RAFTELIS

CITY OF

PHILADELPHIA

OFFICE OF CLEAN & GREEN INITIATIVES, SANITATION DEPARTMENT, AND OFFICE OF SUSTAINABILITY

Solid Waste Management

Request for Information / July 21, 2025

RAFTELIS CHARITABLE GIFT FUND

Giving back

The Raftelis Charitable Gift Fund seeks to make a difference on issues that matter to our clients and employees by helping build sustainable, inclusive communities locally and worldwide. We do this by allocating company profits and employee contributions of time and money. We support organizations that: promote efficient sustainable resource; advance diversity, equity, and inclusion within the public sector; invest in clean water and sanitation; and help vulnerable communities by addressing affordability issues.

DEI@RAFTELIS

Diversity and inclusion are an integral part of Raftelis' core expectations.

We are committed to doing our part to fight prejudice, racism, and discrimination by becoming more informed, disengaging with business partners that do not share this commitment, and encouraging our employees to use their skills to work toward a more just society that has no barriers to opportunity.

REGISTERED MUNICIPAL ADVISOR

Raftelis is registered with the U.S. Securities and Exchange Commission (SEC) and the Municipal Securities Rulemaking Board (MSRB) as a Municipal Advisor.

Registration as a Municipal Advisor is a requirement under the Dodd-Frank Wall Street Reform and Consumer Protection Act. All firms that provide financial forecasts that include assumptions about the size, timing, and terms for possible future debt issues, as well as debt issuance support services for specific proposed bond issues, including bond feasibility studies and coverage forecasts, must be registered with the SEC and MSRB to legally provide financial opinions and advice. Raftelis' registration as a Municipal Advisor means our clients can be confident that Raftelis is fully qualified and capable of providing financial advice related to all aspects of financial planning in compliance with the applicable regulations of the SEC and the MSRB.

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WHO IS Raftelis

INNOVATIVE WASTE SOLUTIONS FOR A GREENER TOMORROW

Our expert team offers comprehensive solutions including

- Financial modeling and project funding assistance
- Resilience and circular economy support
- Feasibility studies and procurements
- Strategic planning
- Sustainable practices to promote waste reduction, reuse, and recycling
- Using technology to provide and convey data-driven insights
- Telling an organization's story in a compelling, concise way

PARTNER WITH US TO ACHIEVE PHILADELPHIA'S GOALS.

+ VISIT **RAFTELIS.COM** TO LEARN MORE

Leading the Industry

Our team members hold leadership positions and memberships in these important industry organizations.

INTERNATIONAL SOCIETY OF SUSTAINABILITY PROFESSIONALS

SWANA
SOLID WASTE ASSOCIATION OF NORTH AMERICA

THE MUNICIPAL WASTE MANAGEMENT ASSOCIATION
MWMA

GFOA
Government Finance Officers Association

MSRB
Series 50 Municipal Advisor Representative

ICMA
International City/County Management Association

PRSA
Public Relations Society of America

iap2
International Association of Public Participation

Water Environment Federation
the water quality people

APWA
American Public Works Association

American Water Works Association

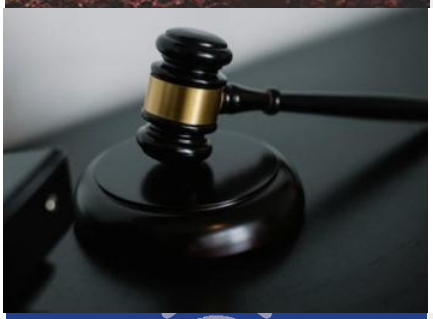
RECENT INDUSTRY PUBLICATIONS AND EVENTS FROM OUR TEAM

[Managing Lithium-ion Batteries in the Age of EVs]

By Morgan McCarthy, JD

[Scaling Circular Economy Practices in Municipal Waste Programs]

By Jennifer Porter



[Flow Control in Flux: How Courts, Climate, and Competition Are Shaping the Future of Waste Ordinances]

By Morgan McCarthy, JD

[The Role of loT in Smart Waste Management Systems]

By Harold Michell

[Legal Risks and Mitigation Strategies in Solid Waste Master Planning]

By Morgan McCarthy, JD

HOW WE CAN HELP

How We Can Help

Raftelis can help Philadelphia's Sanitation Department by providing the strategic and analytical expertise needed to achieve its ambitious "Clean and Green" goals. This includes developing data-driven methodologies to evaluate and minimize the health, safety, and environmental impacts of solid waste disposal, crucial for the Parker Administration's focus on environmental justice and sustainable practices.

Raftelis can also assist in the financial and operational planning for new initiatives, such as the organics collection pilot, and in evaluating alternative methods and technologies to meet the 90% waste diversion target by 2045, all while optimizing resource deployment and maintaining high levels of residential service.

In these uncertain times, you are facing bigger hurdles than ever before.

Raftelis specializes in a range of technical services for your solid waste management challenges, including developing long-term financial plans, conducting rate studies, benchmarking peer operations, advising on legislation, auditing current charge systems, evaluating IT requirements, modeling infrastructure impacts, and creating customized communication and public engagement plans.

We help you plan for and deliver services effectively, sustainably pay for these services, and educate your customers about the services they are receiving.

Raftelis also provides strategic solid waste and materials management planning including climate solutions, adaptation measures, resilience tactics and sustainability implementation.

Solid Waste Service Areas

Solid Waste & Sustainable Materials Management Planning and Implementation

We help communities and organizations develop comprehensive solid waste plans and implement sustainable materials management practices. Our services include waste audits, feasibility studies, strategic planning, and implementation of sustainable practices to reduce waste and promote recycling and reuse.

Project Funding and Grant Application Assistance

Our experts assist in identifying and securing grant funding for solid waste management projects. We provide support in preparing grant applications, developing project proposals, and managing grant-funded projects to successful outcomes.

Billing Technology

We offer cutting-edge solutions for billing technology to streamline the billing process for solid waste services. Our services include planning, implementation, and integration of billing systems to improve efficiency and accuracy in revenue collection

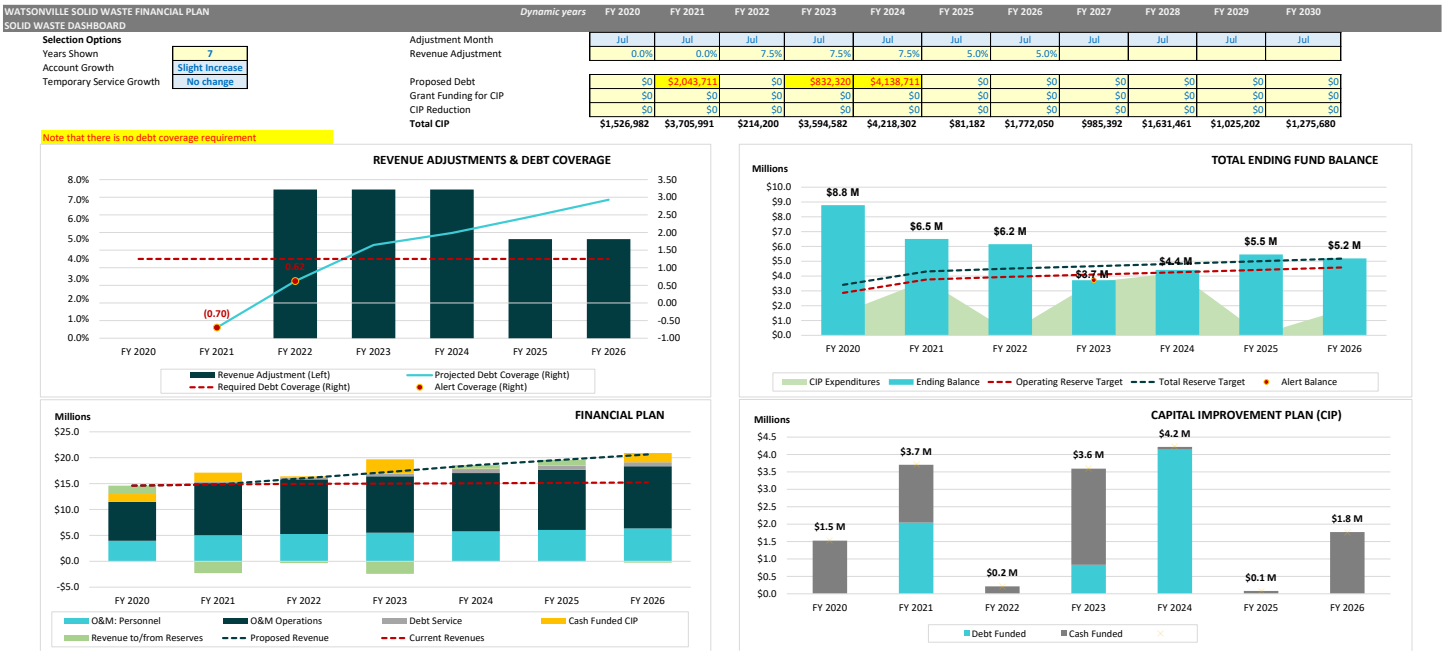
Collection/Routing and Disposal/Processing Planning, Procurements and Implementation

Our team provides comprehensive planning and implementation services for waste collection, routing, and disposal/processing. We assist in developing optimized collection routes, procuring waste management services, and implementing efficient disposal and processing solutions.

Rates and Financial Modeling

We conduct detailed financial analyses and develop cost-effective rate structures for solid waste services. Our services include cost-of-service studies, rate modeling, and financial planning to help ensure sustainable funding for waste management programs.

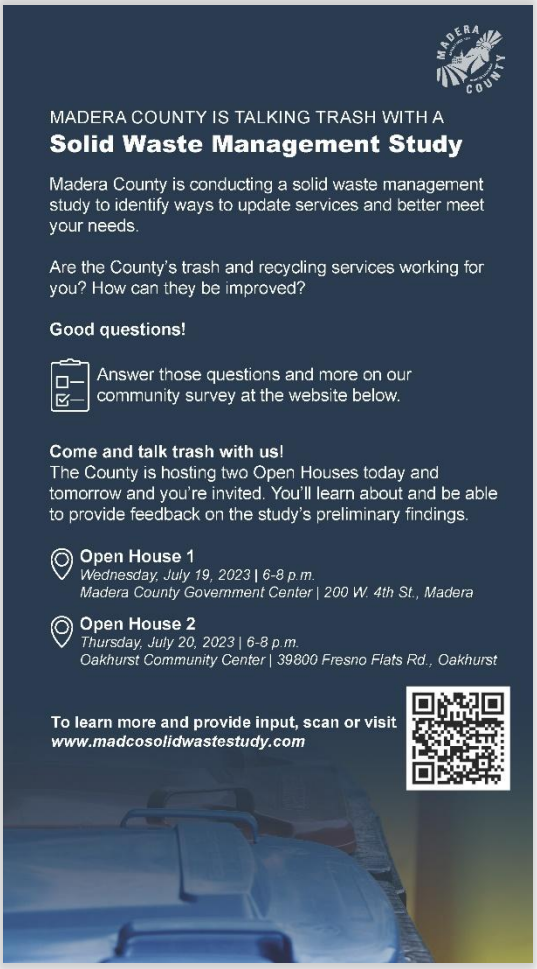
Raftelis can develop a customized financial model that incorporates a dashboard to allow you to easily run scenarios and see the impacts in real time. Shown here is a sample dashboard that we developed for another project.



Communications and Public Engagement

We help clients effectively communicate their solid waste management initiatives and engage with the public. Our services include developing communication strategies, creating outreach materials, and facilitating public engagement activities to build community support for waste management programs.

Shown here are a few graphics we designed for Madera County, CA communications and outreach project.



