DELAWARE COUNTY
ZERO WASTE PLAN

SEPTEMBER 2025

Credit: DCOS

CONTENTS

ZERO WASTE:
An Aspirational Vision for the Future

Delaware County is committed to becoming a more ***sustainable*** and ***resilient*** community that protects the most vulnerable residents from the impacts of climate change. One method in which the county is seeking to do this is by working towards Zero Waste.

In pursuing this aspiration, Delaware County has adopted the internationally peer-reviewed definition of Zero Waste:

"The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health."[1]

To achieve this goal, Delaware County created a plan which seeks to:

1. Guide the county's transition towards Zero Waste by following the *Zero Waste Hierarchy*, ensuring maximum feasible waste reduction and diversion.

2. Assure the effectiveness of the county's recycling programs and investigate the feasibility of expanded waste diversion programs and services.

3. Conserve resources and protect the public health, safety, and welfare from the short- and long- term impacts of the waste disposal system.

4. Evaluate how Zero Waste solutions can help meet other county goals, such as reducing costs and creating efficiency across programs.

5. Engage with stakeholders throughout the planning and implementation process and complete extensive outreach to gather ideas and support for the plan.

While Zero Waste is an aspirational goal, like zero accidents on the job site and zero defects in manufacturing, the county believes that striving for this target is imperative as current practices and behaviors have lasting impacts on the health and well-being of the residents, communities, and environment of Delaware County.

This plan recognizes that that there are existing constraints within the ***waste stream*** that will prohibit the achievement of a complete elimination of waste; however, it seeks to formally recognize those constraints, question existing practices, and recommend meaningful actions to bring Delaware County closer to a Zero Waste future.

DEVELOPING THE PLAN

To achieve Zero Waste, all members of the Delaware County community will have a role to play. In recognizing this need for community action, it was incredibly important throughout this planning process to get multiple perspectives and feedback from the community. To do this, members of the public had several opportunities to get involved, including:


Credit: DCPD

Listening Sessions

Between February and April 2022, 20 listening sessions were held with service providers, municipalities, ***environmental justice*** organizations, faith-based groups, schools, and universities to better understand their concerns and perceptions of the existing waste system.

These sessions gathered feedback from over 140 community members.

Online Workshops

Three (3) online workshops were presented via Zoom to coincide with the in-person meetings. These workshops provided greater accessibility to content and an additional platform for residents to get involved. These workshops addressed the same topics as the in-person components. Together, nearly 200 stakeholders participated in the workshops.

In-Person Workshops

Between April and June 2022, three (3) public workshops were held across Delaware County to inform members of the public about the progress of the plan and gather feedback regarding guiding principles, the role of the county in the waste stream, implementation of Zero Waste, and more. Sessions were held at the Upper Darby and Norwood Public Libraries and at Chester City Hall.

Advisory Committee*

Three (3) main advisory boards served to inform the direction of the plan. This included the Delaware County Sustainability Commission, the Solid Waste Advisory Committee, and the Sustainability Plan Zero Waste Subcommittee. These groups provided valuable feedback on a more consistent basis in between listening sessions and workshops.

*See listing of Advisory Committee members on page 64.

In total, over 400 community members participated and provided feedback to inform this plan. As such, the subsequent sections of the plan reflect the ideas, feedback, and concerns shared by the community throughout this process.

REFLECTING SHARED VALUES

To serve as a foundation for the plan, guiding principles were developed to reflect the values of the community. Guiding principles were drafted by the Advisory Committee and refined through the public workshops. These shared values will continue to guide the implementation of policies, programs, and infrastructure that support a ***sustainable waste management*** system in Delaware County.

1. **Centering on Environmental Justice** by keeping pollution out of the county's most vulnerable communities.

2. **Protecting public health and the environment** by reducing discharges to air, water, & land.

3. **Reducing waste** by enacting policies, providing technical assistance and education, and developing partnerships with municipalities, businesses, residents, and institutions.

4. **Fostering a culture of sustainability** through education and programs that reinforce the concept of sustainable waste management and make it easier to take actions that follow the Zero Waste Hierarchy.

5. **Strengthening green jobs in the local economy** by supporting existing local sustainable businesses, attracting new ones, and spurring innovation.

6. **Improving transparency, communication, and accountability between all parties** - as it relates to actions, roles, impacts, and costs.

7. **Supporting municipalities** by providing resources and services.

8. **Holding producers of waste responsible** by identifying problem products and materials and supporting policies to address them.

9. **Using science and data** to guide decision-making.

10. **Equitably funding programs and infrastructure** by identifying appropriate revenue sources.

PLAN ACTIONS

Based on expert advice and community feedback, the plan incorporates 17 key initiatives to transition the county to a more sustainable waste management system. Initiatives were broken into four (4) main categories:

Policy

Shifting Culture

Curbing Waste

Building Better Systems - Infrastructure

This break-down not only assists the county in better understanding the type of work required to implement solutions, but also assists municipalities, community groups, and residents to identify actions within their level of control.

In addition to categorization, specific actions were identified to support each initiative. Actions are labeled as short-term, mid-term, or long-term.

This designation reflects how resource intensive the action is and a rough estimate on how much time will be required to implement. It is worth noting that this is not a perfect system, as the availability of grant funds, unforeseen challenges, or other external factors can also impact how long a project will take to implement. For example, product policies, such as plastic bag bans, are labeled as short-term because there are several existing models which are transferrable to Delaware County allowing for low-effort adoption. On the contrary, infrastructure upgrades, such as the construction of a material recovery facility, are listed as long-term actions as they would require several million dollars for construction and years of market analysis and relationship building for selling materials, ultimately transforming how the existing waste stream operates.

Collectively, the initiatives within this plan have the potential to more than double the county's current waste ***diversion rate***, if implemented in totality. This plan provides the county with proven actions for moving toward its goal of Zero Waste, while also providing adaptability in our changing world.

In embarking on this journey toward Zero Waste, Delaware County will need to change not only the way it looks and thinks about waste, but also the culture around waste. To make a change of this size, the county has recognized that it will need to look at its existing practices and behaviors through a new lens.

THE ZERO WASTE HIERARCHY

To do this, the county leaned on the Zero Waste International Alliance's Zero Waste Hierarchy (the Hierarchy).[2] The Hierarchy is a decision-making tool which emphasizes the highest and best use of materials before considering alternative options. The components of the Hierarchy are:

Rethink/Redesign –
Design and purchase products/materials that are reused, recycled, sustainably-harvested, or renewable. Materials are non-toxic, durable, repairable, reusable, fully recyclable or compostable, and easily disassembled to allow them to stay in use in perpetuity.

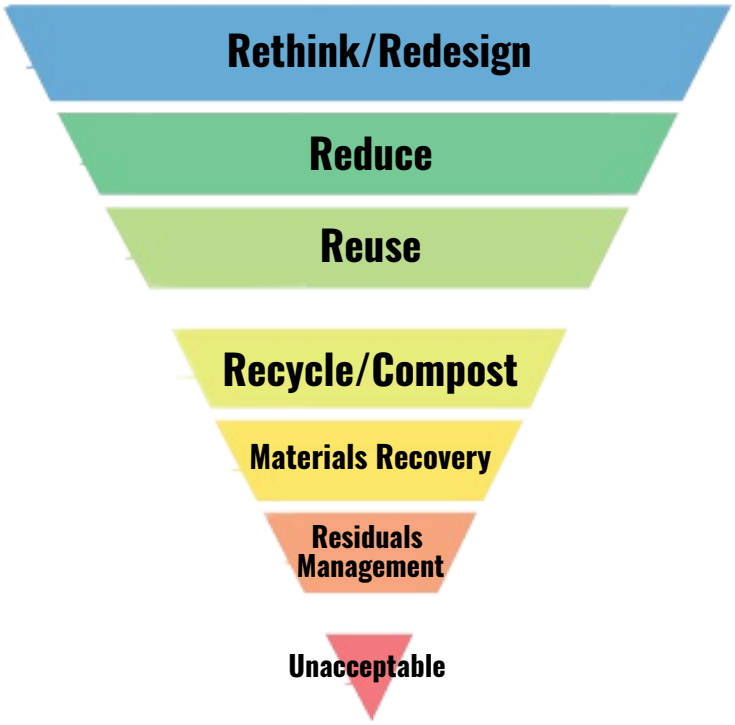
Reduce – Minimize quantity and toxicity of materials used.

Reuse – Maximize reuse of materials and products.

Recycle/Compost –
Support and expand systems to keep materials in their original production loop and to protect the full usefulness of the materials.

Materials Recovery –
After extensive source separation through the methods above, recover additional materials from mixed discards for additional salvage.

The Zero Waste Hierarchy



Residuals Management –
Handling the remaining discards that were wasted in a way that does not threaten the environment or human health. Consideration of biologically stabilized organic residuals through anaerobic digestion prior to landfilling in order to reduce volume and weight in transportation, and to minimize landfill gas formation and odors.

Unacceptable (Last Resort)–
Incineration and other "waste-to-energy" or "waste-to-fuels" methods.

In using the Hierarchy, the county can consider good, better, and best solutions for implementation. Though true zero may not be attainable in today's climate, the Hierarchy will allow the county to continue pushing forward with meaningful progress toward this vision.

It is worth noting that there are some challenges in using this tool. For example, under the Zero Waste Hierarchy methodology, incineration (also known as "waste-to-energy") is considered unacceptable for managing ***municipal solid waste***, which contrasts with some existing state laws and local practices.

For example, the U.S. Environmental Protection Agency (US EPA) has a Waste Management Hierarchy[3] (an alternative to the Zero Waste Hierarchy), in which "Energy Recovery", referring to incineration, is placed above treatment and disposal (landfilling). While this determination is currently under review based on the latest available data and information from the US EPA, it contrasts core Zero Waste principles. Additionally, local waste management practices currently direct most waste to the incinerator in the City of Chester.

When considering these differences at the beginning of the planning process, the Zero Waste Advisory Committee made the decision to follow the Zero Waste Hierarchy, in an effort to achieve a more sustainable waste management system, despite some current practices not falling in alignment with the tool.

Credit: DCOS

THE CASE FOR ZERO WASTE

While Zero Waste may seem like the new buzzword or the latest political fad, many in Delaware County have been fighting for a more sustainable waste management system for decades. While the catalyst which drives change in each community may differ, in Delaware County, it boils down to the idea of improving the health, safety, and welfare for the community.

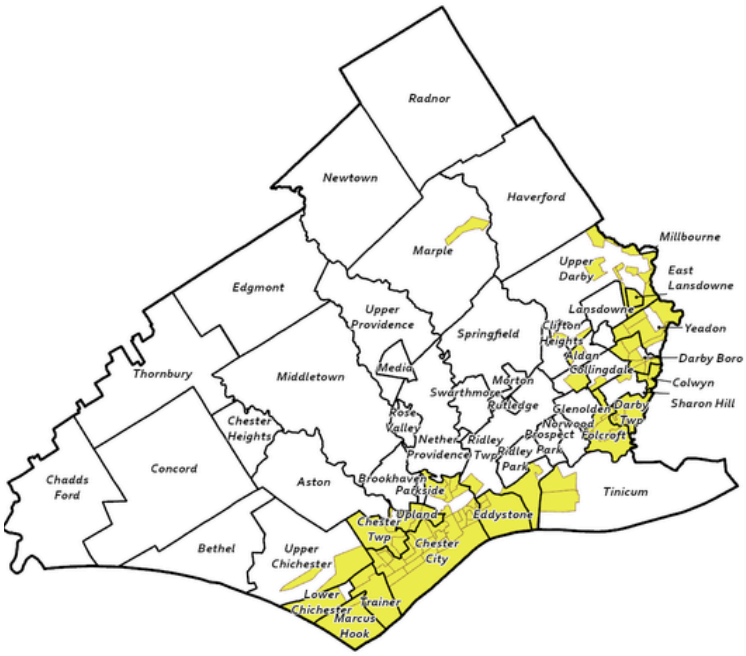
Environmental Justice

Approximately 94,157 residents of Delaware County live across 46 census tracts which are considered ***environmental justice*** (EJ) communities.[4] These communities have been historically marginalized or overburdened by pollution and underinvestment, often caused by ***environmental racism***.

While significant efforts have been made to address the mistakes of the past, many residents continue to be burdened by legacy decisions and infrastructure perpetuating significant challenges. For example, the poverty rate across Delaware County's EJ communities is 45%, over double that of the national average (11.6%) and that of Delaware County as a whole (10.8%).[5]

Legacy infrastructure projects and an oversaturation of industrial facilities contribute to negative health outcomes in many of Delaware County's EJ communities. Despite major air pollution reductions over the years, in 2024, the American Lung Association "State of the Air" report gave Delaware County a failing grade for annual particle pollution.[6]

Delaware County Environmental Justice Areas, 2024



Credit: Delaware County Office of Data & Mapping Innovation

The study estimated that nearly 60,000 Delaware County residents are suffering with youth and adult asthma, 32,849 for COPD, and 45,574 for cardiovascular disease related to poor air quality.[7] Asthma rates in Delaware County EJ communities are in the 77th percentile, compared to the 27th percentile of neighboring non-EJ communities. Some census tracts in the City of Chester have rates in the 98th percentile, meaning only 2% of communities in the United States have worse rates.[8] These outcomes are especially troubling these hazards are more likely to impact children, which make up 29% of the population in the City of Chester.[9]

The PA Department of Environmental Protection (PA DEP) EnviroScreen[10] tool further confirms these trends, marking communities in the I-95 riverfront corridor of the county between the 80th and 100th percentiles for Environmental Exposures, ***Particulate Matter*** 2.5, Toxic Air Emissions, and Diesel Particulate Matter.

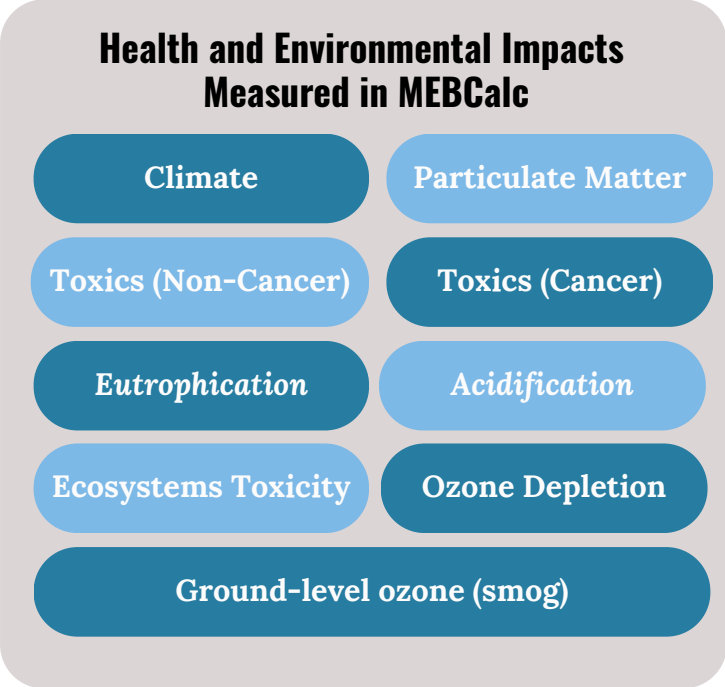
The City of Chester also falls within the 90th percentile for ozone, meaning it is in the top 10% of the state for ground-level ozone exposures, which are known to cause respiratory distress among other health problems.[11]

Two of the largest contributors of poor air quality in these communities include increased truck traffic and heavy industrial uses. Of particular concern is the nation's largest incinerator, the ***Reworld*** (formerly known as Covanta) incinerator located in the City of Chester. Reworld burns approximately 1.2 million tons of waste each year.[12] This facility is often considered ground zero for the environmental justice movement in Pennsylvania and has faced objections from different environmental justice groups since the early 1990s.[13] To this day, residents continue to be concerned with the facility as it brings waste from all over the Mid-Atlantic region into the city, impacting air quality, health outcomes, and quality of life for residents.

