat-resistant 3-bin composting system. But, the Compost Collective is more than just an employment opportunity. It is an entrepreneurship program where youth are trained in workforce skills, food access programming, and community-scale composting. They are receiving guided, hands-on experience managing a small-scale composting operation and its expansion. The compost they create is used to grow fresh produce for the community at Filbert Street Garden, supporting community agriculture.

Marvin Hayes, a longtime youth life-skills mentor from Baltimore's Sandtown-Winchester neighborhood is the Compost Collective's program manager. With more than 20 years of youth mentorship experience, ranging from leading wilderness experiential learning expeditions to coaching football and basketball in inner-city Baltimore, Once employed, youth are coached through required paperwork, opening bank accounts, customer service, route management, composting science, and more. For most, this is their first job. To date, the project has employed five high school students or recent graduates from Curtis Bay's Benjamin Franklin High School; two have moved on to other employment.

Initially launched under a grant from the Abell Foundation, the goal is to make the Compost Collective a financially self-sustaining enterprise. To achieve this, the Compost Collective is working to expand its residential customer base. The Institute for Local Self-Reliance continues to provide technical composting assistance and in August 2018 organized a community bin build to increase the capacity of the project to accept additional food scraps. The site now has two 3-bin enclosed compost systems. Plans include adding a neighborhood food scrap drop-off component to the garden.

The Baltimore Compost Collective reduces waste, increases composting, produces a great soil amendment for use in the garden; and, importantly is an investment in the community and the next generation.



CREATING SCALABLE COMPOSTING INFRASTRUCTURE

After small-scale, distributed infrastructure on the hierarchy comes medium and large scale facilities. These larger facilities do not have the same benefits as small-scale infrastructure—e.g. keeping the food waste resource in the community, potential for community engagement—but they obviously do serve the overall purpose of diverting food waste from landfills. Additionally, they do have some advantages over small-scale composting, as they can handle more food waste, and more types of food waste, whereas a small community garden or backyard system may not be able to process certain foods, such as meat and dairy. Larger scale composting also enables more participation in composting programs, and increases efficiencies through economy of scale. For instance, one of the case studies in this section discusses the composting program at Johns Hopkins University; they are now able to have compost collection in every building on their main campus, which means they're collecting a substantial amount of food waste. In the last fiscal year, they collected 277 tons; an amount which would require numerous community gardens to process, but which can be easily handled at the Western Branch Composting Facility in Prince George's County.

At the moment, Baltimore does not have any medium or large scale composting capacity, which inhibits the growth of composting in the city. The Western Branch facility, as well as Veteran Compost's site in Aberdeen, cannot effectively handle more food waste. Since facilities of this size are accepting material from a relatively large surrounding area, the feedstock has to travel further and thus tends to be less fresh, which means that the facilities must be careful not to overburden themselves, or they could run into serious odor issues. Thus, while the existing facilities in Maryland have been vital in helping compost efforts in Baltimore achieve the level they are at today, their capacity is insufficient to handle all of Baltimore's food waste.

Large scale composting will not only require additional facilities, but will also require a coordinated effort to ensure that all stakeholders are invested in the goals and strategies. The case studies in this section, as well as the Federal Hill case study in the K-12 Schools section, provide good templates for working with institutions and the private sector. Creating scalable infrastructure in Baltimore requires more than just building the infrastructure. Mindsets towards composting must be changed and new practices need to become commonplace. In order to fully address the massive issue of food waste, all strategies for food waste reduction, recovery, and recycling will be necessary.

CASE STUDY: JOHNS HOPKINS UNIVERSITY HOMEWOOD CAMPUS

In 2010, the JHU Office of Sustainability led the implementation of two pilot food waste programs in close partnership with the Offices of Dining, Housing, and Recycling:

- pre-consumer food waste collection program in the kitchen of the main dining hall, and
- post-consumer food waste collection program in the Office of Sustainability.

Both programs were successful due to early engagement, good planning and strong partnerships. The Dining, Housing, and Recycling Offices are the key implementers of the compost program while the Office of Sustainability assists with outreach. After the pilot, JHU ramped up collection services by adding all other dining locations, and then expanded to event spaces, staff kitchens and student lounges. By January 2017, compost collection locations were established in every building on the Homewood campus. To encourage the use of compostable ware, its use was written into the RFP for food service providers. Currently, Johns Hopkins collects all food products, including meat and dairy, as well as compostable ware. All dining facilities use compostable tableware and to-go items, resulting in a very low level of contamination. Several other campuses now run their own compost collection programs. At the time of the composting program, the university had decided to standardize all waste bins. Existing bins were replaced with a three bin system rather than the two bin system.