Regulation and Compliance

We provide expertise in navigating regulatory requirements and ensuring compliance with local, state, and federal regulations. Our services include drafting and updating municipal codes, conducting regulatory compliance audits, and providing guidance on best practices for regulatory compliance.

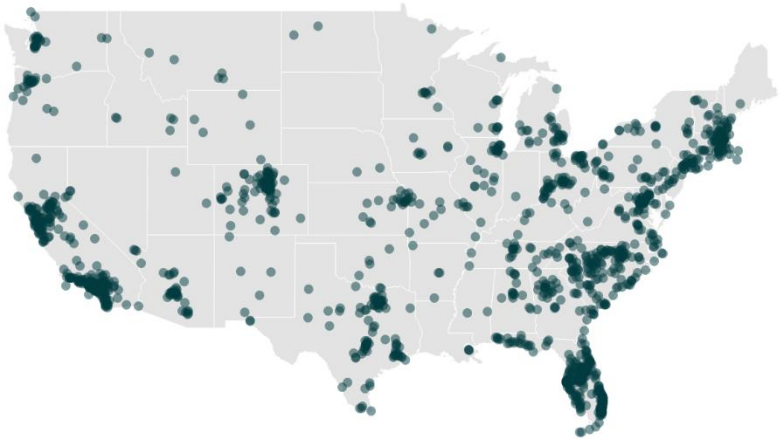
Benchmarking and Best Practices

We conduct benchmarking studies to compare solid waste management practices against industry standards and identify best practices. Our services include evaluating current practices, recommending improvements, and implementing best practices to enhance the efficiency and effectiveness of waste management programs.

EXPERIENCE

Experience

Raftelis has assisted over 1,000 local governments and utilities throughout the U.S. with management and rate consulting services with wide-ranging needs and objectives. Our clients include many of the largest and most complex local governments in the nation, including the agencies serving 41 of the 50 largest cities in the country. Our extensive experience will allow us to provide Philadelphia with innovative and insightful recommendations ensuring that industry best practices are incorporated.



> Raftelis has provided financial/ organizational/technology assistance to utilities serving more than 25% of the U.S. population.

A sample of some of the large local governments and utilities that we have assisted with management and financial engagements is shown below.

AL	Birmingham Water Works Board
AR	Central Arkansas Water
AZ	City of Phoenix
AZ	Tucson Water
CA	City of Los Angeles DWP
CA	MWD of Southern California
CA	City of San Diego
CA	San Francisco PUC
CO	Denver Water
DC	DC Water
FL	Hillsborough County
FL	Palm Beach County
FL	City of Tampa
HI	City and County of Honolulu
KY	Louisville Water
LA	Sewerage and Water Board of New Orleans
MA	Boston Water and Sewer Commission
MD	City of Baltimore
MI	Detroit Water and Sewerage Department

MO	Metropolitan St. Louis Sewer District
NC	Charlotte Water
NC	City of Raleigh
NY	Buffalo Sewer Authority
NY	New York City Water Board
OH	City of Columbus
OH	Northeast Ohio Regional Sewer District
OK	Oklahoma City Water Utilities
OR	City of Portland Water Bureau
PA	Philadelphia Water Department
PA	Pittsburgh Water and Sewer Authority
SC	Greenville Water
TN	Nashville and Davidson County MWS
TX	Austin Water
TX	City of Dallas
TX	El Paso Water
TX	San Antonio Water System
VA	City of Richmond DPU
WA	Seattle Public Utilities
WI	Milwaukee Water Works

City of Baltimore MD

"Raftelis assisted Baltimore City Department of Public Works in an organizational optimization review. The first phase targeted the water/wastewater/stormwater utilities which is currently under implementation. The second phase consisted of review of solid waste operations, city's energy initiatives, and departmental support groups. Staff from Raftelis were engaging and helpful with this optimization review; they have been very easy to work with and open minded."

- Rudy Chow (Retired), Department of Public Works Director

Raftelis has been engaged by the City of Baltimore (City) on a long-term contract to provide financial and management consulting services since 2006. The services that have been provided during this period have included financial planning support, bond financial feasibility, cost of service, rate design, and a variety of management consulting services.

Raftelis has assisted the City in issuing revenue bonds in the amount of $371 million in 2014, $442 million in 2017, and $300 million in 2019 to help fund the City's utility capital investment needs. In addition to the bond issuance support, Raftelis has also undertaken multiple cost of service-based rate studies to update the Bureau's rate-setting methodology, develop rates, and provide rate structure recommendations that equitably assign costs to different customer classes. As part of the cost-of-service study, the Raftelis team examined industrial surcharge fees for industrial customers. Raftelis has also supported financial and rate negotiations with the City's interjurisdictional customers, and provided full-time, temporary assistance on-site with the Bureau to augment annual budgeting and plan for debt issuances to fund the utility capital programs.

Raftelis has developed and updated miscellaneous fees and charges for the water and wastewater utility. This work has resulted in an additional engagement with the City Department of General Services (DGS) to develop additional user charges for services in building operations and maintenance. DGS believes that converting their operations to a user charge-based fee for service will help stabilize their revenue stream and insulate them from City General Fund budget cutting initiatives.

Raftelis has supported financial and rate negotiations with the City's interjurisdictional customers, and provided full-time, temporary assistance on-site with the Bureau to augment annual budgeting and plan for debt issuances to fund the utility capital programs. Raftelis has provided additional support for the planning and prioritization of the Bureau's capital program. One key to identifying the annual level of investment was a comprehensive analysis of the local impacts on customer affordability. Combining data from the U.S. Census Bureau, Baltimore CityStats, and the financial planning models, Raftelis was able to deliver visualizations that showed anticipated impacts to customers of the City. The data also provided the context of the types of people impacted and where in the City they reside, which is being used to develop a more effective customer outreach and affordability program.

Madera County CA

Raftelis was engaged by Madera County (County) to perform an evaluation of the County's solid waste system stemming from: i) findings of a prior cost-of-service evaluation performed by Raftelis which identified the need for substantial fee increases; and ii) to address stakeholder concerns related to mandatory collection, perceived inequities in the cost recovery and rates charged to the differing disposal customers of the system, and general understanding of the financial and operational health of the solid waste system to assist with near-term and long-term planning and system operation for the County's Solid Waste Management System (SWMS). The evaluation examined the key elements of the County's SWMS including, but not limited to, customer demands,

operations review, legal and regulatory environment, contractual relationships, and potential changes to the County's SWMS. As part of the evaluation, a comprehensive stakeholder outreach effort was developed to help ensure input and concerns from residents were identified and addressed. The outcome of the engagement was unanimous approval of the study recommendations with no public comment.

Project Outcomes

The communications and engagement portion of the project were incorporated into the study and helped inform recommendations for the County's solid waste management program moving forward. By the end of the study, the outreach strategy had:

- Conducted 12 in-depth stakeholder interviews
- Published one microsite with English and Spanish page viewing options
- Reached more than 24,000 people on social media
- Published three press releases and earned at least two resulting articles in the local press
- Received 120 survey responses to the online survey
- Hosted four in-person engagement opportunities

In doing this, the County's Board of Supervisors was able to choose a solid waste management scenario that reflected the needs of their community and feel confident that stakeholder input had been incorporated into the decision-making process. In addition to this decision being made, Madera County now has an annual contract with Raftelis for solid waste management review and assistance.

Samples

Madera County Solid Waste Management Program Deliverables;
Madera County Solid Waste Management Study Website

Lee County FL

Raftelis has prepared a financial forecast and revenue sufficiency analysis and model of the County's Solid Waste Division, which includes both disposal and collection services. The financial forecast and model were prepared to evaluate the current and projected fiscal position, support the development of collection and disposal fee rates for service, and develop a funding plan for ongoing capital re-investment. The financial forecast encompassed a six-year planning horizon. Study tasks have included:

- Compilation of historical solid waste deliveries received by the County, by waste type, and the projection of solid waste tonnage to estimate residential assessment and tipping fee disposal revenues
- Preparation of forecast of residential/dwelling unit, and commercial customer growth, and waste generation rates to estimate solid waste collection revenues as well as the delivery of municipal solid waste to the County disposal facilities
- Projection of electric rate revenues derived from the operation of the waste-to-energy (WTE) facility, recognizing changes in fuel prices, and contractual arrangements for the sale of electricity to other utilities; Projection of operating expenses, including contractual fees for operation of the landfill and other disposal facilities and providing collection services by the County's contractors
- Preparation of change in landfill closure and long-term liability for expense recognition and funding considerations
- Development of a capital funding plan, including the funding of a landfill replacement reserve (new landfill) for future disposal requirements
- Developed cost allocation and development of rates based on by customer and waste type
- Providing the rate and financial model for County staff's internal use

Raftelis has annually updated the financial and revenue sufficiency model in support of annual budget process, to review the financial position of the system, and to maintain compliance with the overall business plan adopted by the Board of County Commissioners.

Oklahoma City Water Utilities Trust OK

The City of Oklahoma City (City) provides solid waste collection and disposal services to approximately 645,000 people with contractor provided collection service to about 60% of the customer base and City in-house provided collection service to about 40% of the customer base. Collection services primarily include refuse, recycling, and bulky waste. The City is also responsible for a number of solid waste programs from neighborhood clean ups, household hazardous waste, rural recycling convenience centers, street sweeping, and others. Raftelis recently assisted the City through the performance of a formal Cost of Service rate study and financial forecast model. A key element of the engagement included: i) rate revenue adjustments over a 10-year period including modeling of fleet replacement and identifying capital needs; ii) establishment of cash reserves for operating, capital, force majeure, cart, and other reserves; and iii) cost of service for several of the City's key services including, bulky waste collection, recycling, illegal dumping and litter collection, and flow fee design. Raftelis assisted the City in modeling cart and fleet replacement cycles. Raftelis recently assisted the City in determining the cost of in-housing certain contracted operations including solid waste collections of the franchise area and bulky waste collections. Raftelis identified operating costs including but, not limited to, the incremental costs associated with additional collection routing requirements, staffing, equipment and vehicles, carts, fuel, and stakeholder outreach.

Anchorage Solid Waste Services AK

The Municipality provides collection and disposal service to residents and businesses in the Municipality and processes approximately 300,000 tons of solid waste annually. The Municipality is responsible for and/or operates an active Class I landfill, two (2) transfer stations, and community collection sites. The municipality also provides residential curbside organics collection service. Raftelis was tasked with development of a long-range triple bottom line economic evaluation (e.g., Financial, Social, and Environmental) on behalf of the Municipality to examine the financial and rate impacts of solid waste disposal alternatives (i.e., construction of a new Waste-to-Energy facility), including construction of a new waste-to-energy facility to address the Municipality's declining landfill capacity. The evaluation considered several alternatives organized into four (4) options for consideration by MOA staff. Raftelis prepared a written report with presentation.

Seattle Public Utilities WA

Raftelis played a key role in five comparative reports for Seattle Public Utilities (SPU) which tasked with managing the City of Seattle's water and waste resources to promote the well-being of its residents, the environment, and the local economy. SPU manages a wide range of essential services for Seattle's 1.4 million residents, including Solid Waste Management, which encompasses collecting, transferring, processing, and disposing of garbage, recycling, compost, and other waste materials generated by residential, multifamily, commercial, and self-haul customers. Raftelis is currently working with SPU on a Solid Waste Benchmarking Research and Report that will help SPU decrease the waste stream, decrease garbage can size, and responded to expected changes in housing density. This report uses benchmarking and best practices in order to help SPU develop specific strategies and programs to meet its regarding bulky and special waste, waste management for increased urban density, managing waste at special events, trash compaction, and transparent customer billing.

