City of Philadelphia
Office of Clean & Green Initiatives, Sanitation Department, and Office of Sustainability

# Response to the Request for Information on Solid Waste Management

July 21, 2025

Submitted by

INCH and METER

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Dear Scott McGrath and Office of Sustainability Staff,

Inch and Meter, P.C., a Philadelphia-based environmental consulting and engineering firm (certified LBE and WBE), is grateful for the opportunity to respond to your Request for Information (RFI) on Solid Waste Management in Philadelphia, issued on June 26. We support the City's efforts to improve waste management and appreciate you soliciting input on best practices from stakeholders early on. In recent weeks Philadelphia's residents got a new appreciation for the fact that waste does not magically disappear when we discard it and we hope that there may now be greater public support for initiatives to reduce and more sustainably manage waste.

We have extensive staff experience in complex systems planning, data gathering and analysis, including solid waste planning. We are currently working on the final phases of New York City's next 10-year Solid Waste Management Plan (SWMP) and have collected publicly available regional waste management data as part of that effort. We have also worked with the Philadelphia Office of Sustainability, on the 2019 Greenhouse Gas (GHG) Inventory, in which we gathered available data on collected municipal waste and disposal practices to calculate GHG emissions. We would be happy to leverage our knowledge of a variety of waste management strategies, as well as our expertise in assessing environmental effects (such as climate, air quality, environmental justice), dwindling landfill and incineration capacity, and local and global market factors and policies that affect waste management.

In addition to sharing recommendations as part of this response, we would consider submitting proposals in response to future solicitations to assist you with developing a Solid Wate Management Plan (in accordance with Pennsylvania Code, Chapter 272. Municipal Waste Planning, Recycling and Waste Reduction), planning for additional waste management facilities, and developing pilot and other new programs (e.g., for managing organics and for facilitating reuse and repair).

While Inch and Meter has collected data on regional incinerators and landfills, including location, capacity, energy recovery, environmental and health information, and while we also have information on paper and metal, glass, and plastics (MGP) processing facilities, Questions 3.2.1 through 3.3.2 in the RFI appear directed at waste management providers. We will therefore focus our response on Questions under **Section 3.1 (Methodology recommendations for the City's upcoming residential RFP) and Section 3.3 (Information on Zero Waste Strategies)**.

We would be happy to have follow up conversations with your team and would welcome the opportunity to contribute to Philadelphia's efforts to more efficiently, cost-effectively, and sustainably manage waste and work to meet zero-waste goals.

Sonia Dattaray,

Sustainability and Public Health Lead
Inch and Meter, P.C.

# 1. General Information

| | | |
|---|---|---|
| 1.1 | Organization/Respondent Name* | Inch and Meter, P.C. |
| 1.2 | Street Address | 21 S 11th Street, Floor 2 |
| 1.3 | City, State, Zip | Philadelphia, PA 19107 |
| 1.4 | Primary Business | Environmental Consulting and Engineering |
| 1.5 | Point of Contact Name*: | Sonia Dattaray |
| 1.6 | Title: | Sustainability and Public Health Lead |
| 1.7 | Phone*: | 267-636-0448 |
| 1.8 | Email*: | sonia@inchandmeter.com |
| 1.9 | Organization Web Address: | inchandmeter.com |

# 2. Firm Overview

**Inch and Meter** is an environmental consulting and engineering firm, founded in 2019 with a wide range of environmental planning, engineering, and environmental compliance services, including waste management planning. Inch and Meter's highlighted capabilities include:

- ✓ environmental policy support
- ✓ GIS analysis and mapping
- ✓ environmental justice
- ✓ air quality analysis (emissions and dispersion modeling)
- ✓ environmental compliance
- ✓ environmental review
- ✓ mitigation of environmental impacts
- ✓ engineering design coordination
- ✓ sustainability plans
- ✓ waste management plans
- ✓ project management
- ✓ GHG inventories and climate action
- ✓ climate hazards, vulnerability assessments, and adaptation plans
- ✓ construction impact assessment
- ✓ capital project planning
- ✓ stakeholder engagement and education

Inch and Meter is a certified Local Business Enterprise (LBE), Women Business Enterprise (WBE), and Disadvantaged Business Enterprise (DBE) with a firm commitment to racial, social, and economic justice and environmental sustainability. We currently have four full-time employees and one hourly employee. We hope to expand our headquarters in Philadelphia with additional staff over the next couple of years. We have previously offered internships to local high school and university students and hope to continue to support the local economy and provide education and training for environmental and planning jobs.

