Executive Summary

An Aspirational Vision for the Future

Delaware County is committed to be a more sustainable and resilient community that serves to protect the most vulnerable residents from the impacts of climate change. One method in which the County is seeking to do this is by achieving Zero Waste.

In pursuing this aspiration, Delaware County defines Zero Waste as:

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

As a meaningful first step toward this goal, Delaware County embarked to create a plan which would meet the following goals:

1. Guiding the County's transition to Zero Waste following the Zero Waste Hierarchy to ensure maximum feasible waste reduction and diversion.
2. Assuring the effectiveness of the County's recycling programs and investigating the feasibility of expanded waste diversion programs and services.
4. Conserving resources and protecting the public health, safety, and welfare from the short- and long-term impacts from transportation, processing, treatment, storage, and disposal of municipal waste.
5. Evaluating how Zero Waste solutions can help meet other County goals, such as reducing costs and creating efficiency across programs.
6. Engaging with stakeholders throughout the planning and implementation process 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 beliefs 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 l 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 get Delaware County closer to achieving 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:

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.

In-Person Workshops

Between April and June 2022, three 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.

Online Workshops

Three online workshops were presented via Zoom to coincide with the in- person meetings. These workshops provided additional accessibility to content and provided 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.

Advisory Committee*

Three main advisory boards served to inform the direction of the Plan. This included the Delaware County Sustainability Commission, a 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.

In total, over 400 community members participated and provided feedback to inform this Plan. The subsequent sections of this 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 identified 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 Environmental Justice communities.
2. **Protecting public health and the environment**
   by reducing discharges to air, water, and land.
3. **Reducing waste**
   by enacting policies, providing technical assistance and education, and developing partnerships with County 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 main categories:

- Policy
- 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 to assist municipalities, community groups, and residents to identify actions within their level of control.

In addition to categorizing initiatives, specific actions were identified to support each initiative. Actions are labeled as Low-Hanging Fruit, Medium, or Long. 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, this is not a perfect system, as grant funds, unforeseen challenges, or other external factors can also impact how long a project will take to implement. For example, while product policies, like a plastic bag ban, are labeled as low-hanging fruit, as it does not require much effort to bring an ordinance together in theory, many communities are several years into the process, as they are actively working with businesses, garnering support from elected officials, and adjusting ordinances to meet the feedback from the community to get the policies adopted.

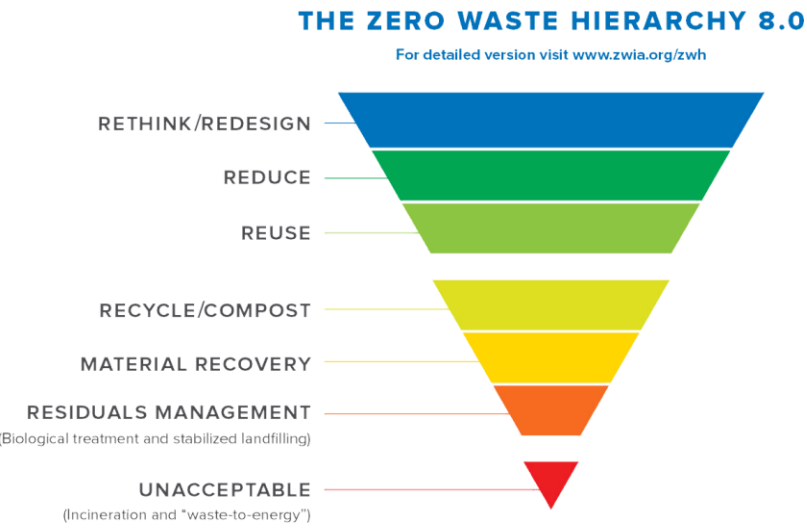
Collectively, the initiatives within this Plan have the potential to more than double the County's current diversion rate, if implemented in totality. This Plan provides the County with proven actions for moving it closer to its goal of Zero Waste, while also providing adaptability for our changing world.

Striving for Zero

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.

To do this, the County leaned on the Zero Waste International Alliance's Zero Waste Hierarchy[ii] (the Hierarchy). 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 from reused, recycled or sustainably-harvested renewable, non-toxic materials to be durable, repairable, reusable, fully recyclable or compostable, and easily disassembled.
- 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 – Maximize materials recovery from mixed discards and research purposes after extensive source separation.
- Residuals Management – Examine materials that remain and use this information to refine the systems to rethink, reduce, reuse, and recycle in order to prevent further discards. Biologically stabilize materials prior to landfilling.
- 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 due to existing regulations, resource constraints, or political opposition, 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, waste-to-energy or incineration is considered unacceptable for managing municipal solid waste, which contrasts with some existing state laws and local practices.

For example, in the United States Environmental Protection Agency (USEPA) Waste Hierarchy[iii], an alternative to the Zero Waste Hierarchy, Energy Recovery, also known as waste-to-energy or incineration, is placed above treatment and disposal (landfilling). Additionally, local waste management practices currently divert most of the waste from Delaware County to incineration. In large part, this is due geographic proximity to the waste-to-energy facility and due to a historical lack of investment in alternative infrastructure.

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, to push boundaries and shoot for the moon in an effort of achieving a more sustainable waste management system despite some current practices not falling in alignment with the tool.

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.

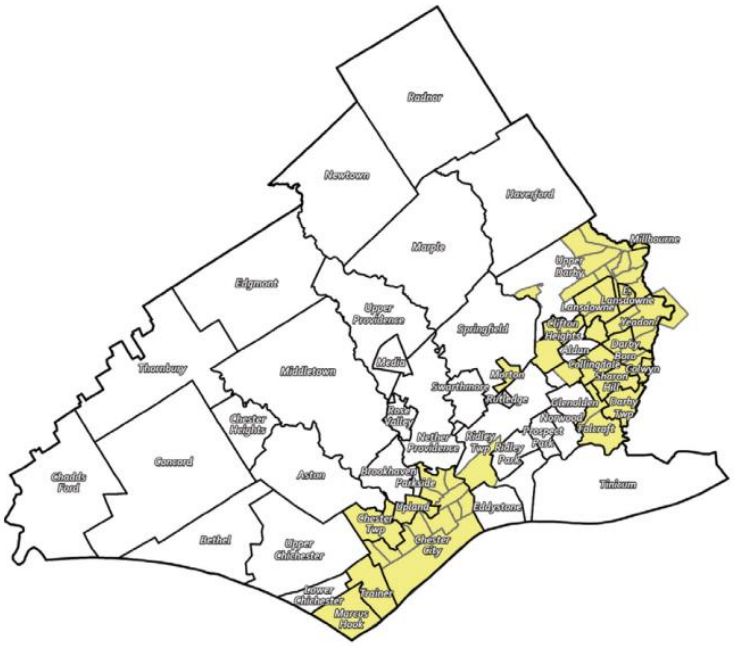
Environmental Justice

Approximately 94.157 residents of Delaware County live across 28 census tracts which are considered environmental justice (EJ) communities. 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%).

Delaware County Environmental Justice Areas



Legacy infrastructure projects, such I-95, which bisects several historically minority communities, and an oversaturation of industrial facilities contribute to negative health outcomes in many of Delaware County's EJ communities. In 2022, the American Lung Association "State of the Air" report gave Delaware County a "D" for both ozone and particle pollution. The study estimated that nearly 60,000 are at risk for youth and adult asthma, 31,280 for COPD, and 43,202 for cardiovascular disease related to poor air quality. The average asthma rate for Delaware County environmental justice communities is 13%, with some census tracts in the City of Chester as high as 15%, while neighboring non-EJ communities are around 7%. These outcomes are particularly of concern when considering these hazards are more likely to impact children, which make up as much of 33% of the population in some EJ communities in Delaware County.

The US EPA EJ Screen indicators further confirm this trend, marking communities in the I-95 riverfront corridor of the county between the 80th and 100th percentiles for Air Toxics Cancer Risk and Respiratory Hazards across the country. The City of Chester ranks between the 86th and 97th percentile in the country for all 12 of the EPA EJ Indexes, and both Darby and Trainer boroughs are above the 86th percentile for 10 of the 12. The Pennsylvania Department of Environmental Protection Penn EnviroScreen tool mirrors these findings.