Natural Resources Defense Council (NRDC) DC

This past Spring, Raftelis presented a three-part workshop series and report to support the Food Matters peer-to-peer network to help cities address barriers to funding food waste reduction and diversion projects. This workshop series aims to empower city representatives with practical knowledge and tools to fund food waste initiatives, leveraging existing resources, grants, and fees. This series was designed to equip city representatives with an understanding of how their municipal funding structures influence food waste reduction opportunities; provide guidance on identifying and accessing grant funding and building strategic partnerships to enhance grant success; and explore the use of fees as a viable funding mechanism for food waste reduction projects, including implementation strategies.

SOLID WASTE TEAM MEMBERS

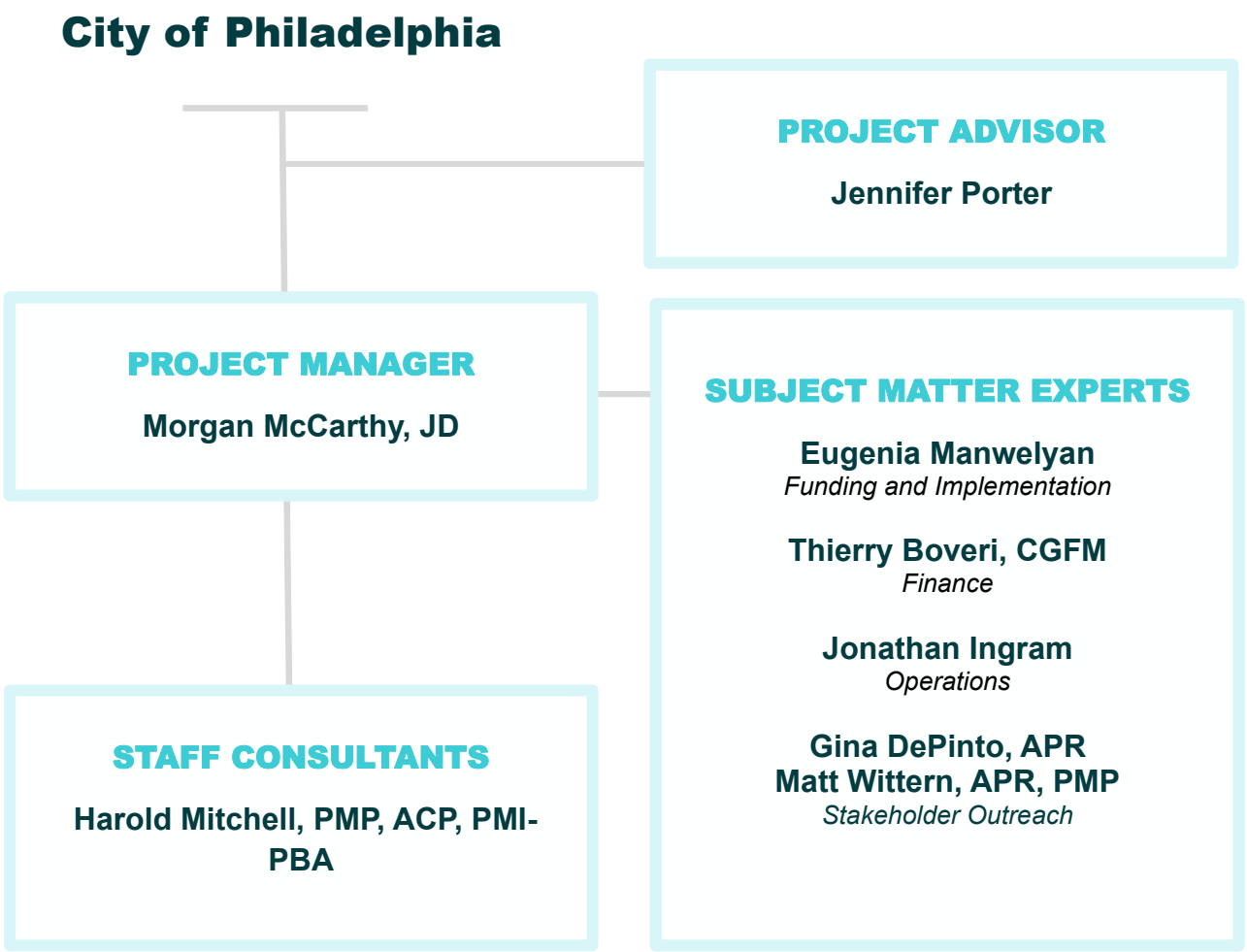
Featured Solid Waste Team Members

Project Team

WE HAVE DEVELOPED A TEAM OF CONSULTANTS WHO SPECIALIZE IN THE SPECIFIC ELEMENTS THAT WILL BE CRITICAL TO THE SUCCESS OF THE CITY'S PROJECT.

Our team includes senior-level professionals to provide experienced project leadership with support from talented consultant staff. This close-knit group has frequently collaborated on similar successful projects, providing the City with confidence in our capabilities.

Here, we have included an organizational chart showing the structure of our project team. On the following pages, we have included resumes for each of our team members as well as a description of their role on the project.



Jennifer Porter | Principal Consultant

- 23 years of experience in government and private sector sustainability, circular economy, and solid waste/sustainable materials management
- Led more than 30 complex public and private-sector client projects, encompassing program development, project management, and scenario evaluation
- Certified Practitioner in Zero Waste Principles & Practices (SWANA/CRRA)
- Co-Chair Awards Committee of the Solid Waste Association of North America (SWANA) Sustainable Materials Management Advocacy Committee; Solid Waste Knowledge Team American Public Works Association

Key Clients:
Central Virginia Waste Management Authority (VA); Albemarle County (VA); Baltimore County (MD); Kent County (MI); Orange County (NC); Oregon Metro (OR); Hartsfield-Jackson Atlanta International Airport (GA); Philadelphia International Airport (PA); Tucson Airport Authority (AZ); Tinian, Commonwealth of the Northern Marianas Islands; Various Confidential Clients (CA, MN, CO, PA)

Morgan McCarthy JD | Manager

- Over 17 years of experience in environmental management, specializing in solid waste, yard waste, food waste, and recycling
- Led 50+ projects for local governments, encompassing waste audits, feasibility studies, strategic planning, and cost-of-service analyses
- Managed the development of Solid Waste Infrastructure for Recycling (SWIFR) Grant applications for Baltimore County and others
- Certified Practitioner in Zero Waste Principles & Practices (SWANA/CRRA) and SWANA Certified in Integrated Solid Waste Management

Key Clients:
Louisville-Jefferson County Metro Government (KY); Vernon (CA); Baltimore County (MD); City of Huntsville (AL); Various California Municipalities (e.g., Carlsbad, Oakland, Oceanside, San Luis Obispo); Tinian, Commonwealth of the Northern Marianas Islands; Culpeper County (VA); Anderson County (TN)

Thierry Boveri CGFM | Vice President

- Over 20 years of experience in solid waste cost-of-service and financial evaluations for local governments
- Served over +85 local governments spanning 22 states and directed/advised +200 projects in last 5 years
- Specializes in developing solid waste enterprise funds, residential assessments, and reviewing contractual arrangements for waste collection and disposal
- Authored several industry publications and frequently presented at national conferences (e.g., SWANA Wastecon) on solid waste finance and circular economy
- Active leader in industry associations, including SWANA (Florida Board of Directors)

Key Clients:
Madera County (CA); Lincoln (CA); Oxnard (CA); Big Bear CDD (CA); Oklahoma City (OK); Municipality of Anchorage (AK); Lee County (FL); Hillsborough County (FL); Fairfax County (VA); Huntsville (AL); Galveston (TX); Fayetteville (AR); City of Wilmington (NC); Brookline (MA); Bainbridge Island (WA)

Eugenia Manwelyan | Manager

- Over 15 years of experience in sustainability, resilience, and environmental justice
- Proven expertise in securing federal funding (grants, loans, tax credits) for environmental infrastructure projects, including over $30M in grants for food waste/renewable energy
- Led the development and implementation of multiple Solid Waste Management Plans focusing on zero waste and landfill diversion
- Specializes in grant strategy and writing, circularity and resilience planning, and environmental, social, and governance (ESG) implementation

Key Clients:
Seattle Public Utilities (WA); Chittenden Solid Waste District (VT); Mecklenburg County (NC); Natural Resources Defense Council; Kent County (MI); Metro (OR); Dauphin County (PA); City of Falls Church (VA)

Jonathan Ingram APR | Vice President

- Over 20 years of experience advancing performance, efficiency, and resilience in local government and utility service delivery.
- Proven expertise in staffing and operations assessments (particularly in public safety), financial management and planning, and driving process improvement initiatives across diverse organizational settings.
- Public Safety Thought Leader: Co-authored the ICMA article "Policing Parameters," demonstrating expertise in applying data-driven methods to public safety operations and delivering integrated, practical solutions.

Key Clients:
City of Hillsboro (OR); City of Charleston (SC); Pinellas County (FL); City of Boulder (CO); LaPlata County (CO); Lower Paxton Township (PA); City of Allentown (PA); East Whiteland Township (PA); City of Harrisburg (PA); City of Duquesne (PA); Ford City Borough (PA)

Harold Mitchell PMP, ACP, PMI-PBA | Senior Consultant

- Solid waste financial assessments, supporting project decision-making and prioritization with detailed analyses.
- Optimized business applications and led IT projects at International Paper and managed SaaS and IT infrastructure projects for the City of Memphis.
- Lead Database Analyst for Memphis' Solid Waste Division, he enhanced fleet and route services with data visualizations and automated reporting and led the integration of Rubicon's SaaS with Oracle's CRM database and ensured the fleet's 360+ vehicles were equipped for improved route tracking and maintenance.

Key Clients:
Memphis (TN); Louisville-Jefferson County Metro Government (KY); Arlington County (VA); Montgomery County (OH); Port St. Lucie (FL); Albemarle (NC)

Matt Wittern APR, PMP | Manager

- Over 25 years of experience in strategic communications and public relations for local government, public utility, engineering, and construction sectors
- Led community outreach and public information initiatives, translating complex technical subjects into easily understandable messages for diverse audiences
- Awarded Gold Pick and SAVVY Awards for excellence in public relations

Key Clients:
Madera County (CA); Denver Water (CO); Oklahoma City Water Utilities Trust (OK); Montecito Water District (CA); City of Port Hueneme (CA); City of Santa Cruz (CA); Charlotte Water (NC); Jackson (WY)

Gina DePinto APR | Manager

- Over 34 years of experience and leadership in strategic communications, crisis management, community outreach, and media relations across public and private sectors
- Managed communications programs for over $2 billion in public transportation and water infrastructure projects, including a $1.8 billion bridge replacement project
- Award-winning and Accredited in Public Relations (APR) professional with certifications in public participation (IAP2)

Key Clients:
Orange County (CA) (multiple projects including Groundwater Replenishment System, Water District); Port of Long Beach (CA); Santa Barbara County (CA); Soquel Creek Water District (CA); City of Seal Beach (CA); Marin County (CA); City of West Sacramento (CA); City of Calistoga (CA)

1. GENERAL INFORMATION

1.1 Organization/Respondent Name: Raftelis

1.2 Street Address: 227 W. Trade Street, Suite 1400

1.3 City, State, Zip: Charlotte, NC 28202

1.4 Primary Business: Financial and Management Consulting for Public Agencies, specializing in utility services including Solid Waste Management, Sustainability, and Infrastructure Advisory.