Cooperation and communication were key to the start of the program and they are critical to its continued success. In addition to cooperation among the Office of Recycling, Dining, Housing involvement of Residential Life, Bon Appetit - the food service provider, Waste Neutral - the food waste hauler, and Western Branch - the food waste processing site have contributed to a successful program. JHU's Recycling Manager for the Homewood campus holds monthly meetings with Bon Appetit, Dining, and Housing in order to maintain ongoing communication. Relationships with the custodial staff are also vital, as they service the food waste bins. While coordination among all these parties is challenging at times, it has been the key to the success of the program.

Additionally, as part of the program, JHU works to shift student and staff behavior and norms around composting. This is an ongoing process, with no easy or immediate solution. A recent survey of JHU students showed that 76% are aware of the program's existence, and 43% are composting every time or most of the time they have food waste. The amount of food waste collected in the compost bins has been steadily growing. In FY16, 277 tons of waste was composted, up from just 119 tons in FY12, and with the addition of compost collection in every building, these numbers should only continue to grow.



CASE STUDY: CAMP SMALL

For over 70 years Camp Small has been the City of Baltimore collection facility for removed and downed trees on public land. An Urban Wood Utilization Initiative began at Camp Small in 2016 with a \$98,000 loan from the City's Innovation Fund. The program took off quickly and the loan was paid down within 2 years using sales revenue and cost savings.

Camp Small has made big strides in repurposing city wood. The Department of Recreation and Parks' new Cahill Recreation Center in west Baltimore will incorporate 130 large Ash, Walnut, and Poplar logs from Camp Small. Logs have also been used in Baltimore's first Nature Playspace, Francis Scott Key Elementary's new outdoor play-scape, as well as for seating play spaces, outdoor classrooms and community spaces. Tree stakes created from Camp Small logs cost the City 60% less per stake. And, American Forests award Camp Small a grant to purchase a portable bandsaw mill and a lumber kiln that supported the creation of a wood products program.

Camp Small repurposed wood is infiltrating Baltimore in multiple avenues ways. It is sold to artists, wood turners, mushroom growers, furniture makers, local band-saw mill operators and a local whiskey barrel company. Through, WoodHawks, a membership program, firewood is sold to residents. The City's first annual Wood Chip Give-Away Day was held in 2018 in coordination with the Mayor's Spring Clean-Up Day. It was a success, as dozens of residents came in trucks or with buckets in hand to receive free wood chips. City agencies use Camp Small woodchips at construction sites and to create garden paths at City Schools and CityFarms. Chips have been sold to residents for soil remediation and flower gardens.



COMPOSTING IN K-12 SCHOOLS

While all the other categories in this report follow the food recycling hierarchy, this section does not. For several reasons, composting at K-12 schools deserves its own category, even if some of the potential solutions could fit into a different category. Baltimore City Public Schools serve meals to thousands of students every day, which make them a large producer of food waste. However, unlike other categories of significant producers of food waste, public schools in Baltimore are all under the umbrella of the school system, and thus can be dealt with as one entity.

Most importantly, composting in schools is a valuable opportunity to teach future generations about compost. Students who see food scrap collection become a normalized part of their routine will be more likely to grow up to become composters themselves. The school system is one of the best ways to reach a large part of Baltimore's population and teach them about the value of diverting waste from the landfills. Compost programs in schools can also be a way of enriching the learning of students—as seen in the case study on The Green School, their vermicompost bins are incorporated into the science curriculum, giving students the opportunity for hands-on learning, and allowing them to see scientific concepts learned in the classroom in action.

Along with the benefits of composting in schools come several challenges. The case studies below highlight programs at the Green School and the Federal Hill Preparatory School. While the vermicomposting bins at The Green School provide a great learning opportunity, they can only handle a small percentage of the total food waste generated and only certain types of food. If The Green School wants to actually divert all their food waste from landfills or incinerators, they will need a much larger composting program, such as bins which can handle a substantial amount of food waste per day, or a collection program like the one at Federal Hill Preparatory School. Federal Hill's program is very successful because it does capture the vast majority of food waste coming out of the cafeteria. However, since the food waste is taken off site to be composted, the students at Federal Hill don't get the same opportunity to participate in the process as the students at The Green School. There is still educational value, as students can see how much food waste is produced and learn about why the school is collecting food waste separately, but there is less hands-on experience. Despite this, hauling off site can be a good solution for schools that don't have the space or resources for on site composting.

Another challenge to reducing food waste in schools stems from the contents of the school-provided lunches themselves. Due to FDA regulations governing subsidized meals in public schools, students receiving meal assistance must receive a certain amount of food—an item of food from three of the five food categories, and at least one of those three must be a fruit or vegetable. Thus, many students may be given food that they do not plan to eat, which can increase the amount of food wasted at schools. Because of these requirements, source reduction is not a viable option for handling food waste in schools, which makes composting all the more necessary. Unfortunately, many schools in Baltimore use disposable tableware, which can hinder composting when disposed of with food waste; Federal Hill Preparatory School has seen some contamination of their food waste by non-compostable materials. This issue is addressed in the strategies for composting in K-12 schools, but it does highlight the reality that successful composting programs entail more than just collecting food waste.