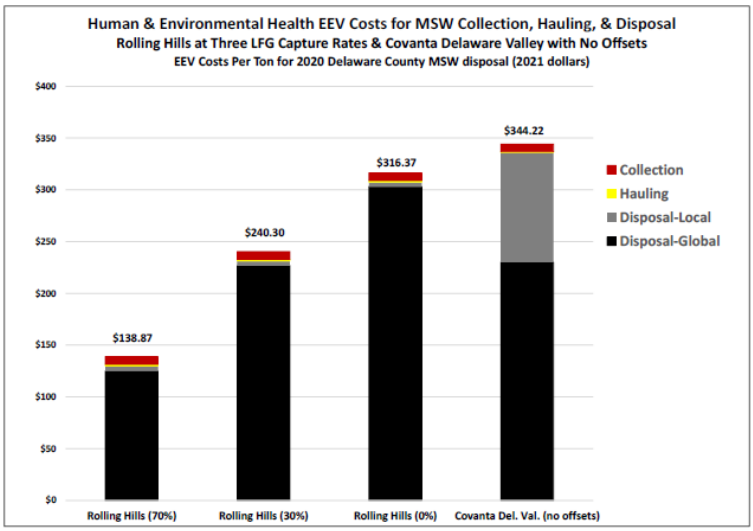
Two of the large contributors of poor air quality in these communities include increased amounts of truck traffic, as well as "heavy" industrial uses. Of particular concern is the Reworld (formerly known as Covanta) incinerator. Reworld, the nation's largest incinerator which burns over 1.2 million tons of waste each year, is located in the City of Chester. This facility is often considered ground zero for the environmental justice movement in Pennsylvania following a resident-led lawsuit in the 1990s which recognized the discriminatory permitting and environmental racism in the siting of the facility. 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.

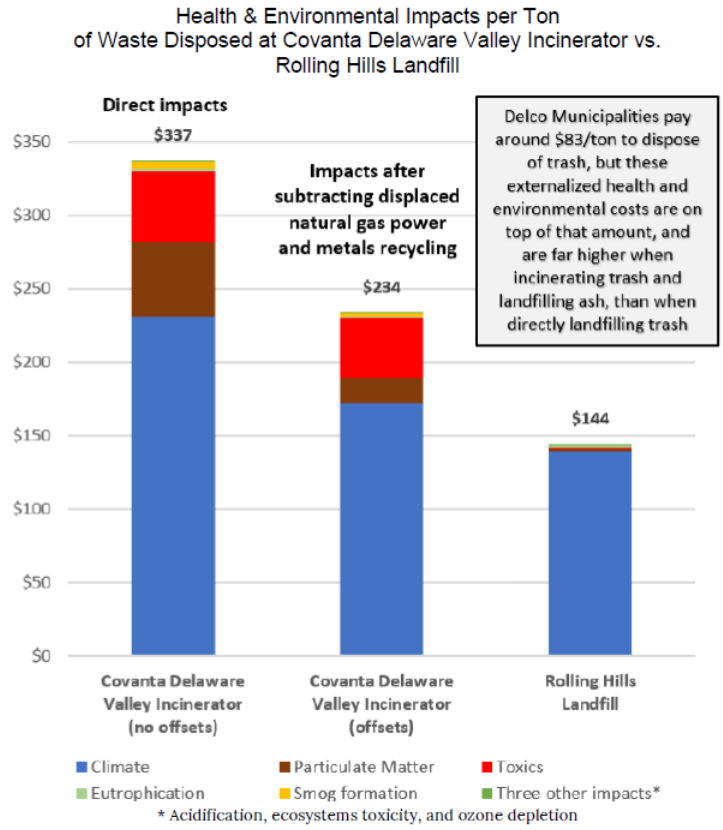
Life Cycle Analysis

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. A life cycle analysis is a systematic analysis of environmental impact over course of the entire life cycle of a product, materials, or process.

To complete this study, Dr. Morris utilized a modeling tool known as the MEBCalc (Measuring Environmental Benefits Calculator) which relies on a number of tools, scientific research papers, data from municipal solid waste management systems across the county, and data estimates specific to Delaware County to consider the environmental economical values (EEV) for nine different human and environmental health impacts, including: Climate, Particulate Matter, Toxics (non-cancer), Toxics (cancer), eutrophication, acidification, ecosystems toxicity, ozone depletion, and ground level ozone (smog). In generating an 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 a dollar value to allow for a standardized side-by-side comparison 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, through reduced quality of life, or through a degraded environment.





Using this methodology, the study considers impacts of the current process (incinerating trash at the Reworld facility in the City of Chester and landfilling the incinerator ash at the Rolling Hills Landfill in Berks County) with a proposed alternative (sending unburned trash directly to the Rolling Hills Landfill in Berks County). 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 $233 more

human health and environmental costs than that of directly landfilling at the Rolling Hills Landfill. When looking at human health costs alone, incineration was 23 times higher than that of landfilling. Transportation impacts of landfilling in Berks County, rather than using the in-county incinerator, were found insignificant relative to other health and environmental impacts, and did not, therefore, justify choosing the more local method of incineration.

Lastly, the study concluded that the County were to truly achieve Zero Waste, with diversion of 522,126 tons of municipal solid waste to recycling and composting (with zero landfilling or incineration), it would avoid approximately 703,000 tons of carbon dioxide equivalents (eCO2). According to the EPA, this avoidance of emissions would have the same climate benefit of taking 142,000 gasoline-powered passenger vehicles of the road each year in Delaware County.

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. When applying sustainable practices, it is no different, however, a triple bottom line, including people, planet, *and* profit are typically considered. When considering moving toward a more sustainable waste management system for Delaware County these factors were also considered.

People, or Societal, Impacts

The traditional waste system, along with other industry, has had historical consequences on the health and welfare of residents in Delaware County, such as poor air quality, higher incidences of exposure to toxics, and more. 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:

- Improving air quality (The Southeastern PA region is currently considered a non-attainment zone for meeting EPA national air quality standards.)
- Reducing exposure to toxins by minimizing exposure to harmful chemicals.
- Reducing levels of stress, anxiety, and crime. (Studies have shown that trash and litter in a community can lead to increased levels of stress, a lack of social cohesion in a neighborhood, and increased crime rates.)
- Increasing property values (Studies have found that properties with litter and waste visible are likely to have a 9% reduction in property values).
- Increasing 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." In switching to a Zero Waste system, our natural environment also receives tremendous benefits, such as:

- Reducing greenhouse gas emissions (14.5% of GHG Emissions in Pennsylvania are associated with the waste system.)
- Improving water quality (More than 97% of Delaware County streams are considered impaired by the PA DEP.)
- Protecting and restoring habitat, biodiversity, and open space by reducing the need for virgin materials
- Reduced risk to wildlife of entanglement, ingestion, or disruption from toxins from trash.
- Improved soil health from reduced pollution from plastics, leachate, and other biproducts of the traditional waste system.

Profit, or Economic, Impacts

Often there is misconception that "sustainable solutions are too expensive" or "they destroy jobs"; however, several studies have found these points moot. Adoption of sustainable waste management practices not only look at the output of physical "stuff", but they also promote efficiency and a reduction of waste in the forms of time, peoplepower, and processes, as well. In aiming for Zero Waste, there are often financial benefits including:

- Increasing support of local economies, thus creating local jobs and keeping wealth within the community.
- Saving energy and fuel costs associated with burning, transporting, or collecting waste.
- Increasing job availability in recycling and composting operations as opposed to incineration or landfilling. (Studies have found recycling creates an average of 9x more jobs than trash, and composting creates at least twice as many jobs as landfills and four times as many jobs as incinerator facilities).
- Retaining higher property values, business retention, and tax revenue (Studies have found that businesses at 60% less likely to site in communities that have visible litter and property values at are 9% higher in communities without visible litter).
- 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.)