Life Cycle Analysis

In response to community concerns over incineration in the City of Chester, Delaware County Council sought additional expertise to consider impacts of potential alternatives, such as landfilling the county's waste. With coordination from the Zero Waste Associates, Dr. Jeffrey Morris of Sound Resource Management Group, Inc. was enlisted to perform a ***life cycle analysis (LCA)*** comparing different methods of waste disposal for Delaware County.[14] A life cycle analysis is a systematic analysis of environmental impact over the course of the entire life cycle of a product, materials, or process.

To complete this study, Dr. Morris utilized the MEBCalc (Measuring Environmental Benefits Calculator) model to consider the environmental economical values (EEV) for nine (9) different human and environmental health impacts. These include the following:



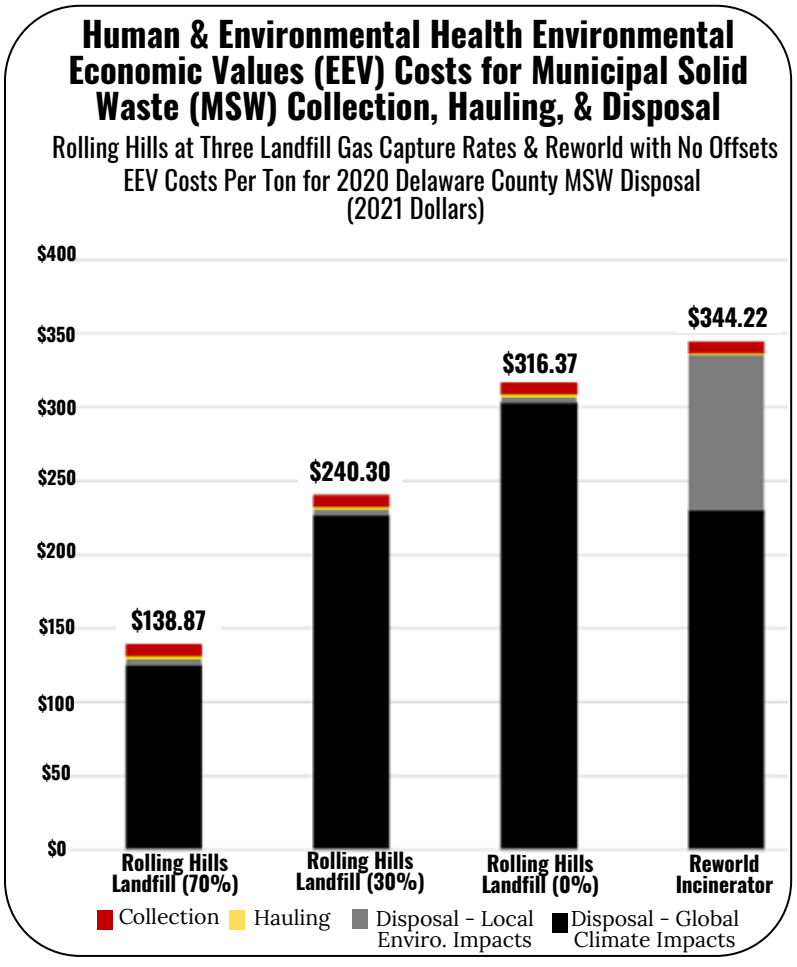
In generating EEV, impacts from different forms of waste disposal, which are not typically considered, such as global climate impacts or local human health impacts, are converted to dollar values to allow for standardized side-by-side comparisons of the processes. This monetization of impacts allows viewers to understand the full "cost" of a process. For example, health and environmental impacts are typically externalized, meaning that they are not paid when purchasing the product or service, but are instead paid through one's medical bills, reduced quality of life, or through a degraded environment. Using this methodology, the study considers impacts of the current process of incinerating trash at the

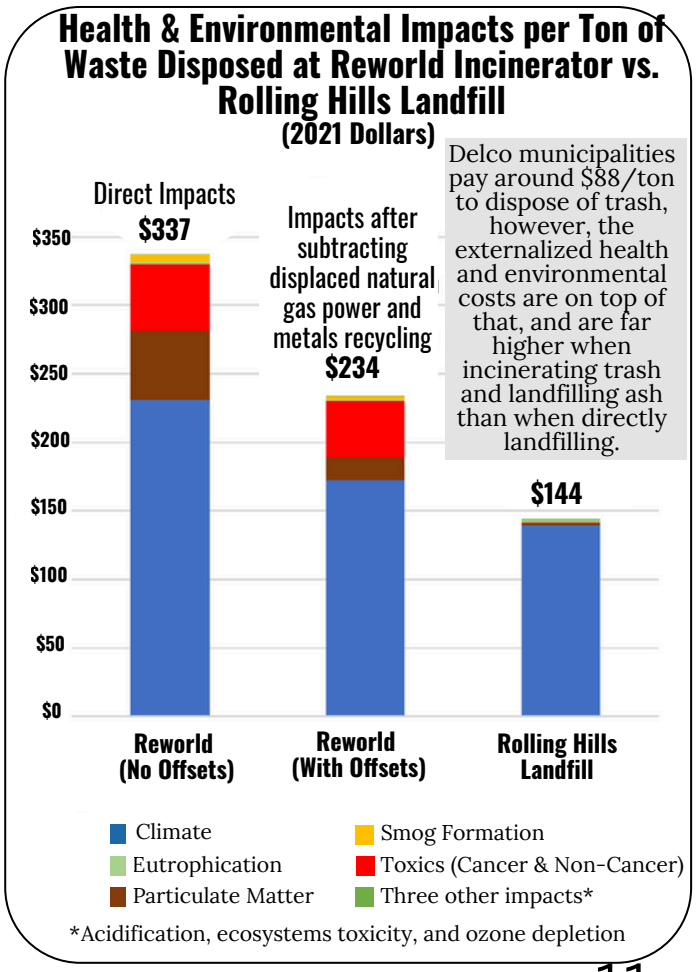
Reworld facility in the City of Chester and landfilling the incinerator ash at the Delaware County-owned Rolling Hills Landfill in Berks County with a proposed alternative of sending unburned trash directly to the Rolling Hills Landfill. Additionally, the study evaluated the baseline waste disposal process from 2020 to a scenario where Zero Waste actions (later identified in this plan) are implemented, thus significantly reducing the amount of material the county would be disposing of.

The study ultimately found incineration in the City of Chester has $193 more human health and environmental costs per ton of waste disposed than that of directly landfilling at the Rolling Hills Landfill. When looking at human health costs alone, incineration was 23 times worse than landfilling.

The study also found that transportation impacts of landfilling in Berks County, rather than using the in-county incinerator (yellow bars on Human & Environmental Health chart), were insignificant compared to other health and environmental impacts, and did not, therefore, justify choosing local incineration.

Lastly, the study concluded that if the county were to achieve true Zero Waste, with diversion of 522,126 tons of waste to recycling and composting per year (with zero landfilling or incineration), it would avoid approximately 703,000 tons of ***carbon dioxide equivalents*** (CO_2e). According to the EPA, this avoidance of emissions would have the same climate benefit of removing 142,000 gasoline-powered passenger vehicles from the road each year in Delaware County.[15]





The Triple Bottom Line

In addition to localized interest in moving away from traditional municipal solid waste management, many cities, businesses, and communities around the world have committed to moving toward a Zero Waste future. In business, change is often driven by the bottom line (profit). When applying sustainable practices, it is no different; however, a ***triple bottom line***, including people, planet, *and* profit is typically utilized. When moving toward a more sustainable waste management system for Delaware County these factors were also considered.

Credit: Illinois State University

People, or Societal, Impacts

The traditional waste system, along with other industry, has had negative consequences on the health and welfare of residents in Delaware County due to increased incidence of toxics exposures and poor air quality. Moving toward Zero Waste can reverse many of these trends and improve quality of life for Delaware County's communities. Many benefits of switching to a Zero Waste system include:

1. **Improved air quality**
   (The Southeastern PA region is current considered a nonattainment area for meeting EPA National Ambient Air Quality Standards for ozone.)[16]
2. **Reduced exposure to toxins**
   by minimizing exposure to harmful chemicals.
3. **Reduced levels of stress, anxiety, and crime.**[17]
4. **Increased understanding of oneself and one's role within a larger system.**

Planet, or Environmental, Impacts

When considering our natural environment, existing waste practices also leave significant impact. Executive Director of the United Nations Environmental Program, Inger Anderson, recognized that "nature doesn't waste, and nor should we."[18] In switching to a Zero Waste system, our natural environment also receives tremendous benefits, such as:

1. **Reduced greenhouse gas emissions**
   (2% of GHG Emissions in Pennsylvania are associated with the waste system.)[19]
2. **Protecting and restoring habitat, biodiversity, and open space**
   by the reduced need for virgin materials.
3. **Reduced risk to wildlife**
   of entanglement, ingestion, or disruption from toxins from trash.[20]
4. **Improved soil health**
   from reduced pollution from plastics, leachate, and other byproducts of the traditional waste system.[21]

Profit, or Economic Impacts

Adoption of sustainable waste management practices not only looks at the output of physical "stuff", but it also promotes efficiency and reductions of waste in the forms of time, people-power, and processes. In aiming for Zero Waste, there are often financial benefits, including:

1. **Increased support of local economies,** thus creating local jobs and keeping wealth within the community.

2. **Reduced energy and fuel costs** associated with burning, transporting, or collecting waste.

3. **Increased job availability** in recycling and composting operations as opposed to incineration or landfilling.
   (Studies have found recycling creates an average of **9x more jobs**[22] than trash disposal, and composting creates at *least twice as many jobs as landfills and four (4) times* as many jobs as incineration facilities).[23]

4. **Combatting increasing tipping fees** from landfilling and incineration.
   (Delaware County communities spent more than $35 million in tipping fees for municipal solid waste in 2022.)[24]

Conclusion

The (triple) bottom line is that Zero Waste systems create efficiency, reduce costs, and provide many positive impacts to the community that are lacking in traditional solid waste management systems. In evaluating and understanding these impacts, Delaware County has expressed interest in moving away from incineration.

While the county does not have ownership or authority over the privately-owned incinerator in the City of Chester, it does have the ability to make alternative decisions for its waste processing. The county's existing contract with Reworld runs through the end of 2027; however, existing infrastructure is currently insufficient for shifting fully to landfilling or other meaningful alternatives within this timeframe. As such, the Delaware County Solid Waste Authority (DCSWA) is actively working on several multi-million-dollar capital infrastructure projects to allow the county to have meaningful alternatives in the future. Some of these projects include redesigning the county's ***transfer stations***, which are further discussed in the Existing Conditions Section of this plan, expanding the Delaware County-owned Rolling Hills Landfill in Berks County and putting out a Request for Proposals (RFP) for additional landfill space. These projects will assist in providing meaningful alternatives to the existing waste stream, which sends waste to the City of Chester. This change will also promote positive impacts for the people, planet, and profit in Delaware County.

Worker at PAR Recycling in Philadelphia Dismantles Electronics for Recycling
Credit: DCOS

THE DELCO WASTE STREAM

The Delaware County waste stream, or path that waste takes from its creation to its final disposal, is comprised of several different categories, including municipal solid waste (MSW), ***construction and demolition waste***, ***special handling waste***, and ***residual waste***. Of these, municipal solid waste is the largest stream, contributing over 429,319 tons, in 2022, or approximately 4.08 pounds per resident per day.[25] Delaware County's municipal solid waste incorporates trash from over the 229,208 households and 20,738 establishments, including commercial (offices, retail stores, restaurants, industrial lunchrooms, and offices, etc.), institutional sources (municipal buildings, libraries, schools, etc.), and community events.[26] As the largest component of the Delaware County waste stream, municipal solid waste will be the focus of this plan.

Waste Collection

Delaware County is comprised of 49 municipalities, classified as either Boroughs, Townships (First- or Second-Class), or a City (Third-Class), based upon their population and governance structure. Each of these municipalities is responsible for overseeing trash and recycling for their residents and setting local rules for collection. Under this authority, municipalities collect trash utilizing the following methods:

Municipal Collection – Operated with municipal staff and equipment owned by the municipality.

Contracted Collection – The municipality contracts with a hauler that provides services to the residents.

Subscription Collection – The municipality delegates the responsibility of selecting a hauler to the residents, in which they choose their own hauler to contract with directly.

To see which method of collection each municipality uses, see map on page 16.

Under this framework, service offerings and prices vary significantly. Twenty-two (22) municipalities have trash collection twice per week, three (3) have twice-per-week collection in the summer only, and fourteen (14) have trash collection once per week. Residents from the remaining ten (10) municipalities, with subscription services, may select their desired collection schedules.[27] Residents are often bound to the collection method designated by the municipality, as the Delaware County Solid Waste Authority does not currently accept "self-hauled" waste from residents.

Businesses, institutions, and community events must also abide by the municipal rules for waste collection; however, most municipalities designate the responsibility of collection to the business/institution by requiring subscription collection services. In some cases, multi-family housing units or private developments also operate in this way.

Movement Through the Delaware County Waste Stream

Municipal Solid Waste

2/3 of waste is transported by hauler to Transfer Station.

Approximately ⅓ of Delaware County Communities haul waste directly to Reworld as it is closer than a Transfer Station. Municipalities receive a discount for taking it directly.

Transfer Stations

Transfer Station #1 (Chester Township) &
Transfer Station #3 (Marple Township)

DCSWA DELAWARE COUNTY SOLID WASTE AUTHORITY

Waste from several communities is consolidated for transfer. Typically three (3) trash trucks fill one trailer.

Reworld™

Waste Incinerator

(Chester City, Delaware County))

Waste is incinerated at the privately-owned Reworld facility in the City of Chester. Waste primarily comes to this facility from Delaware County, Philadelphia, New York, and New Jersey.

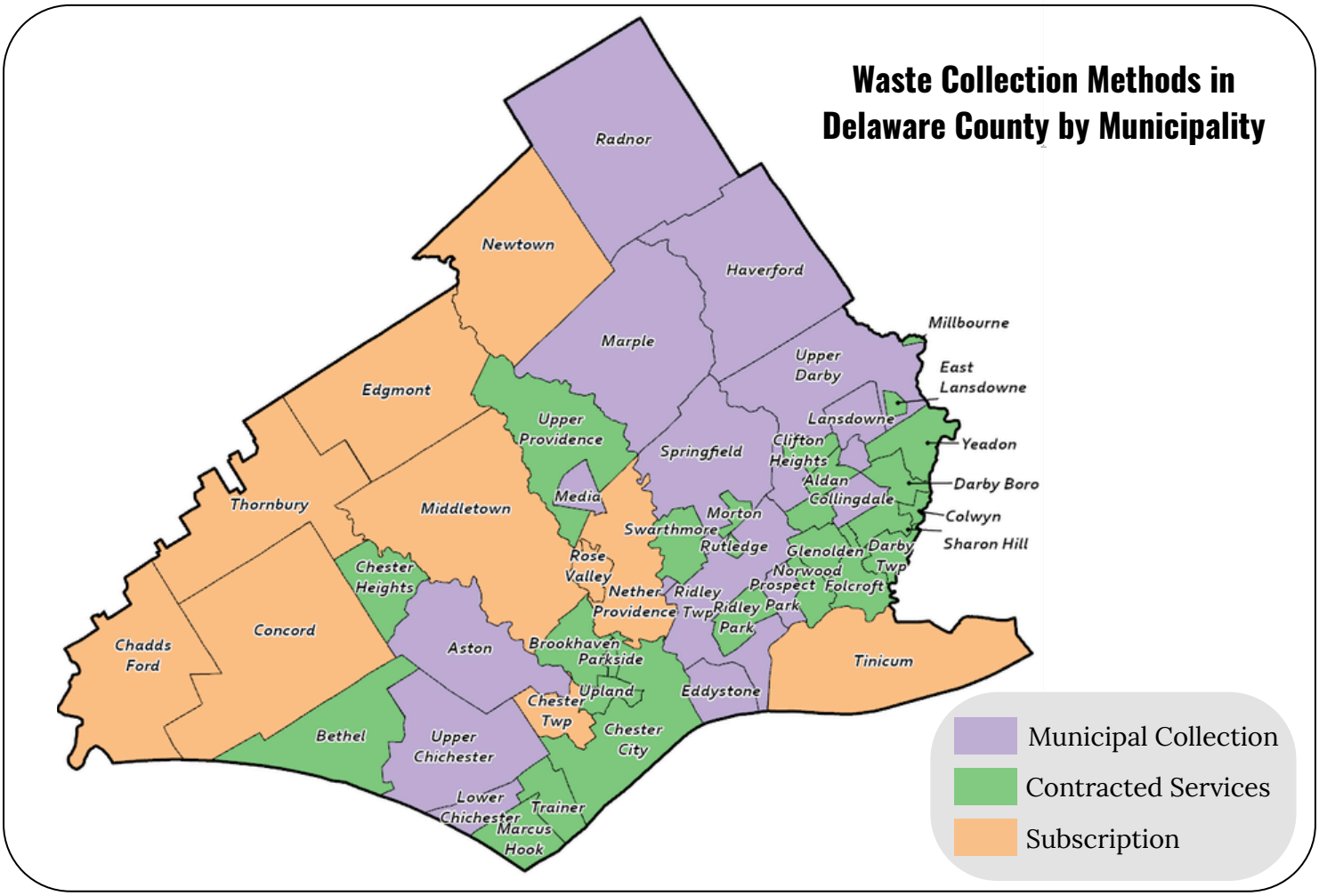
Approximately 15% of Delaware County waste is sent directly to the Rolling Hills Landfill.