Despite the challenges discussed, working with K-12 schools is vital to the future of composting, and thus should be a priority. The following case studies highlight two replicable examples of what school composting programs could look like.

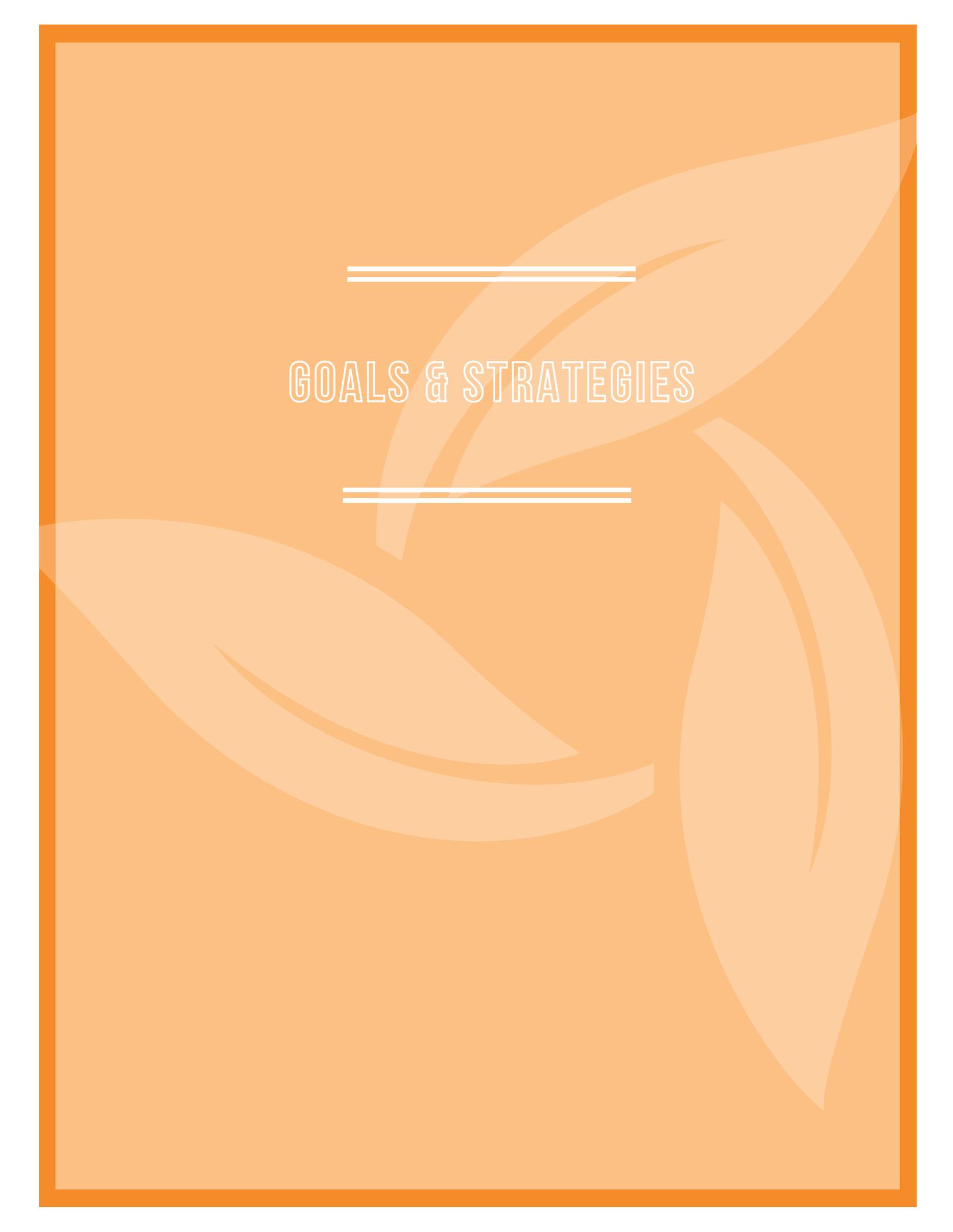
CASE STUDY: FEDERAL HILL PREPARATORY SCHOOL

Federal Hill Prep began its composting program in Fall 2011, as part of the Baltimore Office of Sustainability composting pilot program in Baltimore City Schools. For the first few weeks of each school year, parent volunteers supervise the separation station and instructed students on properly sorting waste. After that, students must figure out separation on their own, sometimes with the supervision of the student Green Club. Faculty and cafeteria staff do not have the time to monitor the separation process. Due to lack of supervision, contamination can be an issue. Waste Neutral, the food waste hauler, monitors the waste very closely and alerts the school when contamination is too high. When that occurs, parent volunteers retrain the students and the Green Club gives classroom presentations on composting.