We recognize that Philadelphia has a vibrant community interested in sustainable waste management, including within the small business and non-profit sectors. While we have not reached out to anyone as part of this response, we would hope to collaborate rather than compete with those types of stakeholders, if encouraged by future RFPs. We would also be interested in developing potential pilot programs for the City at large local institutions.

## Relevant Experience

Our team offers extensive local and regional knowledge. As mentioned, we are currently working with New York City's Department of Sanitation (DSNY) on New York City's next 10-year Solid Waste Management Plan. In addition to describing the current waste management system and discussing the programs proposed for implementation, Inch and Meter put together a GIS map of waste management facilities within New York City, as well as regional facilities where waste is currently managed or could be managed in the future. We have also developed a flow model, which facilitates analysis and visualization of New York City's waste data from cradle to grave.

Inch and Meter had also prepared Philadelphia's Greenhouse Gas (GHG) Inventory, which included an analysis of waste flows and waste characterization data by sector. We used this information to quantify GHG emissions and trends in emissions and waste quantities. We have also worked on the Pennsylvania Department of Environmental Protection Climate Action Plan and Climate Impact Assessment, and focused our work on the solid waste sector, air quality, and environmental justice.

Past work of our staff includes project management of the conceptual and preliminary design of NYC Single Stream Recycling Infrastructure at the Sims Municipal Recycling Facility in Sunset Park. Additionally, Inch and Meter's principal managed the preparation of the Environmental Impact Statement for the Cross Harbor Freight Movement Program, which included detailed analysis of freight flows (including municipal solid waste forecasts) encompassing New York City and a 54-county multi-state modeling area. Previous work also included the review of potential air quality impacts of numerous waste transfer station permit applications (Tully Environmental, American Recycling Management, City Recycling, DeCostole Carting, and Faztec). Inch and Meter's principal also quantified the costs and benefits of New York City's alternative and retrofitted vehicle fleets (including sanitation trucks) that were funded through the Congestion Mitigation and Air Quality (CMAQ) program.

In summary, we highlight the following strengths of our team understanding and experience:

- ✓ Solid waste management planning
- ✓ Waste management process and facilities

- ✓ Urban infrastructure planning and GIS
- ✓ Environmental review for waste transfer facilities
- ✓ Preliminary design for the expansion of a Recycling Facility
- ✓ Work for the Office of Sustainability and Pennsylvania Department of Environmental Protection (PADEP)
- ✓ Collection and analysis of large data sets
- ✓ Strong engineering background in dynamic process analysis, modeling, and control
- ✓ Planning for static and dynamic capacity, seasonality, peak periods, and bottle neck alleviation on large-scale infrastructure systems
- ✓ Understanding of the drivers of waste generation, recycling, and reduction (population and development, technology changes, recovered material costs, transport costs, disposal facility capacity, local and global policies and markets, and equity considerations)
- ✓ Environmental sustainability, climate change, air quality, and equity benefits of waste reduction through composting, anaerobic digestion, recycling, chipping, deconstruction, adaptive reuse, and other initiatives
- ✓ Economic benefits of waste management optimization
- ✓ Communicating highly technical data in visually appealing and informative graphics and dashboards to diverse audiences

In working with you in the future, our team would also contribute to Philadelphia's small business growth and WBE goals. We look forward the opportunity to discuss the City's needs with you in more detail. It would be an honor to contribute to Philadelphia's efforts to more efficiently, cost-effectively, and sustainably manage waste and work to meet zero-waste goals. 3. Responses to Requested Information

## 3.1.1 Methodology Recommendations for the Upcoming RFP

There are several approaches that can be used to compare waste treatment and transportation from a health and environmental impacts perspective, including air quality and environmental justice indicators, health indicators, and life-cycle GHG emissions. Details on these methodologies are outlined below:

- To evaluate facilities based on health impacts, the prevalence of diseases (e.g. cancers, asthma, cardiovascular diseases, etc.) in populations located near different types of waste management facilities (e.g. landfills, incinerators, recycling facilities, transfer facilities) could be compared with populations with similar socioeconomic attributes not located near different types of waste management facilities. This would allow for a comparison of the negative health outcomes associated with existing waste management facilities. This approach could apply publicly available data to compare health outcomes. Public health professionals, such as epidemiologists or

- An alternate approach is to conduct a health impact assessment (HIA) of specific waste management facilities or categories of waste management facilities.