Rolling Hills Landfill

(Earl Township, Berks County)

DCSWA DELAWARE COUNTY SOLID WASTE AUTHORITY

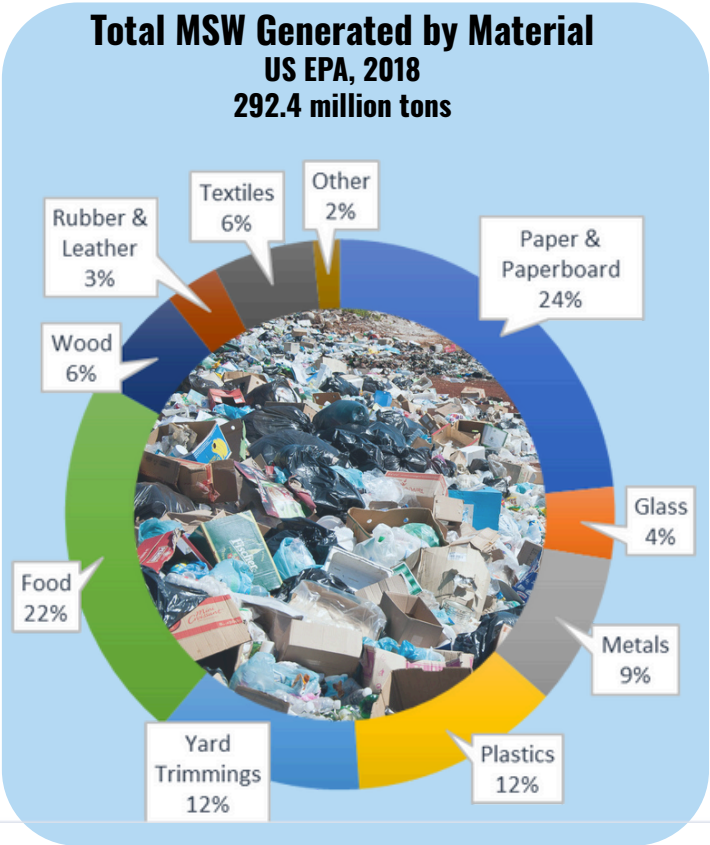
Ash from incineration is transported to the Rolling Hills Landfill in Berks County, PA to complete the process. Ash is about 25% of the weight of the original materials.



What's in a Name... Or a Waste Stream?

In 2018, the United States Environmental Protection Agency (US EPA) commissioned a nation-wide ***waste characterization study*** to evaluate the changes in the waste and recycling streams since the 1960s.[28] The study, which was performed by the Franklin Associates of Kansas focused on the material composition of the waste stream across the United States.

Municipal waste samples were collected from residential, institutional, commercial, and industrial sources. While waste composition may vary slightly depending on region, this information is considered the most accurate to date.

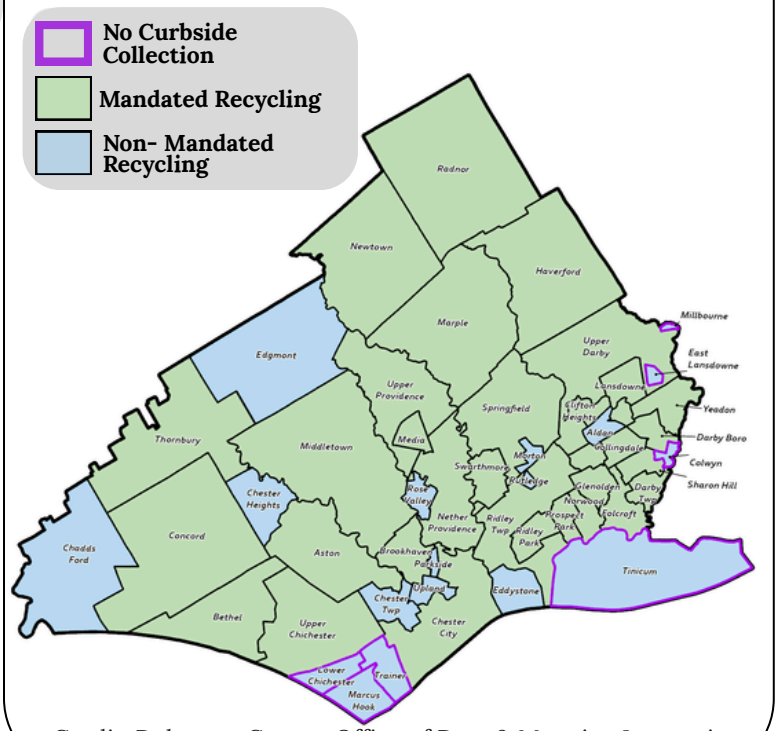


RECYCLING

Much like trash collection, recycling services also vary greatly across the county. Under ***Pennsylvania Act 101 (1988)***, also known as the Municipal Waste Planning, Recycling, and Waste Reduction Act,[29] only municipalities of a certain population size are required to recycle. This includes municipalities with more than 10,000 residents or municipalities with more than 5,000 people with a population density of more than 300 residents per square mile. As Pennsylvania's second most densely populated county, behind Philadelphia, 31 of 49 communities (63%) are legally required to recycle in Delaware County. Of the eighteen (18) non-mandated communities nine (9) have adopted voluntary recycling requirements or offer curbside programs. The other nine (9) have no provisions.[30] Most municipalities employ the same method of collection for waste (municipal, contracted, or subscription), as they do recycling; however, that is not the case in all municipalities. For example, Media Borough has municipal collection for trash but contracts with B & L Disposal for recyclables).

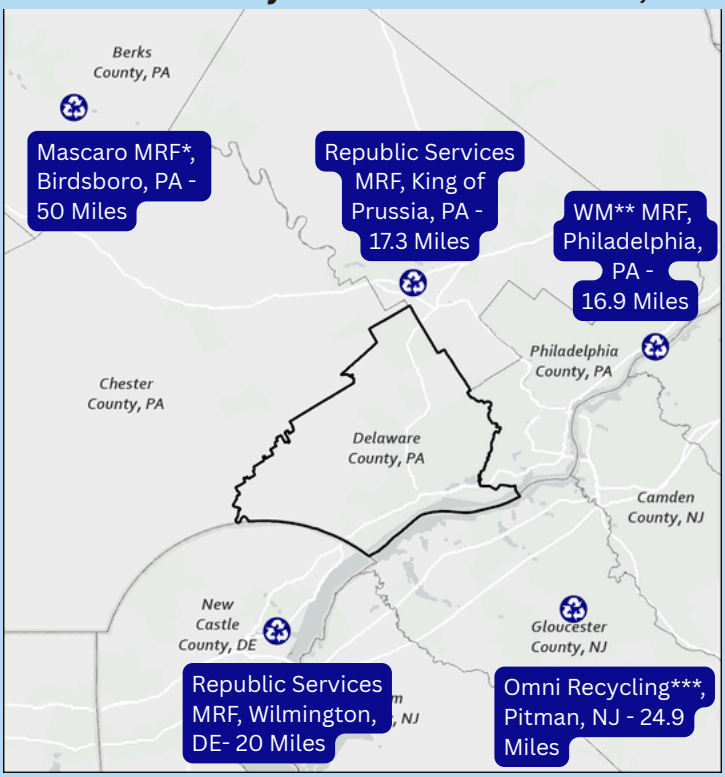
Recycling is typically collected either weekly or every other week; and the predominant form of collection is through "***single stream***", where all recyclable materials are mixed in a single bin for collection. Recycling rules and materials collected vary across the 49 municipalities, largely dependent upon which material recovery facility (MRF) recyclables are taken to for processing. In Delaware County, when recycling leaves the curb, it does not go to a transfer station, but directly to one of five (5) material recovery facilities:

PA Act 101 Mandated Recycling Communities



Credit: Delaware County Office of Data & Mapping Innovation

Material Recovery Facilities Servicing Delaware County with Distance to Media, PA



Credit: Delaware County Office of Data & Mapping Innovation

*Transfers at Bridgeport
** Waste Management
*** Transfer from WM Phila.

These facilities may elect to accept different recyclable materials or have different rules (ex. to keep caps on bottles or to take them off), based on their processing equipment, end markets for sale of materials, or other contributing factors. Despite these differences, 105,470 tons of materials were recycled in Delaware County, including yard and food waste, in 2022.[31] This accounts for approximately one (1) pound of recycling per person per day.

Commercial Recycling

Much like residential properties, commercial, municipal, and institutional establishments (including schools, hospitals, government buildings, churches, retailers, offices, non-profits, and others) in Act 101 mandated communities must recycle. Most municipalities in Delaware County require commercial establishments (including businesses, institutions, and large multi-family buildings) to arrange for subscription-based recycling collection, if it is not provided by the municipality. Act 101 requires commercial, institutional, and municipal establishments to recycle high-grade office paper, corrugated paper, aluminum, and leaf waste and submit this information annually to the municipality.

Waste Diversion Rate

The most common method for evaluating the success of recycling is through a diversion rate. Diversion rates are typically expressed as the percentage of materials diverted from disposal in landfills and incinerators. This can be expressed as:

$$\text{Diversion Rate} = \left[\frac{\text{Weight of Diverted Materials (tons)}}{\text{Weight of all Discarded Materials (tons)}} \times 100\right]$$

Each year, the DCSWA conducts an annual survey of municipalities to document diversion and disposal tonnages by the municipality. In 2022, the countywide diversion rate was 19.72%, meaning, approximately 20% of all waste generated in Delaware County was being diverted, through recycling or other methods.[32] In striving for Zero Waste, *Sustain Delco, a Sustainability Plan for Delaware County*, has set an ambitious goal of getting this number up to 50% by 2028.[33] In order to achieve this goal, several challenges within the existing waste stream will need to be addressed.

Bail of aluminum cans in Republic Services Material Recovery Facility, King of Prussia, PA
Credit: DCOS

Organic Recycling - Composting

In addition to trash and recycling collection, the communities across Delaware County host a variety of other offerings with their collection services. For example, nearly three quarters (3/4) of municipalities offer some form of yard trimming collection and/or leaf pick up throughout the year. For most municipalities, this is a seasonal service; however, the collection frequency, rules, and opportunities greatly vary.

For example, Swarthmore Borough offers yard waste collection the first and third Tuesday of every month, as where other communities, like Bethel Township, offer special pick-up days once a season. Yard trimmings and leaves are typically composted at a municipal site or are brought directly to a private facility by the municipality or a designated hauler.

When considering more specialized organics collection, Media Borough is the only municipality which offers regular food scraps collection for composting. Media Borough utilizes municipal hauling to collect food scraps and organics from participating households on a weekly basis. Materials are then delivered to Kitchen Harvest, located at Linvilla Orchards in Middletown Township, for composting. While Media operates the only municipal-run composting collection, there are several privately-owned subscription services that offer food scraps composting within the county, including:

Composting Companies Servicing Delaware County

- **Back to Earth Compost Crew**
- **EZ Compost**
- **Kitchen Harvest, Inc**
- **Mother Compost**
- **Rot Star**

Other Specialized Recycling Services

Other specialty collection services such as bulk collections, electronics waste recycling (e-recycling), and paper shredding, also vary between communities; however, there are several programs at a county-level that work to supplement municipal services for hard-to-recycle items. For example, the Delaware County Parks Department, in partnership with the Pennsylvania Resources Council, hosts annual e-recycling events in county parks. Similarly, DCSWA hosts several household hazardous waste drop off events each year. The Delaware County District Attorney's Office hosts 42 medicine collection drop boxes throughout the county for proper disposal of pharmaceuticals. The Delaware County Office of Sustainability (DCOS) offers Campaign Sign Recycling following each election cycle. Other programs for specialized or hard-to-recycle-items are hosted by private businesses or through subscription services, such as battery recycling (Lowes/Home Depot), toner recycling (Staples), or a whole host of specialty collections through Recycling Services Inc., Rabbit Recycling, or Terracycle to name a few.

CHALLENGES IN THE WASTE STREAM

While there are many successes in reducing the Delaware County Waste Stream, there are also several challenges or deficiencies that contribute to constrained diversion rates. Many of these challenges were identified throughout the public engagement process.

Variability of Services

As noted in previous sections, methods of waste collection and service offerings vary greatly from one municipality to the next in Delaware County. With different collection methods, acceptable items, and rules for proper disposal, residents and businesses have expressed frustration and confusion in the waste system. These feelings are further exacerbated by residents in communities that do not have access to curbside recycling services. Many municipalities have also voiced frustration over the provision of services. Officials have reported that there is a lack of competition when bidding for trash and recycling collection services, making services extremely expensive. With nearly 39% of Delaware County municipalities (19 of 49) having fewer than 2,000 households,[34] a lack of competition can put extreme strain on the provision of waste collection services, and in some cases, this financial strain for basic waste services has led to reduced offerings for waste diversion programs.

Lack of Trust in System

As noted in Environmental Justice section of this plan, there is a lack of trust within the existing waste system, as many community members feel that the use of incineration is causing more harm than good.

In addition to this sentiment, suspensions in recycling services, warnings to throw away recyclables due to possible contamination, and other bad practices during the COVID-19 pandemic have caused doubt for many residents that their materials were being recycled. Nearly five (5) years later, this sense of doubt still lingers in many communities, leaving residents with the feeling that it is not "worth it" to separate materials for recycling.

These doubts and areas of concern within Delaware County have led to mistrust in the existing waste stream and have hindered larger-scale community adoption of recycling and buy-in to the current waste process.

Degraded Infrastructure and Rising Costs

In response to community concerns, Delaware County Council and the Delaware County Solid Waste Authority have been seeking alternatives to incineration, in addition to opportunities for enhanced services over the past several years; however, the county's infrastructure is not currently adequate for making an over-night switch. First, the Delaware County Transfer Stations, which were originally designed as municipal incinerators, have not had significant upgrades since their creation in the 1950s. While DCSWA has made these sites work as transfer points, the potential increase in waste associated with transporting tonnage directly to the Rolling Hills Landfill, would require the sites to be redesigned.

As of 2024, DCSWA is actively working to redesign both transfer stations in Chester and Marple Townships; however, preliminary designs are reporting construction costs of more than $45 million for each site and there has not yet been assurance from either municipality that permits for upgrades will be forthcoming.