Ideally, Federal Hill would also reduce its food waste but there are a few roadblocks. First, requirements related to food voucher lunches lead to an increase in the amount of waste. Students choose food from at least three different food groups, whether they plan to eat the food or not. Second, the amount of food wasted on any given day fluctuates based on the popularity of the food served. A "share table," where students leave uneaten food for other students, was created to prevent food from being wasted but this diverts only a portion of food from the waste stream.

The program has been a success while facing its share of challenges. Primary among the challenges has been bringing everyone on board and shifting behaviors of students and staff including custodians. Very few had any prior exposure to composting. Continuing education for all is necessary to ensure continued behavior change. The support of the principal has been very important to the program's continued existence as has the strong parent volunteers and school administration presence. The importance of embedding the program into school life is crucial to ensuring the program remains strong even after these parents and supportive administrators have moved on.



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GOALS & STRATEGIES

GOAL #1:

REDUCE COMMERCIAL FOOD WASTE IN BALTIMORE CITY BY 50% BY 2040

Short-Term Strategies (1-5 years)

1. Conduct a needs assessment for the Baltimore City food recovery ecosystem.

This review should include at a minimum: identifying gaps in the food recovery/donation pipeline, barriers for businesses wishing to use produce 'seconds', barriers for businesses wishing to donate food, gaps in metrics tracking, a review and analysis of existing tech-based food recovery options, and areas that should be targeted for funding or technical assistance.

2. Create a 'best practices' guide for businesses and institutions that wish to donate edible food in Baltimore City.

This guide should include education about the federal Bill Emerson Good Samaritan Food Donation Act, as well as information about safe food handling, how to engage with umbrella entities in the field like Feeding America and Maryland Food Bank, and a robust database of recipient organizations, including their location and capacity to accept donations.

3. Create a resource guide for individuals and businesses wishing to use produce 'seconds' (ugly fruit and vegetables).

This guide should have an emphasis on creating economic opportunity for low-income communities by accessing low-cost supply chains. Guide should include a survey of best practices already in place by existing businesses, sources of produce seconds, and resources available to new food businesses.

4. Support State legislation that extends liability protection for entities selling recovered food and donors that donate past-date foods.

Every state has its own version of liability protections for food donors and food recovery organizations. States can improve these statutes by clarifying and expanding protection for food donations beyond what is offered in the federal Emerson Act. Areas of improvement include amending or enacting state regulations to provide liability protection when food recovery organizations sell or otherwise charge for food, when donors donate directly to end-users, when the donated food does not satisfy all quality and labeling standards, and when donors donate past-date foods.

5. Work with the Maryland Department of Agriculture to include food recovery into programming at the Maryland Buyer-Grower Expo.

The MD Grower-Buyer Expo is an annual event held in mid-winter designed to connect large scale growers/craftsman with institutional buyers in an effort to increase the purchasing of local products in places like area hospitals, chain grocery stores, universities etc. During the event, growers set up displays of their products and buyers peruse looking for the contacts that fit their needs. Adding a recovery element would connect the recovery community with growers and buyers proactively at the point of sale versus reactively when they are tasked with discarding items.

6. Create a public awareness/marketing campaign around reducing food waste, targeted to businesses.

This program could utilize the NRDC/Ad Council 'Save The Food' Campaign, or other similar messaging. Any campaign should be preceded by a marketing study to determine appropriate messaging for Baltimore City businesses, and be created in partnership with businesses and non-profits. Develop resources including outreach materials and signage for businesses to use in training staff and educating customers on food waste reduction strategies and sorting organic waste.

(see Austin Zero Waste Business Resources <http://austintexas.gov/page/zerowastebusinessresources>)

GOAL #1:

REDUCE COMMERCIAL FOOD WASTE IN BALTIMORE CITY BY 50% BY 2040

Short-Term Strategies (1-5 years)

7. Support local and state legislation that calls for a phased-in food and organics landfill ban, also known as a large quantity generator ban.

As of 2017, there are five states that have some type of legislation in place that restricts businesses that produce large amounts food waste from disposal at landfill or waste to energy. There is evidence that not only does this law help to spur development of infrastructure in the region, it also helps businesses and the state and local economy grow.

8. Create and staff a city government position tasked exclusively with managing food recovery and food waste reduction initiatives.

