Solid Waste Resources Management Plan: 2019-2023

Prepared for: City of Ann Arbor, Michigan

Prepared by: Aptim Environmental & Infrastructure, LLC

In association with:

"We Know The Box"

PROJECT INNOVATIONS INCORPORATED

Lake Research Partners

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Solid Waste Resource Management and Our Sustainable Future

The *Solid Waste Resources Management Plan* (SWRMP) that this message accompanies is an examination of the means and methods by which the City of Ann Arbor will provide exceptional solid waste services to our community over the next five years (2019 – 2023). The plan, which represents the culmination of 18 months of research, analysis, and public engagement is centered on identifying a financially sustainable approach to achieving the goals of the City's Sustainability Framework and 2012 *Climate Action Plan.*

The plan is intended to be more than just a revisiting of the *2013 Waste Less: Solid Waste Resource Plan.* It is specifically and intentionally disruptive in nature, providing a hard look at the changes that have occurred over the past few years and that can be anticipated in the future. It remains respectful of the past, but also challenges the underlying assumptions and practices that have defined our delivery of services. The SWRMP is analytical, seeking the best balance between community values and costs of services provided.

The SWRMP does not address the future operation of the City-owned Materials Recovery Facility (MRF). The MRF, which was shut down for a short period in 2016-2017 for safety reasons, has been operating on a more limited basis over the past few years as a sorting and trans-loading (transferring materials from collection vehicles to transport trucks) facility. Concurrent with the finalization of the SWRMP, City-staff is seeking proposals from qualified private partners to re-envision and potentially repurpose the MRF so that it is operated in a manner that supports recovery and reprocessing of recyclable materials while mitigating the risks to the City of operating in an uncertain and changing market.

Concurrent with the development of SWRMP, the City engaged with Washtenaw County and other partner jurisdictions to explore the viability of establishing a regional resource management authority, which could be a key component in the future of the City's MRF and Drop-Off Station (DOS) replacement. The process ultimately produced the Washtenaw Regional Resource Management Authority (WRRMA). While the City of Ann Arbor was a proponent of starting the regional process, the City deferred seeking membership in WRRMA until the SWRMP is finalized and concerns about contracting and proportional representation are addressed.

SWRMP Alignment with the Sustainability Framework

On February 19, 2013, Ann Arbor City Council adopted a Sustainability Framework (the "Framework") as an element of our community's master plan. The Framework establishes goals

and requires action plans in the areas of Climate and Energy, Community, Land Use and Access, and Resource Management. These goals remain the foundation of the SWRMP, and are incorporated by reference throughout the document. Table ES.2 specifically provides a "crosswalk" that aligns the recommendations of the Sustainability Framework with the SWRMP recommendations.

Several of these goals have not been met over the period of the *2013 Waste Less* plan, and not achieving these outcomes is the force that drove the direction of the update to that plan. The SWRMP takes a candid and critical look at how the City has been organized to deliver solid waste services and how resources are allocated, with the purpose of challenging existing approaches through comparisons with peer cities and best business practices. The resulting analyses provides recommendations that identify how current means and methods can be modified to produce greater efficiencies (potentially freeing resources for new and improved programs) and cases where additional funding may be needed. The suite of recommendations need to be viewed as interdependent, and not an "ala carte" menu from which to pick and choose.

Community Engagement

The development of the SWRMP was characterized by a strong and extensive community engagement effort – depicted in Figure ES.1.and described in Section 1.4 of the document. Outreach included the formation of an Advisory Committee consisting of a wide cross-section of the community. Additional meetings were added to the original calendar to provide forums for robust discussions of the alternatives and recommendations. In addition, a scientifically-valid citizen survey provided representative views of the community. There are undoubtedly differing perspectives on the recommendations of the plan, but there is also little dispute that the process was open and engaging.

At the time of the publication and presentation of the SWRMP, two specific areas of stakeholder concern remain to be addressed, as discussed below:

Collection of Residential Recyclables (Recommendation R.6). The SWRMP compared the cost of continuing contracted pick-up of residential recyclables to impacts of bringing this service in-house to the City. The financial analysis provided within the SWRMP indicated that the City could achieve significant savings through internal performance, and that these savings could be used to fund other desired services. However there have been concerns expressed by several stakeholders about the validity of the cost estimate. The SWRMP has been revised to recommend that the City conduct a competitive solicitation for curbside recycling cart collection to determine whether contracting or in-house performance represents the best value to community rate payers.

Downtown Area Service (Recommendations D.1, D.2, and D.3). The SWRMP provides three recommendations to improve services provided to the downtown area. The intent is to provide a more responsive approach to customer concerns in the downtown through a single service provider. Future outreach efforts are required to align the objectives of downtown residents and businesses with those of the entities currently providing services.

Reporting

Public presentations of performance measures are an essential aspect of examining the efficiency of service delivery. While the City does provide data on quantities collected and recycled on its web site, the development of a more detailed set of objectives would promote better accountability and transparency in the progress being made to achieve the goals of the City's Sustainability

Framework. Data reported should be both live (up-to-date) and historic. Further, City Council has directed that operating units employ **SMART** performance measures. **SMART** is an acronym, giving criteria to guide in the setting of objectives. The letters in the acronym stand for **s**pecific, **m**easurable, **a**chievable, **r**elevant, and **t**ime-bound. In partnership with the City's Information Technology group, the Public Work Unit is working toward the development of a dashboard reporting scheme that draws data from multiple sources to meet these reporting objectives. In addition, the Environmental Commission's Solid Waste Work Group is working to develop suggested measures as well.

The Call for Climate Action

On November 4, 2019, City Council passed a resolution committing the community to achieve climate neutrality by 2030. Included within the resolution is the requirement for the City Administrator to develop and present a plan to City Council on how the Ann Arbor community can meet this goal. The means and methods by which the City provides solid waste services is intrinsically part of this calculus, and the SWRMP specifically identifies the greenhouse gas (GHG) emissions tied to each of its recommendations. If all recommendations are adopted, the total reduction in annual GHG emissions of 5,600 to 14,558 metric tonnes of carbon dioxide equivalents ($MTCO_2e$). This reduction is equal to the emissions from 10,000 to 27,000 car trips of 6 miles per day every working day, which at the high end is roughly the equivalent of all commuting trips made by people who live and work in Ann Arbor on a daily basis.

Conclusions

The report's recommendations for changes in approach will undoubtedly make many in the community uncomfortable. However, concerns about the departure from past practices should not deter the City from adopting approaches that optimize resources, mitigate financial and operational risk, and improve customer service. When combined with improved outreach and reporting efforts, the SWRMP provides a pathway for Ann Arbor to reclaim its position as a national leader in solid waste management and contribute significantly to the reduction of greenhouse gas emissions in the community.

Howard S. Lazarus
City Administrator

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FOREWORD

The City of Ann Arbor's Solid Waste Resources Management Plan: 2019-2023 (SWRMP) represents the culmination of 18 months of research, analysis, and public engagement centered around identifying a financially sustainable approach to achieving the goals of the City's *Sustainability Framework*.

The *Sustainability Framework* was adopted in 2013 and includes 16 overarching City sustainability goals. With respect to solid waste resources management, the *Sustainability Framework* set the following goal:

- Responsible Resource Use - Produce zero waste and optimize the use and reuse of resources in our community.

In addition to the *Sustainability Framework* goal, goals previously identified in the City's *Waste Less: Solid Waste Resource Plan Update* (2013) and actions established in the City's *Climate Action Plan* (2012) will continue to be primary drivers for solid waste resources management practices in the City. These include:

Waste Less: Solid Waste Resource Plan Update (2013)

- Increase single family diversion rates to 60%
- Increase total citywide diversion rates to 40%
- Pilot expanded food waste composting to include all plate scrapings[1], and if successful, pilot providing year-round weekly compost collection for single-family residential routes
- Expand food waste composting to include all plate scrapings[1]
- Increase apartment recycling rates
- Re-locate and upgrade the existing Drop-Off Station
- Expand zero waste educational efforts for residents, schools, parks, businesses, and special events
- Implement the 2008 citywide commercial recycling plan with mandated recycling at all City non-residential locations
- Involve stakeholders to review and implement measures to increase waste reduction, recycling and composting such as promoting refillable water bottle stations, standardizing carryout food packaging for composting or recycling, managing construction and demolition waste, and implementing a single-use bag fee

Climate Action Plan (2012)

- RM-6 Reduce Ann Arbor's consumption/total waste stream
- RM-7 Advocate for county, state, regional, and federal product stewardship policies
- RM-8 Re-evaluate "pay as you throw" system for residential solid waste
- RM-9 Reduce residential solid waste pick-up schedule to bi-weekly
- RM-10 Encourage residents to place garbage, recycling, and compost carts out for collection only when full
- RM-11 Implement a single-use bag ban or fee
- RM-12 Facilitate more material reuse opportunities throughout the community
- RM-13 Reduce packaging waste
- RM-14 Implement a compostable/recyclable to-go packaging ordinance

[1] Seasonal residential compost collection has included plate scrapings for all households who have purchased a compost cart since 2014.

- RM-15 Utilize zoning incentives to encourage reuse of existing buildings, structures, and recycled building materials
- RM-16 Promote "climate impact" labeling for restaurants as well as other businesses
- RM-17 Develop a comprehensive green business certification program to include solid waste, pollution prevention, green purchasing, water reduction, and energy efficiency
- RM-18 Require any city-sponsored (or city-located) outdoor event to be zero-waste
- RM-19 Increase residential and commercial recycling participation and tonnages
- RM-20 Implement a construction and demolition debris recycling ordinance
- RM-21 Improve recycling opportunities at the city's drop off station
- RM-22 Increase incentives and collection of residential and commercial organic waste (including food and soiled paper products)
- RM-23 Implement a home composting education and outreach program, including providing incentives to increase participation in home composting programs

To monitor and report on progress in achieving these many goals, a number of performance indicators have been established in the City's Sustainability Action Plan and by City staff. Staff has also recently participated in discussions with the Solid Waste Work Group of the Environmental Commission to identify additional performance indicators that may be implemented to track progress towards these goals. As a result of Solid Waste Work Group discussions and other ongoing operational improvements, the following list of performance indicators is likely to expand as additional measures are established over the course of the plan implementation period. To date, the following indicators are being tracked and reported:

- Tons of material collected, landfilled, recycled, and composted
- Percent of residential trash and compost routes completed on the scheduled collection day, with a goal of 99% completion
- Percent of alleys serviced on the scheduled collection day, with a goal of 90% completion
- Number of accidents in which collection vehicles are involved, with a goal of 0 vehicular accidents per month

Implementation of SWRMP recommendations will address a number of the goals that have been identified through prior City planning processes. While the feedback received from members of the SWRMP Advisory Committee, the Environmental Commission, and City Council indicates that not all SWRMP recommendations are equally supported, when taken as a whole the recommendations provide significant guidance for City staff to address immediate operational needs as well as the larger desires of the community in a financially sustainable manner. As individual SWRMP recommendations advance into the implementation stage, program details will be further finalized and presented for appropriate Commission and/or City Council approvals.

City staff and the SWRMP consultant team appreciate the commitment of all of the participants in the SWRMP process to the development of this plan. The knowledge and experience of all involved in the development of the SWRMP and the thoughtful discussions and feedback provided have resulted in a strong and implementable SWRMP which will guide program improvement and expansion over the next five-year period and beyond.

Howard Lazarus
City Administrator

Craig Hupy
Public Service Area Administrator

Cresson Slotten
Systems Planning Unit Manager
SWRMP Project Manager

Molly Maciejewski
Public Works Manager

EXECUTIVE SUMMARY

ES.1 Overview of the Solid Waste Resources Management Plan

The City of Ann Arbor's Solid Waste Resources Management Plan: 2019-2023 (SWRMP) was developed to provide an update to the City's previous *Waste Less: Solid Waste Resource Plan 2013-2017* and to provide City SWRMP strategies that consider Washtenaw County's solid waste resources management goals identified in its 2018 amendment to the *Washtenaw County Solid Waste Management Plan*, which align with Ann Arbor's overarching Zero Waste goal.

Furthermore, the SWRMP is intended to serve the City as a detailed strategy document focused on the five-year planning period (generally 2019-2023) to address immediate operational needs and desires of the community in a financially sustainable manner. Specifically, the SWRMP responds to:

- Ongoing operational needs and rising costs related to the City's current resource management programs;
- The impact of legacy costs associated with the City's former landfill, City retiree costs, and aging program facilities including the City's Drop-Off Station (DOS) and Material Recovery Facility (MRF);
- The formation of the Washtenaw Regional Resource Management Authority (WRRMA), which formed as a result of discussion between a number of Washtenaw County communities following completion of the amended *Washtenaw County Solid Waste Management Plan*; and
- The desire of the community to enhance or expand its current solid waste resource management services to provide a higher level of service and reduce the quantity of waste disposed.

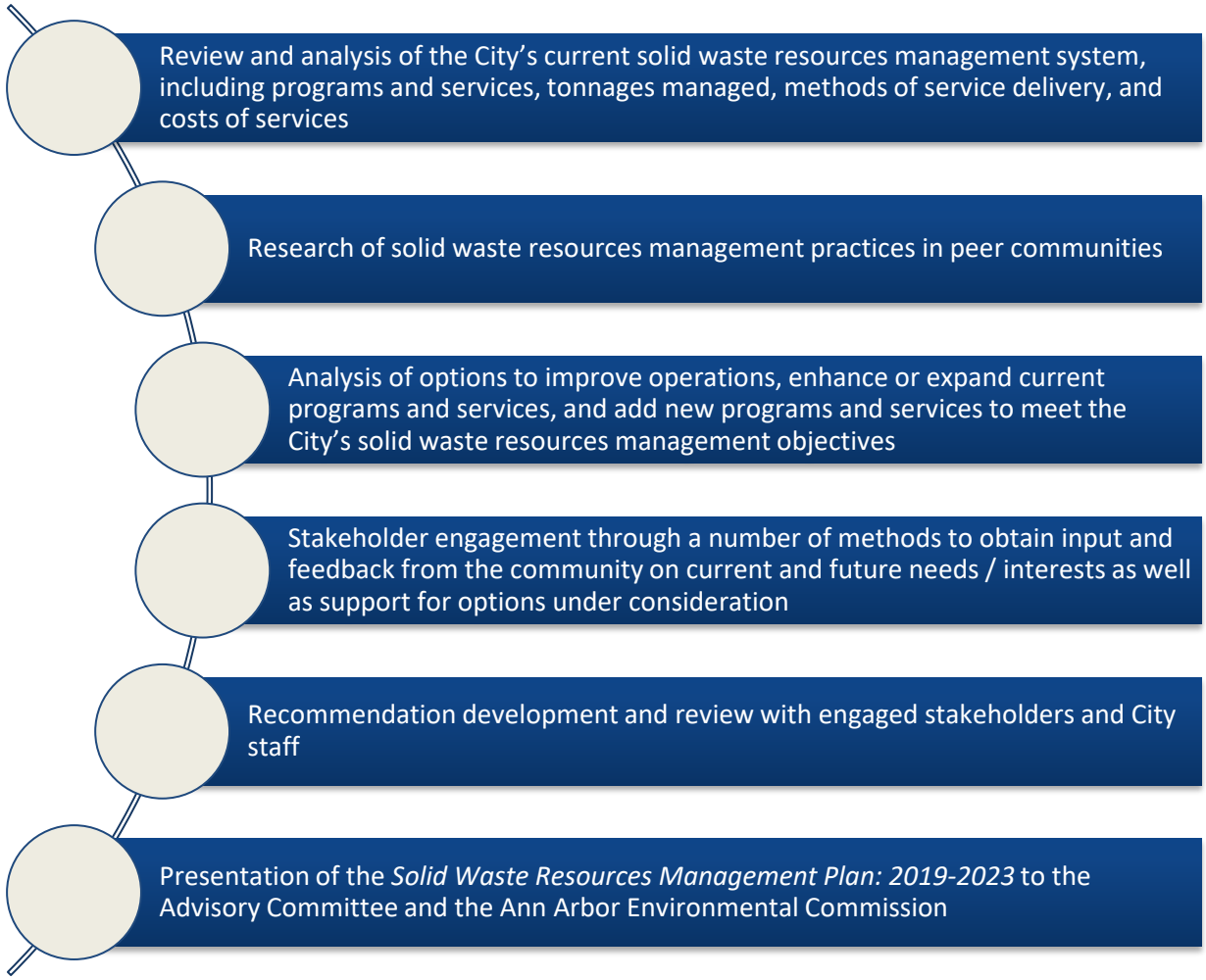
ES.2 The Solid Waste Resources Management Plan Process

SWRMP development began in May 2018 with the City's assignment of a staff working group to oversee the planning process and contracting of an expert consulting team to lead the research, analysis, and public engagement aspects of the planning process. The draft SWRMP was presented to the Ann Arbor Environmental Commission in August 2019 and to City Council at its September 2019 Work Session, with delivery of the final draft in November 2019.

The SWRMP was developed through a robust and comprehensive process which included the steps in Figure ES.1. In addition, concurrent activities related to solid waste resources management in Ann Arbor and the surrounding region were monitored for consideration of their impacts on the SWRMP strategy and the City's overall solid waste resources management practices. These activities included:

- City solid waste resources management contracts for services. Contracts for cart recycling collection, recyclables processing, and commercial waste collection were due to expire during the plan development period. The City secured contract extensions for each of these contracts through June 30, 2020 to enable recommendations resulting from the SWRMP to be considered prior to procuring future contracts for these services.

FIGURE ES.1. SWRMP DEVELOPMENT PROCESS



- Recycling market conditions. Local recycling market conditions changed significantly when the City's Material Recovery Facility (MRF) ceased processing operations in 2016. Subsequently, recyclables began to be transferred to distant processing facilities in Ohio due to a lack of local and regional recycling processing capacity sufficient to support the City's recycling needs. Further recycling impacts have been realized since the beginning of 2018, when Chinese import restrictions and increased quality standards became effective and drastically reduced the value paid for recyclables.

- Regionalization efforts. During Washtenaw County's process to complete its 2018 amendment to the *Washtenaw County Solid Waste Management Plan*, a number of communities, particularly in eastern Washtenaw County and including Ann Arbor, began meeting to discuss options for greater regional recycling cooperation. Their discussions included improving the quantity and quality of recycled materials, increasing access to drop-off recycling opportunities, and reestablishing local recycling processing capacity. In early 2019, the group of communities developed Articles of Incorporation for the Washtenaw Regional Resource Management Authority (WRRMA) and presented them to their elected officials for adoption. To date, seven of the eight communities who participated in planning discussions have joined WRRMA; Ann Arbor has not yet voted to join WRRMA. In the discussion of various solid waste resources management options

within this SWRMP, benefits to the City of approaching services regionally have been identified.

Two key tools were developed through the SWRMP process and are provided as attachments to the report. These include the Cost of Service Analysis (Attachment C) and the financial model (Attachment D).

- The Cost of Service Analysis utilized FY2018 actual expenditures and revenues for the City's solid waste resources management system to calculate costs for each of the key functions of the system (residential waste, recycling, and compost collection and disposal/processing; commercial waste and recycling collection and disposal / processing; and other smaller functions). For each function, costs were broken down to their components such as labor, equipment, fuel, repair and maintenance, and disposal / processing. This enables costs to be evaluated across functions to determine where costs may be higher to perform certain functions in comparison to others. It also enables unit costs to be calculated (such as cost per hour), which can then be applied to various options that were considered in the SWRMP.

- The financial model first includes a baseline scenario representing current conditions. Model inputs can then be adjusted to calculate the impact of program or service changes or additions, and future projections of impacts to the City's Solid Waste Fund balance can be assessed. The financial model can also be used to assess the impact of added or reduced revenue to the system on the Solid Waste Fund balance.

ES.3 Solid Waste Resources Management Plan Recommendations

Ann Arbor has historically been a leader in the delivery of solid waste resources management services, and the recommendations contained in this SWRMP will assist the City in future efforts to achieve continued success. These recommendations reflect the long-term waste and sustainability goals of the City and have been developed based on current and historical City data; experience in benchmark communities; a review of a number of solid waste resources management plan options to improve or expand services and/or increase diversion; input from stakeholders including a random sample of Ann Arbor residents, participants in one-on-one stakeholder interviews, downtown business focus group members, and a diverse Advisory Committee; and input from Ann Arbor's Environmental Commission.

As recommendations are implemented, it will be important to balance Ann Arbor's objectives of providing high quality service and reducing the quantity of waste disposed in pursuit of the goal of zero waste with the City's fiscal constraints and willingness of residents and businesses to pay for programs. Public input throughout the SWRMP development process indicates there is a willingness within the community to pay for enhanced services, within certain ranges. Several recommendations are projected to result in cost increases to the City's Solid Waste Fund and require that funding be identified as part of, and prior to, implementation of those recommendations to ensure adequate funding is available not only to implement but also to sustain the program or service over time. Two important elements in the development of the SWRMP - the Cost of Service Analysis (Attachment C) and the financial model (Attachment D) - provide valuable insight into system costs, funding needs, and Solid Waste Fund balance projections during the planning period.

Prior to, or in conjunction with, implementation of any of the recommendations presented in the SWRMP, there are two core needs that must continue to be met:

1. Oversight and continuous improvements related to customer service aspects of operations. Objectives of this continued effort include providing clear point of contact and resolution pathways both for external customers (i.e., residents and businesses) and for internal staff to respond to questions and issues that arise.

2. Operational improvements and upgrades to sustain current programs must continue. This includes purchasing new fleet as existing equipment reaches the end of its life, reviewing and optimizing collection routes, integrating and expanding the use of technology enhancements as appropriate to maintain operating efficiency (e.g., in-cab navigation and event/issue reporting and tracking), and hiring of staff to serve existing operations when needs arise (e.g., due to staff departures or due to increases in areas to service as growth continues in the City).

The SWRMP recommendations have been grouped by sector and topic, including: Residential; Commercial; Education and Outreach; Downtown Area; Diversion Facilities; and Funding. The recommendations are presented in Section 4 and restated below.

Residential Recommendations

R.1. Implement year-round residential compost collection. Perform collection from December through March on an every-other-week basis from compost cart customers only.

R.2. Contract for curbside textiles collection from single-family residences on a no-cost contract basis.

R.3. Implement a limited bulky item collection program to collect large items not suitable for donation which do not fit in the trash cart.
- Collection scheduled to occur once per month on a rotating schedule based on collection day and location within the daily collection zone.
- Residents required to call the City to provide notification of the need for bulky item pickup, identify the type of waste being collected, and make payment. City to provide information on pickup services available for items that may be suitable for donation, reuse, or recycling.
- Items collected proposed to include furniture, mattresses, rigid plastic children's play items (e.g., ride-on toys, Little Tikes / Playskool-type slides or playhouses, etc.), whole plumbing fixtures (e.g., sinks, toilets), appliances (excluding freon-containing appliances such as refrigerators and air conditioners), and carpet / padding (cut and secured in rolls). Bulky items are not proposed to include any extra loose or bagged / containerized household waste, construction or demolition materials from home renovation projects, tires, appliances containing freon, propane tanks, electronic wastes, or any items larger than can be reasonably lifted and loaded into a rear-load collection truck.
- Establish a per-item collection charge to recover costs associated with this service, initially proposed to be $25.

R.4. Promote the use of existing drop-off options related to electronic waste (e-waste) and household hazardous waste (HHW) collection including the City's Drop-Off Station, Washtenaw County Home Toxics Collection Center, and retail outlets.

R.5. Monitor Washtenaw Regional Resource Management Authority (WRRMA) activities related to e-waste and HHW and seek opportunities to partner with WRRMA to increase access to collection options for Ann Arbor residents, if this is an activity performed by WRRMA.

R.6. Conduct a competitive solicitation for curbside recycling cart collection to be performed by a contractor and determine whether to continue to contract with an outside vendor for this service or to instead consolidate service providers with the City operating as the sole collector performing all curbside cart residential collection of waste, recycling, and compost.

Commercial Recommendations

C.1. In coordination with the City's Stormwater and Wastewater departments, develop and implement an ordinance requiring operating standards and reporting by restaurants and grease haulers to improve management of fats, oils, and grease (FOG) generated by restaurants. The ordinance should contain:

- Restaurant requirements: Submit FOG management plans to the City identifying FOG handling procedures in place or proposed; site maintenance and cleaning procedures; the company providing FOG collection; and the location of any FOG container(s) utilized by the restaurant.
- FOG hauler requirements: Submit periodic (quarterly or annual) reports identifying quantity of grease collected and disposition (reuse/recycling or disposal).
- A fee to be paid by restaurants included in the ordinance to recover costs associated with ordinance implementation. An initial fee of $100 per year is proposed, equating to approximately 3 labor hours per year allocated to each restaurant for monitoring and enforcement.

C.2. Include specifications for commercial organics (compost) collection in the next commercial waste franchise procurement. Parameters for service are recommended to include:

- Voluntary service for interested food-oriented businesses.
- Requirement for a minimum of 2 organics collections per week from all participating businesses (with at least one of those collections occurring on a Saturday or Sunday).
- Cart / container cleaning to be performed periodically by the contracted hauler.
- Site review required to be performed by City and franchise hauler to identify feasibility of service due to space constraints, identify container location(s), review compost collection procedures and acceptable materials with the business, and confirm standard operating procedures to be implemented by the commercial property to maintain quality of organics and ensure proper site management.
- Cost of collection to be paid by participating businesses based on selected container size, number, and collection frequency.

C.3. Establish increased collection service during peak student move-in / move-out periods in May and August for multi-family properties served by the City within a designated student apartment zone. The increased service is recommended to include:

- Collection of carts and property-owned dumpsters on Monday and Friday during designated weeks, with specific dates to be established by the City annually.
- Separate collection of mattresses, if a mattress recycling contract is secured.
- Coordinated reuse / donation collection occurring on the same days as added collections at select location(s) within the student apartment zone and/or in cooperation with area donation / thrift outlets providing pick-up services. This may be considered to supplement or to replace current services provided by RAA at the centralized collection area at Tappan and East University Avenues.

- Cost of collection to be paid by multi-family properties receiving additional collection services.

C.4. Increase data availability and tracking of construction and demolition (C&D) debris as a precursor to establishment of requirements for diversion of C&D materials. Implementation is recommended to be phased:

- Phase 1: Institute reporting requirements to track types and quantities of C&D debris diverted and disposed from permit-required C&D projects. Reporting requirements are recommended to be incorporated into the building and occupancy permit process(es) with a refundable deposit or bond to be paid and returned upon satisfaction of requirements.
- Phase 2: Utilizing data collected in Phase 1, and assuming adequate C&D processing and recycling infrastructure is confirmed to be available in the region, institute requirements for the development of a diversion plan and establish a targeted diversion percentage. Diversion plan requirements will also be required to consider environmental health factors, material testing results (e.g., for lead-based paint or asbestos), and site capacity for dumpster placement and material segregation. Determination of the diversion percentage target will be dependent on local infrastructure and quantities, but is initially suggested to be 50%. Phase 2 is recommended to be initiated 3 to 5 years after implementation of Phase 1.

C.5. Perform ongoing inspection and enforcement of commercial properties to ensure compliance with waste and recycling collection requirements, including use of City collection services (performed by the City or its commercial franchise hauler) and participation in the City's recycling program. Initial enforcement is recommended to focus on education regarding ordinance requirements, on-site training and program set-up, and continuing follow-up support to secure participation prior to issuance of violations.

C.6. Consolidate service providers in the commercial sector, with the City's contracted commercial franchise hauler operating as the sole collector performing all commercial collection of waste, recycling, and compost and multi-family collection of waste where service cannot be provided by once weekly cart collection under the residential program.

Education & Outreach Recommendations

E.1. Hire an individual with a background in community-based social marketing to direct all education and outreach activities.

E.2 Procure a marketing and advertising firm with behavior change and community-based social marketing qualifications and experience to develop and implement a comprehensive outreach campaign and strategy. The strategy will include:

- Audience identification
- Message development
- Media type and frequency
- Branding and creative development
- Rollout strategy and cost

E.3. Establish a grassroots outreach team consisting of core City staff team members and supported by volunteers as available to perform direct contact outreach with residents. Outreach will be performed primarily during evenings and weekends and include door-to-door campaigns, presentations at community group meetings, and table/booth assistance at festivals and events Citywide.

E.4. Track education and outreach level of effort and activities on a monthly or quarterly basis and compare to collection tonnage metrics to measure effectiveness of education and outreach strategies. Supplement this data with periodic customer surveys on an annual basis or in conjunction with targeted campaigns to measure changes in customer awareness and participation in programs and services.

Downtown-Area Service Recommendations

D.1. Change downtown collection route driver schedules to enable Saturday and Sunday collections on a half-day basis, and mandate restaurants and bars to have Saturday and Sunday collection and minimum 4-day collection weekly. This will require amendment of contracts for operation of the City's transfer station and material recovery facility (MRF) (and compost facility, if organics collection service is implemented) to provide weekend receiving hours, as well as a memorandum of understanding with staff labor unions to change driver schedules.

D.2. Pursue consolidation of containers in the downtown area by:

- Planning and designing locations to place larger containers (6-8 cubic yard dumpsters and/or compactors) in the downtown area either in alleys or on City-owned properties to serve groups of businesses, removing carts from alleys to the extent possible.
- Developing a cost-distribution formula to apportion costs for consolidated container services based on property type, size, usage, hours of operation, etc. and establishing the management structure for downtown services.

D.3. Establish separate and discrete service arrangements within the DDA boundaries utilizing a single service provider for all waste-related services, including waste, recycling, and organics collection. This arrangement may be achieved through either the inclusion of separate downtown-area operating requirements and service costs within the commercial franchise agreement or through award of a separate contract for downtown-area services.

Diversion-Related Facility Recommendations

DF.1. Continue to participate in discussions with the County, WRRMA and/or other area communities related to strategies to develop a regional facility to replace the City's Drop-Off Station. The City is not recommended to lead these discussions, given the regional nature of the current facility and desire for any future facility to continue to serve the broader region.

DF.2. Continue to seek proposals for a new recycling processing contract with services to commence July 1, 2020. Encourage potential vendors to propose investment in and operation of the City's MRF as a processing facility.

Funding Recommendations

F.1. Pursue a ballot referendum to return the Solid Waste Millage to its original amount of 3 mils through a Headlee Override, thereby securing increased funding to support implementation of recommendations in the SWRMP and providing stability to the Solid Waste Fund as recycling costs continue to increase.

F.2. Confirm the City's authority to impose a waste diversion fee or surcharge on residential and/or commercial customers to provide supplemental funding to offset shortfalls related to the costs of waste diversion programs and services. If the City is authorized to impose such a fee, implement the fee in the residential sector initially, given the current imbalance between revenues and expenses in the residential sector. To balance residential revenues and expenses under current conditions, this fee would be estimated to be $5.56 per household per month ($66.72 per household per year) in FY2020, resulting in additional revenue of approximately $1,750,000.

F.3. As programs and services are implemented which are used by customers on a periodic or limited basis, establish and implement service fees charged to users of the services to recover the added cost of service.

Summary Resource Requirements and Impacts for Recommendations

Table ES.1 summarizes the resource requirements (staff, equipment, and contracted services) needs for each of the recommendations identified above, excluding recommendations for diversion-related facilities and funding. City Solid Waste Fund direct cost impacts are based on cost projections developed from FY2018 unit costs calculated in the Cost of Service Analysis and annual cost adjustments for contract escalation and inflation. All direct cost impacts assume implementation of recommendations in FY2020. As implementation is planned and timing is confirmed, revenue and cost impact calculations can be adjusted using the financial model framework in Attachment D.

TABLE ES.1. RECOMMENDATION RESOURCE REQUIREMENTS AND IMPACTS

Recommendation	Resource Requirements	Estimated Annual Impact		
		Solid Waste Fund Direct Cost	Diversion	GHG Emissions
Residential				
R.1. Year-Round Compost Collection	• Schedule change for 2 drivers • Rental of 2 collection trucks for 4 months	$147,000 $0.47/hh/month	110-274 tons $540 - $1,340/ton diverted	(61-176 $MTCO_2e$)
R.2. Curbside Textiles Collection	• None	$0, with revenue potential of $500-$2,860	25-143 tons	9-(71) $MTCO_2e$
R.3. Bulky Item Collection	• Add 1 driver and 1 technician • Purchase 1 collection truck • Add 0.5 Customer Service staff	$380,000 $1.20/hh/month	0 tons	31 $MTCO_2e$ (added City-generated emissions; no reduction included for shift of collection from private contractors)
R.4 / R.5. E-Waste and HHW Collection	• None	$0	Up to 340 tons with 100% recovery	No change

TABLE ES.1. RECOMMENDATION RESOURCE REQUIREMENTS AND IMPACTS

Recommendation	Resource Requirements	Estimated Annual Impact		
		Solid Waste Fund Direct Cost	Diversion	GHG Emissions
R.6. Improved Residential Recycling Collection	• Add or reassign 7 drivers • Purchase 7 collection trucks	($775,000) ($2.46/hh/month)	No change	No change
Commercial				
C.1. FOG Management	• Add 0.25 - 0.5 outreach / enforcement staff	$20,000	No change; will provide data for inclusion in diversion calculations	No change
C.2. Commercial Organics Collection	• Add 2 outreach / enforcement staff • Add 1 Customer Service staff	$555,000	1,000-2,400 tons $230 - $555/ton diverted	(700-1,680 $MTCO_2e$)
C.3. Student Move-In / Move-Out Support	• Assign 0.5 outreach / enforcement staff 9 weeks/year • Assign 2 drivers and 1 technician 10 days/year • Rent 2 collection trucks for 5 weeks/year	$55,000	0 tons	<1 $MTCO_2e$
C.4. C&D Waste Diversion	• Add 0.5 data review and monitoring enforcement staff	$51,000	To be determined after Phase 1 completion	No change during Phase 1 Phase 2 impact to be determined
C.5. Commercial Participation Enforcement	• Add 1 enforcement staff • Add 0.5 to 1 driver • Add 0.5 to 1 collection truck • Add 1,700 carts	Year 1 implementation: $65,000 - $130,000 Ongoing, sustaining: $840,000 - $1,680,000	1,700-4,400 tons $380 - $495/ton diverted	(4,879-12,628 $MTCO_2e$)
C.6. Consolidated Commercial Collection	• Reassign 3 full-time collection route drivers performing commercial collection	City operational cost savings of ($1,300,000); added contracted collection expense to be determined based on proposal pricing	No change	Nominal savings

TABLE ES.1. RECOMMENDATION RESOURCE REQUIREMENTS AND IMPACTS

Recommendation	Resource Requirements	Estimated Annual Impact		
		Solid Waste Fund Direct Cost	Diversion	GHG Emissions
Education & Outreach				
E.1. Hire Education and Outreach Lead	• Add 1 marketing / outreach group lead	$94,000	To be determined based on City implementation experience	To be determined based on City implementation experience
E.2. Marketing / Advertising Campaign	• Contract with outside firm	$150,000 (excluding roll-out)		
E.3. Grassroots Outreach	• Add 4 half-time to full-time grassroots field team members • Supplement with volunteers	$100,000 - $200,000 (staff costs only; outreach materials additional, to be determined)		
E.4. Track Performance	• None; to be performed by marketing / outreach group lead	$0		
Downtown-Area Service				
D.1. Saturday / Sunday Collection for Restaurants and Bars	• Add 0.5 to 1 driver • Add 0.25 outreach and enforcement staff	$330,000	No change projected	To be determined based on service design
D.2. Container Consolidation Planning and Design	• Contract with consultant; City staff to support as needed	$45,000 (consultant expense)		
D.3. Single Service Provider for All Downtown Collections	• Dependent on service provider and scope of services	To be determined		

ES.4 Alignment with the City's Sustainability Framework

The City's 2013 *Sustainability Framework* provides a set of sustainability goals against which City activities and programs are measured through planning processes like this. Table ES.2 indicates SWRMP recommendations which align with the *Sustainability Framework* goals. This provides an additional method by which implementation priorities may be determined and will be of use for City staff, the Environmental Commission, and City Council.

TABLE ES.2. ALIGNMENT OF SWRMP RECOMMENDATIONS WITH SUSTAINABILITY FRAMEWORK GOALS

	Climate and Energy Goals			Community Goals						Land Use and Access Goals			Resource Management Goals			
Recommendation	Sustainable Energy	Energy Conservation	Sustainable Buildings	Engaged Community	Diverse Housing	Human Services	Safe Community	Active Living and Learning	Economic Vitality	Transportation Options	Sustainable Systems	Integrated Land Use	Clean Air and Water	Healthy Ecosystems	Responsible Resource Use	Local Food
Residential																
R.1. Year-Round Compost Collection				X									X		X	X
R.2. Curbside Textiles Collection				X		X			X				X		X	
R.3. Bulky Item Collection				X		X										
R.4/R.5. E-Waste and HHW Collection				X		X	X						X	X	X	
R.6. Improved Residential Recycling Collection				X			X		X						X	
Commercial																
C.1. FOG Management	X											X	X	X	X	
C.2. Commercial Organics Collection				X									X		X	X
C.3. Student Move-In / Move-Out Support				X		X			X							
C.4. C&D Waste Diversion			X						X		X	X	X		X	
C.5. Commercial Participation Enforcement				X							X		X		X	
C.6. Consolidated Commercial Collection				X			X		X				X		X	
Education & Outreach																
E.1. Hire Education and Outreach Lead				X		X	X	X	X				X		X	
E.2. Marketing / Advertising Campaign				X		X	X	X	X				X		X	
E.3. Grassroots Outreach				X		X	X	X	X				X		X	
E.4. Track Performance								X							X	

TABLE ES.2. ALIGNMENT OF SWRMP RECOMMENDATIONS WITH SUSTAINABILITY FRAMEWORK GOALS

	Climate and Energy Goals			Community Goals						Land Use and Access Goals			Resource Management Goals			
Recommendation	Sustainable Energy	Energy Conservation	Sustainable Buildings	Engaged Community	Diverse Housing	Human Services	Safe Community	Active Living and Learning	Economic Vitality	Transportation Options	Sustainable Systems	Integrated Land Use	Clean Air and Water	Healthy Ecosystems	Responsible Resource Use	Local Food
Downtown-Area																
D.1. Mandatory Sat & Sun Collection for Restaurants & Bars				X			X		X			X	X		X	
D.2. Container Consolidation Planning & Design		X		X			X		X			X	X		X	
D.3. Consolidated Downtown Collection		X		X			X		X		X	X	X		X	
Diversion-Related Facilities																
DF.1. Drop-Off Station Replacement				X					X				X		X	
DF.2. Procure City MRF Operator		X		X					X		X	X	X		X	
Funding																
F.1. Millage Increase - Headlee Override				X					X							
F.2. Waste Diversion Surcharge				X					X							
F.3. Service Fees				X					X							

SECTION 1
BACKGROUND

1.1 Introduction

The City of Ann Arbor has long provided a broad-based set of programs to manage its solid waste resources in an environmentally focused manner, which is an important value held by the community. These programs include composting and recycling, which Ann Arbor began years before many other communities, and disposing of waste generated by City residents and businesses. Past solid waste documents outline the goals of these programs, the most recent document being the *Waste Less: Solid Waste Resource Plan 2013-2017*, which called for the community to move towards Zero Waste, a goal that was adopted by the City's Environmental Commission in 2007. Through the Zero Waste goal, the City seeks to maximize materials composted, recycled, or reused while minimizing the overall trash to landfill produced[2].

The City sustains its interest in enhanced or expanded solid waste services to meet the Zero Waste goal and recently participated in the Washtenaw County (County) effort to develop the 2018 amendment to the *Washtenaw County Solid Waste Management Plan*, which includes goals to:

- Reduce the overall amount of municipal solid waste (MSW) generated per capita in Washtenaw County by 5% in the year 2022 and by 10% in the year 2027, with a target of working towards zero waste.

- Operate collaboratively within the County and regionally outside of the County for a comprehensive sustainable materials management strategy.

This document, the City of Ann Arbor's Solid Waste Resources Management Plan: 2019-2023 (SWRMP), was developed considering the County's goals, which align with Ann Arbor's overarching Zero Waste goal. Furthermore, the SWRMP is intended to serve the City as a detailed strategy document focused on the five-year planning period (generally 2019-2023) to address immediate operational needs and address desires of the community in a financially sustainable manner. Specifically, the SWRMP responds to:

- Ongoing operational needs and rising costs related to the City's current resource management programs;

- The impact of legacy costs associated with the City's former landfill, City retiree costs, and aging program facilities including the City's Drop-Off Station (DOS) and Material Recovery Facility (MRF);

- The formation of the Washtenaw Regional Resource Management Authority (WRRMA), which formed as a result of discussion between a number of Washtenaw County

[2] As defined in the *Waste Less: Solid Waste Resource Plan 2013-2017*, "Zero Waste is the application of an established and defined framework of waste management options that recognizes waste products as resources and facilitates the most environmentally-beneficial methods of waste prevention and processing. Zero Waste ultimately seeks the highest possible environmental option for management of all resources, to prevent and reduce waste materials to air, water, and land, emphasizing a closed-loop system of production and consumption."

communities following completion of the amended *Washtenaw County Solid Waste Management Plan*; and

- The desire of the community to enhance or expand its current solid waste resource management services to provide a higher level of service and reduce the quantity of waste disposed.

Due to the regional nature of the City's DOS and the City's MRF, and given prior and ongoing discussions among other communities and the County related to future operation of these facilities, analyses and examinations of these facilities are not included in this SWRMP. Replacement of the City's DOS has been identified as a need by the City, and capital has been programmed for a portion of the cost of replacement for several years; however, because it serves as a regional facility the City desires that supplemental funding be provided from other communities and/or the County. The need for local recycling capacity to serve the broader region was a catalyst in the County's recent *Waste Diversion Site Feasibility Study: An Assessment of Recovery Facilities to Manage Recyclables for the County* and facilitated discussions leading to the establishment of WRRMA. Additionally, future investment in the currently inactive City MRF to return it to an active processing facility is considered by the City to potentially be best served through a regional approach and has been a topic of discussion with other communities during the formation of WRRMA. Though not analyzed in this SWRMP, as regional options related to the DOS and MRF are further studied, results of those studies and discussions could be evaluated utilizing the framework and tools provided within the SWRMP.

1.2 Planning History

The City adopted its first solid waste plan in 1988, then subsequently updated the plan in 1994, 2002 and 2013. The City has also developed a number of goals related to sustainability which are documented through actions of the City Council and in the adoption of a series of documents including the City's *Climate Action Plan*, *Sustainability Framework* and associated *Sustainability Action Plan*, and *Waste Less: Solid Waste Resources Plan*. Significant goals related to solid waste resources management have included the following:

- In 2007, the City of Ann Arbor's Environmental Commission and City Council established the policies and goals of the City's Environmental Action Plan, including a goal of achieving Zero Waste.

- The 2012 *Climate Action Plan* identified 18 goals specific to waste reduction.

- The City's 2013 update to its *Waste Less: Solid Waste Resource Plan* identified a number of strategies to move towards Zero Waste.

- The 2013 *Sustainability Framework* included a goal of responsible resource use, including producing zero waste and optimizing the use and reuse of resources in the community.

- The 2015 *Sustainability Action Plan*, an implementation and tracking tool for the *Sustainability Framework*, contained 2 targets with related actions to increase waste diversion rates in Ann Arbor.

- The 2016 *Comprehensive Organics Management Plan* contained several strategies focused on reducing and diverting organic wastes (principally food waste) for the disposed waste stream.

Through each of these processes, continued attention has been focused on reducing the amount of waste disposed by Ann Arbor's residents and businesses. This SWRMP builds upon the work completed during these prior planning processes by identifying specific recommendations that will improve operations and assist the community in moving closer to achieving these goals.

1.3 Project Objectives

Early in the development of the SWRMP, the project team (consisting of City staff and the City's contracted consultant for development of the SWRMP) identified a number of key questions for the SWRMP to address based on input from a diverse range of stakeholders including residents, businesses, institutions, business associations, property managers, contracted service providers, City staff, and the City's Environmental Commission. The key questions focused on programs and services, as well as broader operations and functions. The key questions include:

Critical Questions to Address - Programs and Services:

1. How can we move the needle on diversion and make progress towards Zero Waste?
2. How can organics collection be expanded - year-round for residents, offer collection for businesses?
3. What can we do to meet increased collection needs during select periods (e.g., student move-in / move-out, game days)?
4. What are other communities doing to achieve higher diversion rates, and how can we bring those successes to Ann Arbor?
5. What can be done to improve downtown / alley operations and conditions?
6. How can fats, oils, and grease (FOG) management be improved?
7. What does an education and outreach program need to include?

Critical Questions to Address - Operations and Functions:

1. What do current operations cost, and are current funding levels/methods sustainable?
2. How much are generators willing to pay for enhanced services and increased diversion?
3. What funding options are available, and what will the community support?
4. What services should the City provide, and what services should be provided by contractors?
5. What City staff and equipment / infrastructure are needed to focus on resource management services - planning, administration, collection operations, customer service, enforcement, outreach?
6. What regional collaboration options are available to support SWRMP implementation?

The SWRMP analyzes a number of options to answer these questions, evaluating a range of criteria including diversion potential, cost, greenhouse gas emissions impacts, compatibility with existing operations, and community acceptance.

To ensure SWRMP recommendations are implementable and reflective of the unique local conditions of Ann Arbor, the project team also conducted extensive public engagement, as detailed further below. The multiple sources of input to the planning process have included:

- Resident, business, institution, service provider, and City staff input through a variety of public engagement efforts;
- Historical and current solid waste resources management practices in Ann Arbor; and
- Best practices in other communities.

Based on this diverse and valuable input, the recommendations in this SWRMP provide direction to City staff, the City's Environmental Commission, and the Ann Arbor City Council to optimize and enhance existing services and expand services provided to its residents and businesses to meet community needs and continue pursuit of the City's Zero Waste objectives over the next five-year planning period and beyond.

1.4 Public Engagement in the Plan Update Process

Ann Arbor is committed to strong public engagement through all planning efforts it undertakes, and engaging key stakeholders and the public in the development of the SWRMP was an important element of the process. Objectives of the public engagement process were to allow the public an opportunity to learn about the development of the SWRMP, provide input to ensure community interests are taken into consideration, establish appropriate expectations for potential solid waste resources management strategies that may be considered, and secure feedback on potential options.

Throughout the public engagement process, a number of opportunities were available to the community to provide input into the development of the SWRMP. Additionally, the City provided regular updates including public engagement summaries on a dedicated page on its website at www.a2gov.org/swrmp and established an email address (swrmp@a2gov.org) for interested parties to submit comments or input. This section identifies the public engagement strategies employed and summarizes the input received.

1.4.1 Engagement Strategy

The consultant team and City staff engaged a range of stakeholders to develop the SWRMP to ensure the needs and interests of the community are met. The SWRMP planning process was designed to include a range of perspectives through a multifaceted approach that involved:

- Interviews with key stakeholders, including community groups, business associations, institutions and agencies, waste and recycling service providers, representatives of the Environmental Commission, and City staff
- A random, scientific survey of Ann Arbor residents
- An Advisory Committee comprised of stakeholders and other interested community members

- Focus Group engagement to explore select issues of interest, including downtown alleys and student residents

- Meetings with the City's Environmental Commission

Attachment A.1 contains a copy of the engagement strategy. The following details each of the engagement efforts.

1.4.2 Stakeholder Interviews

The team completed 33 stakeholder interviews to gain input from a range of perspectives on current solid waste resources management services as well as interests in and perceived need for future strategies. The team completed the interviews between July and September 2018 with stakeholders representing:

- Institutions
- Business associations
- Property managers, owners, and developers
- Residents and businesses
- City Commissions
- Contracted service providers
- City staff

A complete list of all interviewees is contained in Attachment A.1.

The team organized key takeaways from the stakeholder interviews to summarize input based on strengths, weaknesses, opportunities, and needs for current and future solid waste resources management strategies. This summary is shown in Figure 1.1.

1.4.3 Downtown Business Focus Group

The project team held a focus group session with downtown business owners and managers as well as representatives of downtown business associations on September 27, 2018. Sixteen people attended, in addition to members of the project team and the Downtown Development Authority (DDA). The objective of the focus group was to gain specific input through group discussion to identify and review current solid waste conditions in the downtown area and discuss needs and options for service improvements to address challenges.

The team summarized focus group input and discussion, which is included in Attachment A.2. Notably, there was significant agreement among participants regarding issues around current services in the downtown area as well as suggested options to improve services. This input helped provide direction for the evaluation of downtown area options, presented in Section 3.4.

FIGURE 1.1. STAKEHOLDER INTERVIEW PERCEPTIONS AND FEEDBACK SUMMARY

STRENGTHS

Residential Composting
* Food waste inclusion makes Ann Arbor a leader
* Compost cart pilot is increasing awareness

Zero Waste Vision
* Powerful, part of culture

Recycling
* Opportunities are robust
* Many materials are accepted
* Service is universally available to residents and businesses

Contracts
* Newer transfer and disposal and composting contracts are streamlined / easier to manage

Consistency
* City establishes and maintains programs - hasn't cut anything
* A lot of public goodwill / support of programs
* Valuable to develop and update / maintain solid waste plans

Customer Service
* See / Click / Fix app is much appreciated

WEAKNESSES

Leadership
* Ann Arbor no longer a national leader in programs / diversion

Contracts
* Services overlap
* Older contracts are difficult to manage, need to be updated and streamlined

Apartment Services
* Lost higher level of service during peak move-out periods
* Tenants use any available dumpster at expense of owners ("trash wilding") or dump illegally

Customer Service
* Difficult to know where to go to get answers
* City culture is not service-oriented, departments are like silos (pervasive - not just in solid waste)
* Service exceptions / special services for individual customers make service inconsistent - standardize services
* City Solid Resource function not structured for high performance
* Loss of China market causing significant disruption in recycling business

Downtown
* Residents are second class compared to those in neighborhoods
* Trash / recycling pickups are irregular or missed
* Overflow and illegal dumping difficult to get collected

OPPORTUNITIES

Zero Waste
* Strenthen commitment to goal
* Incentivize behavior
* Plan / conduct Zero Waste events
* U of M / City partnership
* More emphasis on waste reduction before reuse and recycling

Downtown
* Earlier collection
* Saturday cardboard collection
* Sunday pickups
* Snow removal coordination
* Add service and small fee to clean the alleys after collection

Collaboration
* City / U of M programs standardization and shared promotion / education
* Washtenaw County Plan implementation
* Encourage areas outside City limits to have same level of service as in the City (e.g. business recycling lacking in Pittsfield Twp.)

Composting
* Multi-family service
* Year-round service
* Commercial service

Move-Out Services
* Reuse collections / swap shop option
* Higher service levels to rentals during peak

Communication and Outreach
* Open houses about plan / programs / services
* Clearer documentation on standards, policies, and ordinances

Regionalization
* Partner in Washtenaw County Regionalization initiative

NEEDS

Infrastructure / Equipment
* MRF, local recycling processing
* New collection trucks
* Route optimization
* Incorporate in-cab GPS routing and collection issue recording / photographing tools

Education
* Better "do this / do that" direction on website
* Staff to provide outreach / outward-facing staff lost through restructurings and retirements

Programs
* Convenient drop-offs
* E-waste
* Bulky waste collection

Implementation
* A clear strategy to implement this plan
* Commercial recycling ordinance not enforced
* Strategy / metrics to get higher diversion (like San Francisco's 70-80%)

Funding
* What is the fund balance?
* Projections of future program costs and funding sustainability
* Price services consistently

Strategic Focus / Expertise
* Perception that City could use more Solid Resource staffing/expertise
* Solid Waste Commission went away, would be a benefit to revive it

Customer Service
* Implement across the board customer service process improvement focused on communication / customer satisfaction
* Simplify service delivery / have one provider for a particular service type (e.g. recycling) throughout City so customers' issues are properly routed for remedy

1.4.4 Advisory Committee

The project team convened an Advisory Committee during the fall of 2018 to engage stakeholders and individuals with expertise and interest around solid waste resources management in the identification and analysis of options and development of recommendations for the SWRMP. The Advisory Committee's role, which was established at the outset of its formation, was to provide an advisory perspective in the development of the SWRMP. The Advisory Committee was not expected to reach consensus on SWRMP options or recommendations, or to make any recommendation for approval or adoption of the SWRMP. In recognition of the expertise and interest of participants of the Advisory Committee, input from the Advisory Committee has been sought and taken seriously throughout the SWRMP process and in the SWRMP's final recommendations. In some cases Advisory Committee input or opinions on certain options differed from feedback from other stakeholders or best practices and experience in other communities, and this was also taken into consideration in the structuring of recommendations.

The Advisory Committee consisted of more than 60 members and participants throughout the process, with many of the organizations represented appointing 2 representatives to the committee to provide additional flexibility in attending and participating in meetings. Attachment A.1 provides a listing of Advisory Committee members. Thirty-five to forty-five members of the Advisory Committee typically attended the committee meetings.

Initially, the team planned four meetings of the Advisory Committee[3]. A fifth meeting of the Advisory Committee was later scheduled in response to the desire for further discussion on certain topics before the plan was finalized. Meeting dates and key discussion items included:

- Meeting 1 - November 14, 2018: Introduction of the SWRMP process and committee role, review of project scope and planned activities, and discussion of key topics that will be a focus of the SWRMP

- Meeting 2 - January 15, 2019: Presentation of current and historical tonnage data, the cost of service analysis for current operations, regionalization options, and benchmark community services and performance

- Meeting 3 - April 23, 2019: Review and discussion or preliminary SWRMP options in the residential and commercial sectors as well as in the downtown area and review of resident survey findings

- Meeting 4 - May 21, 2019: Review and discussion of draft SWRMP recommendations

- Meeting 5 - August 13, 2019: Review and discussion of draft final SWRMP

Meeting materials and summaries are contained in Attachment A.3. Of note are the areas where there was general Advisory Committee agreement with other stakeholder input and industry practices. These areas include:

[3] In addition to the project team's official Advisory Committee meetings, a committee member organized and facilitated a discussion session open to all members and the project team on June 11, 2019 to further discuss the draft recommendations presented at the fourth Advisory Committee meeting. This meeting was attended by 13 committee members in addition to the project team, and discussion from this meeting was also taken into consideration in development of SWRMP recommendations.

- In the residential sector, expand compost collection to a year-round service. This echoes the input obtained during development of the *Comprehensive Organics Management Plan* in 2016 and 2017.

- In the commercial sector, ensure compliance with ordinance requirements for participation in the City's waste and recycling programs, though with concern regarding the cost associated with the effort.

- Develop a comprehensive outreach strategy to increase awareness of solid waste resources management programs and services and motivate residents and businesses to participate in existing diversion programs.

- Increase collection services in the downtown area to provide weekend collections to restaurants and bars, given that weekends are peak operating periods for those businesses. Support has also been indicated for allocation of costs to businesses in the downtown area to ensure sufficient service levels and collection frequency are provided to all properties.

- Reestablish local processing capability for recyclables, ensure continued access to drop-off opportunities at the DOS, develop regional relationships, and participate in the Washtenaw Regional Resource Management Authority (WRRMA).

1.4.5 Resident Survey

To obtain input from a cross-section of the average resident population and reflect input into solid waste resources management options from the public at-large, Lake Research Partners, a national public opinion research firm, conducted a scientific telephone survey of a random sampling of City households.

The project team, City staff, and Lake Research Partners developed the survey questionnaire, and it was reviewed by select members of the Environmental Commission. The survey was structured to be completed in 15 minutes. A copy of the survey questionnaire is contained in Attachment A.4.

Lake Research Partners conducted the survey from March 24 through March 31, 2019. Four hundred residents responded, consistent with the survey target, resulting in a statistically significant response with a margin of error at the 95% confidence level of ± 4.9%. In other words, if 50% of respondents answered a given question with the same response, we can be 95% confident that the percentage across all Ann Arbor households that would answer the same would be ± 4.9% of 50%, or generally between 45% and 55% of households. Respondents were representative of the City's demographics for factors including age, gender, owner/renter status, and geographic location within the City.

The team designed the survey to gauge resident attitudes and behaviors regarding current residential solid waste resources management services and programs as well as potential future options for service enhancements or expansions. The survey also assessed funding and cost perspectives associated with the current system and potential future changes.

A detailed summary of the survey findings is contained in Attachment A.5. Key findings from the survey indicate the following:

- Satisfaction with existing services: Residents expressed a high level of satisfaction with the City's current waste, recycling, and compost collection services. Waste and recycling services garner satisfaction from 96% and 93% of residents respectively, while compost service satisfaction is a bit lower at 66%. The reduced satisfaction with compost services is largely attributed to residents in rental properties who often do not have experience with the City's compost collection service, as indicated by the large percentage (23%) of residents who responded "don't know" regarding compost service satisfaction.

- Need for more information: Residents indicated a need for more information regarding City solid waste services, with the greatest information need identified for areas like bulky item disposal and electronic waste and household hazardous waste disposal. Additionally, residents cited a lack of awareness about materials that can be placed in either the recycling cart or the compost cart; 33% of residents who do not recycle everything they can say it is because they don't know what is recyclable, and 43% of residents are not aware food waste can be placed in compost carts (including 25% of residents who currently have a compost cart).

- Interest in and willingness to pay for additional services: Residents are interested in receiving increased services and are willing to pay increased costs in exchange for the added service. Residents expressed the most interest in year-round compost collection or bulky item collection, with equal interest (27% each) between the two options. Only 7% of residents indicated they were not interested in any new services if costs would increase. More than half of residents were willing to pay as much as $10 per month for additional services; greater resident support was noted for smaller cost increases, with 67% willing to pay $6 to $7 more, 70% willing to pay $4 to $5 more, and 89% willing to pay $1 to $3 more per month.

- Support for funding strategies: Residents indicated they favor costs of service that are based on either property values (i.e., charged a millage rate) or based on the size of the garbage cart. Nearly 70% of residents support the current system of paying based on the value of their home, and 65% indicated they would support paying based on the size of the garbage cart if the City implemented such a fee structure. In contrast, 55% of residents would oppose charging a single, flat fee to all residents for their services regardless of their garbage cart size.

SECTION 2
CURRENT SOLID WASTE RESOURCES MANAGEMENT SYSTEM

2.1 Solid Waste Resources Management Practices

The City's current solid waste resources management programs and services have developed and expanded over time as a result of industry advances in collection and resource management practices and in response to resident and business needs and interests. Collection services are provided by City staff and by private contractors, which has resulted in a comprehensive, yet complex, system due to new services being added or current services being modified over time. Post-collection services including trash transfer and disposal, recycling processing, and composting are performed by private contractors under contract to the City. New multi-year trash transfer and disposal and composting contracts commenced in 2016 and 2017 respectively, providing long-term stability and budget planning for the program. The current recycling processing contract will expire in 2020.

Current resource management practices and service providers vary depending on the generator (resident or business), and on the type of service (trash, recycling, or compost). Figure 2.1 provides a high-level summary of the current services and service providers by generator type. Providers of collection services include the City of Ann Arbor (City), Recycle Ann Arbor (RAA), and Waste Management (WM). Collection is made either from carts or dumpsters, as graphically shown in Figure 2.1

FIGURE 2.1. CURRENT SERVICES AND SERVICE PROVIDERS

Note: Approximately 20 downtown businesses currently receive food waste (compost) collection as part of the residential compost collection program. The City is not adding new participants to this service.

2.2 Solid Waste Resources Management Infrastructure

The City has made significant investment in infrastructure to provide solid waste resources management services. This infrastructure includes solid waste resources management facilities as well as collection trucks and collection containers (trash carts, recycling carts and dumpsters, and compost carts) utilized to support the City's programs and services. Collection trucks and containers for trash and compost collection are utilized by City crews, while collection trucks and containers for recycling collection are utilized either by City crews or RAA under the terms of its recycling collection contract.

The City's ownership of solid waste resources facilities ensures that facilities are available to manage its solid waste resources. Additionally, the facilities are co-located within a common area, as shown in Figure 2.2. While these facilities are all owned by the City, they are each operated by private contractors. Facilities include the following:

1. Waste transfer station, operated by Advanced Disposal Services
2. Compost facility, operated by WeCare Denali
3. Drop-Off Station (DOS), operated by RAA
4. Materials Recovery Facility (MRF), operated by RAA

FIGURE 2.2. CO-LOCATED CITY-OWNED FACILITIES

Waste Transfer Station

The City's waste transfer station is operated under the terms of the transfer, transport, and disposal agreement executed by the City in 2017. Under this contract, City waste is delivered to the transfer station by the City or its contracted haulers, loaded into transfer trailers by the contractor, and transferred to the contractor's landfill for disposal. The transfer, transport, and disposal agreement commenced July 1, 2017 and will expire June 30, 2022, and includes an option for two five-year renewals.

Compost Facility

The compost facility was reviewed during the completion of the 2016 *Comprehensive Organics Management Plan* to determine its ability to manage increased quantities of food waste. Based on the analysis at that time, the facility was found to have adequate capacity to accept increased food waste quantities, including segregated food waste (i.e., not mixed with yard waste) from commercial sources.

Following completion of the *Comprehensive Organics Management Plan*, the operating contract for the compost facility was reprocured in 2017 and pricing was secured for delivery of 1) residential organics, including mixed yard waste and food waste; and 2) food waste from commercial sources. The current contract commenced January 29, 2018 and will expire January 28, 2023, and includes an option for two five-year renewals. Given the prior analysis of the compost facility and the current contract terms, no further analysis of the compost facility was performed for this SWRMP.

Drop-Off Station (DOS)

The City's Drop-Off Station (DOS) is located adjacent to the City's former landfill. While the DOS is owned and maintained by the City, it is operated by RAA and receives no operating funding from the City currently.

Replacement of the DOS has been identified as a need since 2004, and the City has programmed for a portion of the costs of replacement. However, approximately 50% of current facility users are from outside of the City, and the City's funding allocation therefore assumes that 50% of the replacement cost would be funded by others in the region. To date, supplemental regional funding for replacement has not been identified. A more detailed study to plan for replacement of the DOS was completed in 2017, titled *Waste Diversion Site Feasibility Study: Assessment of Recovery Facilities to Manage Recyclables*. Replacement of the DOS may be an activity considered by WRRMA members, and would therefore be a benefit to City membership in WRRMA.

Materials Recovery Facility (MRF)

The City's MRF historically provided local processing capacity for recyclables collected from City residents and businesses, as well as outside third-party materials. However, the City's MRF ceased operation as a processing facility in July 2016. Current MRF operations are limited to transfer of recyclables for processing offsite and baling of a small amount of clean cardboard for shipment to a local market. The current contract with RAA expires June 30, 2020.

Securing local processing of recyclables has been an interest of engaged community members, City staff, members of the Environmental Commission, and City Council since operation of the City's MRF ceased in 2016. Local processing capacity is limited, and given current recycling market conditions it is not expected that local options will increase immediately. The potential of

the City's MRF being utilized as a regional facility was one of the catalysts to the examination of a regional authority and the discussions that led to the establishment of WRRMA. As WRRMA becomes further established and works to improve the quality and quantity of recyclable materials collected from its member communities, market conditions may become more favorable for investment in the City's MRF.

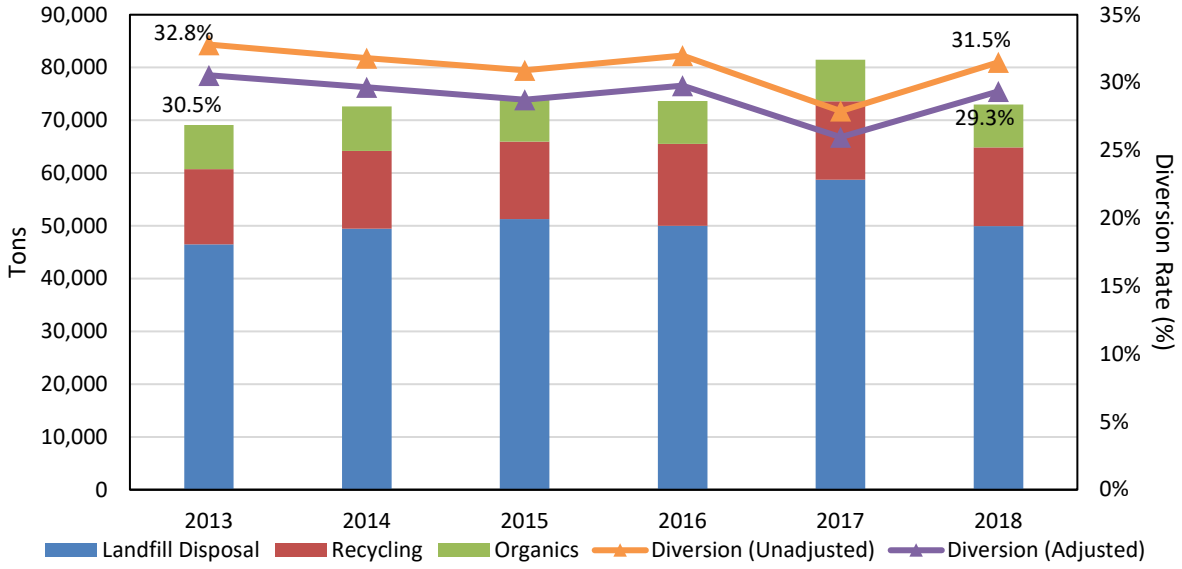
Concurrent with the SWRMP development process, the City was approached by the current recycling processing contractor, RAA, with an unsolicited proposal to make improvements to the MRF processing equipment and resume local processing of recyclables. The City reviewed this unsolicited proposal, and steps were taken to evaluate whether such a proposal may be acceptable for the City's approval. In July 2019, staff was directed to prepare a Request for Proposals (RFP) to be publicly posted, seeking a vendor to provide recycling processing services for the City's recyclable materials. The RFP will also invite proposing vendors to include proposals for investment in and improvements to the City's MRF to return it to operation as a processing facility. As a result of this ongoing effort, no further analysis of MRF options has been completed for this SWRMP.

2.3 Solid Waste Resources Management Quantities

Total solid waste program tonnages have been fairly consistent from year to year over the prior planning period, with the City managing approximately 73,000 tons annually through its collection and disposal / diversion programs. With a population of approximately 120,000, this equates to a rate of approximately 3.3 pounds per person (or "capita") per day (pcd), or approximately 1,200 pounds per capita per year. While the City's population has been growing at a rate of about 0.7% annually, the per capita rate has generally been consistent at 3.3 to 3.4 pcd.

Additionally, the quantity of materials managed through each of the solid waste resources management methods (recycling, composting, landfill disposal) and corresponding diversion rates have also been consistent over this period. Figure 2.3 shows annual solid waste resources management Citywide from 2013 through 2018, and annual tonnage data is contained in Attachment B.

FIGURE 2.3. CITYWIDE RESOURCES MANAGEMENT QUANTITIES: 2013-2018



Citywide diversion rates reflect the sum of recycled and composted material divided by the sum of all material. Figure 2.2 reflects both unadjusted and adjusted diversion rates, which are described as follows:

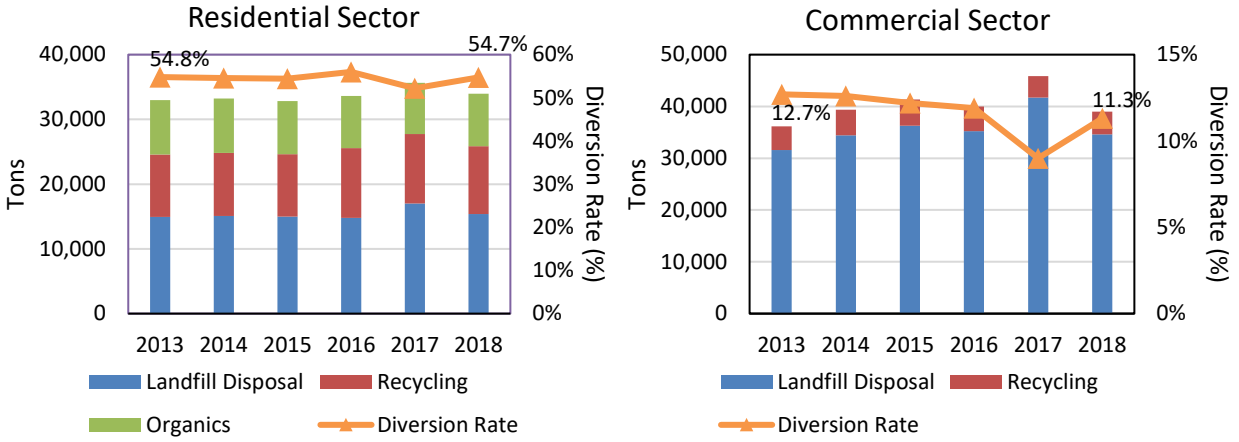
- Unadjusted diversion is calculated based on the tons of material collected for recycling, with no reduction for the fraction of collected material that is not recovered during processing.

- Adjusted diversion reflects a reduction in the tons of material collected to account for material from the recycling stream that is not recovered during processing (either because it is a contaminant or is not captured during the sorting process). This adjustment is based on the residue rate observed in the periodic audits of the City's recycling stream performed by its processor. The residue rate utilized for calculation of the adjusted diversion rate in Figure 2.2 is 10.74%, based on the February 2018 recycling stream audit.

The materials and diversion rates in Figure 2.2 reflect only solid waste resources managed through City-managed programs including residential and commercial waste, recycling, and composting collection provided by City staff or its contractors and materials collected at the City's DOS. Materials not included in this data include construction and demolition debris; fats, oils, and grease (FOG) from restaurants; recycling that is hauled directly by brokers (e.g., cardboard from some commercial businesses); container deposit law redemptions; organic wastes managed through on-site / backyard composting or collected from businesses by private haulers; and materials collected from non-compliant properties (e.g., a business using another third-party hauler instead of the City's franchise hauler).

Figure 2.4 shows solid waste resources tonnages and diversion rates by sector. As shown in Figure 2.4, diversion in the residential sector is nearly 55%, while diversion in the commercial sector is notably less, at just over 11%. Residential diversion is split nearly equally between recycling and composting. Commercial diversion is solely due to recycling, with no composting service provided to the commercial sector currently[4].

FIGURE 2.4. RESOURCES MANAGEMENT QUANTITIES BY SECTOR: 2013-2018



[4] Approximately 20 businesses are provided compost collection service by the City as part of the residential compost collection program. The number of businesses receiving this service has been declining, and no new businesses are being added to the service.

Given the consistency in total solid waste resources quantities over the past six years, it is reasonable to assume that the quantities to be managed in future years will remain similar. If additional customers are added to the system (e.g., as new homes are added to the City or properties in the City not currently participating in the City's collection services are brought into compliance), quantities may increase.

2.4 FY2018 Program Costs and Revenues

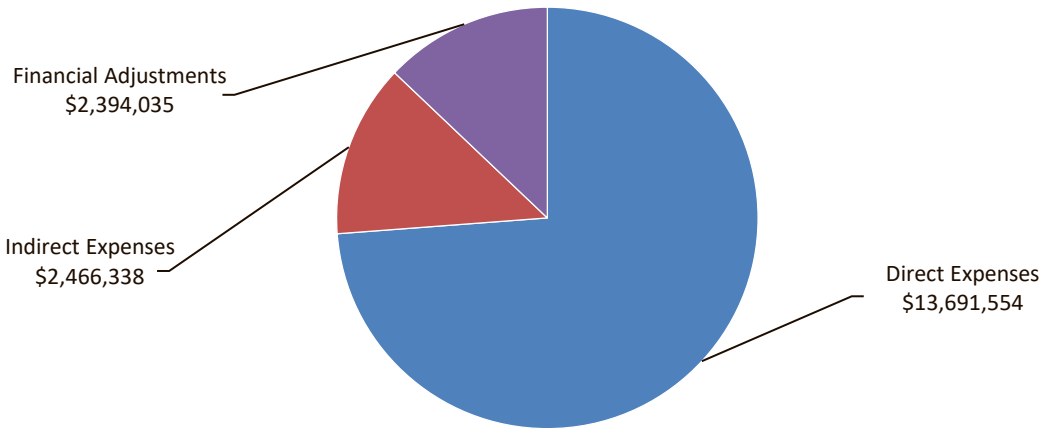
Prior to developing recommendations for future solid waste resources management strategies, it was important to understand the City's current costs of service at a functional level. A detailed cost of service analysis was therefore developed based on FY2018 financial data. The cost of service analysis is contained in Attachment C.

The cost of service analysis sought to quantify service costs by sector (e.g., residential, commercial) and material stream (e.g., waste, recycling, compost). Expenses were grouped by cost type and then broken down to key components. Cost types and their components included:

- Direct costs including labor, fleet, fuel, maintenance, and disposal/processing costs
- Indirect costs including support services from other departments (e.g., Customer Service, management and planning, and administrative and municipal services allocations)
- Financial adjustments, including pension liabilities, retiree benefits, and capital asset adjustments

On a Citywide basis, the current solid waste resources management program had an annual expenditure of approximately $18,550,000 in FY 2018. Nearly 75% of program costs were direct costs, with the remainder split between indirect costs and financial adjustments (see Figure 2.5).

FIGURE 2.5. CITY SOLID WASTE PROGRAM COSTS, FY2018



Costs were also further assessed to calculate a unit rate expressed as the cost per customer per month for each sector and material stream. The residential cost of service is represented in Figure 2.6. Residential services averaged $29.10 per household per month in FY2018.

FIGURE 2.6. RESIDENTIAL COST OF SERVICE ($ PER HOUSEHOLD PER MONTH)

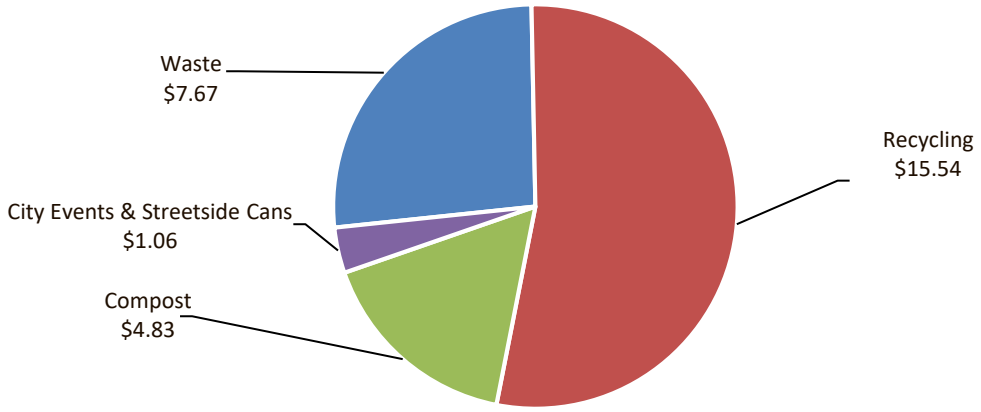


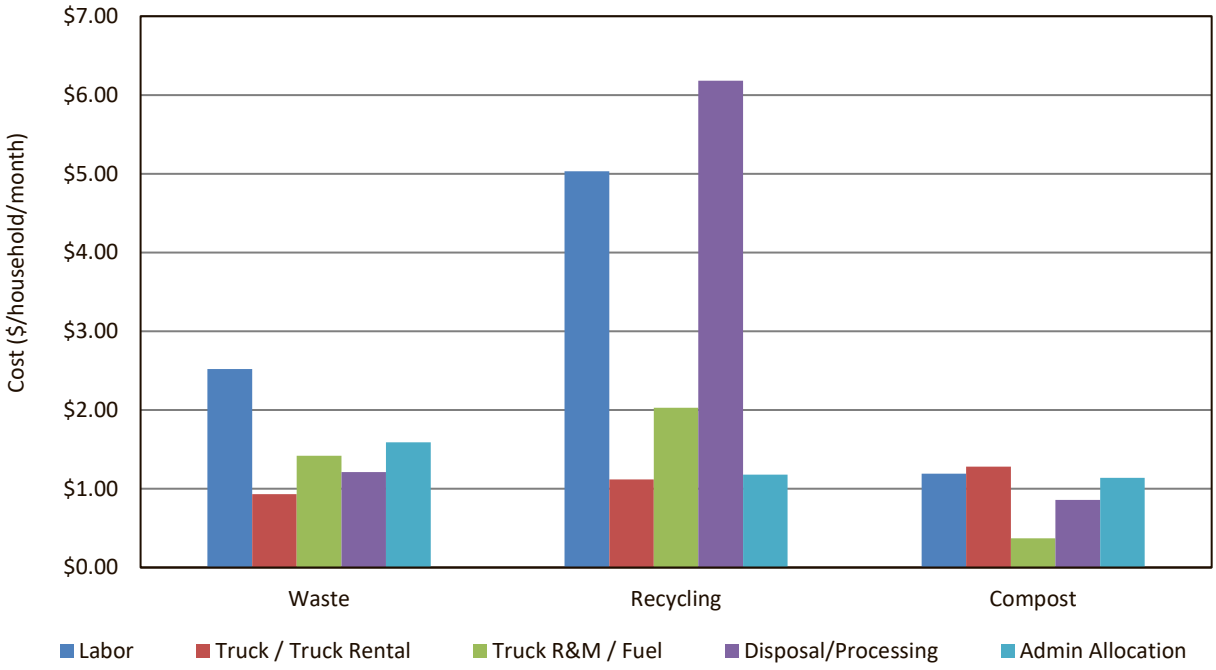
Figure 2.7 compares key cost components across the different material streams from the residential sector. Review of this data indicates the following:

- Labor costs reflect the cost of collection staff inclusive of wages and fringe (benefits). Labor costs vary across the material streams:
  - Compost collection labor costs are lower than other streams due to the seasonal nature of the program as well as historically heavy use of temporary labor rather than permanent (regular) employees to perform compost collection. Temporary labor equates to a lower wage and fringe rate than permanent, full-time labor.
  - Recycling collection labor costs are higher than other streams, and are approximately double that of City labor costs for waste collection. Recycling labor costs are based on contract fees paid to RAA. The current contract was initially negotiated in 2003 and has been amended a number of times since. Contract rates are annually adjusted based on the terms of the contract.

- Truck costs are largely similar across the different material streams. Truck repair and maintenance costs, however, vary. Higher costs are seen in the recycling stream due to the age and condition of the recycling fleet, while lower costs are seen in the compost fleet due to the reduced usage of the trucks and supplementing of City fleet with rental vehicles.

- Disposal and processing costs are based on contracted rates for waste transfer and disposal, recyclables transfer and processing, and composting as well as the tonnage of material managed. Recycling processing costs are substantially greater than disposal or composting costs for reasons further described below.

FIGURE 2.7. RESIDENTIAL COST COMPONENTS BY MATERIAL STREAM, FY2018



Recycling processing costs have increased substantially over the past three years, as shown in Figure 2.8, as a result of contract changes and commodity market conditions:

- Until July 2016, recyclable materials were processed locally at the City-owned Materials Recovery Facility (MRF).
- In July 2016, the operating contract was terminated, on-site processing ceased, and recyclables were transferred under an emergency contract to a Waste Management facility in Dayton, Ohio for processing.
- Since July 2017, recyclables have been managed under an interim processing contract by RAA, with transfer of the majority of recyclables to Rumpke Waste and Recycling Services' processing facility in Cincinnati, Ohio.
- Beginning in January 2018, recycling commodity markets were significantly impacted due to increased quality standards and import restrictions for certain materials imposed by China, historically a significant market for recovered materials from the U.S. This has resulted in steep and continued declines in commodity value, as well as increased processing costs at some facilities to meet strict quality standards.
- During FY2019, commodity prices have continued to decline, resulting in continuing increases in the cost to process recyclables. Figure 2.9 depicts the trend in material value credited to the City by RAA from July 2017 through April 2019. The material value reduces the net processing cost due to the revenue share provisions of the processing contract; net processing costs are approximately $30 per ton greater as of April 2019 than they were during FY2018, placing increased financial burden on the City's Solid Waste Fund.

FIGURE 2.8. RECYCLABLES PROCESSING COSTS (FY2016-FY2018)

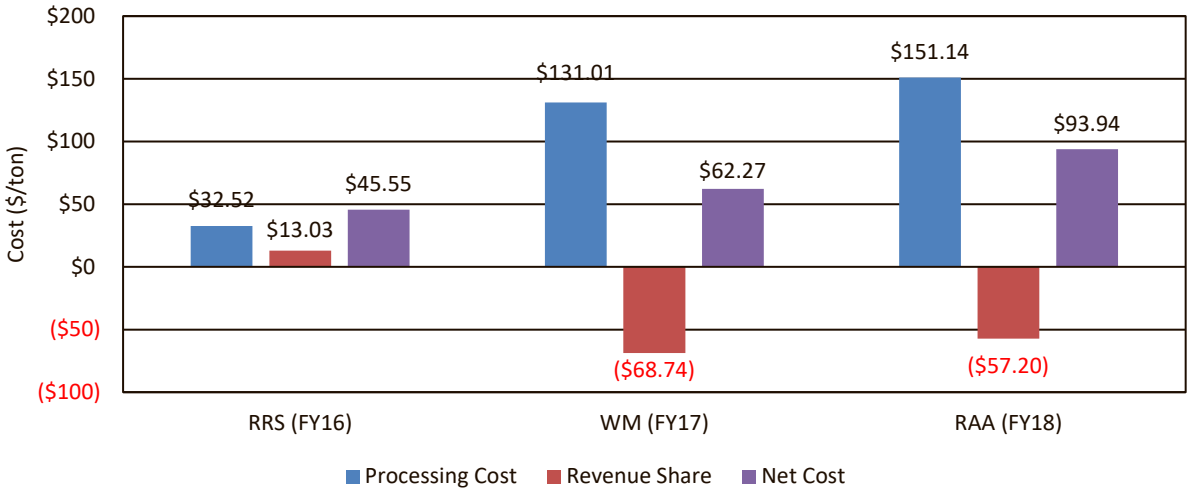
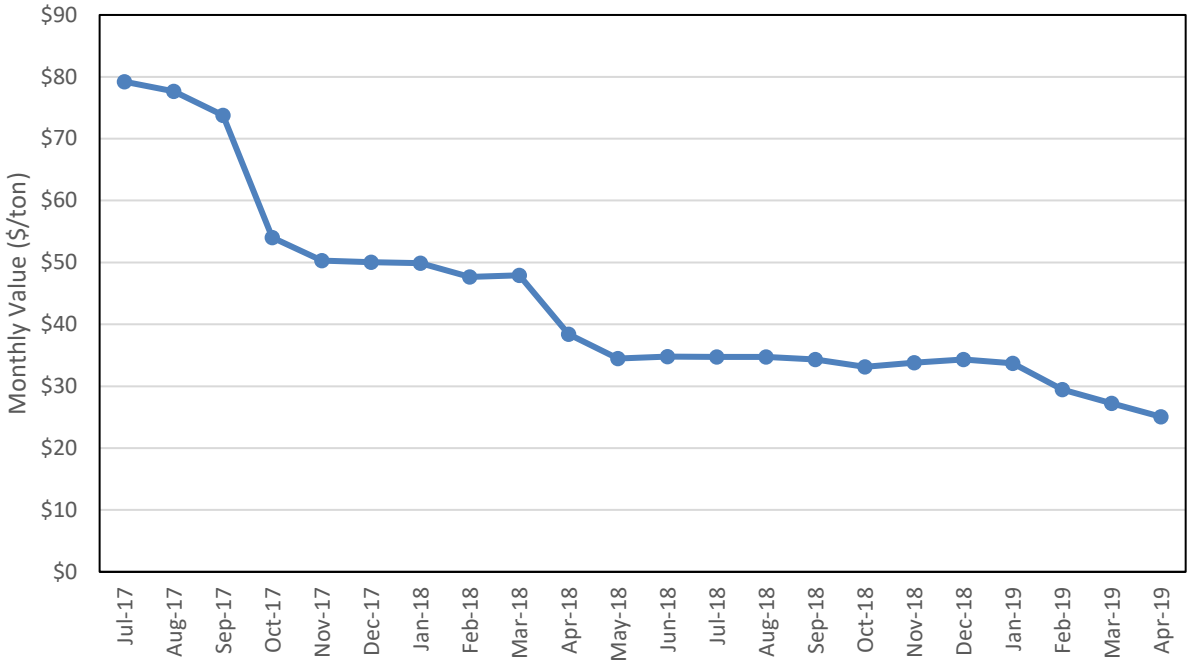
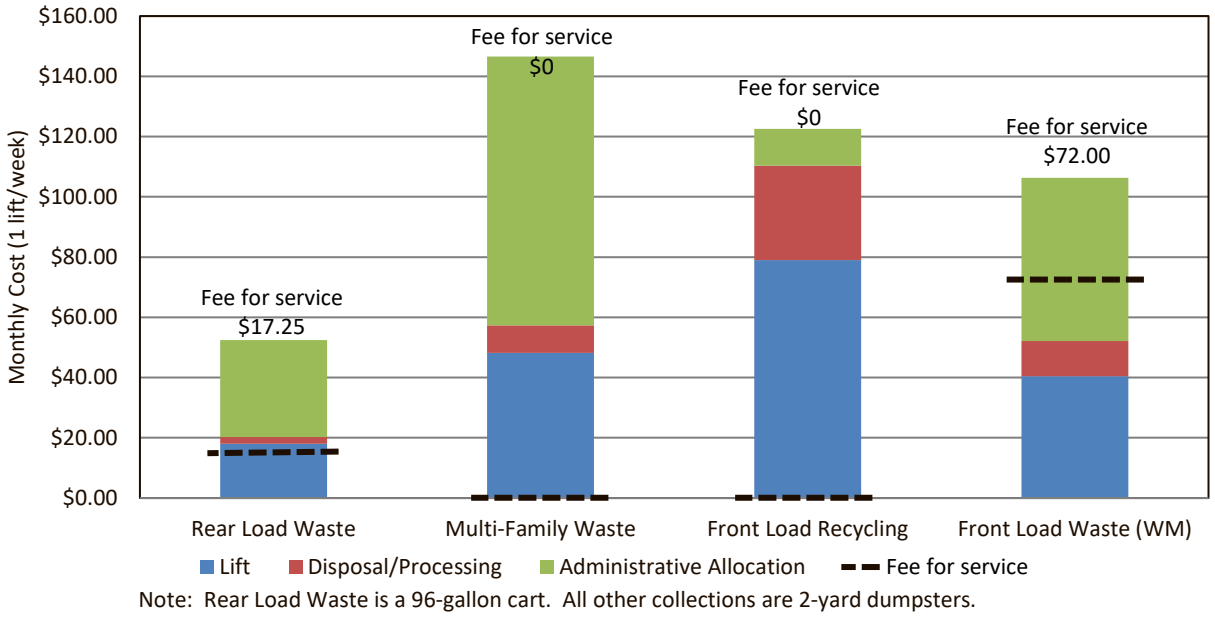


FIGURE 2.9. SINGLE-STREAM RECYCLING MATERIAL VALUE (JULY 2017 - APRIL 2019)



Commercial service costs show variability based on the type of collection performed and the material stream collected. Costs of service for these commercial collections are shown in Figure 2.10. City-provided front-load (dumpster) recycling collection costs are the highest cost per lift among the various commercial services due to less collection efficiency and lower route density. However, City-provided front-load multi-family waste collection has the highest overall cost of service due to the allocation of indirect costs over a relatively small number of customers.

FIGURE 2.10. COMMERCIAL COLLECTION COSTS, FY2018 (1 LIFT PER WEEK)



Note: Rear Load Waste is a 96-gallon cart. All other collections are 2-yard dumpsters.

Revenues to support solid waste resources programs in the City are generated from a number of sources:

- The Solid Waste Millage is the primary funding source supporting City programs, generating approximately $12,600,000 of revenue representing more than 75% of total revenue in FY2018. The millage is charged on property taxes based on the taxable property value. In FY2018, the millage was set at a rate of 2.4134 mils per $1,000 of property value. The millage rate may be reduced periodically in accordance with the Headlee Amendment through a Headlee Rollback, which requires the City to reduce its millage when annual growth on existing property is greater than the rate of inflation. An increase in the millage rate to secure added revenue to support City programs, which would be a Headlee Override, would require approval by ballot referendum from City voters.

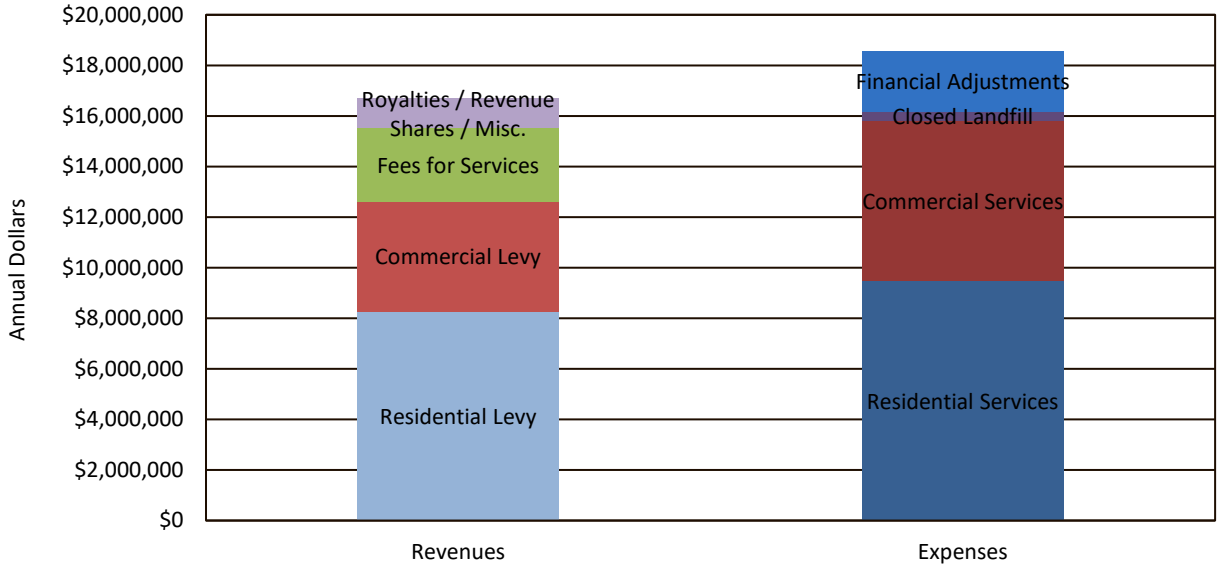
- Fees for services, primarily paid by commercial properties, generated an additional $2,900,000 in revenue (17% of total revenue) in FY2018. These fees are paid by businesses based on their waste collection container size and collection frequency according to rates established by the City. A small amount of the fees are also paid by residents through purchase of compost carts or residential waste cart upgrades.