Transfer Station #1 - Incinerator Road, Chester Twp.
Credit - Google Maps

Transfer Station #3 - Sussex Blvd, Marple Twp
Credit - Google Maps

In addition to necessary transfer station upgrades, the Rolling Hills Landfill is currently undergoing an expansion to accommodate existing capacity needs. This project is also extremely resource intensive, costing around $42 million to ensure an additional 4 - 5 years of capacity. Additional phases of expansion are also planned for the near future to ensure additional capacity.

When considering diversion resources in the county, necessary infrastructure for large-scale implementation is also lacking. For example, service centers allowing for residents to self-haul waste are currently limited and cost a significant fee.

Similarly, self-haul recycling facilities do not currently exist within the county, except for the twenty (20) dumpsters,[35] placed by the DCSWA for the community.

Infrastructure for organics composting is also insufficient. The PA DEP requires special permitting for commercial food scraps processing, which is often very challenging to obtain. As such, only one privately-owned and operated food scraps processing facility is located in Delaware County (Kitchen Harvest at Linvilla Orchards, Middletown Township).

Siting and creating a secondary site for large-scale organics composting would not only require specialized permitting, but it would also require considerable capital and community buy-in for implementation.

Large-scale infrastructure needs challenge efficient implementation of enhanced diversion services for the community.

Looking Toward the Future

Despite many challenges in the existing waste stream in Delaware County, there is a growing interest in moving to a more sustainable waste management system. Increased community support, enhanced agency collaboration, and improved data collection and monitoring have also garnered a foundation for moving toward a Zero Waste future. In the subsequent sections of the plan, additional actions and strategies are identified for the county and community for taking advantage of mounting enthusiasm to continue moving the needle forward.

ROADMAP TO ZERO WASTE

Throughout the Zero Waste planning process, several key initiatives were identified by municipal and county staff, workshop participants, and stakeholders. These initiatives represent the key opportunities for waste reduction and diversion throughout the county. Each of these initiatives have been further broken down into four (4) categories, to assist in implementation and general understanding:

Policy
County policies or municipal ordinances to codify new rules to support Zero Waste initiatives.

Shifting Culture
Actions to shift the existing throwaway culture to Zero Waste.

Curbing Waste
Actions which change how we look at existing curbside collection programs and seek to increase efficiency and reduce unnecessary wasting.

Building Better Systems – Infrastructure
Actions which seek to introduce or expand diversion and recycling services through new facilities or increased processing capacity.

Initiatives are further broken down into specific "Actions for Implementation" to define steps to move toward Zero Waste. Each action has been assigned a time frame for implementation:

- **Short-term**
Relatively easy to implement in the near-term (1-4 years), with minimal resources required.

- **Mid-term**
Requires more investment of staff time or other resources (5-9 years).

- **Long-term**
Will take more time for research, investment, and in some cases, systematic change. (10 +years)

These designations are based upon the perceived ease of implementation, existing resources, funding, and staffing capacity. Additional information for each action, including lead and partner agencies, based upon which organization has authority to make change in a particular area, and time frames, can be found in the implementation matrix beginning on page 49 at the end of the plan.

These initiatives and actions reflect needed change to transition Delaware County's municipal solid waste management system to a Zero Waste System.

POLICY ACTIONS

Policies can help ensure that certain practices become standard throughout the community. This section focuses on the implementation of county policies or municipal ordinances to codify new rules to support Zero Waste initiatives. At this time, most policy-level implementation within the county will need to occur at a municipal level, as the extent of county's ability to adopt Zero Waste legislation is ambiguous; however, the county can play a supporting role in this implementation by supporting municipalities through model ordinances, coordination, or other support. While there is not a one-size-fits-all policy which will work for all 49 municipalities, the initiatives described below have had successful implementation around the country, and with some early-adopters in Delaware County.

1. Product Policies

Bans, fees, or take-back requirements for single-use products, such as plastic bags and plastic food ware.

This initiative focuses on the adoption of local ordinances which seek to reduce the use of specific materials within the community or impose special requirements for diversion. For example, several Delaware County municipalities have proposed or recently implemented plastic bag bans and restrictive packaging ordinances, including Haverford Township, Media Borough, and Swarthmore Borough.

Actions for Implementation

Short-Term (1-4 years)
Determine legal capacity for county-wide ordinance adoption for increased waste reduction and diversion.
Develop policy for county facilities and events addressing single-use plastics, shopping bags, and other product policies.
Draft model municipal ordinances addressing single-use plastics, plastic shopping bags and other product policies and support municipalities through adoption.
Prepare county green procurement policy restricting single-use plastics and increasing recycled content purchases.
Provide ordinance reviews and recommendations for municipalities regarding reuse, recycling, illegal dumping, composting, and other policies which promote Zero Waste.

Mid-Term (5-9 years)
Advocate for state legislation to increase recycling requirements, provide better tracking of waste and recyclables, and prohibit the use of glass for ***alternative daily cover*** at landfills.
Provide opportunities for municipalities and school districts to join into cooperative purchasing agreements with the county's green procurements.

2. Construction & Demolition Recycling Requirements

Photo by maks_d on Unsplash

Local rules can create incentives and encourage diversion of construction and demolition waste, which can significantly reduce a community's discards. Requirements may apply to construction, renovation, and/or demolition projects, as well as disaster debris.

For example, some communities require ***deconstruction***, which is defined as the selective dismantling of building components, specifically for reuse, repurposing, and recycling. Sometimes called "construction in reverse" or "unbuilding,"

deconstruction is a methodical approach which requires materials to be sorted for reuse, recycling, or composting, as where traditional demolition includes the clearing of a building or site in the most expedient means.

Most construction and demolition policies include recycling requirements for construction and demolition debris, specifications on types and quantities of materials that must be recovered, reporting requirements, and compliance tools including fees and penalties for non-compliance.

Actions for Implementation

Short-Term (1-4 years)
Evaluate existing ordinances to better understand ability for ***adaptive reuse*** and demolition requirements.
Develop a model ordinance with encourages adaptive reuse of buildings and structures.

Mid-term (5-9 years)
Develop a model deconstruction ordinance, which requires the dismantling, salvaging, and recycling of materials from buildings, opposed to simply demolishing them.
Develop a model ordinance which encourages and/or requires the use of recovered building materials in new construction and renovations and identifies/creates incentives for adoption.
Where deconstruction is not possible, develop model ordinance requiring recycling for construction and demolition materials.
Support expansion of construction and demolition debris processing and reuse centers, and/or develop plans for the creation of a county-owned reuse innovation center for processing used building materials.

3. Universal Collection

Develop policies which require recycling and composting for all generators, including single-family, multi-family, commercial, and schools/institutions, and supplements the existing Act 101 requirements.

Universal Collection programs make diversion accessible to all by providing efficient collection of compostable and recyclable materials, separate from trash, as a base level of service. Universal Collection programs address barriers to participation, such as cost, thereby making diversion as convenient as wasting.

As collection is organized by each community in Delaware County, developing a model ordinance will provide a way for all communities to phase in new recycling and composting services when their current arrangements end.

Photos from Upsplash and DCOS

By developing a uniform system county-wide, there will be greater efficiency for the collection programs and an increased opportunity for coordinated messaging to help minimize contamination and confusion and to encourage the public to recycle right.

This kind of program could be phased in over time, with the county setting a target of the number of minimum households needed to pursue this most efficiently (e.g. 50,000). Once enough communities agree to participate, opportunities for joint contracts and collaboration for increased services and economy of scale would become more achievable.

Actions for Implementation

Short-Term (1-4 years)
Survey existing recycling and composting facilities to establish a standardized list of acceptable materials throughout the county and create educational materials.
Collaborate with municipalities to develop universal collection ordinance, requiring all generators to have waste, recycling, and composting services.
Support the creation of pilot programs which emphasize shared service contracts between jurisdictions.
Host a roundtable for discussing challenges and opportunities with existing waste stream.
Ensure that municipalities utilize state grants and research alternative funding for Zero Waste policies, programs, and infrastructure (e.g., Act 101 Section 904 Recycling Performance Grants).[36]
Increase accessibility to county reuse, recycling, and composting programs so that all residents can participate.

Mid-term (5-9 years)
Adopt and implement a Universal Collection Policy for county buildings and facilities.
Adopt a county ***flow control*** ordinance directing municipal waste, recyclables, and organics to public facilities.
Support municipal collaboration and shared services for waste, recycling and organics collection, street sweeping and other services.
Continue supporting implementation of model ordinances and joint-service contacts throughout the county.

SHIFTING CULTURE

Zero Waste Chef Anne Marie Bonneau famously said, “We don’t need a handful of people doing Zero Waste perfectly. We need millions of people doing it imperfectly.”[37] Bonneau recognizes that collective action is required to move toward Zero Waste. While policy initiatives impose actions from the top down, adopting Zero Waste as a shared value and integrating it into everyday life will be needed to shift the norm. Actions in this section promote change by adjusting small habits to increase diversion and build trust in a Zero Waste system. Collaboration, education, and awareness are fundamental building blocks for change.

4. Lead by Example

Model waste reduction, recycling, and composting at county and municipal buildings, parks, and events.

While the powers the county possesses to impose Zero Waste practices across the 49 municipalities are ambiguous, the county can serve as a thought and practice leader, promoting positive change. In implementing best practices in waste reduction, reuse, recycling, and composting, the county will lead by example.

Actions for Implementation

Short-term (1-4 years)
Transition to paperless forms and files in county facilities.
Develop and implement enhanced waste reduction, recycling, and composting systems at county buildings, parks, and events.
Provide technical assistance to municipalities and community organizations based on lessons learned.
Provide education to Delaware County staff regarding Zero Waste best practices.
Integrate recycling and Zero Waste education into employee on-boarding process.
Provide training to custodial contractors regarding county recycling practices.
Modify waste collection contracts for county facilities to include measurement and reporting of waste reduction, recycling, and composting.
Reinvigorate the Delaware County Green Team to further empower and engage county staff to implement Zero Waste initiatives.

Mid-term (5-9 years)
Provide reuse closet/supply swap in county buildings.
Research the end use markets for recyclables generated in the county to ensure proper handling and diversion.
Ensure proper recycling and diversion receptacles are in all county parks and facilities.

5. Outreach, Education and Technical Assistance

Provide comprehensive outreach, education, and technical assistance to support all generators countywide to reduce waste, recycle and compost.

Outreach and education will be directed at all sectors: residential, institutional, commercial, industrial, self-haul, and construction and demolition. Zero Waste policies and programs will have more success when there is robust outreach and education.

DCOS staff meet with Representative Borowski at EcoFair
Credit: Representative Borowski's Office and PennEnvironment

Actions for Implementation

Short-term (1-4 years)
Provide outreach, education, and technical assistance to municipalities, grade schools, colleges and universities, and the general public for reducing waste, recycling and composting countywide.
Ensure education and outreach is available in multiple languages and targeted at different age ranges.
Create a directory for local reuse, recycling, composting, and donation opportunities.
Assist in the establishment of "***Waste Watchers***" programs in county facilities, municipalities, and businesses to address contamination in recycling and composting streams.

Provide waste reduction and recycling training opportunities for municipal staff and community organizations.
Communicate with jurisdictions who utilize incineration facilities in Delaware County about the impact of incineration and encourage the use of alternatives.
Promote collaborations for shared services between municipalities to move toward Zero Waste.
Explore and pursue funding for the implementation of waste reduction and diversion activities.

Community members discuss opportunities to live more sustainably at Providence Friends Meeting.
Credit: Alison Lee Photography LLC

Mid-term (5-9 years)
Engage with faith organizations, schools, colleges, and universities to promote waste reduction, reuse, recycling, and composting.
Increase recycling compliance education and training for multi-family and commercial generators.
Create a communications plan for Zero Waste, including toolkits, online resources, signage, and other outreach materials.
Identify Zero Waste best management practices and toolkits for each sector (residential, multifamily, businesses, institutions).

6. Edible Food Donation

Expand surplus edible food recovery from grocery stores and restaurants to food pantries and soup kitchens.

An Edible Food Donation program creates a system to collect pre-consumer edible food from food-generating businesses and redirects the food to those in need. According to the USDA, 30-40% of the food in the United States is wasted.[38] At the same time, many Americans face food insecurity. The USDA estimates that 13.5% of Americans faced food insecurity in 2023.[39] Up to 28% of the food that is wasted occurs at consumer-facing businesses such as grocery stores, restaurants, and other food service businesses.[40]

Programs that collect edible food and redirect it to people in need helps mitigate several problems, including climate change and food insecurity, while also reducing resources going to landfills and incineration.

Delicious Fruits and Veggies at the Swarthmore Co-Op
Credit: Swarthmore Co-Op

Actions for Implementation

Short-term (1-4 years)
Map existing food disbursement and food recovery resources, both retail and non-profit, to identify priority areas for food recovery and distribution.
Promote existing food recovery operations and food disbursement programs.
Work with the Delaware County Health Department to determine safety fact sheet for food donation and disburse to businesses with connections to existing programs.
Identify needs for further expansion of food recovery efforts.
Create a campaign and educational materials regarding food waste with tips and recommendations for reduction, including, catered information for businesses, institutions, and residents.

Mid-term (5-9 years)
Partner with current food recovery efforts and establish systems to expand into new service areas, ensuring coverage for the entire county.
Engage with schools, businesses, and restaurants to increase food donation.
Establish a food donation tool kit for municipalities, businesses, and events.
Identify a channel for food donation and distribution following county events.

Long-term (10+ years)
Create a support system for food banks and food rescue operations connecting them with resources for expansion and efficiency (e.g., connecting businesses that could provide refrigerated storage facilities, refrigerated trucks, and mobile storage containers for collecting and distributing edible food).

Both Photos Above Show Fresh Produce from the community Gardens at Subaru Park packaged and ready to go to local food pantries.
Credit: DCOS

Delaware County Council Members Cut Ribbon on New Share Food Program Warehouse in Holmes, Ridley Township.
Credit: Dr. Monica Taylor, Delaware County Council

7. Reuse and Repair

Host repair fairs, tool lending libraries, and promote material exchange.

The goal of this initiative is to create a culture where reuse is an everyday activity in Delaware County, and community members have the information needed to participate in reuse and repair.

Repair, or the fixing of items, allows for durable goods to stay in use at their highest and best use for longer periods of time. Reuse of goods and materials through repair helps to create green jobs, extend the life of an item, reduce the materials going to the landfill and incinerators, and support the local circular economy. It also reduces the greenhouse gas emissions and water and air pollution associated with mining resources, and manufacturing and transportation of new items.

Actions for Implementation

Short-term (1-4 years)
Understand and advertise existing library offerings of "non-book" items (e.g. tool sharing).
Identify needs and opportunities for further lending libraries for items such as tools, baking equipment, and other non-book items.
Partner with county libraries to host a pilot ***Fixit Clinic or Repair Café***.
Work with county and state health organizations to revise codes allowing for safe use of customer-provided reusable containers for food and drinks and provide proper education on safe practices for restaurants and grocery stores.

Mid-term (5-9 years)
Partner with county libraries to expand lending libraries.
Partner with community organizations and county libraries to sponsor permanent Fixit Clinics, Repair Cafés, and repair skills programming. (e.g. sewing, mending, fixing appliances, etc.)
Develop a reuse, repair, and share online directory offering information on where to divert materials for reuse, list local repair shops, list local reuse stores, and/or list tool-lending libraries.
Partner with local trade organizations to support repair education in the community.

Innovation Around the Nation – Repair Cafes Around the Philadelphia Region

Following World War II, the United States saw a plastic boom. With new innovations, disposable products dominated, due to their convenience and reduced pricing. These products not only shifted the makeup of American households, but also habits and behaviors, largely contributing to what is now referred to as a "throwaway culture."

