Minneapolis
City of Lakes

Zero Waste Plan

November 2017

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
ARR	Austin Resource Recovery Department
BESE	Block Event Special Event
CIM	Commercial, Industrial and Multifamily
City	City of Minneapolis
Commercial Study	Commercial Waste Collection Evaluation Study, May 2017
C&D	construction and demolition
County	Hennepin County
CPED	Community Planning and Economic Development Department
EPA	United States Environmental Protection Agency
EPEAT	Electronic Product Environmental Assessment Tool
EPR	Extended Producer Responsibility
GHG	greenhouse gas
Health	Health Department
HERC	Hennepin Energy Recovery Center
HHW	household hazardous waste
Licensing	Business Licenses and Consumer Services Department
MDH	Minnesota Department of Health
MDID	Minneapolis Downtown Improvement District
MDEED	Minnesota Department of Employment and Economic Development
MPCA	Minnesota Pollution Control Agency
MPHA	Minneapolis Public Housing Authority
MPRB	Minneapolis Parks and Recreation Board
MPS	Minneapolis Public Schools
MRF	materials recovery facility
MSW	municipal solid waste
NAICS	North American Industrial Classification System
PAYT	pay-as-you-throw
RFID	radio-frequency identification
SET	Specialized Environmental Technologies, Inc.
SMM	Sustainable Materials Management
SSDs	Special Service Districts
State	State of Minnesota
SW&R	Division of Solid Waste and Recycling
SWMP	Metropolitan Solid Waste Management Policy Plan
SWMMP	Solid Waste Management Master Plan
URO	Universal Recycling Ordinance
WTE	waste-to-energy

ACKNOWLEDGEMENTS

The Zero Waste Plan was led by the Mayor's office, with support from the Zero Waste Plan Policy Work Group, the City's Zero Waste Plan Staff Work Group composed of representatives from various City Departments, and coordinated by Burns & McDonnell (Project Team). The Project Team included the following:

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1.0 EXECUTIVE SUMMARY

The City of Minneapolis (City) strongly supports public policies and programs that foster social, economic, and environmental benefits for all of its residents. As depicted below, the intersection of these objectives can be characterized as representing the principle of sustainability.

In June 2015, the City established a zero waste goal to recycle and compost 50 percent of its overall waste stream by 2020, 80 percent by 2030, and achieve a zero-percent growth rate in the total waste stream from 2010 levels. The adoption of the zero waste goal was driven by the City's commitment to foster sustainability through an increase in waste diversion, decrease in vehicle miles traveled on the City's roadways, reduced greenhouse gases, providing greater rate equity for customers, and other similar objectives. The Zero Waste Plan addresses solid waste generated from all sectors within the City and will serve as a roadmap for the City to achieve its overall sustainability goals, including but not limited to its zero waste goal. The Zero Waste Plan identifies strategies to collaborate with the City's residents, businesses, non-profits, commercial haulers, and other stakeholders to reduce waste across all sectors. In addition to the sectors identified on the left, the Zero Waste Plan includes a section on the management of Construction and Demolition Debris because these materials cross all sectors.

The Zero Waste Plan identifies approaches to improve the City's well-developed residential program and recommends detailed strategies for the other sectors. For the Commercial, Industrial, and Multifamily (CIM) Sector and the Institutional Sector, limited information is available concerning the amount of waste generated, diverted, and disposed. The Zero Waste Plan includes strategies to obtain data from generators and/or haulers within each sector to establish a baseline and measure progress towards meeting the City's zero waste goals.

The City's Zero Waste Plan also seeks to meet regulations and goals established by the United States Environmental Protection Agency (EPA), Minnesota Pollution Control Agency (MPCA), and Hennepin County, while focusing on strategies that address the City's unique systems and needs.

The strategies for each sector were developed using the solid waste management hierarchy which characterizes industry best management practices that minimize environmental impacts by promoting the highest and best use of resources. While the City does not consider energy recovery of waste as an applicable method for achieving its zero waste goal, most of the City's residual waste materials are transported to the Hennepin Energy Recovery Center (HERC), a waste to energy (WTE) facility that converts garbage into electricity for power and steam for heating and cooling. Furthermore, there is a strong community interest in reducing the quantities of materials transported to HERC for energy recovery and increasing the quantities of materials reduced, reused, recycled, and recovered to create local jobs associated with these activities.

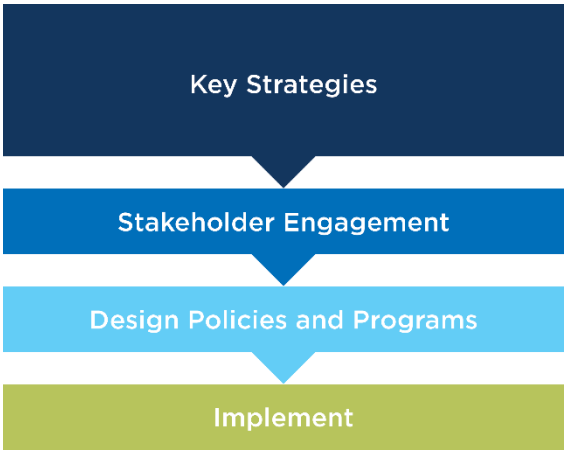
To maximize environmental benefits and support the solid waste management hierarchy, the Zero Waste Plan provides strategies to increase access to waste diversion programs supported by effective education and outreach activities. The combination of these two sets of strategies as reflected above will result in increased waste diversion from all sectors of the City.

The Zero Waste Plan recommends conducting waste characterization studies for each sector to determine a baseline and measure progress towards meeting the City's zero waste goal. The Zero Waste Plan also recognizes the importance of waste reduction in each sector through source reduction and reuse before managing waste materials as discards. Adequate funding is necessary to educate generators, implement strategies, and enforce regulations to meet the City's zero waste goal. Furthermore, the Zero Waste Plan identifies the need to clarify which City department will be responsible for each of the strategies.

Each strategy included in the Zero Waste Plan was evaluated on a preliminary basis by the following criteria:

- Increased diversion potential;
- Difficulty of implementation; and
- Ongoing cost to the City.

The results of the application of these criteria are provided at the end of each section. Staff shall consider these results when prioritizing strategies for implementation. The City also will evaluate potential funding mechanisms and costs associated with the implementation of the identified strategies during an implementation planning process.



The City shall develop detailed implementation plans that identify priority strategies and activities from the Zero Waste Plan. Staff will provide an update to the City Council every three years on progress toward meeting the City's zero waste goal and to identify future priorities.

The City acknowledges the need to continuously involve the diverse public, business community, haulers, and other stakeholders in efforts to meet its zero waste goals. As discussed in Section 2.4, the City conducted numerous stakeholder engagement meetings to obtain feedback during the development of the Zero Waste Plan. Comments received during the Zero Waste Plan stakeholder engagement sessions can be found at minneapolismn.gov/zerowaste.

The City will more directly engage the diverse group of Latinx, Southeast Asian, East African, American Indian, African American, and Eastern European residents and businesses to evaluate potential impacts on these constituencies. The City takes pride in its cultural diversity and understands that extensive engagement, participation, and support from all races and ethnicities, ages, income levels, and living situations is equally important in moving towards zero waste. Engagement with stakeholders may be performed for priority strategies included in the implementation plan prior to enacting an ordinance change, policy change, funding request, or program modification.

The progress associated with implementation of the prioritized strategies and programs to meet the City's zero waste goal will be closely monitored and, as noted above, will be communicated regularly to the City Council.

Section 2.1 identifies the City sectors addressed in the Zero Waste Plan. Waste reduction and diversion strategies targeting specific sectors compose the basis of the Zero Waste Plan.

2.0 INTRODUCTION

In June 2015, the City of Minneapolis (City) established a zero waste goal to recycle and compost 50 percent of its overall waste stream by 2020, 80 percent by 2030, and achieve a zero-percent growth rate in the total waste stream from 2010 levels. The adoption of the zero waste goal was driven by the City's commitment to overall sustainability to minimize the City's environmental impacts by increasing diversion and reducing greenhouse gas (GHG) emissions. The adoption of the City's zero waste goal also initiated the development of this Zero Waste Plan.

The Minnesota Pollution Control Agency (MPCA) adopted the Waste Management Act in 1980 and the MPCA prepares a statewide Solid Waste Policy report every four years. The 2015 Solid Waste Policy Report is the most recent report identifying statewide priorities.

Minnesota Statute 473.149 requires that a separate solid waste management plan be developed for the metropolitan area. The most recent Metropolitan Solid Waste Management Policy (SWMP) Plan, adopted on April 6, 2017 for the planning period of 2016 to 2036, set objectives for 75 percent combined recycling and organics recovery (consistent with state law) and a five percent reduction in waste generated by 2030, for the Twin Cities Metropolitan Area.

As required by MPCA's SWMP, Hennepin County (County) adopted a Solid Waste Management Master Plan (SWMMP) in 2012, and is currently developing its updated 2018 SWMMP. Goals specified by Hennepin County's SWMMP reflect those established by the adopted State Solid Waste Policy Report and Metropolitan SWMP Plan.

The U.S. Environmental Protection Agency's (EPA) Sustainable Materials Management (SMM) Program Strategic Plan for Fiscal Years 2017-2022 is a driver of zero waste and waste reduction initiatives at the state, county, and city levels. The EPA describes SMM as a systematic approach to using and reusing materials more productively over their entire lifecycles. SMM represents a shift in societal thinking about the use of natural resources and environmental protection and seeks to develop long-term solutions to solid waste management and larger environmental concerns. The SMM approach seeks to:

- Use materials in the most productive way with an emphasis on using less.
- Reduce toxic chemicals and environmental impacts throughout the material lifecycle.
- Assure we have sufficient resources to meet today's needs and those of the future.

The Zero Waste Plan addresses solid waste generated by all sectors of the City. The plan identifies preferred strategies to foster waste reduction and diversion to achieve the City's objectives. The purpose of the plan is to identify strategies by which the City can work to reduce waste across all sectors and assure that all materials are used for their highest and best use. The Zero Waste Plan will serve as a roadmap to move the City toward achieving its zero waste goals.

The City's Zero Waste Plan seeks to meet regulations and goals established by the EPA, MPCA and Hennepin County, while focusing on strategies that address the City's unique systems and needs. In addition to the zero waste goals, the City has recently commissioned activities to support waste reduction and diversion including but not limited to the following:

- The City's 2013 Climate Action Plan provides a roadmap to guide the City towards reducing GHG emissions by 30 percent by 2025 (using 2006 emissions as a baseline).

- The City's March 2015 Green Building and Deconstruction Report which revised the current state of green building in Minneapolis compared to peer cities and identified incentive programs offered by the City.
- The City Council passed the Green to Go Environmentally Acceptable Packaging Ordinance on April 22, 2015. Green to Go requires that food and beverage containers prepared for immediate consumption and to-go must be placed in environmentally acceptable packaging (that is reusable, refillable, recyclable, or compostable).
- The Commercial Waste Collection Evaluation Study (May 2017) completed by Burns & McDonnell (Commercial Study) was commissioned by the City and funded through a grant from the MPCA. The primary objective of the evaluation was to detail possible pathways to increase diversion of commercial, industrial and multifamily (CIM) waste using alternative commercial collection strategies and programs.

In conjunction with the above, the City supports the solid waste management hierarchy as depicted below.

Figure 2-1: Waste Management Hierarchy (Non-Hazardous Materials)

As reflected in the waste management hierarchy, waste disposal via a landfill is the least preferred option. While the City does not consider energy recovery of waste materials as an applicable method for achieving its zero waste goals, most of the City's non-recyclable and non-compostable materials are transported to Hennepin Energy Recovery Center (HERC), a waste to energy (WTE) facility that converts garbage into electricity for power and steam for heating and cooling. Furthermore, there is a strong community interest in reducing the quantities of materials transported to HERC for energy recovery and increasing the quantities of materials reduced, reused, recycled and recovered to create local jobs associated with these activities.

2.1 Zero Waste Plan Overview

The Zero Waste Plan addresses a comprehensive set of sectors within the City and is organized into the following sections:

- Section 1.0 – Executive Summary
- Section 2.0 – Introduction

- Section 3.0 – Residential Sector
- Section 4.0 – Commercial, Industrial, and Multifamily (CIM) Sectors
- Section 5.0 – City Operations Sector
- Section 6.0 – Institutional Sector
- Section 7.0 – Public Space Sector
- Section 8.0 – Construction and Demolition Debris
- Section 9.0 – Conclusion

Details regarding services pertinent to each sector are included within their respective section.