1.5 Point of Contact Name: Jennifer Porter

1.6 Title: Principal Consultant

1.7 Phone: (347) 979-4992

1.8 Email: jporter@raftelis.com

1.9 Organization Web Address: www.raftelis.com

2. PROPOSAL INTRODUCTION

2.1 Provide a profile of your company/organization's operations, including the number of years the company/organization has been in business; number of full-time employees; and brief description of the services or products offered. If your response represents collaboration, please describe the type of subcontractors or partners with whom you are responding. If you are an individual respondent with background or experience in any of the areas covered by this RFI, please summarize your relevant personal and professional experience. Resumes need not be included.

Raftelis is a leading financial and management consulting firm, serving public agencies across North America since 1993. With over three decades of experience, we employ hundreds of dedicated professionals, including engineers, economists, financial analysts, public policy experts, and communication specialists. Our core business focuses on providing comprehensive solutions to the utility industry, including solid waste management, water, wastewater, stormwater, and electric services.

Our services include:

- **Financial Advisory:** Cost-of-service studies, rate design, financial modeling, long-term financial planning, debt issuance support, and grant funding assistance.
- **Management Consulting:** Strategic planning, operational assessments, organizational analysis, procurement support, billing technology planning and implementation, and business process improvement.

- **Sustainability & Resilience:** Circular economy strategies, waste diversion planning, environmental impact assessments, climate solutions, and sustainable materials management.
- **Public Engagement & Communication:** Developing and implementing public outreach strategies, fostering community support, and communicating complex technical information clearly.
- **Regulatory & Compliance:** Navigating complex regulatory environments, conducting compliance audits, and advising on best practices.

For this RFI, Raftelis is responding as a prime consultant, leveraging our internal team of experts across all relevant disciplines. Our comprehensive service offering allows us to address the City of Philadelphia's needs holistically, from policy development and financial sustainability to operational efficiency and environmental impact mitigation. We are adept at collaborating with other specialized firms or City departments as required for specific project components, ensuring an integrated and effective approach.

- **Size:** The City will have the support of our full staff of 224 employees, including 193 consultants and 31 additional support staff to provide administrative, billing, and graphic design services.
- **Number of Years in Business:** 31
- **Number of Offices and Locations:** Raftelis has the following 15 offices, which are located strategically across the U.S.: Kansas City, MO; Albany Metro, NY; Austin, TX; Bellingham, WA; Boston Metro, MA; Charlotte, NC; Cincinnati, OH; Denver Metro, CO; Durham, NC; Greensboro, NC; Irving, TX; Littleton, CO; Los Angeles, CA; Orlando Metro, FL; and Santa Barbara, CA.
- **Client Base:** Utilities and local governments
- **Type of Organization:** Subchapter S-Corporation

2.2 Describe your company/organization's relevant experience (and that of partners, when applicable) in Philadelphia and/or elsewhere.

Raftelis has extensive experience assisting local governments across the U.S. with their solid waste management challenges. In the past year alone, we have worked on over 1,300 projects for more than 700 agencies in 47 states, the District of Columbia, and Canada.

In Philadelphia:

Raftelis has worked in Philadelphia for more than a decade. The Philadelphia Water Department (PWD) is one of the largest and most well-respected utilities in the nation. The Water Department began providing water service in 1801, and now provides water service to approximately 1.7 million people and wastewater service to approximately 2.2 million people in the Greater Philadelphia area.

Tiered Assistance Program (TAP) Development and Implementation

With a poverty rate over 25%, the City is one of most economically challenged large cities in the country. In 2016, facing growing customer affordability concerns and account delinquency issues, PWD sought to establish a robust affordability program. The program development was driven by a City Council mandate to overhaul the

existing customer assistance programs. Raftelis was engaged by PWD to provide program recommendations and assist in the implementation and rollout of the selected plan.

Using input from City policymakers, Raftelis helped PWD establish the Tiered Assistance Program (TAP), a cutting-edge affordability program where income-eligible customers receive a fixed monthly bill based on a percentage of their annual household income. TAP is one of the first of this type in the water industry.

TAP provides assistance to income-eligible customers through fixed monthly bills, regardless of usage, that are based on household income levels. Customers submit an application for program participation that are reviewed by program administrators. The program is available to customers whose household income falls at or below 150% of Federal Poverty Level (FPL) for their household size, as well as customers with special hardships who have an income below 250% FPL. Approved program participants receive monthly bills that range from 2-4% of their household income. In addition, customers who enroll have unpaid penalty and interest balances suspended and ultimately forgiven after two years of on-time payments. A benefit to this new program is the universal assistance program application. When applying for TAP, customers are applying for all three assistance programs; the income-based plan, special hardship, as well as the senior citizen bill discount. When applications are reviewed, eligible customers are placed into the program that provides them with the lowest monthly bill that they are eligible for.

Once the conceptual design of TAP was established, program eligibility criteria needed to be established. Raftelis worked with City policymakers to understand the target participants and used industry standards to recommend participation income thresholds. A key analysis during the process was understanding the financial impact to PWD; both in program administration costs and forgone system revenues. This included forecasting program participation, estimating bill impacts for eligible customers, and developing administration costs forecasts.

Starting in the summer of 2016, Raftelis worked alongside PWD to nail down program impacts, set program requirements, and establish billing data practices, protocols, and procedures. One of the key tasks in developing TAP, was the creation of an internal and an external public-facing website. The internal website is a database in which PWD can review all submitted customer applications and documentation, which makes the application approval process much smoother for PWD staff. In addition, the website communicates with the City's billing system and can track the cost of the program and application processing speed among other performance metrics. The external website provides a way for customers to view information on TAP and request an application.

The program start date was approved for July 1, 2017, and PWD and Raftelis worked diligently to meet this deadline. Prior to July 1st, Raftelis assisted with several training sessions regarding TAP for stakeholders within the Department as well as key members of the community. On July 1st, the program began on time and was well received by PWD customers. Since program implementation, Raftelis has continued to provide weekly onsite assistance to help ensure smooth rollout of the program and the transitioning of administration to PWD staff. The post-implementation assistance by Raftelis was key to ensuring a successful start for TAP. Since this new program streamlines the application method for all assistance programs, customers had questions as to what information was needed and who could apply. Further, this program was new for PWD staff and Raftelis was able to assist with technical issues surrounding the internal and external applications.

Financial and Management Consulting Services

Since 2014, Raftelis has been engaged by PWD on a long-term contract to provide financial and management consulting services. The services involve debt issuance support, financial forecasting, service affordability review, and strategic planning assistance. At present under the agreement, Raftelis is performing a bond feasibility study and consulting engineers' report for inclusion in PWD's Official Statement for a 2017 planned bond issuance. The bond feasibility study provides a forecast of revenues and expenditures for the utility to assure bondholders that PWD will be able to repay bonds and meet debt covenants.

Review of Customer Information System (CIS), Billing Processes, and Data Reporting

PWD engaged Raftelis to review their customer information system (CIS), billing processes, and data reporting in support of its 2015 rate case. PWD had historically faced challenges with obtaining accurate information regarding yearly financials when comparing reports from year end against numbers aggregated from monthly reports generated throughout the year.

Raftelis staff reviewed the internal components of the CIS in great detail and compiled a thorough accounting of the strengths and weaknesses of the system and their information reporting processes. Raftelis staff were then further engaged by PWD to perform the necessary reporting to support the 2015 rate case to implement the findings from the initial analysis. As a result, Raftelis provided a critical update to data supporting the rate case, which had previously been based upon figures scaled from 25-year-old reports. Raftelis staff performed data analysis on the financials of individual accounts and used its expertise in automation and programming to create new reports for use by PWD staff for future rate cases.

Management Audit

Historically, PWD's rate-setting process included a complex and lengthy rate case. The 2012 rate case included a commitment by PWD to perform a management audit of customer service functions to examine those functions, improve them where needed to help ensure good service to customers, and improve efficiency and cost-effectiveness. Raftelis was engaged for this study and worked with PWD and the Water Revenue Bureau (WRB) on a strategic review of customer service functions. The WRB, a division of the City Finance Department, handles customer service for PWD customers relating to preparation of bills, application of payments, management of accounts receivable, and administration of assistance programs. WRB operates a customer call center, payment centers, and the customer information system (CIS).

Raftelis' engagement was divided into two major components. The first component is a review of WRB functions for the purpose of increasing efficiency and the effectiveness of customer service. In particular, Raftelis has used benchmarking and process mapping to identify opportunities for improvement within customer service and implement change.

The second component of the study was a review of the information flow and reporting from the CIS. In particular, Raftelis completed a data-intensive review of the CIS and identified means to improve the accuracy and replicability of reporting. Raftelis produced reports to support the City's ongoing cost-of-service study. Raftelis developed recommendations for improving the performance and lifespan of the CIS, such as database configuration changes. Raftelis' unusual combination of strengths in financial analysis, data and information management, and large dataset analysis served the client well.

Raftelis completed the study and made many recommendations for changes. Raftelis is now tasked with assisting PWD and WRB with implementation of some of these changes.

This study assisted PWD and WRB in improving customer service and increase the accuracy and reliability of crucial financial and management reports that support effective utility management.

Customer Information System (CIS), Billing Processes, and Data Reporting Review

PWD engaged Raftelis to review their customer information system (CIS), billing processes, and data reporting in support of its 2015 rate case. PWD had historically faced challenges with obtaining accurate information regarding yearly financials when comparing reports from year end against numbers aggregated from monthly reports generated throughout the year. Raftelis staff reviewed the internal components of the CIS in great detail and compiled a thorough accounting of the strengths and weaknesses of the system and their information reporting processes. Raftelis staff were then further engaged by PWD to perform the necessary reporting to support the 2015 rate case to implement the findings from the initial analysis. As a result, Raftelis provided a critical update to data supporting the rate case, which had previously been based upon figures scaled from 25-year-old reports. Raftelis staff performed data analysis on the financials of individual accounts and used its expertise in automation and programming to create new reports for use by PWD staff for future rate cases.

Elsewhere (Selected Relevant Experience):

- **City of Baltimore, MD**: Raftelis provided comprehensive, long-term financial and management consulting to the Department of Public Works since 2006. This included organizational optimization reviews (water/wastewater/stormwater, solid waste, energy, support groups), assisting with over $1.1 billion in revenue bond issuances for utility capital needs, conducting cost-of-service and rate studies for equitable cost assignment, developing miscellaneous fees, supporting interjurisdictional negotiations, and analyzing customer affordability to inform outreach programs.
- **Madera County, CA**: Raftelis conducted an evaluation of the County's solid waste system, addressing concerns about substantial fee increases, perceived inequities, and overall system health. The project featured extensive stakeholder outreach (interviews, microsite, social media, press releases, surveys, in-person events) which led to unanimous approval of recommendations and resulted in an ongoing annual contract for solid waste management assistance.
- **Lee County, FL:** Raftelis developed a six-year financial forecast and revenue sufficiency model for the County's Solid Waste Division (disposal and collection services). This included projecting waste deliveries and growth, forecasting revenues (including waste-to-energy), projecting operating expenses and landfill liabilities, developing a capital funding plan for future landfill replacement, and creating cost-allocated rates by customer and waste type. Raftelis annually updates this model for budgeting and compliance.
- **Oklahoma City Water Utilities Trust, OK:** Raftelis performed a formal Cost of Service rate study and financial forecast model for the City's solid waste services (refuse, recycling, bulky waste, various programs). Key elements involved recommending rate revenue adjustments over a 10-year period, establishing cash reserves for various needs (operations, capital, carts), designing flow fees, and determining the costs of bringing certain contracted operations, like collection, in-house.