The Case for Zero Waste

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 in the future. 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 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 and expanding the County landfill in Berks County. These projects will assist in providing meaningful alternatives to the existing waste stream, which sends waste to Delaware County's most disadvantaged communities. This change will also promote positive impacts for the people, planet, and profit in Delaware County.

BACKGROUND

DELAWARE COUNTY 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. 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. 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 49 municipalities, classified as either Boroughs, Townships (First- or Second-Class), or a City (Third-Class). 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 resident
- **Subscription Collection** – The municipality delegates the responsibility of selecting a hauler to the residents in which they choose from a list of licensed haulers to contract with directly.

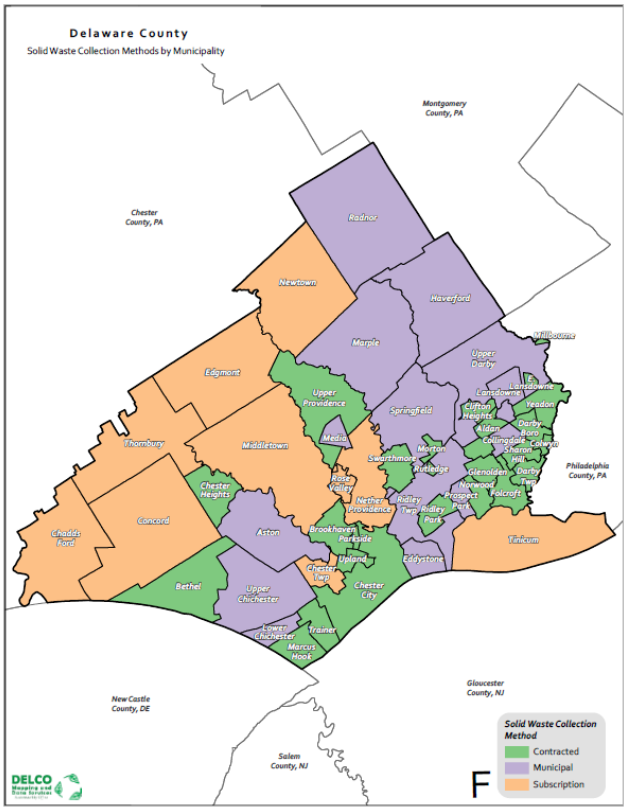
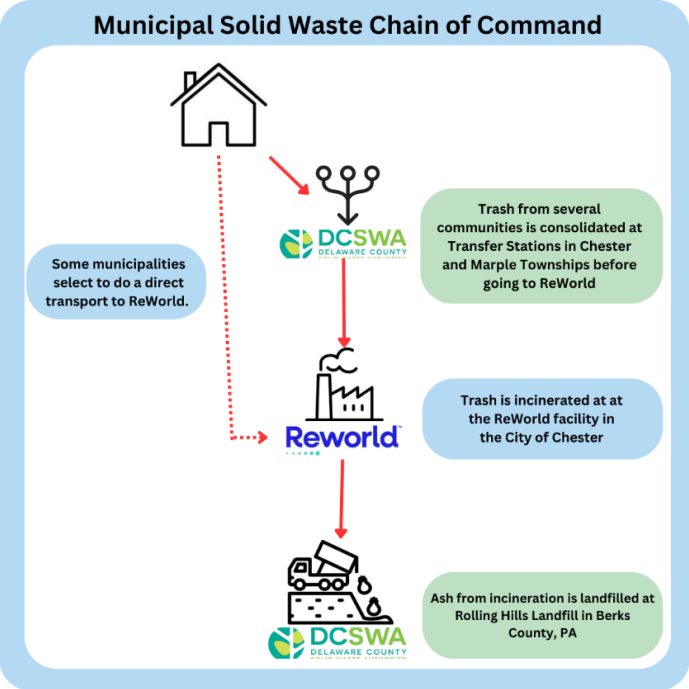


Figure X.X shows which municipalities employ which method of collection for municipal solid waste.

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. 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.

Beyond the Curb

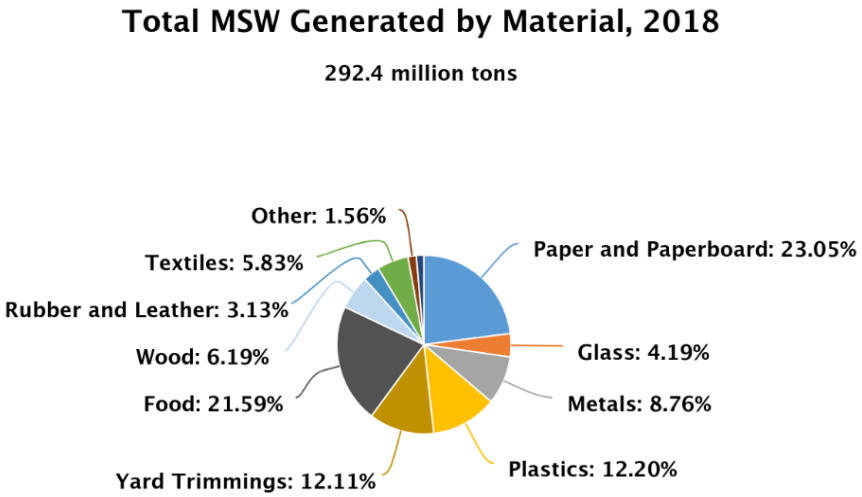


After collection, MSW is often brought to one of two transfer stations, owned by the Delaware County Solid Waste Authority (DCSWA), in either Chester Township (Transfer Station #1) or Marple Township (Transfer Station #3) to be consolidated with waste from other municipalities. From the transfer stations, waste is then taken to ReWorld (a privately-owned facility, formerly known as Covanta) in the City of Chester for incineration. Some municipalities elect to take their waste directly to ReWorld if it is more convenient to do so for a discounted tipping fee. Following incineration, ash from ReWorld is then trucked to the DCSWA-owned Rolling Hills Landfill located in Earl Township, Berks County. **Figure X.X** further illustrates this chain of command.

Other categories of waste (construction and demolition waste, special handling waste, and residual waste), are disposed outside of the system described above in appropriately licensed facilities.

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. The study, which was performed by the Franklin Associates of Kansas focused on the material composition of the waste stream across the United States.



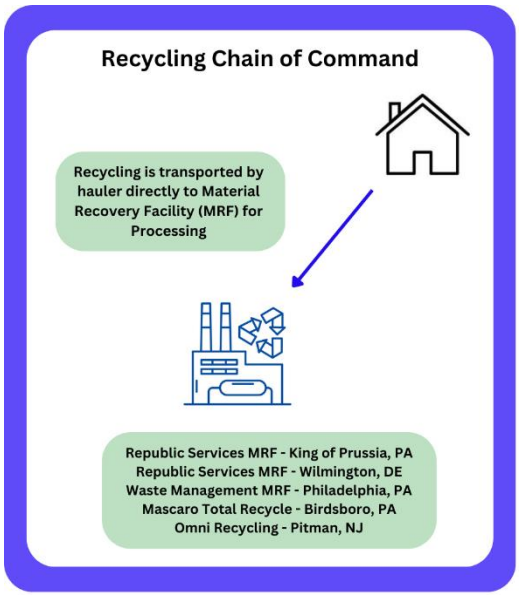
Municipal waste samples were collected from residential, institutional, commercial, and industrial sources. While the snapshot of waste composition may vary slightly depending on region, this information is considered the most accurate to date.

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, only municipalities of a certain population size are required to recycling. 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 non-mandated communities nine (9) have adopted voluntary recycling requirements or offer curbside programs, as where other nine (9) have no provisions. 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.

Recycling is typically collected either weekly or every other week; and the predominant form of collection is through a "single stream" program, 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 material recovery facilities:

- Republic Services MRF - King of Prussia, Pennsylvania
- Republic Services MRF – Wilmington, Delaware
- Waste Management MRF - Philadelphia, Pennsylvania
- Mascaro Total Recycle - Birdsboro, Pennsylvania (Bridgeport transfer)
- Omni Recycling (acquired by Salt Creek Capital in 2022) - Pitman, New Jersey (Philadelphia transfer at a Waste Management facility)



These facilities may elect to accept different recyclable materials or have different rules (ex. Caps on or caps off bottles), 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, including yard and food waste, in 2022. 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 multifamily 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 and waste diversion, 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

Diversion Rate (%) = Diversion (tons) /*Generation (tons)

*Generation = Diversion + Disposal

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 is being diverted, through recycling or other diversion methods. 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. In order to achieve this goal, several challenges within the existing waste stream will need to be addressed.