Specific waste reduction and diversion strategies are outlined that target the specific waste types and generators within each sector. For each of the strategies, metrics are provided for:

- **Lead Departments** – identifies the likely City department(s) to lead in development of the strategy or clarify which department will ultimately be responsible.
- **Increased Diversion Potential** – potential for the City to increase waste diversion through implementation of the specific strategy. Quantified on a "low" to "high" basis, where "low" indicates there is minimal potential for increased waste diversion with the strategy and "high" indicates a large potential for increased waste diversion.
- **Difficulty of Implementation** – this planning level measure quantifies both the regulatory and initial costs for implementation of a specific strategy. Quantified on a "low" to "high" basis, where "low" indicates the strategy should be easy to implement with minimal initial costs and "high" indicates that the City should anticipate several implementation challenges and measurable initial costs for implementation.
- **Ongoing Cost to the City** – provides the metric to determine the associated annual costs for the City after implementation of a specific strategy. Quantified on a "low" to "high" basis, where "low" indicates minimal maintenance costs after the strategy is implemented and "high" indicates that the City would have extensive program maintenance costs for continued implementation of the strategy.
- **Implementation Timing** – provides a preliminary assessment of which strategies the City should focus on. Quantified on a "near", "mid", and "long" basis, where "near" is indicative of a strategy to be focused on in the next one to three years, "mid" is in the next three to five years, and "long" is in the next five plus years.
- **Comments** – provides additional information for consideration for each of the strategies. Note that comments may not be all encompassing, but are attended to provide a preliminary understanding of the strategy requirements.

2.2 Baseline Solid Waste Program

Solid waste and recycling services within the City are provided through a combination of City crews through the Division of Solid Waste and Recycling (SW&R) and private service providers. As discussed further in the residential sector (Section 3.0), SW&R provides collection services to approximately 290,000 residents in 106,000 dwelling units, including all single-family homes, one to four unit residential buildings, and buildings with five or more units that contract with the City for solid waste services. City crews also service a small number of commercial customers whose service needs fall within the City's residential service offerings. Beyond residential services, SW&R also provides

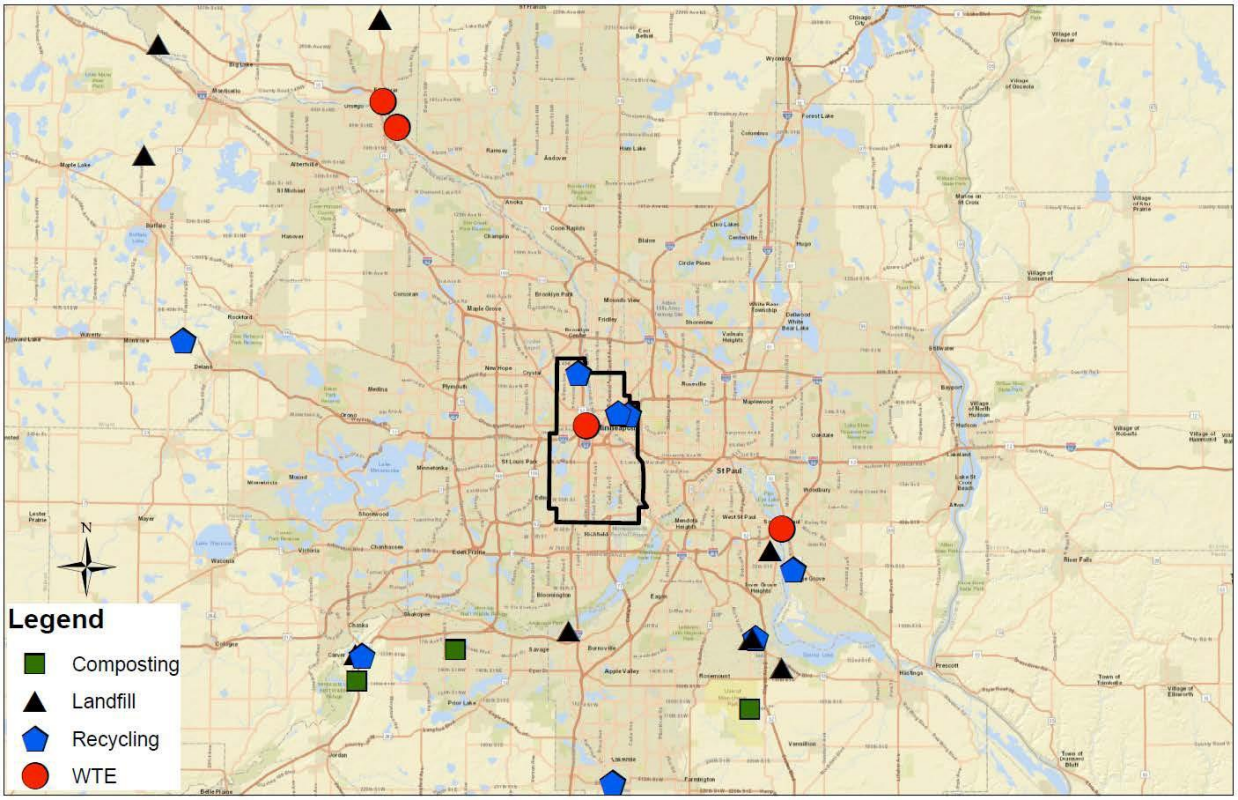
collection services to City facilities and public spaces, including transit shelters, community parks, and neighborhood and community events, and special events permitted through the City Licenses Office.

The City gathers and documents detailed data about materials collected by SW&R and its contractors, which includes primarily residential solid waste and a small number of commercial customers, City parks and City buildings. Each year, the City reports its recycling rate to Hennepin County to demonstrate progress toward the waste management goals established by the County. As outlined in Section 3.1, the City's waste diversion and recycling rate in 2016 was 37 percent, which includes all recyclables, organics, and yard waste.

Solid waste management services are provided to the CIM and institutional sectors (as well as construction and demolition debris collection) through a network of approximately 70 private haulers that are licensed by the City and offered through the City's open competitive collection system (discussed further in Section 4.1). Unfortunately, available data and information on the current conditions of programs outside of SW&R are extremely limited. Strategies are included throughout the Zero Waste Plan to gain a better understanding of the City's CIM and other sector waste streams.

Figure 2-2 provides the locations of the primary solid waste management facilities in the Twin Cities metropolitan area. There is adequate capacity for disposal of municipal solid waste (MSW) and processing of recyclable materials, but there are limited options for organics processing. The City recognizes the need to add organics processing facility capacity and it is understood that Hennepin County intends to release a request for proposal for the development of an anaerobic digestion facility in 2018 to address needed capacity.

Figure 2-2: Primary Solid Waste Facilities Located within the Twin Cities Metropolitan Area



2.3 Reporting/Measurement Tool

The implementation of the prioritized strategies and programs from the Zero Waste Plan should be monitored by the City. The projected benefits from implementation should be compared closely to the actual outcomes going forward. The progress could be measured and represented as a dashboard on the City's website to promote the visibility of the zero waste program efforts.

City staff should also update elected officials and the public every three years on progress towards the City's zero waste goals. Each update shall also identify priority strategies for the next several years.

2.4 Stakeholder Engagement

The Zero Waste Plan is the culmination of several years of planning and stakeholder engagement meetings. The following stakeholder engagement meetings were held to obtain feedback from the community, businesses and haulers on the strategies included within the Zero Waste Plan.

- March 20, 2014: Zero Waste Summit held at Walker Methodist Church.
- Fall 2016: City commissioned the Environmental Initiative to conduct three stakeholder meetings that provided the community, businesses and haulers to share input on the development of the Zero Waste Plan. These meetings were held:
  - September 22, 2016: Multifamily residential sector meeting held at Sabathani Community Center.
  - September 28, 2016: Commercial sector meeting held at Minneapolis Central Library.
  - October 18, 2016: City serviced single family residential sector meeting held at Minneapolis Urban League.
- March 23, 2017: Two stakeholder meetings were held in conjunction with the Commercial Waste Collection Evaluation Study offering representatives of the City's business community, multi-housing association, and commercial waste haulers the opportunity to provide study input.
- September/October 2017: Multiple stakeholder engagement meetings addressing the draft Zero Waste Plan.
  - September 11, 2017: Minneapolis Urban League
  - September 14, 2017: Matthews Park
  - September 18, 2017: City Church
  - September 19, 2017: Currie Maintenance Facility
  - September 20, 2017: Firefighters Hall and Museum
  - September 21, 2017: Sabathani Community Center
  - October 30, 2017: North Regional Library

Comments received during the Zero Waste Plan stakeholder engagement sessions can be found minneapolismn.gov/zerowaste.

3.0 RESIDENTIAL SECTOR

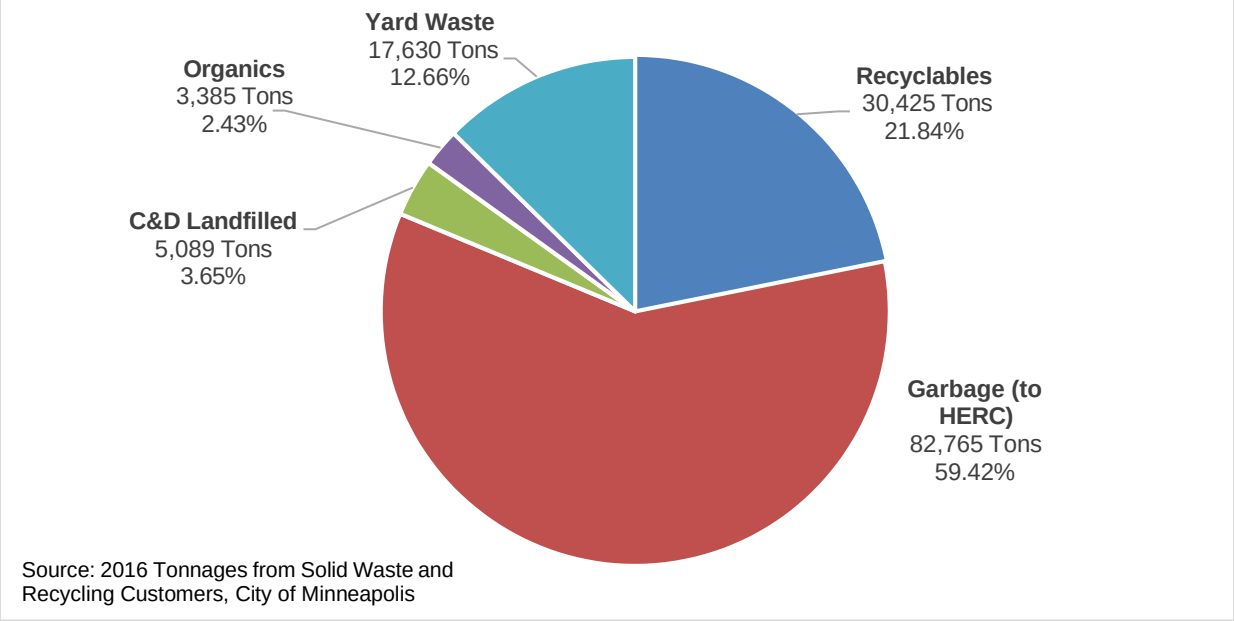
SW&R provides solid waste and recycling services to the residential sector utilizing city and contractor crews and resources. The City also serves a small number of commercial customers, whose service needs fall within the City's residential service offerings. Curbside residential services include garbage, recycling, organics, yard waste, and large item collection. Customers are also provided vouchers (further described in Section 3.1.1), which allows them to dispose of additional materials at the South Transfer Station, including appliances, construction and paving materials, electronics, household garbage, mattresses, scrap metals, and tires. Table 3-1 provides additional details regarding current residential services. The City defines the residential sector as single-family homes and multi-unit residential buildings with four or fewer units. Per City ordinance, Title 11, Chapter 225.600, all single-family homes, townhouses, and other residential buildings containing four or fewer dwelling units are required to receive City solid waste and recycling services.

The following sections detail the current state of the City's residential services and proposes strategies for waste diversion and waste reduction specific to residential sector waste.

3.1 Overview of Sector

SW&R provides solid waste and recycling services to approximately 290,000 residents in 106,000 dwelling units, approximately 200 parks, select City buildings, and small commercial businesses with carted service. In 2016, SW&R collected a total of 139,295 tons of material via residential services. Figure 3-1 presents tonnage and percentage of residential waste (including their 200 commercial customers) by type.