In 2009, Martine Postma, a journalist from Amsterdam, was fed up with the shift in mindset in her own town. This inspired her to launch the first ever Repair Café, a free community meet up which encouraged community members to work together to fix or mend broken items, rather than throwing them away. Since 2009, over 4,325 Repair Cafes have been hosted throughout the world, with more than 223 in the United States. [41]

Locally, the Central Presbyterian Church in Downingtown has jumped on the idea. The Church hosts Repair Cafes, also known as fixit clinics, six (6) times per year on the 2nd Saturday of every other month. During these events, community members bring broken items, whether they are clothes that need mending, coffee makers that will not start, or knives that need sharpening, and they are paired up with a volunteer, also known as a "fixer," to help them repair their item.[42]

"The Repair Café teaches people to see their possessions in a new light. And, once again, to appreciate their value. The Repair Café helps change people's mindset. This is essential to kindle people's enthusiasm for a sustainable society," says The Repair Café Foundation.[43]

Repair Cafes focus on collaboration and community-building, so they are not a drop-off service. Community members bringing in the broken items are required to sit with their fixer and are encouraged to get involved in the process. This encourages repair skills to be taught and passed on throughout the community. There are seven (7) repair cafes within driving distance of Delaware County in Downingtown, Easttown, Phoenixville, Royersford, Eagleville, and Philadelphia, most of which are organized by churches or other community non-profits.

To learn more how to start a Repair Café in your community, visit repaircafe.org for starter guides, best practices, and tips for hosting a successful repair café within your community.

Fixers work with community members to repair items at the Downingtown Repair Cafe.
Credit: Central Presbyterian Church, Downingtown

8. Addressing Litter and Illegal Dumping

Excessive waste within the community often becomes a nuisance in the form of litter or illegal dumping. Litter impacts quality of life, the natural environment, and the economic landscape. Pennsylvania roadways alone are estimated to have over 502.5 million pieces of litter.[44] In shifting toward a culture of Zero Waste, we are also aiming to remove waste from our community spaces. To assist in this effort, in 2023, Delaware County became affiliated with Keep Pennsylvania Beautiful, forming its own group called Keep Delco Beautiful, which aims to bring people together to empower Delaware County to keep our communities clean and beautiful.

Actions for Implementation

Short-term (1-4 years)
Address illegal dumping in community spaces and county parks through community-based outreach, education, and enforcement.
Develop an "adopt-an-area" program to address litter and illegal dumping on municipal roads and streets.
Support litter collection on county properties and adjacent roadways through staff engagement and participation.
Encourage coordination between PennDOT, municipalities, non-profits, and residents to cover gaps in litter prevention and abatement.
Encourage litter prevention education in schools through Keep Pennsylvania Beautiful programming such as the Young Ambassador Program, Litter Free School Zones, etc.[45]
Create or identify waste characterization protocols for clean ups and utilize data to promote upstream strategies for waste prevention.

Mid-term (5-9 years)
Encourage shared services between municipalities for street sweeping and beautification.
Engage the business community regarding litter abatement and beautification.
Encourage the creation of Zero Waste Ambassador and Block Captain programs.

CURBING WASTE

With 49 different municipalities in Delaware County, waste collection services vary significantly across towns, as described in Background Section of this plan. For many community members thoughts of the waste stream end at the curb with little consideration of what happens to waste once it leaves the home. This section seeks to address curbside collection services by introducing strategies for equitable pricing, increased efficiency, and additional diversion services. In addition to those described in the Policy and Shifting Culture Sections, actions in this section serve to reengage community members with the waste system by addressing curbside solutions for Zero Waste.

9. Save-As-You-Throw

Volume-based collection fees paid by the customer.

Save-As-You-Throw programs enact a volume-based fee structure that pays for the combination of waste, recycling, and composting services in one bill. These programs are also known as Pay-As-You Throw, Unit-Based Pricing, Utility Price, or Save Money and Reduce Trash (SMART). Save-As-You-Throw systems can shift the burden of waste management costs from local tax rolls to user fees. When paying for utilities like electricity, water, or gas, users pay based upon how much they use; however, trash it is typically one set cost no matter how much you put out. Setting rates on a per-bag or per-container basis results in real waste reductions and cost savings. They can work in a wide variety of ways, including:

Bag, Tags and Sticker Systems -

Residents buy special bags, tags or stickers at their municipal building and local retailers. The price of the bag, tag, or sticker includes the cost of collection services. The tags/stickers can designate specific volumes of waste and can be used for bulky items. The program is inexpensive to implement and can be used as method for charging for overflow waste.

Variable Carts -

Generators pay a fixed price based on size or number of carts they select for waste service. The larger or greater number of carts used, the more they pay. There are significant costs to buy the carts, but those can be amortized affordably over a long-term (8-10 years) with public or private haulers.

Actions for Implementation

Short-term (1-4 years)
Introduce the concept of save-as-you-throw disposal programs to municipalities and private residential collectors and encourage adoption.
Meet with private waste haulers and municipalities in Delaware County to understand needs for implementation.
Meet with apartment owners, landlords, and public housing authorities to work out best practices for implementing save-as-you-throw in multi-family housing.

Mid-term (5-9 years)
Evaluate opportunities to implement save-as-you-throw for collection programs.
Collect or generate sample contracts for implementing save-as-you-throw and share with municipalities and private haulers.
Support municipal adoption and pilot programs, including in multi-family and public housing.

Credit: City of Decatur, Georgia

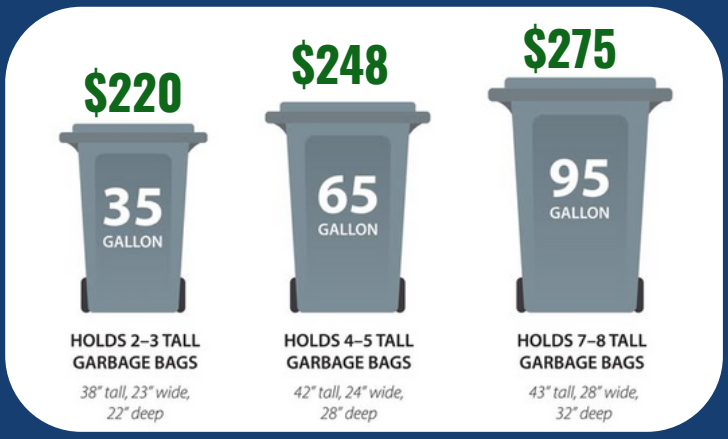
Innovation Around the Nation – Save-As-You-Throw Case Study – Abington Township, PA

When you use electricity or water in your home, you typically pay for the amount you use. It would not be fair for a household with only one person to be paying the same amount as a household with ten people, if they are not using the same amount, right? For the waste stream, why is it any different?

For many municipalities, waste collection is a flat fee whether residents are putting out one bag a week or twenty bags a week. When looking to save on increasing collection and disposal costs, Abington Township, PA, in Montgomery County decided to think outside the bin. Abington utilizes a hybrid Pay-As-You-Throw-Program (also known as Save-As-You-Throw), which includes weekly dual-stream recycling, yard trimmings, and trash collection services.[46]

In this program, residents can choose between a 35-, 65-, or 95-gallon cart for their trash collection. The bin is provided by the township and residents pay their collection fee based on the size of the bin they selected. Recycling collection runs through a similar dual-stream system: residents receive a 65-gallon cart for paper and can select either a 35- or 65- gallon cart for commingled containers. All materials are then collected on the same day by an automated trash and recycling truck, which is able to collect, and keep both materials separated, at the same time. The township also offers collection of yard trimmings (grass clippings, leaves, small brush) March through January in 30-gallon brown biodegradable paper bags with a separate dedicated truck.

This program, in addition to a robust recycling education program, has fostered more than 90% recycling participation rate in the community, which has enabled the Township to achieve a 55% diversion rate along with a 30% cost reduction for collection.[47]



Credit: Republic Services


Credit: Abington Township, Pennsylvania

10. Frequency of Trash Collection

Encourage the reduction in curb-side trash collection frequency and promote the reduction of subscription haulers to reduce emissions.

When both organics and recyclables are collected separately from trash, little material is left to be collected as trash. One way to both minimize overall costs and maximize organics diversion is to collect trash less frequently, either every-other-week or monthly. Over 50% of the municipalities in the county collect trash twice each week regularly or seasonally.

A first step towards every-other-week trash collection would be to reduce the frequency of trash collection to once each week with supplemental recycling and composting services (preferably on the same day as trash collection). Every-other-week (EOW) goes a step further and modifies trash collection to every-other-week trash pickup. If food scraps are collected on a weekly basis, then trash service can be adjusted to an EOW schedule. To reduce contamination from residences, programs will need to address proper diaper and pet waste disposal through education and/or separate pickups.

In addition to reducing the frequency of trash collection for municipal and private haulers, the reduction of subscription-based systems also brings many benefits for reduction. By switching to a centralized collection method, there are reduced numbers of trucks on the road, and it generates economy of scale within the community, often driving costs down.

Short-term (1-4 years)
Encourage the transition from twice per week trash collection to weekly collection for municipalities, private haulers, and residents with subscription services.
Promote information sharing between municipalities to show how once-per-week collection can be effectively implemented.

Mid-term (5-9 years)
Encourage the transition to every-other-week trash collection along with weekly organics collection.
Encourage municipalities to move away from subscription-based hauling and adopting municipal collection or contracted services to reduce the number of trucks on the road.

11. Reuse Collection

Curbside collection of reusable goods, textiles, and furniture.

This initiative creates a curbside program for the collection of durable goods and textiles for reuse and/or recycling.

The goal of this initiative is to reduce the volume and amount of reusable goods, textiles, and furniture from entering the disposal stream. Another goal is to create more awareness on reuse and why it is an important part of a Zero Waste system.

Photo by Egor Ivlev on Unsplash

Actions for Implementation

Short-term (1-4 years)
Evaluate existing service offerings for businesses or non-profits that will collect items for reuse and promote services.
Promote existing free-standing drop-off locations for reusable goods (e.g. Green Drop, clothing collection bins, etc.).
Speak with collection organizations regarding expansion to ensure coverage throughout the entire county.

Long-term (10+ years)
Create a curbside residential program for the collection of reusable goods, textiles, and furniture.
Encourage curbside bulky item collection programs to include both reusable items and bulky items for recycling (including scrap metal and wood).

BUILDING BETTER SYSTEMS
Infrastructure

To move toward Zero Waste, Delaware County cannot continue business as usual. While many changes could be immediate or initiated with a simple change in mindset or practice, other improvements require the development of necessary infrastructure for collecting, handling, or processing waste. Actions in this section not only seek to provide innovative approaches for Zero Waste, but also to address systematic challenges or gaps which have hindered or prevented these initiatives from taking off in the county, region, or, in some cases, on this side of the country. Actions in this section are unique in that it may be found that not all may be applicable or needed for the county to implement. However, in documenting these opportunities, it recognizes the importance of considering all options to find the best fit for the Delaware County community.

12. Supporting Development of Refillable Stations and Zero Packaging Stores

Support expansion and adoption of refill stations and zero packaging stores, reusable food ware, refillable water stations throughout the county.

Packaging remains one of the most prevalent components in our waste stream; however, many businesses and institutions lack the necessary infrastructure to move away from product packaging. Refillable stations within existing establishments are a meaningful alternative, as they focus on the product, not the package, and reduce the use of disposable containers.

Refills in food (e.g. grocery bulk bins) and beverages (e.g. travel coffee mugs) are common and can be expanded. Other opportunities for refills are emerging and are often only seen in zero packaging stores. While zero packaging stores are a new retail movement, they have not yet expanded naturally in the county, with the closest options being in the City of Philadelphia, and Narberth Borough, Montgomery County, PA.

Actions for Implementation

Short-term (1-4 years)
Expand water refill stations at county buildings and parks and encourage adoption within municipal facilities.

Mid-term (5-9 years)
Support the growth of zero packaging stores across the county.
Meet with local businesses and create a Zero Waste Retail Working Group to provide education and mobilize retailers to reduce packaging In the County.

Long-term (10+ years)
Work to create Recycling Market Development Zones to promote creation and investment of reuse and diversion businesses in Delaware County.

13. Building Materials Reuse Centers

Site facility for surplus building materials and materials salvaged from deconstruction.

The US EPA estimates that 90 percent (90%) of construction and demolition debris results from building demolition, while construction represents less than 10 percent (10%).[48] Renovation and demolition debris consists of salvageable and reusable materials generated during construction, renovation, or demolition of buildings, roads, and other structures.

Building Materials Reuse Centers provide the infrastructure necessary to support deconstruction.

Photo by Victor Moragriega on Pexels

Actions for Implementation

Short-term (1-4 years)
Research and understand existing reuse centers servicing Delaware County and promote services.

Mid-term (5-9 years)
Engage with workforce development to incentivize the creation of private or public reuse centers in Delaware County.
Assess county-owned properties and capacity to determine if development of a building materials reuse center is feasible and needed.
Consider or initiate partnerships with one or more existing nonprofit or private operations to create or expand reuse center operations in Delaware County.

Long-term (10+ years)
Site and develop building materials reuse centers, as needed.

14. Center for Hard-to-Recycle Materials

Drop-off facility for materials that are not suitable for curbside collection (textiles, mattresses, electronics).

Some divertible materials are not accepted in curbside recycling collection programs or at drop-off recycling centers. Those materials are often considered "hard to recycle" because they may contain hazardous materials or their end markets may be more difficult to secure than typical household recyclable commodities such as paper, cardboard, bottles, and cans.

A Center for Hard-to-Recycle Materials, or CHaRM, is a kind of drop-off facility that provides an opportunity for community members to divert more types of materials from disposal. CHaRM facilities can accept household appliances, tires, scrap metal, books, textiles, electronics, mattresses, hard-to-recycle plastics, ceramics, concrete, and other materials based on availability of local markets. CHaRM facilities collect these items, may deconstruct, or process some items such as electronics, and market the materials for recycling, repurposing, or reuse. CHaRM facilities create jobs through collection, processing, deconstruction, and marketing. Having established drop off locations for hard-to-recycle items, like tires or mattresses, can reduce problems with illegal dumping.

Actions for Implementation

Short-term (1-4 years)
Research existing recycling options for hard-to-recycle materials and create a toolkit of these resources for municipalities, including the promotion of *e*-Stewards certified electronics waste collectors.
Support municipal efforts in addressing hard-to-recycle materials, including tires, and verify that existing programs are supporting genuine and safe recycling markets.
Evaluate accessibility of existing recycling programs for hard-to-recycle materials across all 49 municipalities.
Research local markets and existing service gaps for hard-to-recycle materials to determine need for county-owned CHaRM facility.

Mid-term (5-9 years)
Develop convenient drop-off options for hard-to-recycle materials.
Explore partnerships with existing private recycling facilities that may want to expand their services to include drop-off of hard-to-recycle materials.

Long-term (10+ years)
If needed, assess county-owned properties for development of a CHaRM.

Innovations Around the Nation:
Center for Hard to Recycle Materials (CHaRM) - Saugus, MA

The Town of Saugus, MA opened a CHaRM facility in September 2015.[49] The center accepts textiles/fabrics and electronics such as televisions and computers.

In addition to clothing items in any condition, residents can drop off footwear, linens, backpacks, stuffed animals, curtains, towels, and other fabric materials. The center also has a collection area for scrap metal items such as bed frames, siding, fixtures, and other items made from stainless steel, lead, and cast iron.

The center also accepts yard trimmings and traditional recyclables such as paper/cardboard and bottles/cans for residents who do not have access to weekly curbside municipal collection. Residents are required to buy an annual $25 sticker to use the Compost Facilities as well as to recycle hard plastics. The rest of the facility's features are free to use for any Saugus Resident. The town receives funding for its recycling center from grants, including the Massachusetts Department of Environmental Protection Recycling Dividends Program. The Program provides grant funds to municipalities that have implemented specific programs and policies proven to maximize reuse, recycling, and waste reduction. This is similar to the Pennsylvania Department of Environmental Protection Act 101 grants: 901 Planning Grants, 902 Development and Implementation Grants, and 904 Recycling Program Performance Grants.[50]

Credit: Saugus, Massachusetts

Photos by John Cameron on Unsplash

15. Recyclables Processing

Contract with recyclables processors, provide transfer, and expand county recyclables processing.