An HIA is "a process which systematically judges the potential, and sometimes unintended, effects of a project, program, plan, policy, or strategy on the health of a population and the distribution of those effects within the population. HIA generates evidence for appropriate actions to avoid or mitigate health risks and promote health

opportunities. HIA guides the establishment of a framework for monitoring and evaluating changes in health as part of performance management and sustainable development" (Winkler et al., 2021). This approach would rely on existing literature, surveys, and health data where available to identify and qualify or quantify the health outcomes of populations adjacent to different types of waste management facilities.

This would allow for an evaluation and comparison of different types of facilities based on environmental and health impacts based on multiple scenarios , and allow for the quantification of the associated health outcomes for each scenario using assumptions from existing research.

- Risk assessments can be used to evaluate waste transportation. This assessment type would involve hazard identification, exposure assessment, and risk characterization. Hazards that could be considered in developing a waste transportation risk assessment include flammability of materials, biological hazards, contact with waste (e.g. sharps), heavy machinery accidents, and pollution. These hazards are associated with a variety of health risks, including acute injuries and respiratory illnesses. To determine the likelihood of these health outcomes, the population exposed to different hazards, the frequency of exposure, and the duration of exposure should be characterized. Waste transport should consider vehicle safety to workers and residents, as well as the distance vehicles travel and safety of routes. The type of materials transported should be considered when determining transport routes and management to reduce the risk of hazardous material spills.
- Truck safety features may include multiple cameras and auto-brake systems to reduce collisions. GPS features on vehicles would also allow for greenhouse gas emissions estimates and could assist with route optimization for waste collection. These technologies can contribute to evaluating and comparing vendors.
- A more general approach to conduct side-by-side comparisons of waste treatment facilities, would evaluate waste streams separately – for example, special waste (e.g. rechargeable batteries) would be assessed separately from recyclables (e.g. glass or plastic). A rubric that would evaluate the life cycle and recoverability of a material based on the waste management hierarchy (depicted in **Figure 1)** could be used to compare facilities ability to recover or recycle different types of materials.


*Figure 1: U.S. EPA*

| Example Rubric | | | | |
|---|---|---|---|---|
| Material | Most preferred (4) | Preferred (3) | Less preferred (2) | Least preferred (1) |
| Glass | Recirculated or reused in current form (e.g. refill) | Recycled into new glass | Reused as landfill cover | Incinerated |

| | | | | |
|---|---|---|---|---|
| Plastic | | | | |
| Metal | | | | |

This approach should also consider vendor capability and capacity. Facilities with the capability to reuse or reduce (rather than treat and dispose) waste could be weighed preferentially. Energy generation, air pollutant, and GHG emissions on a per ton managed basis, along with life-cycle costs should be the primary metrics for evaluating options. To equitably evaluate small and large waste management facilities, the proportion of materials recycled or recovered should also be evaluated. By considering the recyclability or recoverability of materials, environmental and health costs associated with sourcing new raw materials are reduced.

***b. Propose methodologies for creating standardized scoring systems that allow objective comparison between different waste management proposals.***

Standardized scoring systems used to evaluate different waste management proposals could include the following:

- Prior applicable experience of the proposer in solid waste management planning
- Experience with a variety of materials generated by residents (edible food, food scraps, leaf and yard waste, reusable goods, bulky items and appliances, metal, glass, plastic, textiles, special waste, hazardous waste) and the variety of options and technologies for managing them (source reduction, reuse, repair, recycle, composting, anaerobic digestion, treatment and safe disposal of hazardous and special waste).
- Understanding of local, national and global challenges with waste management, and economic and environmental considerations that affect waste generation, diversion, and disposal.
- Air quality experience
- Climate change experience
- Environmental justice experience
- GIS experience
- Life-cycle analysis experience
- Experience working with Philadelphia and other municipal governments
- Local knowledge and presence
- Experience in other jurisdictions
- Ideas on collaboration between private/ non-profit/ institutional partners
- Commitment to environmental justice and public health
- Assistance in developing collaborative pilot programs

- Ability to develop useful tools, such as interactive tools (maps, flow models, educational applications)
- MWBE / DBE / SBE / LBE participation

***c. Sample questions or criteria to include in the City's waste management RFPs to collect the necessary information to compare the health and environmental impacts of the proposed services.***

Waste facilities and transportation vendors hiring and wage practices, and environmental and sustainability initiatives can assist with evaluating vendors' proposed services. Questions evaluating these components can contribute to the assessment of services impacts on the health and well-being of employees.