Figure 3-1: 2016 Residential Refuse and Recycling Overview

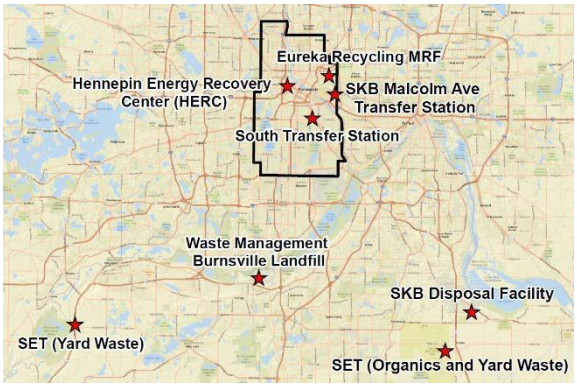


Source: 2016 Tonnages from Solid Waste and Recycling Customers, City of Minneapolis

The City defines diverted waste as material that is redirected from the waste stream; in other words, it includes all recycled and composted materials. The City's 2016 residential waste diversion rate was 37 percent.

The following facilities are currently utilized for waste management by the City:

- **Hennepin Energy Recovery Center (HERC):** HERC, owned by Hennepin County, operated by Covanta, and located in downtown Minneapolis, is a WTE facility that converts garbage into electricity for power and steam for heating and cooling. All garbage collected through City services is transported to HERC. Ash from HERC is disposed at the SKB Disposal Facility located in Rosemount.
- **Eureka Recycling Materials Recovery Facility (MRF):** In December 2016, the City entered into a five-year contract with Eureka Recycling for the processing and sale of its residential recyclable materials. At the MRF, the single-sort recyclables stream is processed and marketed as recovered materials. The City receives a share of the revenues from the sale of its materials.
- **South Transfer Station:** The City owns the South Transfer Station and contracts with a third party for day to day operations. Residents can dispose of and recycle a variety of materials through the voucher program or by paying a fee as described below. Construction and demolition (C&D) waste collected at the South Transfer Station is transported to the Waste Management Burnsville Landfill.
- **Specialized Environmental Technologies, Inc. dba The Mulch Store (SET):** Material collected through the City's organics recycling and yard waste collection programs are composted at one of SET's commercial composting facilities. The City delivers organics and yard waste to the SKB Malcom Ave transfer station where they are put into semi-trailers for transportation to the appropriate facility for composting.
- **Waste Management Burnsville Landfill**: C&D items that are non-burnable or non-recyclable are disposed of at the Burnsville Landfill. In 2016, only 3.65 percent of material collected through City services was landfilled.



3.1.1 Current Residential Services

The City utilizes a volume-based residential rate structure. The City and the City's contractor collect residential solid waste and recyclable items at the curb or alley and contract with vendors to process garbage, recycling, organics, and yard waste. Table 3-1 summarizes current solid waste and recycling services provided by the City to residential customers that are included in the monthly base fee.

The City provides an additional disposal option at the South Transfer Station to residential customers through the voucher program (which is included in the base rate described below). The program offers six cleanup vouchers per year per household for disposal of up to 2,000 pounds per voucher of excess trash and/or up to 2 appliances. Additional items and/or loads in excess of 2,000 pounds may be disposed of for a fee. In addition, the City offers two tire vouchers per year per household for disposal of up to eight tires per voucher. Under the voucher program, accepted materials include: appliances (electronics, televisions, computers, mattresses, and box springs); construction and paving materials (lumber, building materials such as sheetrock, plaster, shingles, and paving materials such as asphalt, brick, concrete, and rock); household trash; scrap metals (bed frames, barbeque grills, metal shelves, pipes, etc.); and tires.

Table 3-1: Current Residential Solid Waste and Recycling Services

	Garbage	Recycling	Organics	Yard Waste	Large Items
Material Types	Household garbage	Commingled single-sort: metal, plastic and glass food, beverage and other containers, paper, cardboard, cartons	Food scraps, non-recyclable paper, and other compostable material; no yard waste	Grass, leaves, yard clippings and small branches	Furniture, mattresses, appliances, electronics, metal items, and similar household items
Fees	Base fee plus $2.00 per small cart, $5.00 per large cart	Service included in base fees; no charge for first or additional carts	Service included in base fees; no charge for first or additional carts; customers must opt in to receive cart and service	Service included in base fee	Service included in base fee
Collection Frequency	Weekly	Every other week	Weekly (for opt-in customers)	Weekly (April - November)	Weekly (non-recyclable); every other week (recyclable)
Collection Container/ Method	Separate cart: 32-, 96-gallon	Separate cart: 64-, 95-gallon	Separate cart: 32-,64-gallon	Compostable bags, owner provided container, or bundled brush	Next to carts: separate collection for disposal or recycling
Setout Limits/ Requirements	Occasional out of cart set outs permitted; customer assigned an extra cart and applicable fees if out of cart setouts are frequent	Occasional out of cart set outs permitted; additional or different sized carts are available at no charge	Compostable bags must be used (BPI certified plastic or paper grocery)	Bags, containers, and brush bundles limited to 40 pounds and 33 gallons each; bundled material size limit of 3 feet long, 3 inches in diameter; no quantity limit	Two items per collection; burnable items may be set out weekly; recyclable items may only be set out on recycling week
Disposal or Diversion Method	Waste to energy	Processed at MRF and recovered materials are marketed	Composted	Composted	Waste to energy or recycled, as appropriate
Additional Information	Special cleanup requests for on-call collection are $75			Large brush or branches must be transported and disposed of by the customer at a commercial facility	All items must be tagged "For Solid Waste"

Note: The 2017 base fee for residential services is $23.47/month and includes the costs for collection and processing of all materials, except for the collection and disposal of garbage. The per cart fee for garbage (described above) covers the garbage disposal fees.

3.2 Overall Residential Program Issues and Recommended Strategies

Increased waste reduction and diversion in the residential sector requires implementation of strategies that address multiple waste streams. These strategies address priority issues with the City's current system or development of additional service offerings that are not specific to one type of residential waste. Program changes should be implemented to minimize impacts on low income residents and renters.

Renters in properties that have SW&R service may or may not be responsible for paying the City utility bill. Only utility bill payers are able to make changes to their account that affects the bill such as decreasing the number or size of the garbage containers. Generally, renters are not utility bill payers. These renters also do not have the ability to request vouchers to bring materials to the South Transfer Station unless authorized by the utility bill payer to use the voucher(s).

The following sections present overall system issues and proposed strategies for the residential sector. Buy in from residents prior to implementing program change is critical to program success.

3.2.1 Conduct Regular Waste Sorts

Continued progress toward the City's waste reduction and diversion goals requires a thorough understanding of the composition of the residential waste stream. The City does not have a current detailed waste characterization baseline to help guide waste reduction and diversion strategies. The City's most recent comprehensive waste sort or residential materials was conducted in 2007. More recent studies have been conducted on a wider level for the State of Minnesota in 2013 and Hennepin County in 2016 that evaluated only the applicable garbage portion of the waste stream.

Actions and Recommendations

1. Complete a detailed waste characterization study at regular intervals (recommended every five years at a minimum; however, more frequent sorts would provide added "real-time" results) to establish a baseline to track the City's progress towards its zero waste goals. This information will provide an opportunity to defensibly estimate quantities of materials diverted. The primary rationale and benefits are:
    a. Regular waste sorts will allow the City to measure progress toward waste reduction and diversion goals. The initial sort will provide baseline data against which subsequent sorts may be compared to quantify progress. This will allow the City to better evaluate the actual effectiveness of implemented waste reduction and diversion strategies.
    b. Detailed waste stream composition data will allow the City to better identify the areas of highest reduction or diversion potential and therefore develop effective, prioritized strategies. Regular waste and recyclable materials sorts will facilitate review of the effectiveness of existing strategies and development of additional strategies based on quantitative data.

2. Develop a waste sort methodology specific to each sector. Materials are collected and disposed in varying ways across the City and across sectors; therefore, it is necessary that the City account for these differences when conducting waste sorts for each sector.
3. Assess baseline and subsequent waste sort data to develop targeted strategies, both overall and specific to sectors and waste types, and adapt strategies as necessary over time.

Table 3-2: Strategy Summary: Conduct Regular Waste Sorts

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Conduct Regular Waste Sorts	SW&R	Low	Low	Medium	Near	Additional staffing and resource needs; measurement tool allowing City to identify target areas; consultant needed for sorts

3.2.2 Restructure Residential Rates and Cart Capacities

The City utilizes a volume-based variable rate structure for residential service charges in which a base fee is charged per dwelling unit and a per cart fee is added based on the number and size of garbage carts. The 2017 base fee is $23.47. Additional fee for a small garbage cart is $2 and $5 per large cart. The current price differential of $3.00 per month between small and large cart charges has not shown to effectively incentivize waste diversion for most SW&R customers. There are no additional fees for one or more recycling carts or to participate in the organics recycling program. Currently 44% of residents subscribe to the organics collection program. If more residents sign up for this program, more residents may choose to subscribe to smaller garbage carts as they are able to divert additional materials for composting.

The purpose of a volume-based variable rate structure, also known as a pay-as-you-throw (PAYT) program, is to incentivize waste reduction or waste diversion by offering a financial enticement to customers who choose a smaller garbage cart size. The extent to which this is effective is largely dependent on the amount by which rates differ between the various cart sizes. The City's residential solid waste and recycling rates have been similar in structure and price differential to current rates since 1995. Of the City's estimated 106,000 households, approximately 92 percent of City residents have large garbage carts and only nine percent have opted for small carts based on the current price differential. Table 3-3 presents the City's current residential enrollment for garbage, recycling, and organics carts.

Table 3-3: Current Residential Solid Waste and Recycling Cart Enrollment

Service	Number of Households (Percentage of Total Households)			Total Percentage of Households
Number of Carts	Less Than One	One	More Than One	
Small Garbage Cart (32-gal)	255 (0%)	8,782 (8%)	1 (0%)	8%
Large Garbage Cart (96-gal)	10,520 (10%)	74,875 (71%)	11,221 (11%)	92%
Recycling Cart	10,208 (10%)	88,854 (84%)	2,509 (2%)	96%
Organics Cart	12,242 (12%)	33,496 (32%)	10 (0%)	44%

In comparison, the cities of Austin, Texas and Portland, Oregon have well-established, long-running PAYT programs, with price differentials of $24.95 and $19.90, respectively, between rate charged for the smallest and the largest cart sizes available. As a result, only 15 percent of Austin's residential customers and four percent of Portland's residential customers choose the largest garbage cart size. In addition, Seattle has established a $86.50 price differential between their smallest and largest carts. Table 3-4 presents more detailed information on the PAYT programs and rate structures for the peer cities. It is important to note that detailed benchmarking to determine the number of customers with each different cart size for the City of Seattle has not been completed. In addition, the micro rate for Portland is the rate for every four-week collection of a 35-gallon garbage cart (this equates to less than 12 gallons per week.)

Table 3-4: PAYT Rate Structures (Monthly Rates) by Cart Size (Gallons(G))

	Micro (12G)	Mini (20-24G)	Small (30-48G)	Standard (60-70G)	Large (90+G)	Price Differential, Smallest and Largest Cart	Percent of Customers with Large Carts
Minneapolis			$25.47		$28.47	$3.00	92%
Austin		$17.90	$19.15	$24.30	$42.85	$24.95	15%
Portland	$21.70	$24.60	$29.25	$35.10	$41.60	$19.90	4%
Seattle	$22.85	$28.00	$36.45	$72.90	$109.35	$86.50	NA

Findings from previously conducted studies reflect the demand for larger garbage carts decreases relative to an increased price differential between the smallest and largest available cart sizes. The price differential between rates (potential financial savings for customers) in a PAYT program must be large enough to incentivize use of smaller garbage carts over larger carts.