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, near three quarters 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 offer special pick-up days once a season. Yard trimmings are leaves are typically composted at a municipal site or are brought directly to a private facility by the municipality or the hauler the municipality contracts with.

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 all 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, including:

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

Other Specialized Recycling Services

Other specialty collection services vary between communities, as well, ranging from bulk collections, e-recycling, paper shredding, and more. At a County-level there are several programs that work to supplement municipal services or provide offerings to municipalities that many not have collections 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, the Delaware County Solid Waste Authority hosts several household hazardous wastes 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. And the Delaware County Office of Sustainability 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 Terracycle, to name a few.

CHALLENGES IN THE WASTE STREAM

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

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 methods of collection, materials accepted for collection, and rules for collection, 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.

In addition to concerns from residents, many municipalities have also voiced frustration over the provision of services. Many 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, a lack of competition can put extreme strain on the provision 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 of this Plan, there is a lack of trust within the existing waste system, as many community members feel that the existing infrastructure is causing more harm than good. In addition to these feelings, suspensions in recycling services, warnings to throw away recyclables due to possible contamination, and other bad practices during the COVID-19 Pandemic caused doubt for many residents that their recyclables were being recycled. Nearly five 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

Delaware County Council and the Delaware County Solid Waste Authority have taken the concerns within the waste stream seriously and have been seeking active alternatives to incineration and 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 1950's. The DCSWA has actively worked to convert these sites to serve as effective transfer points; however, the potential increase in waste, associated with transporting additional tonnage directly to the Rolling Hills Landfill in Berks County, would require redesign. 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.

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.

When considering diversion resources in the County, necessary infrastructure for large-scale implementation is also lacking. For example, convenient service centers allowing for residents to self-haul waste are currently limited and cost a significant fee for residents, and self-haul recycling facilities (for single stream recycling) do not currently exist within the County, except for the twenty (20) convenient dumpsters, placed by the DCSWA for the community.

Organics composting faces similar challenges for infrastructure. The PA DEP requires special permitting for commercial food scraps processing. This permitting is very challenging to obtain, which has led to only one privately-owned and operated food scraps processing facility in all of Delaware County (Kitchen Harvest at Linvilla Orchards, Middletown Township). Siting and creating a secondary site for large-scale processing would not only require specialized permitting, but it would also require considerable capital and community buy-in for implementation.

Large-scale infrastructure needs within the waste stream in Delaware County 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 appetite and interest in moving to a more sustainable waste management system. Growing 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 or diversion throughout the County. Each of these initiatives have been further broken down into four categories, to assist in implementation and general understanding.

The Zero Waste initiatives are categorized based on:

Policy	Shifting Culture
County policies or municipal ordinances to codify new rules to support Zero Waste initiatives.	Actions that can help change the existing throwaway culture to Zero Waste.
Curbing Waste	**Building New Systems – Infrastructure**
Actions which change how we look at existing curbside collection programs and seek to increase efficiency and reduce unnecessary wasting.	Actions which seek to introduce or expand diversion and recycling services through new facilities or increased processing capacity.

The Zero Waste Initiatives require "Actions for Implementation" to define specific steps that the County, or community, can take to move toward Zero Waste.

Timing for implementation of each action is based in-part on ease of implementation, funding, and staffing capacity:

- **Low-Hanging Fruit**
  Relatively easy to implement in the near-term (1-4 years), with minimal resources required.
- **Mid-Range**
  Requires more investment of staff time or other resources (5-9 years).
- **Long-Range**
  Will take more time for research, investment, and in some cases, systematic change. (10 +years)

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

Zero Waste Initiatives

Policy

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. Most policy level implementation within the County will need to occur at a municipal level, as the County has limited powers when enacting ordinances; 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 problem products, such as plastic bags and single-use plastic foodware.

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 packaging ordinances, including Haverford Township, Media Borough, and Swarthmore Borough.

Actions for Implementation

Low-Hanging Fruit (1-4 years)	
▪ Research ability 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 local municipalities regarding recycling, Illegal dumping, composting, and other policies which promote Zero Waste.	
Mid-Range (5-9 years)	
▪ Advocate for state legislation to increase recycling requirements, provide better tracking of recyclables and restrict use of glass for alternative daily cover at landfills.	

2. Construction & Demolition Recycling Requirements

Require enhanced diversion and recycling of building materials from construction and demolition projects

Local rules 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.

For example, some communities require deconstruction which includes 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

Low-Hanging Fruit (1-4 years)	
▪ Evaluate existing ordinances to better understand ability for adaptive reuse and demolition requirements.	
▪ Encourage adaptive reuse practices and protections, thus minimizing need for demolitions.	

Mid-Range (5-9 years)	
▪ Develop a model ordinance with encourages adaptive reuse of buildings and structures.	
▪ Develop a model deconstruction ordinance and encourage adaptive reuse of buildings instead of demolition.	
▪ Where deconstruction is not possible, develop model ordinance requiring recycling for construction and demolition.	
▪ Support expansion of construction and demolition debris processing and reuse centers.	

3. Universal Collection

Develop model ordinance for municipalities which requires recycling and composting for all generators, including single-family, multifamily, 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 the communities to phase in new recycling and composting services when their current arrangements end. By developing a uniform system county-wide, there will be greater efficiency for the collection programs, and an increased opportunity for coordinated messages to go out throughout the county via electronic and print media, social media, websites, events, and flyers 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

Low-Hanging Fruit (1-4 years)	
▪ 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).	
▪ Increase accessibility to County reuse, recycling, and composting programs so that all residents can participate.	

Mid-Range (5-9 years)	
▪ Adopt and implement a Universal Collection Policy for County Buildings and Facilities.	
▪ Support adoption of flow control ordinances directing municipal waste, recyclables, and organics to public facilities.	
▪ Support municipal collaboration and sharing of services for waste, recycling and organics collection, street sweeping and other services.	
Long-Range (10+ years)	
▪ Continue supporting implementation of model ordinances and joint-service contacts throughout the County.	

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." Bonneau recognizes that collective action is required to move toward Zero Waste. While policy actions impose actions from the top down within a community, 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 in everyday processes toward those that increase diversion and build trust in a Zero Waste system. Collaboration, education, and awareness are fundamental building blocks for fostering a change in mindset amongst Delaware County's many municipalities and communities.

4. Lead by Example

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

While the County has limited power to impose Zero Waste practices across the 49 municipalities, it can serve as an example for the community. In Implementing best practices in waste reduction, reuse, recycling, and composting, the County will Lead by Example.

Actions for Implementation

Low-Hanging Fruit (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 based upon implementation experience.	
▪ Provide education to 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 County facility collection contracts to include measurement and reporting of waste reduction, recycling, and composting.	

▪ Report annually on progress. ▪ Reinvigorate the Delaware County Green Team to further empower and engage County staff on to Implement Zero Waste initiatives.	
Mid-Range (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

Countywide program to support all generators to reduce waste, recycle and compost.

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 be accepted and integrated better when there is outreach and education to ensure a more successful rollout of Zero Waste initiatives. A

Actions for Implementation

Low-Hanging Fruit (1-4 years)	
▪ Provide outreach, education, and technical assistance to municipalities, schools, 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 neighboring jurisdictions about the impact of incineration in Delaware County.	
▪ 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.	
Mid-Range (5-9 years)	

▪ Engage with faith organizations, schools, colleges, and universities to promote waste reduction, reuse, recycling, and composting.	
▪ Increase recycling compliance education for multifamily 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. At the same time, many Americans face food insecurity (USDA estimates that 10% of Americans faced food insecurity in 2019). Up to 28% of the food that is wasted occurs at consumer-facing businesses such as grocery stores, restaurants, and other food service businesses.