Example questions for waste facilities and transportation companies relating to environmental justice and community engagement can include the following:

- What programs or technologies does the vendor implement to address environmental injustice inherent to the waste management practices, such as pollution control, odor, and health impacts? How long have the programs existed? What measurements have been taken to assess program success?
- Does the vendor provide benefits to those located in proximity to the company's waste management facility (within 5 miles if the facility is outside of Philadelphia or within 1 mile if within Philadelphia city limits)? Does the vendor create avenues for community members to provide feedback? If so, describe.

Quantitative data driven evaluation metrics can also be considered. Questions relating to hiring and employment practices that can assist with evaluation include:

- Are employees paid living wages and benefits, such as comprehensive health care and transportation reimbursement?
- Does the vendor have any workforce development programs? If so, how many employees in the past five-years have been hired through workforce development programming? What proportion of long-term employees in the past five-years have been employed through workforce development programs at the vendor?
- Are there labor and safety precautions or trainings that are provided or paid for by the vendor? What protocols exist to limit workers' exposure to extreme weather, uncontained waste, and other hazards to ensure safety?
- Record of OSHA inspections and violations over the past 10 years.

Questions relating to environmental health and sustainability include:

- For waste collected or managed by the vendor, are there waste diversion or recovery programs to increase recycling or reuse of materials? If so, what materials are recovered for recycling, reuse, or energy recovery? What proportion of materials are 1) recycled, 2) reused, and 3) recovered for energy?
- Records of pollution mitigation technologies implemented at facilities or in vehicles.

### *3.1.2 Methodology recommendations for ongoing waste management planning. How should the City evaluate the use of assessment methodologies and frameworks to inform decision making around waste management on an ongoing basis? For example:*

To evaluate the use of assessment methodologies and frameworks to inform decision making around waste management on an ongoing basis, the City should adopt an approach that considers data and stakeholder experiences. Potential tools that can be considered include life cycle assessments, waste characterization studies, material flow analyses, environmental justice screening tools, health impact assessments, surveys, and focus groups. The specific tools adopted and the frequency of application of these approaches should be adaptable based on available budget, staffing, regulatory requirements, and the goals that of the program.

#### *a. How should the City incorporate life cycle assessment tools and models, and any standardized frameworks into waste management planning?*

Waste management planning benefits from characterizing existing conditions, recognizing the environmental and health impacts of waste generated, and determining and selecting management options, key components of life cycle assessments.

In developing a solid waste management plan, the City of Philadelphia can identify and assess current conditions using waste characterization studies, locating waste management facilities, and understanding management practices of different waste streams. By assessing current conditions, including waste generation, trends, and diversion rates by material, and geographic and seasonal variations, can identify gaps in current waste management practices, as well as opportunities for waste reduction and diversion. This approach can also assist with understanding cost and revenue streams of different materials.

To understand the environmental and health impacts of waste generation and disposal, the solid waste management plan can compare greenhouse gas emissions associated with different disposal options, as well as health concerns associated with different facility type in and around the City. Conducting literature reviews and comparing available data on health and environmental metrics can assist with this process even where scenario specific data is not available.

In determining and selecting future management options, considerations of greenhouse gas emissions, occupational and public health and safety, and sustainability should be considered. The characterization of waste and management practices will assist with this process.

By conducting a life cycle assessment, or even a partial evaluation of the end-of-life of materials, Philadelphia will be better prepared to develop and implement policy to reduce waste disposal and increase reuse and recycling in the City.

In addition to considering life cycle assessments, the City can use a circular economy and waste management hierarchy frameworks to identify and prioritize opportunities for waste reduction and management of different waste streams.