Actions and Recommendations

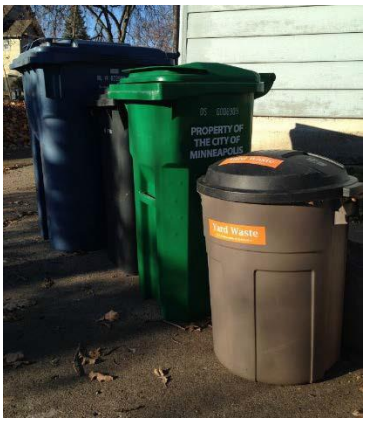
1. Evaluate approaches to improve visibility of cart size charges on City utility bill and offer the opportunity to reduce fees by reducing the number or size of garbage cart(s).
2. Commission a cost of service and rate study to evaluate restructuring residential solid waste and recycling rates to provide a greater financial incentive for customers to divert waste from the garbage waste stream. The price differential should be significant enough to impact positive diversion and recycling behavior.

   a. Rate study should evaluate the feasibility of eliminating a base fee per dwelling unit and implementing a volume based disposal fee. For example, currently a low generating duplex that only needs one garbage cart still must pay two dwelling unit fees.
   b. A variation of the scenario described above may include a base rate plus variable fees for each cart type (garbage, recycling, and organics) based on the size of each individual cart.
   c. Although the use of weight-based variable rates has been considered previously, it is recommended that the City base variable-rate pricing on volume because weight-based pricing presents significant operational challenges, such as increased operational costs for radio-frequency identification (RFID) cart technology in order to track each cart's actual weight.
3. Consider offering additional garbage cart sizes (e.g. 64-gallon cart). This is particularly applicable if the City chooses to adjust garbage and recycling collection frequencies, discussed in Section 3.2.3, in order to maintain a range of service offerings that meet the needs of all residents.
   a. This option would require that the City either expand the area for storage and management of additional carts or transition to a cart system with utilizing a single cart color and interchangeable cart lids for designation of waste type by lid color.
   b. The standard cart size could be switched from 96 gallons to 64 gallons.
4. Continue the current recycling 64- and 95-gallon cart options, with additional carts available upon request at no additional cost.
5. Evaluate the potential to allow cart sharing.
6. Consider charging customers additional fees for large items or out of cart set-outs of garbage. The City should consider a sticker based large item program where they provide a specified number of stickers (covered by the base fee) for each customer for large items or out of cart set-outs of garbage annually. Alternatively, pre-purchased stickers or tags that must be affixed to any garbage or large item not in the garbage cart would encourage customers to find reuse outlets or alternative recycling options for more of their disposed materials.
7. Consider revisions to the current voucher program. The current voucher program is funded through residential service rates paid by all residential customers; however, the service is utilized only by a small percentage of customers due to the need to having a vehicle access and not knowing it is an option. A tiered approach of changes to the voucher program may be more palatable to residents. Drastic changes to the voucher program may result in illegal dumping. The City should engage residents on voucher program usage and make changes to increase waste reduction and diversion.
   a. Initially consider reducing the number of vouchers offered.
   b. Consider transitioning to a pay-as-you-use voucher program. A pay-as-you-use voucher program is more equitable for all residential customers and has the potential to reduce monthly rates.

Table 3-5: Strategy Summary: Restructure Residential Rates and Cart Capacities

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Restructure Residential Rates and Cart Capacities	SW&R; Budget/Finance	Low-Medium	Medium-High	Medium	Mid	Consultant study required

3.2.3 Adjust Collection Frequencies



Ease of access to garbage services can serve as a disincentive to engage in recycling activities. Through adjustment of collection frequencies for residential garbage and recycling, the City may realize an increase in curbside recycling rates and a decrease in garbage generation. The primary hurdle in adjusting collection frequencies is public perception; however, with the established organics collection program, the City's opportunity to move to every other week garbage collection is more viable.

A number of peer cities currently offer or are considering implementation of adjusted collection frequencies. Portland, Oregon offers every other week and every four weeks garbage collection at variable rates, along with weekly recycling collection. Fort Collins, Colorado is considering an ordinance mandating residential haulers to provide curbside organics collection, whereby the City would require a shift from weekly to every other week garbage collection.

Recommended adjustments to collection frequencies are to shift both garbage and recycling collection frequencies. Currently, garbage is collected weekly and recycling is collected every other week. These frequencies could be switched so recycling is collected weekly and garbage is collected every other week.

Actions and Recommendations

1. Evaluate adjusting collection frequencies in tandem with revision of the residential solid waste and recycling rates presented in Section 3.2.2 and be evaluated in a cost of service or rate study.
2. Evaluate the benefits and drawbacks of mandatory recycling and/or organics recycling programs.
3. Evaluate the benefits and drawbacks of an opt-out organics collection program to increase participation in the organics recycling program.
4. Provide public outreach programs to address concerns associated with the negative public perception of every other week garbage collection.

Table 3-6: Strategy Summary: Adjust Collection Frequencies

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Adjust Collection Frequencies	SW&R	Medium	High	Medium-High	Mid	Consultant study required; additional staffing and resource needs

3.2.4 Expand Collection and Drop-off Options

To increase waste diversion, the City should consider evaluating new diversion methods and correspondingly expand material collection and drop-off services for residential customers. The goal is to create convenient opportunities for recycling or proper disposal of materials. Residents currently have access to recycling and disposal options for additional types of materials beyond regular curbside services through the following:

- Voucher program: Residents may dispose of certain materials at the South Transfer Station at no cost or for a fee.
- SKB Environmental Transfer Station at Malcolm Avenue: Residents may drop off certain materials at this additional location, particularly soil or yard waste for a fee.
- Hennepin County Household Hazardous Waste (HHW) Facilities and collection events: The County operates two permanent collection locations, Brooklyn Park and Bloomington, and holds regular collection events at various locations.
- Emerge: Residents may drop off or receive pick-up of mattresses for a fee.
- Hardware stores: Many stores collect paint as part of the PaintCare Extended Producer Responsibility (EPR) Program at no cost and accept compact fluorescent light bulbs for a fee.
- Donation centers: Household goods, furniture, textiles, building materials, etc.

Expansion of collection and drop-off services should be evaluated to offer additional options for materials that are not easily diverted. Additional service offerings would require modifications to or expansions of existing facilities, development of additional facilities, and/or added collection resources. Options should be considered for the following material categories:

- Appliances
- Carpeting
- Construction and paving materials (lumber, building materials such as sheetrock, plaster, and shingles, and paving materials such as asphalt, brick, concrete, and rock)
- Electronics (televisions, computers)
- HHW
- Mattresses and box springs
- Pharmaceuticals

- Scrap metals (bed frames, barbeque grills, metal shelves, pipes, etc.)
- Textiles
- Tires
- Yard waste

Opportunities for recycling or proper disposal of these items are available within the City, but are not necessarily provided by the City. Additionally, there is not a "one-stop-shop" facility where all common residential waste types are accepted. To recycle or properly dispose of a range of materials, customers must visit multiple sites, making it inconvenient. By providing a convenient, strategically located drop-off site(s) for the full range of residential waste types, the City can encourage waste diversion and reduce occurrence of illegal dumping and adverse environmental impacts.

Actions and Recommendations

1. Promote existing drop-off and collection opportunities.
2. Actively support EPR for mattresses on a state level through the City's legislative agenda.
3. Reduce barriers to establish locations for donation collection boxes (i.e., reduce or eliminate required City zoning requirements or associated fees) or offer incentives for host locations.
4. Evaluate modifications to the South Transfer Station or other City-owned property to allow for the collection of new materials.
5. Evaluate a pilot carpet collection program to determine the feasibility, material collection method, and costs of the associated program.
6. Evaluate a residential usable material pick-up program and partnerships with non-profit entities.
7. Evaluate establishing a City/County household hazardous waste collection/drop-off facility.

Table 3-7: Strategy Summary: Expand Collection and Drop-off Services

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Expand Collection and Drop-off Services	SW&R, CPED, Intergovernmental Relations	Low-Medium	Low-High	Low-High	Near-Mid	

3.2.5 Encourage Waste Reduction

The City acknowledges the environmental benefits of waste reduction and should actively encourage waste reduction practices. The following strategies are specific to the residential sector.

Actions and Recommendations

1. Create educational campaigns focusing on waste reduction and expand on waste reduction ideas/opportunities, such as buying in bulk and purchasing items with less packaging.
2. Use waste characterization data to support proposed legislation/ordinances to reduce wastes.
3. Incentivize the use of reusable bags as opposed to plastic or paper bags at retail stores.
4. Partner with Minnesota Department of Health (MDH) and the City's Health Department to educate and encourage residents to bring their own containers to grocery stores (for bulk purchases) and/or restaurants (leftovers) to reduce waste.
5. Encourage the use of online bill pay systems for City utility bills, permits and licenses to reduce paper, printing and mailing waste.

Table 3-8: Strategy Summary: Encourage Waste Reduction

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Encourage Waste Reduction	SW&R	Medium	Low-Medium	Low-Medium	Near-Mid	Additional Staffing and resource needs

3.2.6 Promote Residential Reuse

There are many options by which residential customers are able to sell, give, buy or trade items for reuse, that would have otherwise been disposed. Promotion and expansion of these options is a relatively low cost, low difficulty strategy that may increase waste diversion.

Some of the barriers to promoting reuse are the potential concerns of bedbugs or that the materials may be saturated with moisture. Recommended actions are listed below.

Actions and Recommendations

1. Promote resident-to-resident online sharing platforms such as Twin Cities Free Market, Nextdoor, Craigslist, and Facebook.
2. Encourage neighborhood garage sales, clothing swaps, libraries (books, tools, toys), etc.
3. Promote Hennepin County reuse programs and services such as Fix It Clinics and Choose to Reuse.

4. Encourage residents to bring items to local donation centers.
5. Promote reuse business zones/shopping districts in Minneapolis, modeled after Minnehaha Mile shopping district.
6. Promote buying used items and the environmental, social and economic benefits of reuse.

Table 3-9: Strategy Summary: Promote Residential Reuse

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Promote Residential Reuse	SW&R	Low	Low	Low	Near	

3.2.7 Allocate Additional Resources for Education and Outreach

The City currently offers a wide range of services, some of which have high visibility and are well-known to residents, and others that may have low visibility and therefore may be underutilized. Robust, effective, and adequately funded education and outreach campaigns are critical for any program to maximize participation rates and encourage proper use of services.

Cultivating customer buy-in and interest in the City's waste reduction and diversion goals is essential to customer participation in the programs. Providing feedback on the effectiveness and impact of these efforts will help to support residents interest and values in participating, which will in turn encourage them to do more. It will be important for the City to be consistent in its messaging and design of services to convey its commitment to waste reduction and diversion. In addition, the City needs to ensure that all programs are culturally appropriate and are reflective of homeowners and renters alike.

Some landlords request educational materials from SW&R to distribute to new tenants; however, SW&R is rarely notified when new tenants move into rental units. If the tenants are required to put the utility bill in their name or if SW&R is notified that there is a new renter in the unit, educational materials will be mailed to the tenant. If SW&R is not notified, renters will only receive educational information if they are living in the property when regular citywide mailings are sent out or if they contaminate their recycling or organics. Due to the tenant turnover and the associated challenges in apartments, education materials should be clear on options for renters.

The City will need to identify a funding source(s) to support increased education and outreach. It is important that solid waste and recycling education and outreach efforts are appropriately funded. If underfunded, investments that the City makes in other waste reduction and diversion strategies will not realize their full potential.

Actions and Recommendations

1. Evaluate the success of existing programs (set-out rates, contamination rates, etc.).
2. Identify areas where education and outreach needs improvement or does not currently exist.
3. Enhance existing or create new education and outreach strategies where necessary. Make educational materials more visual to transcend language barriers.
4. Develop outreach strategies targeting specific waste types and customer behaviors. Develop social media posts to increase awareness.
5. Incorporate funding for continued outreach and education into annual budgets.
6. Partner with City departments to provide residents in rental units with waste reduction and diversion information similar to the generator plans described in Section 4.2.7.

Table 3-10: Strategy Summary: Allocate Additional Resources for Education and Outreach

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Allocate Additional Resources for Education and Outreach	SW&R	Medium	Low	Low-Medium	Near	Additional staffing and resource needs

3.3 Strategies for Specific Waste Types

In addition to the overall strategies presented, there are unique challenges to specific types of residential waste, which require development and implementation of strategies tailored specific to each waste type.

3.3.1 Recyclable Materials

The City has a mature single-sort recycling system offering unlimited curbside recycling volume to residents by offering of additional recycling carts at no charge. Participation in curbside recycling is one of the simplest and easiest steps a resident can take to contribute to the City's waste diversion goals. With this strong foundation for service, the City is in position to consider the following strategies to further encourage waste diversion.

Table 3-11: Strategies for Recyclable Materials

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Expand Recycling Block Leader Program	SW&R	Low	Low	Low	Near	Need community buy-in
Targeted Education Campaigns for Recycling	SW&R	Medium	Low	Low-Medium	Near	Additional staffing and resource needs
Expand Accepted Curbside Recyclable Materials	SW&R	Low	Medium-High	Low-High	Mid-Long	Need to identify markets
Mandatory Recycling	SW&R	Medium	Low-Medium	Low-Medium	Mid	Increased contamination potential; additional staffing and resource needs

3.3.2 Organics

Typically, organics are the largest material type by weight present in a community's waste stream that has the potential for diversion. For decades, the City has promoted residential backyard composting and grass-cycling. The City has taken additional steps to increase diversion of organic materials through implementation and promotion of its curbside organics recycling program that rolled out in June 2016. Resident feedback indicates that the cost of compostable plastic bags is prohibitive to participating in the City's organics recycling program. The City should continue to promote that paper grocery bags are acceptable in the program and also evaluate methods to increase availability of compostable plastic bags and decrease the cost of bags. The primary goal of the following strategies is to increase the percentage of households participating in the curbside organics program and diversion of organics from the waste stream.