A program to collect edible food and redirect the food to people in need helps mitigate several problems including climate change and food insecurity, while it also reduces resources going to landfills and incineration.

Actions for Implementation

Low-Hanging Fruit (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 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. Include catered Information for businesses, Institutions, and residents.	
Mid-Range (5-9 years)	
Partner with current food recovery efforts and build on their success and established 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-Range (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).	

7. Reuse and Repair

Quarterly or monthly repair fairs, tool lending library, 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 is a component of reuse and allows for durable goods to stay in use at their highest and best use longer. Reuse of goods and materials through repair helps to create good green local jobs, extends the life of the item, reduces the materials going to the landfill and incinerators, and supports 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

Low-Hanging Fruit (1-4 years)	
Understand and advertise existing library offerings of "non-book" items (e.g. tool sharing, seeds, games).	
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.	
Mid-Range (5-9 years)	
Partner with County libraries to Implement expanded lending libraries.	
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.)	
Develop a reuse, repair, and share online directory. This directory would offer information on where to divert materials for reuse, list local repair shops, list local reuse stores, and/or list tool-lending libraries. These resources can be created by the Delaware County government or could be created in conjunction with a community partner.	
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.

Locally, the Central Presbyterian Church in Downingtown has jumped on the idea. The Church hosts Repair Cafes, also known as fixit clinics, six 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.

"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.

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 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.

8. Addressing Litter and Dumping

Excessive waste within the community can often become a nuisance in the form of litter or, in worse cases, illegal dumping. Litter impacts quality of life, the natural environment, and the economic landscape of communities. Pennsylvania roadways alone are estimated to have over 502.5 million pieces of litter, and this is just 30% of the litter found within a community. In shifting toward a culture of Zero Waste, we are also aiming to remove waste from our community spaces in the form of litter and illegal dumping. To assist in this effort, in 2023, Delaware County became affiliated with Keep Pennsylvania Beautiful. Keep Delco Beautiful aims to bring people together to empower Delaware County to keep our communities clean and beautiful.

Low-Hanging Fruit (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 Programming such as the Young Ambassador Program, Litter Hawk Awards, Litter Free School Zones, etc.	
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 Pricing and Save Money and Reduce Trash (SMART). This is just like is done for electricity and water services in many communities.

Save-As-You-Throw systems can shift the burden of waste management costs from local tax rolls to user fees. They can work in a wide variety of ways, including:

Bag, Tags and Sticker Systems - Residents buy special bags, tag or stickers at City Hall and local retailers. The price includes the cost of collection services. Tags/stickers can designate specific volumes of waste and can be used for bulky items. No billing system to administer. Can work with cart- or can-based collection systems. Inexpensive to implement. 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 year) with public or private haulers.

Actions for Implementation

Low-Hanging Fruit (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.	
Mid-Range (5-9 years)	
▪ Evaluate opportunities to implement save-as-you-throw volume-based pricing 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.	

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, PA 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.

In this program, residents can choose between a 95-, 65-, or 35-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 a 90%+ recycling participation rate in the community, which has enabled the Township to achieve a 57% diversion rate along with a 32% cost reduction for collection.

Annual fee based on the size of trash cart

10. Reduce Frequency of Trash Collection

Encourage the transition from twice per week trash collection to weekly collection or weekly to every-other-week trash collection along with weekly organics collection. Promote the reduction of subscription haulers for reduction in 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 and adding additional 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. Pay-As-You-Throw is often accompanied by the addition of more recycling services, including weekly organics collection. In most locations, "putrescibles" such as food scraps are required to be collected weekly. If food scraps are collected on a weekly basis apart from trash, 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. First, puts the municipality on a single path for collection, reducing the number of trucks on the road, but It also generates economy of scale within the community.

Actions for Implementation

Low-Hanging Fruit (1-4 years)	
▪ Encourage the transition from twice per week trash collection to weekly collection to 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-Range (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

Quarterly collection of reusable goods, textiles, and furniture.

This initiative creates a curbside residential program for the collection of durable goods and textiles to be collected for reuse and/or recycling. This program can be created by Delaware County in collaboration with nonprofit and for-profit organizations that specialize in the reuse and recycling of reusable goods, textiles, and furniture.

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.

Actions for Implementation

Low-Hanging Fruit (1-4 years)	
▪ Evaluate existing service offerings for businesses or non-profits that will collect items for reuse and promote services.	
▪ Understand existing free-standing drop-off locations for reusable goods (e.g. Green Drop Locations, clothing collection bins, etc.).	
▪ Speak with collection organizations regarding expansion to ensure coverage throughout the entire County.	
Long-Range (10+ years)	
▪ Consider creation of 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 to occur. Actions in this section not only seek to provide innovative approaches for Zero Waste, but they also seek 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, following exploration during low-hanging fruit, that not all may be applicable or needed for the County to implement; however, in documenting these opportunities, it recognizes the importance of considering these options and having a better understanding of existing services and County needs.

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. Refill in food (e.g. grocery bulk bins) and beverages (e.g. travel coffee mugs) is common and can be expanded. Other opportunities for refill 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.

Actions for Implementation

Low-Hanging Fruit (1-4 years)	
▪ Expand water refill stations at County buildings and parks and encourage adoption within municipal facilities.	
Mid-Range (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-Range (10+)	
▪ Work with Commerce Center, workforce development, and municipalities 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 USEPA estimates that 90 percent of construction and demolition debris results from building demolition and renovation with 40 percent of total debris resulting from residential and nonresidential renovation projects. Renovation and demolition debris consists of salvageable materials and reusable materials.

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

Actions for Implementation

Low-Hanging Fruit (1-4 years)	
▪ Research and understand existing reuse centers servicing Delaware County and promote services.	
Mid-Range (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 centers 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-Range (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 “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, can reduce problems with illegal dumping.

Low-Hanging Fruit (1-4 years)	
▪ Research existing recycling options for hard-to-recycle materials and create a toolkit of these resources for municipalities.	
▪ Support municipal efforts in addressing hard-to-recycle materials, including tires.	
▪ Consider universal accessibility of existing recycling programs hard-to-recycle materials across all 49 municipalities.	
Mid-Range (5-9 years)	
▪ Research local markets and existing service gaps for hard-to-recycle materials to determine need for county-owned CHaRM facility.	
▪ Explore partnerships with existing private recycling facilities that may want to expand their services to include drop-off of hard-to-recycle materials.	
Long-Range (10+ years)	
▪ If needed, assess county-owned properties for development of a CHaRM.	

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

The Town of Saugus, MA opened a CHaRM facility in September 2015. 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.

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

Low-Hanging Fruit (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 in-County material recovery facility.	
▪ Explore opportunities for implementation of multi-stream recycling to reduce residual rates.	
▪ Evaluate opportunities for transfer of recyclables at County-owned Transfer Stations to enhance convenience and reduce local emissions.	
Mid-Range (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.	

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 compostable paper are converted into a nutrient-rich soil amendment. They can be public, private, or operated through public/private partnerships. There is a stricter permitting process for food scraps than yard waste, resulting in limited capacity for food scraps.

Low-Hanging Fruit (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.	
Mid-Range (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 and develop or contract for a facility to process organic materials collected within 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.

The results of this study will be published and available to the community. Allowing the community to know the study results will help them understand why the county is working toward Zero Waste and help them understand why specific Zero Waste policies and programs will be initiated. The study results will also 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.

Low-Hanging Fruit (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.	
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+)	
▪ Continue researching the long-term impacts of different waste disposal methods (ex. Incineration, landfilling).	

Implementation and Estimated Impact

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, and many organizations within our 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, many 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

As the saying goes, "we don't need a handful of people doing Zero Waste perfectly, but we need millions of people doing it imperfectly". For the County to truly move toward Zero Waste, involvement and participation will be needed from the whole community. Though many actions within this Plan are catered toward the County or Municipal governments for policy or infrastructure upgrades, individual and organizational behavior change is 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, moving the needle toward Zero Waste.