This position should work closely with the Department of Public Works, the Office of Sustainability, other city agencies and non-governmental partners to develop and oversee programs in alignment with this plan.

Mid-Term Strategies (5-10 years)

1. Create incentive programs for food donation, or businesses sourcing recovered food.

Incentives should be tied to the creation and implementation of a food waste management plan. Incentive programs may include awards, tax credits, promotions through a certification program, rebates for facility upgrades, eligibility for grants, or other means.

2. Ensure there are enough community partners to handle volume of all donated food, and that these partners are adequately resourced (refrigeration, hauling, preparation, etc)

Develop and disseminate a resource guide for area non-profits providing food to economically disadvantaged citizens that will connect them with sources for donations, transportation and funding opportunities to support food recovery.

3. Create/support a waste audit program for commercial food waste producers.

In order for commercial food generators to implement organic waste reduction and diversion plans they will need to understand the volume and composition of their organic waste. Waste handling audits and composition studies will provide that necessary information. A program that offers support to complete these steps through resources like guidance documents, audit templates, discounted auditing services, etc. should be established to ensure that businesses are engaged positively and proactively prior to any regulatory requirements or bans.

4. Support existing business models that sell "seconds" produce, and if gaps still exist, support the creation of a 'Vendors Market' for unsold produce from wholesale distributors.

Many business models are tapping into seconds and/or unsold produce from wholesale distributors as a source for product, often marketed with a social mission. Most of these are direct sales through pre-boxed models, or Baltimore City's Arabbers. The supply of unsold produce may be great enough to also create a marketplace for this food, similar to Boston's Haymarket. Such a market could exist in one of Baltimore City's public markets and recover product from smaller sources than just traditional wholesalers.

GOAL #1:

REDUCE COMMERCIAL FOOD WASTE IN BALTIMORE CITY BY 50% BY 2040

Long-Term Strategies (1-5 years)

1. Create/adapt an entity to coordinate and promote all food recovery activities citywide.

Such an entity should track and disseminate data related to food recovery in Baltimore City, and advocate for sustainable food waste policies. It would serve as a convening body for a network of food waste generators, collectors, and recipients.

GOAL #2: ELIMINATE ALL FOOD WASTE FROM HIGHER EDUCATION INSTITUTIONS BY 2040

Short-Term Strategies (1-5 years)

1. Support the development of a Food Recovery Network chapter (or similar entity) in every higher ed institution in Baltimore City.

Food Recovery Network (FRN) is a national nonprofit based in College Park, MD that unites students at colleges and universities to fight food waste and hunger by recovering perishable food that would otherwise go to waste from their campus dining halls and donating it to those in need. This model feeds hungry individuals, benefits the environment, and bridges the gap between college campuses and communities. Establishing chapters within the city of Baltimore is a natural step to reduce food waste since FRN is already working toward growing chapters on all higher education campuses. This model changes behavior at all levels: dining services reduce the amount of food they order, while students become more aware of the value of food and their role in reducing food waste. FRN currently has a chapter at Goucher College, and five additional chapters in Maryland.

2. Support the completion of waste audits in every higher education institution in Baltimore City.

Establish and disseminate best practices for completing waste handling audits and composition studies. This should include waste audit instructions and templates for schools to perform on their own and/or standard language for audit requirements in contracts between universities and waste haulers, as well as, dining service providers. Once conducted, work with institutions and food service providers to adapt food procurement contracts to reflect waste audit findings.

3. Create a public awareness/marketing campaign around food recovery, targeted to higher ed campuses.

This program could utilize the NRDC/Ad Council 'Save The Food' Campaign, or other similar messaging. Any campaign should be preceded by a marketing study in partnership with local colleges and universities to determine appropriate messaging for Baltimore City higher ed campuses.

Long-Term Strategies (10-20 years)

1. Work with colleges, universities and institutional food providers (e.g. Aramark, Sodexo, Chartwells, Bon Appetit) to change the culture of campus cafeterias from one of required abundance, to 'it's ok to run out'.

Depending on the campus, students pay a lump sum for their meals and are served buffet style from the campus dining hall. While the food providers use inventory sheets to help forecast how much of each product to make, they are often left with large quantities of highly perishable foods. Thinking through other options like a pay-down system where students take the lump sum and pay for a-la-carte items deducted from their balance will help improve data, and reduce over preparation. This strategy will require both policy buy-in and training for staff and students.

GOAL #3:

DIVERT 90% OF FOOD AND ORGANIC WASTE GENERATED BY BALTIMORE CITY GOVERNMENT AGENCIES FROM LANDFILL OR INCINERATION BY 2040

Short-Term Strategies (1-5 years)

1. Conduct a waste audit of all city government buildings.

Audit should include volume and waste type for both garbage and recycling. It should also differentiate between wastes collected from public receptacles, desk cans, and other types of receptacles. The findings will create a baseline of waste generation from which the success of future diversion efforts can be measured.