- Royalties, revenue shares, and other miscellaneous sources such as interest generated the remaining $1,100,000 of revenue (7% of total revenue) in FY2018. Royalties and revenue shares can fluctuate from year to year based on flow of third party tonnage to the City's transfer station and compost facility and commodity market pricing for recyclables.

Total expenses in FY2018 (inclusive of operating expenses and financial adjustments) exceeded revenues by approximately $1,900,000, as shown in Figure 2.11. Commercial sector revenues exceeded commercial sector expenses by approximately $1,700,000, while residential sector revenues fell short of residential sector expenses by approximately $1,300,000. This indicates a

current funding imbalance between the sectors based on FY2018 expenses, and supports consideration of funding options identified in Section 3.

FIGURE 2.11. COMPARISON OF FY2018 REVENUES AND EXPENSES



2.5 Financial Model and Future Solid Waste Fund Projections

Financial sustainability is an important consideration for the City's solid waste resources management system. The City's Solid Waste Fund's unrestricted balance has been declining over the past several years, as expenses have outpaced revenues. Sizable impacts to the Fund balance have occurred because of several large one-time adjustments as well as significantly increased costs for recyclables processing. Specifically, these adjustments and increases have included:

- Landfill liability recognition - The liability for the City's former landfill was first recognized in the Solid Waste Fund balance in FY2013 at an expense of approximately $2,000,000. This amount subsequently increased an additional $4,900,000 in FY2016 as a result of further evaluation of long-term responsibilities and costs associated with the former landfill. This expense is now adjusted annually based on interest rate fluctuations for the posted financial security.

- GASB liability recognition for pension funding - Due to a change in Governmental Accounting Standards Board (GASB) requirements, the City was required to recognize the full liability for pension funding for its employees resulting in an initial expense of $1,436,000 in FY2015. This expense is now adjusted annually based on employee changes since the initial funding.

- OPEB liability recognition for retiree benefits - GASB requires that the City recognize the liability associated with other postemployment benefits (OPEB), which include retiree benefits other than pensions. This was first fully funded and recognized as an expense to the Solid Waste Fund in FY2018 at an initial expense of $3,096,000. This expense will be adjusted annually based on benefit expense changes from year to year.

- Recycling processing expense increases - Recycling processing fees have increased significantly since processing stopped at the City's MRF in 2016. Between FY2016 and FY2018, material recovery expenses increased by $2,500,000. This is due in part to increased costs to transport and process recyclables at a non-local MRF, as well as the decrease in the commodity value of recyclables due to global recycling market changes. The increased cost of recycling processing is expected to continue to be an annual, recurring cost until local processing capacity becomes available and is utilized and until recycling markets stabilize and recover.

To provide guidance to the City during the planning period for this SWRMP and to ensure financial sustainability of the City's system, a financial model was prepared based on findings of the Cost of Service Analysis and future predicted revenues and expenses. The financial model, contained in Attachment D, represents baseline conditions based on FY2018 actual revenues and expenses. It also projects future annual revenues and expenses escalated from current operating conditions.

Based on the financial model, increased Fund stability as compared to recent years is projected going forward as shown in Table 2.1 below. However, challenges to this stability must be kept in mind and closely monitored. These challenges or potential impacts to the Fund include costs associated with recycling processing and the City's MRF, potential capital investments associated with the City's DOS, and future as-yet undefined regulatory requirements that could impose further funding liabilities or changes on the City (much like the GASB and OPEB liability changes).

The financial model is also utilized to assess future solid waste resources management options, discussed in Section 3, and will be available for City staff use as a planning tool that can be adjusted and updated throughout the SWRMP implementation period to reflect actual annual revenues and expenses and the impact of system changes (including program and cost changes, as well as revenue changes) on overall Fund performance.

TABLE 2.1. SOLID WASTE FUND FINANCIAL MODEL SUMMARY: BASELINE CONDITIONS

	Actual FY2018	Projected FY2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024
Operating Revenues / Expenses							
Revenues	$16,675,449	$16,789,530	$17,273,216	$17,772,692	$18,288,536	$18,821,350	$19,371,760
Expenses	$16,157,890	$16,637,829	$17,087,230	$17,570,056	$18,061,430	$18,562,402	$19,074,662
Net Operating Surplus (Deficit)	*$517,559*	*$151,701*	*$185,986*	*$202,636*	*$227,106*	*$258,948*	*$297,098*
Additional Fund Impacts							
Financial Adjustments (Credits)	$2,311,314	$(147,799)	$(156,049)	$(164,051)	$(171,813)	$(179,343)	$(186,647)
Capital Projects	$0	$0	$980,000	$296,000	$641,000	$1,800,000	$0
Additional Impacts	*$2,311,314*	*$(147,799)*	*$823,951*	*$131,949*	*$469,187*	*$1,620,657*	*$(186,647)*
Fund Balance							
Beginning Balance	$11,351,180	$9,557,425	$9,856,925	$9,218,960	$9,289,647	$9,047,566	$7,685,857
Annual Balance Impact	$(1,793,755)	$299,500	$(637,965)	$70,687	$(242,081)	$(1,361,709)	$483,745
Ending Balance	$9,557,425	$9,856,925	$9,218,960	$9,289,647	$9,047,566	$7,685,857	$8,169,603

Notes:
1. "Actual FY2018" values from Cost of Service Analysis.
2. "Additional Fund Impacts" reflect costs (credits) that impact the Solid Waste Fund but are not part of routine, day-to-day system operations.
3. "Annual Balance Impact" calculated as "Net Operating Surplus (Deficit)" less "Additional Impacts". Where "Additional Impacts" result in a (credit), this amount is a positive contribution to the Fund balance.
4. Cost escalations for future years generally assume a 3% increase; refer to Attachment D for exceptions to this assumption.

2.6 Trends in Solid Waste Resources Management

This section summarizes benchmark community case studies compiled during the development of the SWRMP. The team developed case studies for a range of communities, including those with mature and robust diversion programs, targeted high diversion rates or zero waste goals, and large universities. The team identified communities based on input from Advisory Committee members regarding the communities they see Ann Arbor seeking to align with or that they view as leaders in solid waste resources management as well as the availability of relevant data to supplement the analysis of options for Ann Arbor. Case study communities include:

- Austin, Texas
- Boulder, Colorado
- Grand Rapids, Michigan
- Lake County, Illinois
- Lincoln, Nebraska
- Madison, Wisconsin
- St. Paul, Minnesota
- San Francisco, California
- Seattle, Washington

Case study findings are summarized in this section, with additional detail in Attachment E.

2.6.1 Residential Programs and Performance

Communities typically are more actively engaged in services and programs provided to the residential sector than the commercial sector. This is because residential service needs are more similar from resident to resident, allowing more uniformity in services offered. Because of the higher level of involvement in residential services, the type and quality of data available for benchmarking in this sector is more widely reported.

Table 2.2 summarizes residential program parameters for benchmark communities, including:

- Service provider: This column identifies who provides collection services for the community. “City” indicates collection is performed by municipal crews. “Franchise” indicates collection is performed by a private hauler under contract to the municipality. “Open” indicates collection is performed by a private hauler selected by residents individually.

- Level of service: This column identifies frequency of collection for each material stream (waste, recycling, and compost). For compost collection, it also identifies whether the program is seasonal or year-round and whether food is accepted or not.

- Diversion rate: This is expressed as a percentage of total residential sector generation based on data reported by the community. Unless otherwise noted, the diversion rate includes both recycling and compost and does not include adjustment for residue in the collected material stream (therefore being comparable to Ann Arbor’s unadjusted diversion rate).

- Fees for services: This column indicates the fees charged to residents for services. Where a range is identified, this indicates fees for different container sizes. A breakdown of fees for all service options is included in Attachment E.

- Funding method: This identifies the method by which fees are collected. Service fees are charged periodically to residents, while tax assessments are collected on property tax bills. Modified pay-as-you-throw (PAYT) reflects fees are charged based on container size selected. Pure PAYT reflects fees are charged for each individual setout.

- Bans and mandates: This column identifies legislated (e.g., through municipal ordinance) disposal bans and mandatory diversion participation.

- Added elements or services: This column primarily addresses added funding elements for the programs, and added services offered for bulky item collection and student move-in / move-out support, which are key services identified as being desired by stakeholders in Ann Arbor.

TABLE 2.2. SUMMARY CASE STUDIES - RESIDENTIAL PROGRAMS

Community	Service Provider	Level of Service	Diversion Rate	Fees for Services	Funding Method	Bans and Mandates	Added Elements or Services
Austin, TX	City	Waste: weekly Recycling: EOW Compost: year-round, weekly, food being phased in	38%	Waste:$17.90 - $42.85/hh/mo (24-gallon to 96-gallon cart) Recycling: no charge Compost: no charge	Service fee: modified PAYT Tax assessment	None	Clean Community Fee = $8.95/hh/mo for waste reduction and litter abatement Bulky items: twice per year on rotating schedule, no fee
Boulder, CO	Open	Varies, depending on hauler and service	40%	Varies, depending on hauler and service	Service fee: set by and paid to hauler	Universal Zero Waste Ordinance: all properties required to recycle and compost	Trash tax: $3.50/hh/mo provides funding for community-wide waste reduction efforts and facilities Student move-out: 6-day service in student zone
Grand Rapids, MI	City	Waste: weekly Recycling: EOW Compost: weekly, seasonal, no food	27% (excludes compost)	Waste: $3.05 - $7.15 per setout (32-gallon to 96-gallon cart) Recycling: no charge Compost: $2.50 - $6.00 per setout	Service fee: pure PAYT	None	Bulky items: $20 sticker per item; collected within 3 days of waste collection day; no limit to number of collections per year

TABLE 2.2. SUMMARY CASE STUDIES - RESIDENTIAL PROGRAMS

Community	Service Provider	Level of Service	Diversion Rate	Fees for Services	Funding Method	Bans and Mandates	Added Elements or Services
Lake County, IL (Comprised of 43 individual communities)	Franchise, individual by city	Waste: weekly Recycling: weekly Compost: seasonal, weekly, food included for many communities	31%	Varies by community; $17.40 - $43.87/hh/mo (64-gallon or 96-gallon cart typical)	Service fee: modified PAYT or fixed	None	Bulky items: universally available; cost and limits vary by community
Lincoln, NE	Open	Varies, depending on hauler and service	21%	Varies, depending on hauler and service	Service fee: set by and paid to hauler	Corrugated cardboard banned from disposal	Bulky items: determined by hauler
Madison, WI	City	Waste: weekly Recycling: EOW Compost: varied, seasonal, no food	53%	Avg cost/hh/mo = $20.03 (2016)	Property tax assessment	Mandatory recycling; City can refuse trash cart collection if recycling present in trash	Bulky items: large items (not excess bagged waste) collected every other week; $15-$35 fee charged for many appliances and some large mechanical items; free collection of furniture, mattresses, limited building materials, and carpet Student move-out: daily collections
St. Paul, MN	Franchise with separate contracts: 1) waste / compost and 2) recycling	Waste: weekly or EOW Recycling: weekly Compost: weekly or on request, seasonal, no food at curbside (can take to drop-off)	24%	Waste: $20.83 - $34.15/hh/mo (32-gallon cart, EOW - 96-gallon weekly) Recycling: $4.85/hh/mo Compost: $120/hh/year (weekly subscription) or $3.00/bag or bundle (on request non-subscription)	Service fee: modified PAYT Tax assessment (for recycling)	None	Bulky items: waste collection includes 2 items (32-gallon waste cart households) or 3 items (64-gallon or 96-gallon waste cart households) per year at no added charge

TABLE 2.2. SUMMARY CASE STUDIES - RESIDENTIAL PROGRAMS

Community	Service Provider	Level of Service	Diversion Rate	Fees for Services	Funding Method	Bans and Mandates	Added Elements or Services
San Francisco, CA	Franchise	Waste: weekly Recycling: weekly Compost: year-round, weekly, includes food	46%	Base charge: $16.46/hh/mo Waste: $6.87 - $41.22/hh/mo (16-gallon to 96-gallon cart) Recycling: $6.87 - $20.61/hh/mo (32-gallon to 96-gallon cart) Compost: $6.87 - $13.74/hh/mo (32-gallon to 64-gallon cart)	Service fee: modified PAYT	Must separate recyclables and compostables from trash	Bulky items: 2 collections per year, scheduled by resident, at no charge; up to 10 items and 10 bags/boxes/bundles per collection
Seattle, WA	Franchise	Waste: weekly Recycling: EOW Compost: year-round, weekly, includes food	74% (single-family) 37% (multi-family)	Waste: $24.25 - $115.90/hh/mo (12-gallon to 96-gallon cart) Recycling: no charge Compost: $6.40 - $12.30/hh/mo (13 gallon to 96 gallon cart)	Service fee: modified PAYT	Recycling banned from disposal; waste carts with >10% recycling not collected Food and compostable paper banned from disposal	Bulky items: $30 per item; no limit to number of items or collections per year

Notes:
1. EOW = every other week collection frequency
2. $/hh/mo = fee charged in dollars per household per month

Notable observations from the case studies include:

- Service providers vary and include municipal crews, municipally-contracted haulers, or private haulers on the open market. In all but one case study community, a single provider performs collection of waste, recycling, and compost. St. Paul contracts with a non-profit hauler and recycling processor for recycling services; until 2018, this was the only organized collection service provided by the City (waste and compost collection services were historically contracted for by households on an individual basis).

- Levels of service are largely similar for waste collection, with weekly service standard. Many communities offer a range of cart sizes that residents can choose from, and 65-gallon or larger service is a typical base level of service. Recycling collection is more varied, with several communities providing collection every other week while others provide weekly collection. Compost collection is the most variable between communities, with differences in duration (seasonal or year-round), whether food is included or not, and how it is to be contained.

- Diversion rates vary, with no observed difference in diversion rates based on service providers or levels of service. Diversion rates are observed to be greater in communities with comparatively higher fees for services and where bans or mandates for diversion have been implemented.

- Fees for services vary widely between communities, with fees generally being greater in communities achieving higher diversion rates than in other communities.

- Services are funded in many communities by service fees charged to residents, with charges based on the resident's selection of service levels (including waste and compost cart sizes). Only one community (Grand Rapids) has a pure PAYT structure; the majority of communities have implemented a modified PAYT structure.

- Some communities supplement service funding with a monthly household fee to support waste diversion programs and related facilities.

- Resident participation in diversion programs (with or without a corresponding disposal ban on select materials) is mandatory in several communities, though notably these communities have stated that they choose to enforce participation through education and outreach rather than penalty. Disposal bans which require diversion of all materials subject to the ban from landfill disposal (e.g., cardboard in Lincoln; recyclables and organics in San Francisco and Seattle) have been implemented in some communities, particularly those achieving higher diversion rates (e.g., San Francisco, Seattle), though enforcement again is limited.

- Bulky item collection is typically offered in each community, often at an additional cost to the resident based on their usage of the service. University communities (Boulder, Lincoln, Madison) all provide enhanced levels of service in student areas during the move-in and move-out periods.

These findings indicate that Ann Arbor's base household collection services for trash, recycling, and compost are generally equal to or greater than services in other communities. Additionally, Ann Arbor currently achieves a higher residential diversion rate than many of the case study communities. The findings also provide input to and support for the analysis of options presented in Section 3 of this SWRMP.

2.6.2 Commercial Programs and Performance

Table 2.3 summarizes commercial program parameters for benchmark communities, including:

- Service provider: This column identifies who provides collection services for the community. “Franchise” indicates collection is performed by a private hauler under contract to the municipality. “Open” indicates collection is performed by a private hauler selected by businesses / property owners individually.

- Diversion rate: This is expressed as a percentage of total commercial sector generation based on data reported by the community. Unless otherwise noted, the diversion rate includes both recycling and compost and does not include adjustment for residue in the collected material stream (therefore being comparable to Ann Arbor’s unadjusted diversion rate).

- Rate structure: Rates for commercial services are either set through municipal contracts or by private haulers on a competitive market basis.

- Bans and mandates: This column identifies legislated (e.g., through municipal ordinance) disposal bans and mandatory diversion participation.

TABLE 2.3. SUMMARY CASE STUDIES - COMMERCIAL PROGRAMS

Community	Service Provider	Diversion Rate	Rate Structure	Bans and Mandates
Austin, TX	Central Business District (CBD) / Downtown - Franchise; dumpsters are available to all businesses within the service block or alley Outside CBD - Open, must use a City-licensed hauler; City provided cart-based collection (once per week in generally residential neighborhoods) until 2015; City now accepts no new commercial customers and businesses are required to contract with private hauler for collection	42%	CBD - Set by City / contract; components include: Base service fee, volume charge per yard, Clean Community Fee, and CBD Special Cleaning Service fee Outside CBD - Set by private hauler	Universal Recycling Ordinance: all commercial properties required to recycle, and all food-oriented businesses required to compost All commercial customers served by City (including in CBD) subject to Clean Community Fee of $20.75 per month
Boulder, CO	Open	43%	Set by private hauler	Universal Zero Waste Ordinance: all properties required to recycle and compost
Grand Rapids, MI	Open	NA	Set by private hauler	None
Lake County, IL (Comprised of 43 individual communities)	Franchise or Open, by city	6-16%	Set by contract or by private hauler	None
Lincoln, NE	Open	NA	Set by private hauler	Corrugated cardboard banned from disposal
Madison, WI	Open	NA	Set by private hauler	Mandatory recycling
St. Paul, MN	Open, must use a City-licensed hauler	NA	Set by private hauler	Mandatory recycling
San Francisco, CA	Franchise	54%	Set by City and hauler	Mandatory recycling and composting
Seattle, WA	Franchise	65%	Set by contract	Recycling banned from disposal; waste carts with >10% recycling not collected Food and compostable paper banned from disposal

Based on the commercial case studies, the following observations are made:

- Commercial collection is typically performed by private haulers; collection by municipal crews is not typical. The exception to this is in Austin, where municipal crews provided cart-based collection for qualifying commercial properties until 2015, when Austin began to transition out of this service and stopped accepting additional commercial customers. By contrast, Ann Arbor provides some commercial collection with City crews, while two different private haulers provide the remainder of either commercial waste or commercial recycling collection.

- Downtown consolidated collection service is provided in communities with franchised collection, often with no difference in the services or rates charged to customers within or outside of the downtown area. One exception to this is in Austin, where the city contracts for private hauler collection of all waste and recycling within its Central Business District (CBD). Austin's current CBD collection contract expires in 2020, and Austin is currently seeking hauler input to identify hauler suggestions for improvements in the current contract terms. The next CBD collection contract is expected to also incorporate organics collection service in addition to waste and recycling collection.

- Benchmark communities are less frequently engaged in contracting for services for the commercial sector as compared to the residential sector. As a result, data on costs and diversion performance is typically less readily available.

- Commercial diversion rates, where available, are often comparable to, or higher than, residential diversion rates in the same community. It is important to note that these communities are also communities where diversion mandates and disposal bans have been implemented. Interviews with staff in these communities indicated that stronger enforcement of mandatory diversion requirements and more outreach is implemented with their commercial sector customers than with their residents to ensure compliance. This may result in higher diversion performance in the commercial sector compared to the residential sector.

- FOG management was researched in benchmark communities as well as on a broad basis across the country. Where FOG management requirements have been established, they are related to wastewater management practices and are not solid waste functions.

These findings provide support for the analysis of options presented in Section 3 of this SWRMP.

SECTION 3
SOLID WASTE RESOURCES MANAGEMENT OPTIONS

This section reviews options considered in development of the SWRMP to increase diversion and improve the operation of the City's solid waste resources management programs and services over the next five-year planning period. The project team identified options based on the input obtained through the public engagement process, as well as research of practices implemented in other communities. The options considered are presented to provide context to the ultimate recommendations developed and presented in Section 4. Not all options resulted in a corresponding recommendation for implementation.

The following options were considered and included in the planning process:

Residential Options:
- Year-round residential compost collection
- Curbside textile collection
- Bulky item collection
- Electronic waste (e-waste) and household hazardous waste (HHW) curbside collection
- Consolidated collection (for a single service provider for all residential collection services)

Commercial Options:
- Fats, oils, and grease (FOG) management
- Commercial organics collection
- Student move-in / move-out support
- Construction and demolition (C&D) waste diversion
- Commercial services participation enforcement
- Consolidated collection (for a single service provider for all commercial collection services)

Education and Outreach Options:
- Marketing and advertising campaign
- Grassroots outreach

Downtown-Area Options:
- 7-day collection, including mandatory weekend collection for restaurants and bars
- 7-day collection, including mandated container sharing and special fee assessment
- Underground containers
- Bag-based collection

Diversion-Related Infrastructure Options
- Drop-Off Station replacement
- Material Recovery Facility operations

Funding Options
- Solid Waste Millage rate increase through a Headlee Override
- Service fees
- Pay-as-you-throw pricing for residential services

For each option, current and potential future conditions as well as reasons for consideration of the option are described; staff and equipment needs are identified; and impacts including

diversion potential, greenhouse gas (GHG) emissions, and costs are estimated. Impact estimates were developed using various data sources:

- Diversion potential is based on information compiled from a literature review and program performance in benchmark communities; actual diversion achieved in Ann Arbor will be dependent on the participation and behavior of local residents and businesses.

- GHG emissions impacts are inclusive of both transportation-related emissions associated with collection of materials as well as impacts resulting from shifting tonnage from disposal to recycling or composting (for applicable options). Emissions rates were obtained from The Climate Registry for transportation-related emissions and from US EPA's Waste Reduction Model (WARM Model, Version 14, updated March 2018) for diversion-related emissions. Based on the activities considered in the City's 2012 *Climate Action Plan*, the waste management sector in Ann Arbor generated less than 1% of community-wide greenhouse gas (GHG) emissions in 2010. Based on the total baseline emissions calculated Citywide (approximately 1,500,000 $MTCO_2e$) and the 1% contribution of waste management activities to emissions, it can be estimated that the City's waste management activities contribute approximately 15,000 $MTCO_2e$ to Citywide emissions annually. Because of its low overall contribution to community emissions, the Climate Action Plan indicated that "Any action taken to reduce emissions from the waste sector is unlikely to have a significant impact on total community emissions". However, emissions impacts are estimated within this SWRMP as an additional evaluation criteria and consideration for overall City planning and implementation purposes.

- Cost impacts are based on resource needs projected for each option and costs for staff and operations identified through the Cost of Service Analysis (Attachment C). Cost impacts are calculated assuming FY2020 implementation[5], and financial model forecasts for each option are presented in Attachment D. Unit costs calculated in the Cost of Service Analysis reflect FY2018 costs and therefore have been escalated 3% annually to develop the FY2020 cost. Cost impacts reflect direct costs only and do not include any allocation of additional indirect costs, as these will not be identified until options are nearer implementation. They also do not consider reductions that may be gained through regional collaboration on programs such as education and outreach. The model does not reflect revenue additions, such as could be secured through various funding options separately discussed at the end of this section; as implementation progresses, City staff can utilize the financial model to project the impact of added (or reduced) revenue to fund programs and services.

3.1 Residential Options

3.1.1 Year-Round Residential Compost Collection

The City currently provides residential compost collection generally beginning in April and continuing through early December. Residents can mix plate scrapings with their yard waste if they have purchased a compost cart from the City; plate scrapings cannot be placed in yard waste bags for collection. Compost carts are offered in 64-gallon and 96-gallon sizes; historically, smaller 32-gallon carts were available but had a higher frequency of damage and replacement and have since ceased to be offered. Compost collection is not currently provided during winter

[5] Not all options would be implemented during FY2020. For options implemented beyond FY2020, costs would be projected to continue to escalate annually to calculate first-year costs.

months, and residents are instead instructed to continue placing food waste in their cart throughout the winter until collection begins again.

Potential Future Conditions

Expanding residential compost collection to occur during an additional 4 months of each year (December through March) was recommended in the City's *Comprehensive Organics Management Plan* completed in 2017. Under a year-round residential compost collection service, the following conditions have been considered:

- Collection will be made from compost cart customers only. This is appropriate because the expanded collection period is intended to allow continued collection of food waste (which is only available to residents with a compost cart). It will also allow better planning of labor and routes, if a Citywide inventory of compost cart locations is completed.

- Investigation of options to provide and service smaller cart sizes (e.g., 32-gallon carts) than the current 64-gallon and 96-gallon compost carts will be explored to increase convenience for residents who generate little or no yard waste requiring collection.

- Collection will be performed either bi-weekly or monthly due to the reduced volume of material to be collected compared to the typical yard waste season. This will also minimize system cost impacts and labor requirements. Less frequent collection of food waste is also possible during the winter months due to the City's colder climate.

- Customer education and awareness will be necessary to provide guidance regarding preparation of food waste for cart storage during the winter to minimize freezing of material to the cart (therefore preventing the material from emptying from the cart during collection). Preparation of a City Customer Service staff response to complaints of material not being collected due to being frozen in the cart will also be required.

Support for Consideration of Option

This option is consistent with stakeholder interests expressed during development of the SWRMP:

- The resident survey indicated this is one of the service enhancements that residents want most, with 27% of respondents identifying this as their most desired service. Two out of three residents surveyed said they would utilize the service.

- The Advisory Committee identified this option as the highest priority for implementation within the residential sector.

- The Advisory Committee has expressed support for options that build upon the use of existing infrastructure. Committee members noted that a limitation to the City's residential compost program is that it is not offered year-round, and despite guidance provided by the City to store food waste in the cart over the winter for collection in the spring many

residents have concerns about odors and pests that prevent them from participating over the winter.

- The Advisory Committee also has expressed support for options that increase diversion and/or reduce greenhouse gas emissions. Extending collection of food waste and capturing additional material will meet both of these goals.

Resource Requirements

Compost collection staff are a combination of full-time and temporary employees of the City, despite collection services being performed only during a portion of the year. Currently during winter months when compost collection is not performed, full-time employees are allocated to other solid waste functions and may perform other Public Works functions as well on an as-needed basis (e.g., snow removal). Similarly, compost collection trucks continue to be utilized during winter months to provide back-up collection trucks for other City collection operations while larger maintenance tasks are performed on the residential collection truck fleet, allowing trucks to be taken out of service for longer time periods without impacting collection operations. Additional staff and equipment will therefore be required to provide year-round compost collection, projected at the following levels:

- Conversion of 1 (monthly collection) to 2 (bi-weekly collection) seasonal compost collection drivers to year-round drivers. This will reduce Public Works staff available to support other winter-season activities, and may therefore require hiring of additional Public Works area employees.

- Rental of 1 (monthly collection) to 2 (bi-weekly collection) collection trucks from December through March. Truck rental may be minimized or avoided if fleet maintenance can be scheduled to allow for continual availability of trucks for compost collection; however, for planning purposes it is assumed that supplemental fleet may be required during the expanded collection period.

- Work to be performed by other City staff including Customer Service and Outreach personnel is assumed to be supported with existing staff. Customer Service is anticipated to field calls with questions or complaints about service during winter months, and Outreach staff will incorporate promotion of the use of the service into its routine outreach work.

Impacts

Expansion of residential compost collection to a year-round service is projected to have the following impacts:

- Diversion increase = 110 to 274 tons per year; 0.2% to 0.4% increase in the Citywide diversion rate, based on the following parameters:
  - The *Comprehensive Organics Management Plan* projected diversion of 2 to 5 pounds of food waste per household per week.
  - Expanding to year-round compost collection would add 15 collection weeks of service.
  - Based on the resident survey fielded for this SWRMP, approximately 28% of residents indicate they have a compost cart and put all or most of their food waste in it, equating to approximately 7,300 households.

- Greenhouse gas emissions reduction = 61 to 176 $MTCO_2e$ per year
  - Projected reduction considers both the GHG emissions reduction resulting from composting instead of landfilling food waste as well as the added GHG emissions resulting from the additional collection truck operations.
  - The calculated reduction assumes collection is performed bi-weekly. If collection is performed monthly, fewer transportation-related emissions would be generated; however, monthly collection may also reduce the diversion performance due to resident concern about holding food waste for a full month before collection.

- City Solid Waste Fund direct cost increase = $73,000 (monthly collection) to $147,000 (bi-weekly collection) per year
  - Based on the City's approximately 26,247 households, this equates to an added cost of $5.60 per household per year or $0.47 per household per month.

3.1.2 Curbside Textile Collection

Textiles include cloth or fabric items such as clothing, bedding, and rugs. Current textile management options in the City include consignment or thrift shops, donation centers (e.g., Goodwill, Salvation Army), the City's Drop-Off Station, and drop boxes in varied locations across the City. There is currently no City-coordinated textile collection program.

Potential Future Conditions

Based on experience in other communities in Michigan and neighboring states, a curbside textile collection option was explored for the SWRMP. This service would be contracted for by the City with a private collector to provide weekly curbside collection from single-family home initially, with potential future expansion to multi-family properties. The service would provide collection bags to residents and perform pickup from the curbside on the same day as other collection services. The service would supplement existing drop-off and donation options, with a goal of increasing diversion of textiles from disposal by increasing convenience for residents.

One company providing this service is Simple Recycling, which serves 26 communities in the Detroit market, including Saline and Ypsilanti. Simple Recycling has contracts with more than 160 communities in 12 markets nationally. Their service is provided at no charge to the local community, and includes outreach materials and direct promotion to residents through delivery of collection bags and program information. Simple Recycling markets reusable textiles to local, regional, or international markets, recycles damaged textiles into other materials such as industrial rags or insulation, and disposes of the small remaining fraction that is not reusable or recyclable.

Support for Consideration of Option

Support for this option was identified within the resident survey as well as from many members of the Advisory Committee:

- The resident survey indicated that a large proportion of residents (90%) currently donate clean and undamaged clothing and textile items now. Nearly 1 in 10 residents indicated a

curbside clothing and textile collection service was the most desired new or expanded service for their household.

- The Advisory Committee ranked this option as a medium priority for implementation within the residential sector.

Resource Requirements

Because this collection service would be performed by a private contractor, no additional operations staff or collection equipment will be required. Contract administration and outreach to promote the use of the service are projected to require a small amount of effort and will be supported with existing City staff. Therefore, no new resources are required for implementation of this option.

Impacts

Curbside textile collection is projected to have the following impacts:

- Diversion increase = 25 to 143 tons per year; <0.1% to 0.2% increase in the Citywide diversion rate, based on collection of 1.9 to 10.9 pounds per household from other Michigan communities in 2018

- Greenhouse gas emissions impact = 9 $MTCO_2e$ added emissions to 71 $MTCO_2e$ reduced emissions per year
  - The calculated impact assumes a similar number of route miles are driven by the textile collector as are driven by City waste collection trucks. This may be reduced if collection is performed on a less frequent schedule (e.g., bi-weekly instead of weekly) or if the collection van does not need to pass down both sides of each street (e.g., if bags are not set out on the opposite street side, a second pass would not be needed). Additional efficiency could be gained if City collection drivers log or report locations of textile setouts for targeted routing of the textile collection van.

- City Solid Waste Fund direct cost impact is nominal. Because no additional staff are projected to be required to manage the contract, no increase in staff expenses is projected. The service may be revenue-generating based on market rates of $0.01 per pound ($20 per ton) paid for collected material by the collector. This may generate revenue of $500 to $2,860 per year based on projected diversion tonnage.

3.1.3 Bulky Item Collection

The City currently collects only waste materials that are contained within the curbside collection cart. No extra waste or large items that don't fit in the cart are collected by the City at the curbside. Residents with large items (e.g., furniture, mattresses, large appliances, and select homeowner-generated construction / renovation wastes such as single cabinets, sink tops, or toilets) are required to either haul these items to the City's Drop-Off Station, RAA's Recovery Yard, or donation sites or to pay a private contractor to remove the bulk items.

Historically, the City did provide collection of bulk items and waste outside of the collection container from residents. The service stopped in 2005 due to increasing costs and resident abuse of the service and coincided with the City's distribution of residential trash carts for collection.

Potential Future Conditions

An option to provide City collection of bulky items was analyzed based on stakeholder feedback during the SWRMP development process. While many residents have found methods to manage bulky items since the service ceased to be offered by the City, it is recognized that it is not convenient to self-haul or contract with a private contractor for removal of bulky items. This option considered a bulky item collection being performed under the following conditions:

- Collection of limited types of bulky items to include furniture, mattresses, rigid plastic children's play items (e.g., ride-on toys, Little Tikes / Playskool-type slides or playhouses, etc.), whole plumbing fixtures (e.g., sinks, toilets), appliances (excluding freon-containing appliances such as refrigerators and air conditioners), and carpet / padding (cut and secured in rolls). Bulky items are not proposed to include any extra loose or bagged / containerized household waste, construction or demolition materials from home renovation projects, tires, appliances containing freon, propane tanks, electronic wastes, or any items larger than can be reasonably lifted and loaded into a rear-load collection truck.

- The City will establish a collection schedule to provide pickup for each residence based on collection day and location within the daily collection zone. As analyzed, it is assumed bulky item collection would be offered to each residence once per month. Residents will be required to call Customer Service to provide notification of the need for collection, confirm that the item(s) to be collected meet program requirements, and pay a fee (if applicable) for the collection.
    - Initially, consideration of this option envisioned collection provided as a pre-scheduled service, with residents scheduling a pickup with Customer Service as the need arises. This was modified based on Advisory Committee feedback and further research of practices in benchmark communities, in order to provide clarity for customers and consistency for City staff in delivering the service.

Support for Consideration of Option

This option is consistent with stakeholder interests, and has been structured to address concerns raised by the Advisory Committee:

- The resident survey indicated this service (along with year-round compost collection) is one of the service enhancements residents want most, with 27% or respondents identifying this as their most desired service. More than half of residents indicate a need for bulky pickup at least 2 or 3 times per year, and 9 in 10 need it at least once per year.

- Bulky item collection is offered in every benchmark community researched. Program parameters and costs vary from community to community.

- The Advisory Committee raised concerns with this option due to past experience of residents setting out excessive quantities or unacceptable items for collection, the

perception that sufficient options exist for management of bulky items currently, and the cost to implement. These concerns can be addressed through clear definition and enforcement of acceptable materials.

- Providing a bulky item collection service provides equitable service options, a key goal of the City. A curbside bulky service provides collection options for residents with mobility limitations such as seniors or disabled residents, financial limitations preventing them from paying a private collector, or transportation limitations preventing them from hauling bulky items to the DOS or other collection centers.

Resource Requirements

Bulky item collection would be provided using a rear-load collection truck operated by a driver and a technician to load items into the truck. Added staff and equipment to provide this service are estimated to include:

- One collection crew consisting of 1 collection driver and 1 technician full-time.
- One new rear-load collection truck
- Additional Customer Service staff at an estimated half-time effort to take customer calls notifying the City of the need for pickup and to complete customer interviews and accept payment (if applicable)

Impacts

Addition of a bulky item collection service is projected to have the following impacts:

- Diversion would not be impacted directly by City collection operations. Customer Service may be trained to provide residents with information about donation outlets (several of which may provide curbside pickup of items) for reusable items; it is unknown at present what fraction of bulky items may be diverted in this manner.
- Greenhouse gas emissions increase = 31 $MTCO_2e$ per year
  - This increase is due to increased City collection truck miles annually. This may overstate the increase in transportation-related emissions if routing of trucks is optimized based on requested pickup locations only and the truck does not have to travel all streets in the collection zone. In addition, if bulky items are currently being collected by a private contractor or hauled by residents to the DOS and residents opt to use City collection instead, the GHG emissions increase may be overstated.
- City Solid Waste Fund direct cost increase = $380,000
  - This increase includes labor, equipment, and the addition of disposal tonnage to the City's system that may currently be paid for by private contractors.
  - Based on the City's approximately 26,247 households, this equates to an added cost of $14.35 per household per year or $1.20 per household per month.
  - This cost may be offset by a customer charge for bulky items. The resident survey indicated nearly 2 out of 3 residents would be willing to pay for the service at a cost of $25 per pickup. At this cost, an average of 1,267 collections per month (15,200 collections per year) would result in cost-neutral service; this is equivalent to one collection annually from approximately 60% of the City's residential customers. If

greater usage of the service is achieved, the cost per pickup could be reduced or utilized to fund additional solid waste resource management services.

- Initial implementation of this service may consider less frequent collection, such as quarterly collection, based on resident indication of the need for collection only 2 or 3 times per year. With this reduced frequency, services may be provided by existing staff within the solid waste area and/or other Public Works functions and result in lower costs due to the reduced service frequency.

3.1.4 Electronic Waste and Household Hazardous Waste Collection

Electronic wastes (e-wastes) and household hazardous wastes (HHW) are relatively small components of the waste stream. However, due to their toxicity, they are often targeted as materials to be diverted from disposal. Currently, the City provides no coordinated collection service for these materials, though City code bans disposal of monitors and televisions and City regulations ban HHW from disposal.

E-wastes and HHW are currently managed by residents by taking them to the City's Drop-Off Station, the Washtenaw County Home Toxics Collection Center, retailers (e.g., Best Buy) or donation outlets (for e-wastes only), or disposing them in the trash.

Potential Future Conditions

Two options for expanded collection service for these materials were considered, as described below. However, based on the lack of established curbside / household collection programs in Michigan for these materials, the undetermined participation of the City in WRRMA, and WRRMA's lack of specific activities related to e-wastes and HHW collection currently, neither of these options were deemed appropriate for further development as recommendations within the SWRMP. They are included within this options discussion for future information, should opportunities or needs be increased in the future. The options evaluated included:

- A curbside pickup option with collection performed by a private contractor was evaluated. Contractor programs include Waste Management's At-Your-Door service or Clean Harbors Door-to-Door Collection Program. These programs are not currently established in Michigan due to a lack of customer demand for the services; however, Waste Management has indicated that the City could be a large enough customer to consider establishing their program in the state. Through a curbside collection program, collections are scheduled by the resident in advance, proper packaging materials and instructions are provided, and collected materials are managed through regulated facilities for recycling or proper disposal.

- A second option considered includes collaboration with Washtenaw County and/or the newly formed Washtenaw Regional Resource Management Authority (WRRMA) to host mobile drop-offs at various locations in the City if the County or WRRMA implemented such a program.

Support for Consideration of Option

Consideration of this option was supported by the following:

- Some stakeholders identified a need for additional options for recycling of e-wastes during stakeholder interviews.

- The resident survey indicated that many residents have a need to dispose of e-wastes and HHW, and more than one-third of residents do not take HHW to a drop-off site currently because it is not convenient or they do not have enough to take.
  - Approximately 6 out of 10 residents indicate they currently donate e-wastes or take them to a drop-off location and take at least some of their HHW to a drop-off location. Use of a home collection program may therefore increase the convenience to these residents without an appreciable increase in the quantity of material diverted.

Resource Requirements

Considering the at-home collection option, because this collection service would be performed by a private contractor, no additional operations staff or collection equipment would be required. Contract administration, outreach to promote the use of the service, and Customer Service to respond to resident inquiries would be projected to require a small amount of effort and be supported with existing City staff. Therefore, no new resources would be required for implementation of this option.

Resource requirements for a collaborative mobile collection or a regional collection option were not evaluated because these programs would be defined in part or whole by the County and/or WRRMA.

Impacts

Potential impacts of an at-home collection option were estimated as follows:

- Diversion increase = up to 340 tons per year if all residential e-wastes and HHW were diverted through these programs; up to 1% increase in the Citywide diversion rate

- Greenhouse gas emissions impacts were not quantified, as this option was determined to not be supported in the current market.

- City Solid Waste Fund direct cost increase estimated at $394,000 to $441,000 per year
  - This estimate is based on contracted rates for Waste Management's At-Your-Door service in other communities; given the lack of establishment of the program in the region, procurement would be required to identify the local market cost for this service.

3.1.5 Improved Residential Recycling Collection

Residential collection services are currently performed by a mix of service providers, as shown in Figure 2.1. For single-family residences, City crews collect residential trash carts and compost bags, bundles, or carts, and RAA collects residential recycling carts. RAA's contract for recycling collection has been extended through June 30, 2020. Under the terms of the current contract, the City provides the truck fleet, fuel, and maintenance for the trucks used by RAA, and RAA is compensated based on the number of carts serviced and the tonnage collected.

Potential Future Conditions

To streamline services and provide consistency for customers, the SWRMP evaluated consolidating all single-family residential services to be a City-performed service utilizing City crews and fleet. This is consistent with practices in other communities, including benchmark communities where all residential services are performed by a single service provider. Benefits of this option include:

- Single point of contact for residents and ultimately Customer Service to address service issues. Under the current structure, service issues must be routed to two different points of contact.
- Uniform collection vehicle routing and coordinated route planning to minimize interference between collection vehicles.
- Consistent education and outreach / feedback to residents regarding set-outs and collection practices.
- Consistency in providing the appropriate size, number, and type of collection containers as regulated by the City's Municipal Code and solid waste regulations.
- Improved fleet efficiency. The same type of collection trucks are utilized to collect all three material streams, and a single provider ensures fleet flexibility in the event of a breakdown or collection delay.
- Improved operational efficiency.
- Minimized operating cost due to the ability to utilize staff for collection of multiple material streams from day to day or within the same collection day.

As an alternative to the option of consolidating all residential collection services, some members of the Advisory Committee suggested consideration of consolidating collection services based on the material stream being collected (i.e., single hauler for all trash, single hauler for all recycling, and single hauler for all compost). Concerns with consolidating collections based on the material stream include:

- This service structure is not in use in any of the communities researched in development of the SWRMP. It also does not provide the same benefits and efficiencies that consolidated hauling by sector provides, as outlined above.
- Different trucks and containers would need to be supplied to provide all collection of each material stream. In the commercial and multi-family sectors, waste and recycling are often contained in dumpsters, which are collected with a front-load collection vehicle instead of the automated side-load collection vehicle used for residential collections. This reduces fleet efficiency and may result in limited flexibility.
- This option does not provide clarity to customers about who provides services or how to address service issues. It also may result in conflicting setout guidance and program information.

- This option limits the City's ability to facilitate responses to service issues reported by residents and increases service oversight and customer service response efforts required by the City.

- A claim was made by members of the Advisory Committee that contracting for recycling collections separately results in a higher quality recycling stream than if collection was performed by a single provider such as the City. This has not been the operating experience in the City; City-collected recyclables from commercial dumpsters and within the downtown has a similar quality to RAA-collected recyclables from cart collections.

Support for Consideration of Option

Consideration of this option is supported by the following:

- Stakeholder input throughout the SWRMP process indicated a need to reduce the complexity of City-provided services and streamline programs.

- Ann Arbor City Council passed Resolution R-18-194 in 2018 opposing privatization of services not currently performed by an outside contractor and directing the City to end the practice of using temporary employees rather than hiring permanent employees. Consolidating all residential collections to be performed by the City ensures current staffing levels are maintained in a cost-effective and optimal role, and could result in an increase in City staffing levels.

In consideration of the input and feedback from the public engagement process and members of the Environmental Commission and City Council, subsequent to the presentation of the draft SWRMP in August 2019 the recommendation related to this option has been modified to include conducting a competitive solicitation for curbside recycling cart collection[6].

Resource Requirements

Resources required for the City to perform all residential collection services include the following:

- Addition of 7 collection route drivers; some or all of these drivers could be reassigned drivers who currently perform downtown collection or multi-family dumpster collection if the City elects to contract those services to an outside contractor (refer to Section 3.2.6 and Section 3.4 for further discussion of these options).

- Replacement of 7 existing automated side-load collection vehicles with new collection vehicles; though the City currently provides collection trucks to RAA for recycling collection, the recycling fleet is at the end of its useful life and must be replaced.

Impacts

Consolidating all residential collection to a City-provided service is projected to have the following impacts:

- Diversion rate impact = none.

[6] With respect to resource requirements and cost impacts, this option continues to reflect conditions resulting from consolidation of services to be performed exclusively by the City.

- Greenhouse gas emissions impact = none.

- City Solid Waste Fund direct cost savings = $775,000 per year
  - Based on the City's approximately 26,274 households, this equates to savings of $29.55 per household per year or $2.46 per household per month.
  - This savings estimate is based on the cost of service analysis contained in Attachment C. City recycling collection costs are assumed to be equal to waste collection costs on a unit (cost per hour) basis for labor, fuel, repair and maintenance, and fleet costs.

3.2 Commercial Options

3.2.1 Fats, Oils, and Grease Management

Restaurants generate fats, oils, and grease (FOG) that consists of two different types: brown grease, which is trapped in grease collectors in washtub drains, and yellow grease, which consists of cooking grease from fryers and is typically collected in grease containers for removal and disposal. FOG management for the SWRMP was focused on the yellow grease component, which is currently managed individually by businesses in an open market system where restaurants are able to select any FOG provider they choose. Because yellow grease can be refined, blended, and burned as a fuel, it is typically collected at no cost to the restaurant and may also result in a revenue payment to the restaurant.

Because FOG is managed on an open market basis and no operating requirements or reporting processes are in place, the City does not receive any information on the quantities of grease collected and recycled, or which restaurants are utilizing which containers. This results in challenges including enforcing cleanliness standards around containers and addressing space constraints for waste and recycling containers, particularly in the more dense downtown area.

Potential Future Conditions

Options considered to increase the regulation of FOG collection included the following:

- Development and subsequent enforcement of an ordinance specifying operations standards, data reporting requirements, and enforcement to be instituted.

- Establishment of a City-contracted co-op service for grease management, with voluntary participation for restaurants interested in this consolidation option. This would provide economies of scale and potentially lower maintenance and grease trap cleaning costs compared to open market pricing for management of brown grease, and may streamline yellow grease collection and enhance revenue potential for that stream. A similar program is in place in Tempe, Arizona that the City could model after.

Support for Consideration of Option

This option was considered based on the following input:

- City staff desire a method by which grease collection container information can be collected and operating standards can be established and enforced.

- Downtown businesses desire reduced clutter and greater cleanliness in alleys, and have cited grease containers as an issue for cleanliness and overall alley management.

Resource Requirements

Resources required to implement these options would include the following:

- Because collection operations will continue to be performed by private haulers, no additional operations staff or equipment will be required to be provided by the City.

- Ordinance development may be completed by City staff or with the assistance of a consultant. Ordinance development is estimated to require 60 hours of work. This would be a one-time implementation resource requirement.

- Additional support staff of an estimated 0.25 to 0.5 new employees would be required to provide monitoring and enforcement of ordinance requirements, periodic collection quantity data review, and outreach to make restaurants aware of requirements.

- If a co-op service is pursued, an additional 160 hours of City staff and/or consultant support is estimated to be required to develop service specifications and procure a provider.

Impacts

FOG management options are projected to have the following impacts:

- Diversion is not anticipated to increase from current levels; however, development of an ordinance which requires grease collectors to report quantities of grease collected for recycling will enable tracking of this additional diversion and inclusion of it in Citywide diversion rate calculations.

- Greenhouse gas emissions are not anticipated to be impacted as a result of ordinance implementation. If a co-op is implemented, GHG emissions may be reduced through increased collection route density and collection efficiency.

- City Solid Waste Fund direct costs are estimated to increase approximately $20,000 per year to support monitoring and enforcement of ordinance requirements. This cost could be recovered if a licensing / permitting fee is charged to grease collectors or restaurants.

3.2.2 Commercial Organics Collection

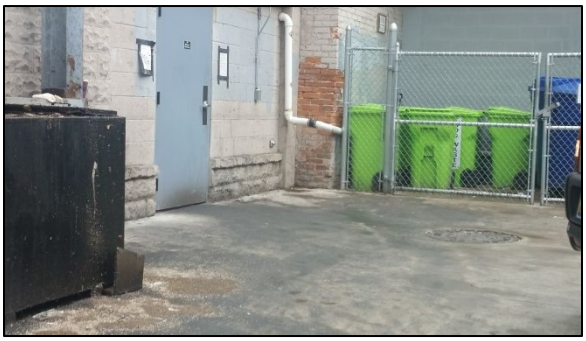
No City-coordinated organics (compost) collection program for businesses is currently provided. Approximately 20 businesses are included in the City's residential compost collection program and are provided seasonal collection of their food wastes. Other businesses have elected to contract with private haulers for food waste collection on a year-round basis.

Potential Future Conditions

The City's *Comprehensive Organics Management Plan* recommended food waste collection pricing be secured as part of the next commercial waste franchise agreement. The current

commercial waste franchise agreement will expire June 30, 2020. Organics collection would be promoted to food-oriented businesses such as restaurants and grocery stores and would initially be offered on an opt-in / voluntary basis to secure high quality material and committed participation.

Including this service in the commercial franchise provides a number of benefits:



- Continued single point of contact for the City for commercial collection operations.
- Single provider for commercial organics Citywide, providing uniform preparation and collection requirements and pricing.
- Coordinated schedules for waste and food waste collection to optimize collection frequencies and timing.
- Coordination to "right-size"[7] waste and organics services between the City and contractor in cases where the City is providing waste collection to the business, or by the same contractor if the private contractor is providing both waste and organics collection service.
- Competitive pricing accounting for the economies of scale that can be achieved by a single hauler servicing commercial customers Citywide, rather than multiple haulers achieving less route density and therefore providing less efficient collection service.
- Collaboration with the private hauler to ensure adequate space is available for collection container placement and that the appropriate container volume and collection schedule / frequency are selected based on individual business or property needs.

Support for Consideration of Option

This option is consistent with stakeholder interests expressed during development of the SWRMP as well as during the prior development of the *Comprehensive Organics Management Plan* in 2016. Making the collection of food waste voluntary for those businesses interested in participating also supports stakeholder concerns (primarily in the downtown area) about the ability to add additional services and provide effective service.

Resource Requirements

Resource requirements to implement a commercial organics collection program include:

[7] "Right-size" refers to adjusting container sizes and collection frequencies to match the needs of the individual generator. When multiple material streams are being managed, such as trash and organics, this can result in changes to either or both container sizes and collection frequencies for each material stream.

- Because collection operations will be performed by a private hauler, no additional operations staff or equipment will be required to be provided by the City.

- Added support staff will be necessary, including:
  - Approximately 2 additional employees to perform outreach, monitoring, enforcement, and contract administration for service at food-oriented businesses. Outreach, monitoring, and enforcement will include an estimated 24 hours per account per year, or 2 hours per account per month with participation of approximately 180 food-oriented businesses. If the service is intended to be actively promoted to all businesses, this may increase to an estimated 5 additional employees.
  - Approximately 1 additional employee to provide Customer Service support, including signing up businesses for service and performing billing for services. This assumes an estimated 12 hours per account per year, or 1 hour per account per month. If the service is extended to all businesses, this may increase to an estimated additional 2.5 employees.

Impacts

Implementation of a voluntary commercial organics collection program is estimated to have the following impacts:

- Diversion increase = 1,000 to 2,400 tons per year from food-oriented businesses; 1% to 3% increase in the Citywide diversion rate, based on the following parameters:
  - The *Comprehensive Organics Management Plan* estimated food waste comprises approximately 39% of the waste stream from food-oriented businesses. Diversion tonnage is based on a waste density of 96.27 pounds per cubic yard, weekly collection of approximately 3,000 cubic yards of waste, and capture of 35% to 80% of food waste from participating businesses.

- Greenhouse gas emissions reduction = 700-1,680 $MTCO_2e$ per year
  - Projected reduction based on GHG emissions reduction resulting from composting instead of landfilling food waste. Added GHG emissions resulting from additional collection truck operations have not been calculated, but are expected to result in only a small decrease in the reduction calculated.

- City Solid Waste Fund direct cost increase = $555,000
  - Of this cost, $275,000 is attributed to City staff costs for outreach, monitoring, enforcement, contract administration, and customer service.
  - An additional $280,000 is the estimated additional contracted collection cost based on current commercial franchise collection rates; this portion of the cost increase will be dependent on contracted pricing and the level of participation by food-oriented businesses.
  - Because the contracted waste transfer and disposal rate and commercial organics rate are nearly equal, there is no net cost impact due to changes in disposal and composting expenses.

3.2.3 Student Move-In / Move-Out Support

Student move-in and move-out peaks occur during May and August each year. During these peak periods, a greater amount of waste is set out for disposal from student rental houses and apartments. The City historically provided a daily collection service for properties in areas with a

high student population; this service was ended several years ago due to insufficient labor and high costs to provide the service. Currently during peak moving periods, the City instructs property owners to schedule extra collections, at the property owner's expense, when needed. Property owners have requested that service be provided as it had been historically, at no extra cost.

The City also contracts with RAA to provide a centralized, staffed collection and donation location at the intersection of Tappan and East University Avenues. This location is available for use by area properties at no charge. During the most recent spring move-out period, in May 2019 the City provided additional collections on Mondays and Fridays over two separate weeks, for an added four days of collection in total, at no additional cost to properties requesting the service. A total of 90 extra collections were provided during this period at 24 properties.

Potential Future Conditions

Stakeholders including multi-family property owners and the Washtenaw Area Apartment Association have expressed a need for consistent, increased service during move-in and move-out periods. Feedback regarding the additional Monday and Friday collections this past spring was positive, with property owners and area neighbors satisfied with the extra pickups.

To allow for proper planning and coordination of services, and based on the successful implementation of services this spring, this option considers providing this same level of service annually. This would include the following parameters:

- City-coordinated collection at multi-family properties in a designated student rental area.
- Extra collections on Mondays and Fridays to occur during the 2-week period around spring student move-out and during the 3-week period around fall student move-in/out peaks; specific dates will be established and specified annually based on the University of Michigan's academic calendar.
- Collection will also include bulky items such as furniture and mattresses that cannot be placed in dumpsters (appliance collection would not be included, as appliances at rental properties are not typically provided by the resident).
- Service is proposed initially to be provided by the City; this service could also be considered for incorporation into the next commercial waste franchise contract.
- This collection may either supplement or replace the staffed, contracted collection location operated by RAA.
- Donation partnerships to provide pickup of reusable items may be sought to reduce disposal tonnage, consistent with current arrangements coordinated by RAA under its contract with the City for centralized move-out collection service.

Earlier in the SWRMP process, a more extensive option consisting of daily collection service throughout the move-in / move-out period was evaluated. Due to higher costs and the potential burden to staffing collection operations during this period, and considering the success of the less-intensive Monday and Friday collections this spring, the daily collection option was not further considered.

Support for Consideration of Option

Having an option for routine, added collections have been of interest to multi-family property owners and the Washtenaw Area Apartment Association for several years. In addition, benchmark communities with large universities and student populations such as Boulder, Lincoln, and Madison all provide higher levels of collection service during peak move-in and move-out periods.

Members of the Advisory Committee opposed this option with their chief concern being the cost of the added service being funded by all City property owners. This concern can be mitigated by charging the added cost of service to the properties receiving extra collections.

Resource Requirements

Resources required to support increased student move-in / move-out support include:

- Assignment of 2 collection drivers and 1 technician to daily collections for a total of 10 days per year (4 days in May and 6 days in August).

- Assignment of an outreach and enforcement staff member half time for 9 weeks per year, including 2 weeks before each collection period and 5 added collection weeks to provide planning and coordination with properties, haulers, and donation partners (if applicable) and monitor collection operations.

- Rental of 1 rear-load collection truck and 1 front-load collection truck to perform supplemental collections; if surplus City fleet is available to provide the service, that may be utilized instead.

Impacts

The following impacts are projected as a result of this service:

- Diversion rate impact will be dependent on the establishment of donation partnerships and collection of material for donation rather than disposal. For planning purposes, no diversion impact has been assumed.

- Greenhouse gas emissions increase = <1 $MTCO_2e$ due to additional truck operations

- City Solid Waste Fund direct cost impact = $55,000
  - This assumes 80 hours of collection service and rental of trucks for 5 weeks per year
  - This includes disposal of 400 tons of collected materials
  - Cost impact does not account for cost savings if the RAA centralized collection point is discontinued upon implementation of this option; this service was provided at a cost of approximately $31,000 during FY2018

3.2.4 Construction and Demolition Waste Diversion

Construction and demolition (C&D) waste generated from building-related projects is not currently an element of the City's solid waste resources management system. C&D waste is collected and either recycled or disposed by private haulers through open market arrangements between haulers and property owners or construction contractors. Recycling options for mixed C&D material requiring processing are limited, but include at least one local facility (RAA Recovery

Yard, formerly Calvert's). Other outlets may be available for segregated materials; however, many construction sites lack adequate container space to perform on-site material segregation for recycling.

Potential Future Conditions

The C&D waste stream is a potentially sizable waste stream within which many materials (including wood, metal, and cardboard) are recyclable. To begin quantifying the diversion potential and identifying infrastructure needs and capabilities to provide C&D waste diversion, a two-phase option was considered:

- Phase 1 would consist of development of an ordinance to require C&D projects to submit waste and diversion data as a component of their building permit or occupancy permit process.

- Phase 2 would utilize data collected during Phase 1 and establish diversion targets for projects meeting defined square footage and/or dollar value thresholds. An initial diversion target of 50% may be considered, based on similar diversion planning and diversion targets established in benchmark communities for C&D waste.
  - This would require development of a diversion plan to be submitted in the building permit or demolition permit process.
  - Documentation of disposition of project wastes would be required as part of permit close-out.
  - Failure to meet the diversion target could result in a fine or loss of upfront bond security.

Support for Consideration of Option

This option is supported by the following:

- It is consistent with practices in California, where a statewide model ordinance has been developed and there has been widespread adoption of the ordinance by local governments.

- Several municipalities and counties in the Chicago metropolitan area, including the City of Chicago and Cook County, have also implemented diversion plan requirements and established diversion targets for C&D waste.

- The Advisory Committee generally supported this option, provided that space is available to properly collect and/or segregate materials on project sites and that recycling facilities are available to accept the material.

- This was a recommended action identified in the *Waste Less: Solid Waste Resource Plan Update 2013-2017* which was not implemented.

Resource Requirements

Resource requirements to support activities in Phase 1 of a C&D waste diversion strategy are estimated to include:

- Ordinance development may be completed by City staff or with the assistance of a consultant. Ordinance development is estimated to require 60 hours of work. This would be a one-time implementation resource requirement.

- Addition of staff to provide data review and monitoring and enforcement of data reporting practices, estimated to require approximately 0.6 of an additional employee based on building permit activity in 2018.

Phase 2 resource requirements will be further estimated when the scope of the diversion planning and reporting process is better defined in the future.

Impacts

This option is projected to have the following impacts:

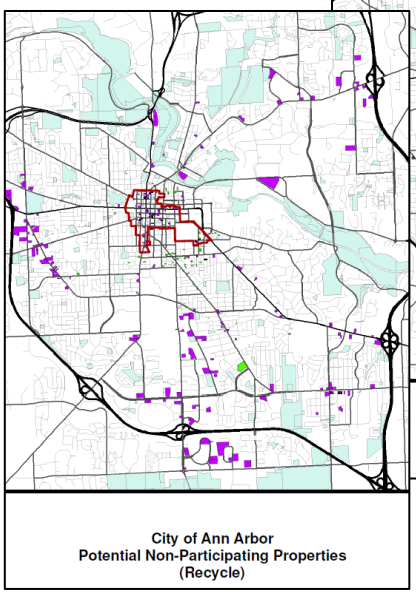
- Diversion rate impact will be positive, with a goal of encouraging future diversion efforts from the C&D sector. Diversion rate impacts have not been estimated because data is not available on the current C&D quantities generated in the City.

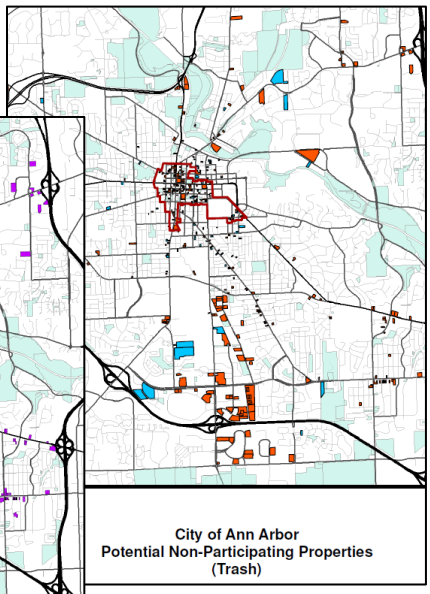
- Greenhouse gas emissions impacts are expected to be neutral during Phase 1. If Phase 2 is implemented, emissions may be reduced as a result of increased diversion from disposal.

- City Solid Waste Fund direct costs are estimated to increase $51,000 per year during Phase 1. This cost could be recovered through building permit fees; assuming 2,500 permits are issued annually (based on 2018 data), this would equate to an addition to permit fees of less than $20.

3.2.5 Commercial Services Participation Enforcement

All commercial properties in the City are required to have waste collection performed either by the City or its contracted commercial waste franchise hauler. In addition, the City has established an ordinance requiring all businesses to recycle. City staff has identified a number of commercial properties who are not in compliance with these requirements. The City estimates that up to 350 properties are not participating in recycling services and up to 500 properties are not subscribed to waste collection through the City or Waste Management.





Potential Future Conditions

To address the non-compliance of properties with current requirements, as well as to provide waste diversion support to these businesses, an option was considered to bring businesses into compliance consisting of the following:

- Outreach to non-compliant properties to educate them on the ordinance requirements and provide direction to bring them into compliance, in addition to assisting with on-site setup of diversion programs and guidance.

- Enforcement of ordinance requirements through follow-up consultation prior to issuing violations.

- In addition to bringing businesses into compliance with City ordinance requirements, this option will also encourage an increase in commercial sector diversion, which is currently 11%.

Support for Consideration of Option

Support for considering this option includes:

- City staff has documented a large number of properties not in compliance with requirements but has lacked the staff resources to pursue outreach efforts.

- Benchmark communities with mandatory requirements for recycling participation have opted to enforce requirements first through outreach to businesses rather than through penalties (e.g., San Francisco, Seattle).

- The Advisory Committee identified this as its highest priority in the commercial sector, despite concerns about the cost impact.

Resource Requirements

Resources required to support implementation of this option include:

- Initial implementation staff including 3 outreach staff to work with subject properties and 0.25 Customer Service staff to complete account setup and establish billing. The initial implementation phase is projected to be completed over a 3-month to 6-month period. Staff to support this effort may be new permanent staff, temporary staff and/or existing staff, pending availability.

- Ongoing outreach, monitoring, and enforcement provided by 1 new outreach staff.

- Addition of 0.5 to 1 collection route driver to support collection from new properties added to the City's system, provided that the City continues to provide collection services for the commercial sector and that added customers utilize cart-based collection.

- Purchase and distribution of up to an estimated 1,700 carts, if cart service is selected by non-compliant properties.

Impacts

Enforcement of commercial services requirements, including promotion of recycling participation, is estimated to have the following impacts:

- Diversion increase = 1,700 to 4,400 tons annually; 2% to 6% increase in the Citywide diversion rate
  - The low-end diversion estimate is based on average tons of recycling collected per year per customer on the City's front-load recycling service and assumed added participation of 350 businesses.
  - The high-end diversion estimate is based on State of Michigan goals to double recycling rates across the state; diversion of an additional 4,400 tons would equate to a doubling of commercial recycling tonnage in the City.

- Greenhouse gas emissions reduction = 4,879 to 12,628 $MTCO_2e$ per year
  - Projected reduction based on GHG emissions reduction resulting from recycling instead of landfilling mixed recyclables. Collection-related GHG emissions are expected to remain the same as under current conditions, and may actually be reduced through routing efficiencies and reduction of collection truck traffic from other service providers currently serving non-compliant properties; the impact of this has not been calculated.

- City Solid Waste Fund direct costs = $840,000 (low-end diversion) to $1,680,000 (high-end diversion)
  - Cost impacts include $290,000 to $420,000 in added City staff and fleet operations costs
  - Added disposal tonnage of 4,000 tons accounts for $105,000 of the cost increase
  - Added recycling tonnage accounts for $450,000 to $1,160,000 of the cost increase

3.2.6 Consolidated Commercial Collection

Commercial collection services are currently performed by a mix of service providers, as shown in Figure 2.1. Commercial properties and multi-family properties can select from the following services and providers:

- Cart-based waste collection service, performed by City crews

- Dumpster-based waste collection service with dumpsters owned by the property (for multi-family properties), performed by City crews

- Dumpster-based waste collection service with dumpsters owned by the commercial franchise hauler, performed by the franchised hauler (Waste Management)

- Cart-based recycling collection service, performed by City crews within the boundaries of the Downtown Development Authority (DDA) or performed by RAA outside the boundaries of the DDA

- Dumpster-based recycling collection service with dumpsters owned by the City, performed by City crews

As with residential recycling collection, cart-based recycling collection service is performed by RAA under the cart recycling collection contract through which the City provides the truck fleet,

fuel, and maintenance for the trucks used by RAA, and RAA is compensated based on the number of carts serviced and the tonnage collected.

Potential Future Conditions

To streamline services and provide consistency for customers, the SWRMP evaluated consolidating all commercial services as well as multi-family services at properties with more than 4 units to be a contractor-performed service under the next commercial franchise collection contract. This is consistent with practices in other high diversion communities who contract for commercial services, including benchmark communities such as San Francisco and Seattle. Benefits of this option include:

- Single point of contact for businesses and ultimately Customer Service to address service issues. Under the current structure, service issues must be routed to multiple points of contact.

- Improved operational efficiency, including uniform collection vehicle routing and coordinated route planning to minimize interference between collection vehicles.

- Consistent education and outreach / feedback to businesses regarding set-outs and collection practices.

- Consistency in providing the appropriate size, number, and type of collection containers as regulated by the City's Municipal Code and solid waste regulations.

- Improved fleet and container efficiency. Because of the nature of the City's commercial collection services, some of the collection fleet is not utilized on a full-time basis, and therefore results in reduced fleet efficiency. Current City performance of select commercial collections also requires the City to maintain collection fleet of various types, including automated side-loaders (which predominantly serve the residential sector), rear-loaders, and front-loaders with specially designed lift arms to collect multi-family dumpsters owned by individual properties (A-frame style dumpsters). Modifying service delivery to have all commercial and larger multi-family collections performed by the commercial franchise hauler provides greater fleet and container efficiency because their fleet and containers can be utilized to serve customers in multiple communities, not limited to only City customers. This also ensures fleet flexibility in the event of a breakdown or collection delay. Furthermore, if customers request changes in container sizes, they can be more readily supplied with a replacement container without the City being required to maintain a larger container inventory.

- Minimized City route driver costs. A portion of the City's commercial collections are performed by residential route drivers, often incurring overtime expenses.

Support for Consideration of Option

Consideration of this option is supported by the following:

- Stakeholder input throughout the SWRMP process indicated a need to reduce the complexity of City-provided services and streamline programs.

- City collection operations staff indicated concerns about the lack of backup or redundant equipment or collection truck flexibility to provide collection services to the commercial sector if extended truck maintenance is required.

- Participants in the downtown business focus group identified a preference for a single provider serving all containers within the DDA boundaries.

- In benchmark communities that franchise commercial waste collection (San Francisco, Seattle), a single contractor provides collection of all material streams (i.e., trash, recycling, and organics).

- Another benchmark community with a high diversion goal (Austin) historically provided commercial collection to businesses who could be served by carts. Austin ceased accepting new customers to this service in 2015 and now requires new businesses to secure a private hauler.

Resource Requirements

Assuming the City contracts all commercial and multi-family (greater than 4 units) collection to a private hauler through the commercial franchise, resources required for the City to consolidate all commercial collection operations to a single provider will be reduced compared to the current system. Contract management and customer service support are the primary services that would be provided by the City, and are assumed to be provided by current City staff. Therefore, no additional resources will be added.

Collection route drivers currently performing commercial sector collection services are proposed to be assigned to other City collection operations. As currently performed, downtown area collections are provided by staff who also perform residential waste collections. Three full-time employees provide other commercial waste and recycling collection services across the City. Implementation of this option in conjunction with the residential services consolidation option (Section 3.1.5) would therefore result in a need to hire only 4 additional collection route drivers.

Impacts

Consolidating all commercial collection to a single contracted provider is projected to have the following impacts:

- Diversion rate impact = none.

- Greenhouse gas emissions impact = nominal savings.
  - Some greenhouse gas emissions reduction may be achieved due to more efficient collection routing and scheduling of collections under a single hauler. However, due to the variable collection frequencies and service types, it is difficult to project the total impact, and due to the impact resulting solely from transportation-related emissions would be likely to be small.

- City Solid Waste Fund direct cost impact = $1,300,000 collection expense savings; contracted services would increase, with the full cost impact dependent on proposal pricing for the next commercial franchise contract

3.3 Education and Outreach Options

Due to staffing constraints, the City's current education and outreach strategy and reach is somewhat limited. Direct outreach has been increased over the past year with the hiring of a new Outreach and Compliance Specialist, a new position in the Solid Waste Services area.

Current City education and outreach services include the following:

- Development of informational content posted on the City's website regarding programs and services
- Periodic updating and digital publication of Waste Watcher
- Contracted education services provided by The Ecology Center through school presentations and community workshops
- Outreach to businesses to address service issues and complaints by a dedicated outreach staff member
- Promotion of programs and services at City events

Potential Future Conditions

Two options for expanded focus on the City's education and outreach efforts were evaluated, as described below.

<u>Marketing and Advertising Campaign</u>

For broad-reaching outreach, a comprehensive marketing and advertising campaign may be developed. This option assumes the City would procure a marketing / advertising firm with behavior change and community-based social marketing qualifications and experience. This has been done recently to support the City's outreach efforts related to water rate changes through development of the Utilities Public Outreach and Marketing Plan; this recent experience may provide valuable insight to an outreach strategy for solid waste resources management.

A comprehensive outreach campaign and strategy is anticipated to include the following tasks and elements:

- Audience definition and identification, including possible consideration of multiple audiences with different needs or motivations;

- Message development, including defining broad objectives as well as succinct information points to be conveyed;

- Media type and frequency; this may be provided as a range of possible options, with timing and frequency identified based on social marketing norms;

- Branding and creative development to promote recognition and consistency through rollout; and

- Rollout strategy and cost.

Future tasks and implementation steps would be identified following completion of the strategy.

Grassroots Outreach

Direct contact outreach with residents and businesses is also an effective method to reach and educate the community based on experience in benchmark communities. Grassroots outreach efforts provide flexibility and personalization in the outreach process. Through face-to-face personal interactions with individuals and in small groups, community needs and motivations can be continually evaluated. Messaging and information shared can also be readily adjusted to reflect the most current guidance to encourage use of programs and services.

A grassroots outreach team would be anticipated to perform much of its outreach during evenings and weekends when directed to the residential sector, with daytime weekday outreach targeting the commercial sector. Outreach methods would include door-to-door campaigns, presentations at community group and business association meetings, and table/booth assistance at festivals and events Citywide.

Support for Consideration of Option

The need for increased outreach was identified throughout the stakeholder engagement process during development of the SWRMP. Stakeholder interviews, Advisory Committee members, and the resident survey all cited a need for more outreach and education. Residents surveyed indicated a need for more information regarding the following topics:

- Disposal options for e-waste and HHW

- Disposal options for bulky items

- Overall City solid waste resources management services

Compared to the topics above, residents identified less need for more information on core services including waste, recycling, and compost collection. Nonetheless, for recycling and compost services, nearly 40% of residents indicated a need for more information; only approximately 20% of residents indicated a need for more information about waste services.

Also of note with respect to awareness and education surrounding core services, the resident survey identified:

- More than 40% of residents are unaware that food waste can be placed in a compost cart.

- Of residents who have a compost cart already, 25% indicated they did not know food waste could go in the cart.

- One third of residents indicated the biggest factor limiting how much they recycle is not knowing what is recyclable.

Education and outreach performed by high diversion communities such as Austin, Boulder, San Francisco, and Seattle all share similar approaches to those outlined above for consideration, generally implementing a two-tiered approach consisting of formal marketing and advertising campaign development and implementation coupled with grassroots "face-to-face" outreach by teams of staff and/or volunteers. These strategies are consistent with community-based social marketing approaches for all types of applications.

Resource Requirements

Increased education and outreach activities are projected to require the following added staff and resources:

- New full-time Education and Outreach Lead. This position would be responsible for managing all aspects of the outreach program. This position would also provide coordination with other groups including WRRMA, University of Michigan, and Ann Arbor Public Schools. Candidates for the position should have a background in community-based social marketing and behavior change, and prior work with municipal utilities (not necessarily with a waste and diversion focus) may be desirable.

- Procurement and oversight of a marketing and advertising firm and a grassroots outreach field team would be performed by the Education and Outreach Lead.

- For the marketing and advertising campaign option, resource requirements for campaign rollout will be identified in the development of the strategy.

- For the grassroots outreach option, four new half-time to full-time grassroots outreach field team staff, supplemented by volunteers as available and needed

Impacts

Increased education and outreach activities are projected to have the following impacts:

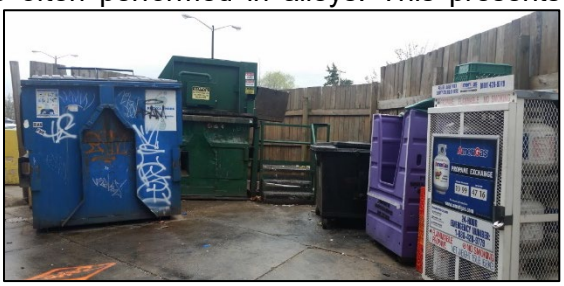
- Diversion increase to be determined and tracked as outreach is increased. A notable challenge with education and outreach performance cited by benchmark communities is the lack of data tracking to measure the direct impact on diversion. Alternative measures, such as changes in awareness of programs, are beginning to be tracked by some communities.

- Greenhouse gas emissions impacts are expected to be reduced as a result of increased diversion from disposal. Calculation of the expected impact, however, has not been performed due to the lack of information available to project diversion rate impacts.

- City Solid Waste Fund direct cost impact = $94,000 - $444,000, depending on the level of implementation
  - New Education and Outreach lead = $94,000
  - Estimated marketing and advertising firm cost = $150,000, based on recent costs for the City's Utilities Public Outreach and Marketing Plan completed in 2017 and 2018. Additional costs associated with campaign implementation will be identified based on the selected strategy and elements of the strategy to be implemented.
  - Estimated grassroots outreach field team labor = $100,000 to $200,000 per year, depending on the staffing level. If funding is limited, initial implementation may consider hiring of a smaller outreach field team with support from a larger number of volunteers to determine the outreach coverage that can be achieved at a smaller scale.

3.4 Downtown-Area Options

Downtown collection services are performed either by the City (for trash carts, recycling carts, and recycling dumpsters) or by Waste Management (for trash dumpsters). Waste and recycling collection services in the City's downtown area are often performed in alleys. This presents collection challenges for several reasons:



- The City's alleys also serve many other functions, including making deliveries, storing linens, collecting cooking grease, providing resident and/or business parking, and serving as pedestrian passageways.

- Because of the narrow alley width in many locations and presence of overhead obstructions (e.g., utility lines, building features), collection carts rather than dumpsters are often used.

- City collection services are not provided on weekends. Because many downtown tenants generate higher volumes of waste and recycling during weekend operations, this requires a large number of containers to be available and stored in the alleys.

- Waste Management offers 7-day collection service through the commercial franchise, but no businesses are currently utilizing the service, presumably because of its high cost.

- Businesses select their desired type and level of service and are billed by the City based on the waste collection container and collection frequency they select. Businesses may therefore select a service level which does not match its service needs, resulting in overflowing containers, waste or recyclables piled around containers, or usage of neighboring businesses' containers.

- Containers cannot always be serviced due to obstructions in the alley such as parked cars, delivery trucks, snow, overflowing trash or recyclable materials.

- A number of the alleyways are not owned by the City and are therefore not part of the public right-of-way. They are instead privately owned property, reducing or preventing the City's ability to perform enforcement in the alleyway.

To mitigate these challenges and establish more sustainable, efficient, and aesthetic solid waste resources management operations in the downtown area, a number of options for potential future conditions were considered as summarized below.

3.4.1 7-Day Collection, Including Mandatory Weekend Collection for Restaurants and Bars

Potential Future Conditions

As a near-term option to improve downtown operations, this option considered providing services on a 7-day schedule, with restaurants and bars required to subscribe to Saturday and Sunday collection service and have a minimum 4-day collection service. Under this option, businesses would continue to select their container size and pay a service fee based on the container size and collection frequency. Due to the pending expiration of the current commercial waste franchise contract on June 30, 2020, initial implementation of this option is proposed to impact only City-serviced businesses; commercial franchise customers with dumpster service would be incorporated beginning July 1, 2020 to enable weekend collection pricing to be secured.

It is estimated that weekend collection requirements would impact about 220 businesses downtown. This provides adequate route density and service needs to justify added collection service on weekends.

A benefit of this option is that, by providing collection during peak weekend periods, the number and/or size of containers needed for each business may decrease. If containers can be eliminated from the alleys, that will improve space availability in the alleys and downtown aesthetics overall.

Support for Consideration of Option

Stakeholders support the expansion of collection services to include weekend collections:

- Weekend collection requirements for restaurants and bars was identified by the Downtown Business Focus Group as a key need to improve downtown operations.

- The Advisory Committee rated this option as the highest priority among all downtown options.

Resource Requirements

Resources required to implement this option include the following:

- Transfer station and MRF hours need to be adjusted to accept material for half a day on Saturday and Sunday, and pricing needs to be secured to provide operations during these periods on a full-time basis. This change would require negotiation and execution of contract amendments for the transfer station and the MRF.

- Driver work schedules will require adjustment to shift 2 drivers to weekend collections. Under the adjusted work schedule, one driver would work 4 hours on Sunday, then 9 hour days Monday through Thursday; a second driver would work 9 hour days Tuesday through Friday, then 4 hours on Saturday. The City would be required to negotiate this schedule change with the unions (Teamster and AFSCME) and a written memorandum of understanding between the parties would have to be executed.

- An additional approximately 0.5 drivers would be required to provide collection service Monday through Friday due to the requirement for 4 days of collection from restaurants and bars.

- Additional outreach and enforcement staff of approximately 0.25 FTE to establish revised collection schedules with restaurants and bars and monitor performance; this may also necessitate scheduled weekend hours for performance monitoring.

Impacts

Required weekend collections in the downtown area for restaurants and bars are projected to have the following impacts:

- No diversion rate impact is projected as a result of the addition of weekend collections.

- Greenhouse gas emissions increase = 4 $MTCO_2e$ per year
  - Projected increase due to added truck trips to perform weekend collections.

- City Solid Waste Fund direct cost impact = $330,000
  - This cost assumes increased service is provided initially at only City-serviced businesses. Businesses with dumpster service provided through the commercial franchise would be incorporated into this requirement upon commencement of the next commercial franchise contract.
  - A portion of the cost increase would be recovered through increased collection fees paid by restaurants and bars who need to increase their service. However, these fee increases may also be offset with a reduction in the number of containers required for each business as a result of weekend collections.

3.4.2 7-Day Collection, Including Mandated Container Sharing and Special Fee Assessment

Potential Future Conditions

To reduce the number of containers and provide more efficient collection in downtown alleys, another option considered included planning and designing a system of shared and designated container usage, with service costs apportioned to users based on an equitable assessment rate apportioned to all users. This option would result in the following benefits:

- Reduced number of containers in the alleys resulting from conversion of some or all current cart collections to larger dumpster collections to the degree space is available

- Increased control of service parameters including container size and collection frequency to provide service flexibility and to readily respond to periodic fluctuations in service demand, as well as ensure full participation in the City's collection program by all businesses in the downtown area

- Provides an opportunity to increase collection efficiency through the use of container monitoring equipment, reducing collection of partially-filled containers and ensuring collection of containers before they are overfilled

- Potentially creates additional space to locate organics collection containers and facilitate implementation of commercial organics collection in the downtown area

This option would require a change in the method by which fees are collected from commercial customers, since individual businesses would no longer be selecting their own container or collection frequency. In lieu of the current service fee paid by businesses, a formula to allocate costs among all users would be designed that considers business type and service need (e.g., a restaurant will be charged a proportionally larger share of costs compared to a professional office because restaurants typically generate more waste and require more frequent collection than offices). This approach is similar to the Business Improvement Zone (BIZ) model that has been implemented in a portion of the downtown area (the Main Street BIZ) for services such as snow removal and streetscape maintenance.

Support for Consideration of Option

Members of the Advisory Committee and the downtown business focus group expressed support for this option due to the potential to reduce the number of containers in the alleys and the ability to set service levels based on need rather than business choice. Some stakeholders, including business and property owners and downtown merchant associations have also approached City staff and the Downtown Development Authority (DDA) concurrent with the development of the SWRMP to discuss this type of strategy, further indicating a general support for the option.

Resource Requirements

Initial implementation of this option will require planning and design efforts to identify container locations and sizing and assignment of businesses to container locations. It will also require that a cost allocation formula be developed. Resource requirements for this implementation effort are estimated to include:

- Consultant support for data collection, planning, and design of the consolidated system and preliminary cost formula.

- City staff support, utilizing current employees, to assist in the planning and design process.

- Additional resources required to further the implementation of the chosen design will be identified based on the design parameters developed and may include resources such as:
  - Construction of container enclosures and other related features.
  - Collection fleet and route driver needs to provide collection services, if the City continues to perform downtown collection services. The same or fewer staff may be required to serve the downtown area due to the reduced number of container collections as a result of consolidating into larger containers. An additional front-load collection truck may also be required to provide increase dumpster collection capability. Dumpsters may also be required to be purchased if the City performs collection services.
  - Outreach and coordination with downtown businesses to communicate changes and provide monitoring and enforcement when services are implemented.

Impacts

Container consolidation is projected to have the following impacts:

- The diversion rate may increase as a result of container consolidation due to the use of larger containers which increase the convenience of recycling larger cardboard boxes. The amount of diversion impact has not been projected, pending further analysis of consolidation options and space available to place containers.

- Greenhouse gas emissions are projected to decrease as a result of the reduced number of containers requiring service and reduced idling time during collections. The amount of greenhouse gas emissions impact can be projected following development of the system design.

- City Solid Waste Fund direct cost impact = $45,000
  - This cost impact reflects only the cost of consultant support for data collection, planning, and design of the consolidated system.
  - City staff support during the design phase is assumed to be provided by existing staff at no added direct cost.
  - Costs associated with implementation of the chosen design will be identified based on the design parameters developed and will include costs associated with construction of container enclosures and other related features; collections staff and equipment; and downtown business outreach and coordination.

3.4.3 Underground Containers

Potential Future Conditions

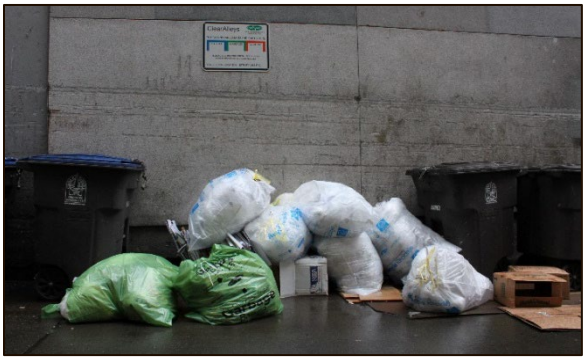
Replacement of standard containers (e.g., carts and dumpsters) with underground containers was considered as an option to further remove solid waste resources management services from the alleys and improve aesthetics. This approach has been implemented successfully in Kissimmee, Florida and is being considered by other Florida communities for implementation. However, it has not been tested in more northern climates, where winter weather may impact the ability to access the underground container for emptying.

Due to the untested nature of underground containers in cold-weather conditions, concerns about the ability to identify suitable locations without below ground or overhead obstructions, and the expectation of a significant capital investment being required, this option was not supported by the Advisory Committee for further consideration in this SWRMP. Preliminary resource requirements and cost impacts for this option are contained in the Advisory Committee meeting materials from Meeting 3 in Attachment A.3.

3.4.4 Bag-Based Collection

Potential Future Conditions

Converting to a bag-based collection system is an option that would enable removal of waste and recycling containers from the alleys. This system is in place currently in Seattle, with select alleys served by the Clear Alleys Program (CAP). The CAP requires businesses to purchase bags for waste and recycling. Businesses place filled bags in the alley for collection within designated setout periods prior to collection. Collection is provided twice per day for waste and once per day for recycling.



While this option could serve to incentivize businesses to recycle or reduce their overall discards since they would be paying for service based on actual quantities set out, it also carries a number of operational concerns. These operational concerns include the risk of bags leaking or breaking, rodents chewing into bags, the need for debagging of recyclables prior to processing, and manual handling of bags by collection staff.

Based on these concerns, this option was not supported by the Advisory Committee for further consideration in this SWRMP, and no resource requirements or impacts were developed.

3.5 Funding Options

Implementation of many of the options explored in this section would result in cost increases to the City's Solid Waste Fund. Based on recent annual revenues and expenses impacting the Fund, surplus funding is not presently available to sustainably fund added services unless additional revenues are also secured. This option addresses three funding strategies that have been considered.

3.5.1 Solid Waste Millage Rate Increase Through a Headlee Override

The majority of the City's solid waste resources management operations are funded through the Solid Waste Millage, as discussed in Section 2.3. The City's ability to secure revenue through the millage is limited by state legislation. In 1978, the Headlee Amendment to the Michigan Constitution was passed. Under the Headlee Amendment, units of government such as Ann Arbor are required to reduce millage rates when property values increase at a rate greater than inflation. This reduction in the millage rate, termed a Headlee Rollback, ensures property tax revenue Citywide from year to year increases by no more than the rate of inflation.

When initially established, the Solid Waste Millage rate was 3 mils, or $3 per $1,000 of taxable property value. The millage rate in FY2018 was 2.4134 mils, as a result of periodic Headlee Rollbacks. There is an option to complete a Headlee Override and reset the millage rate to its original level (3 mils, in this case). Resetting the millage rate would require City Council to approve a resolution directing that the reset be placed on an upcoming election ballot, securing state approval of the ballot question, and a majority approval vote by City voters. In the event that the reset of the millage rate would not secure approval from a majority of voters, the current millage rate would continue to be in effect.

Based on the FY2018 millage rate and resulting revenues, it is estimated that resetting the Solid Waste Millage rate to the initial 3 mils would generate an additional $3,070,000 annually to support solid waste resources management services. As an example of the impact this would have on individual property owners, for a property with a taxable value of $150,000, this would equate to an increase of $88 per year, or $7 per month.

An increase in millage revenue could be used to fund expanded or added services, reduce service fees for commercial customers to balance costs and revenues by sector, and/or support increasing costs related to current services (e.g., recycling processing costs).

3.5.2 Service Fees

Service fees are currently charged by the City to commercial waste customers and to residential customers who request a larger 96-gallon trash cart. These fees supplement Solid Waste Millage revenues to cover additional costs of service. Current service fees charged by the City are based on the specific service selected, and are therefore determined by customer demand for and use of services.

Consistent with this approach, new or expanded services that would not be universally used by all customers could be funded through a service fee. These services could include bulky item collection in the residential sector, increased student move-in and move-out collection services in the commercial (multi-family) sector, and commercial organics collection, for example.

In addition, supplemental service fees charged to all customers or properties could be considered to support diversion programs. This fee could be charged as a fixed rate per property, with either the same or different rates for residential and commercial properties. It could also be charged to only a subset of properties (residential properties, for example) to supplement funding to certain sectors.

Support for the use of service fees include:

- Service fees based on the level of service selected by customers were noted to be charged in many of the benchmark communities researched in development of the SWRMP, and therefore represent a standard funding method in the industry.

- The resident survey indicated that residents would be willing to pay a fee of $25 for bulky item collection, with 64% of residents agreeable to this cost. Only 27% of residents stated they would be willing to pay $50 for bulky item collection, indicating there is sensitivity to the fee that would be charged.

- Some benchmark communities charge a supplemental fee to support waste reduction and diversion programs, including Austin and Boulder. More details on these fees are provided in Section 2.6 and Attachment E.

3.5.3 Pay-As-You-Throw Pricing for Residential Services

An additional funding option that has been of interest to stakeholders and was desired to be considered in the SWRMP is a Pay-As-You-Throw (PAYT) pricing structure for residential services. A number of communities have implemented PAYT pricing in an effort to incentivize residents to place less material in the trash and therefore either divert more materials to recycling or composting or reduce their generated waste stream overall.

A pure PAYT model would result in residents paying for service based on the quantity of waste they actually dispose. This model has been implemented through requirements to purchase special bags or stickers to place on bags or containers when set out for collection or through the use of RFID logging of container collections to assign a collection charge.

Several benchmark communities have implemented a modified form of PAYT pricing under which residents are charged for collection services based on the size of their garbage cart, with larger carts having a higher service fee than smaller carts. Ann Arbor has implemented a limited modified PAYT pricing structure for its residential sector currently, charging residents who request a larger 96-gallon cart an annual fee of $25.

The resident survey gauged resident support for a PAYT pricing structure on two different fee schedules:

1. Fees set at $27 for a 32-gallon cart, $29 for a 64-gallon cart, and $31 for a 96-gallon cart. This fee structure reflects the true cost differential to collect the different sizes of carts. The difference between cart costs is small because the collection activity including labor and fleet time and cost is unchanged; only the quantity of material collected changes, and that is a fraction of the overall cost.