Table 3-12: Strategies for Organics

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Evaluate Methods to Increase the Availability of Compostable Products	SW&R	Low-Medium	Medium-High	Low-High	Near-Mid	Additional staffing and resource needs
Transition to Opt-out Program for Organics	SW&R	Medium	High	High	Mid-Long	Increased contamination potential; additional staffing and resource needs
Mandatory Organics Participation	SW&R	High	High	High	Long	Increased contamination potential; additional staffing and resource needs
Comingle All Organics and Yard Waste	SW&R	Medium-High	High	Medium-High	Long	Need to identify end-users for comingled material
Develop Program to Provide Finished Compost to Participating Households	SW&R	Low	Medium	Medium-High	Near-Mid	Include in vendor processing contract

3.3.3 Large Items and Specialty Recyclables

The City provides a high level of service for collection of large items. Non-recyclable items are collected curbside once per week and recyclable items are collected curbside every other week. This service has high customer satisfaction; however, it is a high cost service to the City and the convenience offered may not adequately incentivize customers to identify recycling or reuse option. In addition, the program is only used by some customers. As discussed in Section 3.2.4, the City should consider evaluating new diversion methods and correspondingly expand material collection and drop-off services for residential customers. The primary goals of the following strategies are to encourage recycling or reuse of large items and specialty recyclables and develop a more efficiently designed program.

Table 3-13: Strategies for Large Items and Specialty Recyclables

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Expand Collection and Drop-off Services	SW&R, CPED, IGR	Low-Medium	Low-High	Low-High	Near-Mid	
Transition to Sticker Based Large Item Collection	SW&R	Low	Low	Low	Near	
Reduce Number of Vouchers Provided	SW&R	Low	Low	Low	Near	
EPR Support	SW&R, IGR	Low-Medium	Medium-High	Low	Near-Long	Including mattresses and other items
Transition to Fee Based Voucher Program	SW&R, Finance	Low	Medium	Medium	Near-Mid	
Develop Illegal Dumping and Litter Cleanup Program	SW&R	Low	Medium	Medium	Near-Mid	Additional staffing and resources needed

3.3.4 Household Hazardous Waste

The City does not directly provide options for properly disposing of HHW through City services. HHW generally refers to relatively small quantities of toxic, corrosive, flammable, or reactive products unused by households or small businesses that pose environmental and health risks when not disposed of properly. Products include items such as antifreeze, batteries, cleaners, cooking and motor oils, latex and oil-based paints, pesticides, bulbs, etc. City residents may visit two drop-off sites operated by Hennepin County, located in Brooklyn Park and Bloomington, that accept HHW and properly containerized needles/sharps. In addition, PaintCare EPR Program requires paint and hardware stores to take back unwanted, leftover paint for recycling. Most hardware stores will also collect bulbs for a fee. State law also requires locations that sell automotive batteries to take back old batteries. The City should ensure that residents have adequate access to HHW, needles/sharps and unwanted medicines disposal options to deter improper disposal and minimize environmental and public health risks. The primary goal of the following strategies is to provide convenient access to proper HHW disposal.

Table 3-14: Strategies for Household Hazardous Waste

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
EPR Support	SW&R, IGR, CPED	Low-Medium	Medium-High	Low	Near-Long	Including bulbs and hazardous products
Increase HHW Disposal Convenience Through Additional Drop-offs	SW&R	Low	Medium	Medium-High	Mid	Collaborate with other City departments and Hennepin County
Develop Needles/Sharps and Unused Medicines Collection Program	SW&R	Low	Medium	Low-Medium	Mid	Partner with Hennepin County
Evaluate Partnership with Local Businesses	SW&R, Licensing, Health	Low	Medium-High	Low-Medium	Mid	Collaborate with businesses
Partner with Hennepin County for Development of a Permanent HHW Facility in Minneapolis	SW&R	Medium	High	High	Long	Collaborate with Hennepin County
Implement Curbside Collection of HHW	SW&R	Low-Medium	High	Medium-High	Long	Contract out or conduct in-house; requires consultant study

3.4 Potential Program Funding

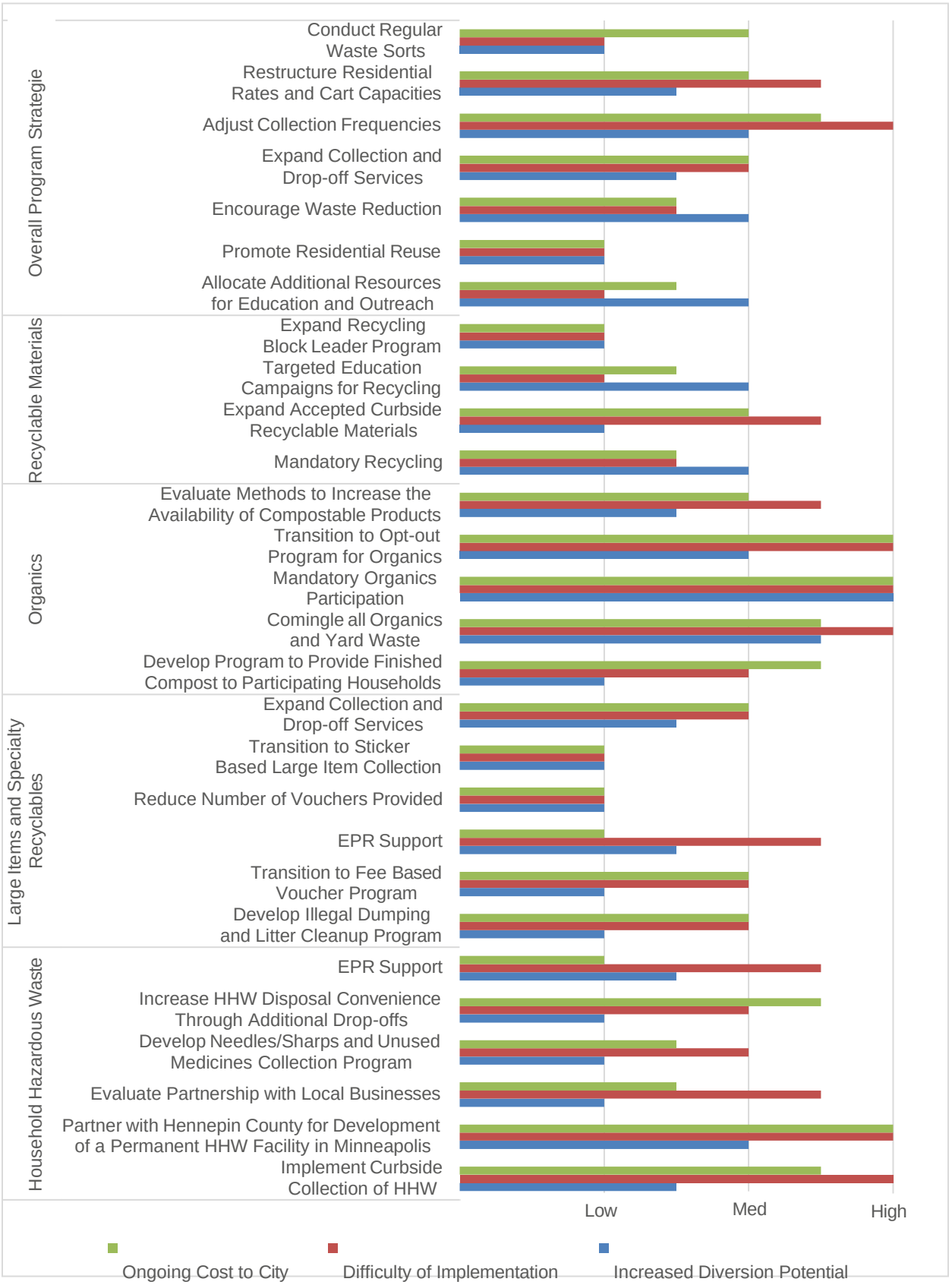
Stable funding is critical to long term solid waste management program success. The City's present residential program is funded through a well-established customer fee schedule. Expansion of existing or implementation of new residential programs will likely result in increased costs resulting in greater revenue needs. The City should evaluate its residential rates in the context of program implementation to meet overall revenue needs and continue to encourage waste reduction and diversion.

3.5 Strategy Summaries & Conclusion

The City currently has a comprehensive residential solid waste and recycling services program that provides an excellent level of service. Changes to the existing program should be carefully considered and extensive outreach should be conducted prior to implementation, otherwise, increased diversion efforts may have an unintended consequence of illegal dumping.

Figure 3-2 provides a graphic representation of the available strategies to increase diversion in the context of the difficulty of implementation and ongoing costs to the City. Overall recommendations for which strategies should be prioritized are included in the Zero Waste Plan Conclusion (Section 9.0).

Figure 3-2: Summary: Residential Program Strategies



4.0 COMMERCIAL, INDUSTRIAL, AND MULTIFAMILY SECTOR

The commercial, industrial, and multifamily (CIM) sector is different from the residential sector in many ways. Some of these differences include diversity in the amount and types of waste collected, collection frequency, container types, and collection vehicles that service various generator types. The Central Business District (i.e., downtown) also provides additional logistical challenges for collection. The City has an open competitive collection system for servicing CIM generators. The City licenses CIM solid waste haulers collecting materials within the City for disposal. The City does not currently license haulers that collect recycling or organics only. Data from the Minnesota Department of Employment and Economic Development (MDEED) indicate that for the first quarter of 2017, approximately 11,562 business establishments were located within the City of Minneapolis. All residential buildings containing five or more dwelling units are included in the multifamily sector. According to City rental license data, approximately 63,177 multifamily units are located within the City.

City ordinances directly related to the CIM sectors are presented below. Another ordinance that pertains to the CIM sector is Green to Go.

City Ordinance Chapter 174.435 requires the following commercial recycling service requirements:

- Building owners must provide adequate recycling containers in convenient locations for those recyclable materials generated by the respective businesses in the buildings being offered service;
- Building owners must provide collection of recyclable materials at least twice a month by self hauling or by contract with licensed hauler;
- Building owners must distribute written information to each business or commerical use located in the buildling on at least an annual basis describing the recycling service being provided; and
- Building owners must provide a recycling plan that describes the recycling services offered upon request of the Fire Marshal.

These requirements for commercial buildings are to be enforced by the City Fire Marshal and the Fire Marshal's authorized representatives and designees.

City Ordinance Chapter 225.780 requires the following for buildings with two or more dwelling units:

- Building owners must provide adequate containers in convenient locations for all recyclable materials collected, provide for collection and delivery to a recycling facility, and distribute information to tenants on the recycling program (at least at time of leasing and annually);
- Building owners must provide (through contract with a licensed hauler or by self-hauling) adequate containers for all recyclable materials collected and provide written information, on an annual basis, regarding the established recycling program, for building owners or operators to distribute to tenants; and
- Owners and licensed haulers must report the address of buildings being provided recycling service, total quantities of recyclable materials collected by material type, and materials processing facilities or end markets used.

These requirements are to be enforced by the City Engineer and Engineer's authorized representative.

In addition, Minnesota Statute section 115A.151 includes recycling requirements for commercial buildings which include multifamily housing. Property owners with buildings in the seven-county metro area that contract for four cubic yards or more of garbage collection per week were required to recycle at

least three materials beginning January 1, 2016. Single stream collection meets the commercial recycling requirement if three or more materials are collected and recycled. The Minnesota statutes, in addition to the applicable City ordinances, help create the policy framework for the City's existing commercial program.

4.1 Overview of Sector

Commercial hauler licenses for the current open competitive collection system are managed as part of the overall City licensing program. The present licensing requirements include hauling such items as garbage, building debris and yard waste, but excludes recyclable materials. There are approximately 70 haulers licensed to collect solid waste (including building debris and yard waste) within the City. The 2017 licensing fees are as follows:

- Base Fee - $186
- Each additional vehicle - $98
- Decals for vehicle transfer - $15

Based on data provided by the Community Planning and Economic Development Department (CPED), a total of 379 collection vehicles were registered in 2015 and the licensing fees generated approximately $45,300. The present licensing information requirements are very limited. Haulers are only required to provide general business information, evidence of a certificate of insurance, and specific hauler vehicle information. No specific information addressing the quantities or types of materials collected is required as part of the licensing process.

The hauler licensing program is administered by the Licensing and Consumer Services Division of CPED. The licensing process requires verifying that the information is correct on the form, ensuring adequate insurance, Department of Transportation inspection for each vehicle and then approving the license. Once approved, decals are sent in the mail, one for each vehicle as identification.