2. Implement a communications campaign and/or training program around recycling, aimed at city government staff.

This may include required organic waste diversion training for property management positions.

3. Create a phased plan for diverting all city-generated organic waste to mulching, composting, or anaerobic digestion facilities.

This plan can and should be created before sufficient organic waste facilities exist, as it can lend greater certainty to the food waste hauling and processing market, making it easier for facilities to get capitalized. This plan should also include a method for tracking waste generation and diversion on an annual basis, and set goals for waste diversion for each government facility.

4. Pilot a food waste hauling program at select government agency buildings

This effort should build on the findings of the City Schools compost pilot of 2011, and should focus on a cluster of government buildings in close proximity.

Mid-Term Strategies (5-10 years)

1. Divert all city agency-generated organic waste to mulching, composting, or anaerobic digestion facilities.

This includes but is not limited to all organic waste generated by landscaping and park maintenance projects, street tree maintenance, development projects, and yard and leaf waste collected by DPW. It does not include food waste generated in public buildings by city staff.

2. Create an incentive program for government staff to reduce waste in their agencies.

This could function similarly to city employee charity drives, which encourage friendly competition between agencies.

Long-Term Strategies (10-20 years)

1. Implement food waste collection at all city government buildings, and food waste diversion at all city-sponsored public events.

GOAL #1:

REDUCE HOUSEHOLD FOOD WASTE IN BALTIMORE CITY BY 80% BY 2040

Short-Term Strategies (1-5 years)

1. Create/support a public awareness and education campaign around household food waste.

This action could utilize the NRDC/Ad Council 'Save The Food' Campaign, or other similar messaging. Any campaign should be preceded by a marketing study to determine appropriate messaging for Baltimore City residents.

2. Support community-based culinary education programs, with emphasis on food waste reduction.

Such efforts could be supported through micro-grants (similar to the community greening grants administered by Parks & People Foundation), and may require an entity to support food waste reduction message through technical assistance. See Five Times A Feast as a current example.

3. Create and implement a voluntary household waste audit program; include incentives for participation.

Such a program could build on the practices of the NRDC citywide food waste audits in Nashville and New York. Program may be incentivized through tax rebates, gift cards to area grocery stores, or other means.

4. Develop and implement a system for tracking household food waste.

Such a system may include random audits of truckloads delivered to BRESCO by DPW.

Mid-Term Strategies (5-10 years)

1. Distribute 'smart' trash cans to all city residents, capable of tracking waste weight; create positive feedback loop/gamification by sending waste data to residents via water bill or other means.

Such a program may mirror BGE's Neighbor Comparison feature on monthly energy bills.

GOAL #2:

ENSURE ALL BALTIMORE CITY RESIDENTS HAVE ACCESS TO ORGANIC WASTE COLLECTION AT HOME OR IN THEIR NEIGHBORHOODS BY 2040

Short-Term Strategies (1-5 years)

1. Create a publicly accessible database of all compost collection sites or food waste hauling services in Baltimore City.

This database should be available online and in print and updated annually or on an ongoing basis (perhaps included in DPW annual calendar), and include information about how to contact collection sites or haulers.

2. Create best-practices or guidance document for establishing community composting sites.

This document could be distilled from ILSR's Neighborhood Soil Rebuilder curriculum. It should also have an explicit emphasis on rat abatement best practices, as learned from a local demonstration site.

3. Pilot a food waste collection program at Baltimore City Farmers Markets, Public Markets, and/or City Farms.

Program would likely need a private hauling partner to implement. Should be paired with free education on food waste reduction and composting concepts. Could use City Farms locations as demonstration sites.

4. Identify and remove zoning/permitting barriers to community-scale food waste collection and processing in residential neighborhoods.

Seek clarity on community-scale composting efforts, including for-profit and non-profit models.

5. Offer suitable, free or reduced-price backyard compost bins to every city household, with required appropriate training.

Training may include volunteer hours at nearby compost facilities in urban farms or community gardens.

Mid-Term Strategies (5-10 years)

1. Support/incentivize the creation of community composting locations in every Baltimore City neighborhood.

Community composting projects should be led by community partners (neighborhood organizations, faith organizations, schools, etc) and should be distributed in neighborhoods of all economic levels. Opportunities for youth employment or other workforce development should be included as part of the program. Substantial training will be required for site managers and participants.

2. Conduct a residential curbside organic waste collection pilot program in a small number of Baltimore City neighborhoods.

Selected neighborhoods for pilot projects should be geographically, economically, and racially varied. Pilot collection programs must be paired with adequate advance education and audience-appropriate messaging. Program may include partnering with a private organic waste hauler. Program should include a component of rodent abatement monitoring.