2. Fees set at $27 for a 32-gallon cart, $54 for a 64-gallon cart, and $81 for a 96-gallon cart. This fee structure does not reflect the actual cost to collect the different sizes of carts, but it ensures that service costs are covered if all residents were to select the smallest cart size then escalates costs of larger carts proportional to the size change (i.e., doubling the cart capacity doubles the fee). This is a common pricing approach for many PAYT communities.

Residents indicated about equal support for these fee schedules, with 64-65% of residents indicating support. On the first option, 25% of residents opposed the fee schedule, and on the second option, 31% voiced opposition indicating that opposition to the bigger range in fees is greater.

While PAYT is intended to incentivize recycling and composting over disposal, there are concerns about the impact it may have on the quality of recyclable materials collected. Residents may base their selection of their garbage cart size on economic motivations rather than the actual quantity of waste they require disposal of. This may lead to selection of the smallest container offered to have a lower monthly fee, while still having a larger amount of waste to dispose of. When their waste does not fit in the garbage cart, residents may engage in “wishcycling” by placing materials that they believe might be able to be recycled in the recycling cart or simply place their excess waste in the recycling cart.

San Jose, California, faced this issue in 2016, after the City’s PAYT rates led many residents to select the smallest garbage cart available (a 32-gallon cart), and recycling contamination rates increased. San Jose proposed a pilot to test whether providing residents with larger, 64-gallon carts for garbage collection improved the quality of the recycling stream. Though the pilot has not been implemented and other efforts have been taken to address recycling stream quality, this highlights the potential for negative impacts of the PAYT structure.

PAYT is not recommended for further consideration for implementation by the City during the planning period for the following reasons:

- Recycling contamination rates in Ann Arbor are low relative to rates in other communities, indicating the City's residents are provided adequate waste capacity currently with the standard 64-gallon cart.

- The City's residential recycling rate is among the highest when compared to benchmark communities, indicating residents are committed to recycling. It does not seem likely that PAYT would have a significant impact on the diversion rate.

- While residents indicated support for a PAYT structure, they indicated stronger support for paying for their solid waste services through the millage as they currently do.

- The Solid Waste Millage provides a consistent and predictable revenue to the City's Solid Waste Fund; PAYT would result in less predictability as residents select their levels of service.

- Establishing a PAYT billing procedure would require investment of significant staff resources that currently are not required to support the existing system. Considering other options of interest for implementation and the current cost demands on the Fund, this additional expense is not warranted.

SECTION 4
SOLID WASTE RESOURCES MANAGEMENT PLAN RECOMMENDATIONS

This section identifies recommendations for Ann Arbor's Solid Waste Resources Management Plan to achieve the City's objectives including increased diversion and enhanced operational efficiency and financial sustainability. Recommendations have been developed based on:

- The City's current and historical data and benchmark community program data reviewed and compiled in Section 2;
- The review of solid waste resources management options presented in Section 3;
- The input obtained from the survey of a random sample of 400 Ann Arbor residents, summarized in Section 1;
- The input from stakeholders and interested parties through the Advisory Committee, individual stakeholder interviews, and the downtown business focus group; and
- The input of Ann Arbor's Environmental Commission.

Ann Arbor has historically been a leader in the delivery of solid waste resources management services, and the recommendations contained in this SWRMP will assist the City in future efforts to achieve continued success. These recommendations reflect the long-term waste and sustainability goals of the City, the input of stakeholders through extensive public engagement during plan development, and the analysis of benchmark communities and local needs. Recommendations have been grouped by sector and topic, including: Residential; Commercial; Education and Outreach; Downtown Area; Diversion Facilities; and Funding.

Recommendations which result in cost increases to the City's Solid Waste Fund require that funding be identified as part of, and prior to, implementation of those recommendations. Adequate funding must be available not only to implement but also to sustain the program or service over time. The financial model and modeling of each scenario resulting in cost increases in Attachment D includes changes to the Solid Waste Fund balance compared to current conditions to be used as guidance for the need for ongoing funding for each option recommended. Suggested funding approaches are identified within certain recommendations, particularly where funding is recommended to be provided through a service fee charged to customers utilizing the program or service. Broader funding recommendations are also separately identified. The model does not reflect impacts of increased revenue, pending selection by the City of preferred funding methods during the implementation phase.

As recommendations are implemented, it will be important to balance Ann Arbor's objectives of providing high quality service and reducing the quantity of waste disposed in pursuit of the goal of zero waste with the City's fiscal constraints and willingness of residents and businesses to pay for programs. The resident survey indicated that residents desire expanded services, even if they come at added costs, and that they are willing to pay more for these services. However, residents are price-sensitive, with support for added costs nearly 90% of residents willing to pay $1-$3 more per month for an additional service, 67% of residents willing to pay $6-$7 more per month, and 52% of residents willing to pay $8-$10 more per month.

Prior to, or in conjunction with, implementation of any of the recommendations presented in this section, there are two core needs that must continue to be met:

1. Oversight and continuous improvements related to customer service aspects of operations. Objectives of this continued effort include providing clear point of contact and resolution pathways both for external customers (i.e., residents and businesses) and for internal staff to respond to questions and issues that arise. Continued effort in this area is not initially expected to require hiring of additional staff, but it may require changes to staff organization or staffing assignments within the Customer Service and Public Works areas as well as changes to computer and work order systems to enter and track issues.

2. Operational improvements and upgrades to sustain current programs must continue. This includes purchasing new fleet as existing equipment reaches the end of its life, reviewing and optimizing collection routes, integrating and expanding the use of technology enhancements as appropriate to maintain operating efficiency (e.g., in-cab navigation and event/issue reporting and tracking), and hiring of staff to serve existing operations when needs arise (e.g., due to staff departures or due to increases in areas to service as growth continues in the City). As an example of this continuous improvement, two recent hires have occurred during the course of the SWRMP project which have expanded City staff's service capability and experience in both outreach and compliance and in collection operations management. In addition, the hiring of a solid waste manager as planned prior to commencement of work on the SWRMP is moving forward through development of a position summary and search for candidates to further strengthen operational leadership at the staff level.

4.1 Residential Recommendations

Residential recommendations are enumerated below. Table 4.1 summarizes resource requirements, costs, diversion impacts, and greenhouse gas emissions impacts for each recommendation.

R.1. Implement year-round residential compost collection. Perform collection from December through March on an every-other-week basis from compost cart customers only.

R.2. Contract for curbside textiles collection from single-family residences on a no-cost contract basis.

R.3. Implement a limited bulky item collection program to collect large items not suitable for donation, reuse, or recycling which do not fit in the trash cart.
- Collection scheduled to occur once per month on a rotating schedule based on collection day and location within the daily collection zone.
- Residents required to call the City to provide notification of the need for bulky item pickup, identify the type of waste being collected, and make payment. City to provide information on pickup services available for items that may be suitable for donation, reuse, or recycling.
- Items collected proposed to include furniture, mattresses, rigid plastic children's play items (e.g., ride-on toys, Little Tikes / Playskool-type slides or playhouses, etc.), whole plumbing fixtures (e.g., sinks, toilets), appliances (excluding freon-containing appliances such as refrigerators and air conditioners), and carpet / padding (cut and secured in rolls). Bulky items are not proposed to include any extra loose or bagged / containerized household waste, construction or demolition materials from home renovation projects, tires, appliances containing freon, propane tanks, electronic

wastes, or any items larger than can be reasonably lifted and loaded into a rear-load collection truck.
- Establish a per-item collection charge to recover costs associated with this service, initially proposed to be $25.

R.4. Promote the use of existing drop-off options related to electronic waste (e-waste) and household hazardous waste (HHW) collection including the City's Drop-Off Station, Washtenaw County Home Toxics Collection Center, and retail outlets.

R.5. Monitor Washtenaw Regional Resource Management Authority (WRRMA) activities related to e-waste and HHW and seek opportunities to partner with WRRMA to increase access to collection options for Ann Arbor residents, if this is an activity performed by WRRMA.

R.6. Conduct a competitive solicitation for curbside recycling cart collection to be performed by a contractor and determine whether to continue to contract with an outside vendor for this service or to instead consolidate service providers with the City operating as the sole collector performing all curbside cart residential collection of waste, recycling, and compost.

TABLE 4.1. RESIDENTIAL RECOMMENDATION REQUIREMENTS AND IMPACTS

Recommendation	Resource Requirements	Estimated Annual Impact		
		Solid Waste Fund Direct Cost	Diversion	GHG Emissions
R.1. Year-Round Compost Collection	• Convert 2 seasonal compost drivers to year-round • Rent 2 collection trucks (December-March)	$147,000 $0.47/hh/month	110-274 tons $540 - $1,340/ton diverted	(61-176 $MTCO_2e$)
R.2. Curbside Textiles Collection	• None	$0, with revenue potential of $500-$2,860	25-143 tons	9-(71) $MTCO_2e$
R.3. Bulky Item Collection	• Add 1 driver and 1 technician • Purchase 1 rear-load collection truck • Add 0.5 Customer Service staff	$380,000 $1.20/hh/month	0 tons	31 $MTCO_2e$ (added City-generated emissions; no reduction included for shift of collection from private contractors)
R.4 / R.5. E-Waste and HHW Collection	• None	$0	Up to 340 tons with 100% recovery	No change
R.6. Improved Residential Recycling Collection	• Add or reassign 7 drivers • Purchase 7 collection trucks to be used for curbside recycling collection	($775,000) ($2.46/hh/month)	No change	No change

4.2 Commercial Recommendations

Commercial recommendations are enumerated below. Table 4.2 summarizes resource requirements, costs, diversion impacts, and greenhouse gas emissions impacts for each recommendation.

C.1. In coordination with the City's Stormwater and Wastewater departments, develop and implement an ordinance requiring operating standards and reporting by restaurants and grease haulers to improve management of fats, oils, and grease (FOG) generated by restaurants. The ordinance should contain:

- Restaurant requirements: Submit FOG management plans to the City identifying FOG handling procedures in place or proposed; site maintenance and cleaning procedures; the company providing FOG collection; and the location of any FOG container(s) utilized by the restaurant.
- FOG hauler requirements: Submit periodic (quarterly or annual) reports identifying quantity of grease collected and disposition (reuse/recycling or disposal).
- A fee to be paid by restaurants included in the ordinance to recover costs associated with ordinance implementation. An initial fee of $100 per year is proposed, equating to approximately 3 labor hours per year allocated to each restaurant for monitoring and enforcement.

C.2. Include specifications for commercial organics (compost) collection in the next commercial waste franchise procurement. Parameters for service are recommended to include:

- Voluntary service for interested food-oriented businesses.
- Requirement for a minimum of 2 organics collections per week from all participating businesses (with at least one of those collections occurring on a Saturday or Sunday).
- Cart / container cleaning to be performed periodically by the contracted hauler.
- Site review required to be performed by City and franchise hauler to identify feasibility of service due to space constraints, identify container location(s), review compost collection procedures and acceptable materials with the business, and confirm standard operating procedures to be implemented by the commercial property to maintain quality of organics and ensure proper site management.
- Cost of collection to be paid by participating businesses based on selected container size, number, and collection frequency.

C.3. Establish increased collection service during peak student move-in / move-out periods in May and August for multi-family properties served by the City within a designated student apartment zone. The increased service is recommended to include:

- Collection of carts and property-owned dumpsters on Monday and Friday during designated weeks, with specific dates to be established by the City annually.
- Separate collection of mattresses, if a mattress recycling contract is secured.
- Coordinated reuse / donation collection occurring on the same days as added collections at select location(s) within the student apartment zone and/or in cooperation with area donation / thrift outlets providing pick-up services. This may be considered to supplement or to replace current services provided by RAA at the centralized collection area at Tappan and East University Avenues.
- Cost of collection to be paid by multi-family properties receiving additional collection services.

C.4. Increase data availability and tracking of construction and demolition (C&D) debris as a precursor to establishment of requirements for diversion of C&D materials. Implementation is recommended to be phased:

- Phase 1: Institute reporting requirements to track types and quantities of C&D debris diverted and disposed from permit-required C&D projects. Reporting requirements are recommended to be incorporated into the building and occupancy permit process(es) with a refundable deposit or bond to be paid and returned upon satisfaction of requirements.
- Phase 2: Utilizing data collected in Phase 1, and assuming adequate C&D processing and recycling infrastructure is confirmed to be available in the region, institute requirements for the development of a diversion plan and establish a targeted diversion percentage. Diversion plan requirements will also be required to consider environmental health factors, material testing results (e.g., for lead-based paint or asbestos), and site capacity for dumpster placement and material segregation. Determination of the diversion percentage target will be dependent on local infrastructure and quantities, but is initially suggested to be 50%. Phase 2 is recommended to be initiated 3 to 5 years after implementation of Phase 1.

C.5. Perform ongoing inspection and enforcement of commercial properties to ensure compliance with waste and recycling collection requirements, including use of City collection services (performed by the City or its commercial franchise hauler) and participation in the City's recycling program. Initial enforcement is recommended to focus on education regarding ordinance requirements, on-site training and program set-up, and continuing follow-up support to secure participation prior to issuance of violations.

C.6. Consolidate service providers in the commercial sector, with the City's contracted commercial franchise hauler operating as the sole collector performing all commercial collection of waste, recycling, and compost and multi-family collection of waste where service cannot be provided by once weekly cart collection under the residential program.

TABLE 4.2. COMMERCIAL RECOMMENDATION REQUIREMENTS AND IMPACTS

Recommendation	Resource Requirements	Estimated Annual Impact		
		Solid Waste Fund Direct Cost	Diversion	GHG Emissions
C.1. FOG Management	• Add 0.25 - 0.5 outreach / enforcement staff	$20,000	No change; will provide data for inclusion in diversion calculations	No change
C.2. Commercial Organics Collection	• Add 2 outreach / enforcement staff • Add 1 Customer Service staff	$555,000	1,000-2,400 tons $230 - $555/ton diverted	(700-1,680 $MTCO_2e$)
C.3. Student Move-In / Move-Out Support	• Assign 0.5 outreach / enforcement staff 9 weeks/year • Assign 2 drivers and 1 technician 10 days/year • Rent 1 front-load and 1 rear-load collection truck for 5 weeks/year	$55,000	0 tons	<1 $MTCO_2e$
C.4. C&D Waste Diversion	• Add 0.5 data review and monitoring enforcement staff	$51,000	To be determined after Phase 1 completion	No change during Phase 1 Phase 2 impact to be determined
C.5. Commercial Participation Enforcement	• Assign 3 outreach and 0.25 Customer Service staff (3-6 month implementation period) • Add 1 enforcement staff • Add 0.5 to 1 driver • Add 0.5 to 1 collection truck • Add 1,700 carts	Year 1 implementation: $65,000 - $130,000 Ongoing, sustaining: $840,000 - $1,680,000	1,700-4,400 tons $380 - $495/ton diverted	(4,879-12,628 $MTCO_2e$)
C.6. Consolidated Commercial Collection	• Reassign 3 full-time collection route drivers performing commercial collection	City operational cost savings of ($1,300,000); added contracted collection expense to be determined based on proposal pricing	No change	Nominal savings

4.3 Education & Outreach Recommendations

Education and outreach recommendations are enumerated below. Table 4.3 summarizes resource requirements and costs for each recommendation. Insufficient data is available from other communities to estimate the diversion impact to be expected from implementation of education and outreach strategies. As data is collected through implementation of these recommendations, updated estimates of diversion impacts and GHG emissions impacts can be developed.

It is important to note that efficiencies in both cost and in messaging related to implementation of the below recommendations could be achieved by approaching outreach on a regional basis in conjunction with WRRMA, if the City decides to join the authority. Education and outreach has been identified as a primary focus for WRRMA.

E.1. Hire an individual with a background in community-based social marketing to direct all education and outreach activities.

E.2 Procure a marketing and advertising firm with behavior change and community-based social marketing qualifications and experience to develop and implement a comprehensive outreach campaign and strategy. The strategy will include:

- Audience identification
- Message development
- Media type and frequency
- Branding and creative development
- Rollout strategy and cost

E.3. Establish a grassroots outreach team consisting of core City staff team members and supported by volunteers as available to perform direct contact outreach with residents. Outreach will be performed primarily during evenings and weekends and include door-to-door campaigns, presentations at community group meetings, and table/booth assistance at festivals and events Citywide.

E.4. Track education and outreach level of effort and activities on a monthly or quarterly basis and compare to collection tonnage metrics to measure effectiveness of education and outreach strategies. Supplement this data with periodic customer surveys on an annual basis or in conjunction with targeted campaigns to measure changes in customer awareness and participation in programs and services.

TABLE 4.3. EDUCATION AND OUTREACH RECOMMENDATION REQUIREMENTS AND IMPACTS

Recommendation	Resource Requirements	Estimated Annual Impact		
		Solid Waste Fund Direct Cost	Diversion	GHG Emissions
E.1. Hire Education and Outreach Lead	• Add 1 marketing / outreach group lead	$94,000	To be determined based on City implementation experience	To be determined based on City implementation experience
E.2. Marketing / Advertising Campaign	• Contract with outside firm	$150,000 (excluding roll-out)		
E.3. Grassroots Outreach	• Add 4 half-time to full-time grassroots field team members • Supplement with volunteers	$100,000 - $200,000 (staff costs only; materials or giveaways for outreach additional, to be determined)		
E.4. Track Performance	• None; to be performed by marketing / outreach group lead	$0		

4.4 Downtown-Area Service Recommendations

Downtown-area service recommendations are enumerated below. Table 4.4 summarizes resource requirements and associated costs for each recommendation.

D.1. Change downtown collection route driver schedules to enable Saturday and Sunday collections on a half-day basis, and mandate restaurants and bars to have Saturday and Sunday collection and minimum 4-day collection weekly. This will require amendment of contracts for operation of the City's transfer station and material recovery facility (MRF) (and compost facility, if organics collection service is implemented) to provide weekend receiving hours, as well as a memorandum of understanding with staff labor unions to change driver schedules.

D.2. Pursue consolidation of containers in the downtown area by:

- Planning and designing locations to place larger containers (6-8 cubic yard dumpsters and/or compactors) in the downtown area either in alleys or on City-owned properties to serve groups of businesses, removing carts from alleys to the extent possible.
- Developing a cost-distribution formula to apportion costs for consolidated container services based on property type, size, usage, hours of operation, etc. and establishing the management structure for downtown services.

D.3. Establish separate and discrete service arrangements within the DDA boundaries utilizing a single service provider for all waste-related services, including waste, recycling, and organics collection. This arrangement may be achieved through either the inclusion of

separate downtown-area operating requirements and service costs within the commercial franchise agreement or through award of a separate contract for downtown-area services.

TABLE 4.4. DOWNTOWN-AREA SERVICE RECOMMENDATION REQUIREMENTS AND IMPACTS

Recommendation	Resource Requirements	Estimated Annual Impact		
		Solid Waste Fund Direct Cost	Diversion	GHG Emissions
D.1. Saturday / Sunday Collection for Restaurants and Bars	• Add 0.5 to 1 driver • Add 0.25 outreach and enforcement staff	$330,000	No change projected	To be determined based on service design
D.2. Container Consolidation Planning and Design	• Contract with consultant; City staff to support as needed	$45,000 (consultant expense)		
D.3. Single Service Provider for All Downtown Collections	• Dependent on service provider and scope of services	To be determined		

4.5 Diversion-Related Facility Recommendations

Diversion-related facility recommendations are enumerated below. As these continue to be developing opportunities, resource requirements and costs have not yet been identified.

DF.1. Continue to participate in discussions with the County, WRRMA and/or other area communities related to strategies to develop a regional facility to replace the City's Drop-Off Station. The City is not recommended to lead these discussions, given the regional nature of the current facility and desire for any future facility to continue to serve the broader region.

DF.2. Continue to seek proposals for a new recycling processing contract with services to commence July 1, 2020. Encourage potential vendors to propose investment in and operation of the City's MRF as a processing facility.

4.6 Funding Recommendations

Funding recommendations are enumerated below.

F.1. Pursue a ballot referendum to return the Solid Waste Millage to its original amount of 3 mils through a Headlee Override, thereby securing increased funding to support implementation of recommendations in the SWRMP and providing stability to the Solid Waste Fund as recycling costs continue to increase.

F.2. Confirm the City's authority to impose a waste diversion fee or surcharge on residential and/or commercial customers to provide supplemental funding to offset shortfalls related to the costs of waste diversion programs and services. If the City is authorized to impose such a fee, implement the fee in the residential sector initially, given the current imbalance between revenues and expenses in the residential sector. To balance residential revenues and expenses under current conditions, this fee would be estimated to be $5.56 per

household per month ($66.72 per household per year) in FY2020, resulting in additional revenue of approximately $1,750,000.

F.3. As programs and services are implemented which are used by customers on a periodic or limited basis, establish and implement service fees charged to users of the services to recover the added cost of service.

SECTION 5
IMPLEMENTATION STRATEGY

Based on the recommendations presented in Section 4, feedback from stakeholders, and upcoming contract expirations, Table 5.1 depicts a suggested implementation phasing schedule beginning in 2020. The actual schedule upon which recommendations are implemented will be determined in part by the ability to identify funding and staffing resources for implementation.

TABLE 5.1. PROPOSED IMPLEMENTATION SCHEDULE

Recommendation	2020		2021		2022		2023	
	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec
Residential Recommendations								
R.1. Year-Round Compost Collection								
R.2. Curbside Textiles Collection								
R.3. Bulky Item Collection								
R.4 / R.5. E-Waste and HHW Collection								
R.6. Improved Residential Recycling Collection								
Commercial Recommendations								
C.1. FOG Management								
C.2. Commercial Organics Collection								
C.3. Student Move-In / Move-Out Support								
C.4. C&D Waste Diversion								
C.5. Commercial Participation Enforcement								
C.6. Consolidated Commercial Collection								
Education and Outreach Recommendations								
E.1. Hire Education and Outreach Lead								
E.2. Marketing / Advertising Campaign								
E.3. Grassroots Outreach								
E.4. Track Performance								
Downtown Area Recommendations								
D.1. Mandatory Saturday / Sunday Collection								
D.2. Container Consolidation Design								
D.3. Procure Single Downtown Service Provider	(Schedule depends on commercial franchise inclusion or not)							
Diversion-Related Facilities Recommendations								
DF.1. Drop-Off Station Replacement								
DF.2. Procure City MRF Operator								
Funding Recommendations								
F.1. Millage Increase - Headlee Override								
F.2. Waste Diversion Surcharge								
F.3. Service Fees	(As needed based on implementation of other recommendations)							

Financial impacts of the various recommendations are reflected in the financial model scenarios contained in Attachment D, to the extent that financial impacts have been estimated. These scenarios assume implementation during FY2020; however, not all recommendations are expected to be implemented in a single year. Therefore, as implementation of specific recommendations is planned and timing is confirmed, the financial model should be updated by City staff to reflect then-current and projected future cost impacts and revenue needs.

As individual recommendations are pursued for implementation, it is recommended that City staff, the Environmental Commission, and/or other key parties take the following general steps:

- City staff review and confirm assumptions and costs included in this SWRMP continue to be representative.
- Identify City staff members and departments to engage prior to bringing a recommendation forward.
- Identify key stakeholders (e.g., service providers, customers, appointed or elected officials) to engage to build support for implementation.
- Develop a detailed implementation strategy including key dates, deliverables, additional planning or analysis, and outreach to ensure successful implementation.
- Secure a recommendation from the Environmental Commission for City Council to approve implementation.
- Present to City Council for approval and commencement of implementation, including budget amendments if necessary to fund implementation and operations.
- Convene a small work group comprised of City staff, 1-2 representatives of the Environmental Commission, contracted service providers (if integral to implementation), and other key stakeholders as appropriate to finalize specifications, draft ordinance language, and provide additional implementation support. If City staff resources are not sufficient to provide full implementation services, procure consultant support to assist with implementation tasks.

ATTACHMENT A
PUBLIC ENGAGEMENT MATERIALS

ATTACHMENT A.1
PUBLIC ENGAGEMENT STRATEGY

SWRMP Public Engagement Report

PREPARED: July 2, 2019

Leads

Name	Affiliation
Cresson Slotten	Project Manager, City of Ann Arbor, Systems Planning Unit
Heather Seyfarth	Community Engagement Specialist
Christina Seibert	Consultant Project Manager, APTIM
Charlie Fleetham	Public Engagement Facilitator, Project Innovations Inc.

Level of Impact/Interest

Beginning of the Public Engagement: Moderate level of community interest.

End of the Public Engagement: High level of community interest.

Stakeholders

Organization/Group	Name	Describe Involvement
Advanced Disposal	Chris Hennessy	Advisory Committee
Advanced Disposal	Joe Kohn	Advisory Committee
Advanced Disposal	Christopher Preston	Advisory Committee
Ann Arbor Area Elders Climate Action Chapter	Joe Ohren	Advisory Committee
Ann Arbor Chamber of Commerce	Diane Keller	Advisory Committee
Ann Arbor DDA	Susan Pollay	Advisory Committee
Ann Arbor DDA	Maura Thomson	Advisory Committee
Ann Arbor Public Schools	Jason Bing	Advisory Committee
Ann Arbor Public Schools	Emile Lauzzana	Advisory Committee
B Green Ann Arbor	Carlton Mundus	Advisory Committee
Bill's Beer Garden	Mark Hodesh	Advisory Committee
Bivouac Ann Arbor	AJ Davidson	Advisory Committee
Blue Llama	Elisabeth Berry	Advisory Committee
City of Ann Arbor	Jack Eaton	Advisory Committee
City of Ann Arbor	John Fournier	Advisory Committee
City of Ann Arbor	Jeff Gomez	Advisory Committee
City of Ann Arbor	Howard Lazarus	Advisory Committee
City of Ann Arbor	Molly Maciejewski	Advisory Committee
City of Ann Arbor	Amber Miller	Advisory Committee
City of Ann Arbor	John Mirsky	Advisory Committee
City of Ann Arbor	Marti Praschan	Advisory Committee
City of Ann Arbor	Ali Ramlawi	Advisory Committee
City of Ann Arbor	Heather Seyfarth	Advisory Committee
City of Ann Arbor	Cresson Slotten	Advisory Committee
City of Ann Arbor	Melissa Stults	Advisory Committee
Connor O'Neil’s	Brendan Murray	Advisory Committee
Connor O'Neil's	Tom Murray	Advisory Committee
Curtis Commercial	David Curtis	Advisory Committee
Curtis Commercial	Jim Curtis	Advisory Committee

Denali Water	Michael Nicholson	Advisory Committee
Ecology Center	Katy Adams	Advisory Committee
Ecology Center	Mike Garfield	Advisory Committee
Environmental Commission	Steve Brown	Advisory Committee
Environmental Commission	Allison Skinner	Advisory Committee
First Martin	Darren McKinnon	Advisory Committee
First Martin	John Teeter	Advisory Committee
Hughes Properties	Sean Havera	Advisory Committee
Interfaith Council on Peach and Justice	Al Connor	Advisory Committee
Interfaith Council on Peace and Justice	Jan Wright	Advisory Committee
Kerrytown	Eric Sartori	Advisory Committee
Liberty Maynard, LLC & Collegian Venture, LLC	Tyke Eccleston	Advisory Committee
Main Street Area Association	Sandra Andrade	Advisory Committee
Midwestern Consulting, LLC	Tom Covert	Advisory Committee
Old Town Tavern	Chris Pawlicki	Advisory Committee
Praxis Properties	Bill Kinley	Advisory Committee
Praxis Properties	Tyler Kinley	Advisory Committee
Recycle Ann Arbor	Bryan Ukena	Advisory Committee
Recycle Ann Arbor	Bryan Weinert	Advisory Committee
Residential	David Diephuis	Advisory Committee
Residential	Karen Prochnow	Advisory Committee
Residential	Krystn Stephens	Advisory Committee
Residential	Todd Bukowski	Advisory Committee
Residential	Tom McMurtrie	Advisory Committee
Residential	Jenny Oorbeck	Advisory Committee
Residential	Nancy Stone	Advisory Committee
RRS	Jim Frey	Advisory Committee
SavCo Hospitality	Peter Malley	Advisory Committee
Shaffran Co.	Ed Shaffran	Advisory Committee
South University Area Association	Maggie Ladd	Advisory Committee
State St. District	Frances Todoro-Hargreaves	Advisory Committee
Three Chairs	Susan Monroe	Advisory Committee
University of Michigan	Tracy Artley	Advisory Committee
University of Michigan	Andrew Berki	Advisory Committee
University of Michigan	Alison Richardson	Advisory Committee
Washtenaw County	Theo Eggermont	Advisory Committee
Washtenaw Area Apartment Association	Alice Ehn	Advisory Committee
Washtenaw Area Apartment Association	Fred Gruber	Advisory Committee
Washtenaw Area Apartment Association	Tom Ewing	Advisory Committee
Waste Management	Brian Conaway	Advisory Committee
Waste Management	Pat Greve	Advisory Committee
WeCare Denali	Don Butynski	Advisory Committee
Zingerman's	Miriam Flagler	Advisory Committee
Zingerman's	Nancy Rucker	Advisory Committee
Zingerman's	Grace Singleton	Advisory Committee

Community Engagement Methods

Engagement Method	Means Used to Communicate or Promote	Outcomes of Engagement Method
Paid Advertising — This project did not include a public hearing so a notice was not required.	No	
Press Release — This project did not require a press release.	No	
City Website News and Homepage Post / Project Page Post — All news releases related to this project are available on the project webpage.	Yes	
Email Distribution — Project lead distributed project information, public meetings, and other project-specific emails.	Yes	
Social Media — Social Media was not used to communicate about this program.	No	
Education Materials — Project materials provided at all public meetings including sign up information and study information and various information packets.	Yes	Handouts distributed at all public meetings.
Project Videos – Wrote and produced an educational video on Organics Management. This is now available on the City of Ann Arbor website.	No	
Public Meetings – Organized and facilitated meetings with Advisory Committee**.**	Yes	Conducted five Advisory Committee meetings
Public Tour – Organized and conducted two tours of Ann Arbor Compost Facility	No	
Third-party communication vehicle	No	
Presentations to Groups — Provided background information on the program and what the implementation of mandatory composting would look like in the City of Ann Arbor.	Yes Yes	Presented project to Environmental Commission (2x)
Interviews — This approach may be helpful to gather candid and more detailed feedback.	Conducted a series of one on one or small group interviews	Diane Keller, A2Y Chamber Christopher Preston, Advanced Disposal Emile Lauzzana, Ann Arbor Schools Michelle Brainard, City of Ann Arbor Crystal Allen, City of Ann Arbor Kayla Coleman, City of Ann Arbor Christina Gomes, City of Ann Arbor Molly Maciejewski, City of Ann Arbor Jennifer Petoskey, City of Ann Arbor Kirk Pennington, City of Ann Arbor Tracy Pennington, City of Ann Arbor Melissa Stults, City of Ann Arbor Matt Naud, City of Ann Arbor Susan Pollay, DDA Amber Miller, DDA Maura Thompson, DDA Michael Nicholson, Denali Don Butynski, WeCare Katy Adams, Ecology Center Scott Betzoldt, Midwestern Consulting, LLC Kathy Keinath, Perimeter Engineering Brad Moore, J. Bradley Moore Architects Bryan Weinert, Recycle Ann Arbor

		Greg Keith, Recycle Ann Arbor Andrew Berki, U of M Tracy Artley, U of M Noelle Bowman, Washtenaw County Theo Eggermont, Washtenaw County Alice Eln, Washtenaw AAA Brian Conaway, Waste Management Nancy Rucker, Zingerman's Miram Flagler, Zingerman's/Recycle AA
Focus Group – conducted to gain more target input	Conducted Business Owner Focus Group	Participants included 15 Ann Arbor business owners and/or representatives

Sept. 27 AA Solid Waste Resource Mgmt Plan Downtown Business Leader Focus Group Participant List

Last Name	First Name	Organization	Phone #	Email Address
Curtis	Jim	Curtis Commercial	734-355-1010	jim@curtiscommercialllc.com
Davidson	AJ	Bivouac	734-761-6707	aj@bivouacannarbor.com
Eccleston	Tyke	Hughes Properties	734-260-4679	teccleston@property-accounting.net
Fleetham	Charlie	Project Innovations	248-476-7577	charlie@projectinnovations.com
Havera	Sean	Hughes Properties	313-410-6488	shavera@hughes-properties.net
Hodesh	Mark	Bill's Beer Garden	734-255-0280	mark@downtownhomeandgarden.com
Kinley	Tyler	Praxis Properties	734-971-6850	tyler@proxisproperties.com
Ladd	Maggie	South U. Area Assoc.	734-730-5185	southu@gmail.com
McKinnon	Darren	First Martin	734-994-5050	dmckinnon@firstmartin.com
Murray	Tom	Conor O'Neill's and Main St. AA	734-904-1390	tmurray@conoromeills.com
Pawlicki	Chris	Old Town Tavern	734-355-3964	cpawlicki@comcast.net
Pollay	Susan	Ann Arbor DDA	734-994-6697	spollay@a2dda.org
Seibert	Christina	APTIM	630-762-3306	christina.seibert@aptim.com
Seyfarth	Heather	Ann Arbor	734794-6430	hseyfarth@a2gov.org
Shaffran	Ed	Shaffran Co.	734-276-6031	edward@shaffran.com
Slotten	Cresson	Ann Arbor	734-794-6430	cslotten@a2gov.org
Teefer	Jan	First Martin	734-994-5050	jteefer@firstmartin.com
Thomson	Maura	Ann Arbor DDA	734-994-6697	mthomson@azdda.org
Todoro	Frances	State St. District	734-646-1500	frances@a2stat.com

Solid Waste Resource Interview List as of 7-16- 2018

Organization	First Name	Last Name	Title	Email	Phone Number	Interview Day/Time
A2Y Chamber	Diane	Keller	President & CEO	diane@a2ychamber.org	734-214-0102	7/23 - 3:00 PM
Advanced Disposal	Christophe	Preston		Christopher.Preston@advanceddisposa	888-443-1717	8/16 - 10:30 AM
Ann Arbor Schools	Emile	Lauzzana	Executive Dir. Phys Properties	Emile Lauzzana <lauzzanae@aaps.k12.n	734-994-2014 ext. 51250	8/16 - 1:00 PM
City of Ann Arbor	Michelle	Brainard	Administrative Assistant	MBrainard@a2gov.org	ext. 43211	
	Crystal	Allen	Asst. Treasurer / Customer Service Sup.	Callen@a2gov.org	ext. 43202	8/16 - 2:00 PM
City of Ann Arbor	Kayla	Coleman	Community Engagement Specialist	KColeman@a2gov.org	ext. 43728	7/25 - 1:00 PM
City of Ann Arbor	Christina	Gomes	Solid Waste and Recycling Program	Cgomes@a2gov.org	ext. 43359	7/24 - 10:00 AM
City of Ann Arbor	Molly	Maciejewski	Manager	MMAciejewski@a2gov.org	ext. 43328	
	Jennifer	Petoskey	Solid Waste Outreach and Compliance	Jpetoskey@a2gov.org	ext. 43317	8/16 - 9:00 AM
	Kirk	Pennington	Supervisor	KAPennington@a2gov.org	ext. 43326	
	Tracy	Pennington	Supervisor	tpennington@a2gov.org		
City of Ann Arbor	Melissa	Stults	Sustainability and Innovations Manager	Mstults@a2gov.org		7/25 - 11:00 AM
	Matt	Naud	Environmental Coordinator	Mnaud@a2gov.org	ext. 43712	
DDA	Susan	Pollay	Executive Director	spollay@a2dda.org	734-994-6697	
	Amber	Miller	Capital Projects Manager	amiller@a2dda.org	734-994-6697	7/25 - 3:00 PM @ DDA
	Maura	Thompson	Communications Director	mthomson@a2dda.org	734-994-6697	
Denali	Michael	Nicholson	Senior VP, Technology	michael.nicholson@denaliwater.com	419-349-5402	8/16 - 8:00 AM
WeCare	Don	Butynski	Operator at Compost Facility	organics@wecareorganics.com		
Ecology Center	Katy	Adams	Education Director	katy@ecocenter.org	734-369-9272	7/25 - 10:00 AM
Midwestern Consulting, LLC	Scott	Betzoldt		SWB@MIDWESTERNCONSULTING.COM	734-995-0200	7/24 - 3:00 PM
Perimeter Engineering	Kathy	Keinath		kjkeinath@yahoo.com	734-216-9941	7/24 - 3:00 PM
J. Bradley Moore Architechs	Brad	Moore		brad@jbradleymoore.com	734-930-1500	will call back
Recycle Ann Arbor	Bryan	Weinert	Interim Chief Executive Officer	bryancweinert@recycleannarbor.org	734-662-6288	7/24 - 2:00 PM
	Greg	Keith	Curbside Manager	gregk@recycleannarbor.org		
University of Michigan	Andrew	Berki	Director - Campus Sustainability	aberki@umich.edu		7/24 - 9:00 AM
	Tracy	Artley	Manager Waste Reduction & Recycling	artleyt@umich.edu		
Washtenaw County	Noelle	Bowman	Solid Waste Program Specialist	bowmann@washtenaw.org	734-222-6821	7-24 - 12:30 pm
	Theo	Eggermont	Public Works Manager	eggermontt@washtenaw.org	734-222-6864	
Washtenaw Area Apartment Assoc.	Alice	Eln	Executive Officer	aliceehn@wa3hq.org	734-663-1200	7/25 - 2:00 PM
Waste Management	Brian	Conaway	Public Sector Manager	bconaway@wm.com	248-640-8754	7/25 - 9:00 AM
Zingerman's	Nancy	Rucker	Facility Manager	nrucker@zingermans.com	734-926-4000	
Zingerman's/Recycle Ann Arbor	Miram	Flagler	Facilities Manager	mflagler@zingermans.com	734-926-4000	7/24 - 11:00 AM

ATTACHMENT A.2
DOWNTOWN BUSINESS FOCUS GROUP SUMMARY

Ann Arbor Solid Waste Resource Management Plan Project
Downtown Business Owners and Managers Focus Group
September 27, 2018 Meeting Summary
Submitted by Charlie Fleetham, Project Innovations

1. **Participants: (See Attachment #1)**

2. **Desired Outcomes:**
   - To create awareness about the city's Solid Waste Resource Management Plan Project
   - To collect input from Downtown business owners and managers

3. **Project Review: Christina Seibert (APTIM Project Manager) reviewed the project approach. (see Attachment #2)**

4. **Overall Service Evaluation: the facilitator asked the participants to respond to the comment *"Ann Arbor currently provides 'Best-in-class' solid waste resource services"* using a 1 to 5, Strongly Agree to Strongly Disagree scale.**

   Results: Strongly Agree = 0; Agree = 0; Neutral = 4; Disagree = 6; Strongly Disagree = 6

5. **Reasons for Survey Responses: the facilitator asked the participants to identify the reasons for their ratings. As the discussion unfolded, the facilitator confirmed the level of agreement with the reasons provided – these are identified as UA - "Unanimous Agreement," with UA reasons listed first. Individual comments follow, and positive comments are highlighted.**

   - Alleys are too dirty and cluttered. (UA)
   - Containers are dirty and smelly – need effective cleaning program. (UA)
   - Lack of coordination between different City programs – we don't know who is responsible for what service. (UA)
   - Lack of customer service from City staff – lots of meetings and listening but no concrete actions to solve our problems. (UA)
   - Lack of knowledge about who owns which carts. (UA)
   - Missed pickups - failure to organize downtown alley trash especially grease waste . . . leads to illegal dumping. (UA)
   - No enforcement – have made numerous calls over several years to Community Standards without any response. (UA)
   - Pick-ups needed more frequently, not enough pick-ups especially on the weekends or during events. (UA)
   - Policies are incorrect - no business in the downtown should be allowed to put garbage on the sidewalks – creates health hazard, horrible odors, makes our City look Third World. (UA)
   - Private alleys - must be addressed regarding lack of knowledge about who owns what. (UA)
   - Too many carts/recycle bins in the alleys - there is a linear space problem. (UA)
   - Winter plowing is poor…it took me 17 years to get our alley plowed … City not viewed as clean and safe in winter. (UA)

- City staff doesn't know basic facts.
- Excessive cost of services (millage + tip fee + franchise fee).
- Insufficient recycling collection.
- Jennifer is responsive to my issues – she is good addition to City staff.
- Lack of ability to respond to questions/issues.
- Lack of consistency emptying pedestrian carts.
- Lack of flexibility of schedule.
- Lack of knowledge of alleys.
- Neutral in my response – I believe the City is trying to improve a difficult situation.
- No response to terrible garbage situation on Ashley!
- Problems are getting worse – we should be collecting our own garbage because the City is doing a poor job … business associations are investing $20K in consultant to prepare a plan for us.
- Responses from the City on new developments regarding solid waste issues are inflexible.
- Some street containers not picked up because trucks don't have access.
- Trucks do not come back if alley is blocked

6. **Improvement Suggestions: the facilitator asked the participants to identify improvement suggestions. A listing follows, using the same categorization as in the previous listing.**

- Alley clean up – City needs a program (UA)
- Identify a single point of contact in the City for all downtown solid waste issues - Community Standards / "Garbage Police" - and they need to have and use teeth/enforcement. (UA)
- Landlords should be responsible for enforcement issues. (UA)
- Need real and proactive enforcement. (UA)
- No more carts downtown – only dumpsters. (UA)
- One hauler for grease collections. (UA)
- Policies needed - all restaurants/bars should have dumpsters, should have minimum collection frequency determined by the City. (UA)
- Review city policies to enable enforcement. (UA)
- Seven day pickup for restaurants – twice a day during events. (UA)
- Solve garbage issues first – before bringing on any new programs, like composting. (UA)
- Washing methods for dumpsters and containers need to be developed and implemented. (UA)

- Allow garbage services with limited license service grants instead of easements to give access to private alleys.
- Expand composting (**some participants opposed this suggestion).**
- Label all bins/dumpsters with names of businesses allowed to use them
- Streamline process for recycling provider

7. **Summary Comments:**

- Useful meeting
- Hope City actually does something this time
- Keep us involved in the solution process.

Attachment #1

Sept. 27 AA Solid Waste Resource Mgmt Plan Downtown Business Leader Focus Group Participant List			
Last Name	**First Name**	**Organization**	**Email Address**
Curtis	Jim	Curtis Commercial	jim@curtiscommercialllc.com
Davidson	AJ	Bivouac	aj@bivouacannarbor.com
Eccleston	Tyke	Hughes Properties	teccleston@property-accounting.net
Fleetham	Charlie	Project Innovations	charlie@projectinnovations.com
Havera	Sean	Hughes Properties	shavera@hughes-properties.net
Hodesh	Mark	Bill's Beer Garden	mark@downtownhomeandgarden.com
Kinley	Bill	Praxis Properties	bill@praxisproperties.com
Kinley	Tyler	Praxis Properties	tyler@praxisproperties.com
Ladd	Maggie	South U. Area Assoc.	southu@gmail.com
Malley	Peter	SavCo Hospitality	peter@savcohospitality.com
McKinnon	Darren	First Martin	dmckinnon@firstmartin.com
Monroe	Susan	Three Chairs	susan@threechairs.com
Murray	Tom	Conor O'Neill's and Main St. AA	tmurray@conoromeills.com
Pawlicki	Chris	Old Town Tavern	cpawlicki@comcast.net
Pollay	Susan	Ann Arbor DDA	spollay@a2dda.org
Seibert	Christina	APTIM	christina.seibert@aptim.com
Seyfarth	Heather	Ann Arbor	hseyfarth@a2gov.org
Shaffran	Ed	Shaffran Co.	edward@shaffran.com
Slotten	Cresson	Ann Arbor	cslotten@a2gov.org
Teeter	John	First Martin	jteeter@firstmartin.com
Thomson	Maura	Ann Arbor DDA	mthomson@a2dda.org
Todoro	Frances	State St. District	frances@a2stat.com

Attachment #2

ATTACHMENT A.3
ADVISORY COMMITTEE MEETING MATERIALS AND SUMMARIES

City of Ann Arbor
Solid Waste Resources Management Plan
Advisory Committee
November 14, 2018 Meeting Summary

Participant List – see Attachment #1

1. **Welcome -** Cresson Slotten, City of Ann Arbor Project Manager for the Solid Waste Resources Management Plan (SWRMP) Project welcomed the participants. Highlights of his remarks are as follows:

- *The City provides daily services for collection and processing of materials from the community's waste, recyclable and yard waste/organics streams.*
- *Many things have happened, or changed over the past several years that affect … some directly, some indirectly… the City's delivery of these services, including:*
    1. *The evolution of the downtown:*
        - *Very different business market, many more restaurants and bars*
        - *More, and denser residential housing*
    2. *Changes of the City as a job center: In early 2000's - most jobs in the city filled by City residents. Today, we have more jobs and the majority of the jobs are filled by non-City workers. So much of our "daytime population" is not necessarily aware and familiar with the City's programs and policies.*
    3. *The impacts of the Headlee Amendment on the revenues of the City's Solid Waste Fund - we are allowed up to 3 mills but are only collecting 2.3759 mils today.*
    4. *Reduction and changes in the City's work force*
        - *Leaner organization*
        - *Organizational changes*
        - *Retirements in the City*
    5. *Several aspects of the Solid Waste area today are contracted by the City - 11 different contracts and 7 different contractors.*
    6. *The challenges of the MRF shutdown:*
        - *Termination of the past operator*
        - *Condition of the equipment and facility*
        - *Inability to process recyclables locally/regionally*
    7. *Product manufacturers and changing consumer habits:*
        - *New and emerging packaging*
        - *Disposable items*
        - *The "Amazon Effect"*
        - *Electronics*
        - *The vast reduction in print newspapers*
    8. *Global markets and their effects locally*
        - *China's "Green Fence" and "National Sword"*
        - *Effects on commodity pricing and quality/contamination requirements*
    9. *Education and Outreach challenges:*
        - *An increasingly transient population*
        - *How people receive and digest information*
        - *The amount of time people give to learning outside information*
    10. *Washtenaw County amending its Solid Waste Plan:*
        - *Encouraging cooperation among jurisdictions and regional approaches*
        - *Recommendation for expansion of drop-off services within the County*
        - *Movement toward a potential regional approach to some aspects of resource management*

- *In view of the above strategic implications, the City has dedicated significant resources to:*
    1. *Conduct technical analysis combined with robust engagement to ensure that we have both hard data and first-hand insight into the future.*
    2. *Use the aforementioned data, to layout a strategic approach for the City on how best to provide solid waste, recycling and compost/organics management programs that meet the needs and desires of the community in a fiscally responsible and sustainable manner.*

2. **Advisory Committee Purpose -** Charlie Fleetham, Advisory Committee Facilitator from Project Innovations, Inc. reviewed the committee's purpose, schedule, and participation expectations. These can be viewed in SWMRP Advisory Committee PowerPoint, Attachment #2, pages 2 through 4.

3. **Ann Arbor SWRMP Presentation -** Christina Seibert, Project Manager, Aptim Environmental & Infrastructure, Inc., reviewed the project scope, activities conducted to date, planned activities, and the critical questions that the project team is addressing (see Attachment #2, page 5 forward).

4. **Questions Regarding Project Scope and Topics Addressed by the SWRMP -** Advisory Committee members discussed in small groups the project scope and upcoming activities and identified questions they had regarding the project and its outcomes or deliverables. Questions were shared with the larger group and noted on flip charts in the room. The questions and the project team response to each questions are provided in Attachment #3.

5. **Facilitated Discussion -** A series of breakout groups formed to discuss five topics posed by the project team (see Attachment #2, page 19). A summary of feedback from each breakout group is summarized.

    - **Group #1 Discussion Topic:** ***There are too many solid waste contracts. They should be consolidated to a single contract.***

        - What is the context of issue/complaint?
        - Group felt strategic consolidation is important.
        - Not necessarily a single contract but again, focus on strategic consolidation.
        - Can we do 1-yr extension? Reasons included:
            - There is a group in DDA looking at holding their own contract for collection (like Republic Parking handles structures).
            - Concerns of how having a new City Council could affect process. Need to educate and give them time to understand issue.
            - 1-yr gives time for regionalization to more fully develop.
        - Need to know boundaries from City Council
        - System-wide consolidation might be counterproductive. Need haulers that care about recycling and have expertise.
        - Is contract administration the problem rather than too many contracts?
        - Look at in-house service provision like a contract.

    - **Group #2 Discussion Topic:** ***Our alleys are too crowded and we have enough challenges with the current services. Composting would be nice, but it's not a top priority right now for the downtown.***

        - I agree… it is too soon, we have other problems that need to be dealt with.
        - It is a good idea to do composting in the downtown… we've tried it, but implementation was a struggle.
        - Concerned that with the upcoming contracts that we may be missing, or eliminating an opportunity if it isn't included.
        - Bids for collections are based on expected tonnages, so if food waste collection is added later it will affect the in-place contract pricing for trash since it will reduce the trash tonnage.

- Perhaps food waste could be collected at a central collection point in larger containers rather than in the alleys … perhaps one per block… maybe locate them in surface parking lots.
- Maybe replace some of the recycle carts in the alleys with compost carts?
  - But the recycle carts are already overflowing with material.
  - The food waste that would be going into the compost carts/containers is already going into other containers (trash or recycling), so you would think that there would be an offset allowing to remove trash/recycle containers to have room for compost containers.
- Hop Cat is doing it themselves, but it is expensive.
- Wonder if businesses will be willing to pay for the costs to do it?
  - We need to find out which businesses aren't paying now for solid waste services, and get all of them to pay.
- Are all of the alleys too crowded with carts currently?
- The Ant Alley (at/under the Maynard Parking Structure) has had issues, but it has improved… video cameras monitor who does what… it is usually the same people that don't do what they are supposed to do… a lot of people are working to keep it clean… it's a matter of holding people accountable… the customers/users are key to it working… it's about peoples' behavior, recycling correctly… the businesses themselves are the key… they need to buy into doing things correctly… turnover of staff is a big issue… maintaining, sustaining any process or behavior change is tough… peer pressure has helped.
- Suggested that we use the "5-S" process improvement system from Japan
  - It is a manufacturing process improvement, but could be applied here
  - A 5-step process where a manufacturing line is taken to be a "model" and changes in process are tried and results monitored/metrics captured
    - An alley could be identified as the "model" and working with the parties in the alley - - businesses, property owners - - new processes tried and results measured… may include some short-term costs to the parties, so they need to be part of the process… could use some of the items that work in other alleys, like the Ant Alley.
    - The items learned in the Model Alley could then be looked at for possible application in other alleys… but they may not be able to be applied exactly the same way due to the variability of the alleys.
  - There are experts at the U-M that could possibly assist in utilizing this approach/process.

- **Group #3 Discussion Topic:** ***Recycling is part of our City's DNA and we are proud of our history of being recycling leaders. Cost should not be the main driver of our recycling programs.***

  - The feeling that recycling is "in the DNA" of the City may be true for those where recycling is convenient - single-family residents in particular. But for multi-family residents and businesses, this may be less true.
  - Cost is something we can't ignore - we can't just recycle at <u>any</u> cost. And when sustainability is a goal, cost is a necessary consideration.
  - Costs are challenging for recycling. Revenues for recyclable materials vary. Landfill costs in Michigan are low. With these factors, recycling might not be the cheapest option to manage resources. Maybe longer term contracts (10 years?) would smooth cost fluctuations.
  - We need to back up and make sure our current program is being used right and that we are recycling right. This will give us better quality materials and result in better revenue / pricing.
  - The priority should be on sending as little to the landfill as possible through reduction and reuse, then identifying what in the waste stream is recyclable and will have the biggest impact on diversion rates (the "low-hanging fruit"). Deciding what is recyclable needs to consider what markets exist and whether they are economical.
  - To the degree that costs are passed along to customers, there needs to be equity. Businesses cannot continue to pay the same or increasing costs and receive less service for it in order for residents to get more programs or program expansions.

- Cost associated with recycling can incentivize behavior - the container deposit law and the high rate of capture it achieves is proof of that.
- We need to consider ways to achieve economies of scale. For example, if there was a community-wide program for reusable take-out containers from restaurants, with drop-off or collection points for the containers conveniently located through the city, that could reduce the waste generated.
- Services should be standardized through the region so that each community doesn't have different rules. That can provide economies of scale as well as improve outreach and awareness.
- We need to consider how to align services offered to match the packaging that is being used and will be used in the future. The "How to Recycle" labels being used more on packaging need to be kept in mind so we maintain programs for at least the materials that are considered to be widely recyclable.

- **Group #4 Discussion Topic:** ***It's time to make our downtown businesses accountable and enforce solid waste ordinances.***

  - Solid waste should have its own code enforcement officer
    - Possibly this role can be housed under Community Standards, which already addresses solid waste.
    - The code enforcement officer needs to have mediation training since the role requires working with property owners that have shared spaces in relation to solid waste, such as alleys.
    - The code enforcement officer will need to establish ongoing relationships and work with people over time.
  - There needs to be clear and consistent consequences to violations.
  - Perhaps more monitoring devices should be installed, such as cameras in alleys or devices on carts.
  - The City should do periodic cleanings through the downtown to clean up.

- **Group #5 Discussion Topic:** ***Improving customer service should be Job 1.***

  - I am a downtown resident. Staff has been giving me different answers about recycling and composting. The first answer is often wrong and different staff members say different things.
  - There doesn't seem to be any firm direction/education on e-waste.
  - Need to restart the Tom McMurtrie program for pick-ups during Student Move-Out days.
  - We are not getting any help for Game Days. Not getting answers when I call on a Friday afternoon for help.
  - The City needs an ongoing education program. It should be global and local – work with individual neighborhoods, associations, religious organizations, schools, etc.
  - We like the See Click Fix app. We are receiving next day response!

Attachment #1 - Advisory Committee Meeting #1 Sign-In Sheet

November 14, 2018 Solid Waste Resource Plan Advisory Committee Participants

Last Name	First Name	Title	Organization	Email	Phone Number
Andrade	Sandra	Executive Director	Main Street Area Association	sandra@mainstreetannarbor.org	810-730-8853
Artley	Tracy	Manager Waste Reduction & Recycling	University of Michigan	artleyt@umich.edu	734-164-1600
Brown	Steve	Commissioner	Environmental Commission	Brownsc6887@att.net	
Bukowski	Todd	Resident	Residential	todd@ptisglobal.com	734-972-4175
Butynski	Don	Operator at Compost Facility	WeCare Denali	organics@wecareorganics.com	734-489-4518
Conaway	Brian	Public Sector Manager	Waste Management	bconaway@wm.com	248-640-8754
Curtis	Jim	Owner	Curtis Commercial	jim@curtiscommercialllc.com	734-355-1010
Eccleston	Tyke		Liberty Maynard, LLC & Collegian Venture, LLC	teccleston@property-accounting.net	
Eggermont	Theo	Public Works Manager	Washtenaw County	eggermontt@washtenaw.org	734-621-1561
Ewing	Tom	Representative	Washtenaw Area Apartment Association		
Flagler	Miram	Facilities Manager	Zingerman's	mflagler@zingermans.com	734-926-4000
Frey	Jim	CEO	RRS	frey@recycle.com	734-417-4415
Garfield	Mike	Director	Ecology Center	michaelg@ecocenter.org	734-369-9263
Gruber	Fred	Representative	Washtenaw Area Apartment Association		
Kohn	Joe		Advanced Disposal	Christopher.Preston@advanceddisposal.com	888-443-1717
Ladd	Maggie	Executive Director	South University Area Association	southu@gmail.com	734-663-5300
Lauzzana	Emile	Executive Dir. Of Physical Properties	Ann Arbor Public Schools	lauzzanae@a2schools.org	734-994-8118
Lazarus	Howard	City Administrator	City of Ann Arbor	hlazarus@a2gov.org	ext. 41102 (Sara)
Maciejewski	Molly	Manager	City of Ann Arbor	MMAciejewski@a2gov.org	ext. 43328
McMurtrie	Tom		Residential	tmcmurt1@gmail.com	734-323-4643
Mirsky	John	Commissioner/Executive Policy Advisor for Sustainability	Environmental Commission	jmirsky@a2gov.org	248-762-8654
Murray	Brendan		Conor O'Neill's	tom@conoroneills.com	
Ohren	Joe		Ann Arbor Area Elders Climate Action Chapter (A3ECAC)	joeohren@gmail.com	734-546-0039
Oorbeck	Jenny		Residential	jenny.oorbeck@gmail.com	734-945-9335
Pawlicki	Chris	Owner	Old Town Tavern/Revens Club	cpawlicki@comcast.net	734-355-3964
Seyfarth	Heather	Community Engagement Specialist	City of Ann Arbor	hseyfarth@a2gov.org	743-795-6430
Singleton	Grace	Board President	Kerrytown District Association	gsingleton@zingermans.com	734-904-4068
Slotten	Cresson	Project Manager	City of Ann Arbor	cslotten@a2gov.org	ext. 43701
Stephens	Krystn	Resident	Residential	ksteph414@gmail.com	734-320-0144
Stone	Nancy	Resident	Residential	nancystone123@yahoo.com	734-255-8619
Stults	Missy	Sustainability and Innovations Manager	City of Ann Arbor	Mstults@a2gov.org	ext. 43725
Teeter	John		First Martin	jteeter@firstmartin.com	734-994-5050
Weinert	Bryan	Director of Strategy	Recycle Ann Arbor	bryancweinert@recycleannarbor.org	734-883-5720
Wright	Jan		Interfaith Council on Peace and Justice	janwrigh@umich.edu	734-975-0445

Attachment #2 - SWRMP Advisory Committee PowerPoint Presentation

(see separate pdf on project website at a2gov.org/swrmp)

Attachment #3 - Responses to Questions About the SWRMP Project

SWRMP Advisory Committee
Meeting #1
November 14, 2018
Questions about the Project (received from small group breakouts after APTIM Presentation)

1. **Is the project timeline realistic given the contract renewal timeline? Can you extend the contract renewal timeline a year to allow for coordination with the outcomes of this plan?**

   Response: At present, City staff do not intend to extend the contract expiration dates for the expiring contracts for recycling collection, recycling processing, and commercial waste franchise collection. The contracts have been aligned to sunset at the same time to allow flexibility and coordination in the re-procurement, and one of them has already been extended one year beyond its original sunset date. Furthermore, the current contractual arrangement with Recycle Ann Arbor for recycling collections requires the City to provide collection trucks for Recycle Ann Arbor. These trucks are beyond their useful life and the trucks cannot withstand another year of use. These contracts provide essential and ongoing services and are anticipated to be maintained going forward and therefore need to be procured in the near term. City staff are working with the SWRMP consultant to develop the scope of the new contracts and incorporate flexibility in the contracts to implement recommendations from the SWRMP when it is completed, and the potential for regional approaches to service delivery if those develop.

2. **Who has the authority to ensure the completion of the plan and the recommendations therein?**

   Response: The SWRMP is being completed at the direction of the City Council and has been budgeted for completion. Implementation responsibilities will be identified in the completed SWRMP and are expected to include responsibilities for City staff. To the extent that City Council approval is required to implement recommendations, those tasks will be brought forth to the Environmental Commission and/or City Council as appropriate by City staff. City Council, the City Administrator, and the Environmental Commission may all have additional roles in advocating for, or driving implementation of, SWRMP recommendations.

3. **How does the project team plan to get public buy-in to the plan's recommendations?**

   Response: Meetings of the Advisory Committee and presentations to the Environmental Commission over the course of the project are open to the public. We will also be conducting a scientific survey of a random sample of residents to measure average resident response to matters directly related to the SWRMP, such as interest and perceived need for expanded services and willingness to pay for services.

4. **We would like to see data about each component of the diversion stream, including residential and commercial components, historical trends and projections, and your priorities for strategic focus.**

   Response: This will be provided through the SWRMP to the extent that data collection and reporting allows for segregation of the components.

5. **How will the plan address e-waste?**

   Response: E-waste is not a specific element within the initial project scope, but it is an area that can be explored within the SWRMP. Because it is also an area of interest for Washtenaw County in implementation of its updated solid waste plan, the consultant team will build upon information gathered by the County for this area.

6. **We suggest you benchmark communities with similar populations … don't know how useful it is to compare us to Seattle or San Francisco.**

   Response: The list of benchmark communities has been developed and presented for exemplar purposes at this point, and the consultant team will add or subtract from this list based on the availability of information from individual communities. Communities such as St. Paul / Ramsey County and Boulder / Boulder County have been suggested as additional benchmark communities to include because of their size and City/County collaboration similarities, and the team will seek to collect the appropriate benchmark data from these communities based on this suggestion.

7. **We would like a clear understanding of the revenue stream and a 5-year forecast given current and forecasted conditions.**

   Response: A 3- to 5-year cost forecast is an element of the scope of work of the SWRMP. This will define the need for revenues over the same time period. Funding options are also being reviewed and evaluated for the SWRMP and will be presented as part of the plan. The actual rates to be charged and revenues generated will be dependent on the implementation undertaken.

8. **How will the plan respond to alley issues?**

   Response: Alley conditions related to solid waste resource management have previously been reviewed by a City staff working group, and findings are being incorporated into the SWRMP. Options for downtown / alley service for solid waste resource management operations are being evaluated by the team, and will include investigation of best practices implemented in other communities.

9. **Does the plan address the recycling drop-off station?**

   Response: The SWRMP will address the resource needs for the options evaluated and recommended in the plan. To the extent this includes a continued reliance on the services provided by the drop-off station, it will be addressed.

10. **How will the plan address FOG?**

    Response: Options for fats, oils, and grease (FOG) management are being evaluated by the team, and will include investigation of best practices implemented in other communities. Stakeholders have expressed an interest in regulating through license or contract the activities of FOG providers, and this will be an element of the investigation.

11. **The plan should address the cost and effectiveness of increasing levels of service, including expansion of organics collection and Downtown service on Sundays, and the impact this will have on the solid waste fund balance.**

    Response: This will be included in the SWRMP.

12. **We would like a better understand of our City's trash cycles.**

    Response: This will be included in the SWRMP.

13. **Will the plan include consideration of Big Picture futuring, e.g. the McArthur Foundation, recent movements in packaging, EPA strategies for diversion, etc.**

    Response: These elements of solid waste resource management are all potential topics for inclusion in the SWRMP. The degree to which the plan incorporates individual consideration of these and other "big picture", visionary concepts will be dependent on their specificity and applicability to the Ann Arbor resource management stream.

14. **The cost analysis needs to include a payer component (by class/by % of total).**

    Response: The cost of service analysis will include a breakdown of costs by generator sector (residential, commercial) as well as by function within each sector (trash, recycling, compost). This will be used to evaluate the sustainability of current funding options and levels, and alternate funding options will also be evaluated with consideration of the required revenue to fund and sustain existing and new/future programs.

15. Will the plan consider reduction and reuse?

Response: This will be included in the SWRMP. Reduction and reuse efforts tie strongly to education and outreach, which is an additional specific element of the SWRMP.

16. How can the Ann Arbor Public Schools, University of Michigan, and other educational institutions support the planning process/recommendations?

Response: The Ann Arbor Public Schools and other educational institutions can participate in the planning process through attendance and participation at the Advisory Committee meetings and submittal of additional comment as appropriate or desired through that process. In addition, particularly in the area of education and outreach, stakeholders have expressed an interest in evaluating involvement of schools and students as both an audience for, and provider of, education and outreach services, and this will be considered in the SWRMP.

17. How will the plan address our need for Move-Out support?

Response: Move-Out support is an area of interest that has been identified by various stakeholders and will be considered through review of best practices implemented in other communities and assessment of costs to raise the level of service to address needs during discrete periods such as move-in, move-out, game days, and special events.

18. Has Council set any boundaries for the project?

Response: In April 2018, City Council passed a resolution limiting the privatization or outsourcing of certain solid waste resource management functions. Through ongoing planning by City staff for re-procurement of existing service contracts and alignment of solid waste resource management services, the limitations imposed through this resolution are being further discussed. No other boundaries have been set for the project to the knowledge of City staff and consultant teams.

19. The plan needs to consider commercial and construction diversion opportunities.

Response: This will be included in the SWRMP.

SOLID WASTE RESOURCES MANAGEMENT PLAN

ADVISORY COMMITTEE MEETING #1

November 14, 2018

ADVISORY COMMITTEE PURPOSE

The City desires a robust community engagement process as part of the development of the SWRMP.

It is vital to obtain stakeholder input in identifying goals for the solid waste programs, developing the plan, and to the extent possible, building community consensus on recommendations contained in the plan.

Community engagement during the plan development will contribute to delivering an implementable SWRMP.

OPPORTUNITIES FOR ADVISORY COMMITTEE INPUT

Four Advisory Committee meetings

- Meeting #1 - Wednesday, November 14, 2018
- Meeting #2 - Tuesday, January 15, 2019 (1 p.m. to 3 p.m.)
- Meeting #3 - Tuesday, March 12, 2019 (1 p.m. to 3 p.m.)
- Meeting #4 - Tuesday, May 14, 2019 (1 p.m. to 3 p.m.)

Comment on draft deliverables

- Accepted between/during meetings

Individual debriefings

- As appropriate

NORMS FOR COMMITTEE CONDUCT

- Start on time … end on time.
- Meeting summaries provided to participants no more than 2 weeks after meeting.
- Project team to submit deliverables in timely manner, as promised.
- Treat all participants with mutual respect – no finger pointing!
- Try to differentiate between I know (facts) and I think (opinions).
- Committee is not decision-making body.

PROJECT DESCRIPTION

Roadmap for Ann Arbor's resource management for the next 5 years and beyond

- Comprehensive look at current and future programs
- Cost of service analysis
- Peer community benchmarking
- Robust public engagement
- Draft and final options and recommendations

TOPICS FOR THE SWRMP TO ADDRESS

Opportunities to increase diversion

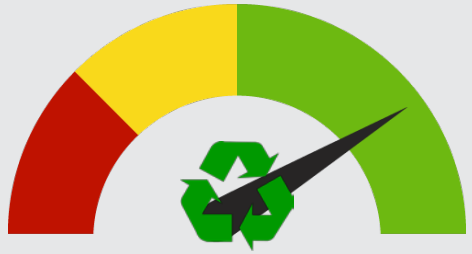
- Organics expansion
- Multi-family recycling
- Specialty programs for textiles, student move-in/move-out, bulky items, etc.
- Education and outreach

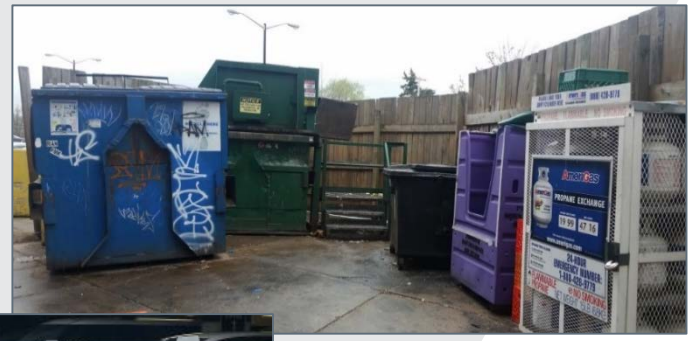
Functional and operational elements

- Downtown / alley services
- Fats/oils/grease (FOG) management
- Customer service and enforcement

Service delivery

- Service providers and contract admin
- Cost of service and funding sources
- Regional options





CONCURRENT & CORRELATED ACTIVITIES

Ongoing activities being monitored and incorporated in SWRMP development:

- Service changes being made to address issues (e.g., Three Chairs alley, Sava's / Michigan Theater)
- Downtown alley service options being studied by others
- Regionalization being considered in collaboration with Washtenaw County and interested communities
- MRF options continuing to be explored
- Procurement of expiring contracts (recycling collection, recycling processing, commercial waste franchise) beginning

KEY ACCOMPLISHMENTS TO DATE

✓ **Stakeholder engagement and input:**

- Completed 22 interviews with more than 30 individual stakeholders
- Conducted work session with Environmental Commission
- Conducted Downtown Business Focus Group

✓ **Reviewing current City resource management practices and quantities**

✓ **Commenced research:**

- Cost of solid waste services in Ann Arbor
- Benchmarking against peer communities
- Program and service options

SUMMARY ENGAGEMENT FINDINGS TO DATE

1. **Ann Arbor set the pace in environmental leadership** with recycling, composting, and its Zero Waste vision – build on those successes!
2. **Sustain the vision by expanding services** – including year-round and business composting, weekend collection service downtown, expanded program to support student move-outs, etc.
3. **Modernize and staff operations to meet needs** – including route optimization software, new/different trucks, consolidated and enhanced customer service, centralization of responsibility/accountability, enforcement of requirements, etc.
4. **Educate, educate, educate** – the City used to provide it, bring it back in force.
5. **Correct / perfect current services before adding more** – current, core services (trash and recycling) must be improved downtown before adding another service option (organics).

STAKEHOLDER PERCEPTIONS / FEEDBACK

Strengths

- Residential Composting
- Zero Waste Vision
- Residential Customer Service
- Recycling
- New Contracts
- Consistency

Weaknesses

- Downtown Customer Service
- Apartment Services
- Downtown Services
- Older Contracts
- Leadership

Opportunities

- Zero Waste Activity
- Downtown Service Expansion
- Move-Out Services
- Communication & Outreach
- Collaboration
- Composting
- Regionalization

Needs

- Infrastructure / Equipment
- Specialty Programs
- Upgrade Customer Service
- Strategic Focus / Expertise
- Education
- Implementation
- Funding

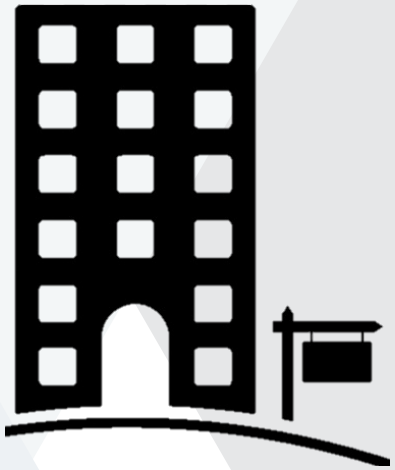
RESOURCE MANAGEMENT PRACTICES

SINGLE-FAMILY RESIDENTIAL

Trash: City

Recycling: RAA

Compost: City



MULTI-FAMILY RESIDENTIAL

Trash: City or WM

Recycling: RAA or City

Compost: (Not offered)

BUSINESSES & INSTITUTIONS

Trash: City or WM

Recycling: RAA or City

Compost: (Not offered)

POST-COLLECTION

Trash
Advanced Disposal

Recycling
RAA / Rumpke

Compost
WeCare Denali

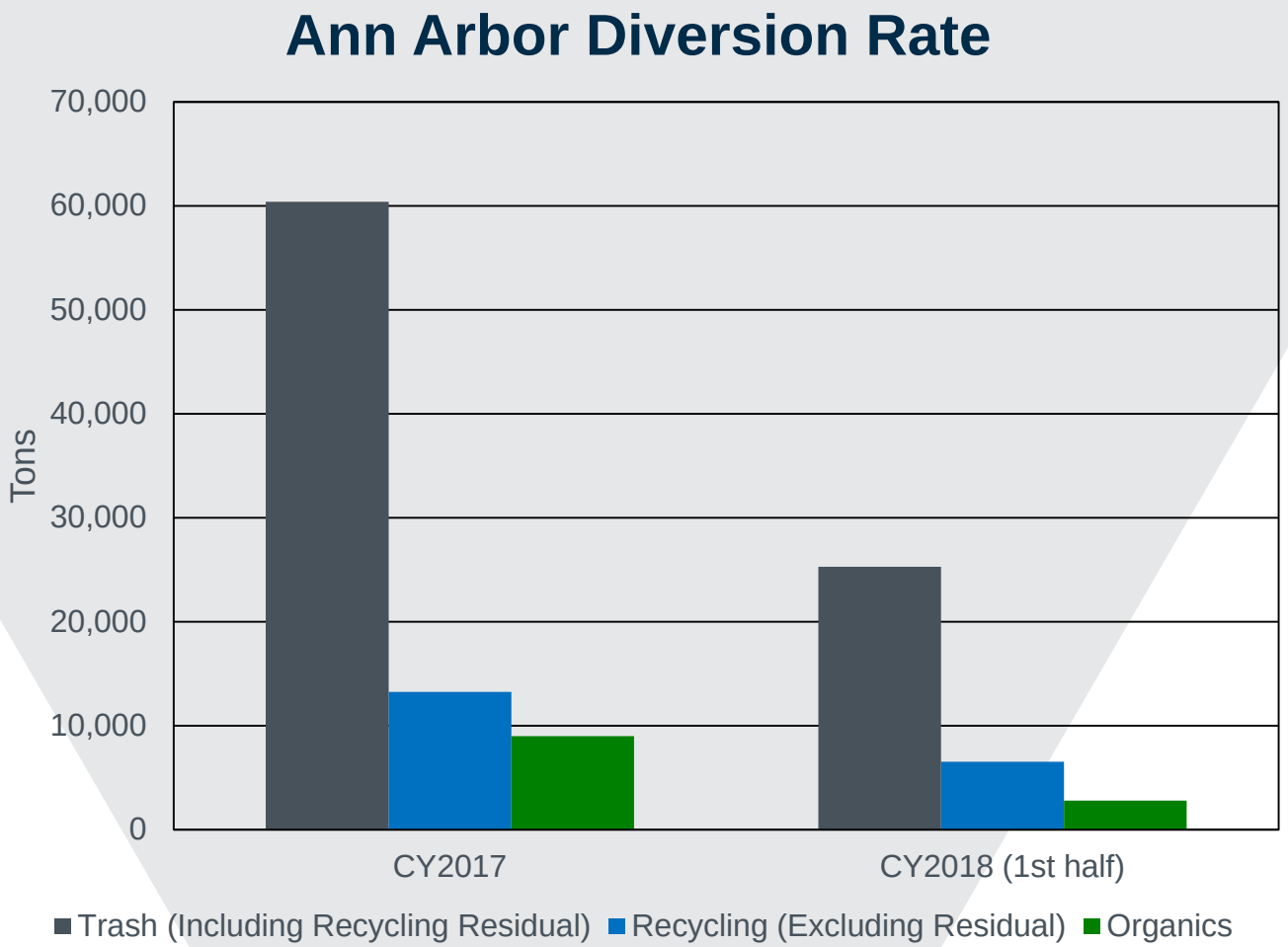
CURRENT DIVERSION RATE

Diversion =

$$\frac{\text{Tons recycled and composted}}{\text{Total tons generated}}$$

Calculation method changed in 2017 from prior years

- CY2017 = 29%
- CY2018 (through June) = 28%



PEER COMMUNITY BENCHMARKING

High diversion communities

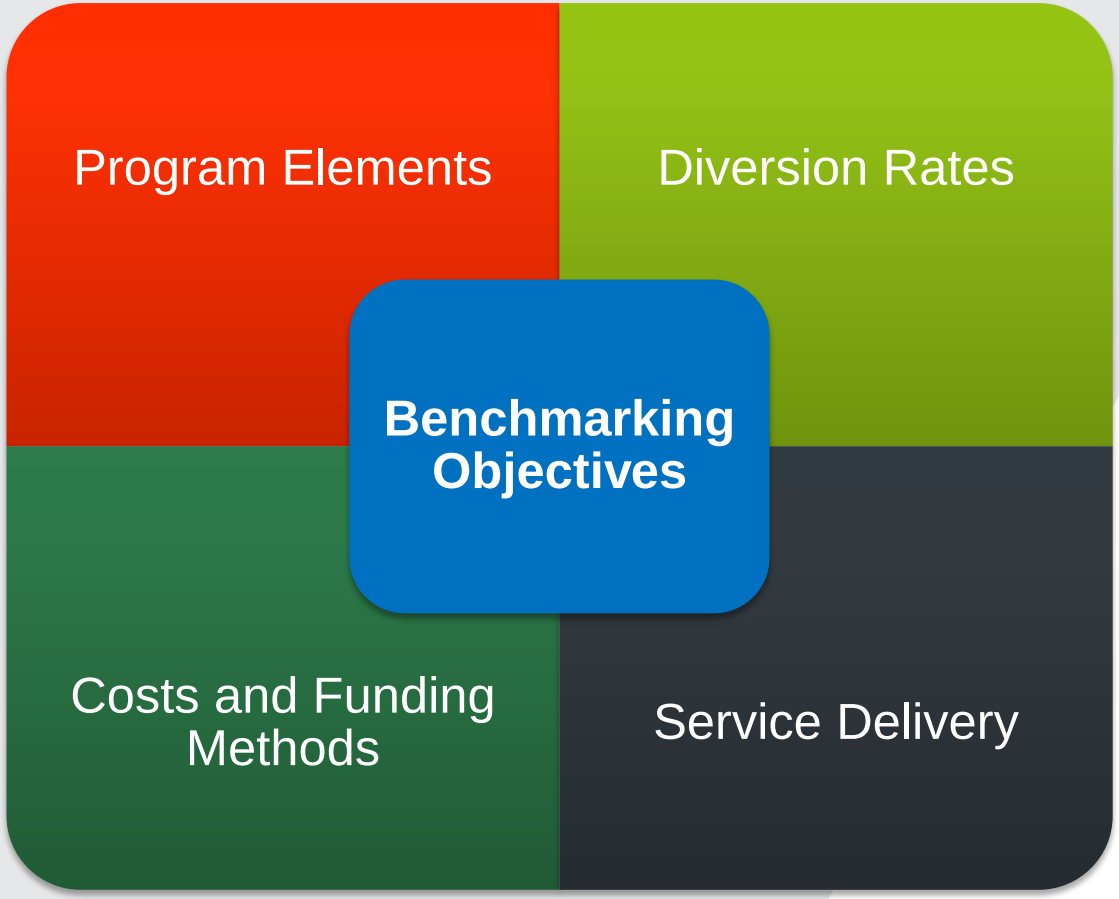
- Seattle, WA; San Francisco, CA; Portland, OR; Austin, TX

Midwestern, university communities

- Lincoln, NE; Madison, WI; Lansing/East Lansing, MI; Columbus, OH

Other Michigan communities

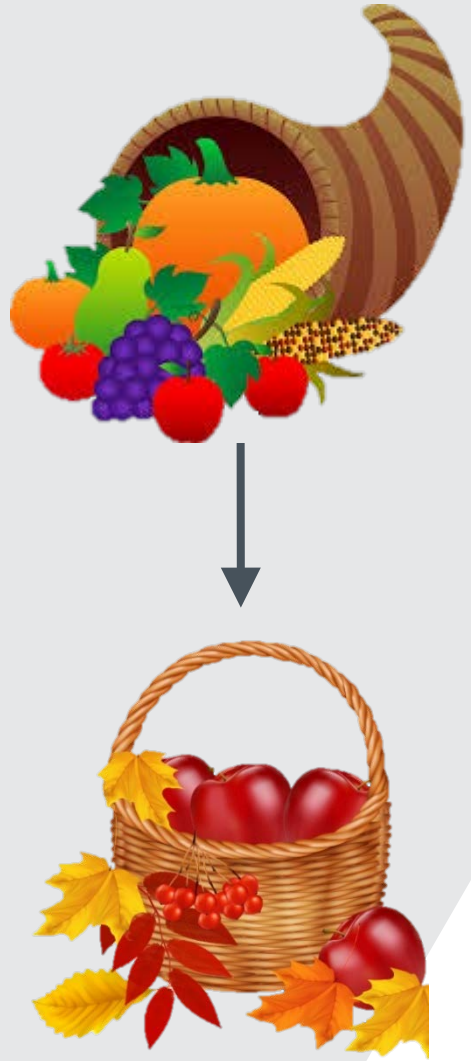
- Chelsea; Dearborn; Grand Rapids; Kalamazoo; Marquette; Saginaw



CHALLENGES IN BENCHMARKING

Lack of standardization of:

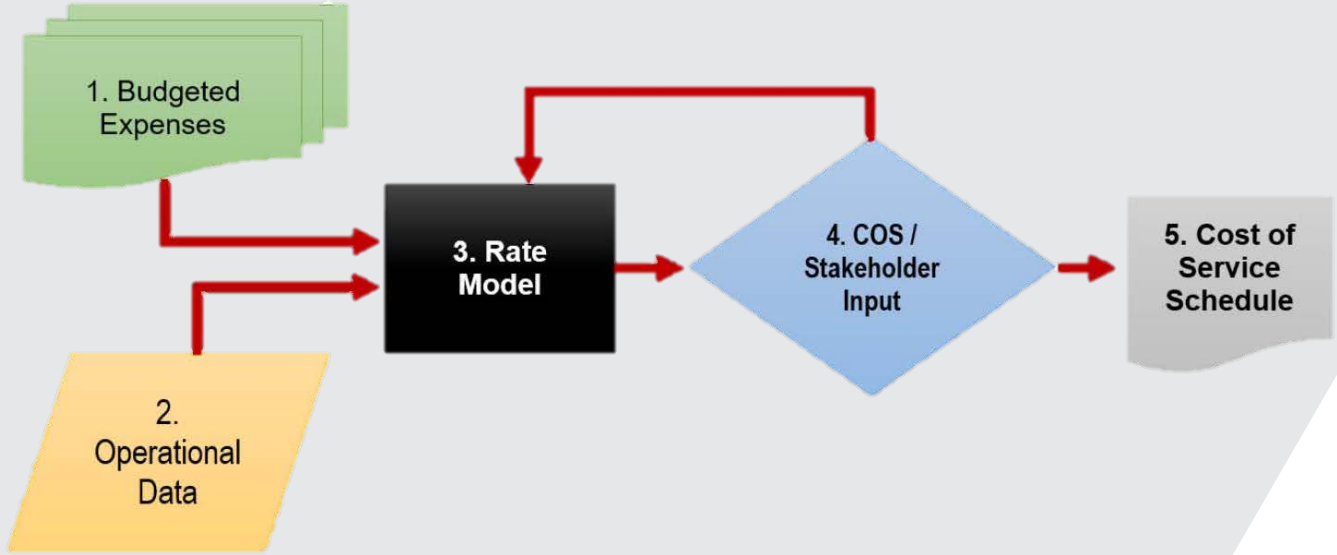
- Definitions
- Levels of data reported
- Sectors included
- Inputs - material streams, activities
- Cost components and categorization
- Costs vs. fees
- Laws / authority of state and local governments



COST OF SERVICE ANALYSIS & FINANCIAL MODEL

What is it?

- Cost analysis by operating area (e.g., curbside residential trash, recycling collection, etc.)
- Identifies unit costs of services (e.g., $/hh/mo, $/ton)



Value of the analysis

- Benchmark Ann Arbor's current costs against other communities
- Provides model to serve as a tool to quantify costs and identify funding needs for SWRMP options

CRITICAL QUESTIONS IN OUR SCOPE TO ADDRESS: PROGRAMS & SERVICES

1. How can we **move the needle on diversion** and make progress towards Zero Waste?
2. How can **organics collection** be expanded - year-round for residents, offer collection for businesses?
3. What can we do to meet **increased collection needs** during select periods (e.g., student move-in / move-out, game days)?
4. **What are other communities doing** to achieve higher diversion rates, and how can we bring those successes to Ann Arbor?
5. What can be done to improve **downtown / alley operations and conditions**?
6. How can **FOG management** be improved?
7. What does an **education and outreach** program need to include?

CRITICAL QUESTIONS IN OUR SCOPE TO ADDRESS: OPERATIONS & FUNCTIONS

1. What do current programs **cost**, and are current **funding levels/methods** sustainable?
2. How much are generators **willing to pay** for enhanced services and increased diversion?
3. What **funding options** are available, and what will the **community support**?
4. What services should the **City provide**, and what services should be **provided by contractors**?
5. **What City staff and equipment / infrastructure is needed** to focus on resource management services - planning, administration, collection operations, customer service, enforcement, outreach?
6. What **regional collaboration options** are available to support SWRMP implementation?

WHAT'S NEXT? 90 DAY LOOK-AHEAD…

- Finalize and distribute cost of service analysis
- Finalize and distribute benchmark analysis
- Draft questionnaire for scientific, random resident survey
- Begin costing out program and service options
- Begin procurement for contracts expiring June 2019
  - Maintain current services
  - Provide flexibility for enhancements that emerge through the SWRMP and other ongoing efforts

CHOICE STAKEHOLDER FEEDBACK … WHAT DO YOU THINK?

Exercise Instructions: Pick the comment you want to discuss. A facilitator will support each group, take notes, and summarize discussion highlights at the close of the exercise.

We have heard…

1. There are too many solid waste contracts. They should be consolidated to a single contract.
2. Our alleys are too crowded and we have enough challenges with the current services. Composting would be nice, but it's not a top priority right now for the downtown.
3. Recycling is part of our City's DNA and we are proud of our history of being recycling leaders. Cost should not be the main driver of our recycling programs.
4. It's time to make our downtown businesses accountable and enforce solid waste ordinances.
5. Improving customer service should be Job 1.

KEEP UPDATED ON THE PROGRESS OF THE SWRMP

Website:

www.a2gov.org/SWRMP

Email:

SWRMP@a2gov.org

Individual Contacts:

Cresson Slotten
Project Manager
City of Ann Arbor
(734) 794-6430 x 43701
cslotten@a2gov.org

Christina Seibert
Project Manager
APTIM
(630) 762-3306
christina.seibert@aptim.com

Charlie Fleetham
Lead Facilitator
Project Innovations
(248) 476-7577
charlie@projectinnovations.com

City of Ann Arbor
Solid Waste Resource Management Plan
Advisory Committee Meeting #2
January 15, 2019 Meeting Summary

Participant List – see page 2.

1. **Welcome -** Cresson Slotten, City of Ann Arbor Project Manager for the Solid Waste Resource Management Plan (SWRMP) Project welcomed the participants as follows:

   This is a very important project for the City and the Ann Arbor community for the direction of our resource management programs over the next several years. Looking at what programs and services to provide, looking at options on how to deliver them, and understanding what resources are necessary to implement them. You all will play an important role in it being a successful effort. After the November meeting and prior to this meeting, we have received many comments/suggestions from Committee members. This input is much appreciated and as you will hear, has already made a difference in our approach.

2. **Review 11/14/18 Committee Summary and Pre-Meeting Commentary -** Charlie Fleetham, the Public Engagement Facilitator for the project, summarized the previous meeting and the comments that had been received post meeting including a request to delay the planned procurement of Solid Waste Program contracts. Cresson reviewed the City's response to this request which was a recommendation to the City Council to delay the contract action in order to synchronize the procurement with the completion of the SWRMP. (The memo from City Administrator Lazarus, dated 12/24/18 is included in the transmittal email of this summary.)

3. **Critical Project Questions re: Operations and Functions -** Christina Seibert, Project Manager, APTIM, delivered a PowerPoint presentation (included in the transmittal email of this summary) regarding the draft Solid Waste Cost of Service report that was distributed prior to the meeting. She thanked the committee members for the many questions and comments about the report received prior to the meeting. During her presentation, she responded to these questions as well as the critical questions that had emerged during the November meeting:
   - What do current programs cost, and are current funding levels/methods sustainable?
   - What regional collaborations options are currently available or may be available in the near future to support Ann Arbor's SWRMP?
   - How does Ann Arbor compare to other communities - diversion rate, programs, service delivery, cost of service?

   After the presentation, Charlie asked the committee members to individually note: (1) key takeaways from the presentation; (2) questions they have; and, (3) requests for additional information. The project team compiled the committee feedback and responded to the questions. This documentation, which includes responses to the pre-meeting questions, begins on page 3.

4. **Resident Survey Topics and Value -** Christina reviewed the upcoming survey and its purpose, and Charlie reviewed how surveys had provided valuable information in other Ann Arbor projects. A couple of Committee members expressed concerns about the value of the survey, and another expressed strong support for undertaking the survey. Cresson indicated that the project team had discussed these concerns (as they had been raised previously by the Environmental Commission) and had decided to go forward with the survey because it will provide critical information from the residents on cost sensitivity, and supports priorities of the City Council for increased and robust community engagement that is equitable and inclusive in its outreach to the community.

5. **Close and Next Meeting -** Cresson thanked the committee members for their participation. The next meeting will be on Tuesday, March 12 from 1:00 pm to 3:00 pm at the Ann Arbor DDA offices.