- **Anchorage Solid Waste Services, AK**: Raftelis conducted a long-range triple bottom line (financial, social, and environmental) economic evaluation of solid waste disposal alternatives for the Municipality. This study specifically examined the financial and rate impacts of constructing a new Waste-to-Energy facility to address declining landfill capacity, presenting several options for consideration.
- **Seattle Public Utilities, WA**: Raftelis contributed to multiple comparative reports for Seattle Public Utilities (SPU), which manages water and waste resources. For solid waste management, Raftelis is actively working on a benchmarking research and report to help SPU reduce its waste stream, adjust to increasing urban density, manage bulky and special waste, and improve customer billing transparency.
- **Natural Resources Defense Council, DC**: Raftelis provided a three-part workshop series and report to support the Food Matters peer-to-peer network. The goal was to equip city representatives with practical knowledge and tools to fund food waste reduction and diversion projects, exploring municipal funding structures, grant funding, strategic partnerships, and the use of fees as viable funding mechanisms.

Our extensive portfolio demonstrates our capability to address complex solid waste management challenges, supporting cities in achieving their financial, operational, environmental, and community goals.

3. PROPOSAL BODY

Respondents may reply to any or all questions listed in the Proposal Body section.

Section 1: Methodologies, measurement tools, and best practices to evaluate the comparative health and environmental impacts of residential waste management practices.

3.1.1 Methodology recommendations for the City's upcoming residential RFP. What tools, measurement systems, or best practices could be employed in the City's forthcoming RFP to ensure that the City collects sufficient data and information to form a comprehensive picture of the associated health and environmental impacts of submitted proposals, incorporating this data into the decision-making process? Responses to this question should be based on the City's stated procurement timeline. For example:

a. Methodologies for the City to employ side-by-side comparisons of waste treatment and waste transport based on considerations including market assessment to facilitate decision-making informed not only by operational metrics, but also by data-driven insights around the short and long-term health and environmental impacts the proposed solutions would generate in Philadelphia, neighboring communities, and beyond. Please include any considerations and limitations related to the proposed approaches.

Raftelis recommends a multi-faceted approach centered on **Life Cycle Assessment (LCA)**, **Environmental Health Impact Assessment (EHIA)**, and a **Market Assessment and Operational Efficiency Integration** for comprehensive side-by-side comparisons:

- **Life Cycle Assessment (LCA):** Employ ISO 14040/14044 compliant LCA tools (e.g., SimaPro, Gabi, or custom models) to quantify environmental impacts across the entire waste management value chain—

from collection and transport to processing (e.g., MRF, composting, AD, WTE) and final disposal (landfill). This would cover:

  - **Greenhouse Gas (GHG) Emissions:** Direct (fleet, facility operations) and indirect (energy consumption, upstream material production).
  - **Air Quality Impacts:** Criteria air pollutants (PM2.5, NOx, SOx, VOCs) and air toxics (e.g., dioxins, furans).
  - **Water Quality Impacts:** Leachate generation and treatment, stormwater runoff, water consumption for processes.
  - **Resource Depletion:** Energy and material usage.
  - **Considerations & Limitations:** Requires robust data from bidders; assumptions about future market conditions (e.g., energy mix, material prices) must be transparent. Philadelphia-specific energy grids and transport distances should be modeled.

- **Environmental Health Impact Assessment (EHIA):** Beyond raw environmental metrics, an EHIA translates these impacts into potential public health outcomes for communities, particularly environmental justice (EJ) communities.
  - **Exposure Pathways:** Modeling air dispersion (e.g., AERMOD) for pollutants, considering proximity to residential areas, schools, and healthcare facilities.
  - **Health Risk Assessment:** Quantifying potential health risks (e.g., respiratory issues, cancer risk) based on pollutant concentrations and population vulnerability.
  - **Socio-economic Factors:** Integrate data on demographics, existing health disparities, and community feedback (from RFI engagement) to assess disproportionate impacts.
  - **Considerations & Limitations:** Complex modeling with inherent uncertainties; requires expertise in toxicology and epidemiology. Requires detailed operational data from proponents.
- **Market Assessment and Operational Efficiency Integration:**
  - **Economic Impact Analysis:** Beyond direct costs, assess local job creation (including green jobs), economic development potential for local businesses (especially nascent providers), and revenue generation.
  - **Operational Metrics:** Integrate data on collection efficiency, processing yields, contamination rates, and equipment reliability into the comparison framework. Raftelis' financial models can be customized to incorporate these operational inputs into long-term cost and benefit projections.
  - **Data-Driven Insights:** Utilize Raftelis' expertise in data analytics to synthesize and visualize complex data for decision-makers, providing a comprehensive "dashboard" view of proposals' performance across environmental, health, and operational dimensions.

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

Raftelis recommends a **Weighted Multi-Criteria Decision Analysis (MCDA) Framework** with clear, quantitative, and qualitative scoring rubrics:

- **Criteria Definition:** Establish primary evaluation criteria aligned with the RFI's purpose (e.g., Cost-Effectiveness, Environmental Performance, Health & Safety, Diversion Rates, Service Reliability, Community Benefits, Innovation, Provider Capacity).
- **Sub-Criteria and Metrics:** Break down each criterion into measurable sub-criteria. For instance, under "Environmental Performance," include GHG emissions (tonnes CO2e/ton), water usage (gallons/ton), air pollutant reductions (kg/ton). Under "Community Benefits," include local job creation (number), EJ community engagement plan quality (qualitative score), and local economic investment (%).
- **Weighting:** Assign relative weights to each criterion and sub-criterion based on the City's priorities (e.g., environmental impact may have a higher weight than collection vehicle age, but both are considered). These weights should be determined transparently by the City.
- **Scoring Rubrics:** Develop detailed rubrics for both quantitative metrics (e.g., points awarded based on reduction targets achieved) and qualitative factors (e.g., a 1-5 scale for the robustness of a community engagement plan, with clear descriptions for each score).
- **Normalization:** For quantitative metrics, normalize data to allow for fair comparison across different scales or units (e.g., per ton of waste processed).
- **Scenario Analysis:** Our financial modeling capabilities allow for scenario planning that integrates these scores, demonstrating how different proposals perform under varying assumptions (e.g., changes in commodity prices, regulatory changes).

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.

General Requirements:

- Provide a detailed process flow diagram for all proposed waste management activities, from collection to final disposition.
- Submit all relevant environmental permits, licenses, and compliance records from all current and past operations, including any notices of violation or enforcement actions.

Environmental & Health Impacts:

- **LCA Data:**
    - Quantify the estimated lifecycle GHG emissions (CO2e) per ton of waste managed for each proposed solution (collection, transport, processing, disposal), detailing assumptions and boundaries.
    - Provide estimated emissions of criteria air pollutants (PM2.5, NOx, SOx, VOCs) and key air toxics from all stationary and mobile sources associated with your proposed operations.

  - Detail water consumption, wastewater discharge volumes, and anticipated pollutant concentrations from all proposed facilities. Describe water treatment methods.
  - Explain how your proposed solution minimizes land disturbance and soil contamination risks.

- **Health Risk Assessment (HRA):**
  - Describe your methodology for assessing potential public health risks to surrounding communities, particularly environmental justice communities, from your proposed operations.
  - Provide a summary of any HRA reports conducted for similar facilities/operations, including findings and mitigation strategies.
  - Outline your proposed health impact mitigation strategies (e.g., advanced air pollution controls, noise abatement, odor management, traffic management plans) and performance metrics for each.

- **Environmental Justice (EJ) Considerations:**
  - Describe your approach to community engagement and outreach, specifically targeting EJ communities, regarding environmental and health impacts. How will community feedback be integrated into your operations?
  - Detail any proposed community benefit agreements or programs related to health and environmental improvements in affected neighborhoods.

Monitoring & Reporting:

- Describe your proposed environmental monitoring programs (air, water, soil) for all facilities, including parameters, frequency, and reporting protocols.
- Outline your public transparency plan for environmental performance data, including how residents can access information.

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:

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

The City should integrate LCA as a foundational tool for **strategic planning and policy development.** Raftelis recommends:

- **Baseline LCA:** Conduct an initial LCA of Philadelphia's current waste management system to establish a benchmark for environmental impacts. This provides a clear understanding of current performance.
- **Scenario Modeling:** Use LCA models to evaluate future scenarios for waste management (e.g., increased composting, new MRF technologies, different WTE options, expanded PAYT programs). This allows the City to compare the environmental footprint of various pathways towards its 90% diversion goal by 2045.

- **Policy & Program Design:** Inform policy decisions, such as material bans, extended producer responsibility (EPR) schemes, and procurement standards, by understanding their full lifecycle environmental implications.
- **Standardized Frameworks:** Adopt internationally recognized frameworks like the **Waste Management Hierarchy (Reduce, Reuse, Recycle, Recover, Dispose)** and **Circular Economy Principles** to guide planning. Integrate the **Environmental Management System (EMS)** approach (e.g., ISO 14001) for continuous improvement in waste operations.

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

To effectively use LCA and other planning methodologies, the City requires comprehensive and consistent data. Minimum data requirements include:

- **Waste Generation & Composition:** Daily/weekly tonnage by waste stream (residential trash, recyclables by material type, organics, bulky waste, HHW) and by geographic area/service route. Seasonal variations. Detailed waste audits for composition analysis.
- **Collection & Transport Data:** Fleet size, fuel consumption (per vehicle, per ton collected), vehicle miles traveled (VMT) per route, collection frequency, equipment maintenance records, and collection vehicle technology (e.g., CNG, electric).
- **Processing & Disposal Data:**
    - **MRFs:** Incoming tonnage by material, outgoing tonnage by material (marketable commodities vs. residuals), contamination rates, energy consumption, water usage.
    - **Composting/AD Facilities:** Incoming feedstock, outgoing compost/digestate, energy consumption, emissions (e.g., methane from composting).
    - **WTE Facilities:** Incoming waste, energy output, air emissions, ash quantity and quality, water usage.
    - **Landfills:** Incoming tonnage, methane capture rates, leachate generation and treatment, liner system details, remaining capacity, operational expenses.
- **Market Data:** Current and projected commodity prices for recyclables and organics. Availability and capacity of regional end markets.
- **Financial Data:** Full operational costs (collection, processing, disposal), capital improvement costs, revenue from material sales or energy generation.
- **Socio-Demographic Data:** Population density, income levels, demographic profiles (especially for EJ communities) in proximity to waste facilities and collection routes.

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.

Raftelis recommends the adoption of integrated technological tools to enhance data collection, analysis, and decision-making:

- **Integrated Waste Management Software Platforms:** Centralized systems for managing collection routes (GIS-enabled optimization), tracking waste volumes, monitoring fleet performance, and managing customer service. Examples include AMCS, Routeware, or custom solutions.
    - **Considerations:** Significant upfront investment, requires data integration with existing City systems, staff training.
- **Smart Waste Technologies (IoT-enabled Bins/Vehicles):** Sensors in bins to monitor fill levels for optimized collection, RFID tags for precise tracking of waste streams, and GPS on vehicles for route optimization and fuel efficiency.
    - **Considerations:** Infrastructure deployment costs, data security, requires robust communication networks.
- **Environmental Monitoring Systems:** Real-time air quality sensors (for PM, VOCs, specific pollutants) near facilities, continuous emissions monitoring systems (CEMS) for WTE/landfills, and groundwater monitoring wells.
    - **Considerations:** Calibration and maintenance, data validation, public accessibility of data needs careful planning.
- **Advanced Data Analytics & Visualization Tools:** Platforms (e.g., Power BI, Tableau, custom dashboards) to aggregate data from disparate sources, perform advanced analytics, identify trends, predict future needs, and visualize environmental impacts clearly for public and decision-makers. Raftelis excels in developing such customized dashboards (as demonstrated in our sample financial model).
    - **Considerations:** Requires data governance policies, skilled data analysts, data integrity.
- **Life Cycle Assessment (LCA) Software:** Specialized software (e.g., SimaPro, GaBi) to conduct detailed environmental impact assessments of various waste management scenarios.
    - **Considerations:** Requires trained personnel, access to up-to-date regional/national datasets, complexity of modeling.