#### *b. What are the minimum data requirements the City should consider to enable the use of the recommended methodologies and frameworks?*

Key metrics for determining a waste management plan include the following:

- Amount of waste generated, disposed as refuse, or diverted (annual)
- Waste distribution (periodic)
    - Proportion of refuse, recyclables (metal, glass, plastic, cartons), organics (leaves, wood, food), textiles, special/household hazardous (batteries, electronics, paints, solvents, etc.), and other
- Refuse and recycling disposal and contamination rates (daily, annual)
- Facilities processing MSW by type
    - Facility type
    - Transfer stations
    - Recycling facilities
    - Landfills
    - Incinerators
    - Composting facilities
    - Chipping facilities
    - Anaerobic digestors
    - Other
    - Quantity and type of waste disposed or recycled (annual)
    - Facility capacity (daily, annual)
    - Facility location
    - Transportation between collection and facility (transportation mode and distance)
    - Annual operating days
    - Emergency capacities
    - Secondary disposition locations (destination of contamination or materials disposed or recycled)

To project waste generation over the period of the waste management plan, the following datasets would be useful:

- Population projections
- Baseline waste generation by material (annual)
- Baseline waste disposed of and diverted by material (annual)
- During the development of the waste management plan, estimates for program impacts on waste

diversion and reduction would improve accuracy of waste projections.

***c. What technological tools could the City employ to improve the health and environmental impacts of waste management practices and inform future planning, including any considerations or limitations related to those tools.***

Tools that could assist with improving and addressing health and environmental impacts of waste management practices and inform future planning include:

- Greenhouse gas analyses
- EPA Waste Reduction Model (WARM) or custom-made tools
- EPA Policy and Program Impact Estimator: A Materials Recovery GHG Calculator for Communities, and
- EPA Co-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA).
- Health impact assessments

GHG analyses and health impact assessments require specialized experience or training. However, the EPA tools available include training modules that make these resources more accessible. Data availability and resources are considerations when selecting appropriate tools for evaluating health and environmental impacts of waste management.

Additionally, GIS and mapping tools can be used to understand capacity and transport, as well as to visualize and address environmental justice issues associated with waste management in Philadelphia.

Waste characterization studies and flow models can further assist with planning and understanding existing waste management conditions and opportunities.

Data quality and availability determine the usefulness of the above tools and methodologies. Lack of data or inconsistent reporting of data relating to waste management can create challenges in tracking and accurately assessing required waste management capacity, evaluating trends, and increasing diversion of waste.

## 3.3.3 Information on Zero Waste Strategies

***Please share information and long-term strategies and/or holistic approaches for the City to nearly eliminate waste sent to landfills and incinerators. Sharing knowledge of practices or programs in other jurisdictions is also encouraged. Please cite resources and studies where possible. Strategies of interest include:***

### *i. Residential curbside compost pick-up*

Philadelphia residential organics collection currently includes fall leaf collection and drop-offs. Additional community garden composting and resident paid collection through Bennet Compost supplement the existing City program. Interest in citywide residential curbside collection of compost is demonstrated through the increased service and capacity of Bennet Compost since the company's inception.

Cities with curbside organics collection include New York City, New York, San Francisco and San Diego, California, and Portland, Oregon. In Canada, Toronto and Montreal also have residential organics collection programs.

New York City rolled out universal residential curbside composting in October 2024. The program was launched in stages after an initial voluntary pilot program for residential organics programming. In conjunction with residential curbside composting, New York City employed Smart Compost Bins, which allow residents to use an app to access a composting bin 24/7. Challenges to residential composting include available space to store compost between pick-up days, cleaning of residential bins, and contamination of compost with other materials. An additional challenge is managing different types of organic materials. For example, leaves and yard waste require different processing from food waste. Composting organics is beneficial in terms of GHG emissions, reduced air pollution, resource conservation, and improved soil health.

In San Francisco, residents pay for waste collection, including composting collection. The cost per gallon for different waste streams is tiered with refuse costing more than recycling or compost.

Prior to instituting citywide residential composting in New York City, the majority of residential organic waste was collected through community organizations at designated drop-off sites (such as farmers markets and educational sites). In 2013, New York City also passed a commercial organic recycling law for businesses of a certain size.