January 15, 2019 AA Solid Waste Resource Mgmt Plan Advisory Committee Participant List			
Last Name	**First Name**	**Organization**	**Email Address**
Andrade	Sandra	Main Street Association	sandra@mainstreetannarbor.org
Artley	Tracy	University of Mich	artelyt@umich.edu
Brown	Steve	Commissioner	brownsc6887@att,net
Bukowski	Todd	Resident	todd@ptisglobal.com
Butynski	Don	WeCare	dbutynski@weorganics.com
Connor	Al	ICPJ	alconnor1019@provide.net
Curtis	Jim	Curtis Commercial	jim@curtiscommercialllc.com
Diephuis	David	Resident	
Eaton	Jack	City Council	jeaton@a2gov.org
Eccleston	Tyke	Hughes Properties	teccleston@property-accounting.net
Eggermont	Theo	Washtenaw County	eggermontt@washtenaw.org
Fleetham	Charlie	Project Innovations	charlie@projectinnovations.com
Fournier	John	City of Ann Arbor	jfournier@a2gov.org
Garfield	Mike	Ecology Center	michaelg@ecocenter.org
Gomez	Jeff	City of Ann Arbor	jgomez@a2gov.org
Greve	Pat	Waste Management	pgreve@wm.com
Kohn	Joe	Advanced Disposal	christopher.preston@advanceddisposal.com
Ladd	Maggie	South U. Area Assoc.	southu@gmail.com
Lazarus	Howard	City of Ann Arbor	hlazarus@a2gov.org
Maciejewski	Molly	City of Ann Arbor	mmaciejewski@a2gov.org
McMurtrie	Tom	Resident	tmcmurt1@gmail.com
Mirsky	John	Commissioner	jmirsky@a2gov.org
Nicholson	Mike	DeNali Water	michael.nicholson@denaliwater.com
Ohren	Joe	Elders Climate Action	joeohren@gmail.com
Pawlicki	Chris	Old Town Tavern	cpawlicki@comcast.net
Pollay	Susan	Ann Arbor DDA	spollay@a2dda.org
Praschan	Marti	City of Ann Arbor	mpraschan@a2gov.org
Ramlawi	Ali	City Council	aramlawi@a2gov.org
Seibert	Christina	APTIM	christina.seibert@aptim.com
Seyfarth	Heather	Ann Arbor	hseyfarth@a2gov.org

Singleton	**Grace**	**Zingermans**	**gsingleton@zingermans.com**
Stone	**Nancy**	**Resident**	**nancystone123@yahoo.com**
Slotten	**Cresson**	**City of Ann Arbor**	**cslotten@a2gov.org**
Stephens	**Krystn**	**Resident**	**ksteph414@gmail.com**
Stults	**Melissa**	**City of Ann Arbor**	**mstults@a2gov.org**
Teeter	**John**	**First Martin**	**jteefer@firstmartin.com**
Thomson	**Maura**	**Ann Arbor DDA**	**mthomson@azdda.org**
Weinert	**Bryan**	**Recycle Ann Arbor**	**bryancweinert@recycleannarbor.org**
Wright	**Jan**	**Interfaith Council**	**janwrigh@umich.edu**

I. Cost of Service Presentation Takeaways

Background: At the conclusion of the cost of service presentation, the participants were asked to identify key takeaways from the presentation, as noted below:

- We provide a wide level of service in AA.
- New information on cost comparisons, recovery, benchmarks, and alleys.
- Cost summary was very beneficial to understand all the ingredients needed for solutions.
- Cost and resource projections are very complex, and I'm glad there is variety of expertise in the room to raise questions and explain different aspects of this.
- Current systems are complicated and convoluted. Too many contracts and too many programs.
- Internal consistency of numbers presented hard to reconcile, especially to meaningfully inform cost/benefit analysis and decision making.
- Commercial sector is supporting residential sector for waste management services.
- Revenues are not likely to cover costs
- Recycling is more expensive than waste or composting
- Recycling is very costly.
- The cost of providing these services is costly.
- Residential recycling cost is too much – cost/benefit ratio is out of line.
- Cost is about $29/month/household and rising and the City is concerned about the long-term viability of the program.
- Recycling costs are very volatile and must be factored into future plans.
- Residential and commercial costs will go up to maintain level of service.
- Recycling is expensive in AA.
- Recycling and composting will get more expensive in coming years.
- We need more work on future fund projections.
- AA waste and recycling services are competitive with benchmark communities.
- Other cities use different tools to augment their costs.

- Relative to others, AA does quite well for residential – diverts 41% for $30/month
- AA is cost competitive in waste and recycling.
- We don't have a good handle on dealing with recycling for multi-family and commercial.
- Trash haulers on average make $60K a year.
- Ann Arbor comes from a position of strength in regards to diversion rate – in residential sector is 55% of recycling and composting
- The City is delaying the RFP process.
- Other towns have more alley pickups. We need more.
- The new regional waste authority is not looking to build a MRF.

II. Requests for Meeting Topics/Suggested Program Tasks

Background: At the conclusion of the presentation, the participants were asked to identify topics for future meetings and/or tasks, as noted below:

II.1 Recommended Meeting Topics:

- Cost analysis model with all services contracted out/with commercial and residential carrying the same load.
- Benchmarking data seemed squishy … give us more hard data/analysis.
- Need more alley benchmarking data for cities of similar size/business concentration and pickup schedules.
- More detailed breakdown of Downtown collection services/costs revenues, including:
    - DDA role in funding downtown collections – routine and events
    - Service schedule for refuse carts
    - Service schedule for recycling carts
    - Service schedule for street litter
    - Weekend service – for what and is it regular/event only/on demand?
- Deeper dive into the MRF – background/history of the business/current status/cost to operate/depreciation schedule/what will it take to restart it/would restarting it reduce recycling costs/a few scenarios on future of the recycling business at large.
- PAYT - best practices, lessons learned/objectives/will it increase user costs/impact on contamination rates/other issues
- Regional Authority – timetable, level of AA effort (are we doing work other communities should be doing?), regional funding options/would it help restore the MRF?

II.2 Suggested Program Tasks:

- Need to consider more frequent collection service model for Downtown – such as night collection at the curb. Current density and volume are more than our system can handle.
- It would be impossible for restaurants, bars and coffee shops to store trash/recyclables IN stores. Option to consider: Large dumpsters for waste and recycling must be required for all bars,

restaurants, and coffee shops in Downtown AA alleys. They must be picked up 6 days per week – this is required.

- Develop a comprehensive alley management program.
- Do a thorough assessment of PAYT for this plan.
- Review survey with Environmental Commission before executing it.
- If you are going to do the survey, get information from multi-family, business and apartment complex managers.
- No more funded official surveys. Dedicate the dollars to the financial modeling.
- More time for discussion on our meetings.

III. Responses to Pre-Meeting Questions re: Prep Material (excluding formatting-type questions):

1. What efforts are being made to re-start the City MRF. The existing process of double handling the City's recycling stream and shipping it to Ohio is expensive, wasteful, and has a high carbon footprint. Are there any options to use our facility?

   Response: MRF options are anticipated to be explored as part of ongoing regional authority development conversations. Additionally, the future RFP for recyclable processing services is anticipated to include the opportunity for vendors to propose an option(s) to reuse or invest in the City's MRF.

   The Environmental Commission also posed several questions related to the MRF at its December 6, 2018 meeting which were responded to in a memo from Cresson Slotten on January 22, 2019 (included in the email transmitted this summary). These responses provide additional information related to the MRF and recycling processing more broadly that may be of interest to the Advisory Committee members to review.

2. I would like the plan to lay out a course to convert to a true "pay-as-you-throw" approach. This will involve how the current millage is converted to individual accounts, developing a separate plan for the downtown and other business districts, and what technology is available, can be reasonable anticipated or can be locally-driven to allow more "customized" service schedules. This will allow our Council to make data based policy decisions going forward.

   Response: Pay-as-you-throw (PAYT) is being evaluated as part of the SWRMP process, within the funding methods topic area.

3. Comment re. Pay as you throw history: When Nancy Stone and I started with the City 20+ years ago, PAYT was seriously considered. It was rejected at that time by City Council because it was viewed as regressive; i.e., larger low income families would be charged more. When we implemented the trash cart system, we moved slightly in the direction of PAYT: residents were no longer allowed to put out unlimited trash at the curb, and were charged more if they wanted to upsize from the standard 64 gallon cart or get additional trash carts.

   Response: This is one version of PAYT that many communities have implemented. This will be explored as part of the funding methods topic area.

4. Regarding the Cost of Service Report:

   a. What actions were taken to ensure the analyses and figures are accurate? Were methodologies as well as the individual figures double-checked or at least audited by someone in all cases? If so, who did so?

   Response: The Cost of Service (COS) analysis and report was developed by the APTIM project team, including its subconsultant, Chris Bell, who is a CPA and former Waste Management controller with 30 years of waste industry and financial expertise. The COS was reviewed by City staff to confirm that costs are appropriately assigned to the functional areas and that operating parameters are reflected accurately. City staff reviewers have included Cresson Slotten, Marti Praschan, and Molly Maciejewski. The COS remains a draft at present while final review by the City and modification by APTIM is completed.

   b. There is a large difference in hourly labor costs between Residential Waste Collection and Residential Compost Collection. Are the costs for the former for unionized City employees and the latter for non-union WeCare employees? Can we obtain hourly labor costs for RAA's Commingled Cart Recycling services for an additional benchmark?

   Response: The hourly labor costs for Residential Waste Collection and Residential Compost Collection each reflect costs for employees through the City, not its contractors. The hourly labor costs between the functions are different due to the use of a greater amount of temporary labor for compost collection operations during FY2018. The use of temporary labor results in lower average hourly rates and lower average fringe benefit rates compared to the use of full-time labor (which was utilized for waste collection operations). The compost collection hourly labor costs are anticipated to increase to a rate more comparable to waste collection hourly labor costs in FY2019 as compost collection operations are staffed by more City employees and the use of temporary labor is decreased.

   c. It's my understanding of comments in the COSA that the City provides trucks and related maintenance for both Residential Waste Collection and for RAA's use for Commingled Cart Recycling Collection. If so, why is the Truck Cost per Route Hour in the case of the former $22.95/hour and in the case of the latter $26.78, a delta of +16.7%?

   Response: The Truck Cost per Route Hour shown in Table 7 of the COS report is an errant row and was not a part of the calculation of the City-Owned Truck Operations Cost on a cost / customer / month basis in that table. The City-Owned Truck Operations Cost per customer per month is calculated based on the Annual Cost of $699,841 cited in Table 7, divided by the number of customers, and divided by 12 months.

   There is, however, a difference of approximately 43% between the cost per customer per month for truck operations and maintenance for Residential Waste Collection ($1.42/customer/month based on $0.34 for fuel and $1.08 for repair and maintenance) and for Commingled Cart Recycling Collection ($2.03/customer/month based on the costs of fuel, repair and maintenance, and operations) as a result of more significant, and more costly, repairs required to the recycling collection fleet during FY2018.

d. Separate multi-family rates from the residential (< 3 units) as we have done with water rates to get a consistent cost-of-service analysis with other City utilities.

Response: Utilities such as water and sewer have a meter collecting a number of data values for each individual property, enabling costs to be readily segregated by property type. In contrast, the current structure of collection operations does not provide sufficient data to separate the multi-family costs from residential (2 unit and less) costs. This is because some multi-family properties are provided service as part of residential collection routes, while others are provided service by the City's front-load collection routes, and yet others are provided service by Waste Management under the commercial waste franchise.

Additional data collection by the City's collection operations would be required to provide a basis for segregating multi-family costs. The types of data required would include full inventories of the number, type, and size of containers present at each property by type and unit count on each route; the frequency of collection of each property; and the quantity of material collected from only multi-family properties. While this data can be collected, it is not able to be collected at present. It would require development and implementation of a data collection and monitoring program Citywide performed by City staff or through contracted services hired by the City.

e. Please specify what percentage of City parks trash carts are being serviced with the residential curbside program. Please also specify how many recycling carts are provided in the parks. (page 1)

Response: Of the 282 trash carts/cans in the City parks, 53 (18.8%) of them are serviced with the residential collection routes. The parks recycling collection provided through the RAA collection contract is provided seasonally, approximately June through September. In 2017, 81 recycling carts were provided in the parks. In 2018, 76 recycling carts were provided in the parks.

f. When I retired, food waste compost collection was being offered seasonally to commercial businesses. Is this not the case any more? (page 2)

Response: Seasonal food waste collection is provided to 26 businesses currently in the City as part of residential compost collection routes. This notation will be added to the report. It does not impact the COS calculations.

g. Please specify how many commercial recycling carts RAA is servicing, and what is the current mix. (96 & 300 gallon carts). (page 4, note 2)

Response: Based on invoices submitted to the City, as of the last month of FY2018 (June 2018), RAA was servicing 30,793 carts, broken down to the following property types: Single-family carts 20,573 Multi-family carts 8,069 Commercial carts 2,151

The split in 96-gallon and 300-gallon cart counts is not reported by RAA in their invoicing. Based on data provided to City staff by RAA in November 2018, the commercial carts serviced are primarily 96-gallon carts (1,829 carts). RAA also services 62 300-gallon carts, and the remainder of commercial customers have either 64-gallon carts or 32-gallon carts. As cart numbers are further reviewed and confirmed, adjustment to the customer count utilized in the cost per customer per month calculation in Table 7 of the COS will be revised if necessary.

h. Recycling residential customers: The 26,247 customer number does not include all multifamily units. RAA services all residential units as part of the recycling collection program. (page 12)

Response: Not all multi-family properties receive RAA collection service. RAA provides service to all single-family residential units (up to 2 units) and may provide service to some multi-family properties. The customer number for Commingled Cart Recycling Collection is based on the number of lifts reported by Recycle Ann Arbor in its invoices to the City.

i. The cost of services report shows a $1.36M annual cost from "City MRF Cost," and a note explains that that consists of MRF oversight, repair and maintenance, utility costs, and depreciation. That's a big number. Can you break out the costs? (p. 14)

Response: These costs were broken out in the note on slide 11 of the presentation at the meeting and are as follows: Depreciation for the building and equipment $625,000 Repair and maintenance for the building and equipment $304,000 MRF oversight $130,000 Utilities (primarily electricity for lights and baler) $23,000 Administrative allocation $278,000

j. It would be helpful to see the recycling processing costs going back several years, to see what the impact of closing the MRF has been. (page 15, top of page)

Response: Annual recyclables processing costs for FY2016 through FY2018 were shown graphically on slide 11 of the presentation at the meeting. The costs reflect a number of conditions that have impacted pricing over this period of time, as they include three separate contracts for services with the earliest having an entirely different structure and approach, and therefore are not solely reflective of the impact of closing the MRF.

FY2018 recycling processing costs of $151.14 per ton are inclusive of transportation costs to Cincinnati, which are incurred on 90% of the recyclables tonnage collected (the remaining tonnage is source-separated cardboard which is transported a much shorter distance - approximately 25 miles - to Royal Oak). Transportation costs are incorporated into the processing fee charged under the contract and have not been separately specified by RAA. As an approximation, transportation cost in the current recycling processing contract may be around $40 per ton based on the following parameters:

- Load weight of 20.5 tons (minimum load weight per contract requirements; over the term of the contract, loads have averaged 19.64 tons)
- Round-trip travel time of 8 hours
- Long-haul cost of $100 per hour

k. The City's rear load routes outside of downtown should be merged into the residential cart collection program. (page 18, bottom of page)

Response: The City's rear load routes are almost exclusively commercial collection routes, with less than 5% of the stops that would be defined as residential. These have been accurately characterized in the COS report and calculations.

l. $2.89M annual revenues from fees for service - It would be helpful to see a breakdown of this revenue, and an idea of well they are covering costs, particularly for commercial waste collection. (page 20)

Response: The revenue from fees for service includes $2.76 million in commercial collection fees paid by commercial properties utilizing dumpster collection through the Waste Management commercial waste franchise and $132,000 in commercial collection fees paid by commercial properties utilizing cart collection through the City.

5. Referring to slide 12 of the presentation, total costs of commercial collection services (including both waste and recycling collection) in FY2018 were approximately $6.3 million. Commercial properties paid approximately $7.3 million to the Solid Waste Fund through the refuse levy and fees for service in FY2018, resulting in a surplus of commercial funding of approximately $1 million in FY2018.

6. Regarding the A2 Tonnage Summary and diversion rate figures: Can this information be provided on A2's Sustainability Framework Dashboard so it becomes available to all city residents?

   Response: The City will work to incorporate this information into the Dashboard.

7. The tonnage report shows a large (~15%) increase in MSW for 2017, but no commensurate increase in recycling or composting, and then it goes back to normal for 2018. Any explanation of that?

   Response: Scale tonnage data was utilized to compile the tonnage report. The increase in 2017 was also noted in the development of the summary by both APTIM and the City, and investigation into the data has not identified an explanation, nor an error in the data.

8. When the City does issue an RFP for SW services, can this information be provided to each vendor?

   Response: This information will be publicly available. It may be included as an attachment to an RFP for solid waste services in the future, or identified as a reference document vendors may obtain to review in developing their proposals.

IV. Responses to Questions Received During and After the Meeting:

1. Will the Advisory Committee be empowered to make collective recommendations?

   Response: The Advisory Committee is an advisory group empowered to review, comment, and advise the SWRMP team in its development of the SWRMP for consideration by the Environmental Commission, which is an advisory body to City Council.

2. Is U of M, EMU part of the proposed regional authority?

   Response: The enabling state law for this authority stipulates that municipalities can be members. Washtenaw County and universities are not allowed to be members of the authority. They may be customers of the Authority, contract with the Authority, and contribute to/benefit from the activities of the Authority, but they are not allowed to be a member and therefore have no voting power.

3. Is U of M included in AA costs or do they pay separately?

   Response: U of M performs its own collection operations at campus facilities, and the costs associated with that collection are not included in Ann Arbor's costs. Similarly, U of M separately pays for its costs for disposal, recycling processing, and composting for material it collects.

4. What are details of commercial waste collection fees – who pays what and how much?

   Response: Commercial waste collection fees vary based on the container type, size, and collection frequency selected by individual properties. Fees are based on the fee schedule established by the City and can be viewed at https://www.a2gov.org/departments/trash-recycling/Pages/BusinessTrash-Services.aspx.

5. What is the long term budgetary and fund projection? When will an actual deficit occur?

   Response: Long-term budgetary and fund projections are continuing to be developed and refined based on the COS analysis, known or anticipated cost adjustments in future years (e.g., for increased labor costs for compost collection), and the specific services and programs to be offered. The projections will be made available when they are completed.

6. Why does our recycling cost so much?

   Response: Recycling costs are representative of a number of components, including costs for collection from generators, transportation to a processor / sorting facility, and processing of the material. Reasons for the higher cost of recycling relative to waste and composting include:

   - Recycling collection is performed by RAA under contract, with RAA's compensation for collection service established by contract pricing terms which include an annual adjustment to the compensation rate based on economic indices. These can compound over time in a long-term contract and result in higher pricing compared to the market in the late years of a contract, as this contract is in. In addition, fleet-related costs paid by the City were higher in FY2018 for recycling fleet than other City fleet, resulting in a higher cost.

   - Transportation costs are related to the distance that materials must be hauled to their processing or disposal destination. The City's waste is hauled approximately 30 miles from its transfer station to the Arbor Hills Landfill for disposal, and composting is delivered directly to the City's composting facility. Recyclables are principally hauled from the City MRF to the Rumpke facility in Cincinnati, a distance of approximately 240 miles. Therefore, transportation costs are greater for recycling relative to waste and composting.

   - Processing costs are a function of costs associated with the labor, equipment, and building in which processing is performed. Recycling processing equipment includes many different components and requires a large capital investment upfront, as well as regular maintenance. Additionally, recycling processing operations are typically much more labor-intensive than waste disposal or composting operations, requiring considerably more personnel to handle the material. Processing costs also are impacted by the value of the material that the processor expects to receive after it has been

sorted. In Ann Arbor, a portion of this material revenue is shared with the City, and the remainder is retained by the processor.

- For the City, a portion of its recycling cost is also contributed by "legacy" costs associated with the City MRF, which include depreciation (the annual cost realized by the City to pay down the original capital expense for construction of the building and purchase and installation of the sorting equipment) and upkeep of the facility, in addition to utilities for the limited operations occurring in the building currently.

7. How do we reduce the cost of recycling?

   Response: Increasing costs for recycling are being experienced by communities across the United States as a result of reduced market values for sorted recyclables, increasing levels of contamination or non-recoverable materials in the recycling stream, and increased quality standards from purchasers of material that are necessitating greater processing effort and cost (through increased labor, equipment upgrades, and/or multiple sorts).

   Reduction in one or more of the cost components discussed in response to question 6 above may reduce the cost of recycling. Factors beyond the City's control such as an increase in the material revenue received for the sorted recyclables may also contribute to a reduction in the cost of recycling.

8. Are other major communities doing dual stream recycling?

   Response: Major communities have implemented single-stream recycling collection across the United States. The conversion to single-stream recycling from dual-stream (separation of fiber and containers) and from multi-stream (separation of fibers and containers by type) recycling has been implemented to increase the convenience of participation for generators (residents / businesses) and to reduce costs and increase efficiency of collection for haulers.

   A small number of communities have transitioned back to dual-stream recycling collection during 2018 and the beginning of 2019, primarily in response to recyclable commodity market conditions and requirements to achieve very low levels of contamination in processed materials. Data is generally unavailable at present to assess the impact of the conversion to dual-stream recycling on costs of service and diversion performance.

9. Are costs for hauling sorted recyclables paid for/provided by the MRF operator? I think buyers of recycled content materials pay for hauling. That would lower/change 2018 AA MRF costs.

   Response: The cost to haul sorted recyclables from a MRF to an end market or secondary processor is typically included in the material value paid (or charged) to the MRF for the material. Therefore, the post-sorting transportation cost is typically not reflected as a separate cost. Whether material is processed at the Ann Arbor MRF or at the Rumpke MRF in Cincinnati, transportation costs for sorted recyclable materials hauled away from the MRF would be incurred and captured through the material pricing.

10. Regarding diversion, what is being done on the C & D side – the diversion rate is 11% … what can we do to improve it?

Response: Construction and demolition (C&D) wastes are not part of the City's collection program through either the services provided by City crews or under the commercial waste franchise. C&D materials generated in Ann Arbor have not been quantified or included in the tonnage or diversion rate calculations presented. This is an area that can be explored further for the SWRMP. Regarding the current commercial diversion rate of 11%, the SWRMP will evaluate alternatives to increase this rate to a higher level. Options may include methods to increase participation in the recycling program, expanded compost collection service to include the commercial sector, and greater outreach and awareness to the business community to encourage waste reduction and diversion.

11. What is the relationship between Recycle Ann Arbor and The Ecology Center?

Response: According to The Ecology Center's website, "Recycle Ann Arbor (RAA) is our recycling subsidiary non-profit organization that was founded in 1977 as a program of the Ecology Center. In 1981, RAA merged with the Ecology Center and received the first contract from the City of Ann Arbor to collect recyclables from the curb." (https://www.ecocenter.org/recycle-ann-arbor-about)

12. Would it be possible to get a breakdown of annual costs for just the downtown area – breaking it out of the general "Commercial Collection Cost of Service" numbers?

Response: Data that is currently collected and tracked on downtown collections compared to nondowntown collections is insufficient to segregate the City's costs for downtown waste and recycling collection. This information, however, will be valuable as downtown service options are explored, and the project team will work to identify the data required to ultimately develop this cost breakdown.

SOLID WASTE RESOURCES MANAGEMENT PLAN

ADVISORY COMMITTEE MEETING #2

January 15, 2019

OPPORTUNITIES FOR ADVISORY COMMITTEE INPUT

Four Advisory Committee meetings

- Meeting #1 - Wednesday, November 14, 2018
- Meeting #2 - Tuesday, January 15, 2019
- Meeting #3 - Tuesday, March 12, 2019 (1 p.m. to 3 p.m.)
- Meeting #4 - Tuesday, May 14, 2019 (1 p.m. to 3 p.m.)

Comment on draft deliverables

- Accepted between/during meetings

Individual debriefings

- As appropriate

NORMS FOR COMMITTEE CONDUCT

- Start on time … end on time.
- Meeting summaries provided to participants no more than 2 weeks after meeting.
- Project team to submit deliverables in timely manner, as promised.
- Treat all participants with mutual respect – no finger pointing!
- Try to differentiate between I know (facts) and I think (opinions).
- Committee is not decision-making body.

KEY ACCOMPLISHMENTS SINCE MEETING #1

✓ **Public engagement**

- Responded to Advisory Committee questions from first meeting

✓ **Received request to delay contract procurement**

- City staff issued memo notifying City Council that procurement to replace expiring contracts will be delayed until the SWRMP is completed

✓ **Reviewed and compiled current City resource management practices and quantities**

✓ **Completed Solid Waste Cost of Service Analysis for current programs and services**

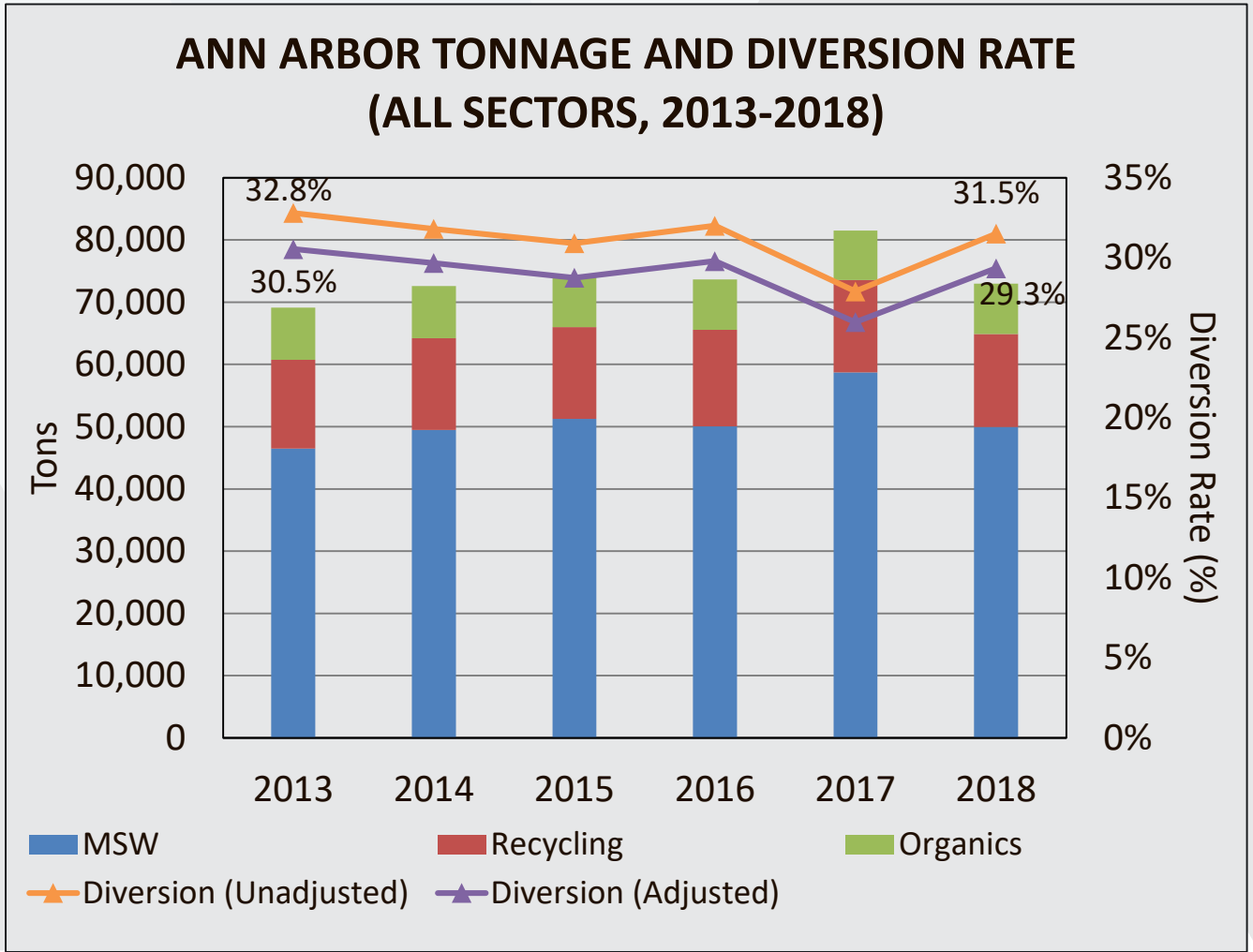
✓ **Ongoing research:**

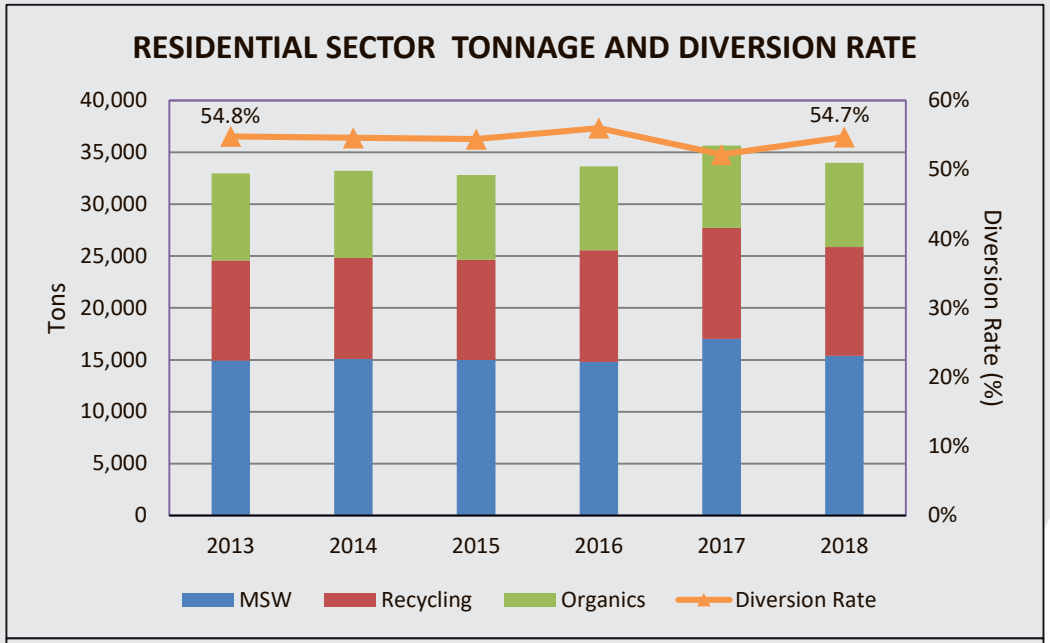
- Benchmarking against peer communities
- Program and service options

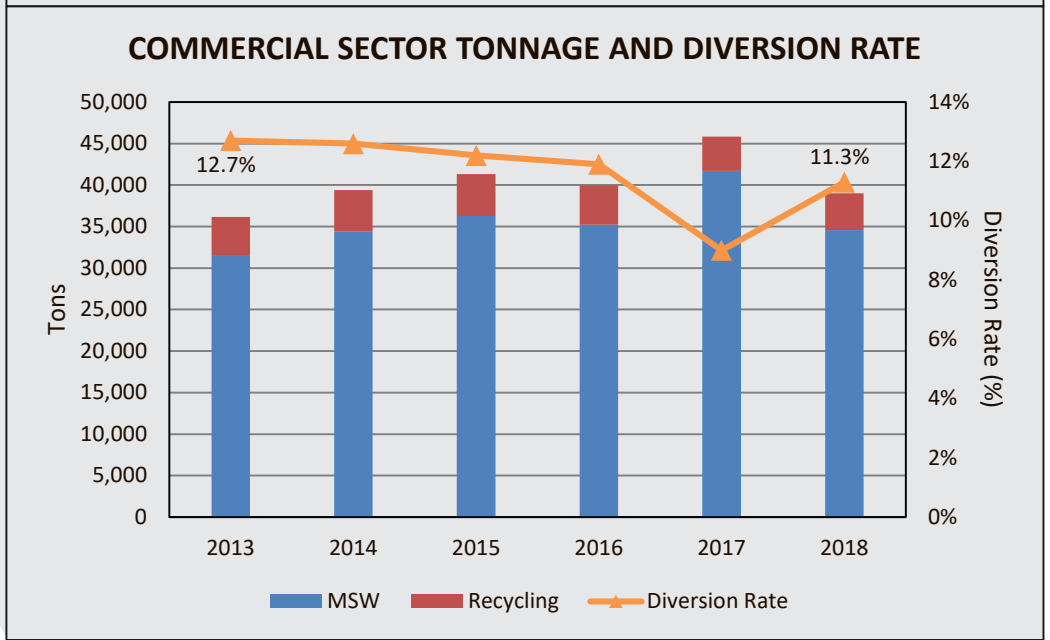
TONNAGE AND DIVERSION RATE TREND (2013-2018)

Diversion = Tons recycled and composted / Total tons generated

City of Ann Arbor
Solid Waste Resources Management Plan







COST OF SERVICE ANALYSIS: FINDINGS

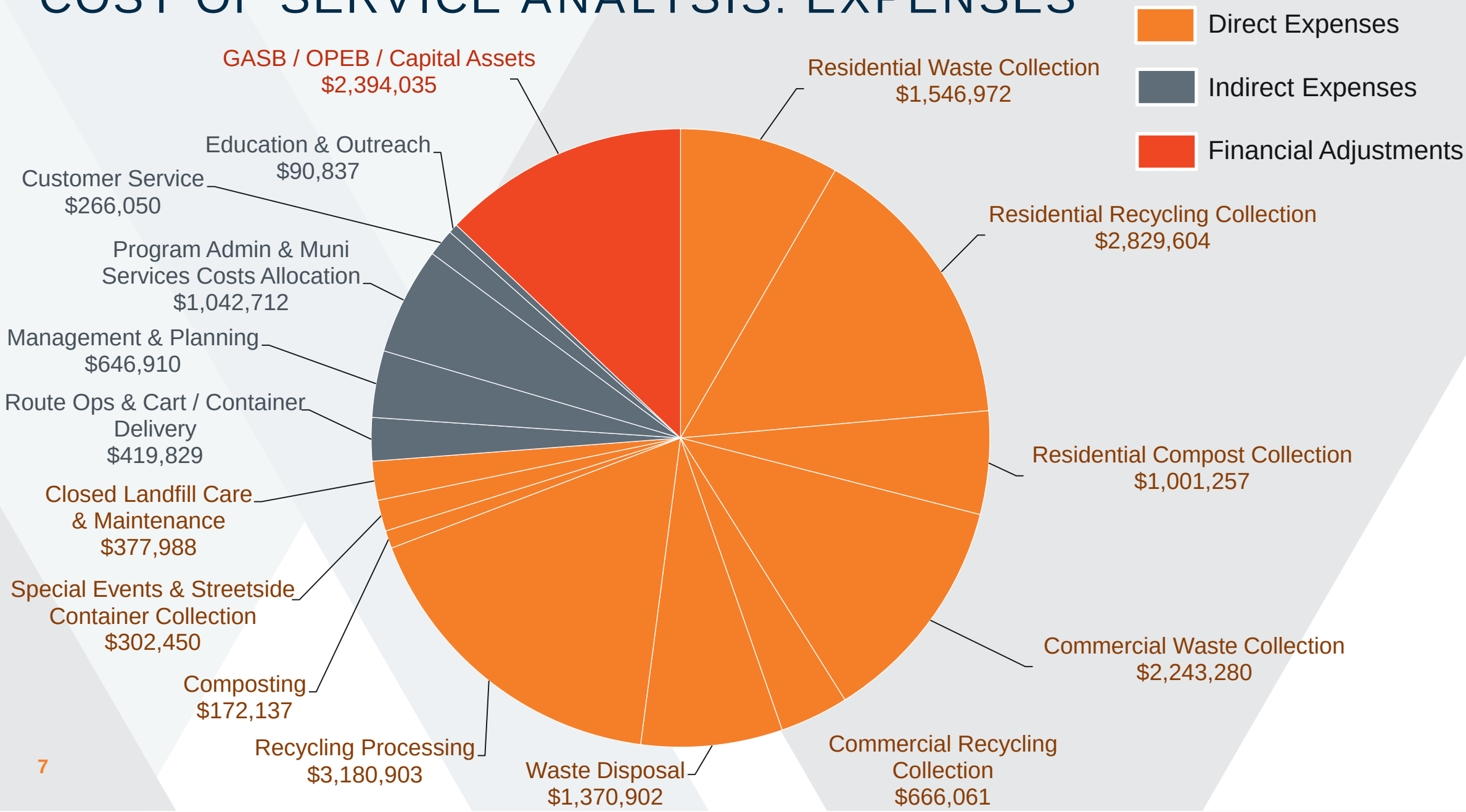
Costs of current programs

- Residential services = $9.5 million/year; $29.09/household/month
- Commercial services = $6.3 million/year
- Other services (former landfill) = $378,000/year

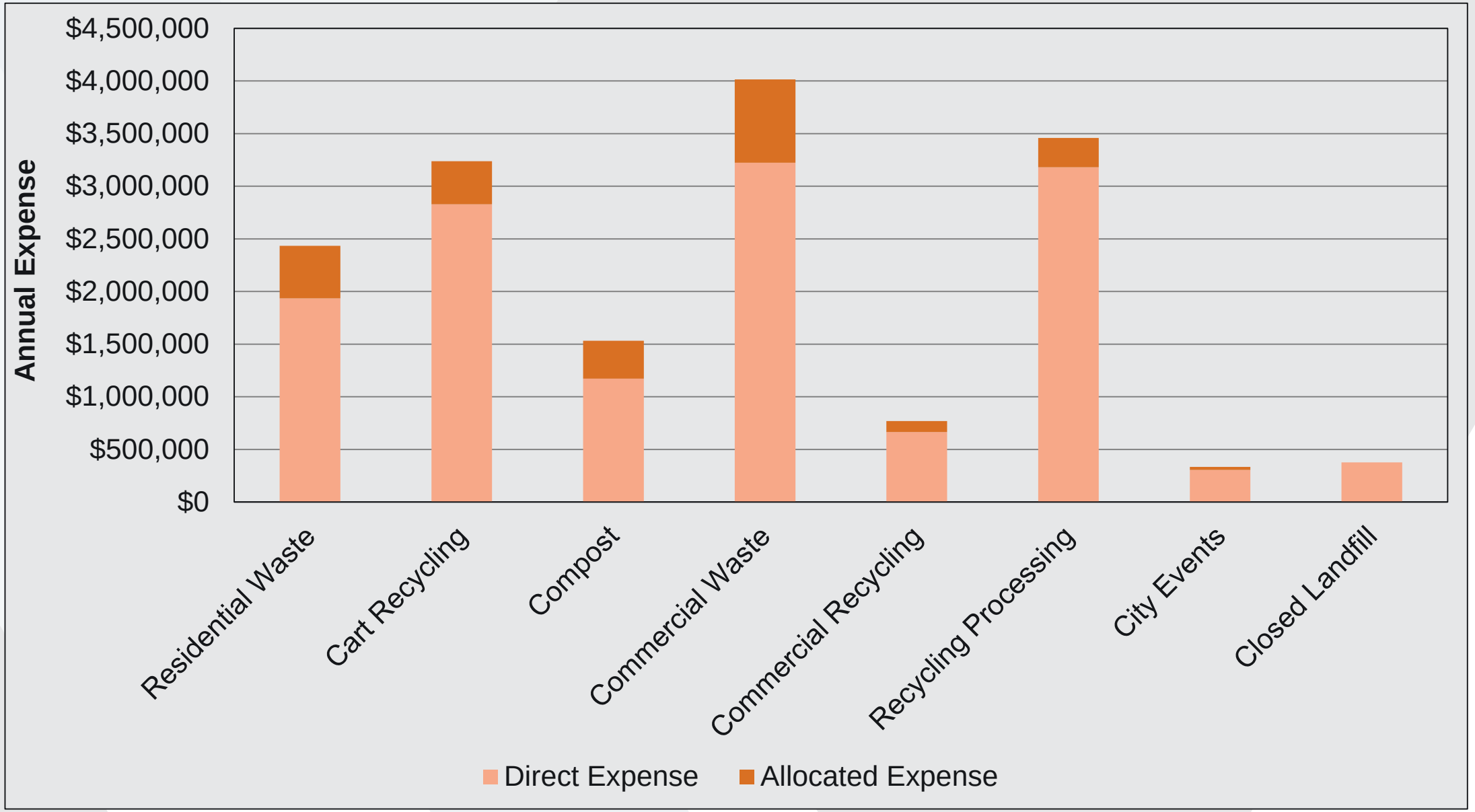
Funding sustainability

- In FY2018, revenues and operations expenses balanced, with a slight revenue surplus
  - BUT operations expenses will increase in future years - more full-time staff for City collections than in FY2018, persistent depressed commodity markets
  - Annual equity adjustments also impact the Fund balance
- Current revenues are not expected to be sufficient to sustain current services over the longer planning period
  - Fund balance will continue to decline unless expenses decrease and/or revenue increases

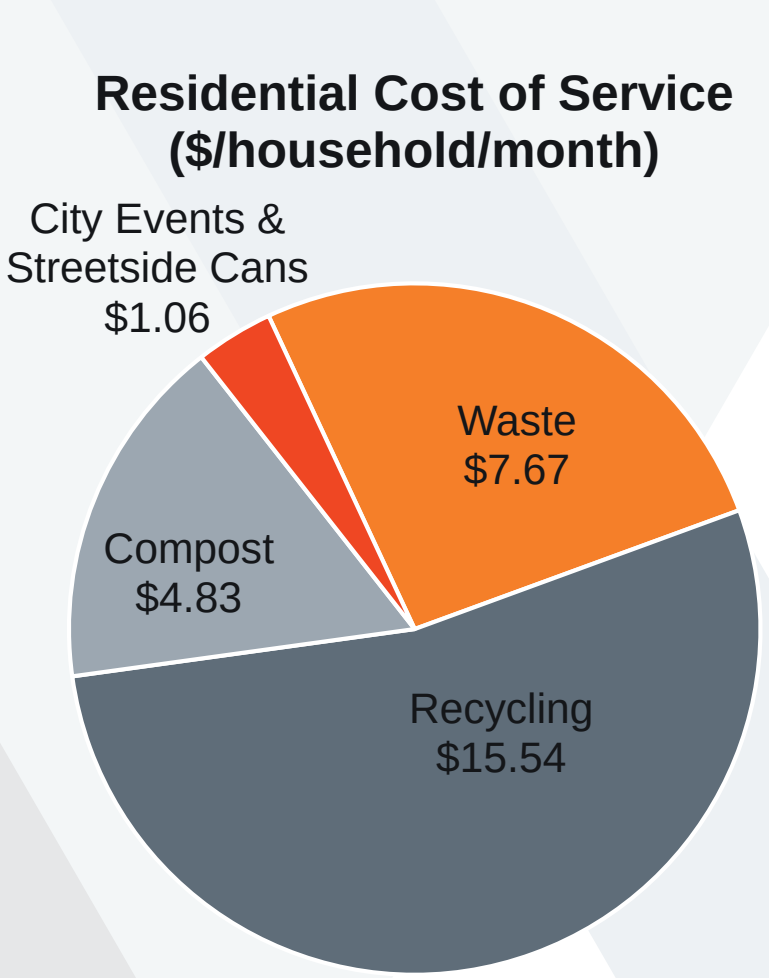
COST OF SERVICE ANALYSIS: EXPENSES



COST OF SERVICE ANALYSIS: FUNCTION EXPENSES

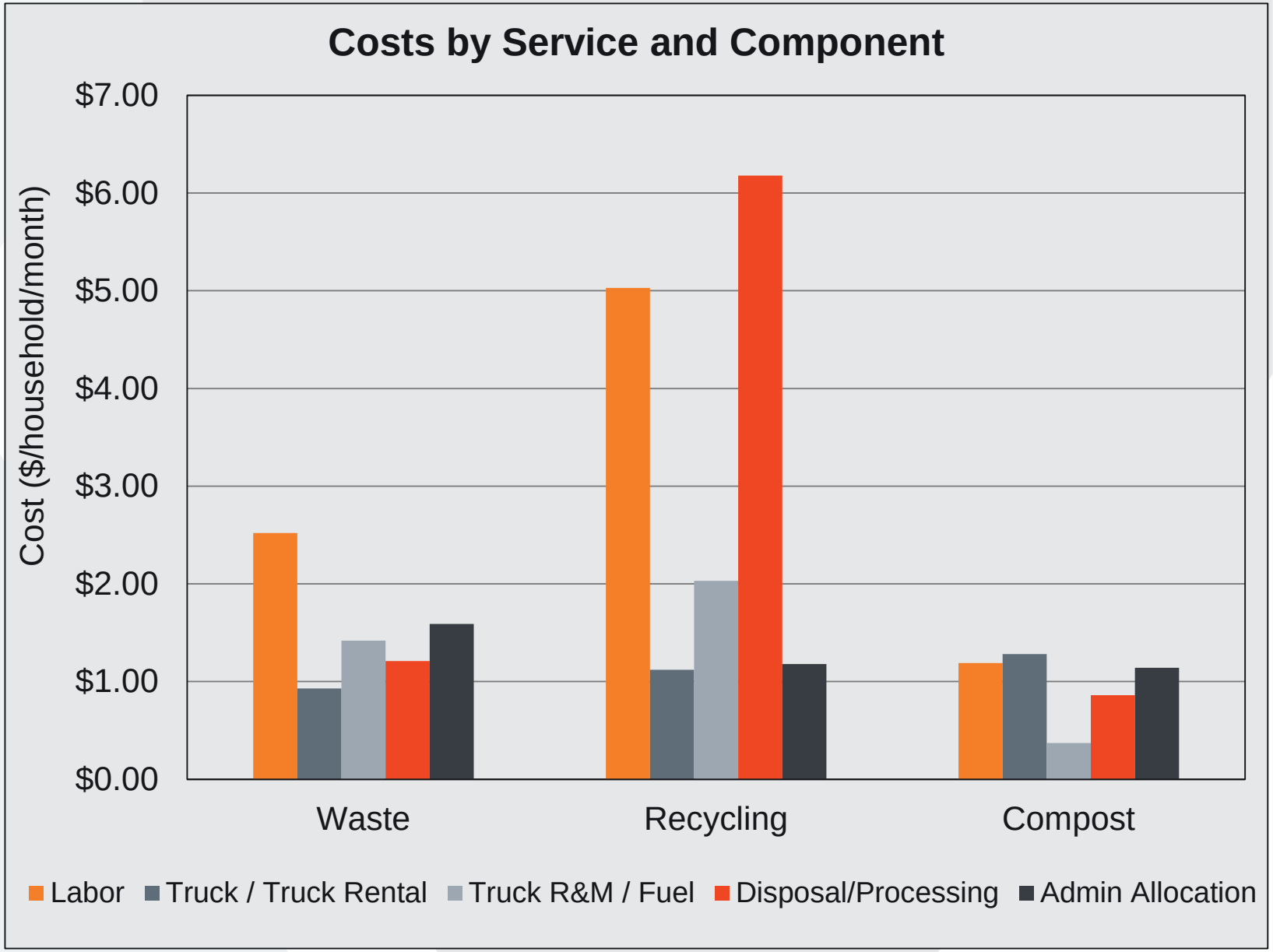


COST OF SERVICE ANALYSIS: RESIDENTIAL SERVICE

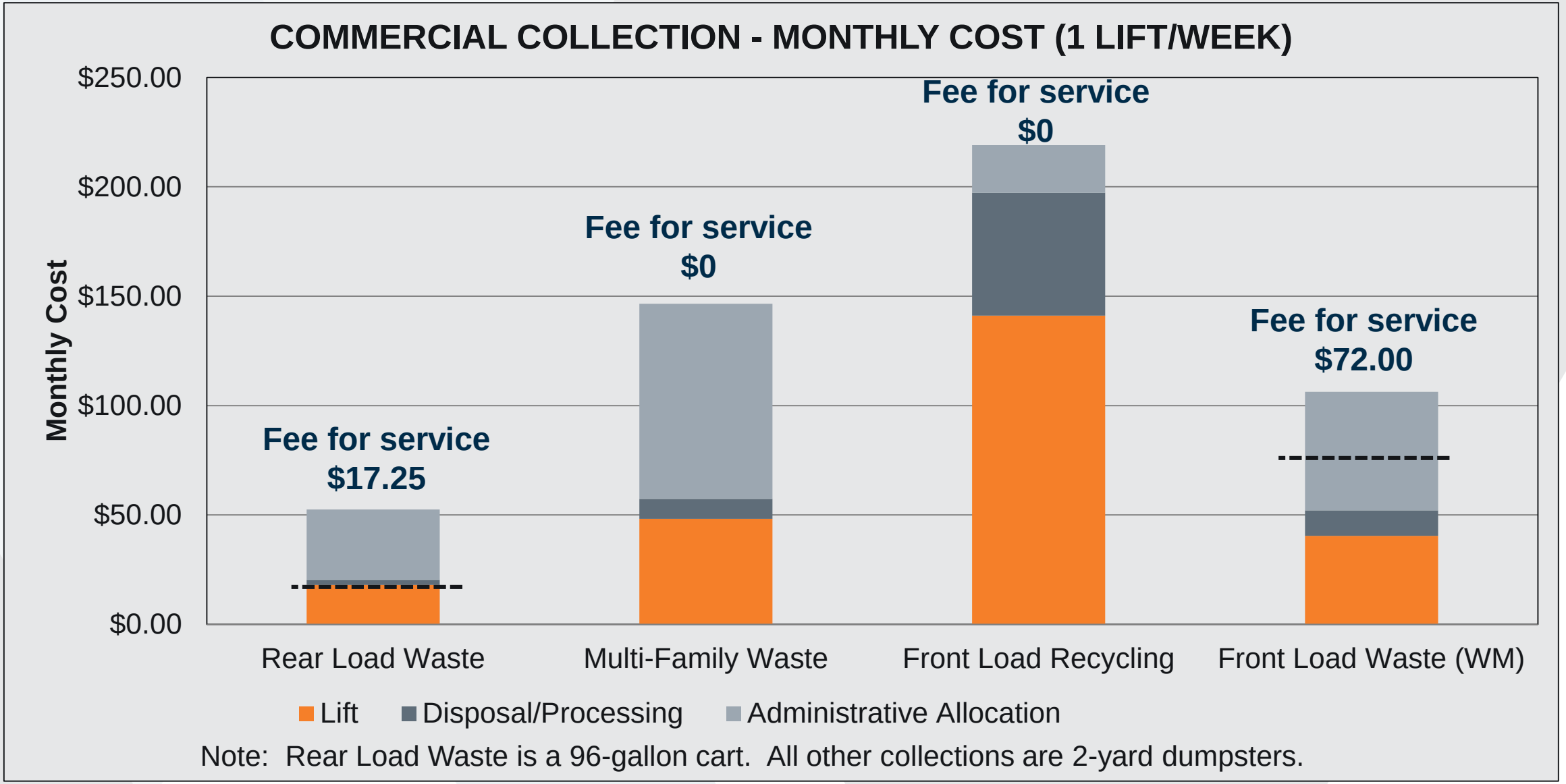


Total = $29.09/household/month

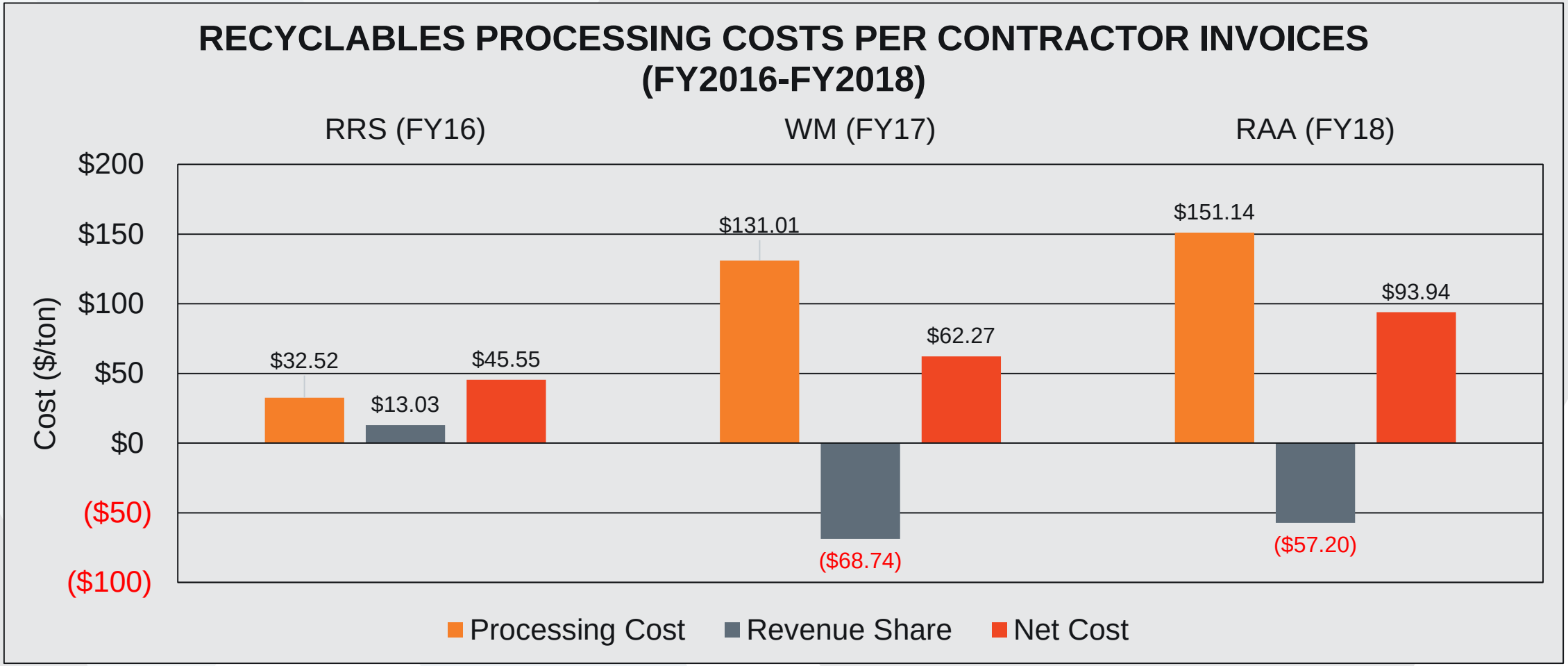
Note: Subtotals above sum to $29.10 due to rounding.



COST OF SERVICE ANALYSIS: COMMERCIAL SERVICE



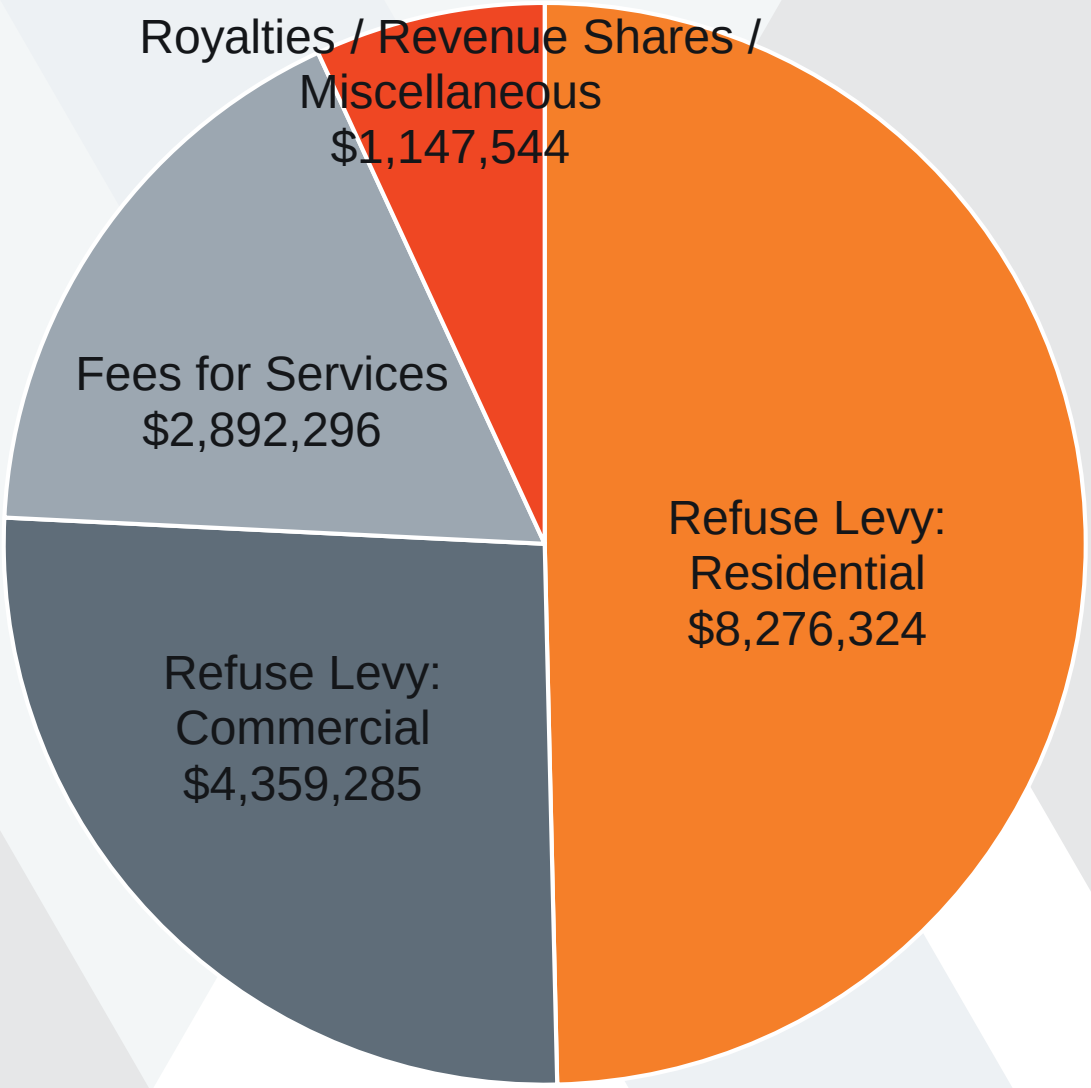
COST OF SERVICE ANALYSIS: RECYCLING PROCESSING



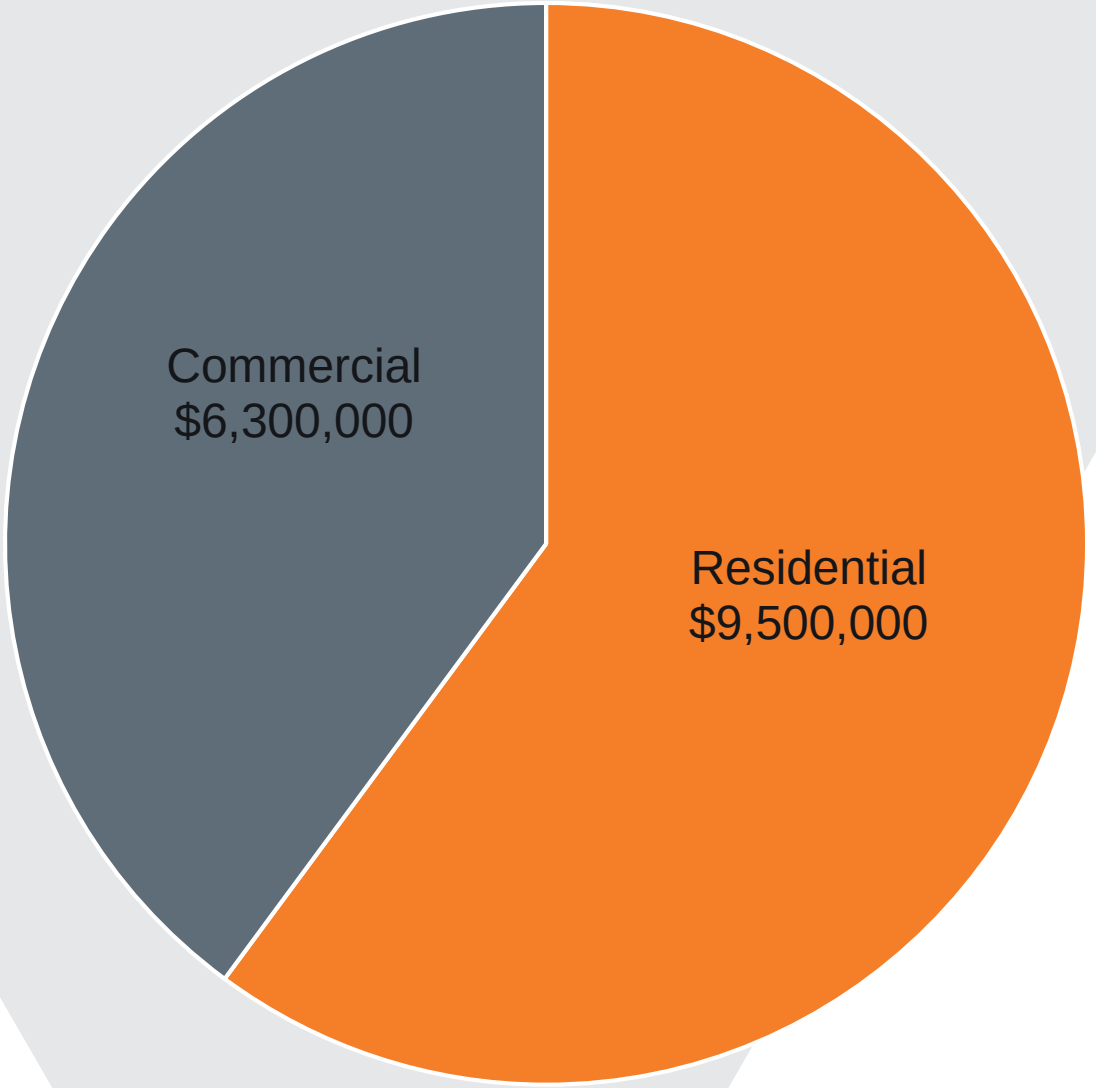
Note:
City MRF Cost ($1.36 million in FY2018) increases the net cost per ton in FY2018 to $191.91; cost includes:
Depreciation (building & equipment) = $625,000
Repair & maintenance (building & equipment) = $304,000
MRF oversight = $130,000
Administrative allocation = $278,000
Utilities = $23,000

COST OF SERVICE ANALYSIS: REVENUES

REVENUE, BY SOURCE



EXPENSES, BY SECTOR



COST OF SERVICE ANALYSIS: FUND BALANCE

FY2018 operational revenue / expense summary

- Revenue = $16,675,449
- Expense = $16,157,889
- Revenues exceeded expenses by $517,560 -> Fund operations surplus

FY2018 equity adjustments negatively impacted Fund balance

- Adjustments = -$2,394,035 (expense / negative impact to Fund)
- Adjustments are required for:
  - Pension (GASB) and retiree benefit (OPEB) funding
  - Landfill closure and post-closure care liability
  - Capital assets
  - GAAP requirements

Fund balance declined $1,876,475 during FY2018

REGIONAL COLLABORATION OPTIONS

Authority Formation Committee

- Facilitated by Washtenaw County Public Works
- Eight jurisdictions participated

City of Ann Arbor	Ann Arbor Township	City of Dexter	Pittsfield Township
City of Saline	Scio Township	City of Ypsilanti	Ypsilanti Township

Developed *Articles of Incorporation* for anticipated regional authority

- Washtenaw Regional Resource Management Authority (WRRMA)
- Will be shared with other jurisdictions for their consideration as well
- To be presented to Boards and Councils for action on acceptance
  - Anticipated presentation to Ann Arbor's Environmental Commission in January, 2019 and City Council in February/March, 2019

REGIONAL COLLABORATION OPTIONS

Committee's discussions on potential initial efforts include:

- Education and outreach
  - Common, consistent recyclables across member communities
  - Improved quality and quantity of recyclables
- Data and metrics for member communities and Authority as a whole
  - Create common accepted system
  - Gather baseline data and ongoing tracking of materials
- Future potential of shared collections contracting
- Work on member communities becoming attractive for recycling processing contractor
  - Providers of high quality and high quantity recyclable materials
  - Contract collaboratively or through the Authority for recyclables processing

BENCHMARKING: OVERVIEW

Benchmark communities:

- Boulder, CO
- Grand Rapids, MI
- Lincoln, NE
- Madison, WI
- St. Paul, MN
- Seattle, WA

Why selected:

- University communities with high student / rental population
- Similar population to Ann Arbor
- Commitment to high diversion
- Availability of data and information

BENCHMARKING: LEVEL OF SERVICE

Waste

- Generally consistent between communities - weekly collection, larger (64 or 96 gallon) carts
- Most include some level of bulky item collection, with or without a fee or limit

Recycling

- Weekly or every-other-week curbside collection with carts
- Curbside is single-stream, drop-offs may be single-stream or source-separated

Compost (Yard Waste / Mixed Organics)

- Widely variable schedule / frequency of collection between communities
- Service may be included/required as part of curbside collection, or by subscription, or drop-off
- Containment may be carts, bags, bundles, loose, or a combination
- Food may or may not be included in curbside collection

BENCHMARKING: FUNDING & SERVICE DELIVERY

Service delivery:

- City crews
- City-contracted private hauler
- Private haulers on open market (selected by customer)

Funding:

- User fees - flat rate, container-based rates, pure pay-as-you-throw rates with charges per setout or stickers
- Tax assessments - flat rate or valuation-based millage
- Combination of the above

BENCHMARKING: BANS & MANDATES

Services:

- Customers must subscribe to collection services (Boulder, Seattle)
- Haulers must provide recycling and compost collection (Boulder, St. Paul)
- Special events must include recycling and compost collection (Boulder)

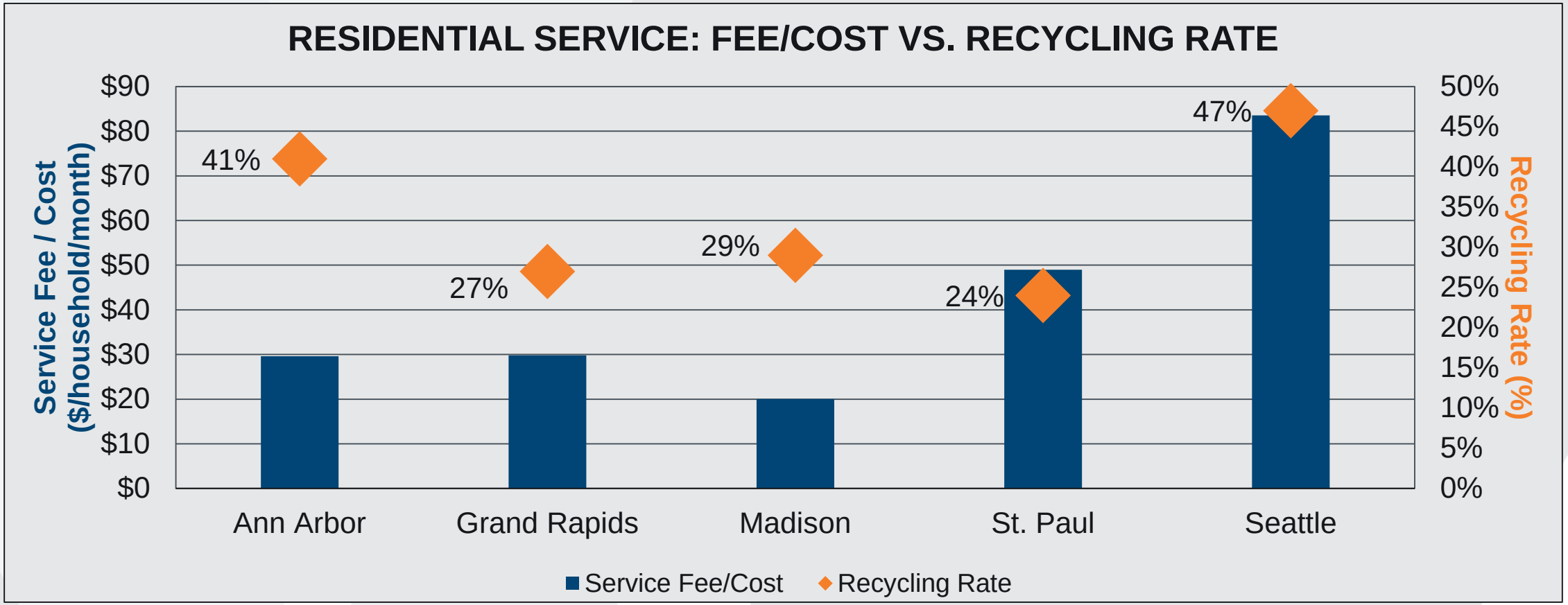
Recycling:

- Mandatory to recycle (Seattle, Madison)
- Must not dispose recyclables (Seattle) / cardboard (Lincoln) in trash

Composting:

- Must not dispose food (Seattle) / yard waste (Seattle, Grand Rapids, Madison, St. Paul) in trash

BENCHMARKING: FEES/COSTS VS. RECYCLING RATE



Notes:

1. Recycling Rate = (Tons Recycled) / (Tons Recycled + Tons Disposed)
2. For comparability between communities, recycling rate reflects residential recycling only and excludes compost diversion due to lack of compost tonnage data from some communities.
3. Monthly service fee/cost reflects comparable service to Ann Arbor for communities that have variable rate container pricing or PAYT service (weekly 64-gallon trash / recycling / subscription or mid-level compost collection).
4. Service fee/cost reflects rates charged to customers (fee) or cost of service. Service fees may not reflect the full cost of service and may be subsidized by other funding sources.

ANN ARBOR RESOURCE MANAGEMENT STRENGTHS

Comprehensive, uniform services widely available

Exemplary level of diversion achieved

Successes achieved without mandates or disposal bans

Lower cost of service than many peer communities

BENCHMARKING: DOWNTOWN ALLEY SERVICES

Seattle - Clear Alleys Program

- Bag-based collection - significantly reduced containers in public alleys
  - Exemptions for organics containers and grease containers, or other containers if City confirms inside space is not adequate
- Multiple collections per day - 3 for trash, 2 for recycling
  - High level of service must be provided by contractor

Dearborn - service consolidation and relocation

- Modified City ordinance to state that when containers are on public property (including public alleys), City has control over collection - including container size, location, and collection frequency
- Established container corrals and reduced numbers of containers
- Selected a single hauler and worked out collection frequency required
- Funded through millage funds

BENCHMARKING: DOWNTOWN ALLEY SERVICES

Nashville - moving containers inside businesses and off City service

- Historically provided 2 trash carts and 2 recycle carts to businesses with once per week pickup
- Evolved into need for continuous collection in downtown area
  - Trash - daily collection, 10 AM - 5 AM the following day - complete 2-3 collections daily
  - Cardboard - daily collection, 6:30 AM - 2 AM the following day
- Cost for service far exceeds funding from businesses - working now to enforce City ordinance and service limits and push containers back inside businesses for storage

Lexington - two collection cycles daily, streetside

- Daily collection - 2 AM - 10 AM (Wed-Sun); 2 PM-10 PM (Mon-Fri)
- Split-body truck for trash and recycling collection
- Many complaints about containers on sidewalks, but work with businesses to provide education and keep them aware of requirements to store carts inside or behind business after collection

ANN ARBOR ALLEY EFFORTS TO DATE

2016 alley investigations and internal work group

- Completed in-depth review of every alley
- Changed ordinance to allow earlier collection hours

Current conditions

- Addressing issues on a case-by-case basis
- Monitoring developing discussions with DDA and downtown business associations regarding alternative alley service

OVERVIEW OF RESIDENT SURVEY TOPICS

Current programs

- Awareness of available services and costs
- Behavior / use of services

Needs

- Specific programs and services
- Information and awareness - how information is obtained, what would motivate participation in programs

Future program enhancements / new programs

- Likelihood of use
- Willingness to pay for services / cost tolerance

RESIDENT SURVEY VALUE

Will the resident survey provide enough valuable information to justify its cost ($30,000)?

The survey has a number of benefits:

- Identifies residential education needs
- Identifies what services residents want and how much they are willing to pay for them
- Provides cost sensitivity factor for cost model
- Provides opportunity for resident engagement in the SWRMP
- Explanatory / background information will be provided to residents during the survey

WHAT'S NEXT? 90 DAY LOOK-AHEAD…

Develop questionnaire and field scientific, random resident survey

Identify and outline program and service options

- Service delivery
- Tonnage impact
- Financial model to reflect resources required and costs

City staff activities

- Contract extensions with RAA and Waste Management
- Regional authority formation progress
- Monitor / participate in downtown alley plan development

KEEP UPDATED ON THE PROGRESS OF THE SWRMP

Website:

www.a2gov.org/SWRMP

Email:

SWRMP@a2gov.org

Individual Contacts:

Cresson Slotten
Project Manager
City of Ann Arbor
(734) 794-6430 x 43701
cslotten@a2gov.org

Christina Seibert
Project Manager
APTIM
(630) 762-3306
christina.seibert@aptim.com

Charlie Fleetham
Lead Facilitator
Project Innovations
(248) 476-7577
charlie@projectinnovations.com

City of Ann Arbor
Solid Waste Resource Management Plan
Advisory Committee Meeting #3
April 23, 2019 Meeting Summary

Participant List – see final page.

1. **Welcome -** Cresson Slotten, City of Ann Arbor Project Manager for the Solid Waste Resource Management Plan (SWRMP) Project welcomed the participants and updated them on recent events:

   On the status of the new solid waste/recycling regional authority that the County has been facilitating:

   - *Articles of Incorporation for Washtenaw Regional Resource Management Authority (WRRMA) completed.*
   - *7 of the 8 communities that participated in developing the Articles have approved them and decided to join WRRMA.*
   - *City staff and administration have been, and are still, supportive of the City joining WRRMA.*
   - *On 1/24/19 the City's Environmental Commission approved a resolution stating that it is supportive of the City participating in a regional approach to materials management strategies and recommending that City Council join WRRMA.*
   - *On 3/4/19 City Council tabled the resolution to approve membership. No date has been set for reconsideration of the resolution.*

   In addition, Committee member and Environmental Commissioner Stephen Brown sent an e-mail and document attachment to Christina, Charlie and I along with many members of the Advisory Committee on Friday, April 5th. In his e-mail, Stephen raised concerns about the process of this committee, including a less than desired focus on Zero Waste planning and vision in the SWRMP. As noted in my response e-mail to Stephen, the majority of the items in the document he attached are included in the Options developed by the Project Team and will be a key part of today's meeting. With regards to developing a "Real Zero Waste Plan" as part of this process, I will note that this project is being done within with the context of the recent Washtenaw County Solid Waste Plan, which endorses a Zero Waste approach to solid waste resource planning.

2. **Review 1/15/18 Committee Summary and Pre-Meeting Commentary -** Charlie Fleetham, the Public Engagement Facilitator for the project, reviewed the agenda (see p. 18) and summarized the previous meeting, recounting input that had been received requesting the Project Team to present draft options (recommendations) to resolve issues raised by the Advisory Committee and other stakeholders. He noted that the Project Team had distributed a comprehensive set of options prior to the meeting.

3. **Work in Progress Review of SWRMP Recommendations -** Christina Seibert, Project Manager, APTIM, delivered a PowerPoint presentation, which accompanies this summary and is also available on the project website. Christina briefly reviewed the draft options, listed on page 3. The Advisory Committee was then asked to provide feedback on the options in a series of facilitated small group discussions that occurred in sequence covering Residential Options, Commercial Options, and Downtown Alley Options. A summary of the overall feedback is provided and followed by detailed notes of the seven small group discussions.

4. **Review of Public Education Efforts -** Heather Seyfarth, Ann Arbor Community Engagement Specialist and Jennifer Petoskey, Ann Arbor Solid Waste and Outreach Compliance Specialist reviewed the current solid waste education efforts, including a spotlight on the work of a team of students from Community High School. It was noted the students would like to present their work at the May meeting. Christina Seibert also briefed the

group on Aptim's ongoing activities to collect solid waste educational data from benchmark communities (which will be included in the final report).

5. **Update on Survey -** Christina reported that the survey had been successfully completed and the results were used (in part) to develop the options. The preliminary results/analysis were included in the PowerPoint presentation. Copies of the draft survey report and final topline results were provided to the Committee. (Note: this topic was re-sequenced from the agenda to provide more time for the report on Public Education efforts.)

6. **Meeting Close -** Cresson thanked the participants for their sustained participation in the planning process and in particular noted the energetic contributions during the meeting's small group discussions. Cresson also responded to a question about the status of the proposal submitted by RAA regarding the City's MRF. A summary of his response follows:

   The City has been approached by Recycle Ann Arbor to operate the City's MRF as a "mini-MRF" and they submitted a written narrative of this concept. The City and APTIM reviewed the information and the City provided written feedback to RAA on items and level of detail that will need to be included in a formal proposal for this concept if they decide to submit one to the City. If RAA does submit a detailed proposal as they described, there will need to be a determination by the City if the City can act on an unsolicited sole-source proposal such as this, or if it would have to be solicited by the City through a Request for Proposals (RFP) process.

PRELIMINARY OPTIONS OVERVIEW					
Option	Sector Impacted	Benefits			Planning-Level Incremental City Solid Waste Fund Direct Cost Impact ($/year, based on FY18 costs)
		Increase Diversion	Reduce Toxics	Enhance / Improve Services	
Year-Round Residential Compost Collection	Residential	✓		✓	$70,000-$140,000
Curbside Textile Collection	Residential	✓		✓	$0 (modest revenue potential)
Bulky Waste Collection	Residential			✓	$380,000-$760,000
Electronic Waste (E-Waste) and Household Hazardous Waste (HHW) Collection	Residential	✓	✓	✓	$390,000-$440,000
Fats, Oils, and Grease (FOG) Management	Commercial	✓		✓	$30,000-$70,000 (Year 1, incl. implementation)
Commercial Organics Collection	Commercial	✓		✓	$520,000 - $1,540,000
Student Move-In / Move-Out Collections	Commercial	✓		✓	$90,000-$120,000
Construction and Demolition (C&D) Waste	Commercial	✓		✓	$60,000-$100,000 (Year 1, incl. implementation)
Commercial Services Participation Enforcement	Commercial	✓		✓	$1,070,000-$1,200,000
Improved Downtown / Alley Collection Services Alt. A - 7-Day Collection, Mandatory Sat & Sun Collection for Restaurants / Bars in DDA	Commercial / Residential			✓	$330,000
Improved Downtown / Alley Collection Services Alt. B - Consolidated Containers and 7-Day Collection with Special Assessment	Commercial / Residential			✓	$40,000 (planning / design only)
Improved Downtown / Alley Collection Services Alt. C - Consolidated Underground Containers and 7-Day Collection with Special Assessment	Commercial / Residential			✓	$63,000 (planning / design only) Rough capital estimate = $1,081,000 (pilot) - $5,020,000 (full-scale)
Improved Downtown / Alley Collection Services Alt. D - Bag-Based Collection with Twice Daily Pickup	Commercial / Residential			✓	$860,000 (full cost for collection; excludes disposal)

Notes:
1. Cost impacts reflect City-incurred direct costs to the Solid Waste Fund only. Some options may impact other City departments / funds through added staff effort in those departments, which has not been quantified. Additional indirect costs may also be assessed to the Solid Waste Fund based on added staff or increased allocations levied by other City departments outside of the solid waste area, which have not been quantified.
2. Reflects expenses only; revenues from user fees or other sources may offset some expenses.

RESIDENTIAL OPTIONS: ADVISORY COMMITTEE FEEDBACK

Residential Sector Options	Advisory Committee Feedback
Year-Round Residential Compost Collection	• Strong support
Curbside Textile Collection	• Broad support • A few questions about impact on reuse outlets and what happens to collected material
Bulky Waste Collection	• Mixed support • Concerns raised about what would be collected and how costly it may be
E-Waste and HHW Collection	• Mixed support • Not sure it is needed, given other options available • Concerns / questions raised about risks or liability issues and cost

COMMERCIAL OPTIONS: ADVISORY COMMITTEE FEEDBACK

Commercial Sector Options	Advisory Committee Feedback
FOG Management	• Generally supported
Commercial Organics Collection	• Strong support, especially if focused on larger food-oriented businesses
Student Move-In / Move-Out Collection	• Limited support • Concerns raised about diverting reusable materials and the need for the added service
C&D Waste	• Generally supported, with need for more data before setting policy • Limited processing infrastructure available, this will be a longer-term implementation item for the diversion element
Commercial Services Participation Enforcement	• Strong support • Questions raised about perceived high cost

DOWNTOWN / ALLEY OPTIONS: ADVISORY COMMITTEE FEEDBACK

Downtown / Alley Collection Service Improvement Options	Advisory Committee Feedback
Alt. A - 7-Day Collection, Mandatory Saturday & Sunday for Restaurants / Bars	• Strong support • Required minimum level of service should be specified
Alt. B - Consolidated Containers and 7-Day Collection with Special Assessment	• Strong support
Alt. C - Consolidated Underground Containers and 7-Day Collection with Special Assessment	• Little support; may be interest on a small pilot level • Concerns about cleanliness around containers and ability to service
Alt. D - Bag-Based Collection with Twice Daily Pickup	• Nearly all opposed • Concerns raised regarding cleanliness / bag breakage / rats, ability to service, and aesthetics

Option Small Group Discussion Notes:
Facilitator: Charlie Fleetham

Residential Options:

1. Which options knocked your socks off? Why?
   - None of the options knocked their socks off, but the group supported year-round composting if demand was sufficient because the public seemed to want it.

2. Which turned you off? Why?
   - Adding any new services is problematic because City has trouble delivering expected level of service now.
   - Recycling market is weak. Not sure if it will support E-Waste, Textile and Bulky Waste collections.
   - Bulky waste was a service that the City intentionally discontinued in the past because it was very costly. Why would it be brought back, and what would be included (and not included)? The rules would have to be very clear.

3. Questions on any of them?
   - The City should be focusing on improving the Drop Off Station. For example, the gate fee is a detriment to the customers.
   - The E-Waste pick up is a good idea, but how much would it cost us to implement?
   - Where is the focus on education? It is one of our biggest needs.

Commercial Options:

1. Which options knocked your socks off? Why?
   - Commercial organics collection could be a big win for the City if we target high volume producers. Need to implement effectively or will lose confidence of food producers.
   - Commercial Enforcement is a good idea as long as the cost is right.
   - C&D diversion is interesting, but will take a long time to develop properly. Suggest they focus on UofM to start as the university is doing lots of construction.

2. Which turned you off? Why?
   - Student move-in / move-out services proposed should be covered by the property owners. Funding this service is not appropriate, and a centralized Drop Off Station is already available.
   - FOG - why centralize a service that is already provided by small independent operators? Not seeing the justification for the effort required to implement this program.

3. Questions on any of them?
   - UofM is big producer of C&D waste. Why should the City get into this business?
   - How would the City enforce the regulations?
   - Why is cost for the Commercial Services Participation Enforcement so high?

Downtown/Alley Options:

1. Which two alternatives should be given the most consideration? A and B hands down.

2. Any strong feelings about any alternative?
   - 7-day service is a must for Downtown – the entire district, not just the DDA.
   - Underground - absolutely not! Too costly and too long to implement.

Option Small Group Discussion Notes:
Facilitator: Molly Maciejewski

Residential Options:

1. Which options knocked your socks off? Why?
   - The group was in agreement that they liked options 1 (year-round residential compost collection) & 2 (curbside textile collection.

2. Which turned you off? Why?
   - Bulky Waste/ Toxics
     - Sends wrong message about recycle & reuse
     - Is there a problem we're trying to fix? Seems that we don't have a problem.
     - Gives message that those items are easy to manage. If residents have to take extra steps, they resist. (There was some disagreement on this, as another person pointed out that curbside take back does require resident effort.)
     - City shouldn't have to pay.

   - Should promote existing collection/drop off method rather than create new. Feel that people do use DOS now. Don't want to encourage unlimited service at curbside.
     - Negates idea of reuse
     - Expand DOS capabilities
     - Incentivize recycling of e-waste
     - If we offer these services, it should be for a fee to the residents who participate.
     - People confuse construction waste with bulky waste. Will this problem increase if we offered bulky waste pickup?

Commercial Options:

- Needs exist in all areas, but logistical challenges to them.
- Commercial services participation is a high priority
- Like Move in/Move out: Structure is in place, need to enforce.
- Commercial organics – Some in group thought low priority, some high. Who pays? How to overcome logistics-space, volume, frequency of pickup, cost. If can overcome will definitely increase diversion.
- Need an innovative way to address C & D waste.
- Make sure overall goals are being thought of for each of these (Sustainability Climate Change). For example, if send trucks out for winter compost collection, does benefit outweigh greenhouse gas impact of trucks?

Downtown/Alley Options:

- Group preferred options A & B with D as a supplement.

Option Small Group Discussion Notes:
Facilitator: Jenny Petoskey

Residential Options:

1. Which options knocked your socks off? Why?
   - 2 people liked the year-round compost, 2 liked textiles, 1 liked year-round compost, 2 liked bulky item pickup, and 1 liked the household hazardous waste (HHW) pickup.
   - Regarding the textiles, they liked that the cost was minimal.
   - Regarding the bulky item collection:
     1. Think it will cut down on illegal dumping.
     2. These items are currently expensive and hard to get rid of.
   - Regarding the HHW pickup:
     1. Could allow the City to effectively add this to the diversion rate.
     2. Has toxics that should be kept out of the landfill.
     3. E waste is becoming a bigger and bigger issue.

2. Which turned you off? Why?
   - Regarding HHW:
     1. Is this a liability for the City?
     2. Does this make the City a transporter?
     3. Is this a liability at the curb?
     4. Some would prefer more drop off locations instead.
   - Regarding textiles collection:
     1. Low volume is a concern.
     2. Worried about contamination.
     3. Worried about removing this stream from the City's reuse stores.
3. Questions on any of them?
   - What efficiencies can we make with resources, particularly for low density services?
   - There are concerns about equity. Specifically, how do we assess costs to take income into account? We don't want to price more people out of the City's housing market.
   - How do we capture economy of scale?
   - Are there vendors that offer multiple services?

Commercial Options:

1. Which options knocked your socks off? Why?
   - Three people liked the fats, oils, and grease (FOG) option, 2 liked commercial organics, and 2 liked enforcement.
   - Regarding FOG:
     1. Opportunity to make money.
     2. Consolidation could create more real estate.
     3. Can these be put underground?
     4. It is a low cost.
     5. Could it be part of the business district?
   - Regarding commercial organics:
     1. Possible under the business district.
     2. Businesses want this.

3. Logistical space is a concern.
4. This option fits with Ann Arbor's culture.

- Regarding enforcement:
  1. How do we coordinate with the County to get information as the County requires restaurants to have waste plans?
  2. More enforcement tools would be needed.

2. Which turned you off? Why?
   - Construction & demolition
     1. Not in the City's jurisdiction.
     2. High cost.
     3. City doesn't have enough incentives to overcome costs.
     4. More of a corporate issue.
   - Student move in/out
     - These costs should be incurred by the property owner/manager.

3. Questions on any of them?
   - Do any cities have incentives for accurate participation?
   - How can we narrow the gap on organics collections costs?
   - How do businesses fall through the gaps with getting services?
   - What tools are available for enforcement?
   - Can service be provided 6 days a week with the week running Wednesday through Monday?

Downtown/Alley Options:

1. Which two alternatives should be given the most consideration?
   - A and B

2. Any strong feelings about any alternative?
   - A:
     1. It's simple.
     2. No new infrastructure needed.
     3. It's immediate.
   - B:
     1. Gets rid of cheating.
     2. Addresses high turnover.
     3. Addresses cultural differences.
     4. How will it logistically work?
     5. Would like to see service 6 days a week from Wednesday through Monday.
     6. Would create less trash in the alleys.
     7. Can we use compactors?
   - C:
     1. Seems very expensive.
     2. Nice and streamlined.
   - D:
     1. Bags could be chewed.
     2. How would it deal with cheating?
     3. Don't need 2 times per day pickup.

Option Small Group Discussion Notes:
Facilitator: Christina Seibert

Residential Options:

1. Which options knocked your socks off? Why?
   - The group favored both composting and textile recycling.
   - Year-round composting was the most strongly favored, though the group recognized there will still be issues or concerns with food freezing in carts.
   - Textile recycling is a nice option and seems like a good idea based on other communities already doing it and no real cost to the City to offer it.

2. Which turned you off? Why?
   - Bulky waste was a service that the City intentionally discontinued in the past because it was very costly. Why would it be brought back, and what would be included (and not included)? The rules would have to be very clear.
   - Bulky waste and e-waste/HHW options present Clean Community concerns and liability risks that seem unnecessary to take on given other options that are available.

3. Questions on any of them?
   - Where would textiles go that would be collected? Has anyone vetted Simple Recycling?
   - Is there a way to provide HHW and e-waste services by tagging onto the U of M's program? How well does that program work?
   - Could bulky pickup be done by a contractor instead of by the City?
   - Could bulk waste companies (like 1-800-GotJunk) be required to be licensed and report quantities they collect and divert to the City?

Commercial Options:

1. Which options knocked your socks off? Why?
   - Enforcement is a must and was strongly favored by the group.
   - C&D diversion is interesting, and opportunity seems high, but the group recognized it would need time due to need for development of processing facilities to be successful.
   - FOG was supported as something worth doing. Enforcement is needed in this area because there is belief that not all restaurants divert grease now and no process for inspections to make sure they are.
   - Commercial organics are of interest because there are businesses who want the service, but it would be a fit only for larger food-generating businesses.

2. Which turned you off? Why?
   - Student move-in / move-out services proposed do not include diversion and focus on just picking up the trash more frequently. There were concerns also that providing more frequent pickup will lead to people from other parts of the community bringing their trash to the dumpsters in the designated collection area.

3. Questions on any of them?
   - Why is cost for the Commercial Services Participation Enforcement so high?
   - With commercial organics, how will businesses have space to collect food waste inside? And what will the contamination impact be?

Downtown/Alley Options:

1. Which two alternatives should be given the most consideration?
   - A and B

2. Any strong feelings about any alternative?
   - The provision of 7-day collection is a huge positive of all options.
   - A (individual containers with mandatory weekends for restaurants) would be easiest and fastest to implement and take care of a lot of problems.
   - B (consolidated containers with a special assessment) is interesting because it gets more containers out of the alleys, but there are questions about how the costs would be apportioned and whether businesses will support it or follow best practices in using their assigned containers.
   - D (bags) is a terrible idea and should not be done. There is too much risk for breakage, it would look bad, and it would be difficult to provide a second collection every day because alleys are blocked with deliveries and vehicles all day and evening.

3. Questions on any of them?
   - Who would decide how to separate costs for each business?
   - Will some businesses still have to have carts if there isn't space for a dumpster?
   - If a business does not use the right dumpster or is putting the wrong materials in the dumpster, how would the City know who is at fault?

Option Small Group Discussion Notes:
Facilitator: Heather Seyfarth

Residential Options:

- Liked all options
- Year-round compost needs education and possibly incentive for users.
- Curbside pick-up: there is a concern about taking away from local resale.
- Bulk pick-up: there is a concern that it will go to landfill. We need to ensure that items that can be reused and recycled will be and that any toxic materials will be handled properly.
- Question: Are the compost costs too low? Seems like the cost would be triple that amount.
- Education is necessary for everything. Electronic waste education was specifically noted.