Long-Term Strategies (10-20 years)

1. Offer residential curbside organic waste collection throughout Baltimore City.

2. Create/support an ongoing program to staff and manage community composting locations throughout the city.

GOAL #3:

DIVERT 80% OF RESIDENTIAL FOOD AND ORGANIC WASTE FROM LANDFILL OR INCINERATION BY 2040

Short-Term Strategies (1-5 years)

1. Implement a citywide education & awareness campaign about how to handle residential food waste.

This action could utilize the NRDC/Ad Council 'Save The Food' Campaign, or other similar messaging. Any campaign should be preceded by a marketing study to determine appropriate messaging for Baltimore City residents. Campaign could be paired with a 'Best Practices' guiding document for composting in Baltimore City residential neighborhoods.

2. Extract cost of waste collection services from city property tax.

Unlike surrounding counties, Baltimore City includes the cost of household waste collection in every property owner's tax bill. Extracting this cost from property tax calculations, and calling it out as its own line item (perhaps on a combined waste and water bill) would both lower property taxes, and alert residents to the cost of waste collection, potentially paving the way for a pay-as-you-throw program.

3. Conduct a feasibility study for a Pay-As-You-Throw (PAYT), SMART, or other incentive based residential waste collection system.

4. Increase the number of compost training programs offered in the city; ensure equitable geographic distribution and affordability.

Long-Term Strategies (10-20 years)

1. Implement a residential food waste ban.

Any food waste ban must be announced at least six months prior to implementation and include robust public education and support from the City or partner organizations.

GOAL #1:

CREATE COMPOSTING AND/OR ANAEROBIC DIGESTION FACILITIES IN THE BALTIMORE REGION CAPABLE OF PROCESSING ALL OF BALTIMORE CITY'S ORGANIC WASTE BY 2040.

Short-Term Strategies (1-5 years)

1. Complete a comprehensive city-wide solid waste audit, quantifying the volume and source of all food and organic waste generated in Baltimore City.

Audit should take into account seasonal variation, as well as flow of waste into and out of Baltimore City. A one-time effort of this type could be funded by state, federal, or foundation grants.

2. Conduct a feasibility and cost-benefit analysis of establishing composting or anaerobic digestion facilities at suitable Baltimore City-owned sites.

Scope of sites may include but not be limited to active and inactive landfills, transfer stations, and wastewater treatment plants. Study should include scenarios in which facilities are privately and publicly operated. Study should also include scenarios for various types and sizes of food waste processing, including in-vessel composting, windrow composting, and anaerobic digestion.

3. Work with surrounding counties and regional authorities to identify viable locations for small, medium, and large scale composting and AD facilities, and issue joint RFPs for private composters at these locations. Allocate funding for the construction of these projects.

Special attention should be paid to sites accessible to both DC and Baltimore, and with close proximity to highways, and adequate distance from residential areas. Funds may come in the form of bonds, TIFs, innovation grants, revolving loan funds, or other means. Lands could be made available to private compost facility operators, in exchange for low-cost leases or reduced tipping fees.

4. Ensure a continued supply of carbon-rich material for composting by continuing to support the Camp Small Zero Waste Initiative.

Camp Small sorts and manages large volumes of wood waste, and could be a supply of this material for other composting operations around the city.

GOAL #2:

SUPPORT THE FOOD WASTE DIVERSION MARKET BY ENSURING AN ADEQUATE SUPPLY OF ORGANIC WASTE IS BEING DIVERTED TO COMPOST AND ANAEROBIC DIGESTION FACILITIES.

Short-Term Strategies (1-5 years)

1. Conduct a policy review of best practices for encouraging organic waste diversion including PAYT, food waste bans, tipping fee regulations, incentives.

Review should be nationwide, with emphasis on cities that reflect Baltimore's geography, demographics, and current waste-hauling practices.

2. Conduct a review of existing organic waste diversion in Baltimore City.

Review should identify all food and organic waste haulers operating in Baltimore City, and the volume and source or their supply. It should also include smaller, community scale projects. Goal should be to create an accurate baseline from which the city can increase diversion rates.

3. Support state legislation requiring waste haulers in Maryland to report hauling metrics, including volumes, sources, and destinations.

4. Establish food waste diversion practices at all Baltimore Public Markets.

These practices should include, but not be limited to: establishing group purchasing of disposable products for all vendors, and replacing non-compostable products with compostable ones; separation and collection of back-of-house food waste, accompanied by appropriate training for vendors about how to separate waste; upgrading technology and vendor training for proper disposal of fats, oils, and greases (FOG); separation and collection of customer-generated food waste.

5. Introduce legislation requiring food waste diversion for commercial generators, to take effect 2-4 years in the future.