4.2 Overall CIM Issues and Recommended Strategies

The available data and information on the current conditions of the CIM collection program are extremely limited. The City will need to collaborate and form partnerships with haulers, businesses, other CIM generators, and Hennepin County to gather data and work together to achieve the City's zero waste goals. Improved waste diversion and waste reduction in the CIM sectors requires implementation of strategies that address multiple waste streams. These strategies address priority issues with the City's current system or development of additional service offerings that are not specific to one type of waste. The following sections present overall system issues and proposed strategies.

4.2.1 Develop Ad Hoc Work Group

The City should create an ad hoc work group composed of representatives from the hauling industry, business community and multifamily sector, civic groups, Hennepin County, and the general public to meet on a regular basis to discuss current solid waste and recycling issues and share information, including best practices.

Actions and Recommendations

1. Establish ad hoc work group to address the following:
    a. Establish a baseline through data gathering.
    b. Collaborate on zero waste strategies and educational programs.
    c. Assist in measuring progress towards zero waste goals through data measurement.
2. Clarify which City department is responsible for managing the work group and which departments should be in attendance at work group meetings.

Table 4-1: Strategy Summary: Develop Ad Hoc Work Group

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Develop Ad Hoc Work Group	SW&R	Low-Medium	Low	Low	Near-Mid	Additional staffing and resource needs

4.2.2 Conduct Regular Waste Sorts

As discussed in Section 3.2.1, the City should prioritize completing a detailed waste sort at regular intervals (recommended every 5-years at a minimum; however, more frequent sorts would provide added "real-time" results). The City has historically had difficulty obtaining information from haulers due to the current lack of reporting requirements. The primary challenge associated with conducting City CIM waste sorts is to effectively measure the CIM sector waste when not all CIM waste is transported directly to HERC for recovery. A number of private haulers collect materials throughout the Twin Cities Metro area and deliver materials to other solid waste facilities. Thus, the CIM waste sampled and sorted at HERC may not be fully representative of the City's CIM sector. The City would need to partner with haulers and Hennepin County to conduct waste sorts at HERC and other appropriate locations to characterize the CIM waste.

Table 4-2: Strategy Summary: Conduct Regular Waste Sorts

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Conduct Regular Waste Sorts	SW&R	Low	Low-Medium	Medium-High	Near-Mid	Measurement tool allowing City to identify target areas; additional staffing and resource needs; consultant needed for sorts

4.2.3 Encourage Waste Reduction

As discussed in Section 3.2.5, the City should actively encourage waste reduction practices. The following strategies are specific towards the CIM sectors.

Actions and Recommendations for Commercial and Industrial Sector

1. Promote the use of reusable dinnerware and to-go containers in restaurants and at events.
2. Encourage CIM industry to follow City's examples to address procurement policy for office buildings (automatically substitute eco-friendly products (products that contain recycled content, are remanufactured, refillable or rechargeable).
3. Encourage the use of online bill pay systems for all bills, permits and licenses to reduce paper, printing and mailing waste.
4. Evaluate the expansion of Green to Go for the elimination of other non-recyclable/non-compostable products (such as silverware and straws).

Actions and Recommendations for Multifamily Sector

1. Partner with MDH and the City's Health Department to educate and encourage residents to bring their own containers to grocery stores (for bulk purchases) and/or restaurants (leftovers) to reduce waste.
2. Encourage the use of online bill pay systems for City utility bills, permits and licenses to reduce paper, printing and mailing waste.

Table 4-3: Strategy Summary: Encourage Waste Reduction

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Encourage Waste Reduction	SW&R	Medium	Medium	Low-Medium	Near-Mid	Additional Staffing and resource needs

4.2.4 Promote Reuse

Promotion and expansion of reuse options for CIM sectors is a relatively low cost, low difficulty strategy that may potentially increase waste diversion while supporting the City's overall goals.

Actions and Recommendations for Commercial and Industrial Sector

1. Promote business-to-business reuse exchange sites, such as Minnesota Materials Exchange.
2. Encourage businesses to develop internal reuse programs or methods to donate usable items to other businesses, staff or the public.
3. Encourage restaurants to develop reusable to-go container programs in collaboration with the City's Health Department and the Minnesota Department of Health. Consider providing containers.

Actions and Recommendations for Multifamily Sector

1. Consider providing incentives to owners of multifamily buildings to provide "reuse/donation space" in buildings or on the premises.
2. Promote resident-to-resident online sharing platforms such as Twin Cities Free Market, Nextdoor, Craigslist, and Facebook.
3. Promote Hennepin County programs and services such as Fix It Clinics and Choose to Reuse.
4. Support ReUSE Minnesota and work with them to list and promote all reuse businesses in Minneapolis in their directory.
5. Encourage residents to bring items to local donation centers.

Table 4-4: Strategy Summary: Promote Reuse

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Promote Reuse	SW&R	Low	Low	Low	Near-Mid	Additional staffing and resource needs

4.2.5 Targeted Outreach and Assistance to Generators

Hennepin County provides no-cost technical assistance to select commercial generators within the County, including generators in the City of Minneapolis, through its business recycling program. This technical assistance may include providing free resources and/or awarding of a business recycling grant. Funding is provided with the understanding that the generator will work with the County to implement a waste diversion project, including providing written information describing the types and level of service and quantities of materials generated and recycled. Many businesses within Minneapolis may not be aware of Hennepin County resources due to the limited outreach capacity of County staff.

Actions and Recommendations

1. Consider implementing a more targeted outreach and technical assistance program to foster additional recycling and organics recovery similar to Hennepin County's business recycling program. Collaborate on initiatives with Hennepin County to make sure efforts are not duplicative. Staff should identify CIM generators offering the greatest opportunity for additional materials recovery. These generators would be offered technical assistance and the potential to receive grant funding to increase diversion and materials recovery.
2. Allocate additional resources for public education and outreach in addition to existing budgets.
3. Encourage businesses to gain recognition for waste diversion activities through Hennepin County Environmental Partners Program.

Table 4-5: Strategy Summary: Targeted Outreach and Assistance to Generators

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Targeted Outreach and Assistance to Generators	SW&R	Low-Medium	Low	Low-Medium	Near-Mid	Additional staffing and resource needs

4.2.6 Enhanced Enforcement of City Ordinances

Overall, the existing City ordinances prescribe general service requirements for CIM generators, but do not provide an adequate framework to measure program effectiveness or necessary resources for enforcement. The applicable existing recycling ordinances place the responsibility of compliance with the City's Fire Marshal for the commercial buildings and with the City's Engineer for the multifamily dwelling units. In addition, the City's Health Department oversees the Green to Go ordinance.

The various offices responsible for enforcement create confusion for residents regarding who to contact to ensure compliance with City ordinance.

Actions and Recommendations

1. Revise City ordinances to create a viable framework for coordinated enforcement between applicable City departments.
2. Clarify responsibility for compliance of City ordinances.
3. Allocate additional resources for enforcement in addition to existing budgets.

Table 4-6: Strategy Summary: Enhanced Enforcement of Existing City Ordinances

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Enhanced Enforcement of Existing City Ordinances	SW&R	Medium	Low-Medium	Low-Medium	Near-Mid	Additional staffing and resource needs

4.2.7 Mandatory Generator Waste Reduction and Diversion Plans Coupled with Material Disposal Bans

Existing City ordinances provide the Fire Marshal's Office with the discretion to require a limited recycling plan for commercial buildings only. The City should supplement the existing ordinances by considering the implementation of mandatory CIM generator recycling planning requirements and identify select recyclable materials to be banned from disposal.

As discussed in the Commercial Study, the City of Austin, Texas regulates recycling policy through its Universal Recycling Ordinance (URO), including but not limited to detailed reporting requirements as part of generator recycling plans. The URO is being rolled out in phases, with the largest businesses having to comply first and the phasing in of more business types each year. Enforcement is handled by the City through review of plans and annual reports. Austin Resource Recovery Department (ARR) has 2.5 to 3 FTEs dedicated to compliance. ARR is an enterprise fund; however, there is a "Clean Community Fee" that funds code compliance (two-thirds) and zero waste initiatives (one-third). The Austin "Clean Community Fee" is a monthly fee assessed to both residents and business. For 2017, the residential rate is $8.05 per month (including single-family homes, apartments and condos) and the commercial property rate is a flat fee of $19.85 per month. More information on the City of Austin program is provided in the Commercial Study.

Austin's URO provides a model to gather data necessary to measure progress towards the City's zero waste goals and offers education and outreach to building tenants.

Actions and Recommendations for Commercial and Industrial Sector

1. Ensure all CIM properties have garbage collection or documentation of self-hauling and proper disposal methods for specialty materials generated (e.g., tires, hazardous waste, bulbs, etc.)
2. Phase in recycling generator planning requirements over a three to five-year time frame. The program could be tied to commercial building registration and inspection program, business licenses or could stand on its own.

   a. Each generator (in conjunction with its hauler) would be required to document quantities and types of materials generated including disposal locations and materials recycled and composted to establish a baseline for measuring progress. Based on an established waste generation baseline for the various generator types, each plan could be required to identify specific implementation strategies and programs to achieve at least an 80% recycling and composting goal.
   b. The City should start the process with the largest buildings and/or generators first and could potentially leverage the existing Energy Benchmarking Program and its reporting requirements.
3. Revise ordinances to ban select recyclable materials from disposal (e.g., corrugated cardboard, containers).
4. Clarify which City department is responsible for administering the program including technical assistance, monitoring, and oversight.
5. Allocate additional resources for enforcement in addition to existing budgets.
6. Require Hennepin County signage or approved alternative on all containers (carts, dumpsters, compactors) to provide a consistent message both inside and outside of buildings.

Actions and Recommendations for Multifamily Sector

1. Phase in recycling generator planning requirements over a three to five-year time frame. The program could be tied to commercial building registration and inspection program, business licenses or could stand on its own.
   a. The City may consider requiring the owner of the multifamily buildings to publicly post the recycling plan and review their plan with tenants.
   b. Annual education should also be provided per existing ordinance for the tenants of multifamily buildings.
2. Revise ordinances to ban select recyclable materials from disposal (e.g., corrugated cardboard, containers).
3. Clarify which City department is responsible for administering the program including technical assistance, monitoring, and oversight.
4. Allocate additional resources for enforcement in addition to existing budgets.
5. Require Hennepin County signage or approved alternative on all containers (carts, dumpsters, compactors) to provide a consistent message both inside and outside of buildings.

Table 4-7: Strategy Summary: Mandatory Generator Waste Reduction and Diversion Plans Coupled with Material Disposal Bans

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Mandatory Generator Waste Reduction and Diversion Plans Coupled with Material Disposal Bans	SW&R, CPED, Licensing	Medium-High	Medium-High	Medium-High	Near-Mid	Additional staffing and resource needs

4.2.8 Increase Hauler Accountability

In addition to the above described strategies to move towards zero waste, the City should also consider increasing hauler accountability for the CIM sector. The increased hauler accountability strategies listed below are considered mutually exclusive and provide a "tiered" approach, whereby the strategies 1 through 4 increase in difficulty for implementation and cost from least to most. The strategies include the following:

1. Expand hauler licensing and establish minimum service standards
2. Transition to a non-exclusive franchise
3. Establish organized collection
4. Municipalization of collection (not recommended at this time)

The following sections detail the above listed strategies and also provide actions and recommendations for each, except for of municipalization of collection. At this time, the City is not considering municipalization of CIM collection.

4.2.8.1 Expand Hauler Licensing and Establish Minimum Service Standards

Current hauler licensing does not require haulers to report tonnages of materials collected within the City. Therefore, a baseline of current waste generated and diverted does not exist. The City does not presently license haulers collecting recyclable materials. In addition, the City's existing ordinances require a minimum service standard to provide adequate sized containers to collect the recyclable materials generated by the CIM generators. However, the ordinances do not specify the material types to collect or offer a definition for adequate sized containers. Strategies to address these issues are provided below.

Actions and Recommendations

1. Revise hauler licensing requirements such that recycling haulers are required to have a license.
2. Expand the hauler licensing requirements to include minimum requirements, including reporting the types and quantities of recyclable and compostable materials collected and distribution of written recycling materials and other information (e.g., contamination, waste reduction).
3. Update City ordinances to define adequate container sizes and specific materials to be collected.
4. Increase licensing fees to a level to generate adequate revenues to cover the costs of applicable CIM programs.
5. Clarify which City department is responsible for administering the program including technical assistance, monitoring, and oversight.
6. Allocate additional resources for enforcement in addition to existing budgets.
7. Require haulers to use Hennepin County signage or approved alternative on all containers (carts, dumpsters, compactors) to provide a consistent message both inside and outside of buildings.