Commercial Options:

- FOG is somewhat self-managed because of "greasers" coming by and emptying containers, but the containers and the areas around the containers need to be taken care of better. Maybe a registration or at least better lines of communication about who is responsible.
- FOG service is considered to be a nice thing to have, but not a top priority.
- Organics is considered a top priority (ranked 3). There is a question about whether people can receive some type of credit for diverting organics waste – maybe regular trash would be cheaper if a business was diverting organics from it?
- Student move in/out is considered a top priority (ranked 2), but the group would like the city to ensure that the items being picked up would not all go to the landfill.
- C&D: The group wondered if there was a way to get a sense of the amount of C&D was that is occurring now. Maybe track it through the permitting process.
- Enforcement is considered a top priority (ranked 1), but the group wondered if there was a way to use technology to lower the cost.

Downtown/Alley Options:

- Options A and B were favored
- Question: why are the Greenhouse Gas Estimates different?

Option Small Group Discussion Notes:
Facilitator: Cresson Slotten

Residential Options:

1. Which options knocked your socks off? Why?
   - The group liked all of them, and didn't put any one higher than the others -
   - "Include them all and educate the customers on them."
   - When pushed to even rank them, only one person was willing to offer the following:
     1. E-Waste and HHW Collection
     2. Year-Round Residential Compost (Organics) Collection
     3. Bulky Waste and Curbside Textile Collection

2. Which turned you off? Why?
   - Not a turn off, but a concern on the unknown endpoint of the E-Waste, that it be handled properly and not end up in a landfill at the end, or at a 3rd world country and causing environmental issues there.

3. Questions on any of them?
   - Why is the anticipated diversion rate for the Year-Round Residential Compost Collection Option only 10% of what was reported/included in the Organics Management Plan? Has something changed in the last couple of years?
   - Would fluorescent bulbs be included/allowed in the HHW Collection? What about batteries?
   - How will the potential of compost/organics freezing in the carts be handled?

Commercial Options:

1. Which options knocked your socks off? Why?
   - The ones with higher Greenhouse Gas reduction - - Commercial Organics Collection; Commercial Services Participation Enforcement
   - F.O.G. since there are no controls in the city today
   - C & D since a big opportunity for diversion
     - But concern raised for implementing in the downtown due to space limitations and challenges… would need to be a phased-in implementation
   - Student Move-In/Move-Out due to importance/impact of the U-M on the community
     - Suggested there be an additional charge/surcharge on rental unit inspections (e.g., $5) that would go into specific "pot" to fund the option
     - Strong disagreement with this suggestion by one member:
       1. Landlords can't/shouldn't pay more.
       2. Need to have it just the way it was… the Solid Waste Commission figured it out and the City did it the right way and then took it away… need it to come back, and come back now.

2. Which turned you off? Why?
   - Having Student Move-In/Move-Out funded by the full City taxpayers (all but one member).
   - C & D in the downtown (noted above)

3. Questions on any of them?
   - Why is cost for the Commercial Services Participation Enforcement so high?

Downtown/Alley Options:

1. Which two alternatives should be given the most consideration?
   - A and B

2. Any strong feelings about any alternative?
   - B is the preferred between A and B
   - Option C (Underground)
     - Limitations on space for available installations
       1. ROWs already crammed with utilities, etc.
     - Freezing conditions, potential to have problems (?)

   - Option D (Bags)
     - More involved/complex for City and customers
     - Bags would be unsightly, especially if left out for extended period
     - Winter conditions likely to be problematic
       1. Bags would end up covered by snow due to event itself and/or clearing and shoveling
     - Instead of dumpster diving, potential for "bag tearing" (including during operations)

Option Small Group Discussion Notes:
Facilitator: Nancy Stone

Residential Options:

1. Which options knocked your socks off? Why?
   - **Year-round residential compost collection.** All Yes. WeCare/Denali site has capacity and would welcome the volume. Advised that winter month food pickups would work best with pre-bagged materials (dump scraps into a 33-gallon paper bag used as cart liner or use BPI "plastic" bags). 1-2x/month seems adequate. EDUCATION: need to provide residents with calendar each year with specific pickup dates—as home mailer and/or as ads in A2 Observer –as well as online. Past monthly pickup schedule also had volunteers who placed out yard signs stating, e.g., "Winter compost cart pickup is on this week's curbside pickup day, a2gov.org/compost."
   - **Bulky Waste Collection.** All Yes with understanding the resident will pay for service at a reasonable rate, such as $30 up to first cubic yard/each large item. Not free service to resident. One neighboring community sells tags that are attached to bulky item(s), bags, which works well. [2013 A2 waste plan suggested annual or 2x/year rotating neighborhood reuse days, with remaining materials picked up by city at no charge.

   Cautious Support:
   - **Curbside Textile Collection.** Cautious Yes. Not sure it's needed but the promotion/reminder to people to reuse clothing & textiles instead of landfilling them may be a useful and a convenient message at no cost to the City and possibly directing some profits (1 cent/pound) to the city. Worth a pilot.
   - **E-waste and Household Haz Waste (HHW) collection.** Cautious interest due to concerns over privacy/hard drives; potential spills of Haz Waste, Lead, Mercury. Could possibly fold some items into Bulky Pickups. [Washtenaw County sometimes sponsors a free senior's pickup of HHW and light bulbs during United Way Day of Service.]

Commercial Options:

1. Which options knocked your socks off? Why?
   - **Fats, Oils, Grease (FOG) Management.** Agreement that FOG must be handled responsibly. People responsible for buildings & businesses feel that the issue isn't the contracted frequency of collection, but that the alleys are blocked by other vehicles and so the FOG collection trucks skip stops. There are also new technologies for storing FOG inside with connection hoses to exterior trucks that are being installed in town.
   - **Commercial Organics Collection.** Yes, for restaurants; case-by-case for mixed use buildings. But concern to "fix alley collection first" before adding a new, potentially messy program.
   - **Construction & Demolition (C&D)** Important issue but requires a dedicated, separate study to begin to address issues. Needs sponsored pilots to grow local infrastructure to handle mixed materials. Concrete is easy to separate and manage locally. Calverts would need to expand facility to handle much larger C&D quantities. Previous C&D report from ~1998 suggested starting with largest projects >$1 million and phase-in smaller projects [Possible pilot using county's or state's grant programs?]

2. Which turned you off? Why?
   - **Commercial Services Participation Enforcement.** No/not sure.

3. Questions on any of them?
   - **Student Move-in/Move-Out Collections**. Previous program worked fine until the arrival of new high-rise apartments/condos and cut-backs on days of service. More than 6,000 new residents have been added to DDA (per city census of 119,000) since 2000 but no increase in student turn-around service. [Return to start the extra

dumpster tips and curbside pickups BEFORE UM graduation in order to present a "Clean Community" to parents, visitors. The case has been presented that students with curbside pickups--and living in apartments adjacent to those with dumpsters—will use the dumpster when they move out in order to avoid city citations.]

Downtown/Alley Options:

- **Alt A Mandatory Sat & Sun Collection for Restaurants & Bars in DDA.** Year-round Sunday is not needed. Essential for game and other event (e.g., Hash Bash) weekends but e.g., February is a slow time for trash. The biggest issue is access to the blocked alleys. People in the field felt a mandatory ordinance is asking for a fight because businesses rankle on anything mandatory. Better to work with voluntary compliance and a strategy to access alleys.
- **Alt B Consolidated containers 7x/week; Special Assessment (AKA Business Improvement Zone, BIZ).** Yes. South U is working on a similar plan. A small area on Main St has one in effect.
- **Alt C Underground containers 7x/week, Special Assessment (BIZ).** No. The DDA has been actively encouraging businesses to fill-in vaults. This is a reverse of agreed-upon improvements/quality of life/infrastructure.
- **Alt D No carts; Twice daily, 7x/week bagged pickups.** No, no, no. Little discussion. Implied problems include scavengers, vermin, alley access blocked by bags, plastic waste, etc.

City of Ann Arbor
Solid Waste Resources Management Plan (SWRMP)
Advisory Committee Meeting #3 Agenda
April 23, 2019

Ann Arbor DDA, 150 South Fifth Ave, Ann Arbor
1:00 pm to 3:00 pm

1:00 p.m.	**Welcome and Group Introduction** ▪ Updates re: City Activities Impacting the SWRMP - Cresson Slotten, Ann Arbor Solid Waste Resources Management Plan Contract Manager ▪ Advisory on Mr. Steven Brown April 5 email re: *SWRMP/APTIM Citizen Advisory Committee statement of concern* ▪ Agenda Review/Desired Outcomes Poll - Charlie Fleetham, Facilitator, Project Innovations, Inc.
1:15 p.m.	**Review 01/15/19 Committee Summary - Charlie Fleetham**
1:25 p.m.	**Work in Progress Review of SWRMP Recommendations - Christina Seibert, APTIM Project Mgr.** • Summary Review of Pre-Meeting Materials • Facilitated Group Discussion
2:30 p.m.	**Update on Survey - Christina Seibert** ▪ Preliminary Results ▪ Q&A
2:40 p.m.	**Review of Current Public Education Efforts - Heather Seyfarth, Ann Arbor Community Engagement Specialist/Jennifer Petoskey, Ann Arbor Solid Waste and Outreach Compliance Specialist/Christina Seibert** • Review of Current Efforts in Ann Arbor • Community High School Program - Emerging Leaders in Youth Education! • What are the National Leaders Doing?
2:55 p.m.	**Action Items/Agenda Topics for Next Meeting - Charlie Fleetham**
3:00 p.m.	**Meeting Close - Cresson Slotten**
3:05 p.m.	**Public Comment (three-minute limitation per speaker)**

04/23/19 AA Solid Waste Resources Management Plan Advisory Committee Participant List				
Last Name	**First Name**	**Organization**	**Phone #**	**Email Address**
Andrade	Sandra	Main Street Association	810-730-8853	sandra@mainstreetannarbor.org
Artley	Tracey	UofM	734-164-1600	artleyt@umich.edu.
Berry	Elisabeth	Blue Llama		elisabeth@multiverseinvestments.com
Brown	Steve	Environmental Commissioner		Brownsc6887@att.net
Bukowski	Todd	Resident	734-972-4175	todd@ptisglobal.com
Butynski	Don	WeCare Denali	734-489-4518	dbutynski@wecareorganics.com
Conaway	Brian	Waste Management	248-640-8754	bconaway@wm.com
Diephuis	David	Resident		ddiephuis@comcast.net
Eaton	Jack	City Council		jeaton@a2.gov
Curtis	Jim	Curtis Commercial	734-355-1010	jim@curtiscommercialllc.com
Davidson	AJ	Bivouac	734-761-6707	aj@bivouacannarbor.com
Eccleston	Tyke	Hughes Properties	734-260-4679	teccleston@property-accounting.net
Eggermont	Theo	Washtenaw County	734-621-1561	eggermontt@washtenaw.org
Flagler	Miriam	Zingerman's	734-926-4000	mflagler@zingermans.com
Fleetham	Charlie	Project Innovations	248-476-7577	charlie@projectinnovations.com
Frey	Jim	RRS	734-417-4415	frey@recycle.com
Garfield	Mike	Ecology Center	734-369-9263	frey@recycle.com
Gruber	Fred	Apt. Association	734-668-1111	fredgruber@aol.com
Greve	Pat	Waste Management		pgreve@wm.com
Hennessy	Chris	Advanced Disposal	248-504-2535	christopher.hennessy@advanceddisposal.com
Ladd	Maggie	South U. Area Assoc.	734-730-5185	southu@gmail.com
Lazarus	Howard	City Administrator Ann Arbor		hlazarus@a2gov.org
Maciejewski	Molly	Public Works Mgr Ann Arbor		mmaciejewski@a2gov.org
McMurtrie	Tom	Resident	734-323-4623	tmcmurt1@gmail.com
Mirsky	John	Environmental Commissioner		jmirsky@a2gov.org
Mundus	Carlton	B Green Ann Arbor		carlton.mundus@gmail.com
Murray	Tom	Conor O'Neill's and Main St. AA	734-904-1390	tmurray@conoromeills.com
Petoskey	Jenny	City of Ann Arbor		jpetoskey@a2gov.org
Pollay	Susan	Ann Arbor DDA	734-994-6697	spollay@a2dda.org
Prochnow	Karen	Resident		prochnow.karen@gmail.com
Seibert	Christina	APTIM	630-762-3306	christina.seibert@aptim.com
Seyfarth	Heather	Ann Arbor	734794-6430	hseyfarth@a2gov.org
Shaffran	Ed	Shaffran Co.	734-276-6031	edward@shaffran.com
Singleton	Grace	Zingerman's	734-904-4068	gsingleton@zingermans.com
Slotten	Cresson	Ann Arbor	734-794-6430	cslotten@a2gov.org
Stone	Nancy			nancystone123@yahoo.com
Teeter	John	First Martin	734-994-5050	jteefer@firstmartin.com
Todoro	Frances	State St. District	734-646-1500	frances@a2stat.com
Weinert	Brian	Recycle Ann Arbor	734-883-5720	bryanweinert@recycleannarbor.org
Wright	Jan	ICPJ	734-975-0445	janwright@umich.edu

SOLID WASTE RESOURCES MANAGEMENT PLAN

ADVISORY COMMITTEE MEETING #3

April 23, 2019

WELCOMING COMMENTS

Updates re: City activities impacting the SWRMP

Advisory on Steven Brown's April 5th email re: SWRMP/APTIM Citizen Advisory Committee statement of concern

Agenda review and desired outcomes poll

Review of January 15th meeting summary

KEY ACCOMPLISHMENTS SINCE MEETING #2

✓ Contract extensions

- City staff completing contract extensions for commercial waste franchise, cart recycling collection, and recyclables processing

✓ Public engagement

- Resident telephone survey fielded March 24th - 31st

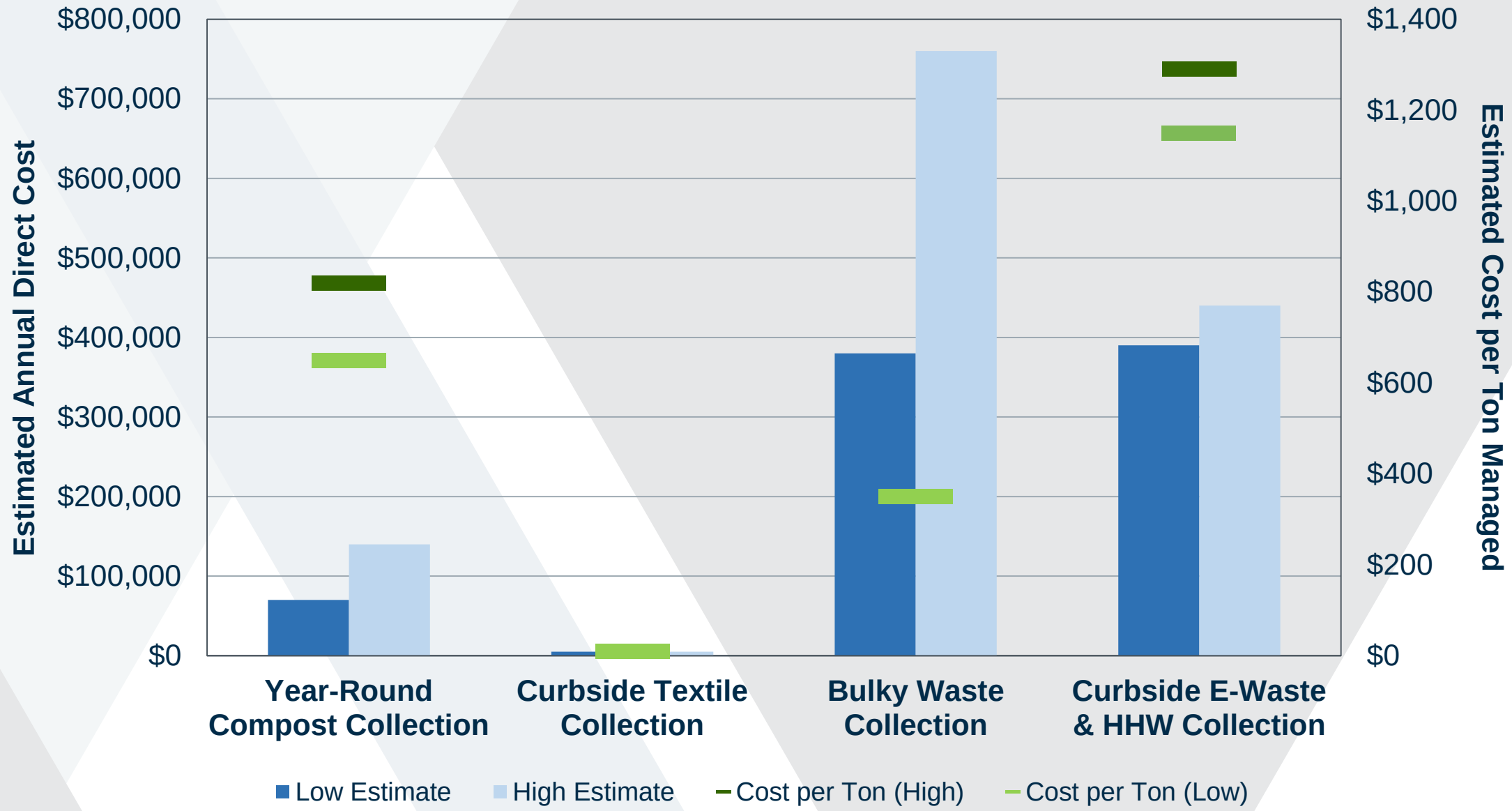
✓ Research and analysis to inform recommendations:

- Program and service options, including preliminary staffing / resource needs and cost estimates

SUMMARY OF RESIDENTIAL SECTOR OPTIONS

Rating Scale ↑ High → Medium ↓ Low Residential Sector Options	Benefits			Ratings				
	Increase Diversion	Reduce Toxics	Improve Services	Implementation Effort	Zero Waste Alignment	Direct Cost	GHG Reduction	Responsive to Public Input
Year-Round Residential Compost Collection	✓		✓	→	→	→	→	↑
Curbside Textile Collection	✓		✓	↓	→	↓	↓	→
Bulky Waste Collection			✓	↑	↓	→	↓	↑
E-Waste and HHW Collection	✓	✓	✓	→	↑	→	↓	→

RESIDENTIAL OPTIONS: ANNUAL COST IMPACT



RESIDENTIAL OPTIONS: SMALL GROUP DISCUSSION

1. Which option(s) knocked your socks off - and why?

2. Which option(s) turned you off - and why?

3. What questions do you have about any option(s) that must be answered for you to have a serious opinion about the option?

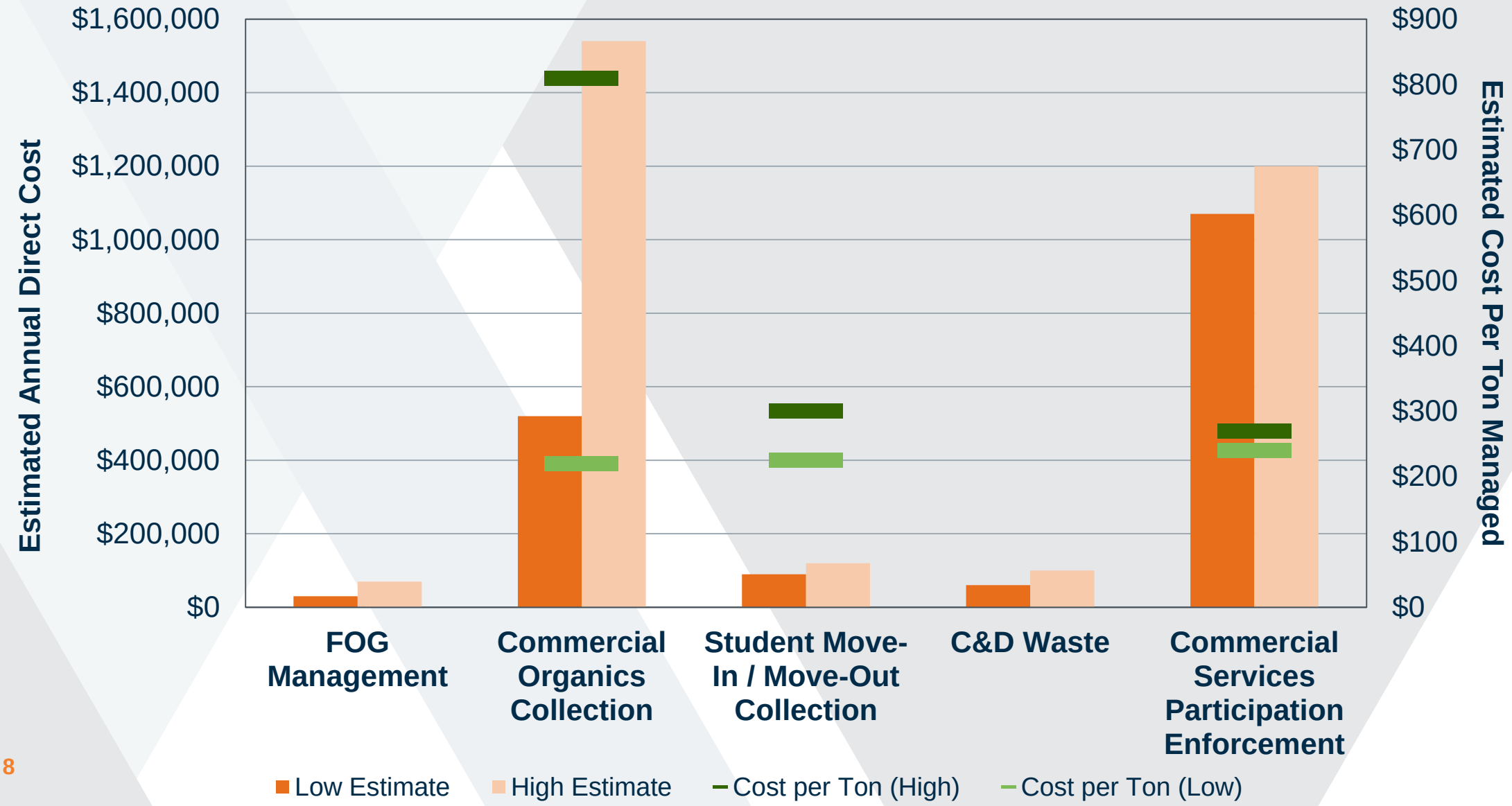
SUMMARY OF COMMERCIAL SECTOR OPTIONS

Rating Scale

- High
- Medium
- Low

Commercial Sector Options	Benefits			Ratings				
	Increase Diversion	Reduce Toxics	Improve Services	Implementation Effort	Zero Waste Alignment	Direct Cost	GHG Reduction	Responsive to Public Input
Fats, Oils, and Grease (FOG) Management	✓		✓	→	→	↓	↓	↓
Commercial Organics Collection	✓		✓	↑	↑	↑	↑	↑
Student Move-In / Move-Out Collection	✓		✓	→	↓	↓	↓	↑
C&D Waste	✓		✓	↑	↑	↓	↓	→
Commercial Services Participation Enforcement	✓		✓	↑	↑	↑	↑	→

COMMERCIAL OPTIONS: ANNUAL COST IMPACT



COMMERCIAL OPTIONS: SMALL GROUP DISCUSSION

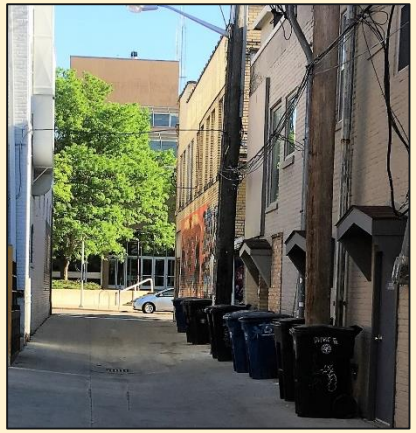
1. Which option(s) knocked your socks off - and why?

2. Which option(s) turned you off - and why?

3. What questions do you have about any option(s) that must be answered for you to have a serious opinion about the option?

DOWNTOWN / ALLEY OPTIONS

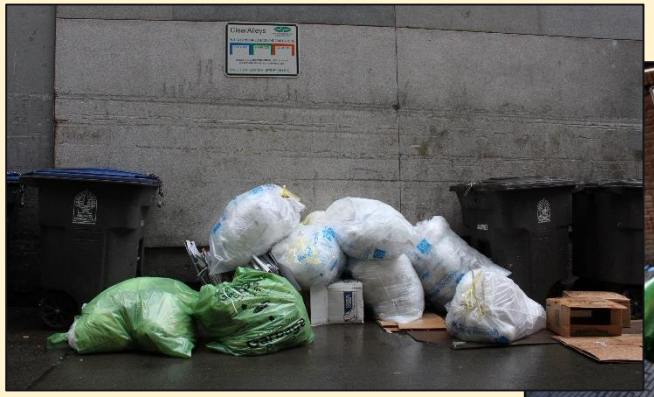
Alt. A - 7-Day Collection, Mandatory Saturday & Sunday for Restaurants / Bars



Alt. B - Consolidated Containers and 7-Day Collection with Special Assessment

Alt. C - Consolidated Underground Containers and 7-Day Collection with Special Assessment

Alt. D - Bag-Based Collection with Twice Daily Pickup



SUMMARY OF DOWNTOWN / ALLEY OPTIONS

Rating Scale

- ↑ High
- → Medium
- ↓ Low

Downtown / Alley Collection Service Improvement Options	Benefits			Ratings				
	Alley Accessibility	Public Health	Aesthetics	Implementation Effort	Zero Waste Alignment	Direct Cost	GHG Reduction	Responsive to Public Input
Alt. A - 7-Day Collection, Mandatory Saturday & Sunday for Restaurants / Bars		✓		↑	↓	→	↓	→
Alt. B - Consolidated Containers and 7-Day Collection with Special Assessment	✓	✓	✓	↑	↓	→	→	↑
Alt. C - Consolidated Underground Containers and 7-Day Collection with Special Assessment	✓	✓	✓	↑	→	↑	→	↑
Alt. D - Bag-Based Collection with Twice Daily Pickup	✓			↑	→	↑	↓	↑

DOWNTOWN / ALLEY OPTIONS: SMALL GROUP DISCUSSION

1. Which TWO of these alternatives should be given the most consideration?

2. If you have a strong feeling about ANY alternative - please share.

3. What questions do you have about any alternative?

RESIDENT SURVEY RESULTS

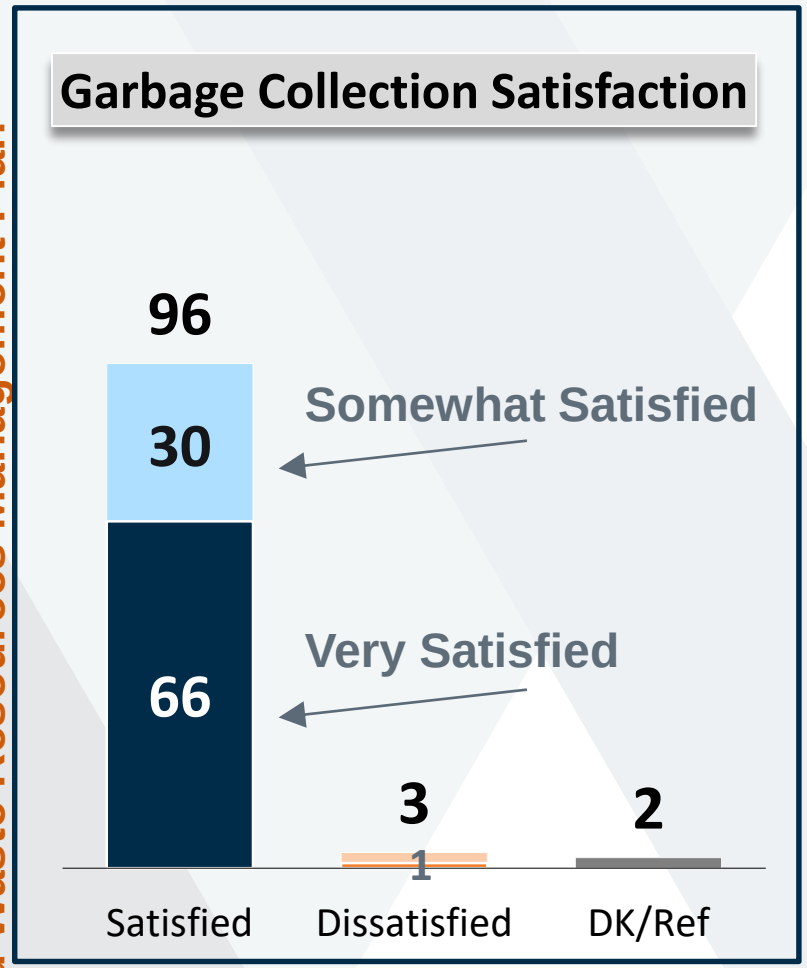
Survey fielded March 24th - 31st

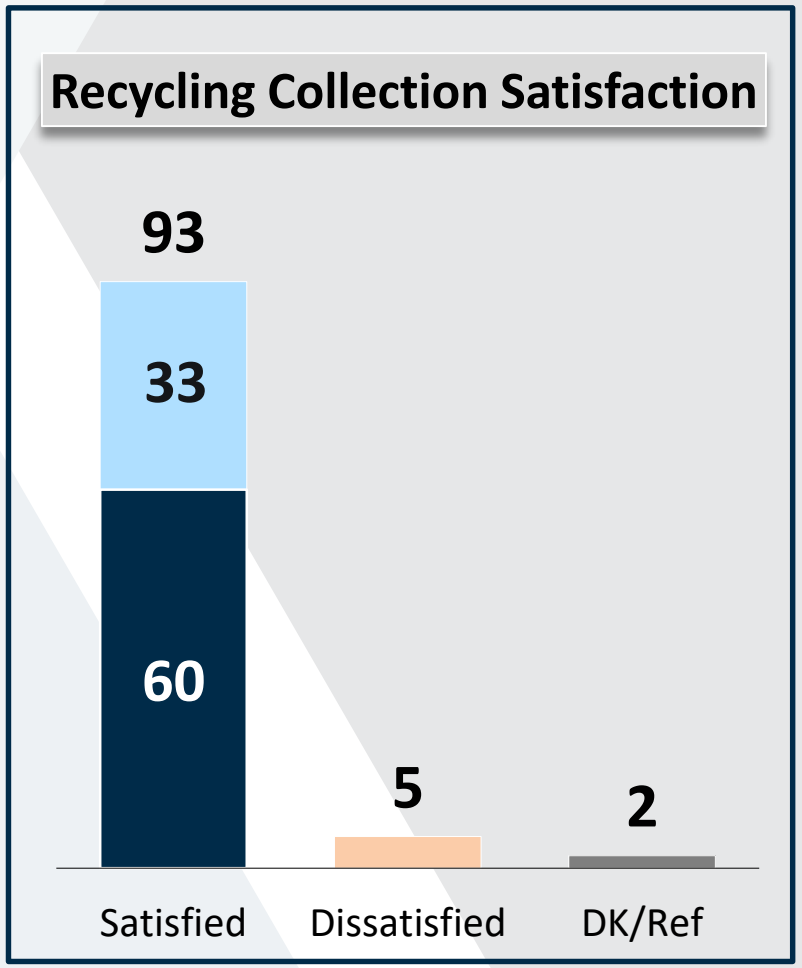
- 15 minute questionnaire
- 400 responses
- Margin of error = ±4.9% at 95% confidence level

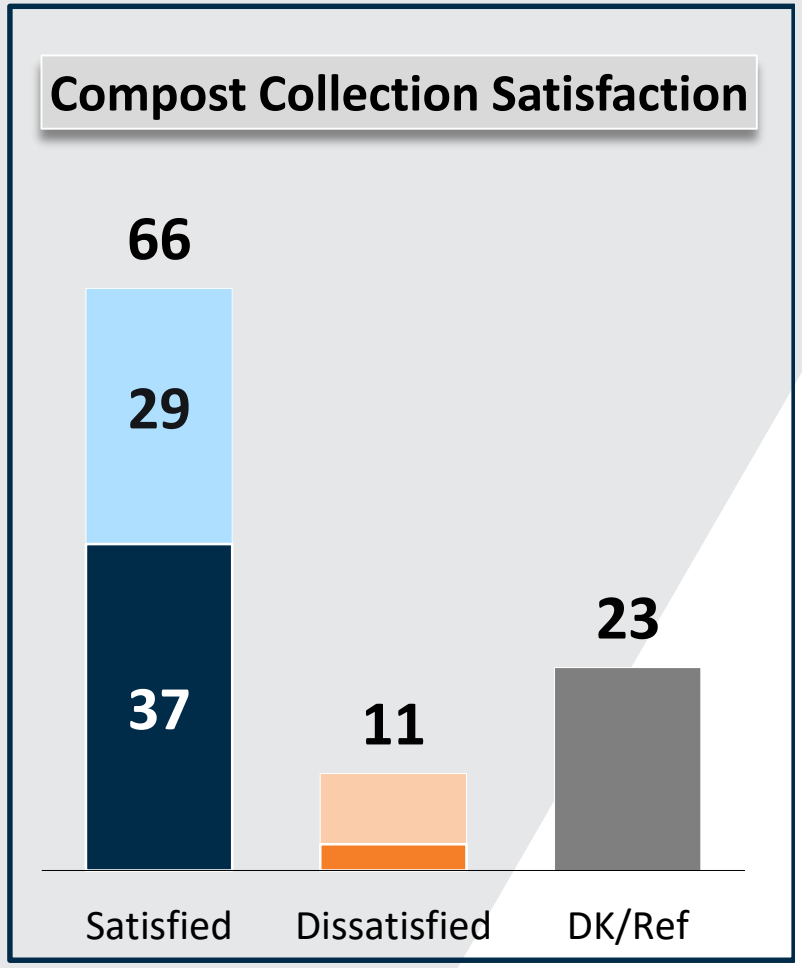
Broad range of topics

- Satisfaction with current services
- Recycling and compost practices
- Bulky item, e-waste, and HHW practices and needs
- Education needs and methods of receiving information
- Payment / funding options support

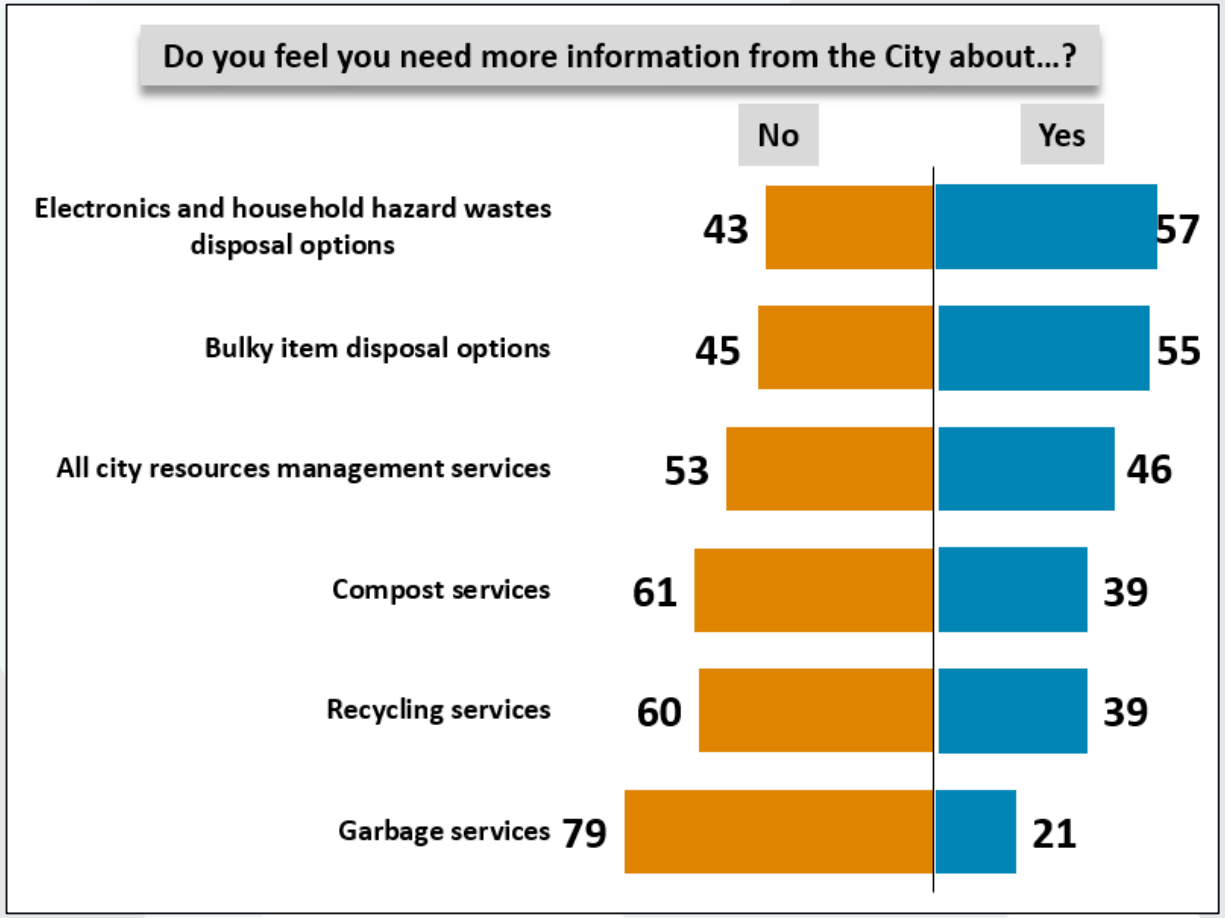
SURVEY SAYS…SATISFACTION IS HIGH

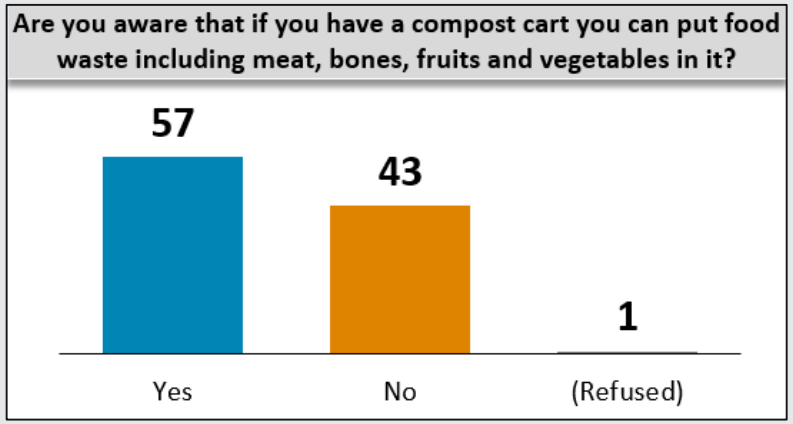


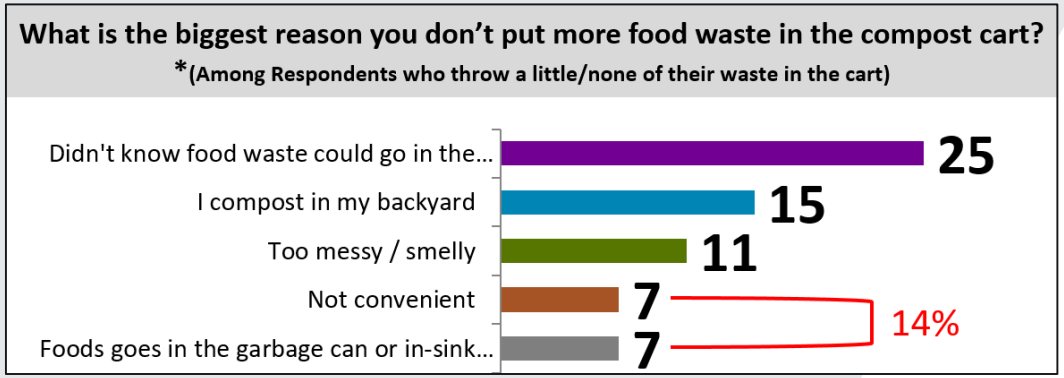


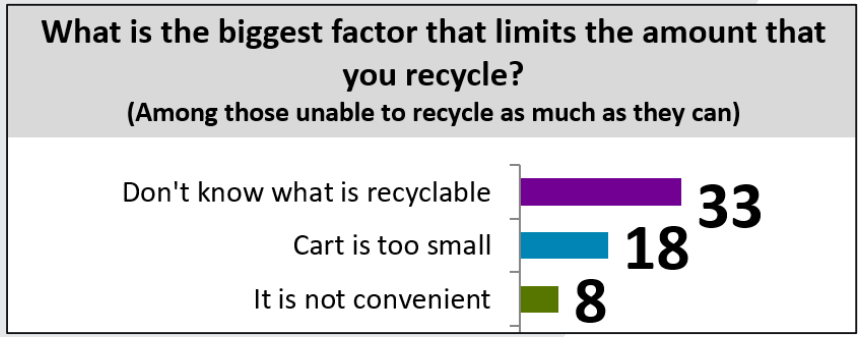


SURVEY SAYS…RESIDENTS HAVE A NEED FOR MORE INFORMATION - EVEN ON CURRENT SERVICES

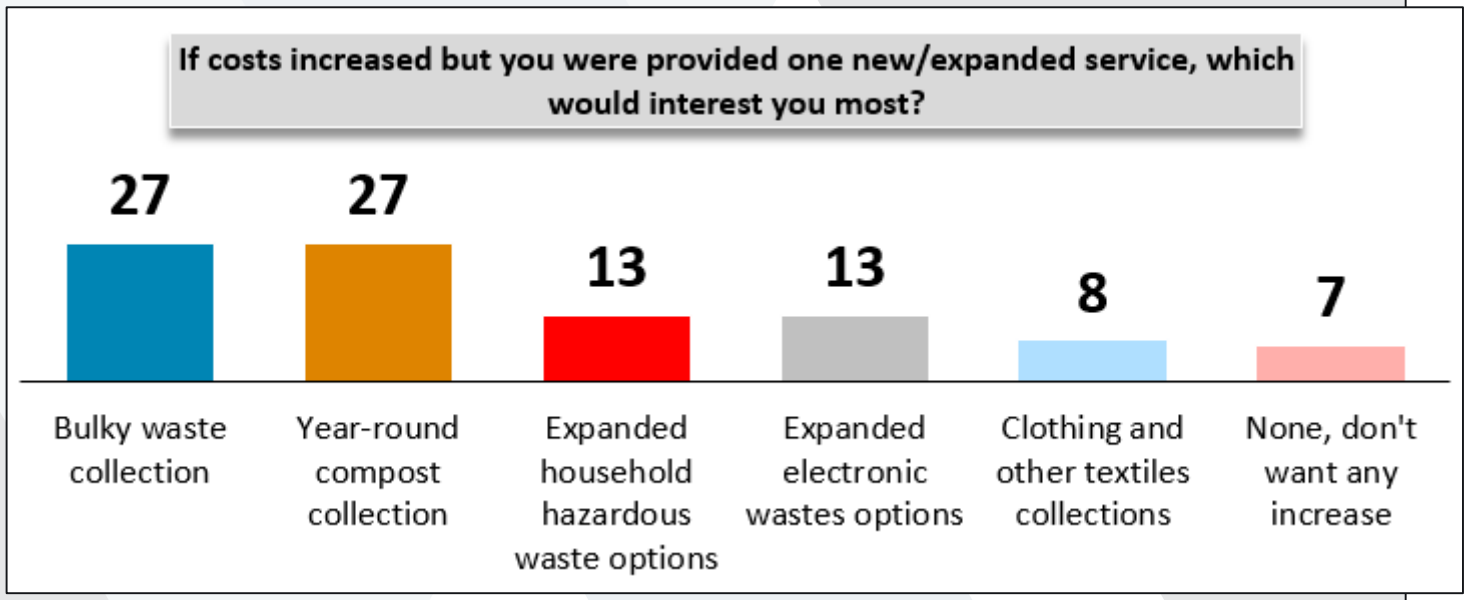


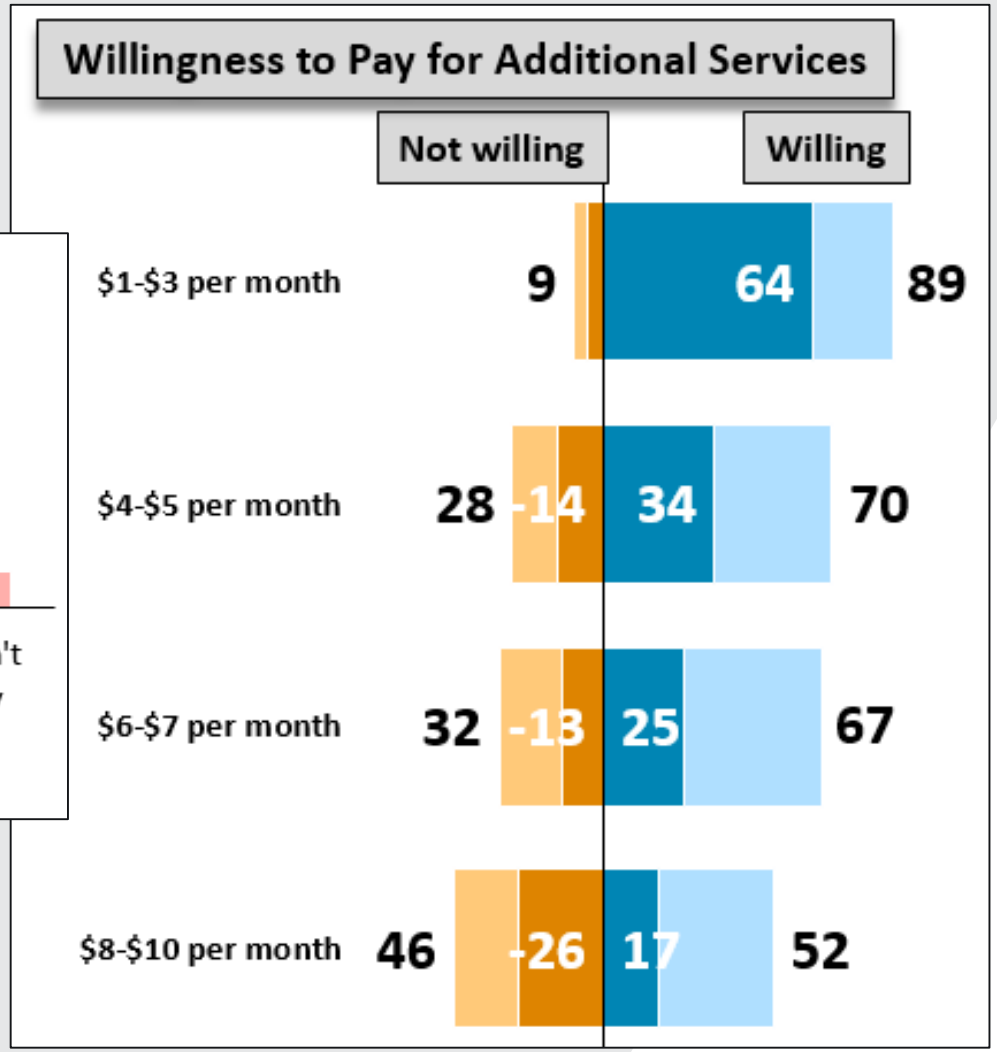




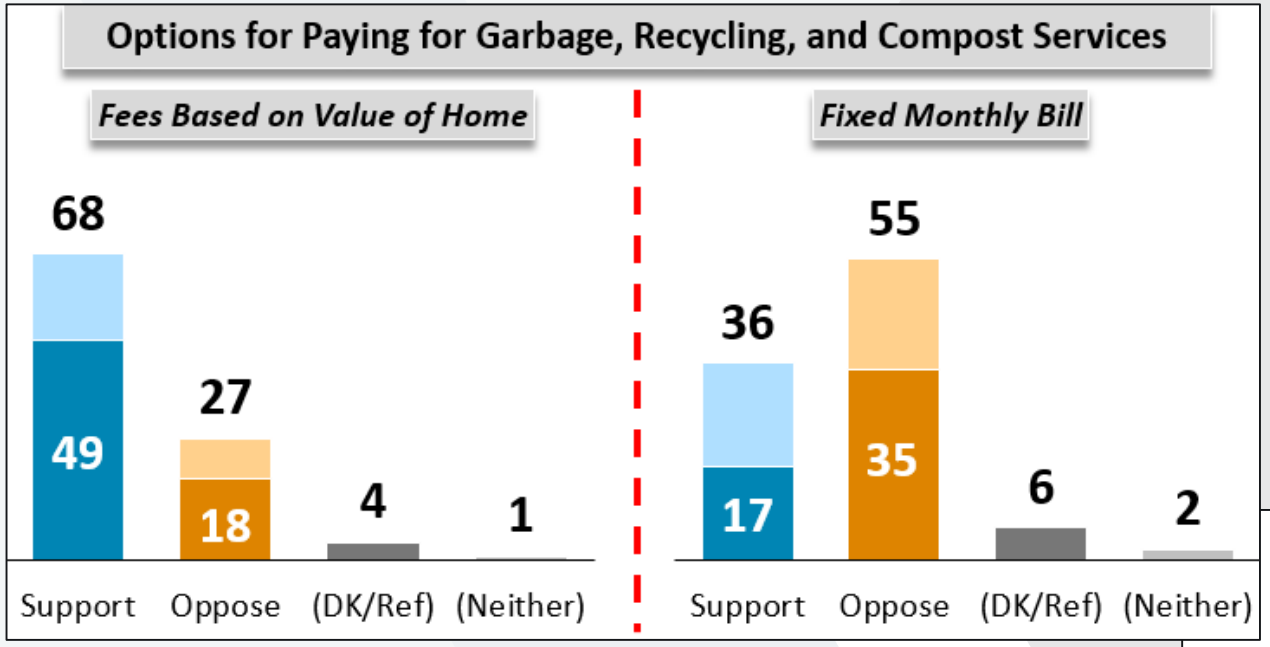


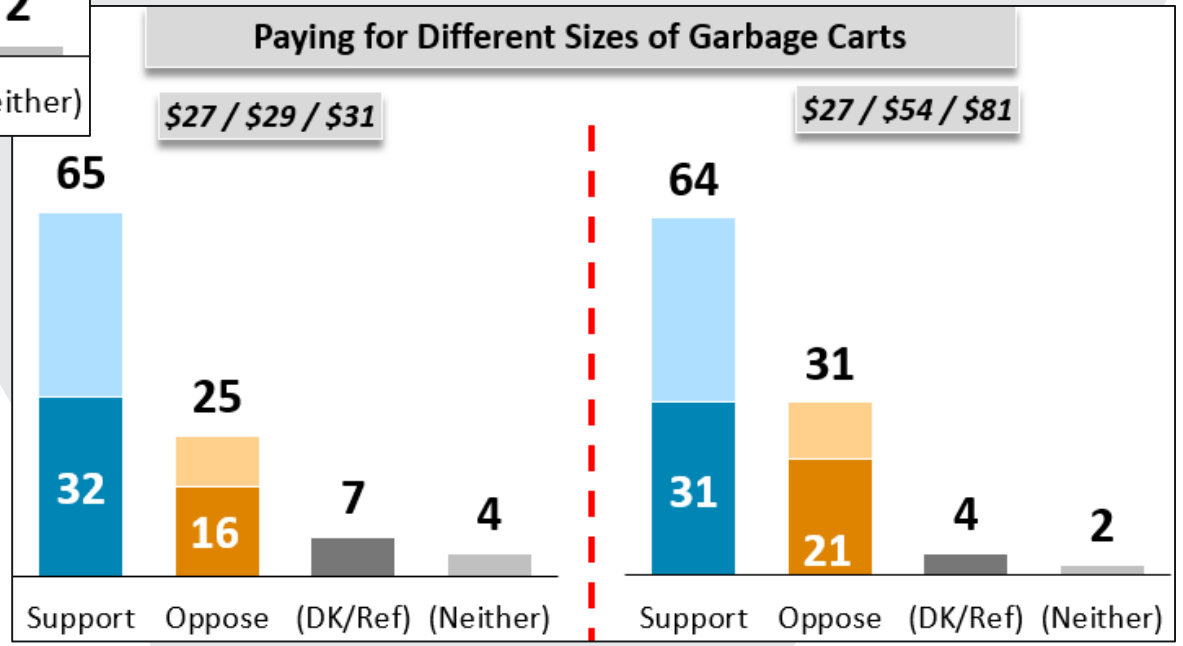
SURVEY SAYS…RESIDENTS WANT ADDITIONAL SERVICES, AND ARE WILLING TO PAY FOR THEM





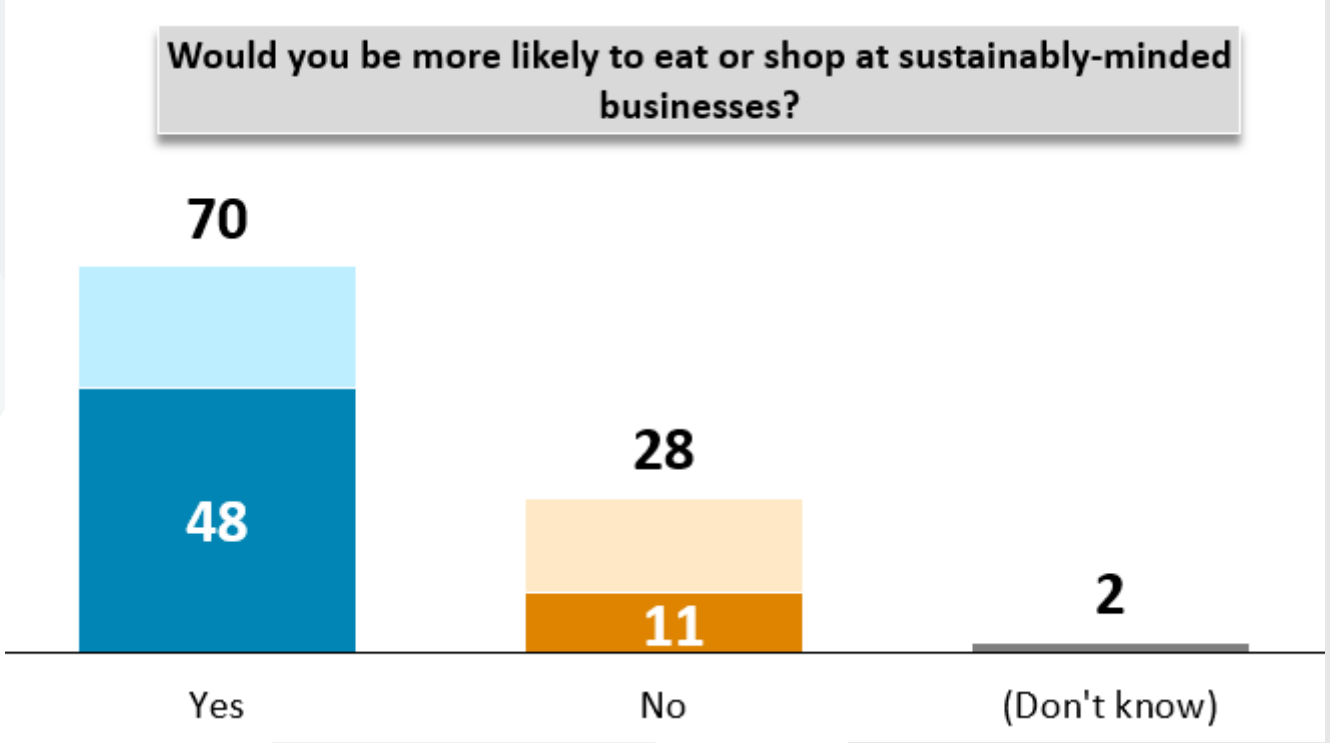
SURVEY SAYS…RESIDENTS FAVOR COSTS BASED ON HOME VALUE OR GARBAGE CART SIZE





SURVEY SAYS…RESIDENTS ARE MORE LIKELY TO EAT OR SHOP AT SUSTAINABLY-MINDED BUSINESSES

This question was included based on input from Community High School's Urban Planning Community Resource (CR) students working on a solid waste education and outreach project in collaboration with the City:



CURRENT ANN ARBOR PUBLIC EDUCATION EFFORTS

Review of current outreach and education efforts

- Jennifer Petoskey, Ann Arbor Solid Waste Outreach and Compliance Specialist

Highlight on Community High School program

- Heather Seyfarth, Ann Arbor Community Engagement Specialist

WHAT'S NEXT?

Environmental Commission update and input - April 25th

Draft the SWRMP report

- Identify resource requirements, funding methods, and service delivery
- Present recommendations and implementation guidance

City staff activities

- Finalize contract extensions with RAA and Waste Management
- Track Environmental Commission's Solid Waste Working Group activity
- Review draft SWRMP report
- Outreach to potentially coordinate Community High School group presentation for next meeting

KEEP UPDATED ON THE PROGRESS OF THE SWRMP

Website:

www.a2gov.org/SWRMP

Email:

SWRMP@a2gov.org

Individual Contacts:

Cresson Slotten
Project Manager
City of Ann Arbor
(734) 794-6430 x 43701
cslotten@a2gov.org

Christina Seibert
Project Manager
APTIM
(630) 762-3306
christina.seibert@aptim.com

Charlie Fleetham
Lead Facilitator
Project Innovations
(248) 476-7577
charlie@projectinnovations.com

City of Ann Arbor
Solid Waste Resource Management Plan
Advisory Committee Meeting #4
May 21, 2019 Meeting Summary

Participant List – see final page.

1. **Welcome -** Cresson Slotten, City of Ann Arbor Project Manager for the Solid Waste Resources Management Plan (SWRMP) Project welcomed the participants, noted that it was the fourth and final meeting, and updated the committee on recent events impacting the SWMRP effort:

   a. *The project team met with the Environmental Commission on April 25 and 1) provided a project update, 2) presented the options discussed with this committee with a summary of the feedback, 3) summarized the Cost of Service Analysis findings and Resident Survey results and 4) asked for additional feedback.*

   b. *Regarding Ann Arbor membership in the Washtenaw Regional Resource Management Authority (WRRMA), the Environmental Commission passed a resolution restating the Commission's recommendation that the City become a member of the WRRMA, and in his welcoming remarks at the Michigan Recycling Coalition's Annual Conference last week, Mayor Taylor expressed his view that he hoped the City would join the Authority.*

   c. *After our last meeting, the winter term at U-M ended, and the spring student move-out season took place. As you know materials management services related to this season is part of our discussions here, and are going to be factored into the plan recommendations; some of you may have heard that the City expanded the program this spring to provide 4 days of additional dumpster tips to multi-family sites that requested them at no charge to the properties, in addition to the typical drop-off location for materials near the campus area.*

   d. *The contract amendments to extend the current contracts with Waste Management of Michigan for the Commercial Waste Collection Franchise, and Recycle Ann Arbor for Recycling Collections and for Recycling Processing are on track for being presented to City Council for their approval at their 6/3/19 meeting. These amendments will extend these contracts through June 30, 2020 to allow for the City to develop the Request for Proposals to replace these contracts incorporating the recommendations of the Plan.*

   e. *At our last meeting, a question was asked about the status of Recycle Ann Arbor's proposal to the City regarding the MRF. After that meeting, Recycle Ann Arbor provided the City with an updated submittal of their unsolicited sole-source proposal related to the MRF.*
      - *In examining the ability of the City to act on this submittal, it's been recognized that the City Code section related to competitive bidding needs to be amended to clearly indicate that the City Administrator can determine if competitive bidding is not practical or of no advantage to the City in certain situations, such as this or others.*
      - *If this Code change is approved by City Council, which requires approval of two readings of the ordinance and a public hearing to be held, then staff can bring forward to City Council a contract based on RAA's submittal after the City's items of concern/clarification are addressed, for City Council to determine whether or not to award that contract.*

   f. *Lastly, Theo Eggermont of Washtenaw County and our Committee, has brought to my attention that in 2018 the Ann Arbor Summer Festival made a commitment to become a zero-waste event over the next two to three years, and this year will be implementing new three-stream waste stations. The festival organizers need volunteers to guide attendees when tossing out compost, recycling, and landfill items. Individuals and teams are welcome! Sign up at https://bit.ly/2VuXqUf; full link: https://www.signupgenius.com/go/20f0d4faea623a1f58-festival. We'd like you to be "amplifiers" to spread the word. Please share via Facebook, Nextdoor, or Twitter. This program initiative was highlighted on "Issues of the Environment" on WEMU radio.*

2. **Review 4/23/19 Committee Summary and Pre-Meeting Commentary -** Charlie Fleetham, the Public Engagement Facilitator for the project, reviewed the agenda (see page 4) and summarized the feedback that had been received about the draft options. Charlie also provided a description of what makes up a strategic plan, such as the SWRMP, compared to a County solid waste plan required by the State, or a Zero Waste Plan which may be contemplated by the City's Environmental Commission (see AC Meeting #3 Meeting Summary). Based on stakeholder input throughout the process, and considering operational and financial conditions, strategies in the SWRMP are focused first to improving current operations and customer service, in order to ensure operational and financial sustainability of services.

3. **Overview of Draft SWRMP Recommendations -** Christina Seibert, Project Manager, APTIM, delivered a PowerPoint presentation, which accompanies this summary and is also available on the project website. This presentation and accompanying documentation were furnished to the committee prior to the meeting. Christina covered the following topics:

   a. Baseline Assumptions for Consideration of Recommendations
   b. Summary Pros and Cons of Funding Options
   c. Summary Pros and Cons of Service Delivery Options
   d. Project Cost Overview
   e. Draft Recommendations for Comment

   Charlie asked the participants to discuss the presentation content in small groups, in particular, the content regarding cost and service delivery options as this material was new to the group. The questions and comments are summarized below:

   - We don't have a full understanding about WRRMA – what it will deliver to Ann Arbor and why we should join it?
   - What is the proportion of commercial vs. residential contribution to the City's solid waste revenue?
   - Why didn't we get an option that considered modernizing the Drop-Off Station. It needs a lot of work.
   - Why did you ignore our Bulky Waste recommendation? We didn't think it was needed, but you have recommended it.
   - Why is the cost of commercial ordinance enforcement so large?
   - How will your recommendations improve our diversion rate? (Seems to be missing)
   - How will your recommendations reduce Greenhouse Gasses? (Seems to be missing)
   - Regarding the Downtown Alley recommendation, have you considered a Special Assessment District? We asked for you to consider this idea.
   - This plan doesn't have firm goals for reducing Greenhouse Gasses, improving recycling or improving diversion.
   - We were not offered an opportunity to weigh in on service consolidation.
   - We question the validity of this committee process. We were not consulted on important recommendations, like service consolidation or the future of the MRF. We would like a vote on adding the Drop-Off Station, MRF recommendations, Service Consolidation and Bulky Waste.

   Project Team Response: Detailed responses to the questions/comments can be found beginning on page 5 of this summary. Regarding the request inclusion of the future of the City's Drop-Off Station (DOS) and MRF in the SWRMP, Cresson Slotten noted that the Drop-Off Station and the MRF were significant items of consideration in the Washtenaw County Solid Waste Plan and in the discussions regarding the establishment of a new regional solid waste/recycling authority (WRRMA), and the SWRMP is being developed within the context of the County Plan and the authority development. Therefore recommendations regarding the DOS and/or MRF were not included in the set of options and then recommendations because the City seeks to align with Washtenaw's plan and evaluate options related to the Drop-Off Station and MRF via WRRMA. Theo Eggermont provided a brief

overview of the Washtenaw Plan and its coverage of the Drop-Off Station and MRF. Regarding Service Consolidation, Charlie asked the Committee if it wanted one more meeting to discuss/weigh in on Service Consolidation and other topics of interest. The majority of the participants voted for a 5th meeting. Cresson noted that the City would have to consider the request, given that a 5th meeting was not in the contracted scope of work. (Subsequent to this meeting, staff is preparing an item City Council consideration to approve addition of a 5th meeting to the project's contract scope).

Forced Ranking Exercise: At the conclusion of the presentation, Charlie asked the committee to prioritize the recommendations in a forced ranking exercise. See page 8 for the results.

4. **Next Steps to Finalize SWRMP -** Cresson said that the City will respond to the Committee's request for a 5th meeting; however, the current plan calls for the Project Team to deliver its final draft report to the Environmental Commission on Thursday, July 25th. Committee members will receive a copy of the draft report prior to the July 25th meeting and are invited to provide comments via email or with public comment at the Environmental Commission meeting. Cresson noted that committee commentary would be included in the final report as well as the summaries of the committee meetings.

5. **Process Feedback -** Charlie noted that the City continuously strives to improve its public engagement process. As this was the last planned meeting, he asked the participants to complete a feedback survey. The results are on page 12.

6. **Meeting Close:** Cresson thanked the committee members for their participation in the process, and said that their service was greatly appreciated by the Project Team and the City's leadership.

City of Ann Arbor
Solid Waste Resources Management Plan (SWRMP)
Advisory Committee Meeting #4 Agenda
May 21, 2019

Ann Arbor DDA, 150 South Fifth Ave, Ann Arbor
1:00 pm to 3:00 pm

1:00 p.m.	**Welcome and Group Introduction** ▪ Updates re: City Activities Impacting the SWRMP - Cresson Slotten, Ann Arbor Solid Waste Resources Management Plan Contract Manager ▪ Agenda Review/Desired Outcomes Poll - Charlie Fleetham, Facilitator, Project Innovations, Inc.
1:05 p.m.	**Review 04/23/19 Committee Meeting -** Charlie Fleetham • Presented Preliminary Options and conducted Small Group Discussions • Compiled Feedback from Small Group Discussions • Additional Questions/Comments?
1:25 p.m.	**Overview of SWRMP Draft Recommendations -** Christina Seibert, APTIM Project Mgr. • Summary Review of Pre-Meeting Materials • Facilitated Group Discussion • Forced Ranking Exercise
2:40 p.m.	**Next Steps to Finalize SWRMP -** Cresson Slotten
2:45 p.m.	**Process Feedback -** Charlie Fleetham
2:55 p.m.	**Meeting Close -** Cresson Slotten
3:00 p.m.	**Public Comment (three-minute limitation per speaker)**

Questions/comments from Solid Waste Resources Management Plan (SWRMP)
Advisory Committee Meeting #4
May 21, 2019

1. ***We don't have a full understanding about WRRMA – what it will deliver to Ann Arbor and why we should join it?*** The Washtenaw Regional Resource Management Authority (WRRMA) is anticipated to initially focus on: Education and Outreach among the member communities with the goal of increasing the quality and quantity of recyclables collected by the communities; and, data and metrics for the member communities, to create a common system of measurement and tracking of materials. A goal is seen to have the member communities become attractive for a recycling processing contractor to provide services with the communities and/or Authority, potentially utilizing the City's MRF to do so. Also, the Authority is the likely entity to expand drop-off facilities in the eastern area of the County, including the replacement of the City's Drop-Off Station.

2. ***What is the proportion of commercial vs. residential contribution to the City's solid waste revenue?*** Total City solid waste revenue in FY2018 was approximately $16.7 million. Components of this revenue include:

    - $8.3 million from property tax millage revenue on residential properties
    - $4.4 million from property tax millage revenue on commercial properties
    - $2.9 million from fees for services, principally from commercial customers
    - $1.1 million from royalties, revenue shares, and other miscellaneous sources

3. ***Why didn't we get an option that considered modernizing the Drop-Off Station? It needs a lot of work.*** The replacement of the City's Drop-Off Station (DOS) is the highest priority item in the Solid Waste category of the City's Capital Improvements Plan (CIP) and has been included in the plan since 2004. The existing facility is a regional facility, with over 50% of the users being non-City. Therefore, the CIP calls for half of the project to be funded by non-City source(s). This is the key factor that has stopped the project from moving forward to date, despite being the highest priority solid waste related project in the CIP.

    More detailed planning for the replacement of the City's DOS was performed as part of a study commissioned by Washtenaw County, with assistance from the City, titled "*Waste Diversion Site Feasibility Study: Assessment of Recovery Facilities to Manage Recyclables,*" which was completed by RRS in 2017. (https://www.washtenaw.org/DocumentCenter/View/1301/Washtenaw-Diversion-Plan-October-30-2017-Final-PDF?bidId) This study reaffirmed the CIP's approach to replacing the DOS; as noted on page 44 of the PDF file (page 40 of the report document): "The final total costs assume that all new facilities and existing facilities are upgraded or modified and that the operations are provided through contractual service providers, contracted by an Authority (for example WWRA), Washtenaw County, or a municipality. The capital requirement assumes that the all the (sic) capital would be provided by Washtenaw County." WWRA is the Western Washtenaw Recycling Authority, an already existing authority, but this could still apply to WWRMA.

    With this planning already completed, and the framework for a regional approach being laid out and confirmed through WRRMA, further efforts to examine and consider the DOS were not appropriate for inclusion in the SWRMP planning process. The SWRMP will note efforts such as the DOS and

prior studies completed as appropriate for reference within the broader context of solid waste resources management practices and activities.

4. ***Why did you ignore our Bulky Waste recommendation? We didn't think it was needed, but you have recommended it.*** Though there was mixed support of this option by the Advisory Committee, Resident Survey respondents identified this as their top desired new or expanded service (along with year-round compost collection). The team is therefore continuing to consider Bulky Waste options based on the input provided by another key stakeholder group. By continuing to bring the conversation to the Advisory Committee, the team is seeking input to help determine how to best balance the various perspectives and be responsive to perceived needs of all stakeholders, while also providing clarity regarding costs to provide the service and options to cover such costs.

5. ***Why is the cost of commercial ordinance enforcement so large?*** The cost includes: a full-time staff person to monitor and enforce compliance by all customers; additional containers necessary for the newly added customers that are not currently participating, and that change/enter it in the future; new costs for collection and disposal/recycling services for properties that are currently not participating whatsoever in any of the City's solid waste programs (i.e., they use other service providers), and increased costs resulting from movement of materials from the City's trash stream to the recycling stream, at a significantly greater expense to process than to dispose as trash. The annual cost breaks down to the following principal areas:

    - Monitoring and enforcement labor = $80,000
    - Collection-related labor (0.5-1.0 FTE driver) = $65,000-$130,000
    - Collection fleet, operations and maintenance = $60,000-$120,000
    - Added disposal cost (new waste tons entering the system) = $104,000
    - Added recycling cost (new recycling tons to be processed) = $1,123,000

    Funding to cover a portion of these increased costs would be provided by properties who are not currently paying a service fee to the City being added to the system.

6. ***How will your recommendations improve our diversion rate? (Seems to be missing)*** Diversion rate impacts were included in the Preliminary Options document distributed prior to Meeting 3 of the Advisory Committee (https://www.a2gov.org/departments/systems-planning/planning-areas/Documents/SWRMP%20Preliminary%20Options%20-%20.pdf).

7. ***How will your recommendations reduce Greenhouse Gasses? (Seems to be missing)*** Potential impacts to greenhouse gas emissions were identified in the Preliminary Options document. GHG impacts will be calculated and included in the SWRMP report for consideration.

8. ***Regarding the Downtown Alley recommendation, have you considered a Special Assessment District? We asked for you to consider this idea.*** Recommendation D.3, Development of a Cost-Allocation Formula to Apportion Costs, contains the aspects of a "special assessment district" the team understands is desired by the stakeholders - - a formulaic approach to establish and apply charges on a consistent basis for classes of customers for services in the downtown that are determined necessary for the downtown area. The determination of what specific method would be utilized to apply these desired aspects - - special assessment, business improvement zone, or other - - requires further legal review within the context of Michigan law to confirm applicable and

appropriate method(s) for securing funding. This review would be performed as part of the implementation of this recommendation.

9. ***This plan doesn't have firm goals for reducing Greenhouse Gasses, improving recycling or improving diversion.*** The Solid Waste Resources Management Plan is a strategic plan that is laying out directions for operational, program, and services improvements and expansions in the City's solid waste programs area. Improvements include reductions of greenhouse gas emissions and improved diversion through some of the recommendations, but there are also several additional characteristics being included to assist in selecting the plan's recommendations to meet overall objectives of the City with a primary focus on the next 5-year planning period. The establishment of firm goals for reducing greenhouse gases specifically through the solid waste programs area and/or goals for improving recycling or diversion is outside the scope of this project, but could be included in future efforts, such as a potential zero-waste plan that may be considered by the Environmental Commission as mentioned in the opening of Advisory Committee meeting #3.

10. ***We were not offered an opportunity to weigh in on service consolidation.*** Presentation of the draft recommendation related to service consolidation at the May 21 Advisory Committee meeting provided the opportunity for committee feedback. Review of service delivery options was a specific subtask in the project scope, and service consolidation was an outcome of several feedback/input points through the process, particularly the stakeholder interviews and downtown business focus group session. Feedback was provided that service overlaps are a weakness of the current programs, and that it is difficult for customers to know where to get answers or resolve issues, and that service delivery should be simplified.

11. ***We question the validity of this committee process. We were not consulted on important recommendations, like service consolidation or the future of the MRF. We would like a vote on adding the Drop-Off Station, MRF recommendations, Service Consolidation and Bulky Waste.*** The role of the Advisory Committee is to provide guidance based on each of your areas of expertise and experience, which is highly valued. However, the committee does not serve as a decision-making body, and therefore a vote of this nature would be inappropriate. The project team is responsible for balancing your input against data and other stakeholder feedback to help shape a strategic plan that is both feasible and broadly supported by the community.

SWRMP Advisory Committee
Ranking of Draft Recommendations– 26 responses
May 21, 2019

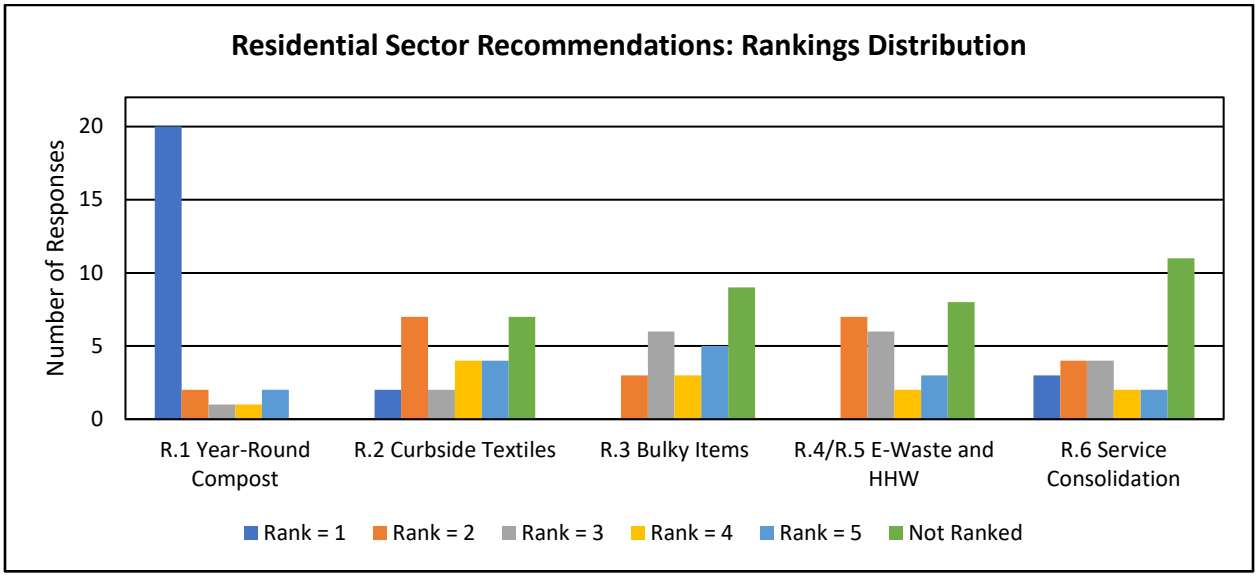
All meeting participants were provided a ranking form requesting to "Identity priorities for implementation within each sector / focus area and overall". Rankings were completed separately for each sector.

The summary tables below identify the calculated average priority assigned to each recommendation where an ordinal ranking was provided by participants. Participants were also told they could choose to not rank certain recommendations; a non-ranking of a recommendation is understood by the project team to indicate it (that particular recommendation) was not supported or prioritized for any inclusion in the SWRMP. Charts accompanying each table indicate the frequency of rankings for each recommendation, including the number of responses which did not rank certain recommendations.

The average rankings and ranking distributions, as well as input and feedback from other stakeholders through the SWRMP process (e.g., the Downtown Business Focus Group, the Resident Survey), will be utilized by the project team in finalizing recommendations for inclusion in the SWRMP and establishing implementation steps and schedules that consider rank order priorities from the Advisory Committee.

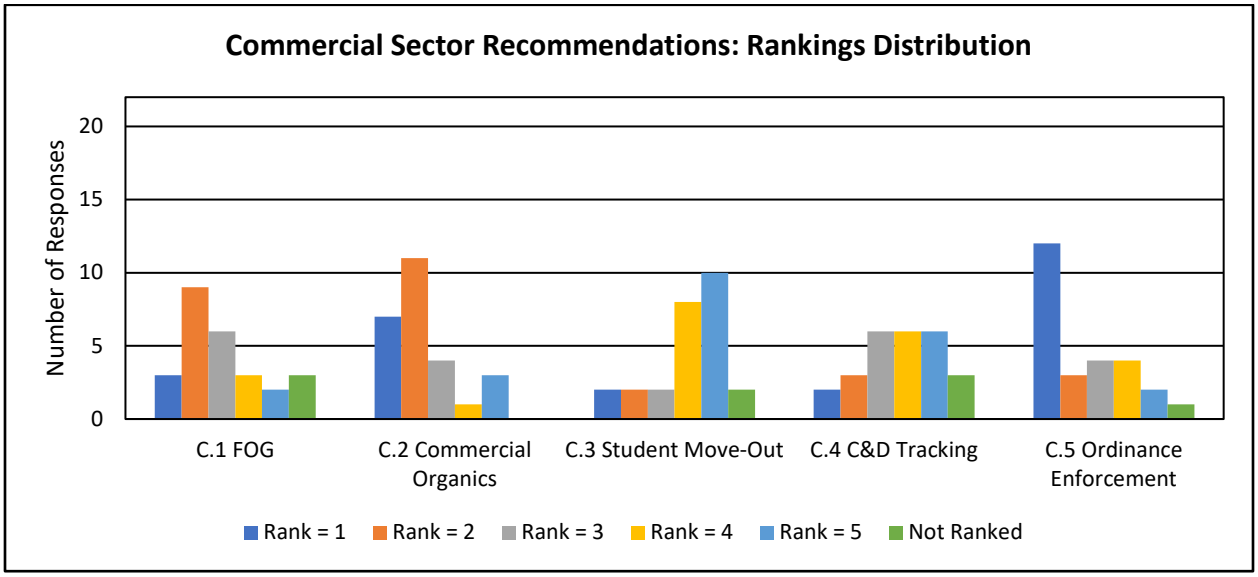
Residential – 1 (highest priority) to 5 (lowest priority)

Avg. Ranking	Recommendation	# Ranked	# Not Ranked
1.6	**R1: Year-round compost collection**	**26**	**0**
2.7	R6: Service consolidation	15	11
3.0	R2: Curbside textile collection	19	7
3.1	R4/R5: E-waste and HHW	18	8
3.6	R3: Bulky item collection	17	9



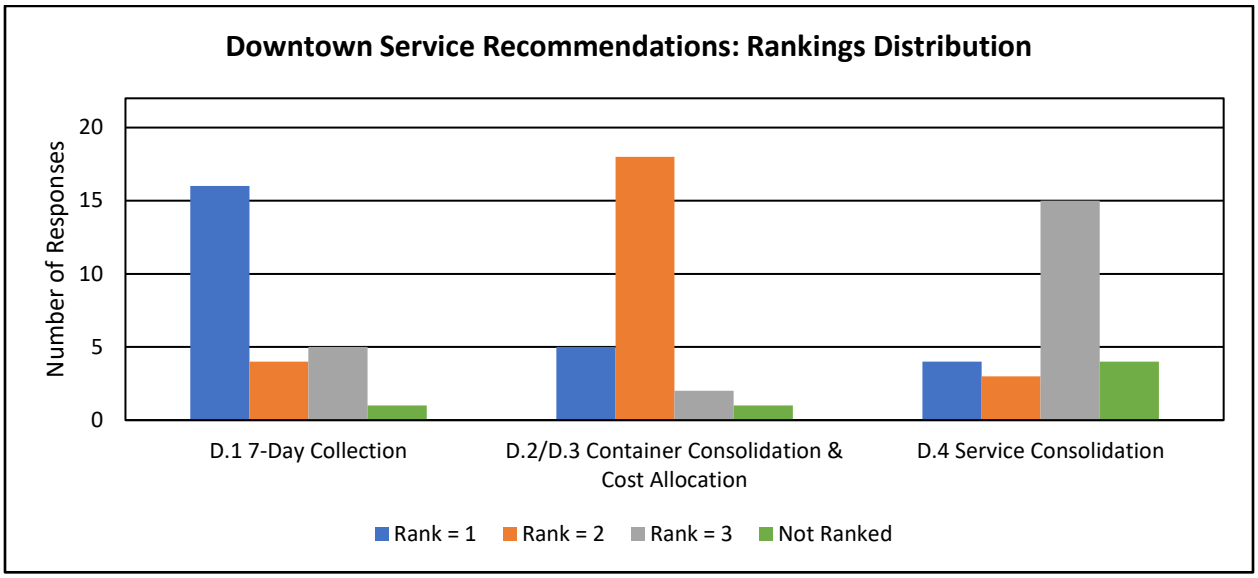
Commercial – 1 (highest priority) to 5 (lowest priority)

Avg. Ranking	Recommendation	# Ranked	# Not Ranked
2.2	**C5: Commercial ordinance enforcement**	**25**	**1**
2.3	C2: Commercial organics collection	26	0
2.7	C1: FOG management	23	3
3.5	C4: C&D tracking	23	3
3.9	C3: Student move-in / move-out	24	2



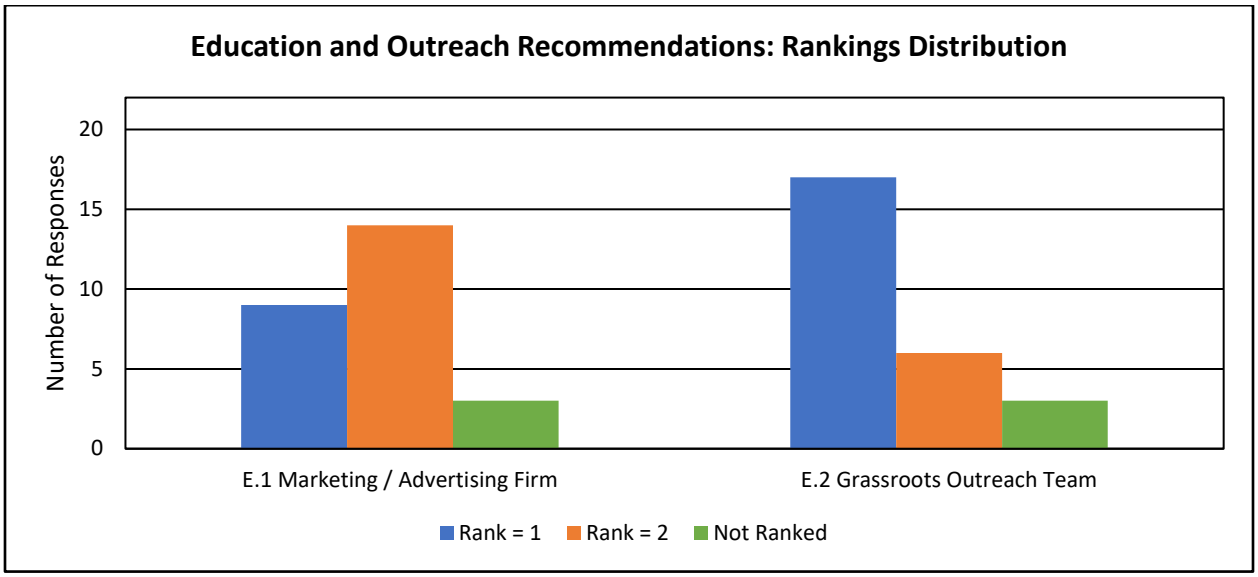
Downtown Service – 1 (highest priority) to 4 (lowest priority)

Avg. Ranking	Recommendation	# Ranked	# Not Ranked
1.6	**D1: 7-day collection**	**25**	**1**
1.9	D2/D3: Container consolidation (plan/design) and cost allocation formula	25	1
2.5	D4: Service consolidation	22	4



Education and Outreach – 1 (highest priority) to 2 (lowest priority)

Avg. Ranking	Recommendation	# Ranked	# Not Ranked
1.3	**E2: Grassroots outreach team**	**23**	**3**
1.6	E1: Marketing/advertising firm	23	3



Identify your 2 Highest Priority / Strongest Recommendations from All / Any Sector

1. **R1: Year-round compost collection - Identified by 13 participants**
2. **C5: Commercial ordinance enforcement & D1: 7-day collection - Identified by 8 participants each**

Project Team Note: The identified highest priority recommendations are consistent with the frequency distribution of rankings, indicating the strength of support for these specific recommendations. Many additional recommendations were identified by at least one (and in some cases several) committee members as highest priority recommendations; the only recommendations not identified by anyone as a highest priority were the following:

- R.2 Curbside Textile Collection
- R.4/R.5 E-Waste and HHW
- C.3 Student Move-in / Move-out
- D.4 Service Consolidation (Downtown)

<u>Verbatim comments included on ranking forms:</u>

Residential 1: Year-round compost collection
- Think monthly would work!
- If monthly or bi-weekly in winter.

Residential 3: Bulky item collection
- Limit to 1 item/year with tag/voucher.
- STUPID IDEA.

- If for fee, subsidized.
- With caveats that limit its use so not abused.
- This would rank higher if funds applied to offset drop off rates.

Residential 4/Residential 5: E-waste and HHW
- Should support with dollars as other beat the cost.

Residential 6: Service consolidation
- No for residential only.
- No, except maybe as Jim Frey suggests, within sector e.g. recycling.
- No for trash and compost.
- Only by service type (trash, recycle, compost for both residential and commercial)

Commercial 1: FOG management
- If paid by water department.

Commercial 2: Commercial organics collection
- Educational, spot checks for quality training for 4th-5th year status.

Commercial 3: Student move-in/move-out
- As long as producers pay for this service.

Commercial 5: Commercial ordinance enforcement
- Could be done at lower cost.
- Only by service type (trash, recycle, compost for both residential and commercial)

Downtown 1: 7-day collection
- Consider weekend but not 7-day service.
- For restaurants, bars, etc.
- Increase frequency
- You could start with Saturday – 6 days versus going to 7 days.
- Has been suggested 6 days shifting to full service on Sunday with Wednesday off - might save cost and fix problem.

Downtown 2/Downtown 3: Container consolidation (plan/design) and cost allocation formula
- In State St. area, greatest need for managing Solid Waste.
- Please remove carts!
- Every business pays for their needs.

Downtown 4: Service consolidation
- Waste only
- Only by service type (trash, recycle, compost for both residential and commercial)

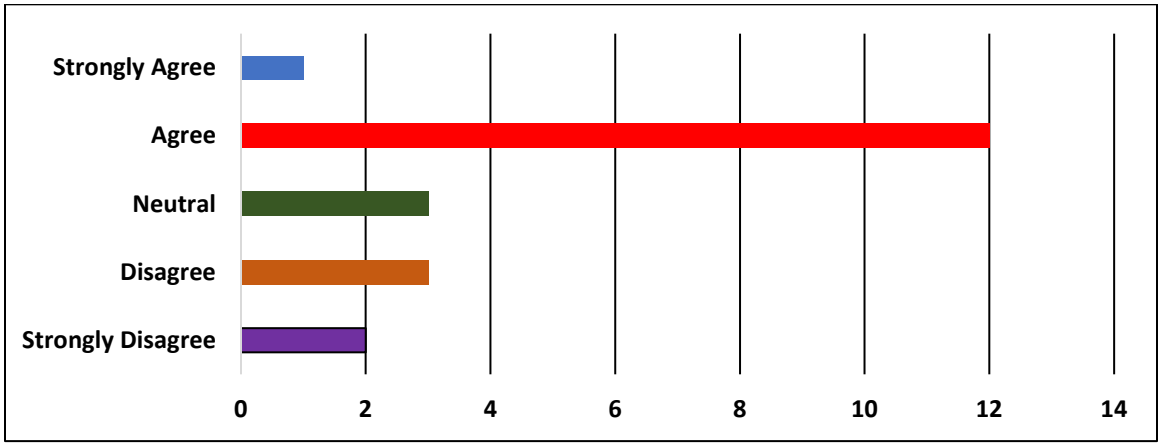
General Comment:
- In future, it would be helpful to identify the commentators interest or bias, such as: A2 resident, commercial, DDA, service provider, group rep, elected official, other.