3.1.3 Operational health and safety recommendations. Information on best practices and safety/back-up controls for waste management methods to ensure the performance of environmental health and safety control systems. What procedures and protections should be in place to ensure:

a. Maximum compliance with all City and State environmental health and safety regulations;

Raftelis recommends a robust **Environmental Health and Safety (EHS) Management System** based on industry best practices and regulatory requirements:

- **Integrated EHS Manual & SOPs:** Develop a comprehensive, up-to-date EHS manual with clear Standard Operating Procedures (SOPs) for all waste management activities, from collection to processing and disposal. This includes specific protocols for handling hazardous materials (e.g., lithium-ion batteries), spill prevention and response, and emergency preparedness.
- **Regular Audits & Inspections:** Implement a rigorous schedule of internal and third-party EHS audits and inspections (e.g., quarterly, annually) to identify non-compliance, rectify deficiencies, and continuous improvement.
- **Training & Certification:** Mandatory and regular EHS training for all personnel, including specific certifications for hazardous waste handling, confined space entry, lockout/tagout, and equipment operation. Foster a strong safety culture through regular safety briefings and incentive programs.
- **Performance Tracking:** Utilize a system to track EHS key performance indicators (KPIs), including incidents, near-misses, training completion rates, and audit findings. This data should inform corrective actions and continuous improvement.
- **Regulatory Liaison:** Designate dedicated personnel responsible for staying current with all local, state (Pennsylvania DEP), and federal (EPA, OSHA) EHS regulations, ensuring proactive compliance and permit management.

b. Minimizing the health and environmental impacts of disposal operations including the criteria air pollutants, air toxins, greenhouse gas emissions and soil and water pollutants.

To minimize impacts from disposal operations, the City can consider a multi-pronged strategy:

- **Advanced Air Pollution Control Technologies:**
    - **Waste-to-Energy (WTE):** Implementation of Best Available Control Technologies (BACT) such as Selective Catalytic Reduction (SCR) or Selective Non-Catalytic Reduction (SNCR) for NOx, Acid Gas Scrubbers (e.g., spray dryer absorbers, wet scrubbers), Baghouses/Fabric Filters for particulate matter (PM), and Activated Carbon Injection for mercury and dioxins/furans. Continuous Emissions Monitoring Systems (CEMS) are crucial.
    - **Landfills:** Enhanced Landfill Gas (LFG) collection systems (active and passive), with high capture efficiency. Utilize LFG for energy generation (e.g., biogas-to-energy projects) to reduce GHG emissions and provide renewable energy.
- **Robust Leachate Management Systems:**
    - **Landfills:** Design and operate state-of-the-art composite liner systems (geomembrane over compacted clay) to prevent leachate migration. Implement efficient leachate collection and treatment systems (e.g., on-site wastewater treatment, off-site disposal to POTWs with pretreatment). Regular leachate quality monitoring.
- **Stormwater Management:**

    - **All Facilities:** Implement comprehensive Stormwater Pollution Prevention Plans (SWPPP) including best management practices (BMPs) such as sediment and erosion control, vegetated swales, retention ponds, and regular monitoring of discharge quality to prevent soil and water contamination.

- **Waste Minimization & Diversion (Upstream):** The most effective way to minimize disposal impacts is to reduce the volume and toxicity of waste requiring disposal. This includes:
    - Aggressive recycling and composting programs.
    - Extended Producer Responsibility (EPR) programs for difficult-to-manage wastes.
    - Public education on waste reduction and proper disposal of hazardous materials.
- **Contingency Planning & Redundancy:** Develop robust emergency response plans for spills, fires, or equipment failures. Help to ensure backup systems are in place for critical environmental controls (e.g., backup power for air pollution control, redundant leachate pumps).
- **Siting Considerations:** Incorporate environmental justice principles in facility siting, avoiding disproportionate impacts on vulnerable communities. Help to ensure robust public participation in siting and operational decisions.

Section 2: Information about the capacity and availability of large-scale residential waste management providers to meet the City's ongoing residential waste management needs without compromising high service levels, including potential opportunities and challenges to expand and diversify service delivery.

(As a consulting firm, Raftelis' response here describes how we help the City assess and manage these aspects, rather than stating our own capacity as a provider.)

3.2.1 Large provider capacity: Please provide information about your existing capacity as a large-scale waste disposal or recycling provider and your readiness to provide services to the City consistent with the Parker administration's Safe, Clean and Green goals.

Raftelis' expertise lies in assisting municipalities like Philadelphia in evaluating, procuring, and managing services from large-scale waste disposal and recycling providers. We do not directly provide these services but offer the following capabilities to the City:

- **Provider Assessment:** We have extensive experience conducting due diligence and capacity assessments of large-scale waste service providers. This includes evaluating their operational footprint, equipment fleets, facility throughput, staffing models, and financial stability. Our assessments focus on a provider's ability to meet high service levels and adapt to evolving needs.
- **Procurement Support:** Raftelis guides cities through the RFP process, from developing comprehensive scopes of work that align with Safe, Clean and Green goals to evaluating proposals based on technical

capabilities, financial competitiveness, and environmental performance. We help structure contracts that incentivize desired outcomes, such as increased diversion and robust data reporting.

- **Market Analysis:** We routinely conduct market assessments to understand the current landscape of waste disposal, recycling, and processing facilities in a given region, identifying existing capacities, emerging technologies, and potential new entrants. This informs the City on the availability of providers ready to serve Philadelphia.
- **Strategic Alignment:** We help the City articulate its Safe, Clean and Green goals within procurement documents, ensuring that potential providers clearly understand and can demonstrate their alignment with waste reduction, diversion, and sustainability objectives.

3.2.2 Environmental and health impacts: Beyond meeting baseline permitting requirements, please describe how your company addresses the environmental and health impacts of your operations and seeks to reduce these impacts over time (e.g., air quality, water quality, etc.).

Raftelis helps cities mandate and verify that their chosen waste management providers not only meet baseline permitting requirements but also actively pursue continuous improvement in environmental and health performance. Our approach includes:

- **Setting Performance Benchmarks:** We assist the City in defining ambitious yet achievable environmental and health KPIs (Key Performance Indicators) for providers. These may include specific targets for GHG emissions reductions, leachate quality improvements, and particulate matter reductions over time, going beyond minimum regulatory compliance.
- **Impact Assessment & Monitoring:** We advise on the implementation of robust environmental monitoring programs for air, water, and soil quality at provider facilities. We help design reporting frameworks that require providers to regularly report on their environmental footprint, including fuel consumption, emissions, water usage, and diversion rates.
- **Technology & Innovation Evaluation:** We assess providers' proposed technologies and operational practices for their potential to reduce environmental and health impacts. This includes evaluating investments in cleaner fleets (e.g., electric, CNG vehicles), advanced material recovery technologies, and enhanced emissions control systems.
- **Health Impact Mitigation:** We guide the City in requiring providers to submit detailed plans for mitigating health impacts on surrounding communities, including odor control, noise reduction, traffic management, and community engagement protocols. We emphasize transparent reporting on these measures.
- **Contractual Incentives:** We work with the City to embed performance-based incentives and penalties within contracts to encourage providers to invest in and adopt practices that continuously reduce their environmental and health impacts.

3.2.3 Data collection methods and reporting capabilities: Please provide information around your firm's current data collection. The City is interested in learning what data potential respondents to future RFPs collect currently.

Raftelis works with municipalities to establish comprehensive data collection and reporting frameworks for their solid waste operations and to define the data requirements for their service providers. Our expertise provides the City the necessary information to track progress, compliance, and inform future planning. We advise on data collection for:

Operational and Service Metrics:

- **Frequency and volume of different waste stream collections:** We guide cities in collecting granular data on residential, commercial, recyclables, and organics collection, including daily tonnage by route, service area, and material type.
- **Equipment failure rates and replacement schedules:** We help define metrics for fleet performance, maintenance, and capital planning, enabling predictive analytics for vehicle replacement and operational continuity.

Waste Volume and Composition:

- **Total tonnage collected by waste type and geographic area:** We support the implementation of scales and reporting systems at transfer stations and processing facilities to accurately capture incoming and outgoing material flows.
- **Contamination rates in recycling streams:** We advise on auditing protocols and data capture for contamination at MRFs, crucial for maximizing recycling quality and marketability.
- **Diversion rates from landfills and incineration (recycling, organics):** We assist in establishing methodologies to calculate accurate diversion rates, differentiating between recycling and organic waste streams, and tracking progress towards zero waste goals.
- **Seasonal variation patterns in waste generation:** We help analyze historical data to identify and forecast seasonal trends in waste generation, aiding in operational planning and resource allocation.

Environmental and Compliance:

- **Greenhouse gas emissions from collection vehicles and fuel consumption per ton collection:** We define requirements for providers to track and report detailed fuel consumption and emissions data, enabling the City to monitor its carbon footprint.
- **Distance traveled for ton of waste:** We guide in using GIS and fleet management systems to track mileage for collection and transport, informing route optimization and emissions reduction efforts.
- **Water usage in processing facilities:** We advise on metering and reporting requirements for water consumption at MRFs, composting, and WTE facilities.
- **Recycling processing efficiency rates:** We help establish metrics for the efficiency of material recovery at MRFs, including capture rates for target materials and residuals generated.
- **Regulatory compliance tracking and violation records:** We assist in developing systems for providers to report all environmental permits, compliance status, and any violations or enforcement actions.

Raftelis specializes in designing customized data dashboards (as seen in our Rates and Financial Modeling section) that integrate these diverse data points, providing the City with real-time, actionable insights for effective waste management and robust decision-making.

3.2.4 Diversion methods: Please describe your approach to maximize waste diversion including the necessary infrastructure for implementation. Please note if you have engaged in partnerships to improve diversion rates.

Raftelis' approach to maximizing waste diversion for municipalities like Philadelphia is holistic, combining strategic planning, infrastructure development, and community engagement:

- **Comprehensive Diversion Planning:** We assist cities in developing detailed Solid Waste Master Plans that include aggressive diversion targets and pathways. This involves:
    - **Waste Audits and Characterization:** Understanding the composition of the waste stream to identify key materials for diversion.
    - **Feasibility Studies:** Evaluating the technical and economic feasibility of various diversion methods (e.g., expanded recycling, organics collection, C&D waste processing).
    - **Strategic Planning:** Creating a phased implementation plan for new programs and infrastructure.
- **Infrastructure Development:** We provide expertise in identifying and planning for necessary infrastructure, including:
    - **Material Recovery Facilities (MRFs):** Assessing the need for new or upgraded MRFs with advanced sorting technologies (e.g., optical sorters, robotics) to maximize recovery of recyclables and reduce contamination.
    - **Organics Processing Facilities:** Planning for composting facilities (centralized or decentralized), anaerobic digestion (AD) plants for energy recovery, or other forms of organic waste processing (e.g., community composting initiatives).
    - **Transfer Stations:** Optimizing transfer station design and operations to facilitate efficient sorting and diversion.
    - **Drop-off Centers:** Designing accessible and convenient drop-off centers for hard-to-recycle materials, household hazardous waste, and bulky items.
- **Program Design & Implementation:**
    - **Curbside Programs:** Developing or refining residential curbside collection programs for recyclables and organics, including considerations for frequency, bin types, and outreach.
    - **Commercial & Institutional Diversion:** Designing programs tailored for businesses and institutions to increase their recycling and organics diversion.
    - **"Hard-to-Recycle" Programs:** Establishing specific programs for difficult materials like electronics (e-waste), batteries, textiles, and construction & demolition (C&D) debris.