Policy specifics should be based on nationwide policy review, interviews with commercial food waste generators, and may likely need to be phased in, starting with largest generators first, incrementally including smaller generators.

Mid-Term Strategies (5-10 years)

1. Create an incentive program for commercial food waste generators to divert food waste. Possibilities include rebates for food waste receptacles, 'green certifications', tax deductions.

Incentives should be based on findings from nationwide policy review, as well as interviews with wide range of commercial food waste generators.

Long-Term Strategies (10-20 years)

1. Implement a city-wide commercial food waste ban.

A commercial food waste ban should be announced 1-2 years in advance of start date. It should be phased in over time, beginning with largest food waste producers, and incrementally included smaller food waste producers. If possible, it should align with a similar state-wide ban.

GOAL #1:

ATTAIN 90% FOOD AND RECYCLABLE WASTE DIVERSION IN BALTIMORE CITY K-12 SCHOOLS BY 2040

Short-Term Strategies (1-5 years)

1. Eliminate styrofoam cafeteria trays from all BCPS cafeterias.

Trays should be replaced with either reusable or certified compostable products. Multiple replacement types should be tested, and students and cafeteria staff should be surveyed on satisfaction of different types. Once suitable tray replacements have been chosen, BCPS should 'piggyback' on contracts with other MD counties.

2. Establish robust recycling programs at all BCPS schools.

3. Conduct comprehensive Cost/Benefit Analysis and feasibility study of converting BCPS cafeterias from disposable to reusable trays and serveware.

Study should include opportunities to fund facilities upgrades through long-term cost savings of reduced disposable purchases and waste hauling fees.

4. Create 'pre-packaged' food waste projects for the Green, Healthy, Smart Challenge Grant.

Ideas could include 'Creating a Zero Waste Plan', 'Doing A Student-Led Waste Audit', or 'Building an On-Site Compost Project.'

5. Create a citywide cafeteria food recovery plan for over-ordered produce.

This should follow on work already underway to upgrade FNS ordering software for better efficiency. Plan should address remaining produce, potentially through school food pantries, or coordinated left-over 'produce take home' days on Thursdays.

6. Conduct a review of waste hauling contract 'best practices' from existing school programs in the Baltimore area and around the country.

Review should include scenarios in which general waste hauling contracts are reduced or eliminated due to food waste and recyclable diversion; contracts that 'bundle' different types of waste hauling services; contracts utilizing different types of bins (front or back loading); contracts that include on-site in-vessel food waste systems.

7. Pilot a food waste collection program at 10-20 BCPS schools

Pilot should take place after styrofoam trays and other non-compostable products have been replaced with reusable or compostable products. Programming should include competitive element, with rewards for best performing schools. Pilot should include preliminary waste audits, and tracking of frequency and volume of trash and recycling pick-ups, in addition to food waste.

8. Create a resource guide for schools wishing to begin food waste programs.

Resource guide should include findings from pilot program and list of best practices for cafeteria purchasing, waste hauling contracts, communications, staff and teacher training. Roll-out should include staff to visit schools and offer trainings.

GOAL #2:

CREATE A SUPPORTIVE CULTURE FOR FOOD WASTE REDUCTION AND DIVERSION IN K-12 STUDENTS, FACULTY, AND STAFF

Short-Term Strategies (1-5 years)

1. Introduce garden and compost concepts into life sciences curricula for all grade levels.

Curricula should adhere to Next Generation Science Standards. Could include student-led waste audits, worm composting, integration with Great Kids Farm programming.

2. Survey school faculty, staff, and administration about attitudes towards food waste diversion and re-usable trays. Develop and introduce training programs based on findings.

Survey should include a review of labor union policies and job descriptions for staff to ensure compliance.

3. Implement outreach and awareness campaigns in K-12 schools about food waste reduction and recovery.

Such a program should reach every Baltimore City Public School at least once a year for several years.

4. Create opportunities for students to earn Service Learning Hours through food waste reduction projects.

Opportunities could include 'Compost Captain' roles for students in schools where food waste diversion takes place, volunteering at nearby urban farm composting operations, building composting projects on-site.

Mid-Term Strategies (5-10 years)

1. Support the establishment of school gardens at all BCPS schools, where hands-on gardening and compost curricula can take place.

Assistance should be leveraged from the Maryland Agricultural Extension Master Gardener and Master Composter programs. Programs may be developed to allow students to earn Service Learning Hours for participation.

2. Expand and sustain programs to compensate faculty/staff that maintain school gardens and food waste programs (similar to sports team coaching).

Compensation could be integrated into Achievement Unit program, or have stand-alone funding like sports coaching program.

3. Incorporate sustainable waste management practices into scope-of-work for BCPS facilities staff.