SWRMP Advisory Committee
Public Engagement Process Feedback Results – 21 Responses
May 21, 2019

Public Engagement Efforts:

- 22 Individual Stakeholder Interviews
- Downtown Business Focus Group
- Environmental Commission Workshop
- Four Advisory Committee Meetings (average attendance +30)
- Residential Survey
- Community High School Educational Outreach

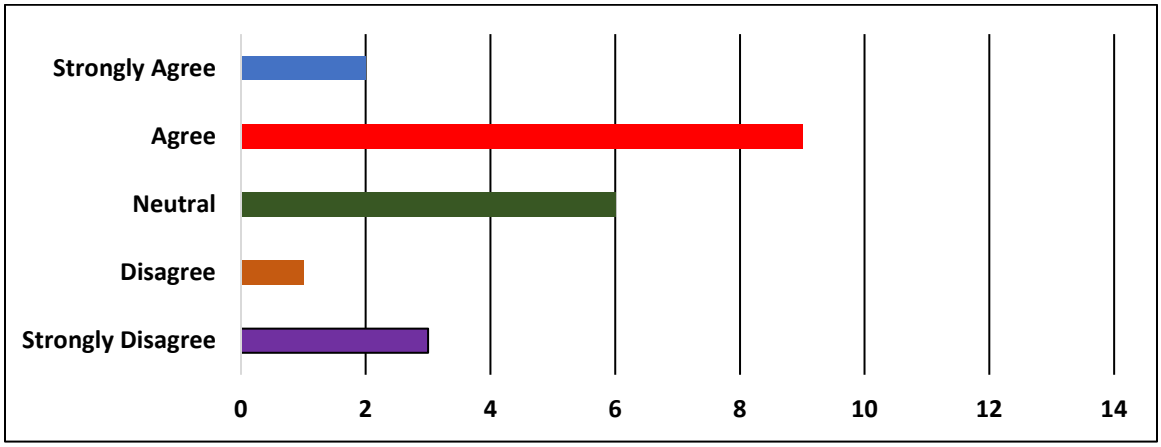
1. Overall, there was sufficient public engagement on the SWRMP project.



#1 Comments:

- Narrow focus throughout sessions may help consolidated collection does not seem a healthy move long term.
- Agree but with reservations. Notes of key topics left out or given little time. I think people would have been willing to do longer meetings. Key things were left out or not focused on (several of which were noted in today's meeting.)

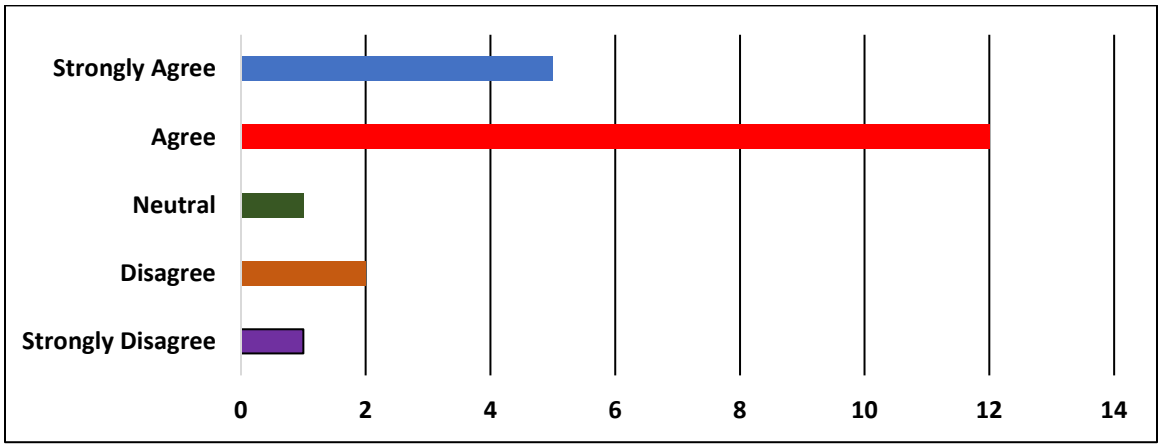
2. As a member of the SWRMP Advisory Committee, I felt that my opinions were sought after and valued.



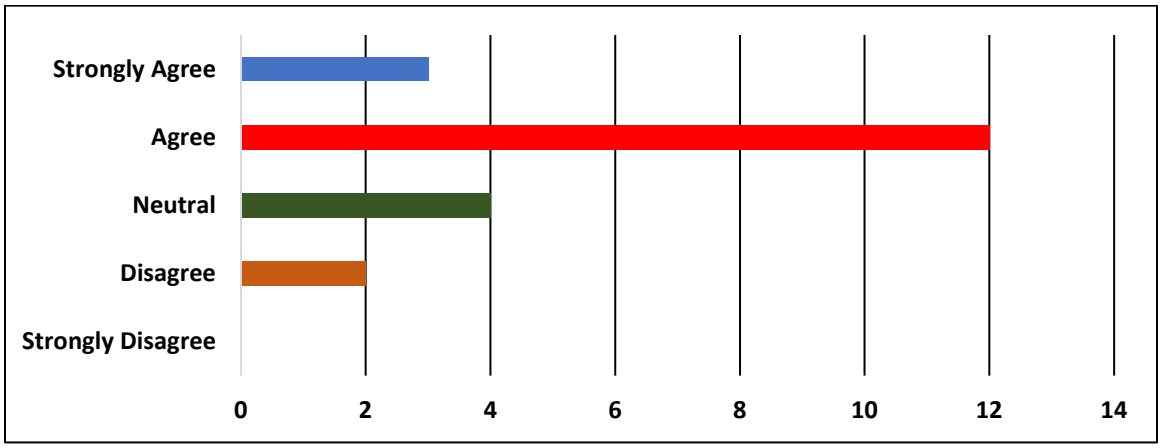
#2 Comments:

- It's clear that our thumbs down on various items like bulky waste and service consolidation and our thumbs up on other like zero waste and drop-off were discounted.

3. During the Advisory Committee meetings, the Project Team provided sufficient information about the project.



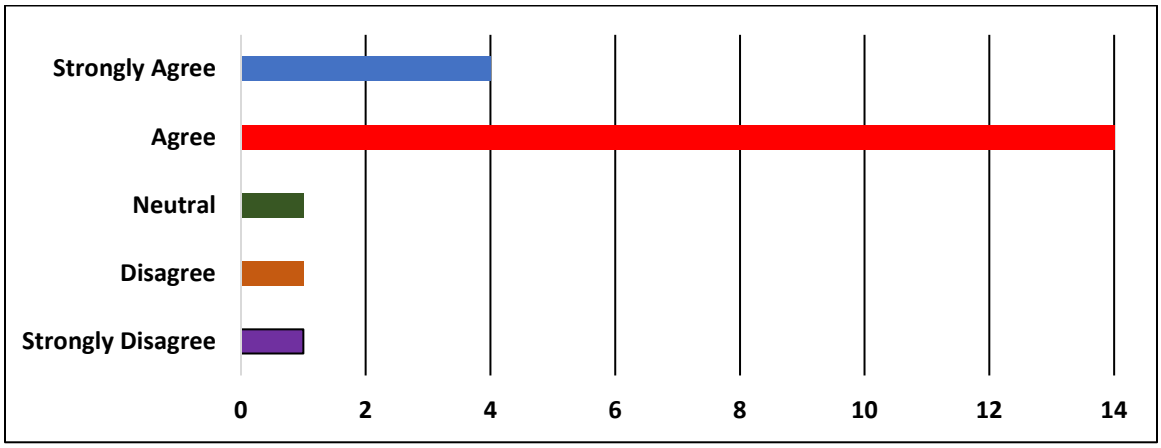
4. The Advisory Committees were effectively facilitated.



Comments:

- Given the limitations mentioned and the fact that the committee had no input into the agenda.

5. The meeting summaries increased my understanding of what happened during the meetings and results.



Liked Best about the process:

- Facilitation was fine.
- Facilitation and ranking of options.
- Great info sharing, having the right people in the room as presenters and invitees participating.
- I like that this process was conducted, however, I feel as though we need to move the ball further down the field with regards to climate change and zero waste initiatives. I'm grateful that these conversations are being held in Ann Arbor. The staff and facilitation were terrific. Looking forward to one more meeting. Good work.
- Open dialogue ability for participants to raise questions and get feedback.
- You provided better, more accurate data (financial, diversion, GHG reduction, cost by service type, etc.)
- Included broad spectrum of community experience sharing of information.
- The lively discussions. Condensed ideas into small amount of time. Liked getting the numbers of diversion rates.
- Openness – inclusive
- Good group of participants.
- The meeting summaries and charts made it easy to follow from one meeting to the next.
- The information was useful. We could have had more time to discuss and present opinions regarding how we might work for the goals especially GHG emissions.
- Regular meeting times/locations; openness to questions/comments.
- The group of people who were included. Talking to and hearing from other members.
- Expertise of committee members.

Suggestions for the next time:

- Share more financial details, assumptions, and scenarios. Where we are now could be a starting point for a whole new discussion.
- The meetings felt somewhat disconnected. First meeting felt like presentation not easy to follow; too much time reviewing pre-reading – not enough time on dialogue. It's a tough subject but all meetings were rushed and needed more time and dialogue in large group to help hear all opinions.
- More diversity - advisory group was very white. Few young people.
- Committees input needs to be better reflected.
- Needed more public engagement at the end of the process.
- More time for members to digest information BEFORE meetings. More group discussion, less PowerPoint presentations of previously distributed information at Advisory Committee meetings. Need detailed undigested data provided.
- Know it's hard but more time to talk.
- Shorten Christina's presentations.
- Meetings were too far apart. I would like the materials available before presented at Advisory meeting. Also, expectations for participants should be better understood prior to meetings – time to digest and think about material prior to meetings.
- Better comparative analysis on diversion/GHG impact; better enterprise fund-based analysis.
- Breakout session: about 30 minutes.
- Material provided earlier.
- Work with 3 or 4 Advisory Committee members to design the meeting. More open time for discussion as a whole group.

Updated (v.2) - 6/5/2019

May 21, 2019 Solid Waste Resource Plan Advisory Committee Participant List			
Last Name	**First Name**	**Organization**	**Email**
Andrade	Sandra	Main Street Area Association	sandra@mainstreetannarbor.org
Artley	Tracy	University of Michigan	artleyt@umich.edu.
Brown	Steve		Brownsc6887@att.net
Butynski	Don	WeCare Denali	dbutynski@wecareorganics.com
Conaway	Brian	Waste Management	bconaway@wm.com
Connor	Al	ICPJ	alconnor1019@provide.net
Curtis	Jim	Curtis Commercial	jim@curtiscommercialllc.com
Diephuis	David		ddiephuis@comcast.net
Eaton	Jack		jeaton@a2gov.org
Eccleston	Tyke	Liberty Maynard, LLC & Collegian Venture, LLC	teccleston@property-accounting.net
Eggermont	Theo	Washtenaw County	eggermontt@washtenaw.org
Flagler	Miriam	Zingerman's	mflagler@zingermans.com
Garfield	Mike	Ecology Center	michaelg@ecocenter.org
Gruber	Katie	Washtenaw Area Apartment Association	
Greve	Pat	Waste Management	pgreve@wm.com
Hennessy	Chris	Advanced Disposal	Christopher.hennessy@AdvancedDisposal.com
Kinley	Tyler	Praxis Properties	tyler@praxisproperties.com
Maciejewski	Molly	City of Ann Arbor	MMAciejewski@a2gov.org
McMurtrie	Tom	Residential	tmcmurt1@gmail.com
Mirsky	John	City of Ann Arbor	jmirsky@a2gov.org
Mundus	Carlton	B Green Ann Arbor	carlton.mundus@gmail.com
Ohren	Joe	A2 Area Elders Climate Action Chapter (A3ECAC)	joeohren@gmail.com
Petosky	Jenny		
Pollay	Susan	Ann Arbor DDA	spollay@a2dda.org
Prochnow	Karen		prochnow.karen@gmail.com
Seyfarth	Heather	City of Ann Arbor	hseyfarth@a2gov.org
Singleton	Grace	Zingerman's	gsingleton@zingermans.com
Slotten	Cresson	City of Ann Arbor	cslotten@a2gov.org
Stone	Nancy		nancystone123@yahoo.com
Weinert	Bryan	Recycle Ann Arbor	bryancweinert@recycleannarbor.org
Wright	Jan	Interfaith Council on Peace and Justive	janwrigh@umich.edu

SOLID WASTE RESOURCES MANAGEMENT PLAN

ADVISORY COMMITTEE MEETING #4

May 21, 2019

WELCOMING COMMENTS

Updates re: City activities impacting the SWRMP

Agenda review and desired outcomes poll

Review of April 23rd meeting summary

RESIDENTIAL OPTIONS: ADVISORY COMMITTEE FEEDBACK

Residential Sector Options	Advisory Committee Feedback
Year-Round Residential Compost Collection	• Strong support
Curbside Textile Collection	• Generally supported • A few questions about impact on reuse outlets and what happens to collected material
Bulky Waste Collection	• Mixed support • Concerns raised about what would be collected and how costly it may be
E-Waste and HHW Collection	• Mixed support • Not sure it is needed, given other options available • Concerns / questions raised about risks or liability issues and cost

COMMERCIAL OPTIONS: ADVISORY COMMITTEE FEEDBACK

Commercial Sector Options	Advisory Committee Feedback
FOG Management	• Generally supported
Commercial Organics Collection	• Strong support, especially if focused on larger food-oriented businesses
Student Move-In / Move-Out Collection	• Limited support - need was questioned due to current temporary drop off location at University & Tappan • Concerns raised about diverting reusable materials
C&D Waste	• Generally supported, with need for more data before setting policy • Limited processing infrastructure available, this will be a longer-term implementation item for the diversion element
Commercial Services Participation Enforcement	• Strong support • Questions raised about perceived high cost

DOWNTOWN / ALLEY OPTIONS: ADVISORY COMMITTEE FEEDBACK

Downtown / Alley Collection Service Improvement Options	Advisory Committee Feedback
Alt. A - 7-Day Collection, Mandatory Saturday & Sunday for Restaurants / Bars	• Strong support • Required minimum level of service should be specified
Alt. B - Consolidated Containers and 7-Day Collection with Special Assessment	• Strong support
Alt. C - Consolidated Underground Containers and 7-Day Collection with Special Assessment	• Limited support; may be interest on a small pilot level • Concerns about cleanliness around containers and ability to service
Alt. D - Bag-Based Collection with Twice Daily Pickup	• Nearly all opposed • Concerns raised regarding cleanliness / bag breakage / rats, ability to service, and aesthetics

REVIEW OF FUNDING OPTIONS

Factors for Consideration	Property Tax Millage	User Fee	Blended (Millage + User Fee)
Funding stability / reliability	Yes	Maybe	Maybe
Transparency	No	Yes	Maybe
Flexibility / adjustability	No	Yes	Yes
Reflective of differences between customers	Yes	Yes (if rate is variable)	Yes
Familiarity / consistency with other services	Yes	Yes	No
Customer support	Yes	Yes (if rate is variable)	Not tested

REVIEW OF SERVICE DELIVERY OPTIONS

Factors for Consideration	City-Performed	Contracted Provider
Absorption of cost increases	No	Yes
Realization of cost savings	Yes	No
Flexibility / adjustability	Yes	No
Control over quality of service	Yes	Maybe
Potential for cost-efficiencies	No	Yes

BASELINE ASSUMPTIONS APPLIED TO ALL RECOMMENDATIONS

1. Revenues increase to sustain current services and fund new services
2. Customer service is revamped / overhauled
3. Operational improvements and upgrades to sustain current programs continue
4. Services are streamlined and consolidated

DRAFT RECOMMENDATIONS: RESIDENTIAL SECTOR

Recommendation	Estimated Annual Direct Cost	Expected Benefits					
		Increase Diversion	Reduce Toxics	Expand Services	Address Need	Reduce GHGs	Operating Efficiency
Residential							
R.1. Year-round compost collection	$140,000	✓		✓	✓	✓	
R.2. Curbside textile collection	$0	✓		✓			
R.3. Bulky item collection	$360,000			✓	✓		
R.4 / R.5. E-waste and HHW	$0	✓	✓				
R.6. Service consolidation	($350,000)						✓

DRAFT RECOMMENDATIONS: COMMERCIAL SECTOR

Recommendation	Estimated Annual Direct Cost	Expected Benefits					
		Increase Diversion	Reduce Toxics	Expand Services	Address Need	Reduce GHGs	Operating Efficiency
Commercial							
C.1. FOG management	$10,000 (Impl.) $20,000 (Annual)	✓					
C.2. Commercial organics collection	$520,000	✓		✓	✓	✓	
C.3. Student move-in / move-out	$50,000			✓	✓		
C.4. C&D tracking	$10,000 (Impl.) $48,000 (Annual)	✓		✓			
C.5. Commercial ordinance enforcement	$1,540,000 - $1,665,000	✓		✓			

DRAFT RECOMMENDATIONS: DOWNTOWN / ALLEYS

Recommendation	Estimated Annual Direct Cost	Expected Benefits					
		Increase Diversion	Reduce Toxics	Expand Services	Address Need	Reduce GHGs	Operating Efficiency
Downtown							
D.1. 7-day collection	$330,000			✓	✓		
D.2. Container consolidation (plan / design)	$25,000, plus construction TBD (one-time cost)				✓	✓	✓
D.3. Cost allocation formula	$20,000 (one-time cost)				✓		
D.4. Service consolidation	TBD				✓	✓	

DRAFT RECOMMENDATIONS: EDUCATION & OUTREACH

Recommendation	Estimated Annual Direct Cost	Expected Benefits					
		Increase Diversion	Reduce Toxics	Expand Services	Address Need	Reduce GHGs	Operating Efficiency
Education and Outreach							
E.1. Marketing / advertising firm	$150,000	✓	✓	✓	✓	✓	
E.2. Grassroots outreach team	$200,000	✓	✓	✓	✓	✓	

DRAFT RECOMMENDATIONS: DIRECT COST IMPACT

$3,000,000/year to implement all recommendations (excluding downtown container consolidation)

Residential + outreach = $500,000/year

- Increase of $1.60/household/month (no change in current revenue split)
- Increase of $5.45/household/month (with revenues and expenses balanced between sectors)

Commercial + 7-day downtown collection = $2,500,000/year

- Increase of $150/customer/month (no change in current revenue split)
- Increase of $80/customer/month (with revenues and expenses balanced between sectors)

Costs per customer calculated by distributing cost impact equally across all customers in each sector. Cost per customer will be higher if assigned only to a subset of customers in the sector (e.g., downtown businesses, food-oriented businesses).

WHAT'S NEXT?

SWRMP report

- Finalize resource requirements, funding methods, and service delivery
- Finalize financial projections
- Present recommendations and implementation guidance
- Present final draft report to Environmental Commission - July 25th

City staff activities

- Review draft SWRMP report
- Execute contract extensions with RAA and Waste Management (June 3rd City Council agenda item)
- Interface with Environmental Commission's Solid Waste Work Group

KEEP UPDATED ON THE PROGRESS OF THE SWRMP

Website:

www.a2gov.org/SWRMP

Email:

SWRMP@a2gov.org

Individual Contacts:

Cresson Slotten
Project Manager
City of Ann Arbor
(734) 794-6430 x 43701
cslotten@a2gov.org

Christina Seibert
Project Manager
APTIM
(630) 762-3306
christina.seibert@aptim.com

Charlie Fleetham
Lead Facilitator
Project Innovations
(248) 476-7577
charlie@projectinnovations.com

ATTACHMENT A.4
RESIDENT SURVEY QUESTIONNAIRE

Survey of 400 Residents of Ann Arbor, MI
Current Timing: 15 minutes
Target Timing: 15 minutes

Hello. My name is _____. I'm calling from Michigan Opinion Surveys. We are conducting a public opinion survey, and I would like to ask you some questions. We are not selling anything, and I won't ask you for a contribution or donation. Your responses are confidential, and we are looking for your candid feedback. Could I please speak with the adult in the household with the most recent Birthday?

Q1. What city or township do you live in?

Ann Arbor 1
(Other) [**TERMINATE**] 2
(REFUSED) [**TERMINATE**] 3

Q2. Do you live in a single-household dwelling; a building with 2, 3, or 4 units; an apartment or condo building with 5 or more units, a college or university dormitory, or something else?

Single-household dwelling 1
Building with 2, 3, or 4 units 2
Apartment/condo with 5 units or more 3
College/University Dormitory..... 4
Something else - RECORD 5
(Don't know/REF) 6

Q3. Do you own or rent your current residence?

Own 1
Rent 2
(Other – live in a dorm) 3
(Other)..... 4
(Don't know) 5
(Refused) 6

Q4. How satisfied are you with Ann Arbor's current garbage collection service overall? Are you VERY satisfied, SOMEWHAT satisfied, SOMEWHAT dissatisfied, or VERY dissatisfied?

Very Satisfied 1
Somewhat Satisfied 2
Somewhat Dissatisfied 3
Very Dissatisfied 4
(Don't know) 5

SSA Q5. How satisfied are you with the city's current recycling collection service overall? Are you VERY satisfied, SOMEWHAT satisfied, SOMEWHAT dissatisfied, or VERY dissatisfied?

Very Satisfied 1
Somewhat Satisfied 2
Somewhat Dissatisfied 3
Very Dissatisfied 4
(Don't know) 5

SSB Q6. How satisfied are you with the city's current compost collection service overall? Are you VERY satisfied, SOMEWHAT satisfied, SOMEWHAT dissatisfied, or VERY dissatisfied?

Very Satisfied 1
Somewhat Satisfied 2
Somewhat Dissatisfied 3
Very Dissatisfied 4
(Don't know/REF) 5

SSA Q7. What is the biggest factor that limits the amount that you recycle? **[DO NOT READ RESPONSES. USE PRE-CODED RESPONSE OPTIONS BELOW.]**

It is not convenient 1
Don't know what is recyclable 2
Think it is a waste of time / don't believe in it / don't want to 3
Goes to the landfill anyway 4
Cardboard doesn't fit in the cart well 5
Not enough space where I live 6
Cart is too small 7
Not available where I live / don't have a cart 8
Takes too much time / have to clean it 9
Forget / don't think about it 10
Nothing limits it, I recycle as much as I can 11
Other (specify) ..... 12 _____ **[RECORD VERBATIM]**
(Don't know/REF) 13

SSB Q8. What would you say is the most important reason for you personally to recycle? **[DO NOT READ RESPONSES. USE PRE-CODED RESPONSE OPTIONS BELOW.]**

It is good for the environment. 1
It conserves natural resources. 2
It is socially responsible. 3
I want other people to think of me as a responsible person. 4
It is my way of fighting climate change 5
It is valued in the community / Ann Arbor. 6
I am pressured by my family, friends, or neighbors to do it. 7
It is required 8
It isn't any harder than throwing the same item away, so I might as well recycle it. 9
It reduces how much is thrown away, making landfills last longer. 10
I don't really recycle, I'm not motivated to do it. 11
Other (specify) ..... 12 _____ **[RECORD VERBATIM]**
(Don't know/ None) 13

This part of the survey has to do with compost collection, which includes both yard waste and food.

Q9. Are you aware that if you have a compost cart you can put food waste including meat, bones, fruits and vegetables in it?

Yes 1
No 2
(Refused) 3

Q10. If you have a compost cart, how much of the food waste from your household do you place in it? All of it. Most of it. A little of it. Or none of it?

All of it..... 1
Most of it..... 2
A little of it..... 3
None of it..... 4
(I don't have a compost cart)..... 5
(Don't know/REF) 6

Q11. **[ASK IF Q10 = 3 OR 4]** What is the biggest reason you don't put more food waste in the compost cart? **[DO NOT READ RESPONSES. USE PRE-CODED RESPONSE OPTIONS BELOW.]**

Need more information about how to participate 1
Too messy / smelly 2
Concerned about attracting flies, rodents, or vermin 3
Not enough food waste to make it worth the effort 4
Not convenient 5
Too much trouble / too much work..... 6
Food goes in the garbage can or in-sink disposal 7
I compost in my backyard 8
Didn't know food waste could go in the compost cart..... 9
Other (specify)..... 10 _____
(Don't know/REF) ..... 11 [**RECORD VERBATIM]**

Q12. The City currently provides compost collection between April and November and is thinking about expanding collection to a year-round service. The added service during winter months of December through March may be every other week or once per month. Do you think you would use this service? (Yes / No / Don't know) **[READ OPTIONS]**?

Yes 1
No 2
(Don't know/Refused) 3

Q13. Shifting topics, bulky items that don't fit in your garbage cart, such as furniture, mattresses, carpet, appliances, large amounts of debris, or cleanout items, are not picked up by the City as part of its garbage collection service. The City is thinking about starting a pickup service for collection of these larger items. How often do you have bulky or extra items to get rid of?

Once per month 1
Two or three times per year 2
Once per year 3
Never 4
(Don't know/REF) 5

Q14. How do you dispose of bulky items now? Do you **[READ ALL RESPONSES]**

Put them at the curb or by the dumpster 1
Take them to the Drop-off station on Ellsworth Road 2
Schedule a pickup with a private contractor 3
Or something else RECORD 5
(Never have these items) 6
(Don't know/REF) 7

Q15. Now I am going to read you some dollar amounts that the city could charge to come pick up bulky items from your residence. Would you be willing to pay? **[RANDOMIZE]**

Yes 1
No 2
(Don't know/Refused) 3

a. $25 per pick up for this service

b. $50 per pick up for this service

Q16. What do you do with your electronics items that you are getting rid of? Do you **[READ ALL RESPONSES]**

Put them in the garbage 1
Donate them 2
Take them to the Drop-off station on Ellsworth Road 3
Or something else RECORD 4
(Don't know/REF) 5

These next questions are about wastes like unemptied cleaning products, pesticides, paint, and oil. These may be referred to as household hazardous wastes.

Q17. How do you get rid of household hazardous wastes? Do you **[READ ALL RESPONSES]**

Place them in your trash cart or dumpster 1
Empty them in the drain and throw away the container 2
Take them to a drop-off site including retail stores, the Drop-Off Station on Ellsworth Road, or Washtenaw (WASH-ten-aw) County's site on Zeeb Road 3
Take some to drop off sites and put others in the trash 4
Other RECORD 5
(Don't know/REF) 6

Q18. If you do not take all of your household hazardous wastes to a drop-off, why not? **[DO NOT READ RESPONSES. USE PRE-CODED RESPONSE OPTIONS BELOW.]**

The sites are inconvenient 1
No one has told me that I shouldn't throw it away 2
I don't see the point in taking it there if I can just put it in my garbage 3
Never thought about it 4
I don't know where the sites are 5
I don't know what I can take to them 6
Other (specify) 7
(Don't know/REF) 8

_____
[**RECORD VERBATIM]**

Q19. Which of the following items do you usually donate, instead of throwing away in the garbage?

Clean, undamaged clothing, sheets, towels, and rugs 1
Working electronics 2
Usable small household items like dishware, cooking ware, and décor 3
Furniture 4
Children's toys or other recreational items 5
Other RECORD 6
(Don't know/REF) 7

Q20. Where do you donate items most often?

Not-for-profit donation centers (Goodwill, Salvation Army, St. Vincent de Paul, etc.) 1
A church, school, or other community organization 2
Donation boxes in parking lots around town 3
Pass on to friends or family 4
Other RECORD 5
(Don't know/REF) 6

Q21. Do you feel you need more information from the city about? **[RANDOMIZE LIST]**

Yes 1
No 2
(Don't know/Refused) 3

a. **SSA:** Garbage services
b. **SSB:** Electronics and household hazardous wastes disposal options
c. **SSA:** Recycling services
d. **SSB:** Bulky item disposal options
e. **SSA:** Compost services
f. **SSB:** All city resources management services

Q22. The following are some methods the City could use to provide you with information about garbage, recycling, composting, or other waste-related services. For each one, tell me Yes or No if you would you find it effective as a way of providing you information: **[RANDOMIZE LIST]**

Yes 1
No 2
(Don't know/Refused)..... 3

a. **SSA:** Mailed to your house
b. **SSB:** Left on your garbage or recycling cart
c. **SSA:** Provided in an automated message over the phone
d. **SSB:** Posted on the City's social media sites
e. **SSA:** Posted on the City's website
f. **SSB:** Put in radio or television ads
g. **SSA:** Shared at neighborhood meetings
h. **SSB:** Put on billboards or signs on the side of buses or garbage trucks

Q23. If restaurants or stores in Ann Arbor were rated based on their environmental and sustainable behaviors, such as recycling participation or waste reduction, and sustainably-minded businesses were recognized on their storefront with a badge or sticker, would it make you more likely to eat or shop at those locations? **[**Yes or No?

[**IF YES/NO:]** And do you feel that way STRONGLY or NOT SO STRONGLY?

Yes - strongly 1
Yes - not-so-strongly 2
No – not-so-strongly 3
No – strongly 4
(Don't know) 5

This portion of the survey discusses costs for services and how garbage, recycling, and compost services are paid for in Ann Arbor.

Q24. Garbage, recycling, and compost services currently cost an average of $29 per month per household. Compared to your other monthly expenses such as electric, natural gas, water, internet, and cell phone, how valuable would you say your solid waste services are for this monthly cost?

Very valuable service 1
Somewhat valuable service 2
Not very valuable service 3
Not at all valuable service 4
(Don't know) 5

SSA: Q25. In Ann Arbor, the standard garbage service is a 64-gallon garbage cart. To incentivize households to reduce the garbage they dispose and to increase how much they recycle and compost, smaller garbage containers could be provided for a lower cost. In other communities that do this, households are charged monthly, and the amount is based on the garbage container size they select. If Ann Arbor switched to this method of payment for garbage collection, the City could charge $27 per month for a smaller 32-gallon cart, $29 per month for the standard 64-gallon garbage cart, and $31 per month for a larger 96-gallon cart.

Would you **[ROTATE]** support or oppose this method of paying for services?

[IF PREFERENCE] Do you feel that way strongly or not so strongly?

Support – strongly 1
Support – not-so-strongly 2
Oppose - not-so-strongly 3
Oppose - strongly 4
(Don't know/Ref) 5
(Neither) 6

SSB: Q26. In Ann Arbor, the standard garbage service is a 64-gallon garbage cart. To incentivize households to reduce the garbage they dispose and to increase how much they recycle and compost, smaller garbage containers could be provided for a lower cost. In other communities that do this, households are charged monthly, and the amount is based on the garbage container size they select. If Ann Arbor switched to this method of payment for garbage collection, the City could charge $27 per month for a smaller 32-gallon cart, $54 per month for the standard 64-gallon garbage cart, and $81 per month for a larger 96-gallon cart.

Would you **[ROTATE]** support or oppose this method of paying for services?

[IF PREFERENCE] Do you feel that way strongly or not so strongly?

Support – strongly 1
Support – not-so-strongly 2
Oppose - not-so-strongly 3
Oppose - strongly 4
(Don't know/Ref) 5
(Neither) 6

Q27. Garbage, recycling, and compost services in Ann Arbor are currently paid for through property taxes based on the value of your home, so higher value homes pay more, and lower value homes pay less for the same services.

Do you **[ROTATE]** support or oppose paying for these services based on the value of your home?

[IF PREFERENCE] Do you feel that way strongly or not so strongly?

Support – strongly 1
Support – not-so-strongly 2
Oppose - not-so-strongly 3
Oppose - strongly 4
(Don't know/Ref) 5
(Neither) 6

Q28. In other communities, households receive a monthly bill for collection services instead of paying for these services through property taxes. In these communities, each household pays the same amount for the same services, regardless of the value of their home. In Ann Arbor, that monthly bill could be $29 based on current services.

Instead of the current method of paying for services through property taxes, would you **[ROTATE]** support or oppose paying a fixed monthly bill for these services?

[IF PREFERENCE] Do you feel that way strongly or not so strongly?

Support – strongly 1
Support – not-so-strongly 2
Oppose - not-so-strongly 3
Oppose - strongly 4
(Don't know/Ref) 5
(Neither) 6

Q29. If costs increased but you were provided one new or expanded service, which would be of the most interest to you? **[READ AND RANDOMIZE:]**

Year-round compost collection 1
Bulky waste collection 2
Expanded electronic wastes options 3
Expanded household hazardous waste options 4
Clothing and other textiles collections 5
Something else (Record) 6
(None, I do not want any cost increase) 7
(Don't know) 8

Q30. Now I am going to read you some potential cost increases over the current average $29 per month per household in order for the City to provide new or expanded service.

Based on the service you identified in the last question, please tell me how willing you would be to pay that increase in cost in order to expand solid waste services: VERY willing. SOMEWHAT willing. NOT TOO willing, or NOT AT ALL willing. **[RANDOMIZE]**

[REPEAT PROMPT IF NECESSARY] Would you be VERY willing. SOMEWHAT willing. NOT TOO willing, or NOT AT ALL willing to pay that increase in cost in order to expand solid waste services?

Very willing 1
Somewhat willing 2
Not too willing 3
Not at all willing 4
(Don't know/Ref) 5

a. **SSA:** $8-$10 per month
b. **SSB:** $6-$7 per month
c. **SSA:** $4-$5 per month
d. **SSB:** $1-$3 per month

The remaining questions are for statistical purposes only

Q31. Are you currently a student, and if so at what university or college? **[DO NOT READ RESPONSES.]**

Yes, University of Michigan 1
Yes, Concordia (Ann Arbor Campus) 2
Yes, Washtenaw Community College 3
Yes, Eastern Michigan University. 4
No 5
(Don't know) 6
(Refused) 7

Q32. Do you have any children under the age of 18 living at home with you?

Yes 1
No 2
(Refused) 3

Q33. Just to make sure we have a representative sample, could you please tell me whether you are from a Hispanic, Latino, or Spanish-speaking background? [IF "NO":] What is your race - white, black, Asian, or something else?

White 1
Black/African American 2
Spanish speaking/Latino (Puerto Rican, Mexican, etc.) 3
Asian 4
Native American 5
Pacific Islander 6
Arab American 7
(Other) 8
(Don't know / Refused) 9

Q34. What is your age?

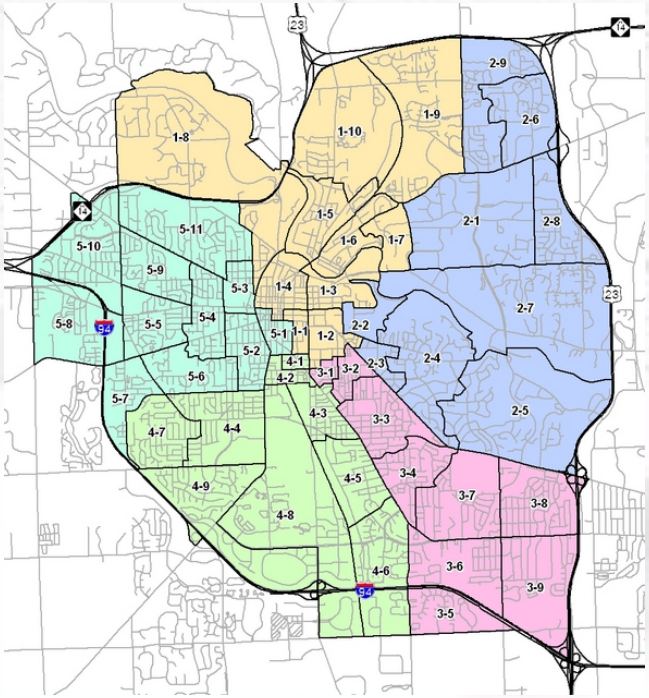
_____

Q35. [IF AGE IS REFUSED]: I am going to read you some categories. Please stop me when we get to your category.

18-24 years 1
25-29 years 2
30-34 years 3
35-39 years 4
40-44 years 5
45-49 years 6
50-54 years 7
55-59 years 8
60-64 years 9
65-69 years 10
70-74 years 11
Over 74 years 12
(Refused) 13

That completes our survey. Thank you so much for your time. Have a pleasant evening!

ATTACHMENT A.5
RESIDENT SURVEY REPORT



Assessing Public Opinion on Waste Management Services in Ann Arbor, MI

Performed on behalf of: City of Ann Arbor, Michigan

Daniel Gotoff and Corey Teter

Washington, DC | Berkeley, CA | New York, NY

LakeResearch.com

202.776.9066

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Methodology

- Lake Research Partners designed and administered this survey, which was conducted by phone using professional interviewers. The survey secured responses from a total of 400 adult residents in Ann Arbor, Michigan who are involved with household bills and/or in charge of dealing with recycling / garbage disposal in their household. By definition, the population of respondents that fit this screening criteria skews slightly older than the overall adult population of Ann Arbor and more towards homeowners than renters. The cooperation rate for this survey (i.e. completed interviews as a percentage of total potential respondents reached) is 2.57%.

- The survey was conducted March 24-31, 2019. Data were weighted by gender, age, race, region, and residence status.

- The margin of error for the full sample is +/-4.9%. In interpreting survey results, all sample surveys are subject to possible sampling error; that is, the results of a survey may differ from those that would be obtained if the entire population were interviewed. The size of the sampling error depends upon both the total number of respondents in the survey and the percentage distribution of responses to a particular question. For example, if 50% of respondents in the total sample answered “yes” to a particular question, we can be 95% confident that the true percentage will fall within +/- 4.9 percentage points of this percentage or between 45.1% and 54.9%.

Demographics

GENDER/AGE

Men under 40	29%
Women under 40	27%
Men 40 +	21%
Women 40+	23%

RACE

White	70%
People of Color	30%

PARENTAL STATUS

Households with children under 18	22%
Non-children under 18	78%

HOMEOWNERS/RENTERS

Homeowners	55%
Renters	39%
Other	5%

REGION

Ward 1	19%
Ward 2	19%
Ward 3	20%
Ward 4	20%
Ward 5	22%

Key Findings

- Majorities of Ann Arbor residents express high levels of satisfaction with the City's current garbage, recycling, and, to a lesser degree, compost collection services.
  - With respect to compost collection, residents are not especially dissatisfied with the service, just somewhat less informed about or experienced with, particularly among renters.

- Residents support the current system of tying fees for waste collection services to property taxes, with the cost per residence varying depending on each home's property value.

- Taking into account differences across households—whether in terms of property values or the level of waste collection services needed by each—is important to residents when considering how to pay for those services.
  - Indeed, majorities solidly oppose moving away from the current system toward a fixed monthly service fee, regardless of the value of their home, but at the same time support monthly fee proposals that would operate on a sliding scale, dependent on the size of each household's garbage cart.

Key Findings (continued)

- If costs were to increase in order to expand services, residents report the greatest interest in year-round compost collection and bulky waste collection. Residents report a need for bulky item pick-up at least two to three times per year, and a willingness to pay $25 per pickup (though not $50).
  - There is a strong inclination among residents to countenance paying on a monthly basis for new or expanded service, with robust majorities in favor of a $1-$5 per month increase, though notable drop-off in support for increases that exceed $5.

- Ann Arbor residents stand out for their progressive views on recycling and environmental responsibility as well as their (self-reported) propensity for donation of household items. Solid majorities say they usually donate a range of items to not-for-profit donation centers, rather than throw them away; this is particular true for clean clothing and sheets, working electronics, usable dishware and cooking ware, furniture, and children's toys.

- There is plenty of room—and appetite—for additional information from the City on waste disposal options. Residents are especially interested in learning more about their options for electronic waste, bulky item waste, and hazardous wastes.
  - They see mailing this information directly and placing it on garbage and recycling carts as the most effective ways to inform residents.

Overall Attitudes and Behaviors on Waste Collection, Disposal, and Donation

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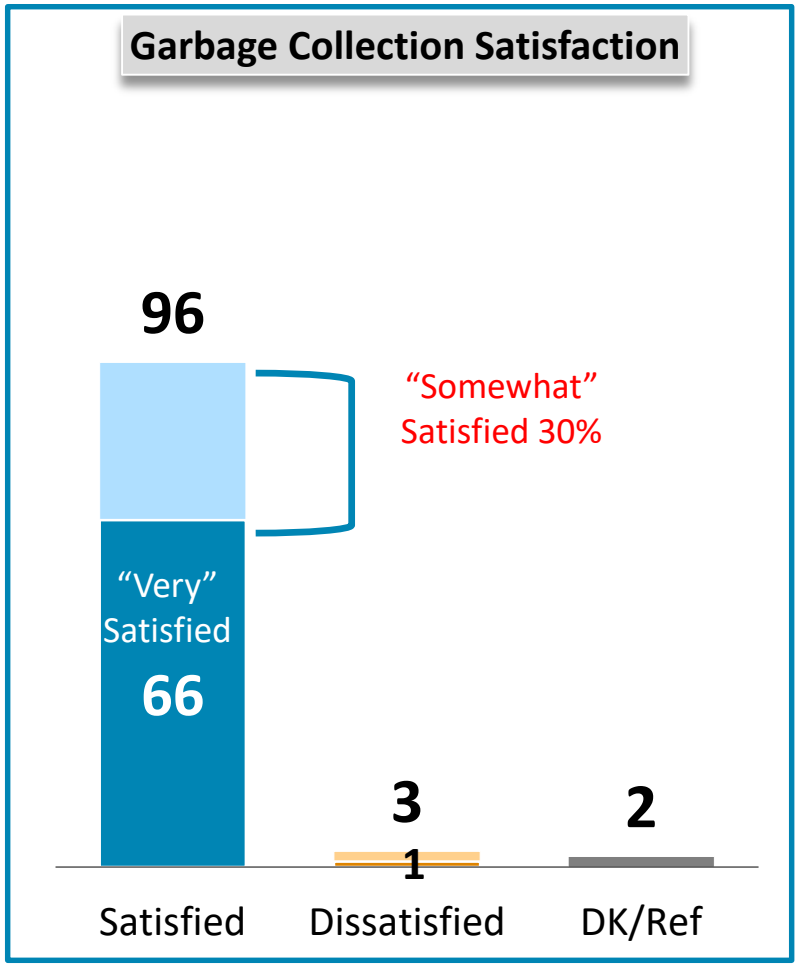
Ann Arbor residents are nearly unanimous in expressing high levels of satisfaction with the city's household garbage collection service, including more than two-thirds who are *"very"* satisfied. Voters over the age of 40, residents of Ward 5, and homeowners tend to be the most pleased with the quality of service.



Those who are disproportionately 'Very Satisfied' with collection services
Total (66%)
50-64 (75%)
Ward 5 40 & over (74%)
Ward 5 (73%)
Homeowners (72%)
40 & over (71%)
Women 40+ (71%)
White 40+ (71%)

Those who are disproportionately 'Somewhat Satisfied' with collection services
Total (30%)
Women <40 (40%)
Ward 4 (38%)
Apartment/Condo with 5 units or more (37%)
Renters (35%)

Q4. How satisfied are you with Ann Arbor's current garbage collection service overall? Are you VERY satisfied, SOMEWHAT satisfied, SOMEWHAT dissatisfied, or VERY dissatisfied?

Residents report robust levels of donation of household items at not-for-profit donation centers like the Salvation Army and Goodwill—the preference of nearly seven in ten residents—as well as donation boxes in parking lots around town or passing on items to family and friends. The residents most likely to donate at not-for-profit centers tend to be white women (mostly under 40) and residents of Wards 2 and 4.

Q20. Where do you donate items most often?

Solid majorities of residents say they regularly donate a wide range of items to not-for-profit donation centers, rather than throw them away; this is particular true for clean clothing and sheets, working electronics, usable dishware and cooking ware, furniture, and children's toys.

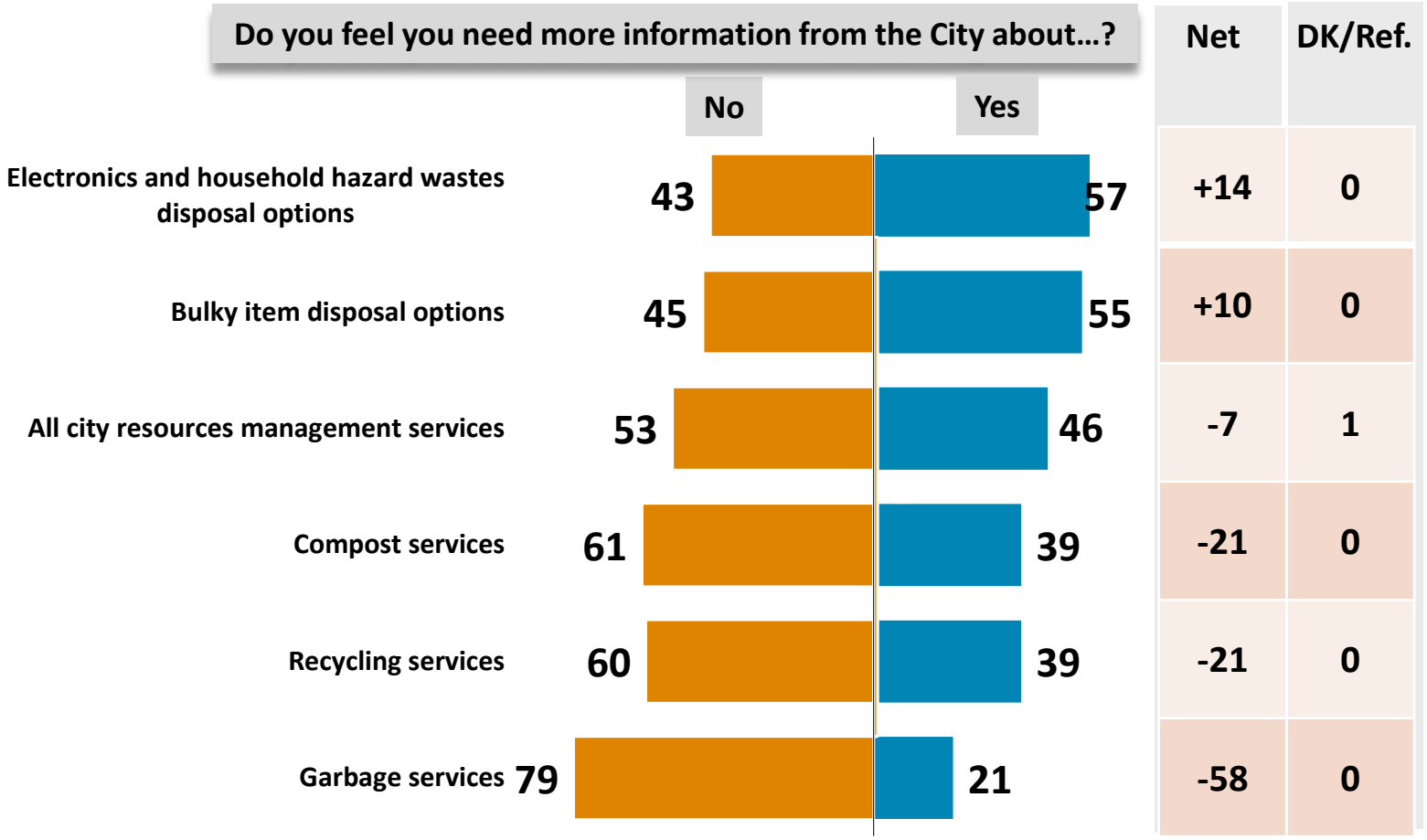
Those most likely to donate include women over 40, parents of children under 18, homeowners, and residents of Ward 2.

Ward 4 residents report more moderate levels of donation, whereas younger men and residents of Ward 5 tend to be the least likely to donate the items in question.

Demos	Yes to all 5	Yes to 2-4	Yes to 1 or less
Total	**50%**	**20%**	**30%**
Men < 40	36%	**28%**	**37%**
Women < 40	55%	18%	28%
Men 40+	51%	16%	33%
Women 40+	**61%**	17%	22%
White	52%	19%	29%
People of color	45%	21%	34%
Children < 18	**59%**	10%	31%
No children < 18	47%	23%	30%
Homeowners	**57%**	13%	30%
Renters	41%	**26%**	33%
Ward 1	53%	16%	31%
Ward 2	**57%**	21%	23%
Ward 3	54%	19%	27%
Ward 4	41%	**29%**	30%
Ward 5	46%	15%	**39%**

Q19. Which of the following items do you usually donate, instead of throwing away in the garbage: Clean, undamaged clothing, sheets, towels, and rugs; Working electronics; Usable small household items like dishware, cooking ware, and décor; Furniture; Children's toys or other recreational items?

Residents express an appetite for more information from the City about their disposal options, with majorities reporting they would like to know more when it comes to disposal of electronics, household hazardous wastes, and bulky items. Residents are somewhat less interested in learning about resource management services in general, as well as compost, recycling, and garbage services; however, in each of these cases, significant minorities do indicate a desire to know more.



Q21. Do you feel you need more information from the city about? **[RANDOMIZE LIST]**

Residents who say they need more information on electronic and household hazardous waste disposal options tend to be younger white men under 40, parents with children under 18, and residents of Wards 3 and 4. Renters, residents of Ward 5, white men under 40, and residents ages 30-39 are the most likely groups to say they want more information on bulky items disposal options. Although a majority of residents overall say they do not need more information on all city resource management services, majorities of key groups such as seniors, men, renters, and residents of Wards 3 and 4 say they would like this information.

Do you need more information from the city about?

Disproportionately – Yes, More info on Electronic/Household Hazardous Waste Disposal Options

- *TOTAL (57%)*
- *30-39 (68%)*
- *Men under 40 (67%)*
- *White under 40 (66%)*
- *Ward 3 (65%)*
- *50-64 (65%)*
- *Ward 4 (64%)*
- *Parents (62%)*
- *Men (62%)*

Disproportionately – Yes, more info on Bulky item disposal options

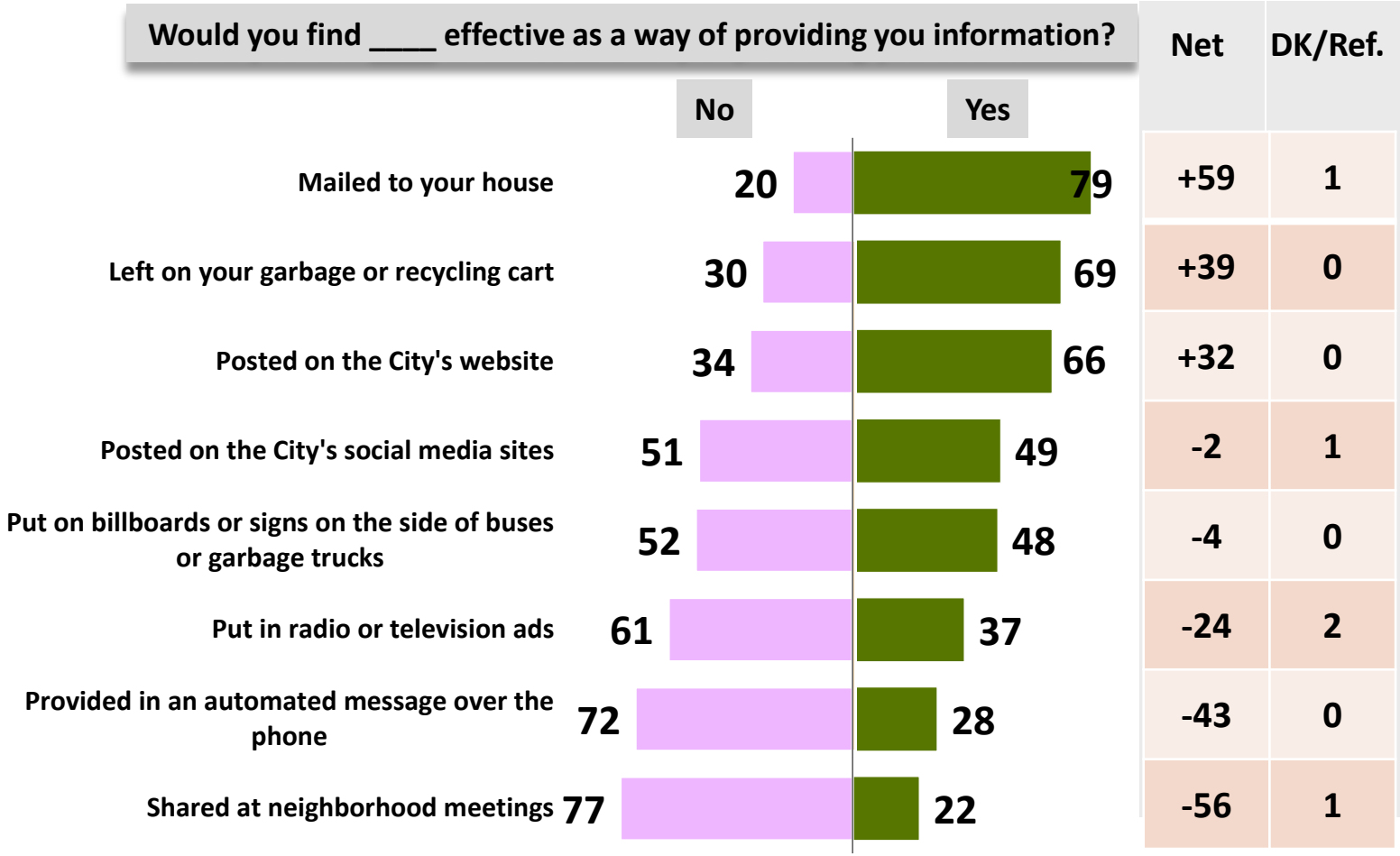
- ***TOTAL (55%)***
- ***30-39 (71%)***
- ***White under 40 (62%)***
- ***Renters (62%)***
- ***Ward 5 (61%)***
- ***Men under 40 (60%)***

Disproportionately – Yes, more info on all city resource management services

- ***TOTAL (46%)***
- ***Apartment/condo with 5+ units (62%)***
- ***Renters (58%)***
- ***Men under 40 (58%)***
- ***People of color (55%)***
- ***Ward 4 (55%)***
- ***65+ (54%)***
- ***Men (52%)***
- ***No children under 18 (52%)***
- ***Women 40+ (52%)***
- ***50-64 (51%)***
- ***Ward 3 (51%)***

Q21. Do you feel you need more information from the city about? **[RANDOMIZE LIST]**

Residents believe the most effective ways for the City to provide more information about waste-related services is to mail it directly to households, leave it on garbage or recycling carts, and post it on the City's website. These are the top 3 methods of communication for all major subgroups in the city, regardless of gender, race, age, and rent/own status. Residents are more divided on the effectiveness of positing information on the City's social media sites and using billboard and/or signs on the sides of busses and garbage trucks. They are solidly opposed to radio or television ads on this subject, as well as automated phone messages and sharing such information at neighborhood meetings.



Q22. The following are some methods the City could use to provide you with information about garbage, recycling, composting, or other waste-related services. For each one, tell me Yes or No if you would you find it effective as a way of providing you information: **[RANDOMIZE LIST]**

Attitudes and Behaviors Regarding Recycling

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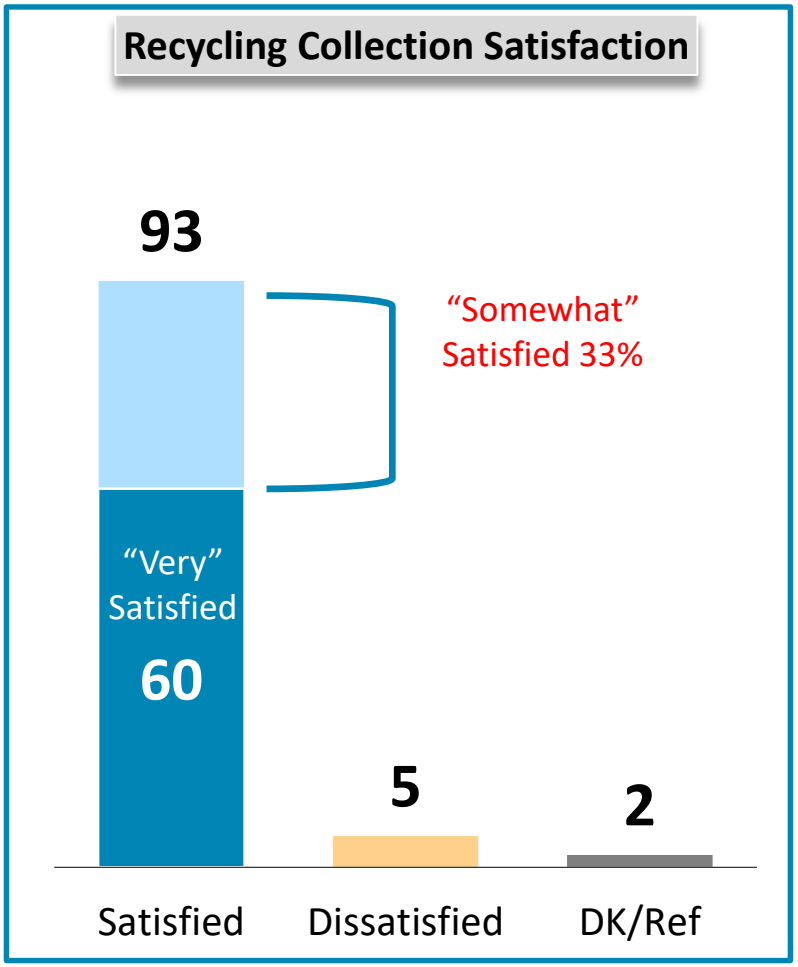
Residents also express high levels of satisfaction with the City's recycling collection services, with six-in-ten reporting they are "very" satisfied. The most satisfied residents tend to be residents under 40 (particularly men) and residents living in Ward 3.



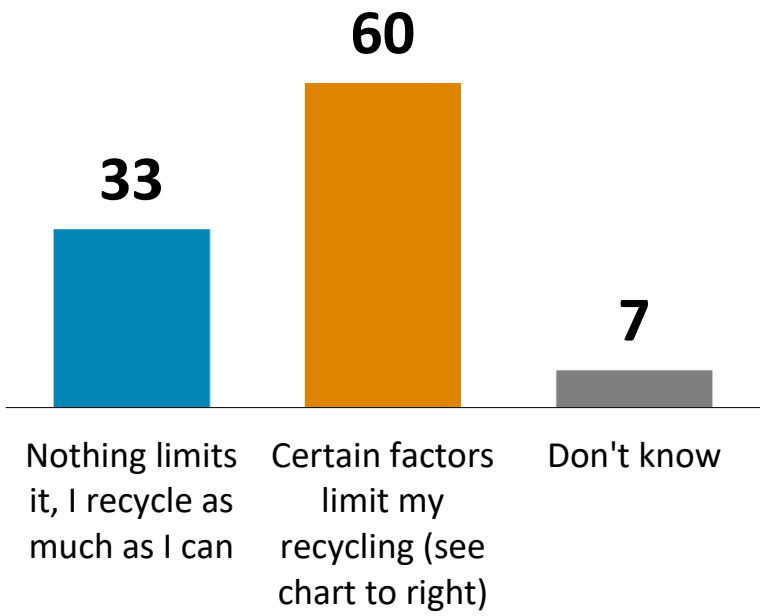
Those who are disproportionately 'Very Satisfied' with collection services
Total (60%)
Men <40 (79%)
Ward 3 (73%)
No University Affiliation Men (72%)
Men (71%)
Under 30 (71%)
White Men (67%)
White <40 (65%)

Those who are disproportionately 'Somewhat Satisfied' with collection services
Total (33%)
Women <40 (46%)
Women (40%)
30-39 (40%)
People of Color (39%)
No University Affiliation Women (38%)

SSA Q5. How satisfied are you with the City's current recycling collection service overall? Are you VERY satisfied, SOMEWHAT satisfied, SOMEWHAT dissatisfied, or VERY dissatisfied?

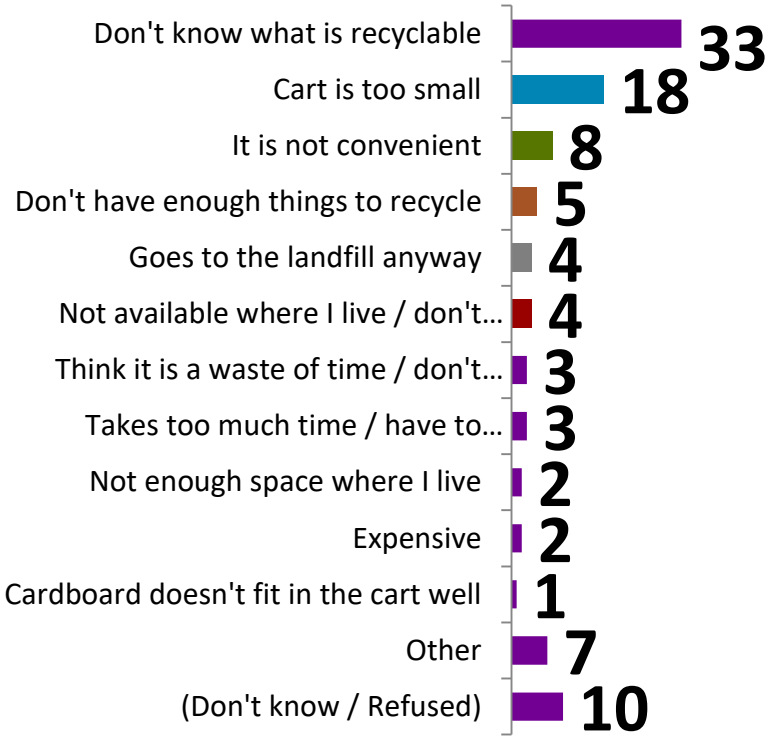
A majority of Ann Arbor residents report limiting their recycling to some degree, citing a variety of reasons, including a lack of sufficient information of what items are recyclable, and insufficient cart size. Still, one-third of residents say they recycle as much as they can and without any limitations.

Limit the Amount you Recycle?



What is the biggest factor that limits the amount that you recycle?

(Among those unable to recycle as much as they can)



SSA: Q7. What is the biggest factor that limits the amount that you recycle? **(Among those unable to recycle as much as they can): N=133 cases**

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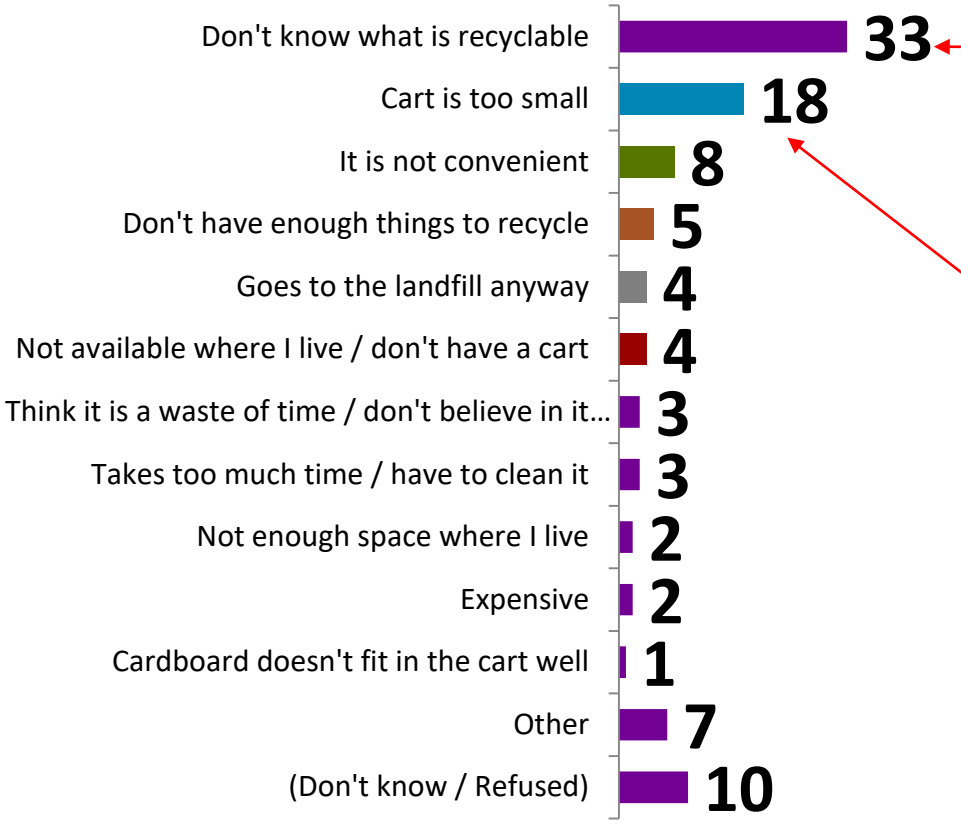
Those residents who are unaware what items are recyclable tend to be women under 40, renters, and residents living in apartments and/or condos with five or more units. Just under one-in-five residents cite their cart being too small. These residents also tend to be under 40, and homeowners.

What is the biggest factor that limits the amount that you recycle?
(Among those unable to recycle as much as they can)



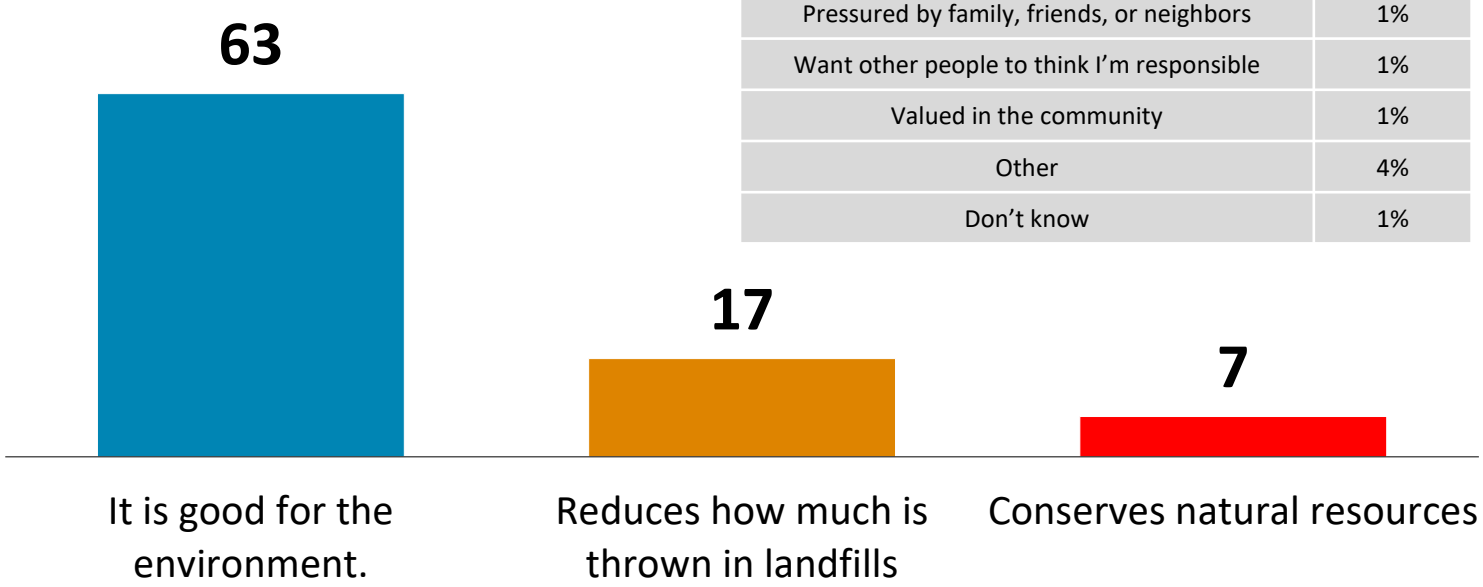
Disproportionately – don't know what is recyclable
- *White Women (46%)*
- *White <40 (45%)*
- *Under 40 (40%)*
- *Apartment/condo with 5 units or more (40%)*
- *Women (38%)*
- *White (38%)*
- *Renters (38%)*

Disproportionately – cart is too small
- *Single-household dwelling (31%)*
- *Homeowners (27%)*
- *30-39 (23%)*
- *Men <40 (23%)*
- *No University Affiliation Men (23%)*

SSA: Q7. What is the biggest factor that limits the amount that you recycle? **(Among those unable to recycle as much as they can): N=133 cases**

When residents are asked to list their own reasons for why recycling is important to them personally, the vast majority cites its positive impact on the environment, its role in reducing the amount of waste that is thrown away, making landfills last longer, and its capacity to help conserve natural resources.

What is the most important reason for you personally to recycle?



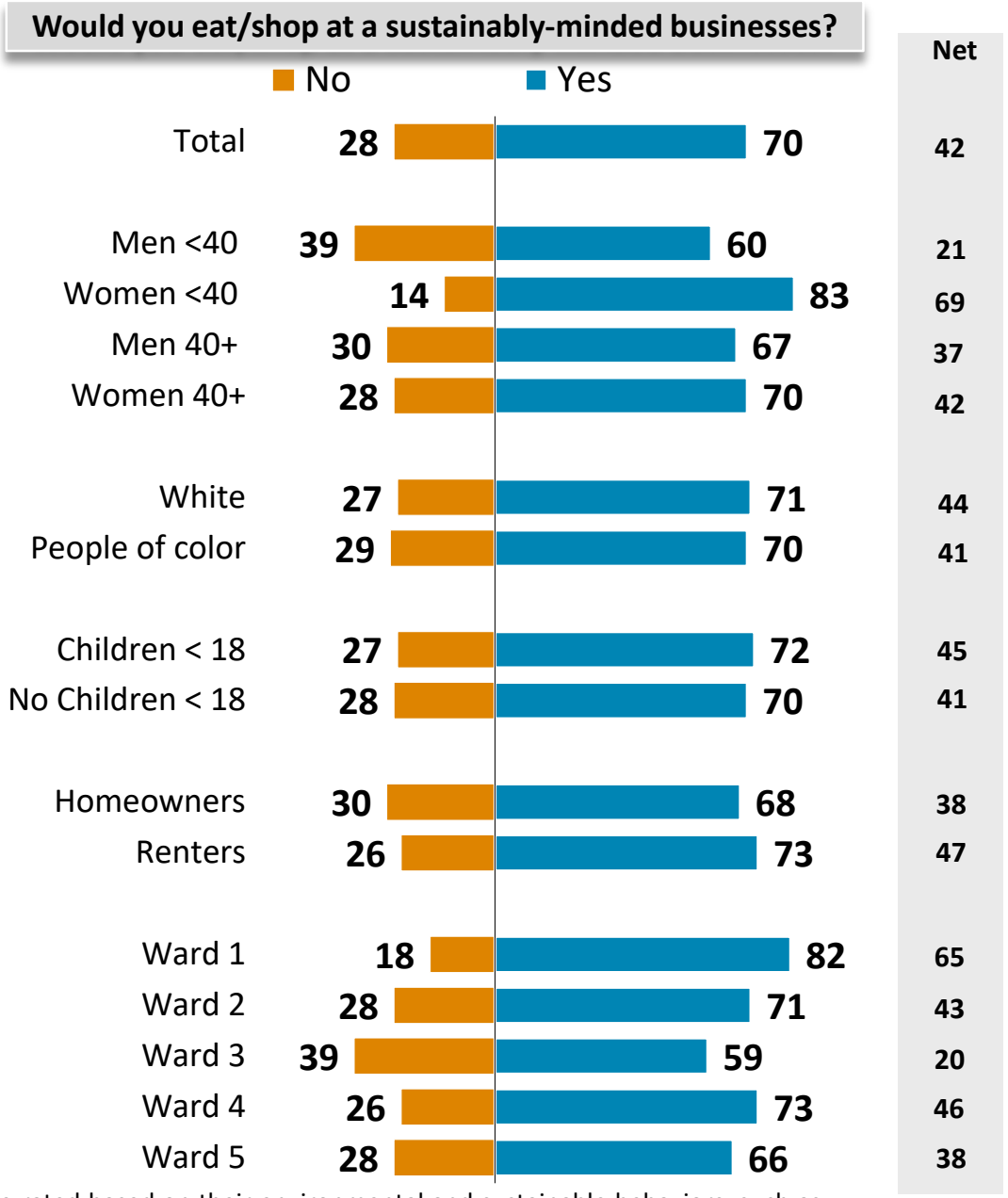
Other Responses	
It is socially responsible	2%
It is my way of fighting climate change	2%
Pressured by family, friends, or neighbors	1%
Want other people to think I'm responsible	1%
Valued in the community	1%
Other	4%
Don't know	1%

SSB: Q8. What would you say is the most important reason for you personally to recycle?
***N=200**

Fully 7 in 10 Ann Arbor residents say they would consider a rating of a restaurant's or store's environmental and sustainable behavior before deciding whether to eat or shop there, including nearly half who feel that way strongly.

Q23. If restaurants or stores in Ann Arbor were rated based on their environmental and sustainable behaviors, such as recycling participation or waste reduction, and sustainably-minded businesses were recognized on their storefront with a badge or sticker, would it make you more likely to eat or shop at those locations? **[**Yes or No?**]**
[**IF YES/NO:]** And do you feel that way STRONGLY or NOT SO STRONGLY?

Solid majorities of every demographic, regional, and household status subgroups say they would consider a restaurant's or store's environmental and sustainable behavior rating before shopping or eating there. Residents who are most interested in such evaluations include those under the age of 40 (particularly women), parents of children under the age of 18, renters, and residents living in Ward 1. Support for this rating is more measured among men under 40 and residents of Ward 3, though majorities of both subgroups still say they would consider the information before offering their patronage.



Q23. If restaurants or stores in Ann Arbor were rated based on their environmental and sustainable behaviors, such as recycling participation or waste reduction, and sustainably-minded businesses were recognized on their storefront with a badge or sticker, would it make you more likely to eat or shop at those locations? **[**Yes or No?**]** **[IF YES/NO:]** And do you feel that way STRONGLY or NOT SO STRONGLY?

Attitudes and Behaviors Regarding Compost Collection

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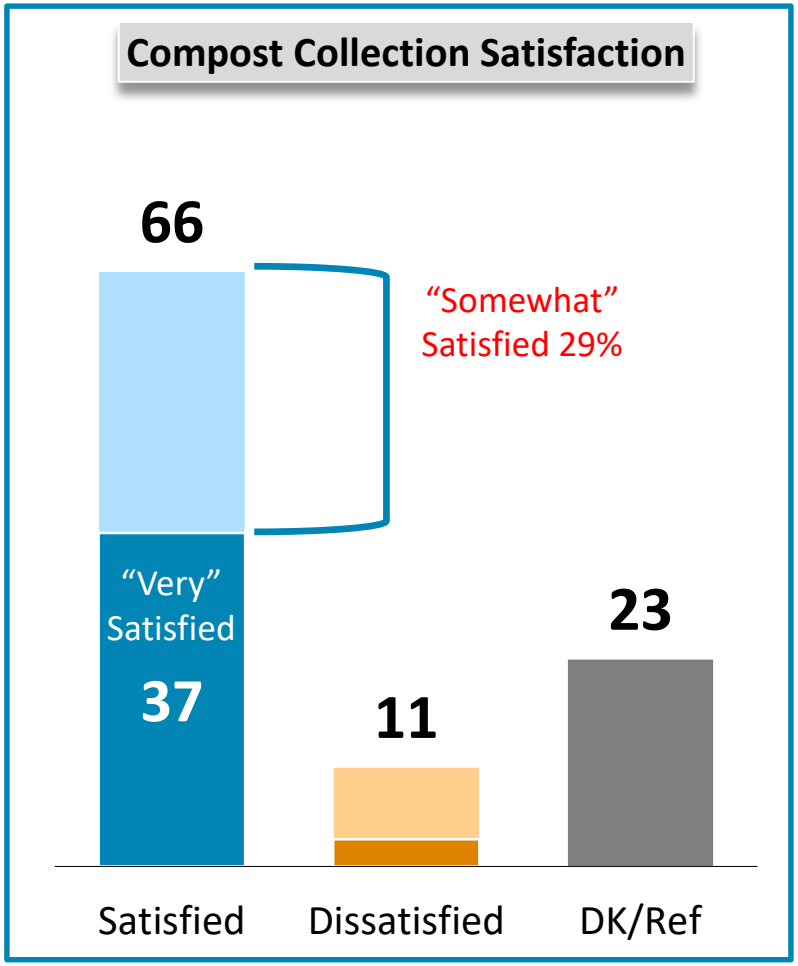
Unlike garbage and recycling services, residents are less aware of the City's compost collection services. Still, even accounting for the relative lack of familiarity, two-thirds of residents report satisfaction with the City's handling of this service, including over one-third who are "very" satisfied. The most satisfied residents tend to be people of color, residents over the age of 40 (particularly women) and homeowners.



Those who are disproportionately 'Very Satisfied' with collection services
Total (37%)
People of Color (56%)
Women 40+ (51%)
Single-household dwelling (47%)
40 & over (46%)
No University Affiliation Women (45%)
Homeowners (44%)
Women (42%)
Parents (42%)

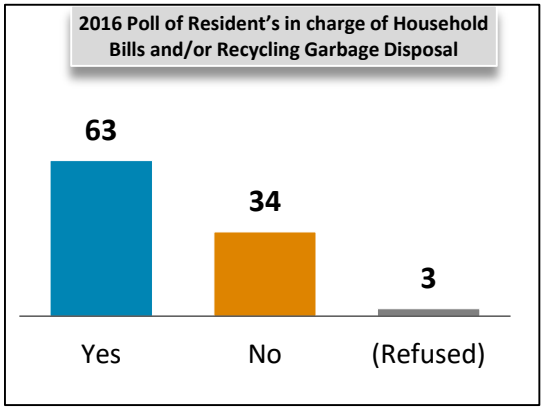
Those who are disproportionately 'Somewhat Satisfied' with collection services
Total (29%)
White Women (39%)
Ward 5 (36%)
White (34%)
White 40+ (34%)

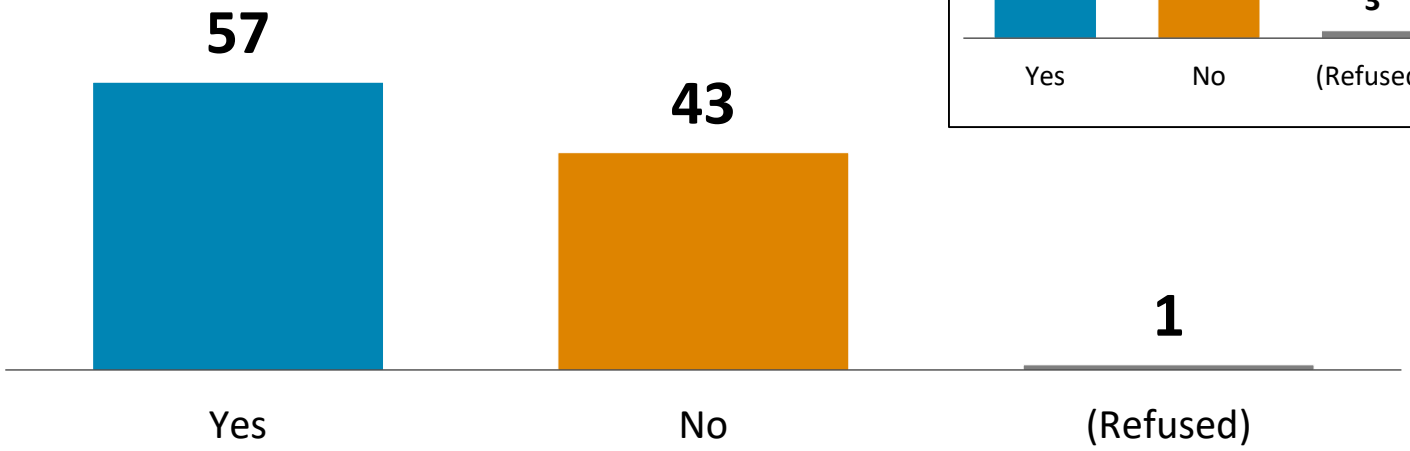
SSB Q6. How satisfied are you with the City's current compost collection service overall? Are you VERY satisfied, SOMEWHAT satisfied, SOMEWHAT dissatisfied, or VERY dissatisfied?

Overall, just 57% of Ann Arbor residents report being aware that food waste such as meat, bones, fruits and vegetables can be placed directly in a City compost cart. With over four-in-ten residents currently saying they are unaware, there is significant room for further education on this subject. Notably, in our 2016 survey of residents in charge of household bills and/or recycling and garbage collection, awareness was almost exactly the same as it is in this data among homeowners.

Are you aware that if you have a compost cart you can put food waste including meat, bones, fruits and vegetables in it?

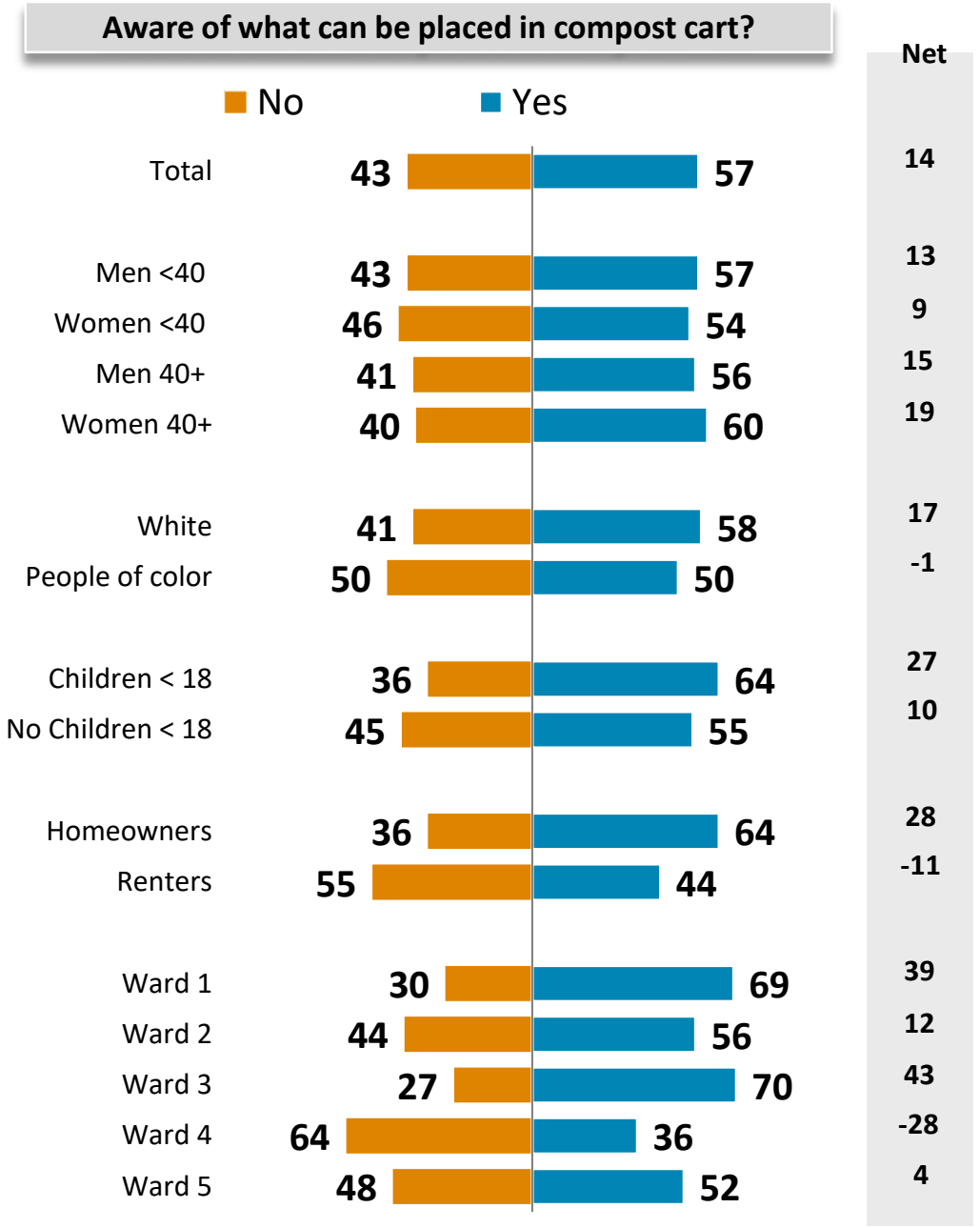
	Own	Rent
Yes	64%	55%
No	36%	45%





Q9. Are you aware that if you have a compost cart you can put food waste including meat, bones, fruits and vegetables in it?

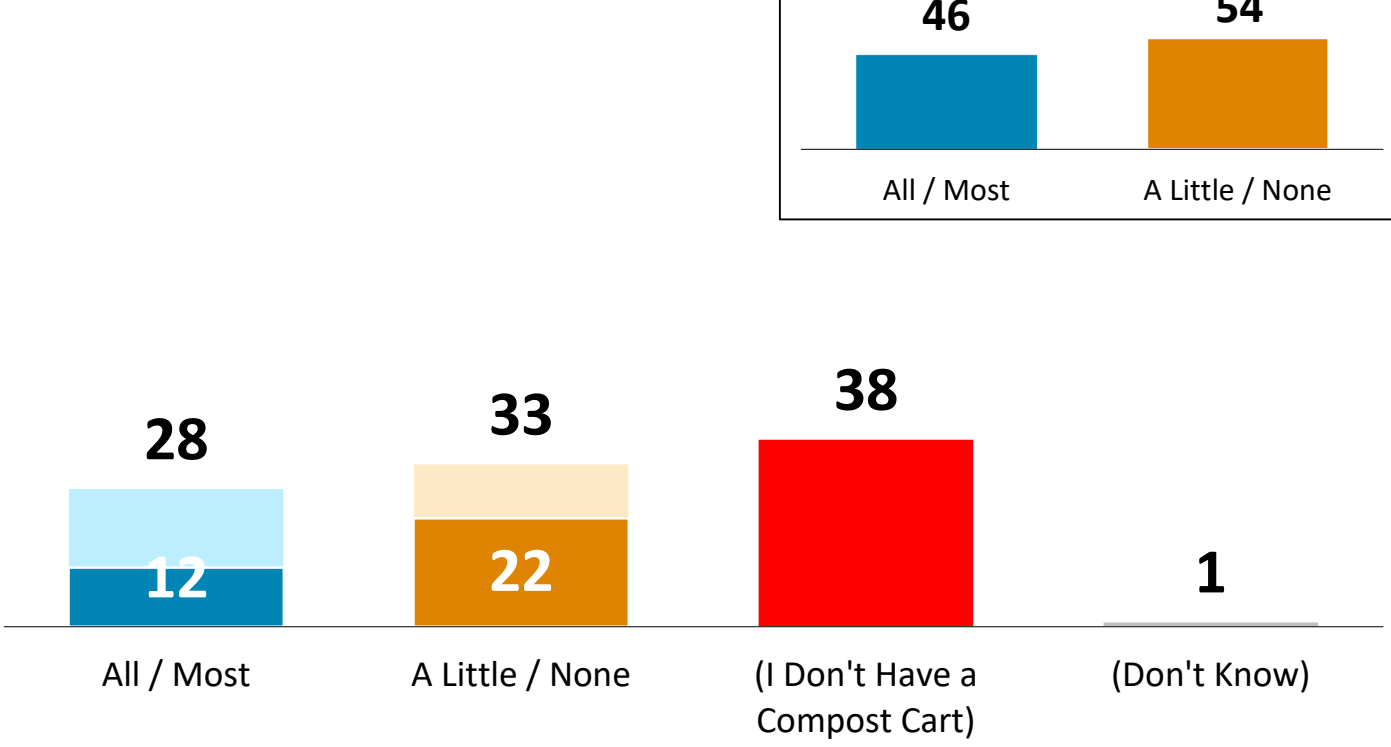
Men and women over the age of 40, parents with children under the age of 18, homeowners, and residents living in Wards 1 and 3 are among the most informed residents when it comes to knowing what wastes can be placed in the City compost carts.
The least informed residents tend to be renters, residents of color, and residents living in Ward 4. Voters under the age of 40 also represent a potential education target.



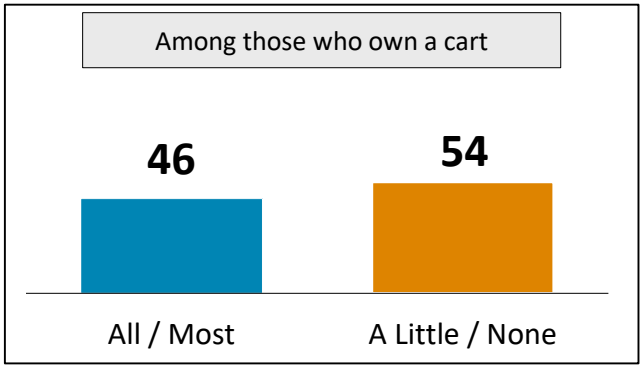
Q9. Are you aware that if you have a compost cart you can put food waste including meat, bones, fruits and vegetables in it?

Nearly four-in-ten residents currently report not having a compost cart, tracking closely with the data from our last survey (38% now vs. 37% in 2016 poll). Among those who both have a compost cart and are aware of the rules governing what can and cannot be placed into the cart, nearly half say they place all or most of their food waste in it.

If you have a compost cart, how much of the food waste from your household do you place in it?



Among those who own a cart



Q10. If you have a compost cart, how much of the food waste from your household do you place in it? All of it. Most of it. A little of it. Or none of it?