A Materials Recovery Facility, or MRF, is where recyclables are processed and prepared for sale to manufacturers as raw materials for new products. MRFs are important links in the recycling system chain as they provide communities a place for recyclable material to go after collection. They can be public, private, or operated through public/private partnerships.

Actions for Implementation

Short-term (1-4 years)
Spread awareness and education regarding existing recycling processes to promote trust and understanding of the system.
Evaluate existing market challenges and consider need for county-owned material recovery facility.
Explore opportunities for implementation of multi-stream recycling to reduce contamination rates.
Upgrade county-owned Transfer Stations to include recyclables transfer, enhancing convenience and reducing local emissions.

Mid-term (5-9 years)
Identify technology and systems available to process recyclable materials.
If needed, secure funding and develop or contract for a facility to process recyclable materials collected within the county.

Bales of Paper at the Republic Services MRF, King of Prussia, PA
Credit for both photos: DCOS

Workers sort paper recycling at Republic Services MRF

16. Organics Processing

Contract with compost facilities, provide transfer, and expand county compost capacity.

An organics processing/compost facility is where compostable materials such as yard trimmings, food scraps, and paper are converted into a nutrient-rich soil amendment. They can be public, private, or operated through public/private partnerships. There is a strict permitting process for food scraps, resulting in limited facilities.

Actions for Implementation

Short-term (1-4 years)
Provide education on the importance and benefits of composting in the community and information about backyard composting.
Promote and partner with existing channels for organics processing in the county, including haulers and processors.
Survey communities to understand market viability and interest in composting.
Evaluate existing market challenges and identify need for local organics processing facility.
Consider need or opportunities for developing a county-owned or operated composting facility to bolster processing capacity.
Advocate for inclusive and modernized composting legislation in Pennsylvania.

Composting at Bennett Compost in Philadelphia, PA
Credit: DCOS

Mid-term (5-9 years)
Identify technology and systems available to process organic materials.
Work with municipalities, businesses, and institutions to provide hauling services for curbside or community composting.
Understand and secure partners and markets for purchasing composting end-products.
Secure funding to develop or contract a facility to process organic materials in the county.

17. Research and Reporting

Data collection and research on recycling, composting and trash composition, quantities by sector (residential, commercial, construction), and long-term impacts of the waste stream.

Material characterization studies supply data and information on the types and qualities of disposed materials. These data will help municipalities plan and organize Zero Waste policies and programs. Material characterization studies can also characterize the recycling, composting, and construction and demolition streams.

Study results reveal the amount and types of contaminated materials in the recycling stream. This information can help the municipalities focus their recycling education on the mistakes made in sorting recyclables.

Photo by Glenn Carstens-Peters on Unsplash

Actions for Implementation

Short-term (1-4 years)
Conduct a county-wide waste characterization study to better understand recycling, composting and trash composition and quantities by sector (residential, commercial, construction).
Perform a county facilities waste characterization study to better understand opportunities for increased diversion and recycling activities.
Generate annual reports on the status of Zero Waste Actions identified within this plan.
Call on state legislators to introduce and pass legislation requiring stronger reporting on where waste and recycling tons come from and go within Pennsylvania.

Mid-term (5-9 years)
Cater collection programs and education to address the most prevalent materials in the Delaware County Waste Stream.
Implement community composting pilot programs which provide convenient neighborhood/municipal drop off locations for composting.

Long-term (10+ years)
Continue studying the long-term impacts of different waste disposal methods (ex. incineration, landfilling).

IMPLEMENTATION

Delaware County is already on the path to Zero Waste. Since the publication of *Sustain Delco* in 2023, the county has successfully implemented several efforts which support Zero Waste, such as introducing Campaign Sign Recycling, supporting back-of-house composting at Capozzoli's Café in the Delaware County Government Center, and more. To further these successes to date, the actions described in this plan provide a more in-depth framework towards meeting the county's Zero Waste Goals. While the actions in this plan are meant to act as a road map, additional analysis and research may be required prior to implementation of individual actions. Implementation of this plan will be administered by a variety of partners including the Delaware County Office of Sustainability, Delaware County Sustainability Commission, Delaware County Solid Waste Authority, municipalities, and many organizations within the community.

Funding

Much like other sustainability projects, the county will largely rely on staff hours and expertise for leading the implementation of these initiatives. Internal staff are funded through taxpayer dollars and are further supported by a variety of revenues. A great deal of staff time is dedicated to applying for grants to further support new programs, initiatives, and infrastructure for supporting Zero Waste. For example, in 2024 the Delaware County Office of Sustainability applied for over $16.6 million in funding, much of which was in support of community composting.

A variety of sources including the Climate Pollution Reduction Grant (CPRG) funding, the Solid Waste Infrastructure for Recycling Program (SWIFR), and the USDA Food Waste Reduction Program were sought for this initiative. Grant funds are variable in their amounts, priorities, and awards, but they make up a significant role for implementation and to support financial sustainability within the county.

Community Implementation

For the county to truly move toward Zero Waste, involvement and participation will be needed from the whole community. Though the actions within this plan are catered toward the county or municipal governments for policy or infrastructure upgrades, individual and organizational behavior change is also needed to foster a culture of Zero Waste in Delaware County. When considering the role of your household, organization, or business, it is important to recognize what you can control, where you have influence, and where you can provide education. In following this framework, the identification of meaningful and achievable actions should emerge for next steps. This plan is meant to inspire and inform readers to take action within their own communities, while also implementing institutional change to move the needle toward Zero Waste.

IMPACT

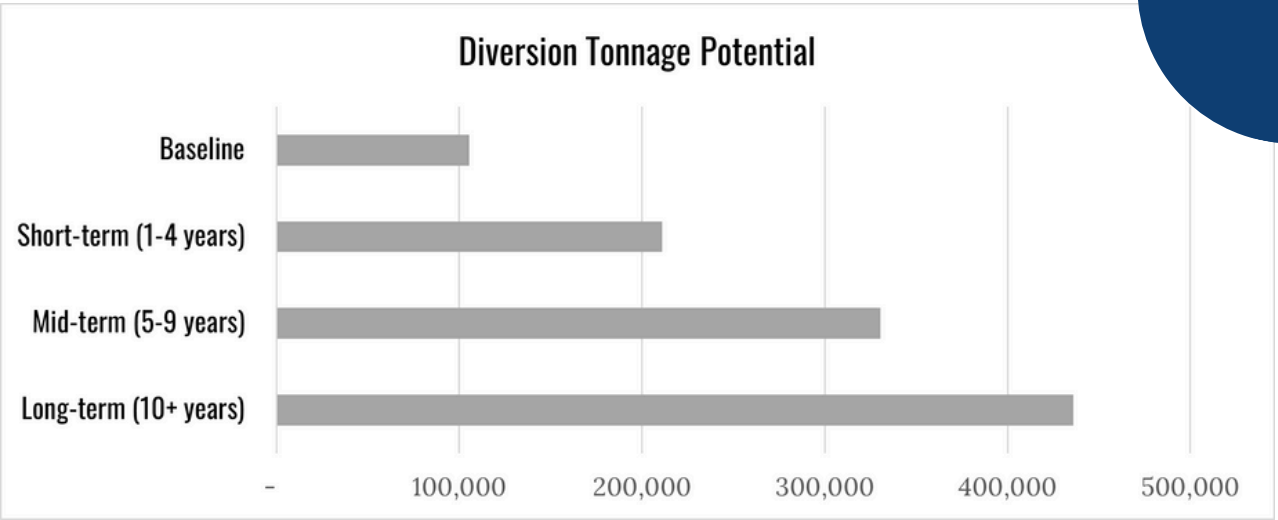
Each of the prescribed Zero Waste initiatives has the potential to increase the countywide diversion rate. Estimates were made using conservative assumptions for capture rates by material type for what can be accomplished by implementing these actions using the **US EPA *WARM Tool***.

The Zero Waste initiatives described above highlight the "short-term" (1-4 years), mid-term (5-9 years) and long-term (10+ years), recognizing a potential timeline for implementation, as well as informing resource intensiveness required for implementing each action. If implemented *in totality*, the Zero Waste initiatives are estimated to increase the countywide diversion rate from 20 percent (20%) in 2022 to 82 percent (82%). The chart below further estimates diversion potential in implementing the prescribed actions.

Diversion Potential for Zero Waste Implementation

Diversion Potential	Baseline	Short-term (Years 1-4)	Mid-term (Years 5-9)	Long-term (10+ Years)
Disposal Tons	429,319	323,839	204,327	98,847
Diversion Tons	105,470	210,950	330,462	435,942
Generated Tons	534,789	534,789	534,789	534,789
Diversion Rate	20%	39%	62%	82%

Note: This analysis is based on total tons disposed in 2022, including tons disposed outside of the Authority's disposal system.



As noted in the introduction of this plan, while true zero may be an aspiration, this roadmap serves to completely change how Delaware County looks and thinks about waste to maximize feasible reduction and diversion while conserving resources. The prescribed actions have the power to make a significant impact in Delaware County, changing the landscape of our waste stream, and improving the health, safety, and welfare of our communities. A lot of progress can be made with further strategic investment in Zero Waste initiatives, which will promote savings in the long-term. In taking the first step on this journey for Delaware County, we encourage all with the words of President John F. Kennedy which recognized "one person can make a difference, and everyone should try."[52]

Delaware County community members come together to make a difference at Keep Delco Beautiful Launch Event in the City of Chester. Credit: DCOS

IMPLEMENTATION MATRIX

No.	Action	Time	Lead	Supporting Partner
POLICY ACTIONS - PRODUCT POLICIES				
1	Determine legal capacity for county-wide ordinance adoption for increased waste reduction and diversion.	Short (1-4 years)	Solicitor	DCOS
2	Develop policy for county facilities and events addressing single-use plastics, shopping bags, and other product policies.	Short (1-4 years)	DCOS	Executive Director
3	Draft model municipal ordinances addressing single-use plastics, plastic shopping bags and other product policies and support municipalities through adoption.	Short (1-4 years)	DCOS	Solicitor
4	Prepare county green procurement policy restricting single-use plastics and increasing recycled content purchases.	Short (1-4 years)	DCOS	Purchasing
5	Provide ordinance reviews and recommendations for municipalities regarding reuse, recycling, illegal dumping, composting, and other policies which promote Zero Waste.	Short (1-4 years)	DCOS	Munis
6	Advocate for state legislation to increase recycling requirements, provide better tracking of waste and recyclables, and prohibit the use of glass for alternative daily cover at landfills.	Mid (5-9 years)	County Council	DCOS
7	Provide opportunities for municipalities and school districts to join into cooperative purchasing agreements with the county's green procurements.	Mid (5-9 years)	Purchasing	DCOS, Solicitor, Munis
POLICY ACTIONS - CONSTRUCTION & DEMOLITION RECYCLING REQUIREMENTS				
8	Evaluate existing ordinances to better understand ability for adaptive reuse and demolition requirements.	Short (1-4 years)	DCOS	Planning
9	Develop a model ordinance with encourages adaptive reuse of buildings and structures.	Short (1-4 years)	DCOS	Planning, Munis
10	Develop a model deconstruction ordinance, which requires the dismantling, salvaging, and recycling of materials from buildings, opposed to simply demolishing them.	Mid (5-9 years)	DCOS	Planning, Munis
11	Develop a model ordinance which encourages and/or requires the use of recovered building materials in new construction and renovations and identifies/creates incentives for adoption.	Mid (5-9 years)	DCOS	Planning, Munis
12	Where deconstruction is not possible, develop model ordinance requiring recycling for construction and demolition materials.	Mid (5-9 years)	DCOS	Planning, Munis
13	Support expansion of construction and demolition debris processing and reuse centers, and/or develop plans for the creation of a county-owned reuse innovation center for processing used building materials.	Mid (5-9 years)	DCOS	DCSWA

No.	Action	Time	Lead	Supporting Partner
POLICY ACTIONS - UNIVERSAL COLLECTION				
14	Survey existing recycling and composting facilities to establish a standardized list of acceptable materials throughout the county and create educational materials.	Short (1-4 years)	DCOS	DCSWA
15	Collaborate with municipalities to develop universal collection ordinance, requiring all generators to have waste, recycling, and composting services.	Short (1-4 years)	DCOS	Munis
16	Support the creation of pilot programs which emphasize shared service contracts between jurisdictions.	Short (1-4 years)	DCOS	Munis
17	Host a roundtable for discussing challenges and opportunities with existing waste stream.	Short (1-4 years)	DCOS	DCSWA
18	Ensure that municipalities utilize state grants and research alternative funding for Zero Waste policies, programs, and infrastructure (e.g., Act 101 Section 904 Recycling Performance Grants).	Short (1-4 years)	DCOS	DCSWA
19	Increase accessibility to county reuse, recycling, and composting programs so that all residents can participate.	Short (1-4 years)	DCOS	DCSWA, Munis
20	Adopt and implement a Universal Collection Policy for county buildings and facilities.	Mid (5-9 years)	DCOS	County Council
21	Adopt a county flow control ordinance directing municipal waste, recyclables, and organics to public facilities.	Mid (5-9 years)	DCSWA	County Council
22	Support municipal collaboration and shared services for waste, recycling and organics collection, street sweeping and other services.	Mid (5-9 years)	DCOS	Munis
23	Continue supporting implementation of model ordinances and joint-service contacts throughout the county.	Long (10+ years)	DCOS	Munis
24	Adopt and implement a Universal Collection Policy for county buildings and facilities.	Mid (5-9 years)	DCOS	County Council
25	Adopt a county flow control ordinance directing municipal waste, recyclables, and organics to public facilities.	Mid (5-9 years)	DCSWA	County Council
SHIFTING CULTURE - LEAD BY EXAMPLE				
26	Transition to paperless forms and files in county facilities.	Short (1-4 years)	DCOS	IT
27	Develop and implement enhanced waste reduction, recycling, and composting systems at county buildings, parks, and events.	Short (1-4 years)	DCOS	Facilities, Public Works, Parks & Rec
28	Provide technical assistance to municipalities and community based upon lessons learned.	Short (1-4 years)	DCOS	Munis
29	Provide education to Delaware County staff regarding Zero Waste best practices.	Short (1-4 years)	DCOS	DCOS

No.	Action	Time	Lead	Supporting Partner
SHIFTING CULTURE - LEAD BY EXAMPLE				
30	Integrate recycling and Zero Waste education into employee on-boarding process.	Short (1-4 years)	DCOS	HR
31	Provide training to custodial contractors regarding county recycling practices.	Short (1-4 years)	DCOS	Facilities, Public Works
32	Modify waste collection contracts for county facilities to include measurement and reporting of waste reduction, recycling, and composting.	Short (1-4 years)	Purchasing	DCOS, Public Works
33	Reinvigorate the Delaware County Green Team to further empower and engage county staff on to implement Zero Waste initiatives.	Short (1-4 years)	DCOS	DCOS
34	Provide reuse closet/supply swap in county buildings.	Mid (5-9 years)	DCOS	DCOS
35	Research the end use markets for recyclables generated in the county to ensure proper handling and diversion.	Mid (5-9 years)	DCSWA	DCOS
36	Ensure proper recycling and diversion receptacles are in all county parks and facilities.	Mid (5-9 years)	DCOS	Parks & Rec
SHIFTING CULTURE - OUTREACH, EDUCATION, AND TECHNICAL ASSISTANCE				
37	Provide outreach, education, and technical assistance to municipalities, grade schools, colleges and universities, and the general public for reducing waste, recycling and composting countywide.	Short (1-4 years)	DCOS	DCSWA
38	Ensure education and outreach is available in multiple languages and targeted at different age ranges.	Short (1-4 years)	DCOS	DCOS
39	Create a directory for local reuse, recycling, composting, and donation opportunities.	Short (1-4 years)	DCOS	GIS
40	Assist in the establishment of “Waste Watchers” programs in county, facilities, municipalities, and businesses to address contamination in recycling and composting streams.	Short (1-4 years)	DCOS	Facilities, Public Works, Munis
41	Provide waste reduction and recycling training opportunities for municipal staff and community organizations.	Short (1-4 years)	DCOS	Munis
42	Communicate with jurisdictions who utilize incineration facilities in Delaware County about the impact of incineration and encourage the use of alternatives.	Short (1-4 years)	County Council	DCOS
43	Promote collaborations for shared services between municipalities to move toward Zero Waste.	Short (1-4 years)	DCOS	Munis
44	Explore and pursue funding for the implementation of waste reduction and diversion activities.	Short (1-4 years)	DCOS	Munis
45	Engage with faith organizations, schools, colleges, and universities to promote waste reduction, reuse, recycling, and composting.	Mid (5-9 years)	DCOS	DCSWA