[2021 – 2022 New York City Biennial Report; Recology]

### *ii. Pay-to-throw programming*

There are multiple forms of pay-to-throw programming. San Francisco residents are charged different amounts based on the material stream (refuse, recycling, organics). Residents are provided with a bin for refuse, recycling, and compost, with the volume of recycling and compost bins double the volume of refuse bins. Collection costs are the same for each bin. This system is overseen by a commercial waste collection vendor. Other systems of pay-to-throw require residents to deposit their refuse at a drop-off location where they are charged per bag of refuse. [Recology] We have photos of this system from an example in Europe that we can share in the future.

### *iii. Materials re-use*

Philadelphia has a burgeoning re-use economy with multiple bulk grocery co-ops (Marisposa Food Co-Op, Weavers Way), refill stores (Good Buy Supply, Ray's Reusables, Perennial Refill); circular businesses (Remark Glass, Bennet Compost, Rabbit Recycling, Revolution Recovery); and non-profits (Circular Philadelphia, Green Philly, The Resource Exchange) across the city. The City also has multiple reuse organizations, such as second hand stores, and repair businesses and organizations, such as the West Philly Tool Library.

Other programming that supports reuse includes goods swaps and repair cafes. New York City hosts Community Reuse and Recycling Events, where residents can exchange household goods, such as toys, clothing, books, and electronics. New York City also developed a platform to enable the exchange of goods and rescue of food between business and non-profit organizations, as well as the exchange of materials businesses and residents through the donateNYC platform. The platform also provides a map of reuse and repair organizations throughout the city. [2024 Zero Waste Report] Repair cafes are places or events, where

residents can bring household goods to repair. In the Greater Philadelphia repair cafes operate in Berwyn, Phoenixville, Downingtown, and Audubon. [MainLine Today] The City could work to incentivize and scale up the material re-use options that are already in place.

### *ix. Infrastructure needs to support innovation*

Infrastructure needs that can support circular, zero waste, low waste, reuse, and recycling businesses include financial support, affordable storage, zoning, land, and other incentives. A City grant for a site or funding, or a circular economy hub to encourage waste reduction and diversion initiatives. Examples of infrastructure to support innovation in the space include: Tornonto's Circular Food Innovators Fund, Oregon's Investment and Innovation grants, New York City's Governors Island Climate Pilot Programming, or Austin's Circular Economy Program.

### *v. Public/private partnerships*

College and university students make up approximately 7% of Philadelphia's population. Compared to other residents in the City, this population moves frequently, resulting in large quantities of waste disposal, including bulky items, at the end of the school year. Developing pilot programs in partnership with universities, the City can support waste reduction and reuse of large and bulky items. Students also provide a large enough group, often interested in sustainability, and future food packaging waste and zero waste event pilot programs could potentially be implemented at universities interested in participating.

Institutes and businesses are unique because they can capitalize on the high generation rate of specific materials and waste streams. For instance, stadiums and bars generate high volumes of cans and bottles. These materials are easily recyclable and can be cost reducers. Piloting public-private partnerships between packaging, textile, and food rescue or recycling programs at universities, hospitals, stadiums, concert venues, and other institutions and businesses throughout the City can lead to waste diversion and circular waste management capacity of these waste streams. Sharing Excess is an example of a Philadelphia based non-profit that rescues food from university cafeterias and businesses for redistribution to local hunger relief organizations. [SharingExcess]

### *vi. Workforce development opportunities*

Workforce development opportunities within the waste management sector include collection and processing skills, as well as education, community engagement, data collection, and administrative skills. Recycling and reuse centers are opportunities for a variety of workforce development opportunities. For instance, repair cafes can be paired with workforce development programs, providing participants with technical skills, including the repair of goods, customer service, and community engagement. Environmental internships often also incorporate different composting skills into programs, including soil and temperature testing, and material processing.

Cities have a unique opportunity to support workforce development opportunities for sanitation workers while increasing outreach and education for residents. One option for a City-based workforce development program could engage sanitation workers in community outreach. Sanitation workers would be trained in residential education and outreach, as well as the recyclability of materials and could potentially be selected to receive additional compensation for training and community outreach at community events. Topics covered could

include safety of sanitation workers (e.g. bagging refuse to reduce exposure to organic waste, recycling electronics to reduce the risk of truck fires), curbside recycling (i.e. plastic, paper, glass, and metal), and household hazardous waste recycling.