Impact

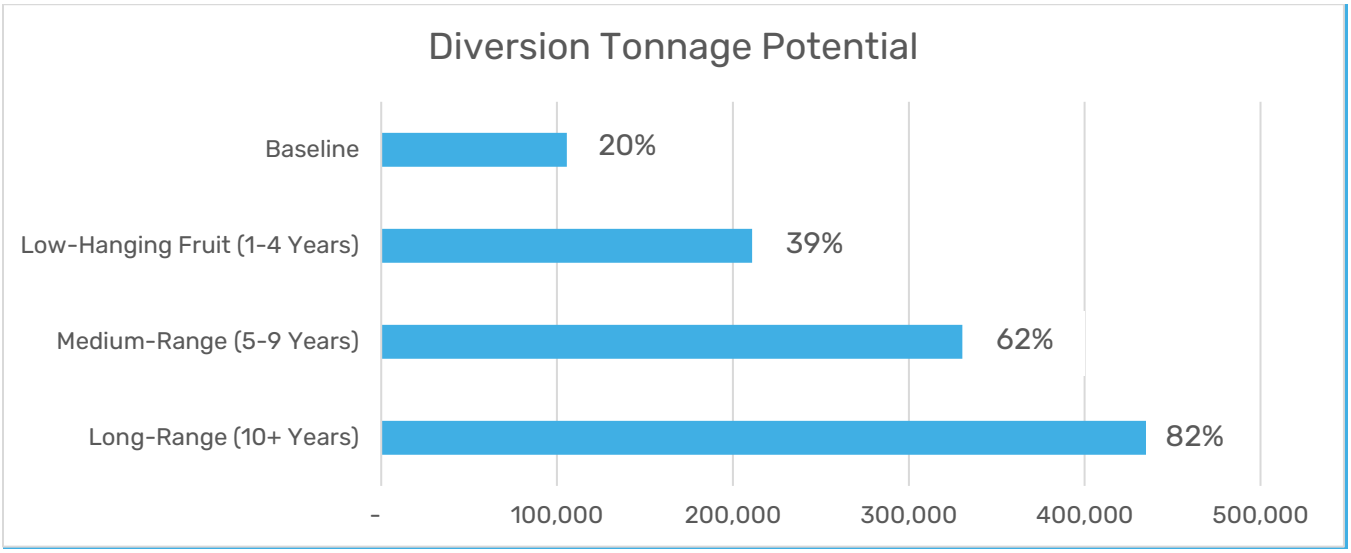
Each of the prescribed Zero Waste initiatives has the potential to increase the countywide diversion rate. Estimates were made using conservative assumptions for capture rates by material type for what can be accomplished by implementing these actions using the US EPA WARM Tool.

The Zero Waste initiatives described above highlight the "low-hanging fruit" near-term (1-4 years), medium-range (5-9 years) and long-range (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 in implementing the prescribed actions.

Diversion Potential	Baseline	Low-Hanging Fruit (Years 1-4)	Medium-Range (Years 5-9)	Long-Range (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 merely an aspiration, this roadmap serves to completely change how Delaware County looks and thinks about waste in an effort 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. 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".

Appendix A: Action Matrix

Category	Initiative	Action	Timeframe	Lead Adopter	Supporting Partner
Policy	**Product Policy**	Research ability for County-wide ordinance adoption for increased waste reduction and diversion.	Low (1-4 years)	County	
Policy	**Product Policy**	Develop policy for County facilities and events addressing single use plastics, shopping bags, and other product policies.	Low (1-4 years)	County	
Policy	**Product Policy**	Draft model municipal ordinances addressing single use plastics, plastic shopping bags and other product policies and support municipalities through adoption.	Low (1-4 years)	Municipality	County
Policy	**Product Policy**	Prepare County green procurement policy restricting single-use plastics and increasing recycled content purchases.	Low (1-4 years)	County	
Policy	**Product Policy**	Provide ordinance reviews and recommendations for local municipalities regarding recycling, Illegal dumping, composting, and other policies which promote Zero Waste.	Low (1-4 years)	Municipality	County
Policy	**Product Policy**	Advocate for state legislation to increase recycling requirements, provide better tracking of recyclables and restrict use of glass for alternative daily cover at landfills.	Mid (5-9 years)	County	Municipality
Policy	Construction and Demolition Recycling	Evaluate existing ordinances to better understand ability for adaptive reuse and demolition requirements.	Low (1-4 years)	Municipality	County
Policy	Construction and Demolition Recycling	Encourage adaptive reuse practices and protections, thus minimizing need for demolitions.	Low (1-4 years)	Municipality	County
Policy	Construction and Demolition Recycling	Develop a model ordinance with encourages adaptive reuse of buildings and structures.	Mid (5-9 years)	Municipality	County
Policy	Construction and Demolition Recycling	Develop a model deconstruction ordinance and encourage adaptive reuse of buildings instead of demolition.	Mid (5-9 years)	Municipality	County
Policy	Construction and Demolition Recycling	Where deconstruction is not possible, develop model ordinance requiring recycling for construction and demolition.	Mid (5-9 years)	Municipality	County
Policy	Construction and Demolition Recycling	Support expansion of construction and demolition debris processing and reuse centers.	Mid (5-9 years)	County	
Policy	Universal Collection	Collaborate with municipalities to develop universal collection ordinance, requiring all generators to have waste, recycling, and composting services.	Low (1-4 years)	Municipality	County
Policy	Universal Collection	Support the creation of pilot programs which emphasize shared service contracts between jurisdictions.	Low (1-4 years)	Municipality	County
Policy	Universal Collection	Host a roundtable for discussing challenges and opportunities with existing waste stream.	Low (1-4 years)	County	Municipality
Policy	Universal Collection	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).	Low (1-4 years)	Municipality	County

Policy	Universal Collection	Increase accessibility to County reuse, recycling, and composting programs so that all residents can participate.	Low (1-4 years)	County	Municipality
Policy	Universal Collection	Adopt and implement a Universal Collection Policy for County Buildings and Facilities.	Mid (5-9 years)	County	
Policy	Universal Collection	Support adoption of flow control ordinances directing municipal waste, recyclables, and organics to public facilities.	Mid (5-9 years)	County	Municipality
Policy	Universal Collection	Support municipal collaboration and sharing of services for waste, recycling and organics collection, street sweeping and other services.	Mid (5-9 years)	Municipality	County
Policy	Universal Collection	Continue supporting implementation of model ordinances and joint-service contacts throughout the County.	Long (10+ years)	Municipality	County
Culture	Lead by Example	Transition to paperless forms and files in County facilities.	Low (1-4 years)	County	
Culture	Lead by Example	Develop and implement enhanced waste reduction, recycling, and composting systems at County buildings, parks, and events.	Low (1-4 years)	County	
Culture	Lead by Example	Provide technical assistance to municipalities and community based upon implementation experience.	Low (1-4 years)	County	
Culture	Lead by Example	Provide education to County staff regarding Zero Waste best practices.	Low (1-4 years)	County	
Culture	Lead by Example	Integrate recycling and Zero Waste education into employee on-boarding process.	Low (1-4 years)	County	
Culture	Lead by Example	Provide training to custodial contractors regarding County recycling practices.	Low (1-4 years)	County	
Culture	Lead by Example	Modify County facility collection contracts to include measurement and reporting of waste reduction, recycling, and composting.	Low (1-4 years)	County	
Culture	Lead by Example	Report annually on progress.	Low (1-4 years)	County	
Culture	Lead by Example	Reinvigorate the Delaware County Green Team to further empower and engage County staff on to Implement Zero Waste initiatives.	Low (1-4 years)	County	
Culture	Lead by Example	Provide reuse closet/supply swap in County buildings.	Mid (5-9 years)	County	
Culture	Lead by Example	Research the end use markets for recyclables generated in the County to ensure proper handling and diversion.	Mid (5-9 years)	County	
Culture	Lead by Example	Ensure proper recycling and diversion receptacles are in all county parks and facilities	Mid (5-9 years)	County	
Culture	Outreach, Ed., and Technical Asst	Provide outreach, education, and technical assistance to municipalities, schools, and the general public for reducing waste, recycling and composting countywide.	Low (1-4 years)	County	Municipality
Culture	Outreach, Ed., and Technical Asst	Ensure education and outreach is available in multiple languages and targeted at different age ranges.	Low (1-4 years)	County	
Culture	Outreach, Ed., and Technical Asst	Create a directory for local reuse, recycling, composting, and donation opportunities.	Low (1-4 years)	County	
Culture	Outreach, Ed., and Technical Asst	Assist in the establishment of “Waste Watchers” programs in County, facilities, municipalities, and businesses to address contamination in recycling and composting streams.	Low (1-4 years)	County	Municipality