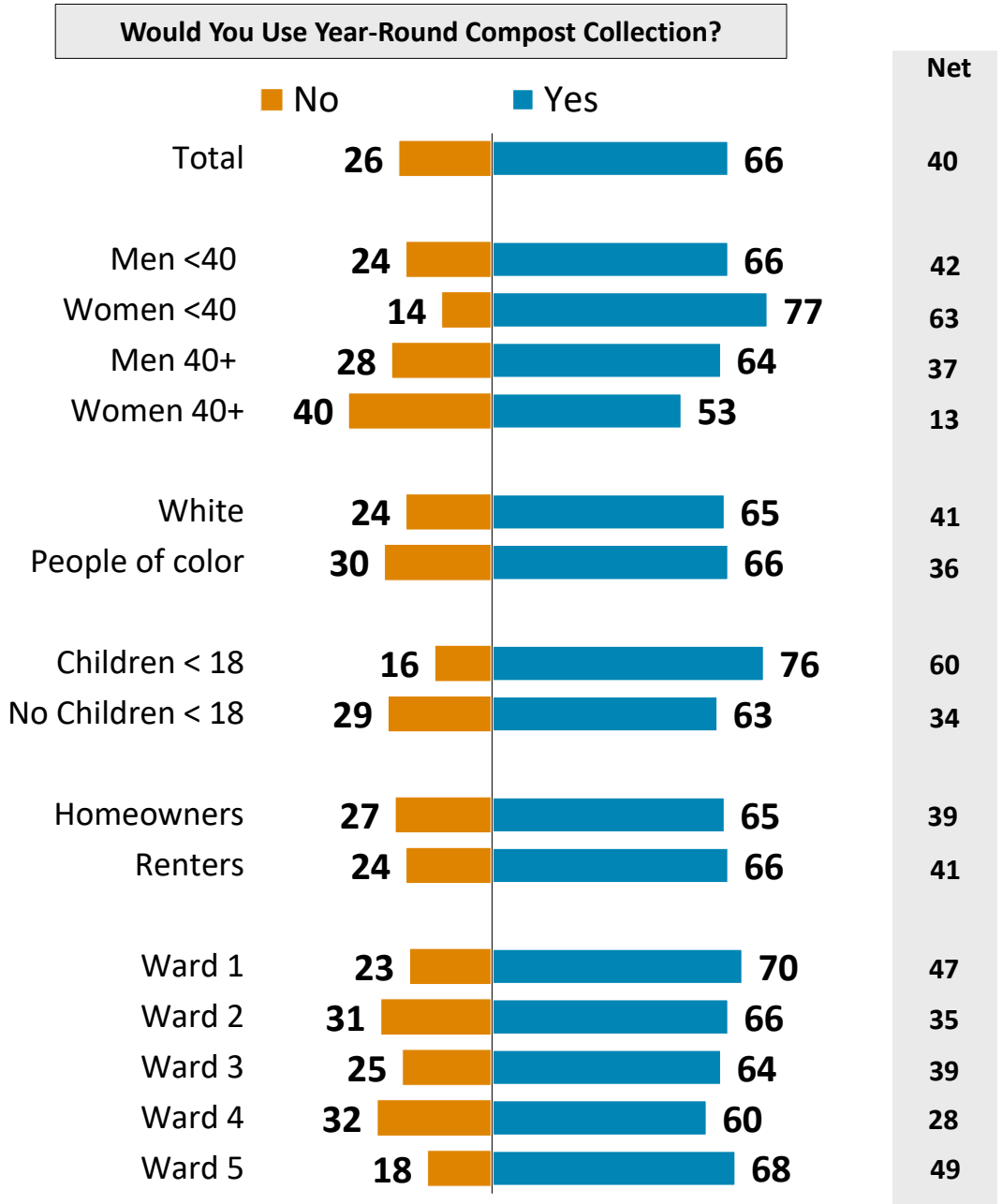
Of those residents who say they throw little to none of their waste into their compost cart, one-quarter cite a lack of awareness that food waste could be thrown into the cart, while 14% say it is inconvenient or that they prefer to use the garbage or in-sink disposal. One-in-ten residents say they choose not to do so to avoid creating a mess and producing foul odors while 15% say they prefer to compost such waste at home.

What is the biggest reason you don't put more food waste in the compost cart?

***(Among Respondents who throw a little/none of their waste in the cart)**

Q11. What is the biggest reason you don't put more food waste in the compost cart?
* n=132 cases

Two-thirds of residents say they would be likely to use year-round compost collection services if the City were to expand those services through the winter months. Residents under 40, particularly women, parents of children under the age of 18, and residents of Ward 1 are among the groups expressing the most interest, currently. Notably, homeowners and renters express nearly identical levels of interest in this service.



Q12. The City currently provides compost collection between April and November and is thinking about expanding collection to a year-round service. The added service during winter months of December through March may be every other week or once per month. Do you think you would use this service?

Attitudes and Behaviors Regarding Bulky Item Collection

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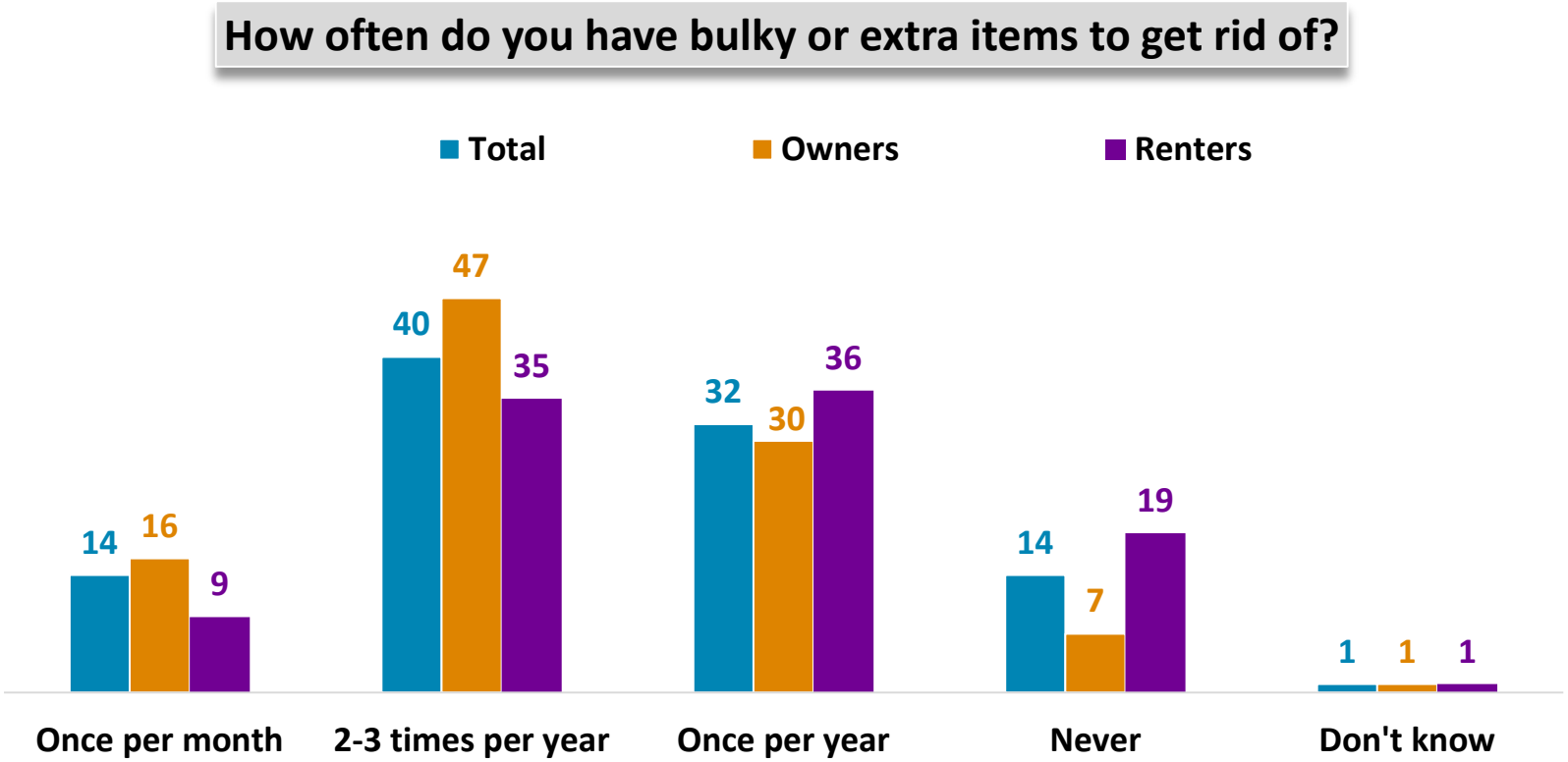
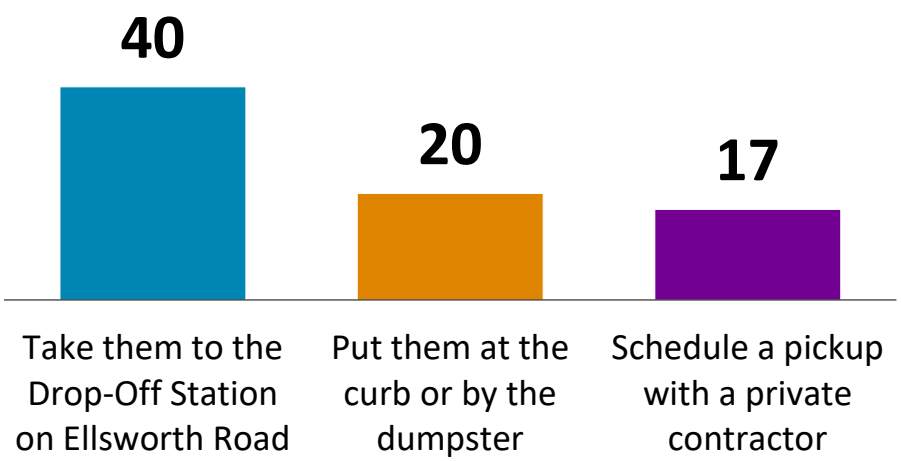
A 54% majority of residents say they have bulky items that need to be picked up from their homes at least two to three times per year, with that number nearly 10 points higher among homeowners. Another third of all residents say they need bulky items picked up only once a year, while just 1 in 7 say they never need this type of service.



Q13. Shifting topics, bulky items that don't fit in your garbage cart, such as furniture, mattresses, carpet, appliances, large amounts of debris, or cleanout items, are not picked up by the City as part of its garbage collection service. The City is thinking about starting a pickup service for collection of these larger items. How often do you have bulky or extra items to get rid of?

When asked how they currently dispose of bulky items, four-in-ten residents report taking them to the drop-off station on Ellsworth Road, while one-in-five say they schedule pickups with private contractors. A similar number of residents also say they place these items at the curb or by the dumpster while around one-in-ten say they either donate these items or just keep them.

How do you dispose of bulky items now?



Other Responses	
Donate them	6%
Keep them/Sit in the house	4%
Place in garbage	3%
My residence disposes of them for me	1%
All of the above	1%
Other	4%
Never have these items	4%

Q14. How do you dispose of bulky items now? Do you…

Residents who typically dispose of their bulky items at the drop-off station tend to be men over 40, parents with children under the age of 18, and homeowners. Residents who place bulky items at the curb or by the dumpster tend to be residents under 40, those who rent their homes, and residents living in Wards 1 and 4. Residents who hire private contractors tend to be seniors, people of color, and Ward 4 residents.

How do you dispose of bulky items now?

Disproportionately – take them to the Drop-Off Station on Ellsworth Road

- *TOTAL (40%)*
- *Ward 5 men (58%)*
- *Parents (56%)*
- *Owners (53%)*
- *Men 40+ (52%)*
- *Ward 5 (52%)*
- *40-49 (50%)*
- *Single house dwelling (50%)*
- *White men (49%)*
- *White 40+ (46%)*
- *40+ (45%)*

Disproportionately – put them at the curb or by the dumpster

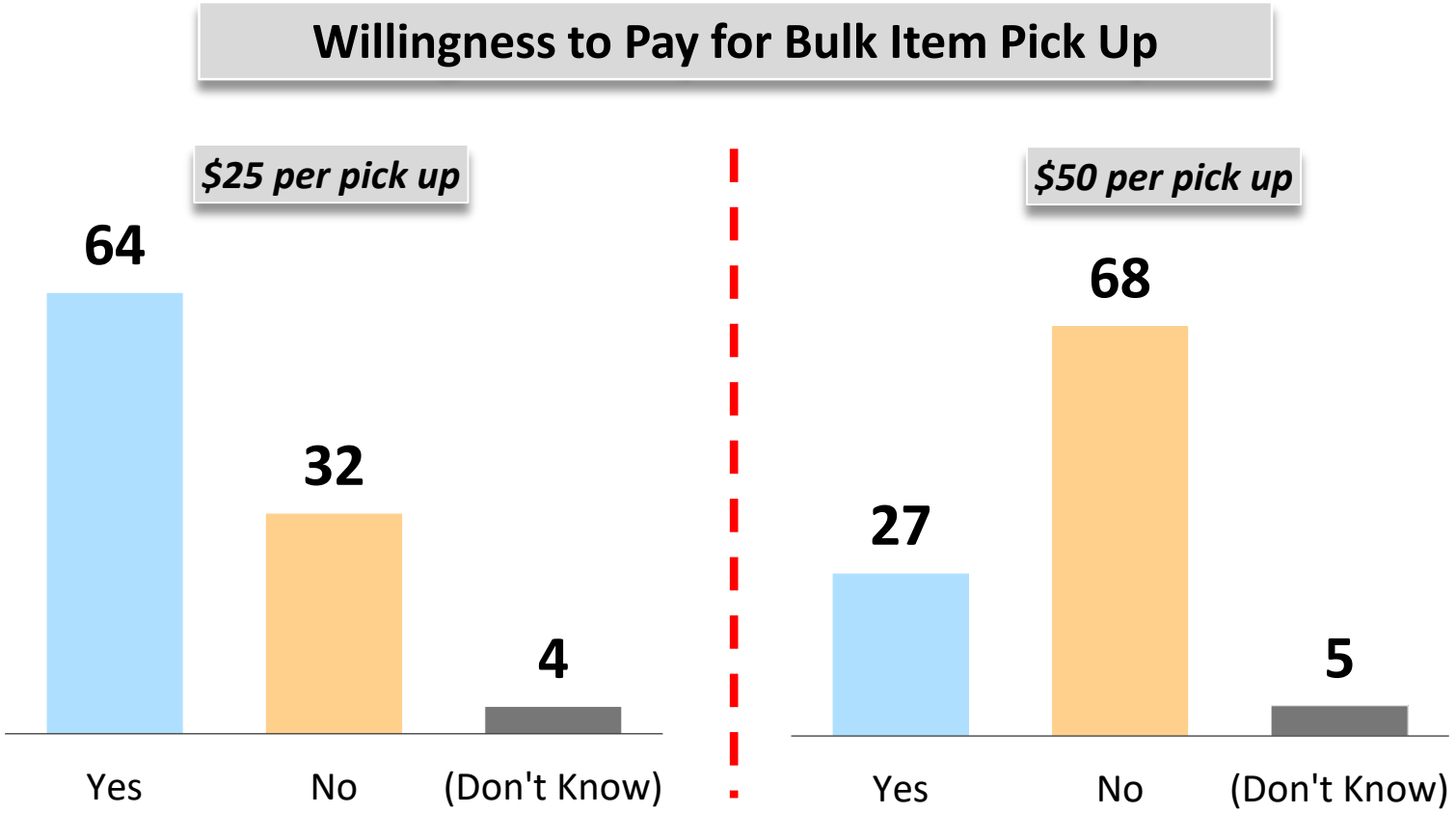
- *TOTAL (20%)*
- *Renters (37%)*
- *Under 30 (31%)*
- *Apartment/Condo with 5+ Units (29%)*
- *Men under 40 (28%)*
- *Ward 1 (28%)*
- *Under 40 (27%)*
- *White under 40 (27%)*
- *Ward 4 (26%)*
- *Women under 40 (25%)*

Disproportionately – schedule a pickup with a private contractor

- *TOTAL (17%)*
- *Apartment/Condo with 5+ Units (29%)*
- *Ward 4 (24%)*
- *People of color (23%)*
- *65+ (22%)*

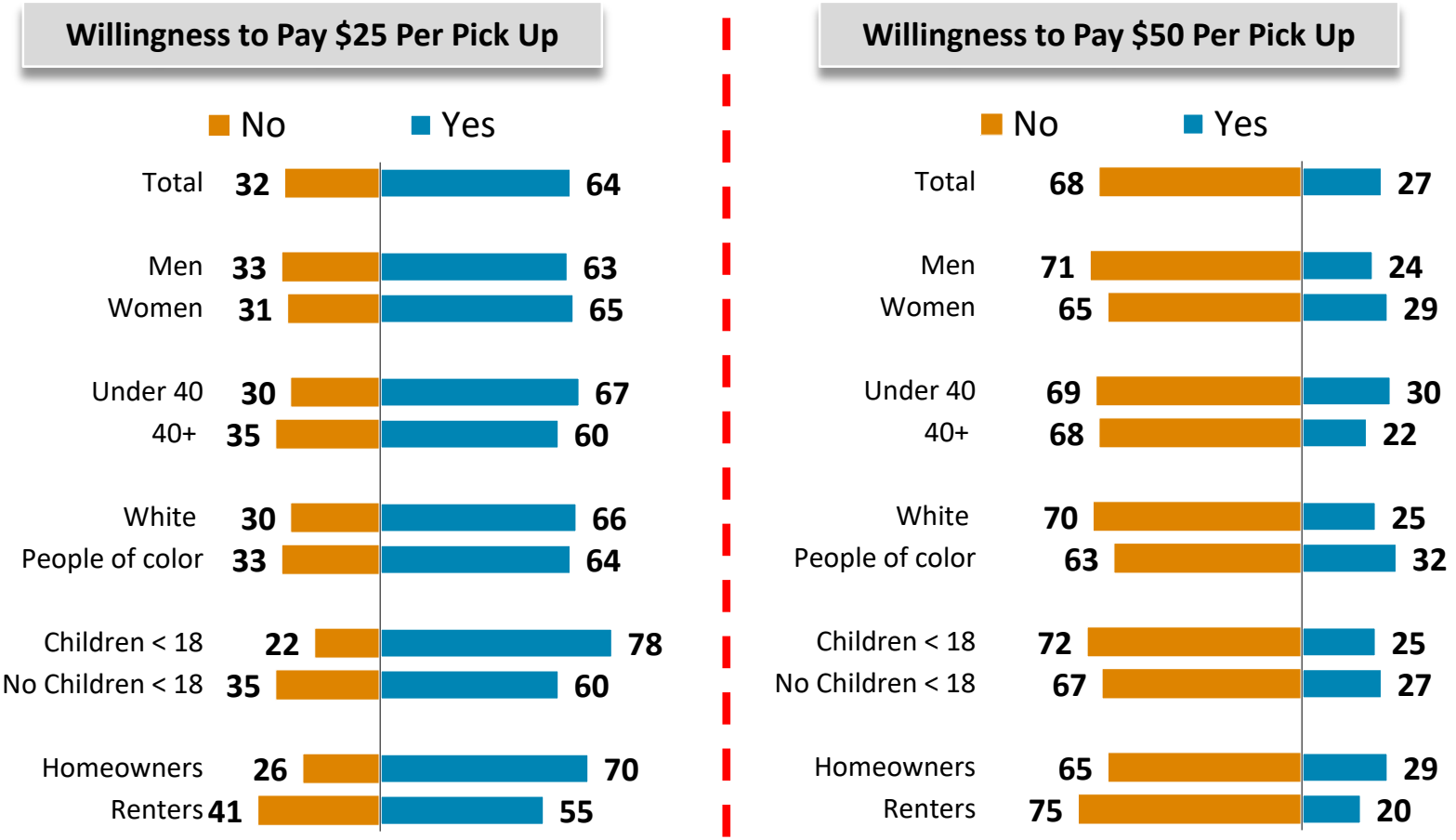
Q14. How do you dispose of bulky items now? Do you…

A solid majority of Ann Arbor residents express a willingness to pay $25 for every time they need bulky items picked up from their residence. That said, more than two-thirds would *not* be willing to pay $50 per pick up.



Q15. Now I am going to read you some dollar amounts that the City could charge to come pick up bulky items from your residence. Would you be willing to pay? **[RANDOMIZE]**

Solid majorities of every major subgroup of residents express a willingness to pay $25 per pickup of bulky items. Even greater majorities of the same major subgroups, however, are firm in their rejection of a proposal to pay $50 for the same service.



Q15. Now I am going to read you some dollar amounts that the City could charge to come pick up bulky items from your residence. Would you be willing to pay? **[RANDOMIZE]**

Electronic and Household Hazardous Waste Disposal

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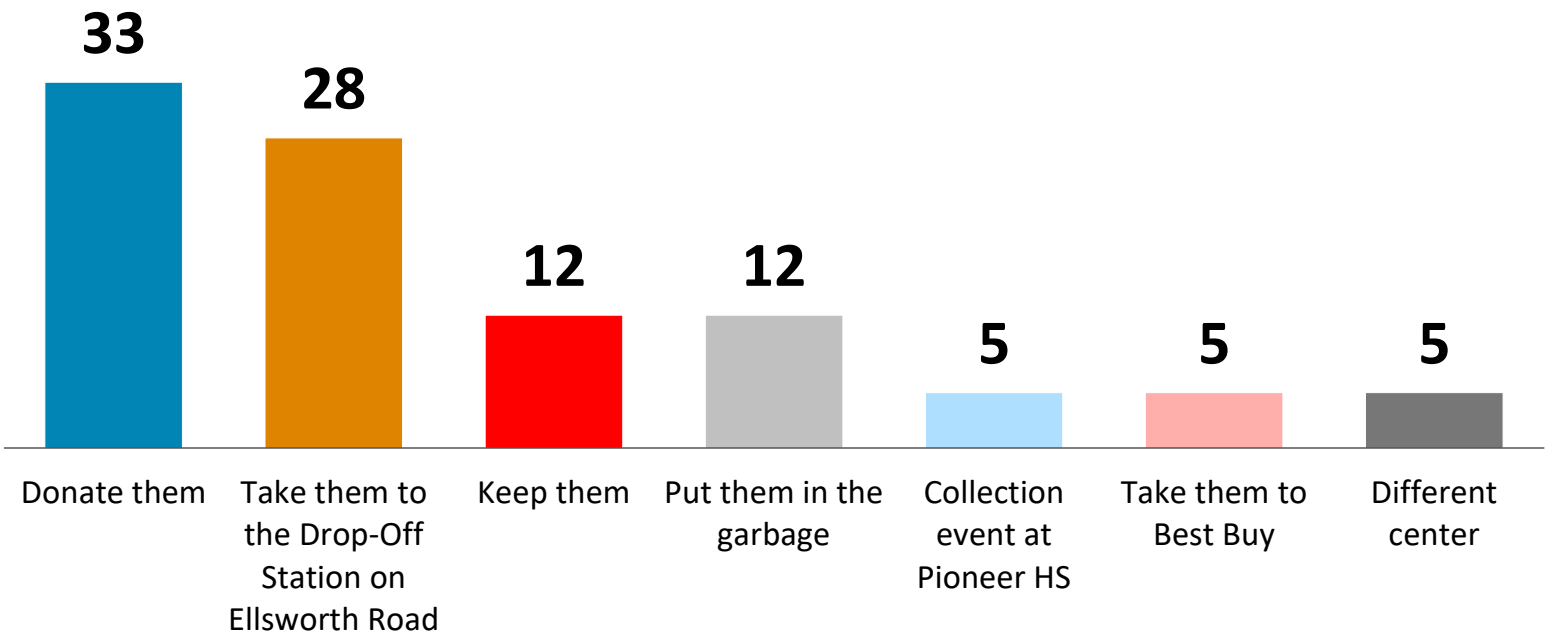
When residents are asked specifically about their disposal habits of electronic waste, one-third say they generally donate these items while a little more than a quarter say they take them to the drop-off station on Ellsworth Road. About a quarter of residents also say they either keep these items or throw them away in the garbage.

What do you do with your electronic items that you're getting rid of?



Q16. What do you do with your electronics items that you are getting rid of? Do you **[READ ALL RESPONSES]**

The groups of residents that typically donate their electronic items most tend to be residents under 40, renters, and residents living in Wards 4 and 5. Those most likely to take these items to the drop-off station tend to be homeowners over 40 (mostly women) and residents of Wards 2 and 3. Those most likely to throw these items in the garbage tend to be residents living in condos and apartments and residents of Ward 3 who are over 40.

What do you do with the electronic items you're getting rid of?

Disproportionately – donate

- *TOTAL (33%)*
- *30-39 (45%)*
- *Ward 5 men (44%)*
- *Men under 40 (43%)*
- *Under 40 (42%)*
- *White under 40 (42%)*
- *Women under 40 (40%)*
- *Ward 4 (40%)*
- *Renters (40%)*
- *Under 30 (39%)*
- *Ward 5 (38%)*

Disproportionately – take them to the Drop-Off Station on Ellsworth Road

- *TOTAL (28%)*
- *White 40+ (38%)*
- *65+ (37%)*
- *White women (37%)*
- *Ward 3 (37%)*
- *40-49 (36%)*
- *Women 40+ (36%)*
- *40+ (35%)*
- *Ward 2 (35%)*
- *Ward 5 women (34%)*
- *Owners (34%)*
- *Men 40+ (33%)*
- *White (33%)*

Disproportionately – Throw in Garbage

- *TOTAL (12%)*
- *Ward 3 40+ (21%)*
- *Apartment/Condo with 5+ Units (19%)*
- *Ward 1 (18%)*
- *Ward 5 men (17%)*

Q16. What do you do with your electronics items that you are getting rid of? Do you **[READ ALL RESPONSES]**

Just over four-in-ten Ann Arbor residents say they dispose of their households' hazardous waste by taking it to drop-off sites like retail stores or stations on Ellsworth Road and Zeeb Road. Another 1 in 5 say they place such waste in their trash cart and/or dumpster, while most of the remaining number report some combination of the two.

How do you get rid of household hazardous wastes?

Other Responses	
Don't have any/enough	9%
Empty them in the drain and throw away the container	6%
Don't do anything/just sit there	4%
Other	2%
Don't know	7%

Q17. How do you get rid of household hazardous wastes? Do you **[READ ALL RESPONSES]**

Residents most likely to take their hazardous wastes to drop-off stations tend to be over the age of 40 (especially 40-49 and 65+), women, parents with children under the age of 18, and homeowners. Residents most likely to place them in the trash cart or dumpster tend to be men under 40, renters, people of color, and residents of Wards 1 and 4.

How do you get rid of household hazardous wastes?

Disproportionately – take them to a drop-off site

- *TOTAL (41%)*
- *40-49 (59%)*
- *Men 40+ (56%)*
- *White 40+ (53%)*
- *Ward 5 (53%)*
- *65+ (52%)*
- *40+ (52%)*
- *Owners (50%)*
- *Parents (49%)*
- *Single household dwelling (49%)*
- *Women 40+ (48%)*
- *50-64 (47%)*

Disproportionately – place them in your trash cart or dumpster

- *TOTAL (19%)*
- *Renters (34%)*
- *Apartment/Condo with 5+ Units (30%)*
- *Men under 40 (29%)*
- *Ward 4 (27%)*
- *30-39 (25%)*
- *White men (25%)*
- *Men (24%)*
- *People of color (24%)*
- *White under 40 (24%)*
- *Ward 1 (24%)*

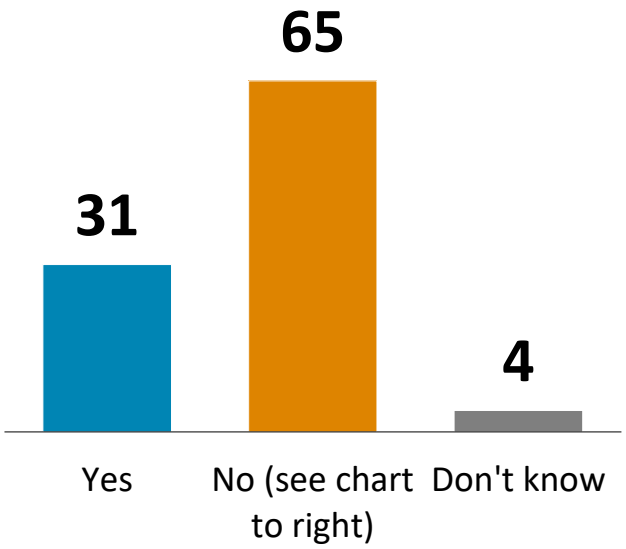
Disproportionately – take some to drop-off sites and put others in the trash

- *TOTAL (15%)*
- *Ward 5 Women (27%)*
- *Ward 5 (23%)*
- *Ward 2 (22%)*
- *Parents (22%)*
- *White under 40 (21%)*

Q17. How do you get rid of household hazardous wastes? Do you **[READ ALL RESPONSES]**

While just under one-third of Ann Arbor residents say they try to take all of their household hazardous waste to a drop-off center, six-in-ten identify a factor that limits their ability to do so, most prominently a lack of enough such waste to make going to a drop-off center necessary and that the sites are inconvenient.

Take Household Hazardous Wastes to Drop-off?

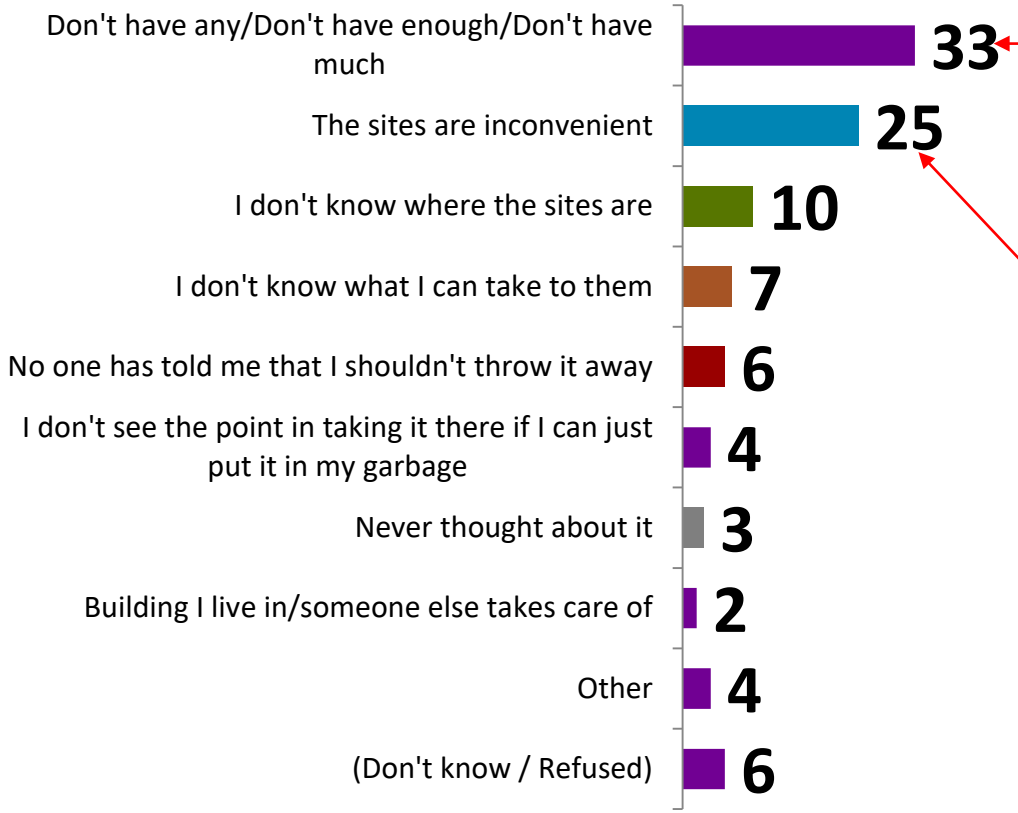


If you do not take all of your household hazardous wastes to a drop-off, why not?
*** (among those who do not always take)**

Q18. If you do not take all of your household hazardous wastes to a drop-off, why not? (Among those who do not always take hazardous waste to approved sites)

Women over 40, especially white women and residents of Ward 3 are the most likely residents to say they generally do not have enough hazardous waste to make going to a drop-off center necessary. Residents under 30 and men over 40 are the most likely groups to say they choose not to go to the centers because doing so is inconvenient.

If you do not take all of your household hazardous wastes to a drop-off, why not?
*** (among those who do not always take)**



Disproportionately – don't have any/don't have enough/don't have much
- *TOTAL (33%)*
- *Women 40+ (48%)*
- *White women (42%)*
- *40+ (40%)*
- *White 40+ (40%)*
- *Ward 3 (40%)*

Disproportionately – the sites are inconvenient
- *TOTAL (25%)*
- *Under 30 (31%)*
- *Ward 4 (31%)*
- *Men 40+ (30%)*
- *Single house dwelling (30%)*

Q18. If you do not take all of your household hazardous wastes to a drop-off, why not? (Among those who do not always take hazardous waste to approved sites)
* n=277

Assessments of Funding Options for Waste Management Services

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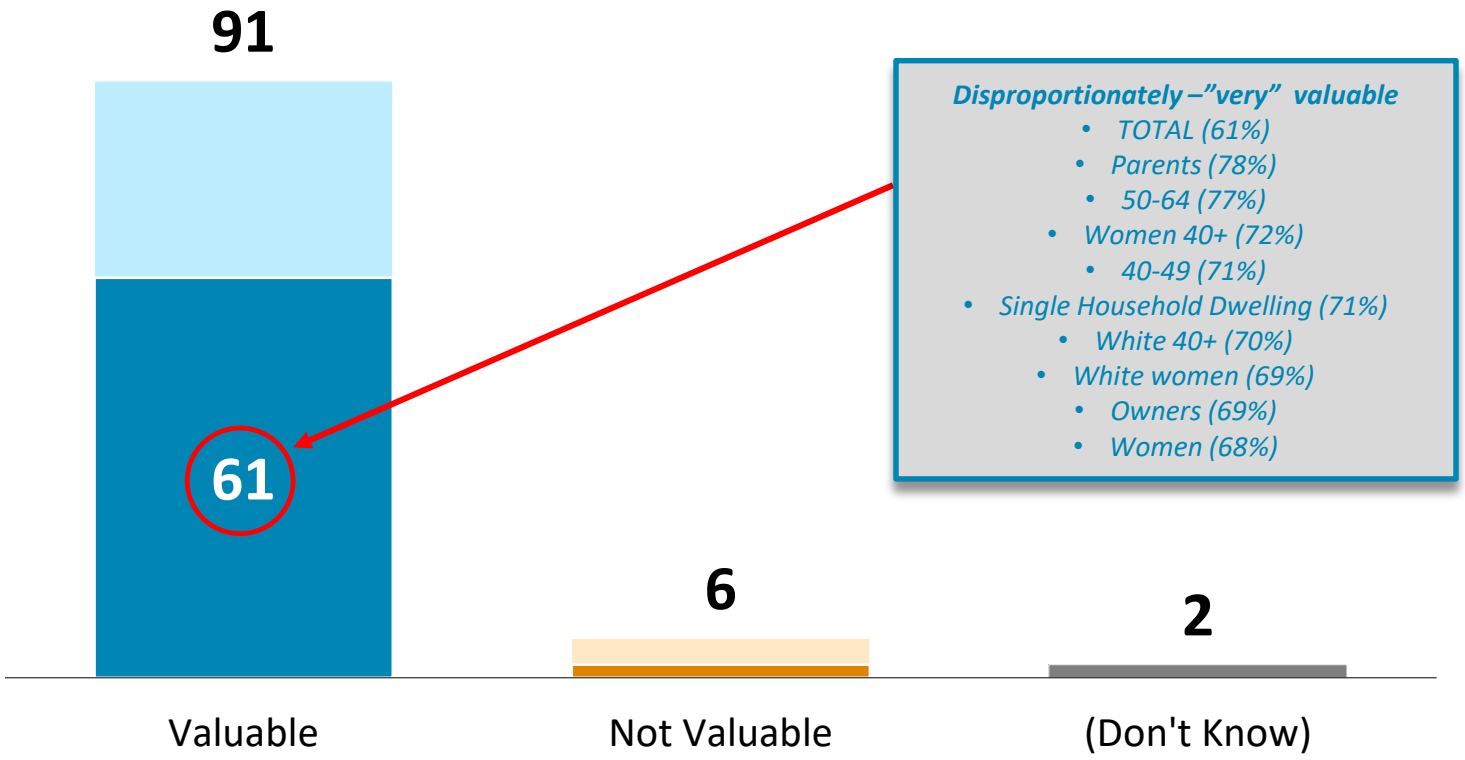
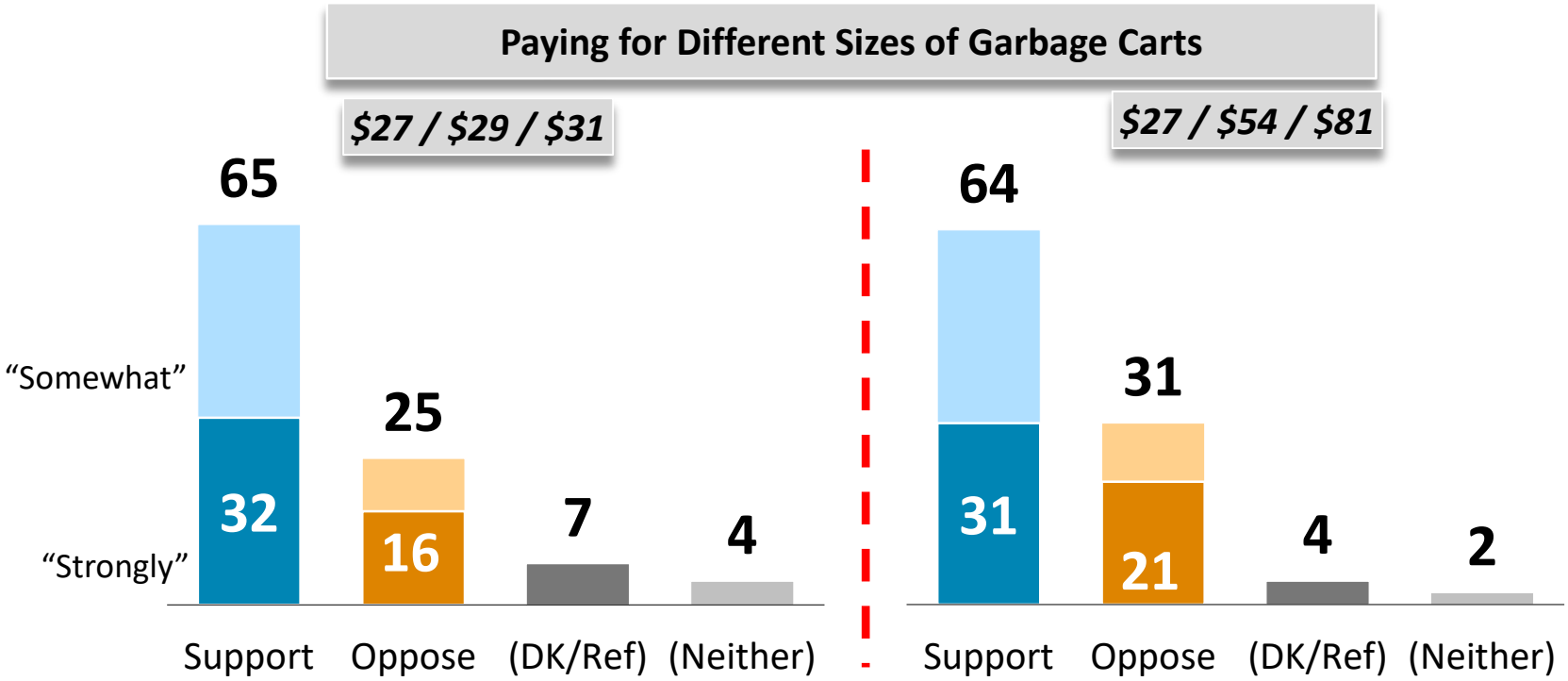
Over nine-in-ten residents consider the $29 average per household cost for garbage, recycling, and compost services in the City to be a “very” or “somewhat” valuable service.

How valuable would you say your solid waste services are for the average monthly cost?



Q24. Garbage, recycling, and compost services currently cost an average of $29 per month per household. Compared to your other monthly expenses such as electric, natural gas, water, internet, and cell phone, how valuable would you say your solid waste services are for this monthly cost?

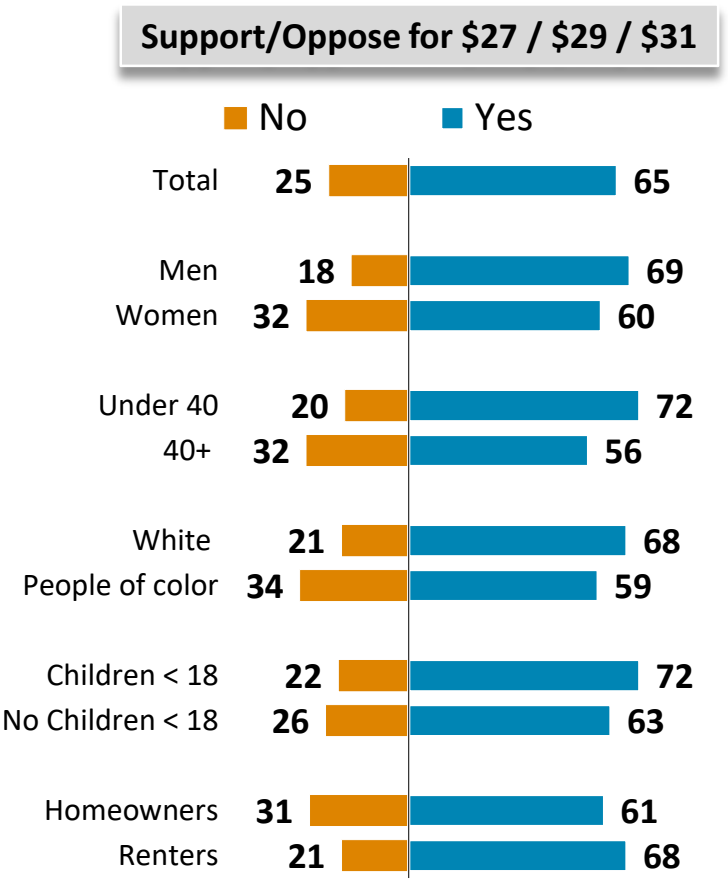
Nearly two-thirds of residents say they would support switching to a method of monthly payments for garbage collection, with $27 the cost per month for a 32-gallon cart, $29 for a 64-gallon garbage cart, and $31 for a larger 96-gallon cart; just 25% of residents say they would oppose such a switch. The dynamics are similar for an alternate plan of charging $27 for a 32-gallon cart, $54 for a 64-gallon cart, and $81 for a 96-gallon cart. Notably, in both cases, the intensity of support is split evenly between strong and soft

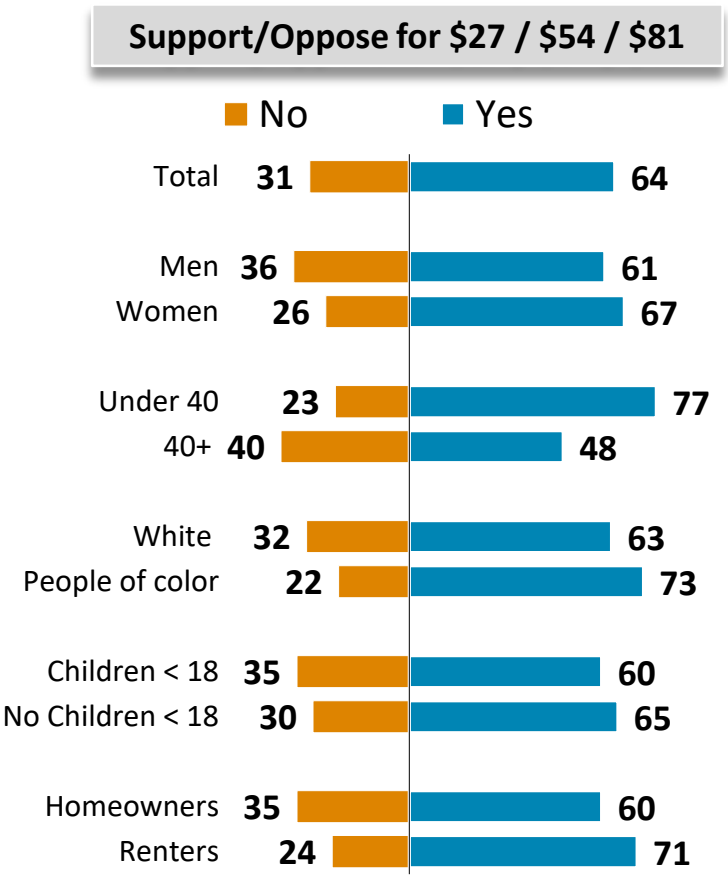


SSA: Q25. In Ann Arbor, the standard garbage service is a 64-gallon garbage cart. To incentivize households to reduce the garbage they dispose and to increase how much they recycle and compost, smaller garbage containers could be provided for a lower cost. In other communities that do this, households are charged monthly, and the amount is based on the garbage container size they select. If Ann Arbor switched to this method of payment for garbage collection, the City could charge $27 per month for a smaller 32-gallon cart, $29 per month for the standard 64-gallon garbage cart, and $31 per month for a larger 96-gallon cart. Would you support or oppose this method of paying for services? How strongly?

SSB: Q26. (Asked same question, except with $27 / $54 / $81 charges.)

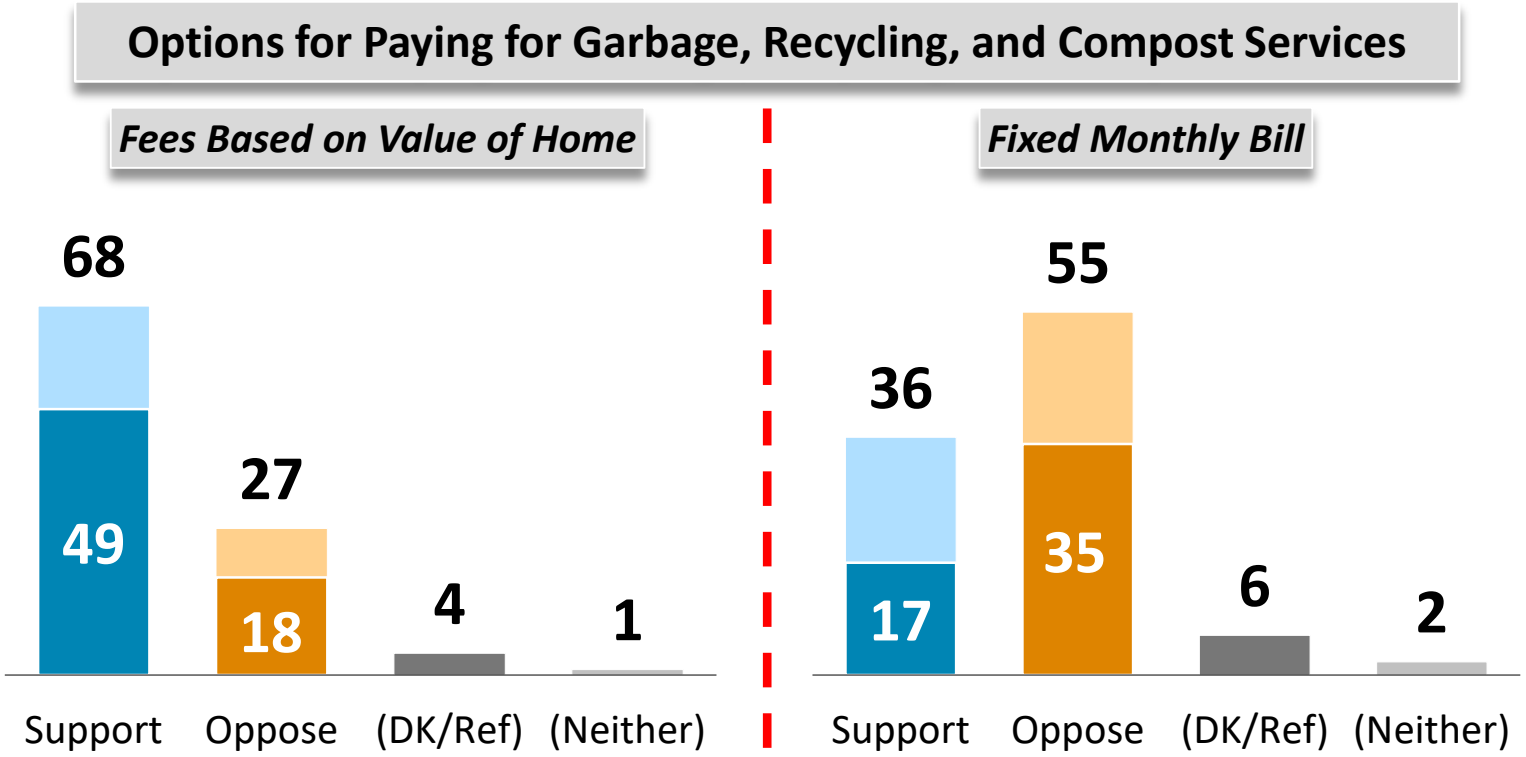
Support for the $27 / $29 / $31 combination is strongest among residents under the age of 40 (particularly men), and parents with children under the age of 18. The former group also expresses the strongest level of support for the $27 / $54 / $81 combination, just ahead of renters and people of color. In both cases, support is more measured among residents over the age of 40.





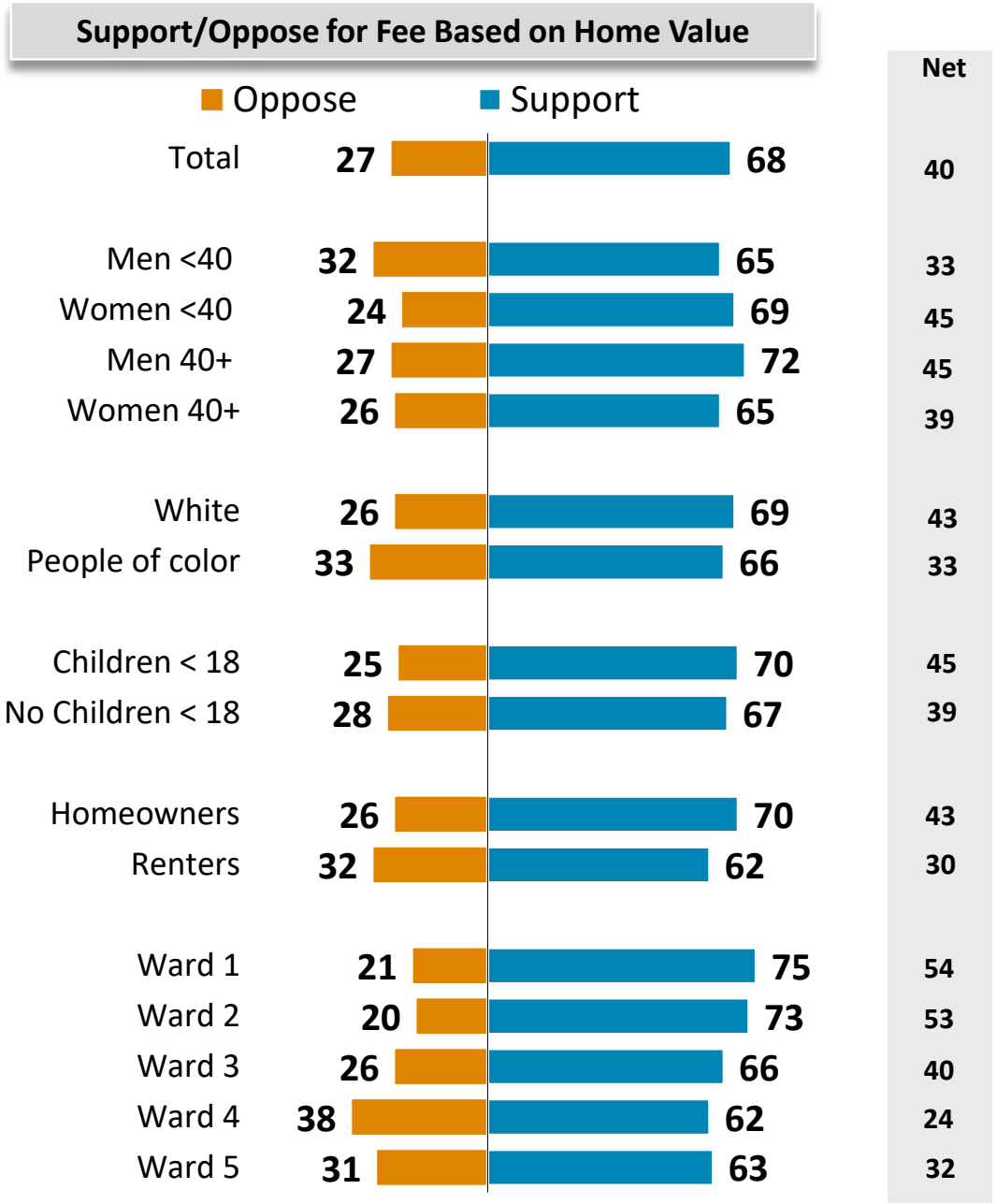
SSA: Q25. (See previous page)
SSB: Q26. (See previous page)

Close to seven-in-ten residents support the current system of tying the costs of services to the property value of homes, compared to less than one-in-three who oppose this system. Moreover, residents register firm opposition to switching to a system where all households are charged a fixed $29 monthly rate for services rather than tying fees to property values, with only 36% of residents saying they would support such a shift.



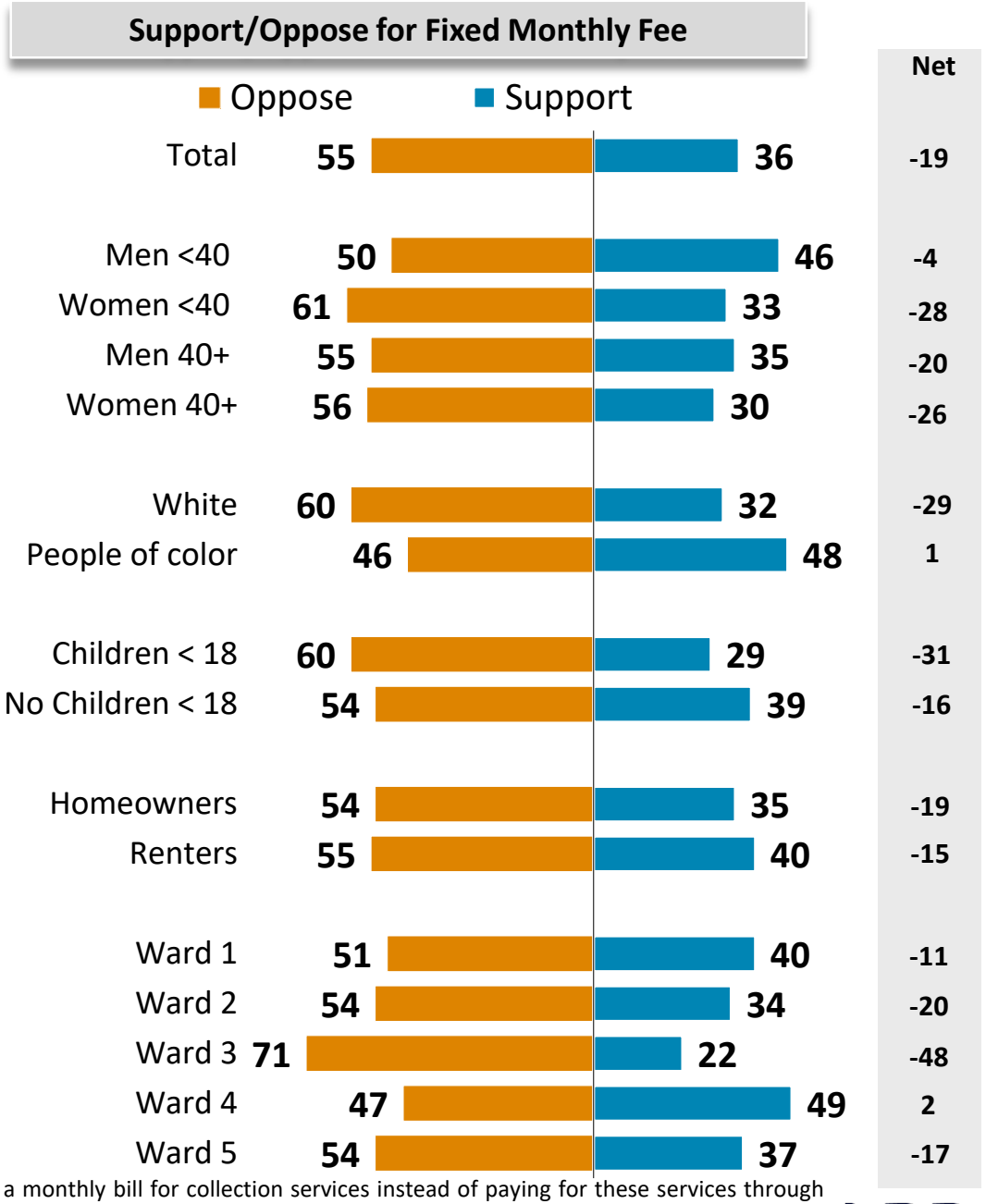
Q27. Garbage, recycling, and compost services in Ann Arbor are currently paid for through property taxes based on the value of your home, so higher value homes pay more, and lower value homes pay less for the same services. Do you **[ROTATE]** support or oppose paying for these services based on the value of your home?
Q28. In other communities, households receive a monthly bill for collection services instead of paying for these services through property taxes. In these communities, each household pays the same amount for the same services, regardless of the value of their home. In Ann Arbor, that monthly bill could be $29 based on current services. Instead of the current method of paying for services through property taxes, would you **[ROTATE]** support or oppose paying a fixed monthly bill for these services?

Solid majorities of every major subgroup of residents support the current system of tying solid waste collection services to the value of homes, with support especially strong among men over the age of 40, parents with children under the age of 18, homeowners, and residents of Wards 1 and 2. People of color, renters, and residents of Wards 4 and 5 are more measured in their support, but only in relative terms.



Q27. Garbage, recycling, and compost services in Ann Arbor are currently paid for through property taxes based on the value of your home, so higher value homes pay more, and lower value homes pay less for the same services. Do you **[ROTATE]** support or oppose paying for these services based on the value of your home?

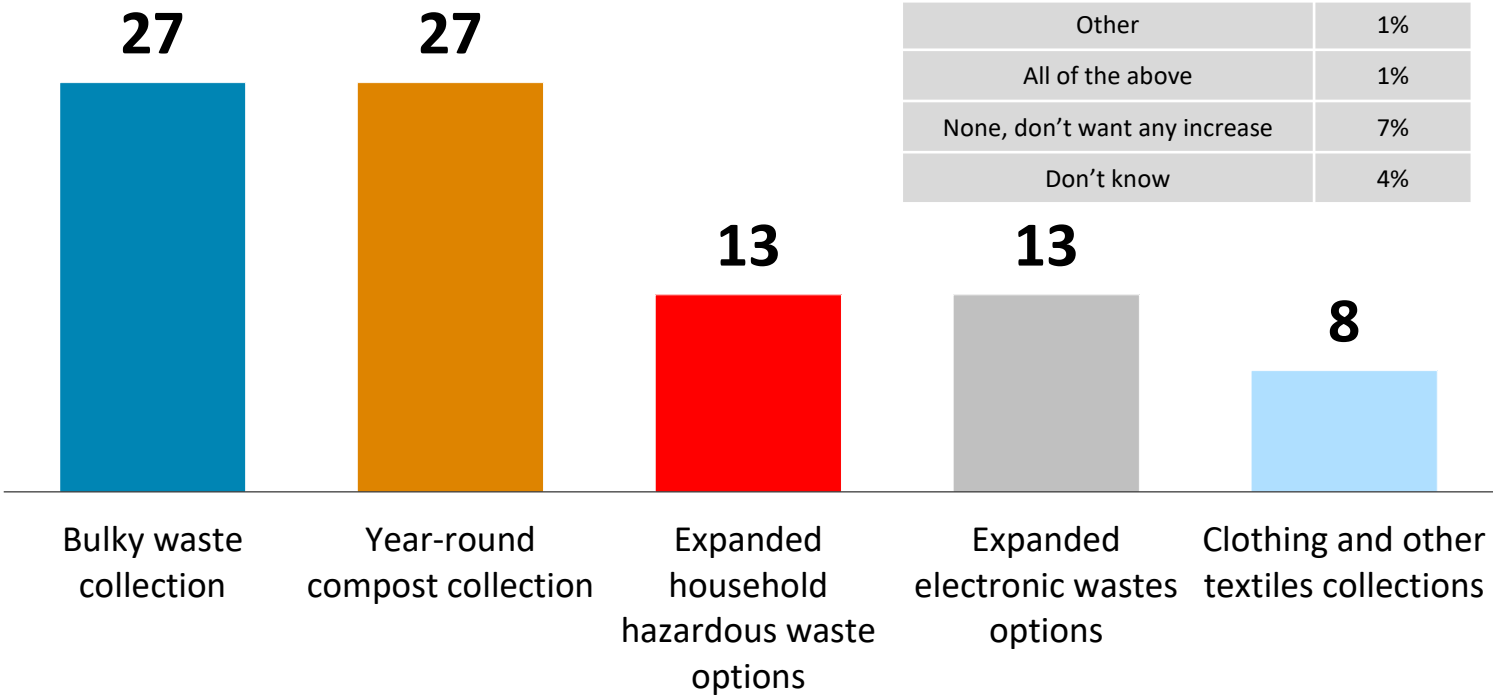
With the exceptions of people of color and residents of Ward 4, a majority of every subgroup of residents opposes an alternative plan to charge all households a fixed $29 monthly rate for solid waste collection services. Opposition is particularly strong among residents of Ward 3, parents with children under the age of 18, and (mostly white) women under 40.



Q28. In other communities, households receive a monthly bill for collection services instead of paying for these services through property taxes. In these communities, each household pays the same amount for the same services, regardless of the value of their home. In Ann Arbor, that monthly bill could be $29 based on current services. Instead of the current method of paying for services through property taxes, would you **[ROTATE]** support or oppose paying a fixed monthly bill for these services?

If costs were to increase in order to expand services, a similar number of residents say they would be most interested in year-round compost collection and bulky waste collection. Similar numbers of residents also express interest in the City expanding its current disposal options for hazardous and electronic wastes.

If costs increased but you were provided one new/expanded service, which would interest you most?



Other Responses	
Other	1%
All of the above	1%
None, don't want any increase	7%
Don't know	4%

Q29. If costs increased but you were provided one new or expanded service, which would be of the most interest to you? **[READ AND RANDOMIZE:]**

Women over the age of 40, people of color, and residents of Wards 2 and 3 are the most likely to prefer increased costs go towards expanded bulky waste collection. Voters under 40 (especially women), renters, and parents with children under the age of 18 are the most likely to prefer they go towards year round compost collection. Men over the age of 40 and parents disproportionately prefer cost increases go towards expanded hazardous waste options while men under 40 and residents of Ward 4 prefer additional clothing and other textile collection.

If costs increased but you were provided one new/expanded service, which would interest you most?

Disproportionately – bulky waste collection

- *TOTAL (27%)*
- *Ward 3 40+ (37%)*
- *White women (34%)*
- *Women 40+ (33%)*
- *Ward 3 (33%)*
- *People of color (32%)*
- *Ward 2 (32%)*

Disproportionately – year-round compost collection

- *TOTAL (27%)*
- *Women < 40 (39%)*
- *Under 30 (34%)*
- *White < 40 (34%)*
- *Ward 3 (34%)*
- *Renters (33%)*
- *Under 40 (32%)*
- *Parents (32%)*

Disproportionately – expanded household hazardous waste options

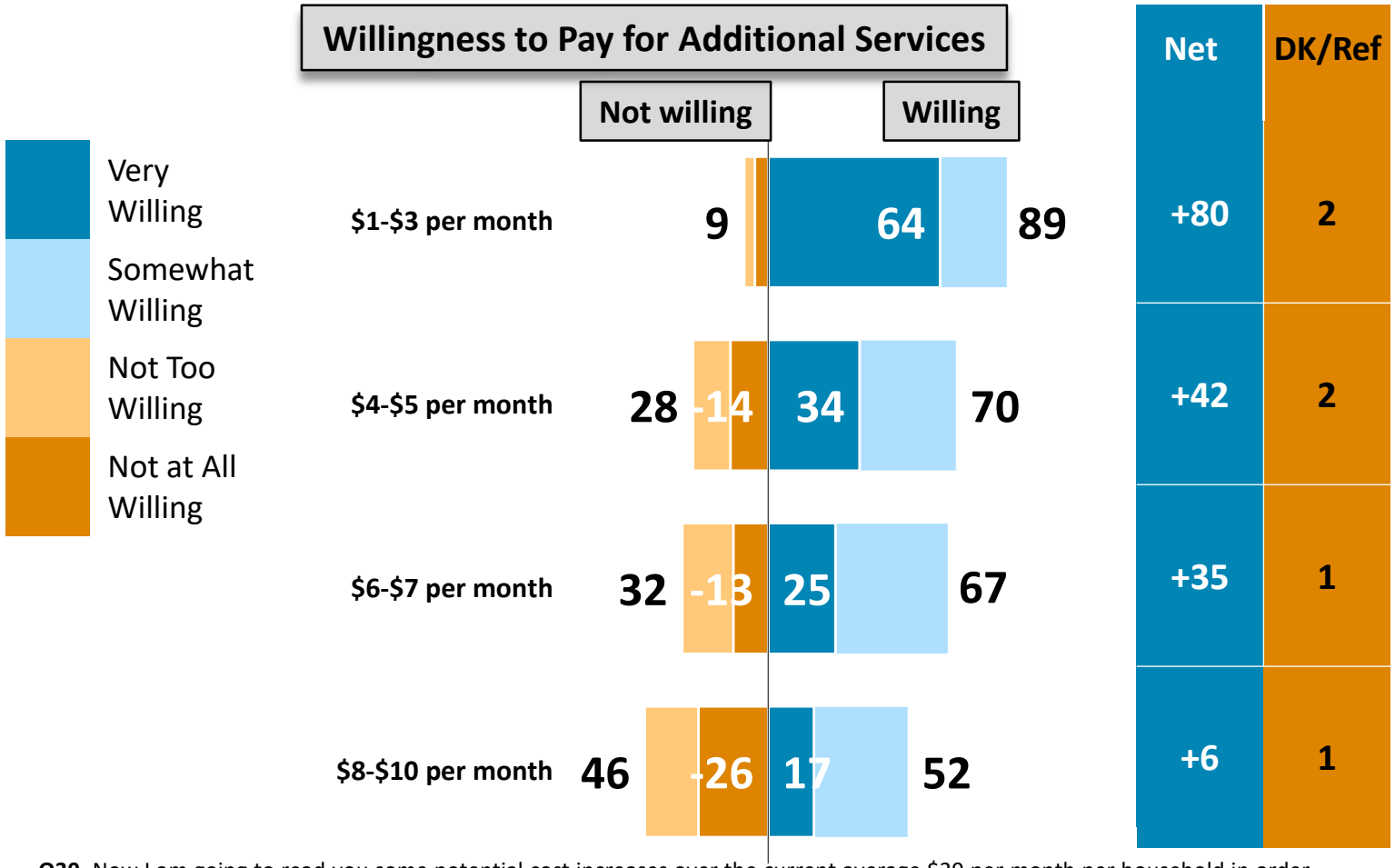
- *TOTAL (13%)*
- *40-49 (23%)*
- *Men 40+ (22%)*
- *White men (19%)*
- *White 40+ (18%)*
- *Parents (18%)*

Disproportionately – clothing or other textile collection

- *TOTAL (13%)*
- *Men < 40 (19%)*
- *30-39 (18%)*
- *Ward 4 (18%)*
- *Ward 5 men (18%)*

Q29. If costs increased but you were provided one new or expanded service, which would be of the most interest to you? **[READ AND RANDOMIZE:]**

Nearly nine-in-ten residents say they would be willing to pay $1-$3 per month for expanded services and 70% say the same for $4-$5 per month. While 67% of residents say they would be willing to pay $6-$7 per month, support is soft. And while a narrow majority of residents say they would be willing to pay $8-$10 per month, the intensity of the opposition outpaces the intensity of support.



Q30. Now I am going to read you some potential cost increases over the current average $29 per month per household in order for the City to provide new or expanded service. Based on the service you identified in the last question, please tell me how willing you would be to pay that increase in cost in order to expand solid waste services: VERY willing. SOMEWHAT willing. NOT TOO willing, or NOT AT ALL willing. **[RANDOMIZE]**

Parents with children under the age of 18, renters, and residents under the age of 40 express the most willingness to pay $1-$5 dollars for expanded services while residents over 40 and homeowners tend to display the most apprehension. There is a noticeable drop-off in willingness among all groups when entering the $6-$10 range, with only renters and, to a lesser extent, people of color, displaying disproportionate levels of support for this range.

% Very Willing	Total	Men	Women	Under 40	40+	White	People of Color	Children <18	No children	Owners	Renters
$1-$3 per month	64	65	63	**75**	50	66	63	**80**	60	58	**77**
$4-$5 per month	34	34	35	37	31	35	36	**39**	33	31	36
$6-$7 per month	25	29	20	28	20	25	23	27	24	21	**32**
$8-$10 per month	17	19	16	20	14	15	**25**	15	18	16	18

Q30. Now I am going to read you some potential cost increases over the current average $29 per month per household in order for the City to provide new or expanded service.
Based on the service you identified in the last question, please tell me how willing you would be to pay that increase in cost in order to expand solid waste services: VERY willing. SOMEWHAT willing. NOT TOO willing, or NOT AT ALL willing. **[RANDOMIZE]**

LRP LAKE RESEARCH PARTNERS

Strategy • Precision • Impact

Washington, DC | Berkeley, CA | New York, NY
LakeResearch.com
202.776.9066

Daniel Gotoff
dgotoff@lakeresearch.com

Corey Teter
cteter@lakeresearch.com

ATTACHMENT B
ANNUAL TONNAGE SUMMARY, 2013-2018

City of Ann Arbor **DRAFT**

Incoming MSW, Recycling, and Organics Deliveries from
City Residential, City Commercial, and WM Franchised Commercial Collection
Reported on a Calendar Year (January-December) Basis

Residential	2013	2014	2015	2016	2017	2018
MSW	14,912.88	15,073.23	14,974.77	14,802.95	17,027.98	15,379.20
Recycling	9,668.22	9,747.26	9,658.91	10,762.78	10,700.37	10,492.53
Organics	8,385.19	8,399.33	8,183.13	8,073.30	8,952.09	8,101.73
Total	32,966.29	33,219.82	32,816.81	33,639.03	36,680.44	33,973.46
Diversion Rate	54.8%	54.6%	54.4%	56.0%	53.6%	54.7%

Commercial	2013	2014	2015	2016	2017	2018
MSW	31,561.41	34,413.81	36,278.87	35,228.96	41,705.32	34,579.27
Recycling	4,583.70	4,977.13	5,054.72	4,762.19	4,133.86	4,416.72
Organics	0.00	0.00	0.00	0.00	0.00	0.00
Total	36,145.11	39,390.94	41,333.59	39,991.15	45,839.18	38,995.99
Diversion Rate	12.7%	12.6%	12.2%	11.9%	9.0%	11.3%

Total

	2013	2014	2015	2016	2017	2018
MSW	46,474.29	49,487.04	51,253.64	50,031.91	58,733.30	49,958.47
Recycling	14,251.91	14,724.39	14,713.63	15,524.97	14,834.23	14,909.25
Organics	8,385.19	8,399.33	8,183.13	8,073.30	8,952.09	8,101.73
Total	69,111.39	72,610.77	74,150.40	73,630.18	82,519.62	72,969.45

Diversion Rate

	2013	2014	2015	2016	2017	2018
Diversion (Unadjusted)	32.8%	31.8%	30.9%	32.0%	28.8%	31.5%
Diversion (Adjusted)	30.5%	29.7%	28.7%	29.8%	26.9%	29.3%

Notes:

1. Tonnage data in this table is presented on a calendar year (January-December) basis and therefore tonnages will be different than presented at other times on a fiscal year (July-June) basis.
2. A small amount of organics are collected from commercial sources and included in the Residential sector organics tonnage. It cannot be segregated and reported under the Commercial sector because it is collected as part of residential routes.
3. Diversion Rate - Unadjusted is the sum of Recycling and Organics tonnage divided by the Total tonnage for the year.
4. Diversion Rate - Adjusted for Residue deducts 10.74% of the recycling tonnage from the weight of diverted material, based on audited recycling stream composition as of February 2018.

ATTACHMENT C
COST OF SERVICE ANALYSIS

SECTION 1
PURPOSE

This report summarizes the costs of the various solid waste services provided by the City of Ann Arbor (City) and its contractors. The City tracks and reports its costs for solid waste operations based on standard accounting practices employed for all departments and activities citywide. The City's FY2018 costs were reviewed to evaluate the City's costs to provide solid waste services through each of the functional operations performed. Functional operations include:

- Residential solid waste collection and disposal
- Residential compost collection and composting
- Commingled cart recycling collection
- Commercial commingled recycling collection
- Recycling processing
- Commercial solid waste collection and disposal
- City event-related, City parks, and downtown street-side container solid waste services
- Former landfill maintenance and compliance activities

Costs were compiled by function after a thorough review of the City's cost accounts and activities. In addition, indirect administrative costs were allocated to the different functions. The resulting analysis provides a detailed accounting of costs by function in total (i.e., annual cost) and on a unit cost basis (e.g., cost per household per month, cost per ton). Presenting the costs in this manner is standard within the solid waste industry and enables comparison of the City's costs for its current programs to other communities. It will also enable options included in the Solid Waste Resources Management Plan to be evaluated for cost impacts at the customer level.

The remainder of this report provides further detail on the methodology employed and the City's costs of current solid waste services, consisting of the following sections:

- Section 2 - Overview of Services
- Section 3 - Resource Management Program Area Costs
- Section 4 - Residential Cost of Service
- Section 5 - Recyclable Material Processing Cost of Service
- Section 6 - Commercial Collection Cost of Service
- Section 7 - Program Area Revenue
- Section 8 - Conclusion

SECTION 2
OVERVIEW OF SERVICES

The City provides comprehensive resource management services to the residents and businesses of the City. Services include collection and disposal of trash; collection and processing of recyclables; and collection and composting of organic materials.

The City's resource management services are provided by a combination of City crews and contracted services, as summarized in Table 1. Residential collection in Table 1 refers to single-family residences and properties of 1 or 2 units. Commercial collection includes multi-family residences of 3 or more units in addition to businesses and institutions.

TABLE 1. ANN ARBOR SOLID WASTE AND RECYCLING PROGRAM SERVICE PROVIDERS

Service	City Crews	Contracted Service
Trash		
Residential Collection	32, 64 and 96-gallon carts	
Commercial Collection	32, 64 and 96-gallon carts and property-owned dumpsters	Contracted dumpsters (Waste Management)
Disposal		Advanced Disposal Services
Recycling		
Residential Collection		32, 64 and 96-gallon carts (Recycle Ann Arbor)
Commercial Collection	64 and 96-gallon carts in the downtown and dumpsters	64 and 96-gallon carts outside the downtown and 300-gallon totes (Recycle Ann Arbor)
Processing		Recycle Ann Arbor
Compost		
Residential Collection	Yard waste bags, or 64 and 96-gallon carts	
Commercial Collection	Not currently offered	
Composting		WeCare Denali
Education and Outreach		
Programs and Services	Printed materials and website	School programs, recycling workshops (Ecology Center)

SECTION 3
RESOURCE MANAGEMENT PROGRAM AREA COSTS

The City's resource management program falls under the Public Works Unit of the City's Public Services Area. To assess the costs of service for the resource management program, actual expenses for FY2018 (July 1, 2017 to June 30, 2018) have been reviewed. The City contracts for a number of services in its solid waste operations, and FY2018 represents the first year of new contracts for waste transfer and disposal as well as for recycling processing. The new contracts are materially different in scope than the prior contracts, resulting in prior years' costs not being representative of current and going-forward costs.

The City's accounting structure tracks expenses by activity; however, some activities do not always align directly with the functional areas being considered for this analysis. For example, management and administrative operations for the program area are classified as discrete activities but support numerous functional areas. Revenues and expenses are reported as approximately 750 individual cost items categorized to more than 100 account types. Therefore, expenses have been allocated where appropriate to match the functional services (i.e., residential and commercial costs for trash, recycling, and compost collection and processing/disposal) being provided.

Based on the expenses for each functional service, the cost of service for an individual customer (resident or business) for each type of service provided is calculated. The cost of service is useful for assessing current funding methods, future funding options, and the costs of program changes or expansions. The remainder of this report identifies current expenses and calculates unit costs of service for the City's resource management program in FY2018.

FY2018 Expenses

For cost of service studies, expenses are broadly classified to the following categories:

- Operations expenses - These are direct expenses that are recognized and assigned to specific functions within the resource management area based on their activity type. Operations expenses include collection, transfer, disposal, material processing (recyclables and compost), container delivery, and other recurring activities. Operations expenses include costs of services provided by City employees as well as contracted services.

- Administration expenses - These are indirect or allocated expenses that are either shared, provide support to numerous activities, or can't be directly assigned to specific activities. Administration expenses include management, customer service, education and outreach, planning, and internal municipal services costs.

- Capital expenses - These include asset development or purchases that are in-progress. Capital expenses are typically recognized as depreciation, distributing the cost over the useful life of the asset. Capital expenses are typically direct expenses but in some cases are indirect (e.g., fleet maintenance facility) and must be allocated.

Table 2 summarizes the City's direct expenses by function in FY2018 and the total indirect expenses of the Program Area.

TABLE 2. RESOURCE MANAGEMENT PROGRAM EXPENSES FOR FY 2018	
Function	**Amount**
Direct Expense	
Residential Waste Collection	$1,546,972
Residential Recycling Collection[1]	$2,829,604
Residential Compost Collection	$1,001,257
Commercial Waste Collection	$2,243,280
Commercial Recycling Collection	$666,061
Waste Disposal	$1,370,902
Recycling Processing	$3,180,903
Composting	$172,137
Special Events / Downtown Street-Side Container Collection	$302,450
Closed Landfill Post-Closure Care and Maintenance	$377,988
Indirect Expense	
Route Operations / Cart and Container Delivery	$419,829
Management & Planning	$646,910
Program Administrative and Municipal Services Costs Allocation	$1,042,712
Customer Service	$266,050
Education & Outreach	$90,837
Total Expenses per City Budget Performance Report	**$16,157,890**
Financial Adjustments[2]	$2,394,035
Total Expenses Impacting Fund Balance	**$18,551,925**

Notes:
1. Residential Recycling Collection is cart-based recycling collection performed under contract by Recycle Ann Arbor, which includes a small amount of commercial recycling collection.
2. Financial adjustments include GASB pension liability, OPEB (retiree benefits), and capital assets, which were not included in the FY2018 expenses utilized going forward in this cost of service analysis because they are not directly tied to current solid waste operations. However, these adjustments do impact the Fund balance and therefore must be considered when assessing long-term Fund sustainability and are therefore reflected here as expenses impacting the Fund balance.
3. Subtotals may not sum exactly to totals due to rounding.

Cost Allocations

Indirect expenses are not tied exclusively to individual functions. Therefore, in order to assess costs of services, indirect expenses must be allocated to the various functions. The City's operational data and service parameters were utilized to determine the allocation of indirect expenses to each function. Allocations were made utilizing data including:

- City staffing levels and collection labor hours

- Customer counts by sector (residential, multi-family, commercial)
- Collection route data including number of routes, collection frequency, collected containers, containers on-site, container volumes
- Collection truck data including fuel consumption, repair costs, depreciation, and replacement costs reported by the City's Fleet and Facilities Unit
- Collected material tons and disposed or processed tons
- Contractor invoices from Recycle Ann Arbor, Waste Management, WeCare Denali, and Advanced Disposal to obtain tonnage data and collection parameters

Utilizing these data sources, indirect expenses were allocated as follows:

- Route Operations expenses are the costs for the collection supervisors assigned to the work area. Therefore, these costs are allocated to the various collection functions proportional to the City employee labor hours expended providing services in the function. In addition, the Solid Waste Fund's Wheeler Service Center debt payment allocation is also included here.
- Program Administrative and Municipal Services Costs Allocation expenses are allocated to each function proportional to the tonnage managed through the function because the tonnage associated with each of the services provided by the City is commensurate with the level of effort expended by the City to provide the service.
- Customer Service expenses are allocated to each collection function proportional to the customer counts for each function.
- Outreach expenses are assigned entirely to residential recycling collection, as these expenses are tied directly to outreach to the City's residential recycling customers.

Table 3 on the following page identifies costs by functional service by expense type, including allocated indirect expenses as described above. Total costs from Table 3 are utilized in the subsequent sections of this report to calculate the unit costs of the services provided by the City.

TABLE 3. SUMMARY COSTS BY FUNCTION

Expense Type	Residential Waste	Cart Recycling	Compost	Commercial Waste	Commercial Recycling	Recycling Processing	City Events	Closed Landfill	Total
Direct Expense									
Labor	$794,470	$5,263	$377,142	$365,868	$298,189	$99,306	$141,690	$7,651	$2,089,578
Operations	$80	$76,832	$958	$1,426	$19,411	$14,677	$1,400	$168,647	$283,432
Depreciation	$294,975	$387,456	$97,120	$101,965	$80,052	$624,669	$27,960	$6,135	$1,620,331
Vehicle Rental	$8,153	$355	$415,239	$546	$61,240	$2,849	$39,969		$528,350
Truck R&M	$342,471	$517,662	$50,248	$145,442	$93,038	$8,210	$42,654	$5,248	$1,204,973
Fuel	$106,474	$98,110	$60,550	$37,463	$21,191	$593	$3,397	$370	$328,149
Equipment	$79	$7,237		$4,193	$10,629	$4,404	$7,217		$33,759
Utility	$270			$697		$23,129		$189,937	$214,033
Contracted Collections		$1,736,689[1]		$1,585,679	$82,311		$38,163		$3,442,843
Disposal/ Processing	$388,115		$172,137	$979,516		$2,403,065	$3,270		$3,946,105
Direct Subtotal	*$1,935,087*	*$2,829,604*	*$1,173,394*	*$3,222,796*	*$666,061*	*$3,180,903*	*$305,721*	*$377,988*	*$13,691,552*
Allocated Expense									
Route Operations	$135,876		$105,985	$68,679	$66,844	$17,093	$25,352		$419,829
Mgmt. & Planning	$108,063	$90,254	$65,373	$272,726	$9,665	$99,919	$911		$646,910
Prog Admin & MSC	$174,179	$145,474	$105,371	$439,589	$15,578	$161,052	$1,468		$1,042,712
Customer Service	$81,527	$81,527	$81,527	$10,735	$10,735				$266,050
Outreach		$90,837							$90,837
Allocated Subtotal	*$499,645*	*$408,091*	*$358,256*	*$791,730*	*$102,822*	*$278,063*	*$27,731*		*$2,466,337*
Total Expense	**$2,434,732**	**$3,237,695**	**$1,531,650**	**$4,014,526**	**$768,882**	**$3,458,966[2]**	**$333,451**	**$377,988**	**$16,157,889**

Notes:

1. Contracted commingled cart collection is provided to single-family and multi-family residents and businesses. Approximately 9% of the customers are businesses.
2. Processing costs do not include the material value received for the recyclables, which is recognized by the City as a revenue and varies based on commodity markets. In FY2018, material value credits resulted in an offset of $794,254 of the processing cost.
3. Subtotals may not sum exactly to totals due to rounding.

SECTION 4
RESIDENTIAL COST OF SERVICE

Residential Service Cost Overview

Residential service is the weekly collection of waste, recycling, and compost from single-family (1 and 2 unit) homes. Standard service[1] includes a 64-gallon cart for trash, a 64-gallon cart for recycling, and compost collection in either bags or a 96-gallon cart. Approximately 90% of Ann Arbor residents have one 64-gallon cart for waste, with the remainder either having a 32 or 96-gallon cart or multiple carts.

Table 4 summarizes the cost of residential service for a resident with a 64-gallon cart for waste, a 64-gallon cart for recycling, and a 96-gallon cart for compost. Table 4 also includes the cost for collection and disposal of waste from City events, downtown street-side containers, and bulky waste. In communities where residential collection service is provided under contract by a private hauler, these collection costs are often embedded in the residential monthly rate. Therefore, for purposes of comparison to other communities, these costs are included here, with the FY2018 cost distributed over the City's 26,247 residential units.

TABLE 4. RESIDENTIAL WASTE, RECYCLING, AND COMPOST COST OF SERVICE PER HOUSEHOLD

Service	Monthly Cost per HH
Residential Waste Collection and Disposal	$7.67
Residential Compost Collection and Composting	$4.83
Commingled Cart Recycling Collection and Processing	$15.54
City Events / Downtown Street-side Cans / Bulky Waste	$1.06
Total Cost of Service	$29.09
Annual Cost (Total Cost x 12 months)	$349.09

The subsequent tables provide a more detailed cost analysis to identify the component costs of each service: waste collection, compost, and recycling. Component costs include labor, fuel, truck repair and maintenance, truck capital, post-collection activities (disposal, composting, or processing), and allocated administrative costs.

Residential Waste Collection and Disposal

Table 5 provides a detailed breakdown of costs for residential waste collection and disposal by cost component. Additional detail is provided in the notes to Table 5, including the calculations completed

[1] Residents may opt for 32-gallon or 96-gallon cart sizes for trash and recycling, or 64-gallon cart for compost.

to derive the monthly cost per household contributed by each cost component. The notes correspond to the letters identified in the first column of Table 5.

TABLE 5. RESIDENTIAL WASTE COLLECTION AND DISPOSAL COST OF SERVICE

Note	Cost Component	Count / Unit Cost	Unit	Cost / Household / Month
Route Parameters				
A	Residential Customers	26,247	customers	
	Truck Route Hours (Total)	12,789	hours	
	Weekly Routes	6	routes	
	Truck Route Hours per Route	2,132	hours	
	Customer Pick-Ups per Hour	107	customers per hour	
Labor Cost				
B	Labor Cost per Hour	$31.70	per hour	
	Benefit %	96.1%	% of labor cost	
	Total Labor Cost	$62.17	per hour	$2.52
Fuel Cost				
C	Average Fuel Consumption	6,116	gallons	
	Fuel Cost ($ per gallon)	$2.93	$ per gallon	
	Annual Fuel Cost	$17,916	per year	
	Per Route Hour Cost	$8.41	per hour	$0.34
Truck Repair and Maintenance Cost				
D	Truck Repair and Maintenance Cost	$342,471	per year	
	Per Route Hour Cost	$26.78	per hour	$1.08
Disposal Cost				
E	Residential Waste Tons	15,017	tons per year	
	Monthly Set Out Weight	95.36	lbs / hh / month	
	Disposal Cost per Ton	$25.45	per ton	
	Monthly Disposal Cost	$1.21	per hh / month	$1.21
Truck Cost				
F	2014 Mack LEU613 (Typical)	$278,443	per truck	
	Replacement Cost (+3% per year)	$342,450	per truck	
	Annual Cost (7 year life)	$48,921	per truck per year	
	Truck Cost Per Route Hour	$22.95	per hour	$0.93
Direct Cost, Residential Solid Waste				**$6.08**
Allocated Administrative Costs				
G	Supervisor / Ops Cost	$135,876	per year	$0.43
	Mgmt. & Planning	$108,063	per year	$0.34
	Administrative & Municipal Services	$174,179	per year	$0.55
	Customer Service	$81,527	per year	$0.26
Allocated Administrative Cost, Residential Solid Waste				**$1.59**
Total Residential Solid Waste Cost				**$7.67**

TABLE 5. RESIDENTIAL WASTE COLLECTION AND DISPOSAL COST OF SERVICE	
Notes to Table 5 (subtotals may not sum exactly to totals due to rounding):	
A	Total labor hours were provided by the City. On-route hours, or truck hours, were assumed to be 95% of labor hours. The remaining 5% of labor hours are considered to be non-productive time for activities such as pre- and post-trip inspections. Based on the labor hours worked, the average automated side load collection truck is on-route 2,132 hours annually. Productivity averages 107 customers per hour. When compared to other municipal collection operations from prior cost of service studies, the City has a reasonable level of productivity.
B	The City's full labor cost is based on an average hourly labor cost of $31.70 plus 96.1% for tax and benefit costs. Dividing the labor cost per hour by the customers per hour yields the labor cost per customer per week, which is converted to a monthly cost by multiplying by the average number of weeks per month. Full labor cost = $62.17 per hour = $31.70 x (1+.961) Monthly cost = $2.52/hh/month = ($62.17 per hour / 107 customers per hour) x 4.33 weeks/month
C	The average fuel cost per truck was $17,916 in FY2018. Monthly cost = $0.34/hh/month = ($17,916 per truck / 2,132 route hours per truck) / 107 customers per hour x 4.33 weeks/month
D	The total cost for truck repair and maintenance was $342,471 in FY2018. Monthly cost = $1.08/hh/month = ($342,471 / 12,789 total truck hours) / 107 customers per hour x 4.33 weeks/month
E	Waste collected from the residential routes was 15,017 tons in FY2018. The disposal cost was $25.45 per ton. Avg. monthly set-out per customer = 95.36 pounds = (15,017 tons x 2,000 pounds/ton / 12 months) / 26,247 customers Monthly disposal cost = $1.21/hh/month = (95.36 pounds / 2,000 pounds/ton) x $25.45/ton
F	The current automated collection truck replacement cost is $342,450. Using the City's method for truck replacement, the annual truck cost is the cost of the truck purchased, plus a 7-year 3% annual compounding cost, divided over the 7-year life of the collection truck. Annual truck cost = $48,921 per year = ($342,450 replacement cost / 7 year life) Monthly truck cost = $0.93/hh/month = ($48,921 / 2,132 route hours/week) / 107 customers/hour x 4.33 weeks/month
G	Allocated administrative costs for route supervisor operations, management and planning, administrative and internal municipal services, and customer service total $499,645. Monthly administrative cost = $1.59/hh/month = ($499,645 per year / 26,247 customers) / 12 months/year.

Residential Compost Collection and Composting

Compost collection and composting costs were calculated utilizing the same method as residential waste collection costs. Compost service varies slightly in that direct costs of collection (labor, fuel, repair and maintenance, composting) are only incurred during 9 months of the year, while fixed costs (truck costs including seasonal truck rental, facility depreciation, and administrative costs) are incurred over the entire 12-month year. Costs are therefore calculated and denoted as either 9-month or 12-month costs in Table 6.

Table 6 provides a detailed breakdown of costs for residential compost collection and composting by cost component. Additional detail is provided in the notes to Table 6, including the calculations completed to derive the monthly cost per household contributed by each cost component. The notes correspond to the letters identified in the first column of Table 6.