### *vii. Financing mechanisms, within disposal contracts or otherwise to incentivize waste diversion*

Philadelphia based Rabbit Recycling collects residential and commercial recyclables through a subscription-based service. The company offers 18-gallon bin collection of specified divertible materials. For clients that choose to have 3 or more 18-gallon bins or subscribe for regular collections, discounted rates are offered. This incentivizes clients to increase the diversion of recyclables. [Rabbit Recycling] Philadelphia could also request differential pricing from waste management providers, to incentivize recycling.

### *viii. Local policies to incentivize waste reduction*

Local policies to incentivize waste reduction include implementing City issued zero waste and low waste certificates for businesses, which could motivate consumers to preferentially purchase from these businesses. Alternatively, businesses that participate in low waste practices could be preferentially eligible to participate in City pilot programs relating to sustainability.

In New York City, some businesses are required to recycle organics and textiles based on business type or waste generation practices. A similar requirement could expand Philadelphia's commercial recycling practices. [Local Law 146 of 2013; Commercial Textile Recycling].

### *ix. Nascent technologies*

In Philadelphia recent web and phone apps to address waste generation include resourcePhilly and rego. ResourcePhilly is a tool that maps out where to donate, repair, or recycle used items, and where to buy, rent, or borrow "new-to-you" goods. Rego is an AI_powered waste auditing tool developed to improve bulk waste management and hauling in Philadelphia. The application has since expanded to partner and pilot with schools, universities, and businesses within and beyond Philadelphia. [resourcePhilly; rego]

Another Philadelphia recycling initiative is the reuse of fat, oil, and grease for district heating. In 2021, Vicinity Energy announced its partnership with Lifecycle Renewables to replace fossil fuel oil in its district energy facilities with discarded FOG. [Vicinity Energy]

AI technologies are becoming more prevalent in the waste sector as the technology is used to improve routing of waste collections and material sorting. Other nascent technologies in the waste disposal space include advanced thermal treatment. Pyrolysis, gasification, and hydrothermal liquefaction are examples of advanced thermal treatment. Industry is advocating for the use of pyrolysis for plastic recycling, unfortunately, to date, at least in the U.S., these methods have had limited commercial success. Future developments in advance thermal treatment technologies could result in more promising waste management practices, so tracking advancements in this field could be beneficial. [Smart Waste Management: A Paradigm Shift Enabled by Artificial Intelligence; Beyond Plastics: Chemical Recycling: A Dangerous Deception]

### *x. Other innovative methods*

Extended producer responsibility (EPR) laws of packaging, electronics, textiles and upholstery are examples of recently passed initiatives to increase manufacturer responsibility for the end-of-life of products. In the United States, EPR laws are state-based, with Oregon, Colorado, and New York taking the lead on these initiatives. Sustainable Packaging Coalition lists recent EPR Proposals: https://epr.sustainablepackaging.org/policies. Challenges to EPR programs include passing relevant legislation and availability of recovery infrastructure. Right-to-repair laws are also gaining traction with multiple state laws passed in recent years. In 2023, Pennsylvania introduced two right to repair bills, including H427, Digital Electronic Equipment Repair, and S 744, Manufacturers of Digital Electronic Equipment. [National Conference of State Legislatures]

Opportunities in waste management include containerization, residential textile recycling, extended producer responsibility, and improved commercial recycling and reporting.

### *4. Other*

***4.4.1 Please use this section to include information or recommendations that have not been addressed elsewhere in your response. Respondents are also encouraged to present any options or approaches that may not have been prompted by the questions proposed in this RFI.***

National and international factors can substantially affect solid waste flows and management. We have recently witnessed supply-chain disruptions. Supply chains affect prices and thereby consumption and waste. Further, the markets for reclaimed materials and the available capacity for solid waste disposal and management affect flows in major ways. For example, China's "National Sword" policy, enacted in 2018, banned the import of most plastics that were previously being shipped to China's recycling processors. We believe it's important for Philadelphia to pursue a variety of options and stay aware of factors outside of the City's control that affect waste management to remain resilient to future changes and ensure efficient management of waste.

# Response to Request for Information on Solid Waste Management

INCH and METER

**21 S 11th Street, Floor 2**
**Philadelphia, PA 19147**
**info@inchandmeter.com**
**267-636-0448**
**www.inchandmeter.com**