Table 4-8: Strategy Summary: Expand Hauler Licensing and Establish Minimum Service Standards

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Expand Hauler Licensing and Establish Minimum Service Standards	SW&R, CPED, Licensing	Medium	Medium	Medium	Near-Mid	Additional staffing and resource needs

4.2.8.2 Transition to a Non-Exclusive Franchise

The City could build upon the existing licensing program (and strategies presented above to enhance licensing) to establish non-exclusive franchises with private solid waste, recycling and organics collection service providers. Haulers would need to enter into a non-exclusive franchise agreement with the City to haul solid waste and recyclable materials within the City. A non-exclusive franchise would not limit the number of licenses that the City offers nor restrict hauling service areas; however, it would provide the City with a more effective way to collect data from haulers (thereby allowing for tracking of zero waste progress) and levy fees from haulers to help pay for zero waste initiatives.

As discussed in the Commercial Study, the City of Miami, Florida requires all commercial haulers engaged in collecting and disposing of solid waste to enter into a franchise agreement establishing minimum service standards for the City of Miami. The length of the term of the franchise agreement is for five years with three one year renewal options. As a condition of receiving a non-exclusive franchise, commercial haulers must pay a franchise fee of 24% of gross receipts to the City of Miami on a monthly basis. More information on the City of Miami program is provided in the Commercial Study.

The City of Miami provides a model for the City to consider implementation of a non-exclusive franchise collection program.

Actions and Recommendations

1. Establish a set of information and reporting requirements for franchisees, but not preclude any hauler that meets these requirements from receiving a non-exclusive franchise. The information and reporting requirements may include the number of customers (customer names would be considered proprietary), list of the number and types of collection vehicles, quantities and types of materials collected, and levying of fees proportional to the breadth of the hauling services provided within the City (e.g., percent of gross revenues, percent of total tons collected, etc.).
    a. The levying of fees based on percent of hauler gross revenues would generate substantially greater revenues than licensing fees. Specifically, the fees should be related to the actual costs to administer the licensing and franchise program. Note that this option does not include regulating the rates being offered by service providers, but will result in an increase in program funding and available reported program information.
2. Require Hennepin County signage or approved alternative on all containers (carts, dumpsters, compactors) to provide a consistent message both inside and outside of buildings.

Table 4-9: Strategy Summary: Transition to a Non-Exclusive Franchise

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Transition to a Non-Exclusive Franchise	SW&R, CPED, Finance, Licensing	Medium	Medium-High	Medium-High	Long	Confirm applicability of organized collection requirements

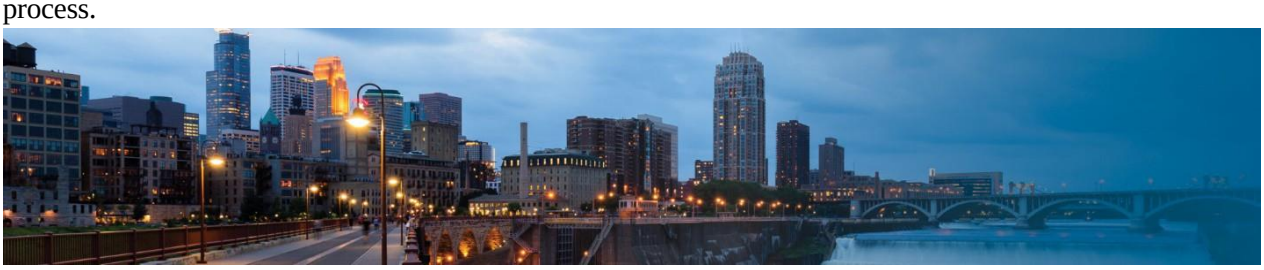
4.2.8.3 Establish Organized Commercial Collection

Organized collection represents a formal method to "organize" haulers to collect solid waste and recyclable materials. Organized collection usually includes a comprehensive process of designating hauler(s) to provide defined service(s) in specific geographic zones or areas; however, organized collection may exclude specific services or designated geographic areas (e.g., Central Business District). The benefits may include improved collection efficiencies, increased diversion, ability to gather accurate waste generation and diversion data, more uniform services, less wear and tear on roads, reduced air emissions, and increased program funding. In addition, transitioning to an organized collection could

include additional collection services such as large items from the CIM sector (e.g., mattresses, electronics).

As previously mentioned, the present commercial collection program is an open competitive system. Haulers contract directly with customers regardless of their location within the City. For the City to establish an organized collection system, it would need to follow a well-defined process as specified in the Minnesota "Organized Collection" Statute 115A.94.

As discussed in the Commercial Study, the City of San Jose, California has an exclusive franchise system with two haulers for CIM collection. For the City of San Jose, the commercial program is funded through the franchise fee paid by the exclusive franchisees and the AB 939 or Source Reduction and Recycling Fee. The City of Los Angeles, California is presently transitioning to an exclusive franchise system where the City is divided into 11 zones. The process for the City of Los Angeles began more than ten years ago and the two-year customer transition period began in the summer of 2017. For the City of Los Angeles, revenues to administer the program are generated through hauler franchise fees. More information on the City of San Jose and City of Los Angeles programs is provided in the Commercial Study. Please note the City recommends more detailed analysis be completed prior to determining if the Central Business District (i.e., downtown area) would be included as part of an organized collection process.



Actions and Recommendations

1. Follow Minnesota Statute, 115A.94 which provides a prescriptive process for local governments to implement a "system for collecting solid waste in which a specified collector, or member of an organization of collectors, is authorized to collect from a defined geographic area or areas." Per this statute, the City of Minneapolis would be required to complete the following:
    a. Provide notification to residents and licensed haulers that the City is considering organizing collection.
    b. Provide a 60-day period for the opportunity to negotiate with existing licensed haulers to agree on a proposal where interested licensed haulers provide collection service to designated areas within the City.
    c. Establish a committee to evaluate various alternative methods of organized collection if the outcome of the process described above does not result in a negotiated agreement.
    d. Seek input from a range of stakeholders including, at minimum, licensed haulers, customers, City Council, and SW&R staff as part of issuing a report with findings and recommendations.
    e. Hold at least one public hearing prior to deciding whether to implement organized collection.

    This is the process the City of St. Paul recently used to organize its residential garbage collection program.

2. Evaluate legal authority to organize collection of recyclable materials.
3. Require Hennepin County signage or approved alternative on all containers (carts, dumpsters, compactors) to provide a consistent message both inside and outside of buildings.

Table 4-10: Strategy Summary: Establish Organized Commercial Collection

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Establish Organized Commercial Collection	SW&R	High	High	Medium-High	Long	Need to follow prescriptive process

4.2.9 Revise Building Design Requirements

The City should consider advocating for adjustments to the State of Minnesota (State) building design requirements to promote opportunities for the diversion of materials. The State building code currently requires buildings or structures that contain over 1,000 square feet (except for residential structures with fewer than four dwelling units) to provide convenient recycling locations where other solid waste is collected. However, the State building code should be revised to specify minimum service standards, such as providing signage and offering composting.

Actions and Recommendations for Commercial and Industrial Sector

1. Require haulers to use Hennepin County signage or approved alternative on all containers (carts, dumpsters, compactors) to provide a consistent message both inside and outside of buildings.
2. Advocate for modifications to State building code to increase capacity for adequate space for composting and recycling in all CIM buildings.
    a. Alternatively, consider adjusting the City's zoning code to include provisions for adequate space for reuse, recycling, and composting.

Actions and Recommendations for Multifamily Sector

1. Require haulers to use Hennepin County signage or approved alternative on all containers (carts, dumpsters, compactors) to provide a consistent message both inside and outside of buildings.
2. Advocate for modifications to State building code to increase capacity for recycling by requiring a three-chute system in all new multifamily buildings.
    a. Alternatively, consider adjusting the City's zoning code to include provisions for adequate space for reuse, recycling, and composting.

3. Consider requiring mandatory recycling days for existing multifamily buildings where there is only one chute.
    a. Example: Tuesday and Thursday the chute is for recycling and every other day for trash.
    b. Requires collaboration with the haulers and building owners - may need to move containers for use and service during applicable collection days.

Table 4-11: Strategy Summary: Revise Building Design Requirements

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Revise Building Design Requirements	SW&R	Medium-High	Medium	Low	Near	Further review of City zoning requirements necessary

4.2.10 Allocate Additional Resources for Education and Outreach

As discussed in Section 3.2.7, the City should develop improved education and outreach campaigns. The City should partner with the waste industry, building managers and owners to develop and promote these campaigns. The City will need to identify a funding source(s) to support increased education and outreach. Multifamily properties introduce a further challenge with frequent turnover and the need for ongoing education. It is important that solid waste and recycling education and outreach efforts are appropriately funded. If underfunded, investments that the City makes in other waste reduction and diversion strategies may not realize their full potential.

The actions and recommendations provided in Section 3.2.7 include identifying areas where education and outreach needs improvement or does not currently exist. For this action and recommendation, the City also should require education and outreach in commercial/institutional settings with food courts and cafeterias.

Table 4-12: Strategy Summary: Allocate Additional Resources for Education and Outreach

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Allocate Additional Resources for Education and Outreach	SW&R	Medium	Low	Low-Medium	Near-Mid	Additional staffing and resource needs

4.3 Strategies for Specific Waste Types

In addition to the overall strategies presented, there are unique challenges to the various types of CIM waste which require development and implementation of strategies specific to each waste type.

4.3.1 Recyclable Materials

In addition to the recycling strategies presented above, the City should consider the implementation of the following strategies to further encourage recycling.

Table 4-13: Strategies for Recyclable Materials

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Require Recycling Bins in Hotel/Motel Rooms and at Fuel Pumps	SW&R, Building Inspections	Medium	Medium	Low	Near	Additional staffing and resource needs
Incorporate Material Disposal Bans	SW&R	Medium	Medium	Medium	Mid	Additional staffing and resource needs
Mandatory Recycling	SW&R	Medium	Medium-High	High	Mid-Long	Additional staffing and resource needs

4.3.2 Organics

Typically, organics are the largest material type by weight in a community's waste stream that has the potential for diversion. For the CIM sectors, existing programs that are in place through Hennepin County include: food donation, food-to-animals, and organics composting. In addition, many community composting programs exist.

Furthermore, the use of compostable products facilitates diversion of organics from all business types and the City's Green to Go ordinance (which requires the use of reusable, refillable, recyclable, or compostable food service items). Businesses with food permits must collect organics when compostable plastics are used. Currently, compostable products are not widely available at retail locations around the City and, where available, they may be cost prohibitive. The City should evaluate methods to increase availability and decrease cost for compostable products throughout the City.

Lastly, to accommodate the increased organics diverted through these strategies, additional end user infrastructure needs to be developed. The primary goal of the following strategies is to facilitate diversion of organics that are currently disposed of as garbage.

Table 4-14: Strategies for Organics

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Evaluate Methods to Increase the Availability of Compostable Products	SW&R	Low-Medium	Medium-High	Low-High	Near-Mid	Additional staffing and resource needs
Promote Additional Donation of Food by Non-Participating Generators	SW&R	Medium	Low	Low	Near-Mid	Provide grant funding for food banks, etc. to increase capacity
Require Use of Compost in City Projects and Select Building Projects	Public Works, CPED	N/A	Low-Medium	Low	Near	Examples: Carver County and Edina
Add Drop-offs for Multifamily Buildings and Small Commercial	SW&R	Medium-High	Low-Medium	Low-Medium	Near-Mid	Additional staffing and resource needs
Mandatory Diversion for Large Organics Generators	SW&R	Medium	Medium	Low	Near	Breweries, grocery stores, distilleries, and food processors; Collaborate with Hennepin County
Mandatory Organics Collection for Commercial and Industrial	SW&R	High	High	High	Long	Phased approach for implementation; allow composting and other types of organics reuse
Mandatory Organics Collection for Multifamily	SW&R	High	High	High	Long	Phased approach for implementation
Foster Development of a Public-Private End Users	SW&R; CPED	Medium-High	High	High	Long	Composting and/or anaerobic digestion; coordination with Hennepin County
Support MPRB Ecological System Plan for Community Composting on Park Property	SW&R	Low	Low	Low	Near-Mid	

4.3.3 Large Items and Specialty Recyclables

There are not widespread large item and specialty recyclable collection programs currently in place for the CIM sector. The primary goal of the following strategies is to encourage recycling or reuse of large items and specialty recyclables.