No.	Action	Time	Lead	Supporting Partner
SHIFTING CULTURE - OUTREACH, EDUCATION, AND TECHNICAL ASSISTANCE				
46	Increase recycling compliance education and training for multi-family and commercial generators.	Mid (5-9 years)	DCSWA	DCOS
47	Create a communications plan for Zero Waste, including toolkits, online resources, signage, and other outreach materials.	Mid (5-9 years)	DCOS	DCOS
48	Identify Zero Waste best management practices and toolkits for each sector (residential, multi-family, businesses, institutions).	Mid (5-9 years)	DCOS	DCOS
SHIFTING CULTURE - EDIBLE FOOD DONATION				
49	Map existing food disbursement and food recovery resources, both retail and non-profit, to identify priority areas for food recovery and distribution.	Short (1-4 years)	GIS	DCOS
50	Promote existing food recovery operations and food disbursement programs.	Short (1-4 years)	DCOS	GIS
51	Work with Delaware County Health Department to determine safety fact sheet for food donation and disburse to businesses with connections to existing programs.	Short (1-4 years)	DCOS	DCHD
52	Identify needs for further expansion of food recovery efforts.	Short (1-4 years)	DCOS	DCHD
53	Create a campaign and educational materials regarding food waste with tips and recommendations for reduction, including catered information for businesses, institutions, and residents.	Short (1-4 years)	DCOS	DCOS
54	Partner with current food recovery efforts and establish systems to expand into new service areas, ensuring coverage for the entire county.	Mid (5-9 years)	DCOS	DCHD
55	Engage with schools, businesses, and restaurants to increase food donation.	Mid (5-9 years)	DCOS	DCHD
56	Establish a food donation toolkit for municipalities, businesses, and events.	Mid (5-9 years)	DCOS	DCHD
57	Identify a channel for food donation and distribution following county events.	Mid (5-9 years)	DCOS	DCHD
58	Create a support system for food banks and food rescue operations connecting them with resources for expansion and efficiency (e.g., connecting businesses that could provide refrigerated storage facilities, refrigerated trucks and mobile storage containers for collecting and distributing edible food).	Long (10+ years)	DCOS	DCHD
SHIFTING CULTURE - REUSE AND REPAIR				
59	Understand and advertise existing library offerings of "non-book" items (e.g. tool sharing).	Short (1-4 years)	DCOS	Libraries
60	Identify needs and opportunities for further lending libraries for items such as tools, baking equipment, and other non-book items.	Short (1-4 years)	Libraries	DCOS

No.	Action	Time	Lead	Supporting Partner
SHIFTING CULTURE - REUSE AND REPAIR				
61	Partner with county libraries to host a pilot Fixit Clinic or Repair Café.	Short (1-4 years)	DCOS	Libraries
62	Work with county and state health organizations to revise codes allowing for safe use of customer-provided reusable containers for food and drinks and provide proper on safe education on safe practices to restaurants and grocery stores.	Short (1-4 years)	DCOS	DCHD
63	Partner with County libraries to implement expanded lending libraries.	Mid (5-9 years)	DCOS	Libraries
64	Partner with community organizations and county libraries to sponsor permanent Fixit Clinics and Repair Cafés and repair skills programming (e.g. sewing, mending, fixing appliances, etc.).	Mid (5-9 years)	DCOS	Libraries
65	Develop a reuse, repair, and share online directory, offering information on where to divert materials for reuse, list local repair shops, list local reuse stores, and/or list tool-lending libraries.	Mid (5-9 years)	DCOS	GIS
66	Partner with local trade organizations to support repair education in the community.	Mid (5-9 years)	DCOS	Trade Orgs
SHIFTING CULTURE - ADDRESSING LITTER AND ILLEGAL DUMPING				
67	Address illegal dumping in community spaces and county parks through community-based outreach, education, and enforcement.	Short (1-4 years)	DCOS	Parks & Rec, Munis
68	Develop an “adopt-an-area” program to address litter and illegal dumping on municipal roads and streets.	Short (1-4 years)	DCOS	Keep PA Beautiful
69	Support litter collection on county properties and adjacent roadways through staff engagement and participation.	Short (1-4 years)	DCOS	Executive Director
70	Encourage coordination between PennDOT, municipalities, non-profits, and residents to cover gaps in litter prevention and abatement.	Short (1-4 years)	DCOS	PennDOT, Munis
71	Encourage litter prevention education in schools through Keep Pennsylvania Beautiful Programming such as the Young Ambassador Program, Litter Free School Zones, etc.	Short (1-4 years)	DCOS	Keep PA Beautiful
72	Create or identify waste characterization protocols for clean ups and utilize data to promote upstream strategies for waste prevention.	Short (1-4 years)	DCOS	DCSWA
73	Encourage shared services between municipalities for street sweeping and beautification.	Mid (5-9 years)	DCOS	Planning, Munis
74	Engage the business community regarding litter abatement and beautification.	Mid (5-9 years)	DCOS	Chamber of Commerce
75	Encourage the creation of Zero Waste Ambassador and Block Captain programs.	Mid (5-9 years)	DCOS	Munis

No.	Action	Time	Lead	Supporting Partner
CURBING WASTE - SAVE-AS-YOU-THROW				
76	Introduce the concept of save-as-you-throw disposal programs to municipalities and private residential collectors and encourage adoption.	Short (1-4 years)	DCOS	Munis
77	Meet with private waste haulers and municipalities In Delaware County to understand needs for implementation.	Short (1-4 years)	DCOS	Munis
78	Meet with apartment owners, landlords, and public housing authorities to work out best practices for implementing pay as you throw in multi-family housing.	Short (1-4 years)	DCOS	Munis,
79	Evaluate opportunities to implement save-as-you-throw volume-based pricing for collection programs.	Mid (5-9 years)	DCOS	Munis
80	Collect or generate sample contracts for implementing save-As-you-throw and share with municipalities and private haulers.	Mid (5-9 years)	DCOS	Munis
81	Support municipal adoption and pilot programs, including in multi-family and public housing.	Mid (5-9 years)	DCOS	Munis
CURBING WASTE - FREQUENCY OF TRASH COLLECTION				
82	Encourage the transition from twice per week trash collection to weekly collection to municipalities, private haulers, and residents with subscription services.	Short (1-4 years)	DCOS	Munis
83	Promote information sharing between municipalities to show how once-per-week collection can be effectively implemented.	Short (1-4 years)	DCOS	Munis
84	Encourage the transition to every-other-week trash collection along with weekly organics collection.	Mid (5-9 years)	DCOS	Munis
85	Encourage municipalities to move away from subscription-based hauling and adopting municipal collection or contracted services to reduce the number of trucks on the road.	Mid (5-9 years)	DCOS	Munis
CURBING WASTE - REUSE COLLECTION				
86	Evaluate existing service offerings for businesses or non-profits that will collect items for reuse and promote services.	Short (1-4 years)	DCOS	Munis
87	Promote existing free-standing drop-off locations for reusable goods (e.g. Green Drop Locations, clothing collection bins, etc.).	Short (1-4 years)	DCOS	DCSWA
88	Speak with collection organizations regarding expansion to ensure coverage throughout the entire county.	Short (1-4 years)	DCOS	DCSWA
89	Create a curbside residential program for the collection of reusable goods, textiles, and furniture.	Long (10+ years)	DCOS	DCSWA
90	Encourage curbside bulky item collection programs to include both reusable items and bulky items for recycling (including scrap metal and wood).	Long (10+ years)	DCOS	DCSWA, Munis

No.	Action	Time	Lead	Supporting Partner
INFRASTRUCTURE - SUPPORTING DEVELOPMENT OF REFILLABLE STATIONS AND ZERO PACKAGING STORES				
91	Expand water refill stations at county buildings and parks and encourage adoption within municipal facilities.	Short (1-4 years)	DCOS	Parks & Rec, Public Works, Munis
92	Support the growth of zero packaging stores across the county.	Mid (5-9 years)	DCOS	DCEDC, Chamber of Commerce
93	Meet with local businesses and create a Zero Waste Retail Working Group to provide education and mobilize retailers to reduce packaging In the county.	Mid (5-9 years)	DCOS	DCEDC, Chamber of Commerce
94	Create Recycling Market Development Zones to promote creation and investment of reuse and diversion businesses In Delaware County.	Long (10+ years)	DCOS	Workforce Dev, DCEDC, Munis
INFRASTRUCTURE - BUILDING MATERIALS REUSE CENTERS				
95	Research and understand existing reuse centers servicing Delaware County and promote services.	Short (1-4 years)	DCOS	DCSWA
96	Engage with workforce development to incentivize the creation of private or public reuse centers in Delaware County.	Mid (5-9 years)	DCOS	Workforce Dev, DCEDC
97	Assess county-owned properties and capacity to determine if development of a building materials reuse centers is feasible and needed.	Mid (5-9 years)	DCOS	Public Works, County Council, DCSWA
98	Consider or initiate partnerships with one or more existing nonprofit or private operations to create or expand reuse center operations in Delaware County.	Mid (5-9 years)	DCOS	DCSWA
99	Site and develop building materials reuse centers, as needed.	Long (10+ years)	DCOS	DCSWA
INFRASTRUCTURE - CENTER FOR HARD-TO-RECYCLE-MATERIALS				
100	Research existing recycling options for hard-to-recycle materials and create a toolkit of these resources for municipalities, including the promotion of e-Steward certified electronics waste collectors.	Short (1-4 years)	DCOS	DCSWA
101	Support municipal efforts in addressing hard-to-recycle materials, including tires, and verify that existing programs are supporting genuine and safe recycling markets.	Short (1-4 years)	DCOS	DCSWA, Munis
102	Evaluate accessibility of existing recycling programs for hard-to-recycle materials across all 49 municipalities.	Short (1-4 years)	DCOS	DCSWA

No.	Action	Time	Lead	Supporting Partner
INFRASTRUCTURE - CENTER FOR HARD-TO-RECYCLE MATERIALS				
103	Research local markets and existing service gaps for hard-to-recycle materials to determine need for county-owned CHaRM facility.	Short (1-4 years)	DCOS	DCSWA
104	Develop convenient drop-off options for hard-to-recycle materials.	Mid (5-9 years)	DCOS	DCSWA, Munis
105	Explore partnerships with existing private recycling facilities that may want to expand their services to include drop-off of hard-to-recycle	Mid (5-9 years)	DCOS	DCSWA
106	If needed, assess county-owned properties for development of a CHaRM.	Long (10+ years)	DCOS	Public Works, County Council, DCSWA
INFRASTRUCTURE - RECYCLABLES PROCESSING				
107	Spread awareness and education regarding existing recycling processes to promote trust and understanding of the system.	Short (1-4 years)	DCOS	DCSWA
108	Evaluate existing market challenges and consider need for county-owned material recovery facility.	Short (1-4 years)	DCOS	DCSWA
109	Explore opportunities for implementation of multi-stream recycling to reduce contamination rates.	Short (1-4 years)	DCOS	DCSWA, Munis
110	Upgrade county-owned transfer stations to include recyclables transfer, enhancing convenience and reducing local emissions.	Short (1-4 years)	DCSWA	DCOS
111	Identify technology and systems available to process recyclable materials.	Mid (5-9 years)	DCSWA	DCOS
112	If needed, secure funding and develop or contract for a facility to process recyclable materials collected within the county.	Mid (5-9 years)	DCSWA	DCOS
INFRASTRUCTURE - ORGANICS PROCESSING				
113	Provide education on the importance and benefits of composting in the community, and information about backyard composting.	Short (1-4 years)	DCOS	DCSWA
114	Promote and partner with existing channels for organics processing in the county, including haulers and processors.	Short (1-4 years)	DCOS	DCSWA, Munis
115	Survey communities to understand market viability and interest in composting.	Short (1-4 years)	DCOS	DCSWA, Munis
116	Evaluate existing market challenges and identify need for local organics processing facility.	Short (1-4 years)	DCOS	DCSWA
117	Consider need or opportunities for developing a county-owned or operated composting facility to bolster processing capacity.	Short (1-4 years)	DCOS	DCSWA
118	Advocate for inclusive and modernized composting legislation in Pennsylvania.	Short (1-4 years)	County Council	DCOS

No.	Action	Time	Lead	Supporting Partner
INFRASTRUCTURE - ORGANICS PROCESSING				
119	Identify technology and systems available to process organic materials.	Mid (5-9 years)	DCOS	DCSWA
120	Work with municipalities, businesses, and Institutions to provide hauling services for curbside or community composting.	Mid (5-9 years)	DCOS	DCSWA, Munis
121	Understand and secure partners and markets for purchasing composting end-products.	Mid (5-9 years)	DCOS	DCSWA
122	Secure funding to develop or contract for a facility to process organic materials collected within the county.	Mid (5-9 years)	DCOS	DCSWA
INFRASTRUCTURE - RESEARCH AND REPORTING				
123	Conduct a county-wide waste characterization study to better understand recycling, composting and trash composition and quantities by sector (residential, commercial, construction).	Short (1-4 years)	DCSWA	DCOS
124	Perform a county facilities waste characterization study to better understand opportunities for Increased diversion and recycling activities.	Short (1-4 years)	DCOS	DCSWA
125	Generate annual reports on the status of Zero Waste actions identified within this plan.	Short (1-4 years)	DCOS	County Council
126	Call on state legislators to introduce and pass legislation requiring stronger reporting on where waste and recycling tons come from and go within Pennsylvania.	Short (1-4 years)	County Council	DCOS
127	Cater collection programs and education to address the most prevalent materials in the Delaware County waste stream.	Mid (5-9 years)	DCOS	DCSWA, Munis
128	Implement community composting pilot programs which provide convenient neighborhood /municipal drop off locations for composting.	Mid (5-9 years)	DCOS	Munis
129	Continue studying the long-term impacts of different waste disposal methods (ex. Incineration, landfilling).	Long (10+ years)	DCOS	DCSWA

GLOSSARY OF TERMS

Acidification	A reduction in pH, and making of something more acidic, over an extended period of time, caused primarily by uptake of carbon dioxide.
Act 101; Pennsylvania's Municipal Waste Planning, Recycling, and Waste Reduction Act of 1988	A Pennsylvania State law adopted in 1988 which provides for the planning for the processing and disposal of municipal waste; implementation of recycling programs; and other functions of municipal waste planning, recycling, and reduction. This Act is overseen by the PA DEP and implemented locally by municipalities and counties.
Adaptive Reuse	The process of repurposing existing buildings and structures for a purpose other than which it was originally built or designed for.
Alternative Daily Cover	Cover material other than dirt that is placed on the surface of the working surface of a municipal solid waste landfill at the end of each operating day to control odors, blowing litter, scavenging, fires, and vectors (i.e. seagulls, rodents).
Carbon Dioxide Equivalent (CO2e)	A unit of measurement that can be used to compare the emissions of various greenhouse gases based on how long they stay in the atmosphere and how much heat they can trap.
Construction and Demolition Waste	Debris materials generated from the construction, renovation, repair, or demolition of building and infrastructure. These items are typically bulky and heavy and are not accepted at all MSW processing facilities.
Deconstruction	A methodical approach which requires the selective dismantling of building components, specifically for reuse, repurposing, and recycling.
Diversion Rate	A measure which compares the amount of waste generated in a given area compared to that which was diverted from the waste stream. Diversion Rate (%) = (Weight of diverted materials only (tons)/Weight of all discarded materials (tons)) * 100
Environmental Justice (EJ)	The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental Justice/ Disadvantaged/ Historically Marginalized/ Overburdened Communities	Minority, low-income, tribal, or indigenous populations or geographic locations in the United States that experience disproportionate environmental harms and risks.
Environmental Racism	The intentional or unintentional racial discrimination in environmental policymaking, enforcement of regulations and laws, and targeting of communities for the disposal of toxic waste and siting of polluting industries.
Eutrophication	A process that occurs when a body of water receives too many nutrients, which can lead to algal blooms, low oxygen levels, and dead zones.
Fixit Clinic; Repair Cafe	A community event where people can bring broken items from their homes, like electronics, clothing, or small appliances, to be repaired by volunteers with fixing skills in an effort to reduce waste by extending the lifespan of products.
Flow Control	Legal provisions that allow state and local governments to designate the public places where municipal solid waste is taken for processing, treatment, or disposal.
Incineration; Waste-to-Energy	The process of burning waste to reduce its volume and weight, and sometimes, to produce energy.
Life Cycle Analysis or Life Cycle Assessment (LCA)	A systematic analysis of environmental impact over course of the entire life cycle of a product, materials, or process.
Municipal Solid Waste (MSW)	Commonly known as trash or garbage, it consists of everyday items used and then thrown away, such as product packaging, furniture, clothing, bottles, etc.
Particulate Matter (PM)	An air pollutant regulated by the National Ambient Air Quality Standards which is comprised of mixture of solid particles and liquid droplets which are typically measured as 10 micrometers and smaller or 2.5 micrometers and smaller. When inhaled, they can cause serious health problems.
Residual Waste	Nonhazardous industrial waste. Includes waste material produced by industrial, mining, and agricultural operations.