Culture	Outreach, Ed., and Technical Asst	Provide waste reduction and recycling training opportunities for municipal staff and community organizations.	Low (1-4 years)	County	Municipality
Culture	Outreach, Ed., and Technical Asst	Communicate with neighboring jurisdictions about the impact of incineration in Delaware County.	Low (1-4 years)	County	Municipality
Culture	Outreach, Ed., and Technical Asst	Promote collaborations for shared services between municipalities to move toward Zero Waste.	Low (1-4 years)	Municipality	County
Culture	Outreach, Ed., and Technical Asst	Explore and pursue funding for the implementation of waste reduction and diversion activities.	Low (1-4 years)	County	Municipality
Culture	Outreach, Ed., and Technical Asst	Engage with faith organizations, schools, colleges, and universities to promote waste reduction, reuse, recycling, and composting.	Mid (5-9 years)	County	Municipality
Culture	Outreach, Ed., and Technical Asst	Increase recycling compliance education for multifamily and commercial generators.	Mid (5-9 years)	Municipality	County
Culture	Outreach, Ed., and Technical Asst	Create a communications plan for Zero Waste, including toolkits, online resources, signage, and other outreach materials.	Mid (5-9 years)	County	
Culture	Outreach, Ed., and Technical Asst	Identify Zero Waste best management practices and toolkits for each sector (residential, multifamily, businesses, institutions).	Mid (5-9 years)	County	Municipality
Culture	Food Donation	Map existing food disbursement and food recovery resources, both retail and non-profit, to identify priority areas for food recovery and distribution.	Low (1-4 years)	County	
Culture	Food Donation	Promote existing food recovery operations and food disbursement programs.	Low (1-4 years)	County	Municipality
Culture	Food Donation	Work with Delaware County Health Department to determine safety fact sheet for food donation and disburse to businesses with connections to existing programs.	Low (1-4 years)	County	
Culture	Food Donation	Identify needs for further expansion of food recovery efforts.	Low (1-4 years)	County	
Culture	Food Donation	Create a campaign and educational materials regarding food waste with tips and recommendations for reduction. Include catered Information for businesses, Institutions, and residents.	Low (1-4 years)	County	
Culture	Food Donation	Partner with current food recovery efforts and build on their success and established systems to expand into new service areas, ensuring coverage for the entire county.	Mid (5-9 years)	County	Municipality
Culture	Food Donation	Engage with schools, businesses, and restaurants to increase food donation.	Mid (5-9 years)	County	Municipality
Culture	Food Donation	Establish a food donation tool kit for municipalities, businesses, and events.	Mid (5-9 years)	County	Municipality
Culture	Food Donation	Identify a channel for food donation and distribution following county events.	Mid (5-9 years)	County	
Culture	Food Donation	Create a support system for food banks and food rescue operations connecting them with resources for expansion	Long (10+)	County	Municipality

		and efficiency (e.g. connecting businesses that could provide refrigerated storage facilities, refrigerated trucks and mobile storage containers for collecting and distributing edible food).			
Culture	Repair & Reuse	Understand and advertise existing library offerings of "non-book" items (e.g. tool sharing, seeds, games).	Low (1-4 years)	County	Municipality
Culture	Repair & Reuse	Identify needs and opportunities for further lending libraries for items such as tools, baking equipment, and other non-book items.	Low (1-4 years)	County	Municipality
Culture	Repair & Reuse	Partner with County libraries to host a pilot Fixit Clinic or Repair Café.	Low (1-4 years)	County	
Culture	Repair & Reuse	Partner with County libraries to implement expanded lending libraries.	Mid (5-9 years)	County	Municipality
Culture	Repair & Reuse	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)	County	Municipality
Culture	Repair & Reuse	Develop a reuse, repair, and share online directory. This directory would offer information on where to divert materials for reuse, list local repair shops, list local reuse stores, and/or list tool-lending libraries. These resources can be created by the Delaware County government or could be created in conjunction with a community partner.	Mid (5-9 years)	County	
Culture	Repair & Reuse	Partner with local trade organizations to support repair education in the community.	Mid (5-9 years)	County	
Culture	Litter & Dumping	Address illegal dumping in community spaces and County parks through community-based outreach, education, and enforcement.	Low (1-4 years)	County	Municipality
Culture	Litter & Dumping	Develop an “adopt-an-area” program to address litter and illegal dumping on municipal roads and streets.	Low (1-4 years)	Municipality	County
Culture	Litter & Dumping	Support litter collection on County properties and adjacent roadways through staff engagement and participation.	Low (1-4 years)	County	
Culture	Litter & Dumping	Encourage coordination between PennDOT, municipalities, non-profits, and residents to cover gaps in litter prevention and abatement.	Low (1-4 years)	Municipality	County
Culture	Litter & Dumping	Encourage litter prevention education in schools through Keep Pennsylvania Programming such as the Young Ambassador Program, Litter Hawk Awards, Litter Free School Zones, etc.	Low (1-4 years)	County	Municipality
Culture	Litter & Dumping	Encourage shared services between municipalities for street sweeping and beautification.	Mid (5-9 years)	Municipality	County
Culture	Litter & Dumping	Engage the business community regarding litter abatement and beautification.	Mid (5-9 years)	County	Municipality
Culture	Litter & Dumping	Encourage the creation of Zero Waste Ambassador and Block Captain programs	Mid (5-9 years)	Municipality	County
Curbing Waste	Save-As-You-Throw	Introduce the concept of save-as-you-throw disposal programs to municipalities and private residential collectors and encourage adoption.	Low (1-4 years)	County	Municipality
Curbing Waste	Save-As-You-Throw	Meet with private waste haulers and municipalities In Delaware County to understand needs for implementation.	Low (1-4 years)	County	Municipality
Curbing Waste	Save-As-You-Throw	Evaluate opportunities to implement save-as-you-throw volume-based pricing for collection programs.	Mid (5-9 years)	Municipality	County
Curbing Waste	Save-As-You-Throw	Collect or generate sample contracts for implementing Save-As-You-Throw and share with municipalities and private haulers.	Mid (5-9 years)	County	Municipality