- **Partnerships for Diversion:** Raftelis actively facilitates and advises on partnerships:
    - **Public-Private Partnerships (P3s):** Structuring agreements with private sector companies for facility development, operation, or material processing (e.g., partnership between a City and a private composting facility operator).
    - **Inter-governmental Collaborations:** Working with neighboring jurisdictions to share resources, develop regional facilities, or create common policies for waste management.
    - **Community-Based Organizations:** Partnering with local non-profits and community groups for specific diversion initiatives, such as reuse centers, repair cafés, or food waste donation programs. Our work with Madera County, for instance, involved extensive community engagement to secure support for diversion strategies.
    - **End-Market Development:** Assisting cities in identifying and nurturing relationships with end-users for recycled materials and compost, ensuring viable markets for diverted waste.

3.2.5 Recycling recommendations: The Department's residential recycling goal for FY26 is 15%. What approaches or initiatives could be implemented to substantially improve this percentage and stay on target with the goal of 90% waste diversion by 2045?

Achieving 15% recycling by FY26 and the ambitious 90% diversion by 2045 requires a multi-faceted, aggressive strategy. Raftelis recommends the following approaches:

- **Enhanced Curbside Recycling Programs:**
    - **Expanded Material Acceptance:** Evaluate the feasibility of accepting a wider range of plastics (e.g., #3-7), film plastics, and cartons if suitable end markets are identified.
    - **Increased Collection Frequency/Capacity:** Consider weekly recycling collection or larger carts to reduce barriers to participation and address potential space constraints.
    - **Pay-As-You-Throw (PAYT) Programs:** Implement a volume-based or weight-based PAYT system for trash collection, which has proven highly effective in incentivizing residents to reduce waste and increase recycling and composting (Raftelis has extensive experience in rate studies for such systems).
- **Robust Organics Collection Program:**
    - **City-wide Curbside Organics Collection:** Expedite the implementation of the small-scale pilot organics collection initiative into a city-wide program for food waste and yard waste. This is critical for achieving high diversion rates.
    - **Community Composting Initiatives:** Support and expand local composting sites and community gardens that accept food scraps, fostering decentralized solutions and community engagement.
    - **Commercial Organics Mandates:** Implement policies requiring commercial establishments (restaurants, grocery stores, large generators) to separate and divert food waste.

- **Aggressive Contamination Reduction:**
    - **Targeted Public Education & Outreach:** Develop culturally sensitive, multilingual campaigns (like those Raftelis developed for Madera County) to educate residents on proper recycling and composting practices, focusing on "what goes where" and addressing common contaminants. Utilize multi-channel communication (print, digital, social media, community events).
    - **"Tag-and-Flag" Programs:** Implement a system where contaminated recycling bins are tagged with an "oops" sticker explaining the contamination and left uncollected until corrected, combined with education.
- **Infrastructure Optimization & Investment:**
    - **MRF Upgrades:** Invest in or incentivize private sector investment in state-of-the-art MRFs with advanced sorting technologies (AI, robotics, optical sorters) to improve recovery rates and quality of recyclables.
    - **Organics Processing Capacity:** Develop sufficient regional processing capacity for collected organics (composting facilities, anaerobic digestion).
- **Policy & Regulatory Levers:**
    - **Mandatory Recycling & Composting Ordinances:** Enforce ordinances for residential and commercial sectors.
    - **Extended Producer Responsibility (EPR):** Advocate for and implement state-level EPR policies for hard-to-recycle materials (e.g., packaging, batteries, electronics), shifting responsibility and costs to producers.
    - **Construction & Demolition (C&D) Waste Diversion:** Implement stronger C&D diversion requirements for construction projects.
- **Reuse & Repair Economy:**
    - **Support Reuse Infrastructure:** Foster and incentivize local reuse centers, repair shops, and material exchange programs to extend the life of products.
    - **Public Awareness Campaigns:** Promote the benefits of reuse and repair to reduce consumption and waste generation.
- **Data-Driven Management:** Continuously monitor diversion rates, contamination levels, and program costs. Use this data to adapt and optimize programs for maximum effectiveness and efficiency, as Raftelis does with our customized financial and operational dashboards.

3.2.6 Barriers to increased capacity, service delivery, data collection and partnership development. Please share feedback on roadblocks and barriers to expanded service delivery that the City could address as it develops its municipal waste plans. For example:

Raftelis has experience helping municipalities overcome common barriers to expanding and diversifying waste management services:

i. Limits in capacity (e.g., known limitations within the City and/or region, recommendations for locations to create new waste management facilities in the City or region, opportunities to maximize operations at existing facilities, etc.);

- **Roadblocks:** Limited available land for new facilities within dense urban areas; public opposition (NIMBYism) to new waste infrastructure; insufficient capital funding for facility development; existing long-term contracts that limit flexibility.
- **Recommendations:**
    - **Comprehensive Siting Study:** Conduct a professional siting study to identify potential locations for new waste management facilities (e.g., transfer stations, MRFs, composting sites) within Philadelphia or the surrounding region, considering zoning, environmental justice, and logistical factors.
    - **Facility Optimization Assessments:** Perform detailed operational analyses of existing facilities (e.g., drop-off centers, potential transfer stations) to identify opportunities for maximizing throughput, improving efficiency, and expanding capabilities (e.g., adding organics processing at existing sites).
    - **Regional Collaboration:** Explore formal inter-governmental agreements with neighboring counties or municipalities to develop shared regional waste processing infrastructure, leveraging economies of scale and expanding capacity beyond City limits.
    - **Creative Financing:** Utilize innovative financing mechanisms (e.g., green bonds, public-private partnerships, state/federal grants – see 3.3.3.vii) to fund capital-intensive infrastructure projects.

ii. Roadblocks and barriers to improved data collection;

- **Roadblocks:** Fragmented data systems across City departments and with private contractors; lack of standardized data collection protocols; insufficient technology for real-time monitoring (e.g., smart bins, vehicle sensors); lack of trained personnel for data analysis.
- **Recommendations:**
    - **Integrated Data Management System:** Invest in a centralized waste management information system (WMIS) that integrates data from collection, processing, and disposal points, including contractual reporting from private haulers.
    - **Standardized Metrics & Reporting:** Develop clear, consistent data reporting requirements for all internal departments and external contractors, aligned with the metrics outlined in 3.2.3.
    - **Technology Adoption:** Implement smart waste technologies (e.g., route optimization software with GPS, weight sensors on trucks, facility throughput monitoring systems) to automate data collection and improve accuracy.
    - **Capacity Building:** Provide training for City staff and contractors on data collection tools, data quality assurance, and basic data analytics.

iii. Roadblocks and barriers to expanded or enhanced service delivery (e.g., space constraints, limited budget, workforce limitations, etc.);

- **Roadblocks:**
    - **Space Constraints:** Dense urban fabric limits space for new facilities or expanded collection vehicle staging.
    - **Limited Budget:** Insufficient funding for program expansion, new equipment, or staffing.
    - **Workforce Limitations:** Challenges in recruiting and retaining skilled labor (drivers, sorters, technicians) for waste management operations.
    - **Public Resistance:** Resistance to changes in collection schedules, new fees, or new program requirements (e.g., source separation).
- **Recommendations:**
    - **Financial Planning:** Conduct long-term financial modeling and rate studies (Raftelis' core expertise) to identify sustainable funding mechanisms for program expansion, including user fees, grants, and other revenue streams.
    - **Workforce Development:** Collaborate with local educational institutions and workforce development boards to create training programs for careers in the waste management sector, addressing labor shortages.
    - **Phased Implementation & Pilots:** Implement new programs incrementally with pilot projects to test feasibility and gather public feedback, allowing for adjustments before full city-wide rollout.
    - **Community Engagement:** Proactive and continuous public engagement campaigns to explain the rationale for service changes, benefits of new programs, and solicit feedback, fostering public acceptance (as successfully implemented for Madera County).

iv. Barriers to partnerships with smaller providers (e.g., types of smaller providers a company may work with, what would incentivize developing these relationships, what prevents initiating or expanding these types of relationships).

- **Roadblocks:**
    - **Capacity & Scale:** Smaller providers may lack the immediate capacity, fleet size, or financial resources to serve a large municipality or invest in necessary infrastructure.
    - **Risk Aversion:** City procurement processes can be complex and intimidating for smaller businesses.
    - **Funding Access:** Smaller providers often struggle to access capital for expansion.
    - **Lack of Integration:** Difficulty integrating smaller, niche services (e.g., food waste haulers, specialty recyclers, reuse organizations) into a large-scale municipal system.

- **Recommendations:**
    - **Tiered Procurement:** Implement procurement strategies that include set-asides or preferential consideration for local, small, or disadvantaged businesses (e.g., nascent providers focused on niche materials like textiles, electronics, or specialized organics collection).
    - **Technical Assistance & Mentorship:** Provide technical assistance and mentorship programs to help smaller providers with business planning, financial management, and navigating City contracting requirements.
    - **Incubation & Grant Support:** Create local grant programs or facilitate access to grant funding (as Raftelis assists with) specifically for nascent providers to invest in equipment, expand capacity, or develop innovative diversion technologies.
    - **Performance-Based Contracts:** Structure contracts that allow smaller providers to start with manageable service areas or material streams, with opportunities to scale based on performance.
    - **Facilitated Partnerships:** The City, with consultant support, can act as a convener to facilitate partnerships between large prime contractors and smaller, local subcontractors to meet specific diversion or service delivery goals. This fosters a more diverse and resilient waste ecosystem.

Section 3: Recommendations for solutions that will assist the Department in developing new approaches, innovations, and initiatives to minimize the City's waste streams, including practices that will help the City advance its Safe, Clean & Green mission and Zero Waste goals.

3.3.1 Nascent Provider Capacity: To assist the City in gauging capacity of providers to address its future waste reduction and diversion goals and inform planning, the City seeks the following information from small providers:

(As a consulting firm, Raftelis helps the City assess this information from nascent providers.)

Raftelis has extensive experience assisting municipalities in evaluating the capacity and potential of emergent and smaller-scale providers to contribute to broader waste management goals. We guide cities in collecting and analyzing the following information from nascent providers:

Critical Data and Information	Raftelis' Role
i. Current daily/weekly tonnage processing capacity	We would assist the City in developing standardized reporting forms and verification methods to accurately capture the current processing capacity of nascent providers for various waste streams (e.g., organics, specialized recyclables).
ii. Fleet size, composition, and service area coverage	We help evaluate the current logistics and operational footprint of nascent providers, including their vehicle types (e.g., electric, CNG, diesel), number of vehicles, and current service areas, to understand their readiness for expansion.
iii. Current waste diversion rate from landfills (percentage and tonnage by material type)	We assist in developing metrics and collection methodologies for nascent providers to accurately track and report their diversion rates, broken down by material type (e.g., food waste, specific plastics, textiles) and destination.
iv. Contamination rates in recycling streams	We advise on the implementation of quality control measures and data collection for contamination levels within the material streams handled by nascent providers, crucial for maintaining end-market value.
v. Processing facility capacity and capabilities (Materials Recovery Facility, composting, specialty streams)	We conduct site visits and technical reviews to assess the operational capacity, technology, and capabilities of smaller processing facilities, including for niche materials or emerging processes.
vi. Storage capacity for different waste streams	We help gauge the interim and long-term storage capabilities of providers for separated waste streams, which is critical for managing fluctuations in volume and market conditions.
vii. Key partnerships with downstream processors and end markets	We investigate and verify the existing relationships nascent providers have with downstream facilities and end markets, assessing the stability and diversity of their outlets for diverted materials.
viii. Projected capacity increases over 1, 3, and 5 years (percentage and tonnage)	We work with nascent providers and the City to develop realistic growth projections, assessing the financial and operational plans underpinning proposed capacity increases.
ix. Access to financing for expansion (credit facilities, investor backing)	Our financial advisory team can assess the financial health and access to capital for nascent providers, including existing credit lines or investor backing, and advise on strategies to improve their financial readiness for City contracts.
x. Bonding capacity and insurance coverage levels	We assist the City in evaluating the bonding and insurance capabilities of smaller providers, identifying potential gaps and recommending support mechanisms to help them meet municipal requirements.
xi. Data collection and reporting capabilities	We assess existing data systems and provide recommendations for nascent providers to enhance their data collection and reporting to align with City standards and facilitate performance monitoring.
xii. Customer education and community engagement capabilities	We evaluate nascent providers' strategies for public outreach and customer engagement, which are vital for successful program implementation and sustained participation.