Resilient	The ability to successfully cope with and recover quickly from the impacts of climate change while preventing those impacts from getting worse.
Reworld; Covanta; Delaware Valley Resource Recovery Facility	A privately-owned waste incinerator located in the City of Chester which processes approximately 1,230,000 tons of waste per year from Delaware County, Philadelphia, New York City, New Jersey, and several other communities along the east coast.
Single Stream Recycling	A system in which all recyclables, including newspaper, cardboard, plastic, aluminum, glass, steel cans, junk mail, etc., are placed in a single bin or cart for recycling.
Special Handling Waste	Includes infectious, pathological, and chemotherapeutic wastes (known as "regulated medical waste"), incinerator ash residue, sewage, septic, and water sludge and does not meet the definition of residual or hazardous waste.
Sustainability	To create and maintain the conditions under which humans and nature can exist in productive harmony to support present and future generations in a changing climate.
Sustainable Waste Management	The practice of keeping non-toxic materials in use for as long as possible and minimizing the number of such materials that end up as waste.
Transfer Station	A facility in which solid waste is unloaded from smaller collection trucks and reloaded into larger transfer trailer vehicles for transport to its final disposal site. The Delaware County Solid Waste Authority operates two transfer stations in Delaware County.
Triple Bottom Line	A business framework where companies evaluate their performance not just based on financial profit, but also considered their social impact on people, and their environmental impact on the plant. Often referred to as the three "P's": People, Planet, and Profit, this strategy has also been referred to as the three pillars of sustainability.

WARM Tool	WARM stands for Waste Reduction Model. WARM is a tool created by the US EPA that provides high-level comparative estimates of the potential GHG emissions, energy savings, and economic impacts of materials managed in baseline and alternative materials management practices, including source reduction, recycling, composting, anaerobic digestion, combustion, and landfilling. The model estimates emissions, energy units and economic factors across a wide range of material types commonly found in municipal solid waste and construction and demolition debris. *Note - while this tool is accepted by the US EPA, its preferential weighting for incineration over methods like composting has led to much skepticism and dissention from community experts.
Waste Characterization Study	A study quantifying and identifying the composition of the waste stream going to landfills and incinerators. The study is used to determine opportunities for reduction and diversion, conserve resources, and validate disposal estimates.
Waste Diversion	The practice of redirecting waste from landfills and incinerators to other methods like recycling, composting, or reuse. The goal is to reduce the environmental impact disposal.
Waste Stream	The entire life cycle of disposed materials, including trash and recycling.
Waste Watchers Program	A volunteer-led program which aims to reduce contamination in recyclables by helping residents select the correct bins for their materials by either standing near bins during events or placing “Oops” notes on curbside bins which have incorrect materials.

ABBREVIATIONS

COPD	Chronic Obstructive Pulmonary Disease
DCEDC	Delaware County Economic Development Corporation, formerly known as the Commerce Center
DCHD	Delaware County Health Department
DCOS	Delaware County Office of Sustainability
DCSWA	Delaware County Solid Waste Authority
CO2e	Equivalent of Carbon Dioxide
EEV	Environmental Economic Values
EJ	Environmental Justice
GIS	Geographic Information Systems (or Delaware County Data and Mapping Innovation Office)
GHG	Greenhouse Gas
HR	Delaware County Human Resources Department
IT	Delaware County Information Technology Office
LFG	Landfill Gas
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
Munis	Municipalities
PA DEP	Pennsylvania Department of Environmental Protection
Parks & Rec	Delaware County Parks and Recreation Office
Solicitor	Delaware County Solicitor's Office
US EPA	United States Environmental Protection Agency
Workforce Dev	Delaware County Workforce Development Office

REFERENCES

[1] Zero Waste International Alliance, Zero Waste Definition, https://zwia.org/zero-waste-definition/
[2] Zero Waste International Alliance, Zero Waste Hierarchy, https://zwia.org/zwh/
[3] US EPA, Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy, https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy
[4] PA DEP Environmental Justice Areas - PennEnviroScreen 2024, https://newdata-padep-1.opendata.arcgis.com/datasets/04b72f1b62484f0eb322c8c790f91c4c_0/explore?location=40.966986%2C-77.604550%2C7.33
[5] PA DEP Environmental Justice Areas - PennEnviroScreen 2024, Attribute Table, https://newdata-padep-1.opendata.arcgis.com/datasets/04b72f1b62484f0eb322c8c790f91c4c_0/explore?location=40.966986%2C-77.604550%2C7.33
[6] American Lung Association, State of the Air, 2024, Id. at 134 https://www.lung.org/getmedia/dabac59e-963b-4e9b-bf0f-73615b07bfd8/State-of-the-Air-2024.pdf
[7] American Lung Association, State of the Air, 2024, Id. at 135 https://www.lung.org/getmedia/dabac59e-963b-4e9b-bf0f-73615b07bfd8/State-of-the-Air-2024.pdf
[8] Public Environmental Data Partners, EJ Screen, https://pedp-ejscreen.azurewebsites.net/
[9] Census Reporter, Chester PA, https://censusreporter.org/profiles/16000US4213208-chester-pa/
[10] PennEnviroScreen, https://gis.dep.pa.gov/PennEnviroScreen/
[11] PennEnviroScreen, Environmental Justice Indicators Ozone, https://gis.dep.pa.gov/PennEnviroScreen/
[12] Reworld FAQs, https://www.reworldwaste.com/where-we-are/facilities/delaware-valley/faqs
[13] PA DEP History of the Office of Environmental Justice Video, https://files.dep.state.pa.us/PublicParticipation/Office%20of%20Environmental%20Advocacy/EnvAdvocacyPortalFiles/2023/Presentation%2cPt1_ReFinal.mp4
[14] Life Cycle Analysis (LCA) and Monetization for Nine Human and Environmental Health Impacts from Delaware County, Pennsylvania MSW Diversion & Disposal: 2020 Baseline and Recommended Zero Waste Plan - Prepared by Dr. Jeffrey Morris, Sound Resource Management Group, Inc.
[15] US EPA GHG Equivalencies Calculator, https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator
[16] US EPA Green Book, 8-Hour Ozone, https://www3.epa.gov/airquality/greenbook/jbcty.html
[17] National Library of Medicine, Busy Streets Theory: The Effects of Community-engaged Greening on Violence, https://pmc.ncbi.nlm.nih.gov/articles/PMC6373470/
[18] UN Environment Programme, Nature Doesn't Waste, Nor Should We, https://www.unep.org/news-and-stories/video/nature-doesnt-waste-nor-should-we-unep-executive-director
[19] PA DEP, Pennsylvania Greenhouse Gas Inventory, https://www.pa.gov/agencies/dep/residents/climate-change/ghg-inventory.html
[20] US EPA, Impacts of Mismanaged Trash, https://19january2021snapshot.epa.gov/trash-free-waters/impacts-mismanaged-trash_.html
[21] US EPA, Impacts of Sending Food and Other Organic Materials to Landfills, https://www.epa.gov/sustainable-management-food/composting
22] More Jobs, Less Pollution: Growing the Recycling Economy in the U.S., https://www.tellus.org/pub/More%20Jobs,%20Less%20Pollution%20-%20Growing%20the%20Recycling%20Economy%20in%20the%20US.pdf
[23] Institute for Local Self Reliance, Pay Dirt: Composting in Maryland to Reduce Waste, Create Jobs, and, Protect the Bay, https://ilsr.org/wp-content/uploads/2013/05/Pay-Dirt-Report.pdf
[24] Data courtesy of the Delaware County Solid Waste Authority.

REFERENCES

[25] Data courtesy of the Delaware County Solid Waste Authority.
[26] Data courtesy of the Delaware County Solid Waste Authority.
[27] Data collected by Zero Waste Associates in 2022 municipal solid waste management survey.
[28] US EPA, National Overview: Facts and Figures on Materials, Wastes, and Recycling, https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/national-overview-facts-and-figures-materials
[29] Pennsylvania Act 101 (1988), https://www.legis.state.pa.us/cfdocs/Legis/LI/uconsCheck.cfm?txtType=HTM&yr=1988&sessInd=0&smthLwInd=0&act=0101.
[30] Data collected by the Delaware County Solid Waste Authority during the 2024 Municipal Recycling Survey.
[31] Data courtesy of the Delaware County Solid Waste Authority.
[32] Data courtesy of the Delaware County Solid Waste Authority.
[33] Sustain Delco: A Sustainability Plan for Delaware County, https://delcopa.gov/sites/default/files/2024-11/SustainDelcoPlan.pdf
[34] American Community Survey 5-year Population Estimates, https://www.census.gov/programs-surveys/acs.html
[35] Delaware County Solid Waste Authority Recycling Directory, https://www.delcoswa.org/BusinessDirectoryII.aspx?lngBusinessCategoryID=22
[36] PA Recycling Financial Assistance, https://www.pa.gov/agencies/dep/programs-and-services/waste-programs/recycling-in-pennsylvania/municipal-resources/financial-assistance.html
[37] Anne Marie Bonneau Zero Waste Quote, https://laurafenton.substack.com/p/11563180_perfectly-imperfect
[38] USDA Food Loss and Waste, https://www.usda.gov/about-food/food-safety/food-loss-and-waste
[39] USDA Food Security in the U.S. - Key Statistics & Graphics, https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics
[40] World Wildlife Fund, Food Waste, https://www.worldwildlife.org/initiatives/food-waste
[41] About Repair Cafe, https://www.repaircafe.org/en/about/
[42] Repair Cafe Downingtown, https://repaircafedowningtown.com/
[43] Repair Cafe Downingtown, https://repaircafedowningtown.com/
[44] Pennsylvania Litter Research Study, https://files.dep.state.pa.us/waste/Bureau%20of%20Waste%20Management/WasteMgtPortalFiles/Littering/Pennsylvania%20Litter%20Research%20Study%20Final%20Report%201.30.2020.pdf
[45] Keep Pennsylvania Beautiful Tools for Schools, https://www.keeppabeautiful.org/programs/education/tools-for-schools/
[46] Abington Township Refuse Division, https://www.abingtonpa.gov/departments/recycling
[47] Abington Township Refuse Division, https://www.abingtonpa.gov/departments/recycling
[48] US EPA Sustainable Management of Construction and Demolition Materials, https://www.epa.gov/smm/sustainable-management-construction-and-demolition-materials
[49] Town of Saugus Announces Charm Center Opening..., https://www.saugus-ma.gov/home/news/town-saugus-announces-charm-center-opening-april-19-spring-season
[50] PA Recycling Financial Assistance, https://www.pa.gov/agencies/dep/programs-and-services/waste-programs/recycling-in-pennsylvania/municipal-resources/financial-assistance.html
[51] US EPA Waste Reduction Model, https://www.epa.gov/waste-reduction-model
[52] John F. Kennedy Quote, https://www.goodreads.com/quotes/129734-one-person-can-make-a-difference-and-everyone-should-try

ACKNOWLEDGMENTS

Delaware County would like to personally thank everyone who had a hand in crafting this plan. A special thank you to those who dedicated their time, expertise, and passion to this project. We are truly indebted to you.

Delaware County Solid Waste Advisory Committee	
Robert Anderson, Penn Recycling Market Development Center	Thom Nixon, Phi Beta Sigma Fraternity, Inc.
Erica Burman, Media Borough EAC	Gwenn Nolan, Mother Compost
Connie Butler, Delaware County Recycling Coordinator**	Chris Proctor, Swarthmore College
Archie Filshil, Aero Aggregates	Chantal Reyes, C4 – Widener University Campus Coalition Concerning Chester
Dominic Fulginiti, Republic Services	Ann Ryan, PA DEP Southeastern Regional Office
Joan Gunn Broadfield, Chester NAACP	Danielle Ruttenberg, Bottle Underground
Bonnie Hallam, Upper Darby EAC	Faran Savitz, PennEnvironment
James McLaughlin, Delaware County Solid Waste Authority**	Don Vymazal, Upper Providence Township Manager**
Melissa Muroff, Delaware County District Attorney's Office**	

Delaware County Sustainability Plan Zero Waste Subcommittee		
Joy Baxter	Carol Martsolf*	Jennie Saxe*
David Director	Jim McLauglin*	Scott Sidlow*
Mike Ewall	Melissa Muroff*	Darren Speilman
Cephus Hales Richardson*	Peter Puglionesi	Jim Warner*
Chuck Lacey	Bob Redfern	Kearni Warren
Alonzo Loper	Jaclyn Rhoads*	Rebecca Yurkovich*

*Also, serves/served on Sustainability Commission
**No Longer with Organization

Delaware County Sustainability Commission	
Public Members	
Steve Clark	Joi Washington
David Director	Krystl Gauld**
Michael Fuller	Cephus Hales Richardson**
Carol Martsolf	Jennie Saxe**
Julie Prey	Scott Sidlow**
Jaclyn Rhoads	Shawn Stancill**
Michael Schneller	Grace Venit**
Justin Tibbels	
County Staff	
Gina Burritt	Ron Aquilino
Jonathan Coret	John Bosch**
Sue DePompeo	Beth Chapman
Laura Goodrich-Cairns	Francine Locke**
Anne Stauffer	Marc Manfre**
Brooks Stayer	Ed Orner* *
Karen Wilwol	Tom Shaffer**
Rebecca Yurkovich	Jim Warner**

**No Longer with Organization

Delaware County Council	Delaware County Executive Director
Dr. Monica Taylor, Chair	Barbara O'Malley
Richard Womack, Vice Chair	**Delaware County Staff**
Elaine Paul Schaefer	Rebecca Yurkovich, County Sustainability Officer
Kevin Madden	Sue DePompeo, Asst. Director of Sustainability Finance
Christine Reuther	Olivia Sansone, Sustainability Coordinator
	Josh Mintzer, Sustainability Intern
	Francine Locke**

**No Longer with Organization

With Special Help from Consulting Team
Ruth Abbe, Zero Waste Associates
Alex Danovitch, Nothing Left to Waste

“We don’t need a handful of people doing Zero Waste perfectly, but we need millions of people doing it imperfectly.”

-Anne Marie Bonneau