Curbing Waste	Save-As-You-Throw	Support municipal adoption and pilot programs.	Mid (5-9 years)	Municipality	County
Curbing Waste	Reduce Frequency of Collection	Encourage the transition from twice per week trash collection to weekly collection to municipalities, private haulers, and residents with subscription services.	Low (1-4 years)	Municipality	County
Curbing Waste	Reduce Frequency of Collection	Promote information sharing between municipalities to show how once-per-week collection can be effectively Implemented.	Low (1-4 years)	Municipality	County
Curbing Waste	Reduce Frequency of Collection	Encourage the transition to every-other-week trash collection along with weekly organics collection.	Mid (5-9 years)	Municipality	County
Curbing Waste	Reduce Frequency of 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.	Mid (5-9 years)	Municipality	County
Curbing Waste	Reuse Collection	Evaluate existing service offerings for businesses or non-profits that will collect items for reuse and promote services.	Low (1-4 years)	County	Municipality
Curbing Waste	Reuse Collection	Understand existing free-standing drop-off locations for reusable goods (e.g. Green Drop Locations, clothing collection bins, etc.).	Low (1-4 years)	County	Municipality
Curbing Waste	Reuse Collection	Speak with collection organizations regarding expansion to ensure coverage throughout the entire County.	Low (1-4 years)	County	Municipality
Curbing Waste	Reuse Collection	Consider creation of a curbside residential program for the collection of reusable goods, textiles, and furniture.	Long (10+)	County	Municipality
Curbing Waste	Reuse Collection	Encourage curbside bulky item collection programs to include both reusable items and bulky items for recycling (including scrap metal and wood).	Long (10+)	Municipality	County
Infrastructure	Refill Stations	Expand water refill stations at County buildings and parks and encourage adoption within municipal facilities.	Low (1-4 years)	County	Municipality
Infrastructure	Refill Stations	Support the growth of zero packaging stores across the county.	Mid (5-9 years)	County	Municipality
Infrastructure	Refill Stations	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)	County	Municipality
Infrastructure	Refill Stations	Work with Commerce Center, workforce development, and municipalities to create Recycling Market Development Zones to promote creation and investment of reuse and diversion businesses In Delaware County.	Long (10+)	County	Municipality
Infrastructure	Building Material Reuse Ctr	Research and understand existing reuse centers servicing Delaware County and promote services.	Low (1-4 years)	County	Municipality
Infrastructure	Building Material Reuse Ctr	Engage with workforce development to incentivize the creation of private or public reuse centers in Delaware County.	Mid (5-9 years)	County	
Infrastructure	Building Material Reuse Ctr	Assess county-owned properties and capacity to determine if development of a building materials reuse centers is feasible and needed.	Mid (5-9 years)	County	
Infrastructure	Building Material Reuse Ctr	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)	County	
Infrastructure	Building Material Reuse Ctr	Site and develop building materials reuse centers, as needed.	Long (10+)	County	

Infrastructure	CHaRM	Research existing recycling options for hard-to-recycle materials and create a toolkit of these resources for municipalities.	Low (1-4 years)	County	Municipality
Infrastructure	CHaRM	Support municipal efforts in addressing hard-to-recycle materials, including tires.	Low (1-4 years)	Municipality	County
Infrastructure	CHaRM	Consider universal accessibility of existing recycling programs hard-to-recycle materials across all 49 municipalities.	Low (1-4 years)	County	Municipality
Infrastructure	CHaRM	Research local markets and existing service gaps for hard-to-recycle materials to determine need for county-owned CHaRM facility.	Mid (5-9 years)	County	
Infrastructure	CHaRM	Explore partnerships with existing private recycling facilities that may want to expand their services to include drop-off of hard-to-recycle materials.	Mid (5-9 years)	County	Municipality
Infrastructure	CHaRM	If needed, assess county-owned properties for development of a CHaRM.	Long (10+)	County	
Infrastructure	Recycling Processing	Spread awareness and education regarding existing recycling processes to promote trust and understanding of the system.	Low (1-4 years)	County	Municipality
Infrastructure	Recycling Processing	Evaluate existing market challenges and consider need for in-County material recovery facility.	Low (1-4 years)	County	
Infrastructure	Recycling Processing	Explore opportunities for implementation of multi-stream recycling to reduce residual rates.	Low (1-4 years)	Municipality	County
Infrastructure	Recycling Processing	Evaluate opportunities for transfer of recyclables at County-owned Transfer Stations to enhance convenience and reduce local emissions.	Low (1-4 years)	County	
Infrastructure	Recycling Processing	Identify technology and systems available to process recyclable materials.	Mid (5-9 years)	County	
Infrastructure	Recycling Processing	If needed, secure funding and develop or contract for a facility to process recyclable materials collected within the county.	Mid (5-9 years)	County	
Infrastructure	Organics	Provide education on the importance and benefits of composting in the community, and information about backyard composting.	Low (1-4 years)	County	Municipality
Infrastructure	Organics	Promote and partner with existing channels for organics processing in the County, including haulers and processors.	Low (1-4 years)	County	Municipality
Infrastructure	Organics	Survey communities to understand market viability and interest in composting.	Low (1-4 years)	County	Municipality
Infrastructure	Organics	Evaluate existing market challenges and identify need for local organics processing facility.	Low (1-4 years)	County	
Infrastructure	Organics	Consider need or opportunities for developing a county-owned or operated composting facility to bolster processing capacity.	Low (1-4 years)	County	
Infrastructure	Organics	Advocate for inclusive and modernized composting legislation In Pennsylvania.	Low (1-4 years)	County	Municipality
Infrastructure	Organics	Identify technology and systems available to process organic materials.	Mid (5-9 years)	County	
Infrastructure	Organics	Work with municipalities, businesses, and Institutions to provide hauling services for curbside or community composting.	Mid (5-9 years)	Municipality	County
Infrastructure	Organics	Understand and secure partners and markets for purchasing composting end-products.	Mid (5-9 years)	County	
Infrastructure	Organics	Secure funding and develop or contract for a facility to process organic materials collected within the county.	Mid (5-9 years)	County	
Infrastructure	Research & Reporting	Conduct a County-wide waste characterization study to better understand recycling, composting and trash	Low (1-4 years)	County	

		composition and quantities by sector (residential, commercial, construction).			
Infrastructure	Research & Reporting	Perform a County-Facilities waste characterization study to better understand opportunities for Increased diversion and recycling activities.	Low (1-4 years)	County	
Infrastructure	Research & Reporting	Cater collection programs and education to address the most prevalent materials in the Delaware County Waste Stream.	Mid (5-9 years)	County	Municipality
Infrastructure	Research & Reporting	Implement community composting pilot programs which provide convenient neighborhood /municipal drop off locations for composting.	Mid (5-9 years)	County	Municipality
Infrastructure	Research & Reporting	Continue researching the long-term impacts of different waste disposal methods (ex. Incineration, landfilling).	Long (10+)	County	

Appendix B: Glossary of Terms and Abbreviations

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	An act 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 vector.
Carbon Dioxide Equivalent (eCO2)	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.
Disadvantage/Historically Marginalized/Overburdened Communities	Minority, low-income, tribal, or indigenous populations or geographic locations in the United States that potentially experience disproportionate environmental harms and risks.
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. Generation + Diversion + Disposal. Diversion Rate (%) = Diversion (tons)/Generation (tons)
Dual Stream Recycling	A system of recycling in which the consumer sorts their recycled goods before they are picked up by. The recyclables are sorted into paper/cardboard and metals/glass/plastic. This form of recycling typically reduces contamination and results in higher quality materials.
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 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 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 weigh, and sometimes, to produce energy.
Justice 40 Designated Area	An initiative prescribed by the federal government to provide 40% of the overall benefits of certain federal investments flow to disadvantaged communities that are marginalized, underserved, and overburdened by pollution. Communities designated as Justice40 can be identified using the Climate and Economic Justice Screening Tool. *Note, this tool may no longer be available as of 1/20/2025, however, a map of communities can be found on Page 5 of Sustain Delco.
Life Cycle Analysis (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 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 incinerator facility located in the City of Chester which processes approximately 1,230,000 tons of waste per year from Delaware County, Philadelphia, and several other communities along the east coast.
Single Stream Recycling	A system in which all recyclables, including newspaper, cardboard, plastic, aluminum, 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 materials in use for as long as possible and minimizing the number of materials that end as waste.
Transfer Station	A facility in which solid waste is unloaded from smaller trucks and reloaded into larger 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 is a tool 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
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 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.
Wasting	To use too much of something or the act of throwing away or discarding something. What is a
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.
Zero Waste Hierarchy	A decision-making tool which describes a progression of policies and strategies to support a Zero Waste system, from highest and best to lowest use of materials. This tool was created by the Zero Water International Alliance and has been peer-reviewed.
Acronyms	
PA DEP	Pennsylvania Department of Environmental Protection
US EPA	United States Environmental Protection Agency
DCSWA	Delaware County Solid Waste Authority
COPD	Chronic Obstructive Pulmonary Disease
EJ	Environmental Justice
EEV	Environmental Economic Values
eCO2	Equivalent of Carbon Dioxide
MSW	Municipal Solid Waste
MRF	Material Recovery Facility

Appendix D: 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.

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[i] Definition Provided by the Zero Waste International Alliance
[ii] https://zwia.org/zwh/
[iii] https://www.epa.gov/homeland-security-waste/waste-management-hierarchy-and-homeland-security-incidents