3.3.2. Roadblocks and Barriers to Nascent Provider Capacity: Describe your experience with roadblocks and barriers to expanded service delivery for smaller/nascent providers. Examples include, but are not limited to:

Raftelis has observed and helped clients address several key roadblocks facing nascent and smaller waste service providers:

i. Infrastructure constraints, inability to expand, and/or collection reforms;

- **Experience:** Smaller providers often operate with limited, older infrastructure or lack the capital for modern equipment/facilities. They may struggle to scale operations or adapt to new collection mandates (e.g., separate organics collection requiring specialized vehicles or bins) without significant investment.
- **Solutions:** Raftelis assists cities in identifying grant opportunities (e.g., state solid waste grants, federal infrastructure funds) and developing low-interest loan programs specifically for small businesses to upgrade or acquire new equipment and facilities. We also help structure pilot programs that allow nascent providers to test and demonstrate capabilities on a smaller scale before larger commitments.

ii. Needed inter-departmental and/or inter-governmental collaborations;

- **Experience:** Navigating the complex permitting, zoning, and regulatory landscape across different City departments or between the City and neighboring jurisdictions can be overwhelming for smaller entities. Lack of coordinated planning or conflicting policies can create significant hurdles.
- **Solutions:** Raftelis acts as a facilitator, assisting the City in fostering internal and external collaborations. We help define clear roles, responsibilities, and communication channels across departments, and advise on developing inter-local agreements that support regional approaches to waste management, enabling smaller providers to participate in a broader system.

iii. Programs, incentives, and policies to encourage the development of smaller and non-traditional providers.

- **Experience:** Often, procurement processes are designed for large, established companies, unintentionally excluding smaller or non-traditional providers (e.g., social enterprises focused on reuse, community-based composting groups). Lack of specific incentives for innovation or local economic development further exacerbates this.
- **Solutions:** Raftelis advises on designing procurement strategies that specifically encourage nascent providers. This includes:
    - **Tiered Bidding:** Breaking large contracts into smaller components or geographical zones.
    - **Local Preference Policies:** Incorporating preferences for local businesses.
    - **Performance-Based Grants/Subsidies:** Offering financial support tied to achieving specific diversion or environmental justice outcomes.
    - **Incubator Programs:** Creating programs that provide technical assistance, training, and networking opportunities for small waste-related businesses.

- **Relaxed Bonding/Insurance:** Evaluating and potentially adjusting bonding or insurance requirements for smaller, lower-risk contracts.

3.3.3 General 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:

Raftelis champions a comprehensive **Zero Waste Framework** that prioritizes waste prevention, reuse, and resource recovery, aiming to divert 90% or more of waste from landfills and incinerators. Our holistic approach integrates policy, infrastructure, and community engagement. Key strategies include:

- **Holistic Approach:**
    - **Vision & Policy:** Develop a clear Zero Waste vision, integrated into the Municipal Waste Management Plan, supported by strong policies (e.g., mandatory recycling/composting, material bans, EPR).
    - **Infrastructure Investment:** Strategic investments in diverse processing facilities (MRFs, organics, specialty waste).
    - **Behavior Change:** Robust public education and engagement to foster a culture of waste reduction and proper sorting.
    - **Economic Incentives:** Policies that make recycling and composting more attractive and affordable than disposal.
    - **Data-Driven Adaptation:** Continuous monitoring and evaluation to refine programs and track progress.
- **Strategies of Interest:**

i. Residential curbside compost pick-up:

- **Approach:** Implement a city-wide curbside organics collection program for food scraps and yard waste. This is crucial for high diversion. Philadelphia's pilot is an excellent start.
- **Best Practices:** Cities like San Francisco (CA) and Portland (OR) have achieved high diversion rates (over 70% in some cases) largely due to mandatory city-wide organics collection programs. We advise on wet/dry systems vs. separate organics collection, bin distribution, and processing facility options (composting, anaerobic digestion).

ii. Pay-to-throw programming:

- **Approach:** Implement variable rates for trash collection, where residents pay based on the volume or weight of their discarded waste. This directly incentivizes waste reduction and increased diversion to recycling and composting.
- **Best Practices:** Over 7,000 communities in the U.S. use PAYT (EPA, "Pay-As-You-Throw: A Guide to Getting Started"). Cities like Seattle (WA) and San Jose (CA) have successfully

implemented PAYT to boost recycling. Raftelis specializes in designing equitable and financially sustainable PAYT rate structures.

iii. Materials re-use:

- **Approach:** Promote and facilitate robust reuse infrastructure. This includes supporting reuse centers, repair cafes, tool libraries, and online material exchange platforms.
- **Best Practices:** Austin (TX) has a strong reuse network, including a reuse store for construction materials. We recommend partnerships with non-profits, small businesses, and community organizations to scale reuse initiatives.

iv. Infrastructure needs to support innovation;

- **Approach:** Invest in modern, flexible infrastructure that can adapt to evolving waste streams and technologies.
- **Examples:** Advanced MRFs with AI and robotics for better sorting (e.g., facilities in Phoenix, AZ, or Alameda County, CA), anaerobic digestion plants that convert food waste into renewable energy (e.g., facilities in Sacramento, CA, and Charlotte, NC), and specialized processing for textiles or mattresses.

v. Public/private partnerships:

- **Approach:** Leverage private sector expertise and capital for facility development, operations, or collection services.
- **Examples:** Many cities (e.g., Los Angeles, CA; Oklahoma City, OK) partner with private companies for collection, processing, and disposal. Raftelis advises on structuring P3s that align financial incentives with the City's diversion and environmental goals, ensuring transparency and public benefit.

vi. Workforce development opportunities;

- **Approach:** Create green jobs in waste reduction, reuse, recycling, and composting sectors.
- **Examples:** Cities like New York and San Francisco have initiatives to train and employ individuals in sorting, processing, and repair. We advocate for partnerships with local colleges, vocational schools, and community organizations to build a skilled workforce for the circular economy.

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

- **Approach:** Develop financial models that reward diversion and penalize disposal.
- **Examples:** Performance-based contracts with haulers/processors tied to diversion rates, tipping fee structures that disincentivize landfilling of recoverable materials, dedicated recycling/diversion funds (funded by disposal fees), green bonds for sustainable infrastructure, and leveraging state/federal grants (e.g., EPA's Solid Waste Infrastructure for Recycling (SWIFR) Grant Program).

viii. Local policies to incentivize waste reduction;

- **Approach:** Implement policies that encourage prevention at the source.
- **Examples:** Bag bans (Philadelphia already has one, can be strengthened), plastic straw bans, mandatory recycling/composting ordinances, commercial food waste mandates, and construction and demolition debris recycling requirements. Extended Producer Responsibility (EPR) mandates are critical for larger impact.

ix. Nascent technologies; and/or

- **Approach:** Explore and pilot innovative technologies that offer significant diversion potential.
- **Examples:** AI-powered sorting robots (for MRFs to improve efficiency and purity), pyrolysis/gasification for non-recyclable plastics (though careful environmental impact assessment is crucial), advanced biological treatments for mixed waste, and digital platforms for material exchange or waste tracking.

x. Other innovative methods.

- **Approach:** Foster a culture of innovation and continuous improvement.
- **Examples:**
  - **Deconstruction over Demolition:** Require deconstruction of buildings to salvage materials for reuse, instead of demolition for disposal.
  - **Food Rescue Networks:** Strengthen partnerships with food banks and non-profits to rescue edible food from businesses and divert it to those in need.
  - **Circular Procurement:** Implement City purchasing policies that prioritize recycled content, durable goods, and products designed for reuse or recycling.
  - **Community Repair Events:** Organize regular events where residents can bring broken items for free repair, facilitated by local experts.

Section 4: Other

3.4.1 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.

Raftelis would like to highlight additional capabilities and perspectives that underscore our commitment to Philadelphia's Safe, Clean & Green mission and Zero Waste goals:

- **Integrated Communications and Public Engagement for Policy Success:** While touched upon, we emphasize our robust expertise in developing and executing comprehensive communications and public engagement strategies. Successful waste management initiatives, particularly those involving behavioral change (like increased recycling, composting, or PAYT), hinge on clear, consistent, and culturally sensitive communication. Our team, including subject matter experts in public participation (IAP2

certified), crafts targeted messages, develops multi-channel outreach materials, and facilitates community meetings to build consensus and sustain participation. Our experience with Madera County demonstrated how effective engagement leads to broad community support and policy adoption. For Philadelphia, this would mean designing campaigns that resonate with diverse neighborhoods and foster a shared sense of responsibility for a cleaner city.

- **Environmental Justice Focus:** Raftelis recognizes Philadelphia's explicit commitment to environmental justice for underserved and under-resourced communities. Beyond standard environmental impact assessments, we integrate an equity lens into all our recommendations. This includes advising on policies and siting decisions that minimize disproportionate impacts, prioritizing investments in infrastructure and programs that benefit EJ communities, and ensuring that community voices are central to decision-making processes. Our analysis considers not just the environmental burden, but also access to services and equitable distribution of benefits from a thriving circular economy.
- **Strategic Advisory as Registered Municipal Advisors:** Raftelis is a Registered Municipal Advisor (MA) with the U.S. Securities and Exchange Commission (SEC) and the Municipal Securities Rulemaking Board (MSRB). This registration signifies our adherence to a fiduciary standard, meaning we are legally bound to act in the best financial interest of our municipal clients. This credential is vital for Philadelphia as the City can trust that any financial advice, funding strategies, or infrastructure investment recommendations we provide are unbiased, transparent, and solely for the City's benefit, particularly regarding future debt issues or complex financing structures.
- **Long-Term Partnership for Adaptive Management:** The journey to 90% waste diversion by 2045 is a long-term endeavor requiring continuous adaptation. Raftelis is committed to establishing long-term advisory relationships, as evidenced by our annual contract with Madera County for ongoing solid waste management review and assistance. We can serve as a trusted, ongoing partner to the City, helping to monitor performance, evaluate emerging technologies, adapt to market shifts, and refine strategies for sustained progress towards Philadelphia's ambitious goals. Our ability to develop customized, dynamic financial and operational models allows for real-time scenario planning and agile decision-making.

These additional areas of expertise reflect Raftelis’ comprehensive approach to waste management, positioning us not just as a technical consultant, but as a strategic partner dedicated to Philadelphia's long-term environmental, economic, and social well-being.

RAFTELIS

Thank you!

CONTACT

Jennifer Porter

Principal Consultant

E: jporter@raftelis.com / P: 347-979-4992