TABLE 6. RESIDENTIAL COMPOST COLLECTION AND COMPOSTING COST OF SERVICE				
Note	**Cost Component**	**Count / Unit Cost**	**Unit**	**Cost / Household / Month**
Route Parameters				
A	Residential Customers	26,247	customers	
	Truck Route Hours (Total)	9,431	hours	
	Weekly Routes	4	routes	
	Truck Route Hours per Route	2,358	hours	
	Customer Pick Ups per Hour	103	customers per hour	
Labor Cost				
B	Labor Cost per Hour	$29.55	per hour	
	Benefit %	28.0%	% of labor cost	
	Total Labor Cost	$37.82	per hour	$1.59 (9 months)
Fuel Cost				
C	Average Fuel Consumption	4,926	gallons	
	Fuel Cost ($ per gallon)	$2.93	$ per gallon	
	Annual Fuel Cost	$14,430	per year	
	Per Route Hour Cost	$6.12	per hour	$0.26 (9 months)
Truck Repair and Maintenance Cost				
D	Truck Repair and Maintenance Cost	$50,248	per route per year	
	Per Route Hour Cost	$5.33	per hour	$0.22 (9 months)
Compost Cost				
E	Residential Compost Tons	9,085	tons per year	
	Monthly Set Out Weight	76.92	lbs / hh / month	
	Compost Cost per Ton	$18.95	per ton	
	Monthly Compost Cost	$0.73	per hh / month	$0.73 (9 months)
Truck Cost				
F	2010 Mack w/Labrie Packer (Typical)	$265,672	per truck	
	Replacement Cost (+3% per year)	$326,743	per truck	
	Annual Cost (7 year life)	$46,678	per truck per year	
	Truck Cost Per Route Hour	$19.80	per hour	$0.83 (12 months)
Seasonal Truck Rental Cost				
G	Truck Rental	$141,011	per year	$0.45 (12 months)
Facility Depreciation				
H	Compost Facility Depreciation	$97,120	per year	$0.31 (12 months)
Direct Cost, Residential Compost				**$3.72 (12 months)**
Allocated Administrative Costs				
I	Supervisor / Ops Cost	$105,985	per year	$0.34 (12 months)
	Mgmt. & Planning	$65,373	per year	$0.21 (12 months)
	Administrative & Municipal Services	$105,371	per year	$0.34 (12 months)
	Customer Service	$81,527	per year	$0.26 (12 months)
Allocated Administrative Cost, Residential Compost				**$1.14 (12 months)**
Total Residential Compost Cost				**$4.83 (12 months)**

TABLE 6. RESIDENTIAL COMPOST COLLECTION AND COMPOSTING COST OF SERVICE	
Notes to Table 6 (subtotals may not sum exactly to totals due to rounding):	
The overall 12-month cost per customer was calculated by summing all monthly costs and multiplying by 9 months, then summing costs denoted as 12-month costs and multiplying by an additional 3 months. The total annual cost was then divided by 12 months to calculate an average monthly cost on a 12-month basis.	
A	Total labor hours were provided by the City. On-route hours, or truck hours, were assumed to be 95% of labor hours. The remaining 5% of labor hours are considered to be non-productive time for activities such as pre- and post-trip inspections. Based on the labor hours worked, the average compost collection truck is on-route 2,358 hours annually over the 9-month program. Productivity averages 103 customers per hour.
B	The City's total labor cost is based on an average hourly labor cost of $29.55 plus 28.0% for tax and benefit costs. This labor cost includes full-time City employees as well as temporary labor positions, temporary labor positions were used more extensively during FY2018 in this program area. Dividing the labor cost per hour by the customers per hour yields the labor cost per customer per week, which is converted to a monthly cost by multiplying by the average number of weeks per month. Total labor cost = $37.82 per hour = $29.55 x (1+.280) Monthly cost = $1.59/hh/month = ($37.82 per hour / 103 customers per hour) x 4.33 weeks/month
C	The average fuel cost per truck was $14,430 in FY2018. Monthly cost = $0.26/hh/month = ($14,430 per truck / 2,358 route hours per truck) / 103 customers per hour x 4.33 weeks/month
D	The total cost for truck repair and maintenance was $50,248 in FY2018. Monthly cost = $0.22/hh/month = ($50,248 / 9,431 total truck hours) / 103 customers per hour x 4.33 weeks/month
E	Compost collected from residential routes was 9,085 tons in FY2018. The composting cost was $18.95 per ton. Avg. monthly set-out per customer = 76.92 pounds = (9,085 tons x 2,000 pounds/ton / 9 months) / 26,247 customers Monthly composting cost = $0.73/hh/month = (76.92 pounds / 2,000 pounds/ton) x $18.95/ton
F	The current automated collection truck replacement cost is $326,743. Using the City's method for truck replacement, the annual truck cost is the cost of the truck purchased, plus a 7-year 3% annual compounding cost, divided over the 7-year life of the truck. Annual truck cost = $46,678 per year = ($326,743 replacement cost / 7 year life) Monthly truck cost = $0.83/hh/month = ($46,678 / 2,358 route hours) / 103 customers/hour x 4.33 weeks/month
G	Truck rental includes costs to rent additional trucks during the fall leaf collection season.
H	Depreciation represents allocated costs for development and improvement of the compost facility.
I	Allocated administrative costs for route supervisor operations, management and planning, administrative and internal municipal services, and customer service total $358,256. Monthly administrative cost = $1.14/hh/month = ($358,256 per year / 26,247 customers) / 12 months/year.

Commingled Cart Recycling Collection and Processing

The City contracts with Recycle Ann Arbor for cart-based collection of recyclables. While this service is primarily provided to residential customers, Recycle Ann Arbor also provides collection of commercial recycling carts outside of the downtown area. These commercial customers are served on the regular residential routes, and therefore costs for cart recycling collection provided under contract are not segregated by residential or commercial costs. Costs are calculated per customer, inclusive of the commercial customers in addition to residential customers. Recycle Ann Arbor's

contracted collection cost equates to labor costs associated with collection. The City provides the carts, collection trucks and the costs to operate and maintain the fleet.

Table 7 provides a detailed breakdown of costs for commingled cart recycling collection and processing by cost component. Additional detail is provided in the notes to Table 7, including the calculations completed to derive the monthly cost per household contributed by each cost component. The notes correspond to the letters identified in the first column of Table 7.

TABLE 7. COMMINGLED CART RECYCLING COLLECTION AND PROCESSING COST OF SERVICE

Note	Cost Component	Count / Unit Cost	Unit	Cost / Customer / Month
Route Parameters				
	Residential Customers	26,247	customers	
	Commercial Customers	2,539	customers	
	Total Commingled Cart Customers	28,786	customers	
Labor Cost				
A	Contracted Collection Cost	$1,736,689	per year	
	Monthly Contracted Collection Cost	$144,724	per month	$5.03
City-Owned Truck Operations Cost				
B	Recycling Truck Operations	$84,069	per year	
	Fuel	$98,110	per year	
	Repair and Maintenance	$517,662	per year	
	Annual Cost (subtotal)	$699,841	per year	
	Per Route Hour Cost	$26.78	per hour	$2.03
Truck Cost				
C	City Fleet Charge	$387,456	per year	$1.12
Processing Cost				
D	Collected Recycling Tons	10,566	tons per year	
	Monthly Set Out Weight	61.4	lbs / hh / month	
	Processing and City MRF Cost	$255.27	per ton	
	Less, Material Value	$(53.17)	per ton	
	Net Processing Cost	$202.10	per ton	
	Monthly Processing Cost	$6.18	per cust. per month	$6.18
Direct Cost, Commingled Cart Recycling				**$14.36**
Allocated Administrative Costs				
E	Mgmt. & Planning	$90,254	per year	$0.26
	Administrative & Municipal Service	$145,474	per year	$0.42
	Customer Service	$81,527	per year	$0.24
	Outreach	$90,837	per year	$0.26
Allocated Administrative Cost, Commingled Cart Recycling				**$1.18**
Total Commingled Cart Recycling Cost				**$15.54**

Notes to Table 7 (subtotals may not sum exactly to totals due to rounding):

A	In FY2018, Recycle Ann Arbor invoiced $1,736,689 for collection of cart recycling to residents and businesses. This includes labor but not the cost of City-provided trucks. Monthly cost = $5.03/customer/month = ($1,736,689 per year / 28,786 customers) / 12 months/year

TABLE 7. COMMINGLED CART RECYCLING COLLECTION AND PROCESSING COST OF SERVICE	
B	Equipment, materials and supplies, fuel, and repair and maintenance totaled $699,841 for the year. Monthly cost = $2.03/customer/month = ($699,841 per year / 28,786 customers) / 12 months/year
C	The City incurred $387,456 in truck costs charged by the City's fleet department for the trucks assigned to collect recycling. Monthly cost = $1.12/customer/month = ($387,456 per year / 28,786 customers) / 12 months/year
D	Processing costs for the collected materials are based on the total cost to process commingled materials (see Table 8). In addition to processing, the City also incurs costs for its MRF and the associated labor to maintain the facility. Processing costs are detailed in Section 5 and Table 8 of this report. The net cost per ton was $204.02 and recycling collected was 10,566 tons. Avg. monthly set-out per customer = 61.2 pounds = (10,566 tons x 2,000 pounds/ton / 12 months) / 28,786 customers Monthly cost = $6.18/customer/month = (61.2 pounds / 2,000 pounds/ton) x $202.10/ton
E	Allocated administrative costs for management and planning, administrative and internal municipal services, customer service, and outreach total $408,091. Monthly administrative cost = $1.18/customer/month = ($408,091 per year / 28,786 customers) / 12 months/year.

SECTION 5
RECYCLABLE MATERIAL PROCESSING COST OF SERVICE

The City contracts with Recycle Ann Arbor for the processing of commingled recyclable material collected from both residents and businesses; Recycle Ann Arbor has subcontracted with Rumpke Waste and Recycling Services (Rumpke) for processing of recyclables. The contract cost is $157.30 per ton which includes transfer haul from the City's MRF (MRF) to Rumpke's Cincinnati processing facility for processing. Source separated cardboard delivered to the City's MRF is handled separately and transported to a local facility for recycling at a reduced cost per ton compared to commingled recyclables. In addition, the City incurs costs for MRF oversight, MRF repair and maintenance, utility costs, and MRF depreciation. The processing cost is reduced by the value of the sorted material, which fluctuates monthly based on market prices, and is provided to the City as a credit on Recycle Ann Arbor's processing invoices.

Table 8 details the cost of service calculation for recycling transport and processing for commingled single-stream residential and commercial single-stream materials. Costs were allocated based on the invoiced tonnages for single-stream and commercial cardboard tons from the Recycle Ann Arbor invoices. The recyclables credit is based on the average material value per ton each month, applied to the composition of the City's recyclables (which are audited on a periodic basis).

TABLE 8. COST OF SERVICE FOR RECYCLING PROCESSING

Contractor Invoice Data	Single-Stream	Commercial Cardboard	Total / Weighted Average
Invoiced Processing Cost (RAA / Rumpke)	$1,972,869	$125,805	$2,098,674
City MRF Cost (Depreciation, Utilities, Maintenance)	$1,228,712	$131,580	$1,360,291
Gross Recycling Cost	$3,201,581	$257,385	$3,458,966
Annual Invoiced Material Tons	12,542	1,343	13,885
Processing Cost per Ton	$157.30	$93.67	$151.14
City MRF Cost per Ton	$97.97	$97.97	$97.97
Gross Recycling Cost per Ton	**$255.27**	**$191.63**	**$249.11**
Recyclables Credit (FY2018 Actual)	$(666,819)	$(127,435)	$(794,254)
Recyclables Credit per Ton (Average, FY2018)	$(53.17)	$(94.88)	$(57.20)
Net Recycling Cost	$2,534,761	$129,950	$2,664,711
Net Recycling Cost per Ton	**$202.10**	**$96.75**	**$191.91**

Table 8 presents the average cost of service for recycling processing in FY2018. However, it is important to note that the monthly material value per ton over the 12-month period declined from $79.22 per ton in July 2017 to $34.78 in June 2018. Table 9 summarizes the net processing cost of

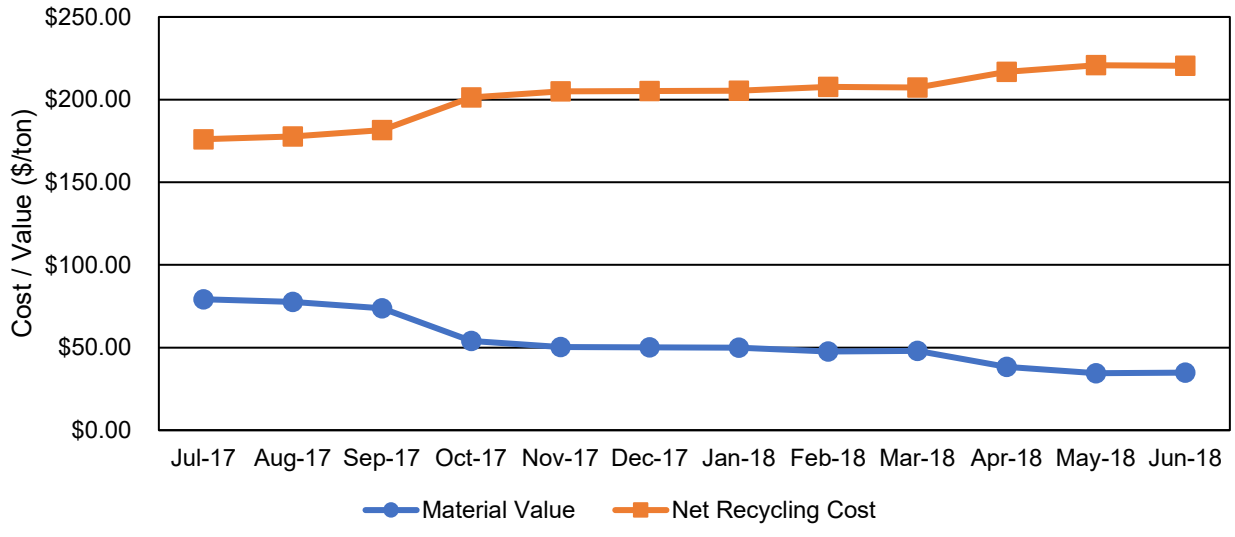
the commingled mix on a monthly basis in FY2018, and Figure 1 graphically summarizes the trends in material value and net cost per ton. Based on material value at the end of FY2018, the net cost per ton to process single stream recycling was $220.49, approximately 10% higher than the average cost in FY2018 and 25% higher than the cost at the start of FY2018. Intra-year changes in material value can therefore have a significant impact on costs of service.

TABLE 9. MONTHLY COST OF PROCESSING SINGLE STREAM RECYCLING IN FY2018

Month	Processing Cost per Ton	City MRF Cost per Ton	Less Material Value per Ton	Net Cost per Ton
July-17	$157.30	$97.97	$(79.22)	$176.05
August-17	$157.30	$97.97	$(77.66)	$177.61
September-17	$157.30	$97.97	$(73.79)	$181.48
October-17	$157.30	$97.97	$(54.00)	$201.27
November-17	$157.30	$97.97	$(50.28)	$204.99
December-17	$157.30	$97.97	$(50.06)	$205.21
January-18	$157.30	$97.97	$(49.87)	$205.40
February-18	$157.30	$97.97	$(47.64)	$207.63
March-18	$157.30	$97.97	$(47.94)	$207.33
April-18	$157.30	$97.97	$(38.39)	$216.88
May-18	$157.30	$97.97	$(34.49)	$220.78
June-18	$157.30	$97.97	$(34.78)	$220.49

Note:
1. City MRF Cost includes MRF oversight, repair and maintenance, utility costs, and depreciation.
2. Subtotals may not sum exactly to totals due to rounding.

FIGURE 1. MONTHLY MATERIAL VALUE AND NET RECYCLING COST, FY2018



SECTION 6
COMMERCIAL COLLECTION COST OF SERVICE

Commercial collection includes periodic (weekly or more frequent) collection of waste and recycling from multi-family properties of 3 units or more and businesses and institutions. Commercial collection service levels vary and include differences in container size (from 64-gallon carts to 40-cubic yard containers) and collection frequency (from once per week to 6-days per week).

Commercial service consists of the following activities and related costs:

- Picking up the waste or recycling container and emptying the contents into the collection truck;
- Delivering the collected material to the City's transfer station (for waste) or material recovery facility (for recyclables); and
- Invoicing commercial customers for the service (for waste).

These three actions have unit costs that are combined to calculate an overall cost of commercial service. Service providers and the type of service provided by each were identified in Table 1 and are summarized as follows:

- City crews provide three types of commercial collection: rear-load collection of solid waste carts; front-load (dumpster) collection of solid waste from multi-family units that own their own front-load container; and, recycling collection for businesses that generate enough material to require a front-load dumpster, or are located in the downtown area.
- Waste Management, through its commercial waste collection franchise agreement with the City, provides waste collection to businesses and multi-family properties that require a front-load container and for which Waste Management provides the container.
- Recycle Ann Arbor provides recycling collection service to multi-family properties and businesses that utilize a cart for collection of commingled recyclables. These costs were calculated in Table 7.

Table 10 details the cost of service for each commercial collection function. Total commercial collection costs from Table 3 have been segregated by the specific function to calculate the cost of service. Disposal and recycling processing costs are based on the quantity of material collected, which varies based on container size and collection frequency; these costs are calculated in Table 11.

TABLE 10. DETAILED COSTS FOR COMMERCIAL COLLECTION SERVICES				
Expense Type	**Rear Load Waste**	**Multi-Family Waste**	**Front Load Recycling**	**Front Load Waste (WM)**
Collection Cost				
Labor	$187,582	$178,286	$298,189	
Operations	$1,426		$19,411	
Depreciation	$33,780	$68,185	$80,052	
Vehicle Rental	$546		$61,240	
Vehicle Repair & Maintenance	$12,610	$132,832	$93,038	
Fuel	$6,665	$30,798	$21,191	
Equipment		$4,193	$10,629	
Utility	$23	$674		
Contracted Services			$82,311	$1,585,679
Collection Cost Subtotal	*$242,632*	*$414,968*	*$666,061*	*$1,585,679*
Administrative Cost				
Route Operations	$33,895	$34,784	$66,844	
Mgmt. & Planning	$8,640	$66,341	$9,665	$197,745
Admin & Municipal Service	$13,926	$106,931	$15,578	$318,732
Customer Service	$1,407	$1,838	$10,804	$7,559
Administrative Cost Subtotal	*$57,868*	*$209,894*	*$102,891*	*$524,037*

Table 11 details the cost of service for each City-provided commercial and multi-family service. Notes providing further explanation of the calculated costs are provided following the table, with each note denoted by letter in the first column of Table 11.

TABLE 11. COMMERCIAL COLLECTION COST OF SERVICE					
Note	**Description / Cost**	**Rear Load Waste**	**Multi-Family Waste**	**Front Load Recycling**	**Front Load Waste (WM)**
A	Collection Cost	$242,632	$414,968	$666,061	$1,585,679
B	Annual Lifts	58,292	37,284	36,556	75,838
C	Cost per Lift	$4.16	$11.13	$18.22	$9.33
D	Collected Container Tons	1,201	9,219	3,320	27,480
E	Annual Container Yards Serviced	27,567	223,756	146,224	517,903
F	Density (Pounds per Yard)	87.11	82.40	45.40	106.12
G	Disposal / Processing Cost per Yard	$1.11	$1.05	$3.62	$1.35

TABLE 11. COMMERCIAL COLLECTION COST OF SERVICE					
H	Administrative Cost	$57,859	$209,883	$102,822	$523,988
I	Customer Count	150	196	703	806
J	Monthly Admin Cost per Customer	$32.14	$89.24	$12.19	$54.18
K	Monthly Cost - 96-gal Cart (1x/wk)	$52.44			
L	Monthly Cost - 2-yard Container (1x/wk)		$146.51	$122.43	$106.26

Notes to Table 11 (subtotals may not sum exactly to totals due to rounding):

A	Collection Cost is the Total Collection Cost from Table 10
B	Annual container lifts obtained from City route sheets and customer summaries
C	Cost per Lift = Collection Cost (A) divided by Annual Lifts (B)
D	Collected Container Tons obtained from City scalehouse data
E	Annual Container Yards Serviced obtained from City route sheets
F	Density (Pounds per Yard) = Collected Container Tons x 2,000 pounds per ton / Annual Container Yards (D x 2,000 / E)
G	Disposal / Processing Cost per Yard = Density (Pounds per Yard) / 2,000 pounds per ton x the SW tip fee ($25.45) or the processing cost per ton ($159.57; this is a blended cost based on the commercial cardboard cost and the single stream cost)
H	Administrative Cost is the Administrative Cost Subtotal from Table 10
I	Customer Counts by function were provided by City staff
J	The Monthly Admin Cost per Customer = Administrative Cost / 12 months / Customer Count (H / 12 months / I)
K	The cost of service calculation is: (Cost per Lift (C) x lifts per week x 4.33 weeks/month) + ((96 gal cart / 203 gals/yd.) x (Disposal Cost per Yard (G) x lifts per week x 4.33 weeks/month)) + Monthly Admin Cost (J)
L	The cost of service calculation is: (Cost per Lift (C) x lifts per week x 4.33 weeks/month) + (2 yds. x Disposal Cost per Yard (G) x lifts per week x 4.33 weeks/month) + Monthly Admin Cost (J)

Commercial Cost Comparisons

Excluding City administrative costs, the monthly cost of collection and disposal for commercial rear load service is $20.30 ($52.44 - $32.14) per 96-gallon cart. The City's commercial cart collection cost is higher than residential cart collection (calculated to be $6.08 per month excluding administrative costs). The increased cost for commercial cart collection can be explained by the differences in service density, automation and access. The City's rear-load routes outside of the downtown are less dense than the residential collection routes, resulting in greater cost per customer. Rear load collection also requires more service time per stop for the driver to start, stop, exit the truck, and dump the cart compared to an automated side load residential cart collection that does not require the driver to exit the truck. In addition, commercial rear load routes are typically in tight access areas, particularly in the downtown area, requiring more maneuvering and slower travel between stops.

Again excluding administrative costs and considering only direct costs, the collection cost for the City's front load service is also higher than Waste Management's rate for similar service under the commercial franchise agreement. Waste Management's average price to the City per lift is $9.33. This price is inclusive of Waste Management's costs for labor, truck capital, truck operating and maintenance, administration, and profit; the cost of the container has been factored out because the container cost varies by size while the lift cost is largely constant and not dependent on container size. Excluding an assumed 15% profit margin from Waste Management's cost, Waste Management's estimated cost per lift for front load collection is $7.93 ($9.33 x (1 - 15%)). Table 12 compares Waste Management's collection costs per lift to the City's front load collection cost per lift.

TABLE 12. COMPARATIVE COMMERCIAL COLLECTION COSTS

Provider	Average Cost per Lift	Variance vs. WM
Waste Management	$9.33	
Waste Management (profit removed)	$7.93	
City Front-Load Solid Waste	$11.13	$1.80 (+19%) / $3.20 (+40%)
City Front-Load Recycling	$18.22	$8.89 (+90%) / $10.29 (+130%)

The difference in the cost between the City and Waste Management can be explained by a number of reasons:

1. Waste Management's service is provided with greater route density than the City's services. Waste Management provides collection to 806 customers Citywide, compared to 196 customers served by the City for front-load solid waste collection. The greater route density results in more efficient, lower cost collection per lift.

2. Waste Management utilizes dynamic routing combined with on-board systems that increase collection efficiency by charting the shortest distance between each stop. The City currently uses hand-drawn maps for routing and has not optimized its routes.

3. Waste Management's administrative costs embedded in its cost per lift are low due to consolidation of systems within the corporation and allocation of administrative costs across a large, national customer base.

4. Because of its size and the number of collection trucks and containers it purchases, Waste Management receives a substantial discount on trucks and containers compared to the costs paid by small quantity purchasers.

5. The City has not established standards or requirements for collection performance and does not measure such metrics. Private companies, including Waste Management, track and evaluate various performance metrics to optimize efficiency.

SECTION 7
PROGRAM AREA REVENUE

Revenue for the operation of the City's resource management program is generated primarily from a property tax levy, with additional revenue provided by fees for services, recyclable commodity value, royalties on third party tonnage accepted at the transfer station and compost facility, and payments on the sale of finished compost. In FY2018, the program area generated $16,675,449 in revenue from the following sources:

- Refuse levy: $12,635,609 of revenue (76% of total revenue), based on a FY2018 tax rate, or millage rate, of 2.4134 mills. The millage rate is applied to every $1,000 of assessed value of each property. Based on the taxable valuation of properties in FY2018, approximately 65.5% of the taxable value was assigned to residential-classed properties[2] and 35.5% was assigned to commercial and industrial-classed properties. Therefore, residential property millage revenue was approximately $8,276,000 and commercial property millage revenue was approximately $4,486,000 in FY2018. By comparison, the cost of residential services in FY2018 was approximately $9,500,000, and the cost of commercial services was approximately $6,300,000.

- Fees for services: $2,892,296 of revenue (17% of total revenue). Service fees include charges for commercial waste collection, residential cart upgrades, additional container tips, or other additional services.

- Royalties and revenue shares not covered under the levy or captured through service fees, and other miscellaneous sources: $1,147,544 of revenue (7% of total revenue); this amount is subject to greater variability from year to year based on commodity markets and the flow of third party tonnage to the City's transfer station and compost facility.

[2] Owner-occupied properties typically claim the Principal Residence Exemption (PRE); properties that are not owner-occupied (such as investment and rental properties) are not eligible for the PRE. By value, residential-classed properties claiming the PRE represent 52.5% of total taxable value, and non-PRE properties represent 13% of the total taxable value.

SECTION 8
CONCLUSION

Based on total operations expenses of $16,157,889 (Table 3) and revenues of $16,675,449 (Section 7), the City's solid waste operations costs were covered by the various revenue streams received in FY2018, resulting in a small operations surplus ($517,560, or approximately 3%) in FY2018. However, adjustments to the City's expenses are also made annually. Though they are not direct cash expenses, these adjustments impact the Solid Waste Fund balance equity, either positively or negatively. The adjustments may include:

- Pension (GASB) and retiree benefit (OPEB) funding based on the number and pay scale of current employees for the program area
- Landfill closure and post-closure care liability adjustments based on engineer's cost estimates
- Capital asset adjustments
- Future Generally Accepted Accounting Practices (GAAP) requirements

While these costs are not driven by current solid waste operations, they are direct obligations charged to the Solid Waste Fund equity. In recent years, large adjustments have occurred to initially fund retiree benefit accounts, recognize the pension liability, and fund the landfill closure liability, each resulting in negative impacts to the Fund balance. In FY2018 these adjustments to the Solid Waste Fund equity totaled $2,394,035, exceeding the $517,560 surplus noted above by $1,876,475, resulting in a reduction in the Solid Waste Fund balance. Therefore, the program area experienced a net loss of nearly $2 million in the Solid Waste Fund equity in FY2018. Though these adjustments may be more modest in some years, they may also be large as was experienced in FY2018.

Other factors also impact Fund sustainability. For example, during FY2018 there was a greater utilization of temporary labor than typical, evidenced by the calculated residential compost collection costs that resulted in lower program costs than can typically be anticipated. In addition, because revenues include streams that are subject to variation (such as royalties on third party waste at the transfer station and recyclables material credits), this surplus could be narrowed or negated and result in a deficit in other years. For example, the material value of single-stream recyclables declined $44.44 per ton from the beginning to the end of FY2018. Had material value been at the lower end-of-FY2018 value all year, the recyclables credit would have been reduced by $557,366 and a deficit in the operations portion of the Solid Waste Fund performance would have been experienced.

This cost of service analysis provides a sound understanding of costs and cost drivers within the City's current programs. It also identifies that, though there is a positive Fund balance, a number of factors impact the long-term sustainability of the Fund and limit its use. The analysis provides the basis to evaluate costs of options being considered in the Solid Waste Resources Management Plan; provides baseline data to evaluate funding methods in the Plan (including additional revenues or cost savings necessary to implement and sustain program expansions or additions); and will be a useful tool for the City when developing annual budgets, monitoring operations and financial performance, and ensuring the Solid Waste Fund is able to absorb annual adjustments.

ATTACHMENT D
FINANCIAL MODEL

ATTACHMENT D.1
BASELINE (CURRENT CONDITIONS) SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.1. Baseline (Current Conditions) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	37,900	37,900	37,900	37,900	37,900	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	75,888	75,888	75,888	75,888	75,888	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.1. Baseline (Current Conditions) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 997,528	$ 1,014,204	$ 1,031,259	$ 1,048,693	$ 1,066,506	1.7%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	2.7%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	2.7%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 17,087,230	$ 17,570,056	$ 18,061,430	$ 18,562,402	$ 19,074,662	2.8%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ 185,986	$ 202,636	$ 227,106	$ 258,948	$ 297,098	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.1. Baseline (Current Conditions) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
	$ (1,793,755)	$ 299,500	$ (637,965)	$ 70,687	$ (242,081)	$ (1,361,709)	$ 483,745	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 9,218,960	$ 9,289,647	$ 9,047,566	$ 7,685,857	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 9,218,960	$ 9,289,647	$ 9,047,566	$ 7,685,857	$ 8,169,603	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.1. Baseline (Current Conditions) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,779,985	$ 11,089,802	$ 11,403,792	$ 11,722,887	$ 12,048,655	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,749,731)	$ (1,842,165)	$ (1,933,337)	$ (2,024,045)	$ (2,115,715)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (66.66)	$ (70.19)	$ (73.66)	$ (77.12)	$ (80.61)	
Monthly	$ (4.09)	$ (5.32)	$ (5.56)	$ (5.85)	$ (6.14)	$ (6.43)	$ (6.72)	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 5,906,237	$ 6,067,216	$ 6,232,209	$ 6,401,323	$ 6,574,669	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,822,070	$ 1,927,744	$ 2,039,875	$ 2,158,807	$ 2,284,902	

ATTACHMENT D.2
YEAR-ROUND RESIDENTIAL COMPOST COLLECTION SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.2. Year-Round Residential Compost Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	14,743	14,743	14,743	14,743	14,743	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,359	9,359	9,359	9,359	9,359	0.0%
Commercial Waste	37,900	37,900	37,900	37,900	37,900	37,900	37,900	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	75,888	75,888	75,888	75,888	75,888	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 388,036	$ 394,523	$ 401,157	$ 407,939	$ 414,868	1.3%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,559,289	$ 2,630,915	$ 2,704,641	$ 2,780,528	$ 2,858,636	2.7%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.2. Year-Round Residential Compost Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 209,829	$ 217,222	$ 221,902	$ 224,616	$ 226,769	2.6%
Program Addition - Year-Round Collection	$ -	$ -	$ 148,046	$ 152,488	$ 157,063	$ 161,775	$ 166,628	3.0%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,800,184	$ 1,855,288	$ 1,909,109	$ 1,962,440	$ 2,016,728	4.7%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 997,528	$ 1,014,204	$ 1,031,259	$ 1,048,693	$ 1,066,506	1.7%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	2.7%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	2.7%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 17,234,208	$ 17,721,571	$ 18,217,534	$ 18,723,172	$ 19,240,219	2.9%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ 39,008	$ 51,121	$ 71,002	$ 98,178	$ 131,542	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.2. Year-Round Residential Compost Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 9,071,982	$ 8,991,154	$ 8,592,969	$ 7,070,491	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 9,071,982	$ 8,991,154	$ 8,592,969	$ 7,070,491	$ 7,388,679	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.2. Year-Round Residential Compost Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,559,289	$ 2,630,915	$ 2,704,641	$ 2,780,528	$ 2,858,636	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,800,184	$ 1,855,288	$ 1,909,109	$ 1,962,440	$ 2,016,728	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,926,963	$ 11,241,317	$ 11,559,896	$ 11,883,657	$ 12,214,212	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 146,978**	**$ 151,515**	**$ 156,104**	**$ 160,769**	**$ 165,557**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,896,708)	$ (1,993,680)	$ (2,089,441)	$ (2,184,814)	$ (2,281,271)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (72.26)	$ (75.96)	$ (79.61)	$ (83.24)	$ (86.92)	
Monthly	$ (4.09)	$ (5.32)	$ (6.02)	$ (6.33)	$ (6.63)	$ (6.94)	$ (7.24)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ 5.60**	**$ 5.77**	**$ 5.95**	**$ 6.13**	**$ 6.31**	
Monthly	**$ -**	**$ -**	**$ 0.47**	**$ 0.48**	**$ 0.50**	**$ 0.51**	**$ 0.53**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 5,906,237	$ 6,067,216	$ 6,232,209	$ 6,401,323	$ 6,574,669	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,822,070	$ 1,927,744	$ 2,039,875	$ 2,158,807	$ 2,284,902	

ATTACHMENT D.3
BULKY ITEM COLLECTION SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.3. Bulky Item Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	17,247	17,247	17,247	17,247	17,247	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	37,900	37,900	37,900	37,900	37,900	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	78,118	78,118	78,118	78,118	78,118	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 453,941	$ 461,530	$ 469,291	$ 477,224	$ 485,331	4.5%
Program Addition - Bulky Item Collection	$ -	$ -	$ 318,041	$ 327,582	$ 337,408	$ 347,531	$ 357,958	3.0%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,943,236	$ 3,025,504	$ 3,110,183	$ 3,197,344	$ 3,287,057	5.7%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.3. Bulky Item Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 997,528	$ 1,014,204	$ 1,031,259	$ 1,048,693	$ 1,066,506	1.7%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	2.7%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	2.7%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 17,463,965	$ 17,957,313	$ 18,459,516	$ 18,971,637	$ 19,495,372	3.2%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ (190,749)	$ (184,620)	$ (170,980)	$ (150,287)	$ (123,612)	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.3. Bulky Item Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 8,842,225	$ 8,525,655	$ 7,885,488	$ 6,114,544	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 8,842,225	$ 8,525,655	$ 7,885,488	$ 6,114,544	$ 6,177,579	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.3. Bulky Item Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,943,236	$ 3,025,504	$ 3,110,183	$ 3,197,344	$ 3,287,057	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 11,156,720	$ 11,477,059	$ 11,801,878	$ 12,132,122	$ 12,469,365	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 376,735**	**$ 387,257**	**$ 398,086**	**$ 409,235**	**$ 420,710**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (2,126,466)	$ (2,229,421)	$ (2,331,424)	$ (2,433,280)	$ (2,536,425)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (81.02)	$ (84.94)	$ (88.83)	$ (92.71)	$ (96.64)	
Monthly	$ (4.09)	$ (5.32)	$ (6.75)	$ (7.08)	$ (7.40)	$ (7.73)	$ (8.05)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ 14.35**	**$ 14.75**	**$ 15.17**	**$ 15.59**	**$ 16.03**	
Monthly	**$ -**	**$ -**	**$ 1.20**	**$ 1.23**	**$ 1.26**	**$ 1.30**	**$ 1.34**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 5,906,237	$ 6,067,216	$ 6,232,209	$ 6,401,323	$ 6,574,669	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,822,070	$ 1,927,744	$ 2,039,875	$ 2,158,807	$ 2,284,902	

ATTACHMENT D.4
CONSOLIDATED RESIDENTIAL COLLECTION SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.4. Consolidated Residential Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	37,900	37,900	37,900	37,900	37,900	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	75,888	75,888	75,888	75,888	75,888	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 94,773	$ 97,616	$ 100,545	$ 103,561	$ 106,668	-48.4%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Program Change - City Collection	$ -	$ -	$ 1,858,393	$ 1,914,145	$ 1,971,569	$ 2,030,717	$ 2,091,639	3.0%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 5,164,968	$ 5,310,513	$ 5,458,206	$ 5,608,111	$ 5,760,295	-1.0%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.4. Consolidated Residential Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Program Change - City Collection	$ -	$ -	$ 273,295	$ 281,494	$ 289,939	$ 298,637	$ 307,596	3.0%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,919,289	$ 1,977,935	$ 2,035,488	$ 2,092,726	$ 2,151,057	6.1%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 997,528	$ 1,014,204	$ 1,031,259	$ 1,048,693	$ 1,066,506	1.7%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	2.7%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	2.7%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 16,311,762	$ 16,771,323	$ 17,238,734	$ 17,715,025	$ 18,201,865	1.8%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ 961,454	$ 1,001,369	$ 1,049,802	$ 1,106,325	$ 1,169,895	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.4. Consolidated Residential Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 9,994,428	$ 10,863,848	$ 11,444,464	$ 10,930,132	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 9,994,428	$ 10,863,848	$ 11,444,464	$ 10,930,132	$ 12,286,674	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.4. Consolidated Residential Collection Scenario**
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	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 5,164,968	$ 5,310,513	$ 5,458,206	$ 5,608,111	$ 5,760,295	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,919,289	$ 1,977,935	$ 2,035,488	$ 2,092,726	$ 2,151,057	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,004,517	$ 10,291,069	$ 10,581,096	$ 10,875,510	$ 11,175,858	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ (775,468)**	**$ (798,733)**	**$ (822,696)**	**$ (847,377)**	**$ (872,797)**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (974,262)	$ (1,043,432)	$ (1,110,641)	$ (1,176,668)	$ (1,242,918)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (37.12)	$ (39.75)	$ (42.31)	$ (44.83)	$ (47.35)	
Monthly	$ (4.09)	$ (5.32)	$ (3.09)	$ (3.31)	$ (3.53)	$ (3.74)	$ (3.95)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ (29.55)**	**$ (30.43)**	**$ (31.34)**	**$ (32.28)**	**$ (33.25)**	
Monthly	**$ -**	**$ -**	**$ (2.46)**	**$ (2.54)**	**$ (2.61)**	**$ (2.69)**	**$ (2.77)**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 5,906,237	$ 6,067,216	$ 6,232,209	$ 6,401,323	$ 6,574,669	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,822,070	$ 1,927,744	$ 2,039,875	$ 2,158,807	$ 2,284,902	

ATTACHMENT D.5
FOG MANAGEMENT SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.5. FOG Management Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	37,900	37,900	37,900	37,900	37,900	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	75,888	75,888	75,888	75,888	75,888	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.5. FOG Management Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 997,528	$ 1,014,204	$ 1,031,259	$ 1,048,693	$ 1,066,506	1.7%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	2.7%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Program Addition - FOG Management	$ -	$ -	$ 21,184	$ 21,820	$ 22,475	$ 23,149	$ 23,843	3.0%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,710,052	$ 1,758,399	$ 1,807,499	$ 1,857,374	$ 1,908,049	3.0%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 17,108,414	$ 17,591,876	$ 18,083,905	$ 18,585,551	$ 19,098,505	2.8%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ 164,802	$ 180,816	$ 204,631	$ 235,799	$ 273,255	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.5. FOG Management Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 9,197,776	$ 9,246,643	$ 8,982,087	$ 7,597,229	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 9,197,776	$ 9,246,643	$ 8,982,087	$ 7,597,229	$ 8,057,131	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.5. FOG Management Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,779,985	$ 11,089,802	$ 11,403,792	$ 11,722,887	$ 12,048,655	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,749,731)	$ (1,842,165)	$ (1,933,337)	$ (2,024,045)	$ (2,115,715)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (66.66)	$ (70.19)	$ (73.66)	$ (77.12)	$ (80.61)	
Monthly	$ (4.09)	$ (5.32)	$ (5.56)	$ (5.85)	$ (6.14)	$ (6.43)	$ (6.72)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Monthly	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,710,052	$ 1,758,399	$ 1,807,499	$ 1,857,374	$ 1,908,049	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 5,927,421	$ 6,089,036	$ 6,254,684	$ 6,424,472	$ 6,598,512	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 21,184**	**$ 21,820**	**$ 22,475**	**$ 23,149**	**$ 23,843**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,800,886	$ 1,905,924	$ 2,017,400	$ 2,135,658	$ 2,261,059	

ATTACHMENT D.6
COMMERCIAL ORGANICS COLLECTION SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.6. Commercial Organics Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	35,500	35,500	35,500	35,500	35,500	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	2,400	2,400	2,400	2,400	2,400	0.0%
Total	75,888	75,888	75,888	75,888	75,888	75,888	75,888	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.6. Commercial Organics Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 934,360	$ 949,980	$ 965,955	$ 982,285	$ 998,970	0.4%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,154,201	$ 4,266,413	$ 4,381,881	$ 4,500,690	$ 4,622,927	2.4%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	2.7%
Program Addition - Commercial Organics								
Collection	$ -	$ -	$ 555,786	$ 572,460	$ 589,633	$ 607,322	$ 625,541	3.0%
Composting	$ -	$ -	$ 61,992	$ 65,304	$ 65,304	$ 67,200	$ 67,752	2.2%
Subtotal	$ -	$ -	$ 617,778	$ 637,764	$ 654,937	$ 674,522	$ 693,293	2.9%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 17,641,840	$ 18,143,596	$ 18,651,063	$ 19,170,516	$ 19,700,419	3.4%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ (368,624)	$ (370,904)	$ (362,527)	$ (349,166)	$ (328,659)	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.6. Commercial Organics Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 8,664,350	$ 8,161,497	$ 7,329,783	$ 5,359,960	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 8,664,350	$ 8,161,497	$ 7,329,783	$ 5,359,960	$ 5,217,949	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.6. Commercial Organics Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,779,985	$ 11,089,802	$ 11,403,792	$ 11,722,887	$ 12,048,655	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,749,731)	$ (1,842,165)	$ (1,933,337)	$ (2,024,045)	$ (2,115,715)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (66.66)	$ (70.19)	$ (73.66)	$ (77.12)	$ (80.61)	
Monthly	$ (4.09)	$ (5.32)	$ (5.56)	$ (5.85)	$ (6.14)	$ (6.43)	$ (6.72)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Monthly	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,154,201	$ 4,266,413	$ 4,381,881	$ 4,500,690	$ 4,622,927	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	
Commercial Organics	$ -	$ -	$ 617,778	$ 637,764	$ 654,937	$ 674,522	$ 693,293	
Subtotal	$ 5,610,453	$ 5,753,495	$ 6,460,847	$ 6,640,756	$ 6,821,842	$ 7,009,437	$ 7,200,426	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 554,610**	**$ 573,540**	**$ 589,633**	**$ 608,114**	**$ 625,757**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,267,460	$ 1,354,204	$ 1,450,242	$ 1,550,693	$ 1,659,145	

ATTACHMENT D.7
STUDENT MOVE-IN / MOVE-OUT COLLECTION SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.7. Student Move-In / Move-Out Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	38,300	38,300	38,300	38,300	38,300	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	76,288	76,288	76,288	76,288	76,288	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.7. Student Move-In / Move-Out Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 1,008,056	$ 1,024,908	$ 1,042,143	$ 1,059,761	$ 1,077,762	1.9%
Program Addition - Move-In/Move-Out	$ -	$ -	$ 42,617	$ 43,895	$ 45,211	$ 46,568	$ 47,966	3.0%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,270,514	$ 4,385,236	$ 4,503,280	$ 4,624,734	$ 4,749,685	3.0%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	2.7%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 17,140,375	$ 17,624,655	$ 18,117,525	$ 18,620,038	$ 19,133,884	2.8%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ 132,841	$ 148,037	$ 171,011	$ 201,312	$ 237,876	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.7. Student Move-In / Move-Out Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 9,165,815	$ 9,181,903	$ 8,883,728	$ 7,464,382	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 9,165,815	$ 9,181,903	$ 8,883,728	$ 7,464,382	$ 7,888,906	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.7. Student Move-In / Move-Out Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,779,985	$ 11,089,802	$ 11,403,792	$ 11,722,887	$ 12,048,655	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,749,731)	$ (1,842,165)	$ (1,933,337)	$ (2,024,045)	$ (2,115,715)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (66.66)	$ (70.19)	$ (73.66)	$ (77.12)	$ (80.61)	
Monthly	$ (4.09)	$ (5.32)	$ (5.56)	$ (5.85)	$ (6.14)	$ (6.43)	$ (6.72)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Monthly	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,270,514	$ 4,385,236	$ 4,503,280	$ 4,624,734	$ 4,749,685	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 5,959,382	$ 6,121,815	$ 6,288,304	$ 6,458,959	$ 6,633,891	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 53,145**	**$ 54,599**	**$ 56,095**	**$ 57,636**	**$ 59,222**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,768,925	$ 1,873,145	$ 1,983,780	$ 2,101,171	$ 2,225,680	

ATTACHMENT D.8
CONSTRUCTION & DEMOLITION DIVERSION (PHASE 1) SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.8. Construction & Demolition Diversion (Phase 1 Only) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	37,900	37,900	37,900	37,900	37,900	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	75,888	75,888	75,888	75,888	75,888	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.8. Construction & Demolition Diversion (Phase 1 Only) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 997,528	$ 1,014,204	$ 1,031,259	$ 1,048,693	$ 1,066,506	1.7%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	2.7%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Program Addition - C&D Diversion (Phase 1)	$ -	$ -	$ 50,923	$ 52,451	$ 54,025	$ 55,646	$ 57,315	3.0%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,739,791	$ 1,789,030	$ 1,839,049	$ 1,889,871	$ 1,941,521	3.4%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 17,138,153	$ 17,622,507	$ 18,115,455	$ 18,618,048	$ 19,131,977	2.8%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ 135,063	$ 150,185	$ 173,081	$ 203,302	$ 239,783	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.8. Construction & Demolition Diversion (Phase 1 Only) Scenario**
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	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 9,168,037	$ 9,186,273	$ 8,890,167	$ 7,472,812	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 9,168,037	$ 9,186,273	$ 8,890,167	$ 7,472,812	$ 7,899,242	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.8. Construction & Demolition Diversion (Phase 1 Only) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,779,985	$ 11,089,802	$ 11,403,792	$ 11,722,887	$ 12,048,655	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,749,731)	$ (1,842,165)	$ (1,933,337)	$ (2,024,045)	$ (2,115,715)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (66.66)	$ (70.19)	$ (73.66)	$ (77.12)	$ (80.61)	
Monthly	$ (4.09)	$ (5.32)	$ (5.56)	$ (5.85)	$ (6.14)	$ (6.43)	$ (6.72)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Monthly	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,739,791	$ 1,789,030	$ 1,839,049	$ 1,889,871	$ 1,941,521	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 5,957,160	$ 6,119,667	$ 6,286,234	$ 6,456,969	$ 6,631,984	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 50,923**	**$ 52,451**	**$ 54,025**	**$ 55,646**	**$ 57,315**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,771,146	$ 1,875,293	$ 1,985,850	$ 2,103,161	$ 2,227,587	

ATTACHMENT D.9

COMMERCIAL PARTICIPATION ENFORCEMENT SCENARIO (LOW DIVERSION AND HIGH DIVERSION IMPACTS)

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.9. Commercial Participation Enforcement (Low Diversion Impact of 1,700 Tons) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	41,900	41,900	41,900	41,900	41,900	0.0%
Commercial Recyclables	3,320	3,320	5,020	5,020	5,020	5,020	5,020	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	81,588	81,588	81,588	81,588	81,588	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 494,076	$ 494,076	$ 494,076	$ 494,076	$ 494,076	2.3%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,327,106	$ 17,826,582	$ 18,342,426	$ 18,875,240	$ 19,425,650	3.0%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.9. Commercial Participation Enforcement (Low Diversion Impact of 1,700 Tons) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 1,102,808	$ 1,121,244	$ 1,140,099	$ 1,159,373	$ 1,179,066	3.7%
Program Change - Participation Enforcement	$ -	$ -	$ 286,672	$ 295,271	$ 304,129	$ 313,252	$ 322,650	3.0%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,609,321	$ 4,732,948	$ 4,860,154	$ 4,991,030	$ 5,125,673	4.5%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 1,320,260	$ 1,355,400	$ 1,390,540	$ 1,425,680	$ 1,460,820	11.3%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 2,135,968	$ 2,195,579	$ 2,255,924	$ 2,317,025	$ 2,378,906	7.6%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 17,926,282	$ 18,431,367	$ 18,945,299	$ 19,469,134	$ 20,004,572	3.8%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ (599,175)	$ (604,785)	$ (602,873)	$ (593,894)	$ (578,922)	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.9. Commercial Participation Enforcement (Low Diversion Impact of 1,700 Tons) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 8,433,798	$ 7,697,065	$ 6,625,005	$ 4,410,454	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 8,433,798	$ 7,697,065	$ 6,625,005	$ 4,410,454	$ 4,018,179	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.9. Commercial Participation Enforcement (Low Diversion Impact of 1,700 Tons) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,779,985	$ 11,089,802	$ 11,403,792	$ 11,722,887	$ 12,048,655	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,749,731)	$ (1,842,165)	$ (1,933,337)	$ (2,024,045)	$ (2,115,715)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (66.66)	$ (70.19)	$ (73.66)	$ (77.12)	$ (80.61)	
Monthly	$ (4.09)	$ (5.32)	$ (5.56)	$ (5.85)	$ (6.14)	$ (6.43)	$ (6.72)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Monthly	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 159,134	$ 159,134	$ 159,134	$ 159,134	$ 159,134	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,782,197	$ 8,048,850	$ 8,325,974	$ 8,614,020	$ 8,913,461	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,609,321	$ 4,732,948	$ 4,860,154	$ 4,991,030	$ 5,125,673	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 2,135,968	$ 2,195,579	$ 2,255,924	$ 2,317,025	$ 2,378,906	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 6,745,289	$ 6,928,527	$ 7,116,078	$ 7,308,055	$ 7,504,579	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 839,052**	**$ 861,311**	**$ 883,869**	**$ 906,732**	**$ 929,910**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,036,908	$ 1,120,323	$ 1,209,896	$ 1,305,965	$ 1,408,882	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.9. Commercial Participation Enforcement (High Diversion Impact of 4,400 Tons) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	41,900	41,900	41,900	41,900	41,900	0.0%
Commercial Recyclables	3,320	3,320	7,720	7,720	7,720	7,720	7,720	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	84,288	84,288	84,288	84,288	84,288	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 579,666	$ 579,666	$ 579,666	$ 579,666	$ 579,666	5.7%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,412,696	$ 17,912,172	$ 18,428,016	$ 18,960,830	$ 19,511,240	3.1%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.9. Commercial Participation Enforcement (High Diversion Impact of 4,400 Tons) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 1,102,808	$ 1,121,244	$ 1,140,099	$ 1,159,373	$ 1,179,066	3.7%
Program Change - Participation Enforcement	$ -	$ -	$ 419,414	$ 431,997	$ 444,957	$ 458,306	$ 472,054	3.0%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,742,063	$ 4,869,674	$ 5,000,982	$ 5,136,084	$ 5,275,077	5.1%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 2,030,360	$ 2,084,400	$ 2,138,440	$ 2,192,480	$ 2,246,520	21.3%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 2,846,068	$ 2,924,579	$ 3,003,824	$ 3,083,825	$ 3,164,606	14.0%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 18,769,124	$ 19,297,093	$ 19,834,027	$ 20,380,988	$ 20,939,676	4.7%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ (1,356,428)	$ (1,384,921)	$ (1,406,011)	$ (1,420,158)	$ (1,428,436)	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.9. Commercial Participation Enforcement (High Diversion Impact of 4,400 Tons) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 7,676,546	$ 6,159,676	$ 4,284,479	$ 1,243,663	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 7,676,546	$ 6,159,676	$ 4,284,479	$ 1,243,663	$ 1,875	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.9. Commercial Participation Enforcement (High Diversion Impact of 4,400 Tons) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,779,985	$ 11,089,802	$ 11,403,792	$ 11,722,887	$ 12,048,655	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,749,731)	$ (1,842,165)	$ (1,933,337)	$ (2,024,045)	$ (2,115,715)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (66.66)	$ (70.19)	$ (73.66)	$ (77.12)	$ (80.61)	
Monthly	$ (4.09)	$ (5.32)	$ (5.56)	$ (5.85)	$ (6.14)	$ (6.43)	$ (6.72)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Monthly	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 244,724	$ 244,724	$ 244,724	$ 244,724	$ 244,724	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,867,787	$ 8,134,440	$ 8,411,564	$ 8,699,610	$ 8,999,051	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,742,063	$ 4,869,674	$ 5,000,982	$ 5,136,084	$ 5,275,077	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 2,846,068	$ 2,924,579	$ 3,003,824	$ 3,083,825	$ 3,164,606	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 7,588,131	$ 7,794,253	$ 8,004,806	$ 8,219,909	$ 8,439,683	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 1,681,894**	**$ 1,727,037**	**$ 1,772,597**	**$ 1,818,586**	**$ 1,865,014**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 279,656	$ 340,187	$ 406,758	$ 479,701	$ 559,368	

ATTACHMENT D.10
CONSOLIDATED COMMERCIAL COLLECTION SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.10. Consolidated Commercial Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	37,900	37,900	37,900	37,900	37,900	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	75,888	75,888	75,888	75,888	75,888	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.10. Consolidated Commercial Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 997,528	$ 1,014,204	$ 1,031,259	$ 1,048,693	$ 1,066,506	1.7%
Program Change - Consolidated Collection	$ -	$ -	$ (697,649)	$ (718,576)	$ (740,134)	$ (762,339)	$ (785,209)	3.0%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 3,519,720	$ 3,612,061	$ 3,707,051	$ 3,804,759	$ 3,905,254	-1.0%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Program Change - Consolidated Collection	$ -	$ -	$ (619,301)	$ (637,879)	$ (657,015)	$ (676,725)	$ (697,027)	3.0%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,069,567	$ 1,098,700	$ 1,128,009	$ 1,157,500	$ 1,187,179	-6.3%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 15,770,280	$ 16,213,601	$ 16,664,281	$ 17,123,338	$ 17,592,426	1.1%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ 1,502,936	$ 1,559,091	$ 1,624,255	$ 1,698,012	$ 1,779,334	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.10. Consolidated Commercial Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 10,535,910	$ 11,963,052	$ 13,118,120	$ 13,195,475	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 10,535,910	$ 11,963,052	$ 13,118,120	$ 13,195,475	$ 15,161,457	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.10. Consolidated Commercial Collection Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,779,985	$ 11,089,802	$ 11,403,792	$ 11,722,887	$ 12,048,655	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,749,731)	$ (1,842,165)	$ (1,933,337)	$ (2,024,045)	$ (2,115,715)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (66.66)	$ (70.19)	$ (73.66)	$ (77.12)	$ (80.61)	
Monthly	$ (4.09)	$ (5.32)	$ (5.56)	$ (5.85)	$ (6.14)	$ (6.43)	$ (6.72)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Monthly	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 3,519,720	$ 3,612,061	$ 3,707,051	$ 3,804,759	$ 3,905,254	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,069,567	$ 1,098,700	$ 1,128,009	$ 1,157,500	$ 1,187,179	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 4,589,287	$ 4,710,761	$ 4,835,060	$ 4,962,259	$ 5,092,433	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ (1,316,950)**	**$ (1,356,455)**	**$ (1,397,149)**	**$ (1,439,064)**	**$ (1,482,236)**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 3,139,020	$ 3,284,199	$ 3,437,024	$ 3,597,871	$ 3,767,138	

ATTACHMENT D.11
EDUCATION AND OUTREACH SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.11. Education & Outreach Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	37,900	37,900	37,900	37,900	37,900	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	75,888	75,888	75,888	75,888	75,888	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Program Addition - Education & Outreach	$ -	$ -	$ 235,350	$ 242,411	$ 249,683	$ 257,173	$ 264,888	3.0%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,449,081	$ 6,633,151	$ 6,820,524	$ 7,011,298	$ 7,205,576	3.5%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.11. Education & Outreach Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 997,528	$ 1,014,204	$ 1,031,259	$ 1,048,693	$ 1,066,506	1.7%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	2.7%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Program Addition - Education & Outreach	$ -	$ -	$ 235,350	$ 242,411	$ 249,683	$ 257,173	$ 264,888	3.0%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,924,218	$ 1,978,990	$ 2,034,707	$ 2,091,398	$ 2,149,094	5.5%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 17,557,930	$ 18,054,878	$ 18,560,796	$ 19,076,748	$ 19,604,438	3.3%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ (284,714)	$ (282,186)	$ (272,260)	$ (255,398)	$ (232,678)	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.11. Education & Outreach Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 8,748,260	$ 8,334,125	$ 7,592,678	$ 5,716,623	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 8,748,260	$ 8,334,125	$ 7,592,678	$ 5,716,623	$ 5,670,592	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.11. Education & Outreach Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,449,081	$ 6,633,151	$ 6,820,524	$ 7,011,298	$ 7,205,576	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 11,015,335	$ 11,332,213	$ 11,653,475	$ 11,980,060	$ 12,313,543	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 235,350**	**$ 242,411**	**$ 249,683**	**$ 257,173**	**$ 264,888**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,985,081)	$ (2,084,576)	$ (2,183,020)	$ (2,281,218)	$ (2,380,603)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (75.63)	$ (79.42)	$ (83.17)	$ (86.91)	$ (90.70)	
Monthly	$ (4.09)	$ (5.32)	$ (6.30)	$ (6.62)	$ (6.93)	$ (7.24)	$ (7.56)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ 8.97**	**$ 9.24**	**$ 9.51**	**$ 9.80**	**$ 10.09**	
Monthly	**$ -**	**$ -**	**$ 0.75**	**$ 0.77**	**$ 0.79**	**$ 0.82**	**$ 0.84**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,924,218	$ 1,978,990	$ 2,034,707	$ 2,091,398	$ 2,149,094	
Commercial Organics	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal	$ 5,610,453	$ 5,753,495	$ 6,141,587	$ 6,309,627	$ 6,481,892	$ 6,658,496	$ 6,839,557	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 235,350**	**$ 242,411**	**$ 249,683**	**$ 257,173**	**$ 264,888**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,586,720	$ 1,685,333	$ 1,790,192	$ 1,901,634	$ 2,020,014	

ATTACHMENT D.12

7-DAY COLLECTION (MANDATORY WEEKEND COLLECTION FOR RESTAURANTS AND BARS) SCENARIO

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.12. 7-Day Collection (Mandatory Weekend Collection for Restaurants and Bars) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Tonnages								
Residential Waste	15,017	15,017	15,017	15,017	15,017	15,017	15,017	0.0%
Residential Recyclables	10,566	10,566	10,566	10,566	10,566	10,566	10,566	0.0%
Residential Organics	9,085	9,085	9,085	9,085	9,085	9,085	9,085	0.0%
Commercial Waste	37,900	37,900	37,900	37,900	37,900	37,900	37,900	0.0%
Commercial Recyclables	3,320	3,320	3,320	3,320	3,320	3,320	3,320	0.0%
Commercial Organics	0	0	0	0	0	0	0	0.0%
Total	75,888	75,888	75,888	75,888	75,888	75,888	75,888	
Processing Fees (per contract)								
Waste Transfer/Disposal ($/ton)	$ 25.45	$ 25.88	$ 26.32	$ 26.76	$ 27.21	$ 27.67	$ 28.14	1.7%
Recycling Processing Fee ($/ton)	$ 151.14	$ 158.42	$ 163.00	$ 168.00	$ 173.00	$ 178.00	$ 183.00	3.0%
City MRF Cost	$ 97.97	$ 99.00	$ 100.00	$ 102.00	$ 104.00	$ 106.00	$ 108.00	1.5%
Recycling Processing Credit ($/ton)	$ 57.20	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	$ 31.70	0.0%
Organics Composting Fee ($/ton)	$ 18.95	$ 22.00	$ 22.42	$ 23.21	$ 23.71	$ 24.00	$ 24.23	1.9%
Commercial Organics Fee ($/ton)	$ -	$ 25.00	$ 25.83	$ 27.21	$ 27.21	$ 28.00	$ 28.23	2.5%
Revenues								
Solid Waste Millage	$ 12,635,609	$ 12,951,499	$ 13,275,286	$ 13,607,168	$ 13,947,347	$ 14,296,031	$ 14,653,432	2.5%
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	5.0%
Recycling Processing Credit	$ 794,557	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	$ 440,186	0.0%
Other	$ 485,112	$ 499,665	$ 514,655	$ 530,095	$ 545,998	$ 562,378	$ 579,249	3.0%
Total	$ 16,675,449	$ 16,789,530	$ 17,273,216	$ 17,772,692	$ 18,288,536	$ 18,821,350	$ 19,371,760	2.9%
Expenses								
Residential Waste								
Collection	$ 1,546,972	$ 1,593,380	$ 1,641,180	$ 1,690,417	$ 1,741,130	$ 1,793,364	$ 1,847,166	3.0%
Transfer/Disposal	$ 388,115	$ 388,640	$ 395,247	$ 401,855	$ 408,613	$ 415,520	$ 422,578	1.7%
Allocated Administrative	$ 499,645	$ 514,634	$ 530,073	$ 545,975	$ 562,354	$ 579,225	$ 596,602	3.0%
Subtotal	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	2.8%
Residential Recycling								
Collection	$ 2,829,604	$ 2,914,493	$ 3,001,929	$ 3,091,988	$ 3,184,749	$ 3,280,292	$ 3,378,700	3.0%
MRF Processing (incl. City MRF Costs)	$ 2,631,921	$ 2,719,900	$ 2,778,858	$ 2,852,820	$ 2,926,782	$ 3,000,744	$ 3,074,706	2.5%
Allocated Administrative	$ 408,091	$ 420,334	$ 432,944	$ 445,932	$ 459,310	$ 473,089	$ 487,282	3.0%
Subtotal	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	2.8%

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.12. 7-Day Collection (Mandatory Weekend Collection for Restaurants and Bars) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Composting								
Collection	$ 1,001,257	$ 1,031,295	$ 1,062,235	$ 1,094,102	$ 1,126,924	$ 1,160,732	$ 1,195,554	3.0%
Composting	$ 172,137	$ 199,870	$ 203,686	$ 210,863	$ 215,405	$ 218,040	$ 220,130	1.9%
Allocated Administrative	$ 358,256	$ 369,004	$ 380,074	$ 391,476	$ 403,220	$ 415,317	$ 427,777	3.0%
Subtotal	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	2.9%
Commercial Waste								
Collection	$ 2,243,279	$ 2,310,577	$ 2,379,895	$ 2,451,289	$ 2,524,828	$ 2,600,574	$ 2,678,591	3.0%
Transfer/Disposal	$ 979,516	$ 980,852	$ 997,528	$ 1,014,204	$ 1,031,259	$ 1,048,693	$ 1,066,506	1.7%
Allocated Administrative	$ 791,730	$ 815,482	$ 839,946	$ 865,144	$ 891,098	$ 917,831	$ 945,366	3.0%
Subtotal	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	2.7%
Commercial Recycling								
Collection	$ 666,061	$ 686,043	$ 706,624	$ 727,822	$ 749,656	$ 772,145	$ 795,310	3.0%
MRF Processing (incl. City MRF Costs)	$ 827,045	$ 854,634	$ 873,160	$ 896,400	$ 919,640	$ 942,880	$ 966,120	2.5%
Allocated Administrative	$ 102,822	$ 105,907	$ 109,084	$ 112,357	$ 115,728	$ 119,200	$ 122,776	3.0%
Subtotal	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	2.7%
Program Addition - Downtown 7-Day Collection								
Collection	$ -	$ -	$ 122,250	$ 125,918	$ 129,696	$ 133,587	$ 137,594	3.0%
MRF & TS Daily Weekend Operations	$ -	$ -	$ 231,701	$ 218,400	$ 218,400	$ 218,400	$ 218,400	3.0%
Subtotal	$ -	$ -	$ 353,950	$ 344,318	$ 348,096	$ 351,987	$ 355,994	0.1%
City Events								
Collection	$ 302,450	$ 311,525	$ 320,870	$ 330,498	$ 340,413	$ 350,626	$ 361,144	3.0%
Transfer Disposal	$ 3,270	$ 3,368	$ 3,469	$ 3,573	$ 3,680	$ 3,790	$ 3,904	3.0%
Allocated Administrative	$ 27,731	$ 28,563	$ 29,420	$ 30,303	$ 31,212	$ 32,148	$ 33,112	3.0%
Subtotal	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	3.0%
Miscellaneous								
Closed Landfill	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Subtotal	$ 377,988	$ 389,328	$ 401,008	$ 413,038	$ 425,429	$ 438,192	$ 451,338	3.0%
Total Expenses	$ 16,157,890	$ 16,637,829	$ 17,441,180	$ 17,914,374	$ 18,409,526	$ 18,914,389	$ 19,430,656	3.2%
Net Operating Surplus (Deficit)	$ 517,559	$ 151,701	$ (167,964)	$ (141,682)	$ (120,990)	$ (93,039)	$ (58,896)	

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.12. 7-Day Collection (Mandatory Weekend Collection for Restaurants and Bars) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Financial Adjustments (Credits)								
GASB Pension Liability	$ 337,009	$ 275,000	$ 266,750	$ 258,748	$ 250,986	$ 243,456	$ 236,152	-3.0%
OPEB	$ 3,096,076	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	$ (250,000)	0.0%
Change in Landfill Liability	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	$ (172,799)	0.0%
Change in Capital Assets, net of debt	$ (948,972)	$ -	$ -	$ -	$ -	$ -	$ -	0.0%
Subtotal	$ 2,311,314	$ (147,799)	$ (156,049)	$ (164,051)	$ (171,813)	$ (179,343)	$ (186,647)	
Capital Projects								
Compost Pad Replacement	$ -	$ -	$ -	$ 200,000	$ -	$ -	$ -	
Drop-off Station Improvements	$ -	$ -	$ -	$ 96,000	$ 641,000	$ 1,800,000	$ -	
Landfill Entrance Improvements	$ -	$ -	$ 880,000	$ -	$ -	$ -	$ -	
Methane Collection System Upgrades	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -	
Subtotal	$ -	$ -	$ 980,000	$ 296,000	$ 641,000	$ 1,800,000	$ -	
Fund Balance								
Beginning Balance	$ 11,351,180	$ 9,557,425	$ 9,856,925	$ 8,865,010	$ 8,591,379	$ 8,001,202	$ 6,287,506	
Ending Balance	$ 9,557,425	$ 9,856,925	$ 8,865,010	$ 8,591,379	$ 8,001,202	$ 6,287,506	$ 6,415,257	

Notes

1. Annual escalation in expenses (unless otherwise specified in contract fee schedule): 3.0%
2. Financial adjustments, if positive amount, are deducted from fund balance; if negative amount, they are added to fund balance.
3. Capital project amounts are for funding from Solid Waste Enterprise Fund; total project costs may be higher.

City of Ann Arbor
Resource Management Plan
Solid Waste Enterprise Fund Model **D.12. 7-Day Collection (Mandatory Weekend Collection for Restaurants and Bars) Scenario**
DRAFT - August 2019

	Actual FY 2018	Projected FY 2019	Projected FY2020	Projected FY2021	Projected FY2022	Projected FY2023	Projected FY2024	Yrly Escalation FY20-FY24
Residential Program Cost Analysis								
Revenues								
Millage (65.5% of Total)	$ 8,276,324	$ 8,483,232	$ 8,695,312	$ 8,912,695	$ 9,135,512	$ 9,363,900	$ 9,597,998	
Recycling Processing Credit	$ 604,375	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	$ 334,942	
Subtotal	$ 8,880,699	$ 8,818,174	$ 9,030,255	$ 9,247,637	$ 9,470,454	$ 9,698,843	$ 9,932,940	
Expenses								
Residential Waste	$ 2,434,732	$ 2,496,654	$ 2,566,500	$ 2,638,247	$ 2,712,097	$ 2,788,109	$ 2,866,346	
Residential Recycling	$ 5,869,616	$ 6,054,727	$ 6,213,731	$ 6,390,740	$ 6,570,841	$ 6,754,125	$ 6,940,688	
Residential Composting	$ 1,531,650	$ 1,600,169	$ 1,645,995	$ 1,696,441	$ 1,745,549	$ 1,794,089	$ 1,843,461	
City Events	$ 333,451	$ 343,456	$ 353,759	$ 364,374	$ 375,305	$ 386,564	$ 398,160	
Subtotal	$ 10,169,449	$ 10,495,006	$ 10,779,985	$ 11,089,802	$ 11,403,792	$ 11,722,887	$ 12,048,655	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Net Operating Surplus (Deficit)	$ (1,288,750)	$ (1,676,832)	$ (1,749,731)	$ (1,842,165)	$ (1,933,337)	$ (2,024,045)	$ (2,115,715)	
Deficit/Household								
Annual	$ (49.10)	$ (63.89)	$ (66.66)	$ (70.19)	$ (73.66)	$ (77.12)	$ (80.61)	
Monthly	$ (4.09)	$ (5.32)	$ (5.56)	$ (5.85)	$ (6.14)	$ (6.43)	$ (6.72)	
Change in Deficit/Household from Baseline								
Annual	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Monthly	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	
Commercial Program Cost Analysis								
Revenues								
Millage (34.5% of Total)	$ 4,359,285	$ 4,468,267	$ 4,579,974	$ 4,694,473	$ 4,811,835	$ 4,932,131	$ 5,055,434	
Commercial Waste Fees	$ 2,760,171	$ 2,898,180	$ 3,043,089	$ 3,195,243	$ 3,355,005	$ 3,522,755	$ 3,698,893	
Recycling Processing Credit	$ 189,904	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	$ 105,244	
Subtotal	$ 7,309,360	$ 7,471,691	$ 7,728,307	$ 7,994,960	$ 8,272,084	$ 8,560,130	$ 8,859,571	
Expenses								
Commercial Waste	$ 4,014,525	$ 4,106,911	$ 4,217,369	$ 4,330,637	$ 4,447,185	$ 4,567,098	$ 4,690,463	
Commercial Recycling	$ 1,595,928	$ 1,646,584	$ 1,688,868	$ 1,736,579	$ 1,785,024	$ 1,834,225	$ 1,884,206	
Downtown 7-Day Collection	$ -	$ -	$ 353,950	$ 344,318	$ 348,096	$ 351,987	$ 355,994	
Subtotal	$ 5,610,453	$ 5,753,495	$ 6,260,187	$ 6,411,534	$ 6,580,305	$ 6,753,310	$ 6,930,663	
Direct Cost Change vs. Baseline	**$ -**	**$ -**	**$ 353,950**	**$ 344,318**	**$ 348,096**	**$ 351,987**	**$ 355,994**	
Net Operating Surplus (Deficit)	$ 1,698,907	$ 1,718,196	$ 1,468,119	$ 1,583,426	$ 1,691,779	$ 1,806,820	$ 1,928,908	

ATTACHMENT E
BENCHMARK COMMUNITY CASE STUDIES

ATTACHMENT E
BENCHMARK COMMUNITY CASE STUDIES

Austin, Texas — Population (2017) = 950,715

Reasons for Inclusion as Benchmark Community

Zero Waste goal established, with performance data available

Services provided by a mix of service providers, including municipal crews

Residential Programs and Performance

Service Provider

City crews (Austin Resource Recovery)

Service Levels

Waste:	Weekly collection, carts (24-gallon, 32-gallon, 64-gallon, 96-gallon)
Recycling:	Every-other-week collection, carts
Compost:	Weekly collection, year-round Food waste being phased in as carts rolled out

Diversion Rate

38%

(Goal = 90%)

Funding & Fees

Funded through both service fees based on garbage cart size and a property tax assessment

Waste:	$17.90 / household / month (24-gallon cart) $19.15 / household / month (32-gallon cart) $24.30 / household / month (64-gallon cart) $42.85 / household / month (96-gallon cart) All service levels include a base fee of $14.05. Carts 64-gallons or less are charged an additional fee of $0.16 / gallon, and the 96-gallon cart is charged an additional fee of $0.30 / gallon
Recycling:	No added charge
Compost:	No added charge
Clean Community Fee:	$8.95 / household / month; this fee funds diversion activities (Recycle & Reuse Drop-Off Center, Austin Reuse Centers, Zero Waste program development, business outreach services),city code enforcement, and cleaning activities (street and sidewalk sweeping, litter abatement, dead animal collection)
Extra Bag:	$4 / bag sticker required $9.60 / bag charged if set out without a sticker

Additional Information - Policies / Mandates / Extra Services

Bulky item collection:	No additional charge Items are collected from each household twice per year on a rotating schedule across the city

Austin, Texas — Population (2017) = 950,715

Commercial Programs and Performance

Service Provider

Downtown / Central Business District (CBD): Franchise hauler

Outside CBD: Open market; some small businesses served by City crews

Service Levels

CBD: Waste and recycling dumpsters (3 to 4 cubic yards capacity) placed by hauler and available for use by all properties on each block

7-day per week collection

Outside CBD: Based on service offerings of business-selected private hauler

City historically offered cart-based collection (once per week for businesses in generally residential neighborhoods) until 2015; City now accepts no new commercial customers, and new businesses are required to contract with private hauler for collection; if a City-served business ends City service, it cannot opt back in to City collection

Diversion Rate

42%

(Goal = 90%)

Funding & Fees

Funded through service fees paid by each property

CBD: Commercial fees vary by property and include: base rate ($14.05 / month), trash service volume fee ($16.60 / cubic yard; property charge varies based on volume of service provided to the block, apportioned equitably to all users), Clean Community Fee ($20.75 / month), and CBD Special Cleaning Service fee ($17.00 / month)

Residential fees are $37.50 / household / month and include: base rate ($14.05 / month), trash service fee ($14.50 / household / month), and Clean Community Fee ($8.95 / month)

No added charge for recycling service

Outside CBD: Rates set by private haulers

Additional Information - Policies / Mandates / Extra Services

Universal Recycling Ordinance: Requires all commercial and larger multi-family properties to have recycling service and all food-oriented businesses to have compost collection service

Phased in, first for recycling requirement (5 year phase-in from 2012 to 2016, based on business size), then for composting requirement (3 year phase-in from 2015 to 2017, based on business size)

Sources:

1. City of Austin, https://www.austintexas.gov/department/austin-resource-recovery, accessed July 31, 2019.
2. Personal correspondence, Austin Resource Recovery, July 31, 2019.

Boulder, Colorado — Population (2017) = 107,125

Reasons for Inclusion as Benchmark Community

High diversion goal established

University community

City and Boulder County partner to provide many waste reduction services

Residential Programs and Performance

Service Provider	Service Levels
Open market / private haulers	Vary depending on the hauler and level of service selected In partnership with Boulder County, provides diversion opportunities including the Center for Hard-to-Recycle Materials (CHaRM), household hazardous waste facility, and MRF facility
Diversion Rate 40% (Goal = 85%)	**Funding & Fees** Funded through service fees set by and paid to private haulers based on selected service and hauler-quoted rate Waste reduction efforts funded through hauler-paid "trash tax" of $3.50 / household / month or $0.85 / cubic yard of service / month for multi-family properties; haulers typically pass this on to customers as a separate line-item charge on their bill

Additional Information - Policies / Mandates / Extra Services

Universal Zero Waste Ordinance requires all properties to have recycling and composting service

Student move-out support requirements:	Haulers providing collection services to properties in the designated student zone must perform collection 6 days per week during the peak move-out period specified by the City

Commercial Programs and Performance

Service Provider	Service Levels
Open market / private haulers	Vary depending on the hauler and level of service selected
Diversion Rate 43% (Goal = 85%)	**Funding & Fees** Funded through service fees set by and paid to private haulers based on selected service and hauler-quoted rate Waste reduction efforts funded through hauler-paid "trash tax" of $0.85 / cubic yard of service / month; haulers typically pass this on to customers as a separate line-item charge on their bill

Additional Information - Policies / Mandates / Extra Services

Universal Zero Waste Ordinance requires all properties to have recycling and composting service

Sources:

1. City of Boulder, https://bouldercolorado.gov/zero-waste, accessed July 31, 2019.

Grand Rapids, Michigan — Population (2017) = 198,829

Reasons for Inclusion as Benchmark Community

Michigan community of similar size, university community

City and Kent County partner on some disposal and waste diversion services

Residential Programs and Performance

Service Provider	Service Levels	
City crews	Waste:	Weekly collection, carts (32-gallon, 64-gallon, 96-gallon)
	Recycling:	Every-other-week collection, carts (64-gallon, 96-gallon)
	Compost:	Weekly, seasonal collection (April-mid-December), bags, carts, or bulk; drop-off available
		No food waste accepted

Diversion Rate	Funding & Fees	
27% (excluding compost)	Funded through both pay-as-you-throw (PAYT) service fees based on garbage cart size and a property tax millage	
	Waste:	$3.05 / setout (32-gallon cart)
		$5.10 / setout (64-gallon cart)
		$7.15 / setout (96-gallon cart)
	Recycling:	No added charge
	Compost:	PAYT for bags and bulk = $2.50 / bag or bundle
		PAYT for carts = $6 / setout cart tag + $27.50 (one-time)
		No charge at drop-off facility

Additional Information - Policies / Mandates / Extra Services

Bulky items: Collected within 3 days of waste collection day

$20 sticker per item; no limit to number of collections per year

Commercial Programs and Performance

Service Provider	Service Levels
Open market / private haulers	Vary depending on the hauler and level of service selected

Diversion Rate	Funding & Fees
Not reported	Funded through service fees set by and paid to private haulers based on selected service and hauler-quoted rate

Additional Information - Policies / Mandates / Extra Services

None

Sources:

1. City of Grand Rapids, https://www.grandrapidsmi.gov/Government/Departments/Public-Services-Department/Trash-Recycling-Yard-and-Other-Waste, accessed July 31, 2019.

Lake County, Illinois (43 Individual Member Communities)	Population (2017) = 703,520 Member communities range 1,579 - 87,729

Reasons for Inclusion as Benchmark Community

High diversion goal established, with performance data available

High level of residential services available; commercial services franchised in several communities

Regional approach to waste diversion services for hard-to-handle material streams

Residential Programs and Performance

Service Provider	**Service Levels**
Franchised private haulers Individually procured and contracted by community	Generally consistent from community to community Waste: Weekly collection, carts (32-gallon, 64-gallon, 96-gallon) Recycling: Weekly collection, carts (64-gallon, 96-gallon) Compost: Weekly, seasonal collection (April-mid-December), bags, carts, or bulk Many accept food waste mixed with yard waste in carts
Diversion Rate	**Funding & Fees**
31% (Goal = 60% reduction in per-capita disposal rate from 2010 baseline)	Funded through service fees paid to community or contracted hauler Fees are a modified PAYT schedule based on trash cart size or a flat fee regardless of trash cart size Rates vary by community / contract; $17.40 to $43.87 / household / month with 64-gallon or 96-gallon trash cart the typical base service

Additional Information - Policies / Mandates / Extra Services

Bulky items: Universally available in all communities

Cost, limits, and setout rules vary by community

Commercial Programs and Performance

Service Provider	**Service Levels**
Franchised private haulers (7 communities) Open market in others	Selected by commercial customer
Diversion Rate	**Funding & Fees**
6-16% in franchise communities where data is available	Funded through service fees paid by businesses to community (in some franchises) or direct to contracted hauler Fees set by contract or private haulers based on selected service

Additional Information - Policies / Mandates / Extra Services

None

Sources:

1. Personal correspondence, Walter Willis, Executive Director, Solid Waste Agency of Lake County, June 28, 2019.

Lincoln, Nebraska — Population (2017) = 284,376

Reasons for Inclusion as Benchmark Community

Big Ten university community

Residential Programs and Performance

Service Provider	Service Levels
Open market / private haulers	Vary depending on the hauler and level of service selected Recycling drop-offs provided by the city (28 locations)
Diversion Rate	**Funding & Fees**
21% (Goal = 30% reduction in per-capita disposal rate from 2011 baseline)	Funded through service fees set by and paid to private haulers based on selected service and hauler-quoted rate

Additional Information - Policies / Mandates / Extra Services

Corrugated cardboard banned from landfill disposal April 1, 2018

City provides education materials for haulers to distribute to customers

Commercial Programs and Performance

Service Provider	Service Levels
Open market / private haulers	Vary depending on the hauler and level of service selected
Diversion Rate	**Funding & Fees**
Not reported	Funded through service fees set by and paid to private haulers based on selected service and hauler-quoted rate

Additional Information - Policies / Mandates / Extra Services

Corrugated cardboard banned from landfill disposal April 1, 2018

Sources:

1. City of Lincoln, https://www.lincoln.ne.gov/city/ltu/solid-waste/recycle/, accessed July 31, 2019.

Madison, Wisconsin — Population (2017) = 255,214

Reasons for Inclusion as Benchmark Community

Progressive and comprehensive diversion programs

Big Ten university community

Services principally funded through millage revenues, with no service fees

Residential Programs and Performance

Service Provider	Service Levels	
City crews	Waste:	Weekly collection, carts (64-gallon, 96-gallon)
	Recycling:	Every-other-week collection, carts (64-gallon, 96-gallon)
	Compost:	Brush pickup on rotating schedule throughout the City, April-November
		Leaf / yard / garden waste pickup varies through season: - After winter thaw in April - 2 collections, rotating through city - When leaves start to drop in fall - goal of 3 collections, rotating through city (weather permitting) - Crews reassigned to other Streets operations during May-October period
		Not currently accepting food waste; pilot collection ended June 2018

Diversion Rate	Funding & Fees
53% (inclusive of special collection programs)	Funded through property tax assessment Average assessment = $20.03 / household / month based on 2016 cost analysis

Additional Information - Policies / Mandates / Extra Services

Mandatory recycling; city crews can refuse trash cart collection if recycling is notably present in the cart or recycling cart is not set out; typically will favor outreach over penalty for non-compliance

Bulky items: Large items (not excess bagged waste) collected every other week

$15-$35 fee charged for many appliances and some large mechanical items

No charge for collection of furniture, mattresses, limited building materials, and carpet

Student move-out support: City provides daily collection of carts in designated student apartment area for scheduled time periods (about 2 weeks in mid-August based on peak lease-end period)

Madison, Wisconsin	Population (2017) = 255,214
Commercial Programs and Performance	
Service Provider Open market / private haulers	**Service Levels** Vary depending on the hauler and level of service selected
Diversion Rate Not reported	**Funding & Fees** Funded through service fees set by and paid to private haulers based on selected service and hauler-quoted rate
Additional Information - Policies / Mandates / Extra Services All commercial properties required to recycle; outreach is favored over penalty to non-compliant properties when they are identified	

Sources:

1. City of Madison, https://www.cityofmadison.com/streets/, accessed July 31, 2019.
2. Personal correspondence, Bryan Johnson, Recycling Coordinator, City of Madison Streets Division, April and May, 2019.

St. Paul, Minnesota — Population (2017) = 306,621

Reasons for Inclusion as Benchmark Community

Services provided by a mix of service providers, including a non-profit recycling collector and processor

Residential Programs and Performance

Service Provider

Waste and compost: Private hauler consortium beginning in October 2018*, with haulers assigned to specific areas of the city; prior to October 2018, collection was open market

Recycling: Non-profit hauler / processor

Service Levels

Waste:	Weekly (32-gallon, 64-gallon, 96-gallon) or every-other-week (32-gallon) collection
Recycling:	Weekly collection, carts (32-gallon, 64-gallon, 96-gallon)
Compost:	Subscription service: cart plus up to 8 bags / week
	Non-subscription service: must call to schedule 48 hours before garbage collection day
	Seasonal curbside collection April 15 - November 30
	May be collected on a different day than the waste / recycling collection day
	Food waste not accepted with curbside collection, but can be taken to drop-off sites

**** Special Note About Waste and Compost Collection Contract***

The consortium contract has been legally challenged by a group of residents. On May 30, 2019 a Ramsey County District Court judge ordered the system be suspended June 30 and for its continuation to be determined after a ballot referendum in the November 5, 2019 election. As of June 28, 2019, the suspension was stayed and not in effect, pending the City of St. Paul's appeal of the ruling to the Minnesota Supreme Court.

Diversion Rate

24% (excluding compost)

Funding & Fees

Funded through both service fees based on garbage cart size and a property tax assessment

Waste:	$20.28 / household / month (32-gallon cart, every-other-week)
	$23.45 / household / month (32-gallon cart, weekly)
	$32.03 / household / month (64-gallon cart)
	$34.15 / household / month (96-gallon cart)
	Fees based on consortium contract service
Recycling:	$4.85 / household / month (on tax bill)
Compost:	Subscription = $120 / year ($10 / household / month)
	Non-subscription = $3.00 / bag or bundle
	Drop-offs = No added charge

Additional Information - Policies / Mandates / Extra Services

Bulky items: Collection of 2 items (32-gallon trash service) or 3 items (64-gallon or 96-gallon trash service) per year at no added charge

St. Paul, Minnesota	Population (2017) = 306,621
Commercial Programs and Performance	
Service Provider Open market / private haulers (must be licensed by city)	**Service Levels** Vary depending on the hauler and level of service selected
Diversion Rate Not reported	**Funding & Fees** Funded through service fees set by and paid to private haulers based on selected service and hauler-quoted rate
Additional Information - Policies / Mandates / Extra Services All businesses are required to recycle	

Sources:

1. City of St. Paul Public Works, https://www.stpaul.gov/departments/public-works, accessed July 31, 2019.
2. Personal correspondence, City of St. Paul Public Works staff, January 7, 2019.

San Francisco, California	Population (2017) = 884,363

Reasons for Inclusion as Benchmark Community

Zero Waste goal established

Achieving high diversion, and traditionally considered a diversion leader

Residential Programs and Performance

Service Provider	**Service Levels**	
Franchise, by City charter	Waste:	Weekly collection, carts (16-gallon, 32-gallon, 64-gallon, 96-gallon)
	Recycling:	Weekly collection, carts (32-gallon, 64-gallon, 96-gallon)
	Compost:	Weekly year-round collection, carts (32-gallon, 64-gallon)
		Food waste accepted
Diversion Rate	**Funding & Fees**	
46%	Funded through service fees based on cart sizes	
(Goal = 90% or better)	Base Fee:	$16.46 / household / month charged to all households regardless of service level
	Waste:	$6.87 / household / month (16-gallon bin)
		$13.74 / household / month (32-gallon cart)
		$27.48 / household / month (64-gallon cart)
		$41.22 / household / month (96-gallon cart)
	Recycling:	$6.87 / household / month (32-gallon cart)
		$13.74 / household / month (64-gallon cart)
		$20.61 / household / month (96-gallon cart)
	Compost:	$6.87 / household / month (32-gallon cart)
		$13.74 / household / month (64-gallon cart)

Additional Information - Policies / Mandates / Extra Services

Mandatory separation of recyclables and compostables from disposed waste

Bulky items:	Households can schedule 2 collections per year at no added charge
	Each collection can include up to 10 items or 10 bags / boxes / bundles

San Francisco, California	Population (2017) = 884,363
Commercial Programs and Performance	
Service Provider Franchise, by City charter	**Service Levels** Selected by commercial customer; range of container sizes and collection frequency available
Diversion Rate 54% (Goal = 90% or better)	**Funding & Fees** Funded through service fees set by City and hauler through rate-setting process, with a discounted rate offered based on actual diversion performance (businesses with a higher diversion rate receive a greater discount - up to 75%)
Additional Information - Policies / Mandates / Extra Services Mandatory separation of recyclables and compostables from disposed waste	

Sources:

1. Recology, https://www.recology.com/recology-sf-residential-rate-calculator/, accessed July 31, 2019.
2. City of San Francisco, https://sfpublicworks.org/services/recycling-and-refuse-collection, accessed July 31, 2019.
3. Personal correspondence, Cara Gurney, Sr. Engagement Coordinator, San Francisco Department of the Environment, May 9, 2019.

Seattle, Washington — Population (2017) = 724,745

Reasons for Inclusion as Benchmark Community

Zero Waste goal established

Achieving high diversion, and traditionally considered a diversion leader

Residential Programs and Performance

Service Provider

Franchise, with 2 contracted haulers serving designated areas of the city

Service Levels

Waste:	Weekly collection, carts (12-gallon, 20-gallon, 32-gallon, 64-gallon, 96-gallon)
Recycling:	Every-other-week collection, carts
Compost:	Weekly year-round collection, carts (13-gallon, 32-gallon, 96-gallon)
	Food waste accepted

Diversion Rate

74% - single-family

(Goal = 83% by 2022)

37% - multi-family

(Goal = 54% by 2022)

Funding & Fees

Funded through service fees based on cart sizes

Waste:	$24.25 / household / month (12-gallon micro-can)
	$29.70 / household / month (20-gallon mini-can)
	$38.65 / household / month (32-gallon cart)
	$77.25 / household / month (64-gallon cart)
	$115.90 / household / month (96-gallon cart)
	$12.00 / extra bag or bundle
Recycling:	No added charge
Compost:	$6.40 / household / month (13-gallon cart)
	$9.60 / household / month (32-gallon cart)
	$12.30 / household / month (96-gallon cart)
	$6.15 / extra bundle
	Up to 10 bags / household of leaves in November at no extra charge

Additional Information - Policies / Mandates / Extra Services

Recyclables banned from disposal; waste carts with more than 10% recycling may be refused for collection

Food and compostable paper banned from disposal

Bulky items:	Collection must be scheduled in advance
	$30 per item, with no limit on the number of items or collections per year

Seattle, Washington	Population (2017) = 724,745
Commercial Programs and Performance	
Service Provider Franchise, with 2 contracted haulers serving designated areas of the city	**Service Levels** Selected by commercial customer; range of container sizes and collection frequency available Certain downtown alleys prohibit containers from being stored in the alley and are part of the Clear Alleys Program, purchasing bags for any materials requiring set-out; compost (food waste) is an exception, where carts can be requested to be stored in alleys
Diversion Rate 65% (Goal = 75% by 2022)	**Funding & Fees** Funded through fixed account fee per business ($28.60 / customer / month) plus service fees set by City based on contract rates and City management costs determined by container size and collection frequency
Additional Information - Policies / Mandates / Extra Services Recyclables banned from disposal; waste carts with more than 10% recycling may be refused for collection Food and compostable paper banned from disposal	
Sources: 1. City of Seattle, https://www.seattle.gov/utilities, accessed July 31, 2019.	