Table 4-15: Strategies for Large Items and Specialty Recyclables

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Promote Reduction and Reuse	SW&R	Low	Low	Low	Near-Mid	Additional staffing and resource needs
EPR Support	SW&R, IGR	Low-Medium	Medium-High	Low	Near-Long	Including mattresses and other items
Ban Disposal of Mattresses/Box Springs	SW&R	Medium	Medium-High	Low	Mid	Requires ordinance change
Discourage Use of Problem/Nonrecyclable Materials	SW&R	Medium	Medium	Medium	Mid	Such as single-use bags and non-compostable takeout food containers
Offer Special Collections for Reuse on a Seasonal Basis	SW&R	Medium	Medium-High	Medium-High	Mid-Long	City operations or contract
Evaluate Subsidy for Low-Income/Small Businesses to Dispose of Large Items	SW&R	Low	Low	Medium	Mid	Additional staffing and resource needs

4.3.4 Hazardous Waste

There are no widespread options currently in place for the proper disposal of household (multifamily) and small quantity generator (business) hazardous waste. Hazardous waste defined for this report includes toxic, corrosive, flammable, or reactive products unused by households or small businesses that pose environmental and health risks when not disposed of properly. It does not include large quantities of hazardous wastes produced by industrial or large businesses. Products include items such as antifreeze, batteries, cleaners, cooking and motor oils, latex and oil-based paints, pesticides, bulbs, solvents etc. City residents may visit two Hennepin County drop-off sites, one located in Brooklyn Park and one in

Bloomington; however, small quantity generators (businesses) are not currently permitted to use these facilities.

In addition, the PaintCare EPR Program requires paint and hardware stores to take back unwanted, leftover paint for recycling from residents. Most hardware stores will also collect bulbs for a fee. State law also requires locations that sell automotive batteries to take back old batteries. The City should ensure that residents and small businesses have access to disposal options to deter improper disposal of hazardous waste and minimize environmental and public health risks. The primary goal of the following strategies is to provide convenient access to proper hazardous waste disposal.

Table 4-16: Strategies for Hazardous Waste

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Allocate Existing Revenues from Pollution Control Fee to Support Program Expansion	Health	Medium	Low-Medium	Low-Medium	Mid	Revise code to re-allocate revenues from program fees
EPR Support	SW&R, IGR, CPED	Low-Medium	Medium-High	Low	Near-Long	Including bulbs and hazardous products
Increase HHW Disposal Convenience Through Drop-offs	SW&R	Low	Medium-High	Medium-High	Mid	Collaborate with other City departments and Hennepin County
Evaluate Partnership with Local Businesses	SW&R, Licensing, Health	Low	Medium-High	Low-Medium	Mid	Collaborate with businesses
Offer Collection to Small Quantity Generators	SW&R	Low	Medium-High	Medium-High	Long	Collaborate with Hennepin County
Partner with Hennepin County to Develop a Permanent HHW Facility in Minneapolis	SW&R	Medium	High	High	Long	Collaborate with Hennepin County

4.4 Potential Program Funding

The estimated costs for implementation of the various options described above will vary considerably for the City. Generally, achieving greater incremental growth in diversion requires additional financial investment which includes higher program costs. For example, the transition to a non-exclusive franchise is projected to result in "medium" growth in diversion with "medium/high" costs to the City. With the City's existing commercial program generating very limited revenues through its hauler licensing program, the City will need to increase its capacity to raise revenues to achieve greater diversion. Expanding capacity to raise revenues requires implementation of a new funding mechanism or, in the alternative, a greater commitment of funding through the general fund. Typically, commercial program funding mechanisms that have been successful address the following:

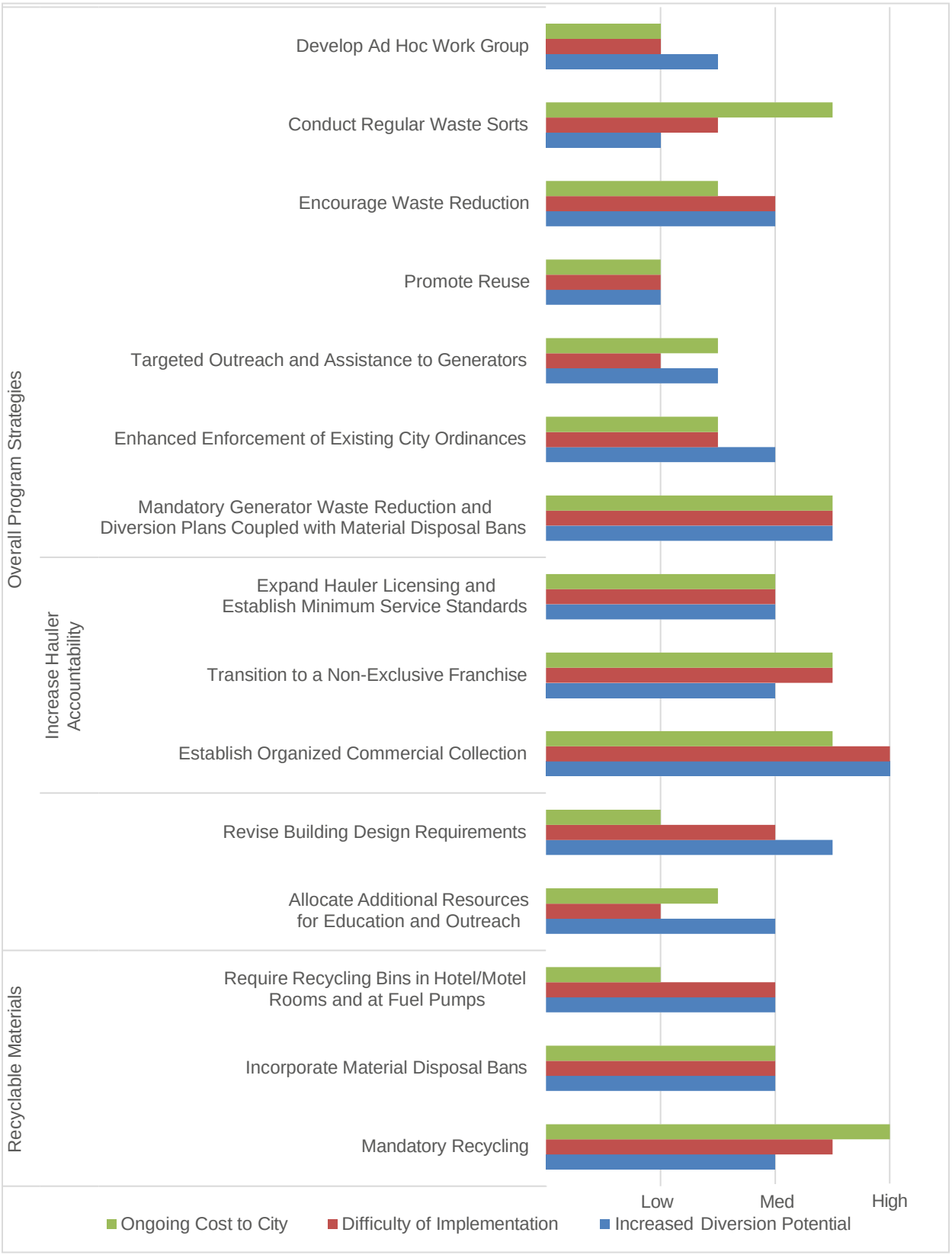
- Total revenues generated clearly align with estimated program costs;
- Shared financial burden with relevant stakeholders such as haulers and generators; and
- Financially sustainable approach is tied to a long-term program commitment.

Without adequate funding, program implementation of any of the options is unlikely to be successful. The City should consider implementation of new or increased fees on the haulers and/or generators to cover program costs, unless it chooses to fund new programs through the general fund or another external funding source. In many instances, these strategies also require additional SW&R or other designated office FTE staff to implement and provide ongoing support for the program strategies implemented.

4.5 Strategy Summaries & Conclusion

Figure 4-1 provides a graphic representation of the available strategies to increase diversion in the context of the difficulties to implement and ongoing costs to the City. Overall recommendations for which strategies should be prioritized are included in the Zero Waste Plan Conclusion (Section 9.0).

Figure 4-1: Summary: CIM Program Strategies




Organics
Promote Additional Donation of Food by Non-Participating Generators
Require Use of Compost in City Projects and Select Building Projects
Add Drop-offs for Multifamily Buildings and Small Commercial
Mandatory Diversion for Large Organics Generators
Mandatory Organics Collection for Commercial and Industrial
Mandatory Organics Collection for Multifamily
Foster Development of a Public-Private End User
Support MPRB Ecological System Plan for Community Composting on Park Property
Large Items and Specialty Recyclables
Promote Reduction and Reuse
EPR Support
Ban Disposal of Mattresses/Box Springs
Discourage Use of Problem/Nonrecyclable Materials
Offer Special Collections for Reuse on a Seasonal Basis
Evaluate Subsidy for Low-Income/Small Businesses to Dispose of Large Items
Hazardous Waste
Allocate Existing Revenues from Pollution Control Fee to Support Program Expansion
EPR Support
Increase HHW Disposal Convenience Through Drop-offs
Evaluate Partnership with Local Businesses
Offer Collection to Small Quantity Generators
Partner with Hennepin County to Develop a Permanent HHW Facility in Minneapolis
Low
Med
High
Ongoing Cost to City
Difficulty of Implementation
Increased Diversion Potential

5.0 CITY OPERATIONS SECTOR

The City values its role in demonstrating commitment to waste reduction and diversion and its responsibility to lead by example for other sectors within the City. The City currently has standardized garbage, recycling, and organics collection in all City facilities, with services provided primarily by the City and in some instances supplemented by commercial haulers (e.g., cardboard only collection). There are approximately 4,600 City employees working in 55 facilities (owned and leased) in and around the City. In addition, the City has numerous residents, contractors, vendors, and tourists visit City facilities throughout the year.

5.1 Overview of Sector

In addition to the City's standardized garbage, recycling, and organics collection in all City facilities, various City departments participate in a range of reuse, recycling, and waste diversion activities and programs. Participation in some of these activities and programs is not currently standard City practice or consistent from department to department. Examples, but not an exhaustive list, are provided below.

- In 2008, the City enacted their environmental purchasing policy as a guide for making procurement decisions. The City has large purchasing power to create demand and awareness for high quality, environmental friendly products at a reasonable price. In addition, the City encourages the purchase of recyclable materials to support the development of stronger end markets. Environmental considerations should be a part of the normal decision process, in line with safety, price, performance, and availability.
- In 2014, the City took steps toward improving its internal solid waste management and collection system by removing all desk-side garbage containers and implementing a centralized system with waste collection stations placed strategically throughout City facilities. Employees were each provided with a "mini" garbage collection receptacle at their desk and a recycling container (which most already had). Desk-side collection of trash was discontinued (desk-side collection of recyclables was not previously provided) and employees were required to transport their garbage and recycling to the central waste collection stations and sort materials into the appropriate container. Education was an important component of the new internal collection system, and employees were educated on the benefits of eliminating desk-side garbage collection. A primary benefit is that when employees must collect and sort their own discarded materials, they become more aware of the materials they generate and become more likely to positively engage in waste reduction and diversion behaviors supporting the City's zero waste goals.

- In 2016, the City's disposal of surplus property ordinance was amended to allow for expanded donation of surplus goods to additional types of organizations in need of the available items. Previously, donation was only permitted to Minneapolis Parks and Recreation Board (MPRB) and Minneapolis Public Schools (MPS). Otherwise, any items of value were required to be sold or destroyed, given that goods were purchased with public funding.

- The City does currently facilitate the reuse of items among City departments, but the mechanisms in place are under-utilized and not widely known. A few City departments set aside and hold items that are no longer used and publicize availability of these items to other departments, but most do not regularly publicize items available. The City has an internal classified posting for internal and employee posts on their intranet website, but this tool is not widely known.
- The City owns a commercial shredder located in City Hall, which is available to all City departments for use in properly disposing of confidential materials. However, many City offices continue to contract with third-party shredding services to haul and shred confidential materials. The internal service is under-utilized, resulting in unnecessary increased truck traffic at facilities, vehicle emissions, costs, and loss of recovered material revenue from the sale of shredded paper.
- The City's City of Lakes building regularly collects plastic bags and other plastic film for recycling; however, the City's partner providing recycling has discontinued the service.
- The City has several contracts to sell scrap metal and plastics to vendors. Public Works staff routinely collect these materials at many of their facilities for recycling.

5.2 Overall City Operations Issues and Strategies

Increased waste reduction and diversion within City facilities requires implementation of strategies that address multiple waste streams. These strategies address priority issues with the City's current system or development of additional service offerings that are not specific to one type of waste. The following sections present overall system issues and proposed strategies. It should also be noted that data from current City operations is comingled with residential collection data; therefore, the City is unable to currently measure waste reduction and diversion within City facilities.

5.2.1 Conduct Regular Waste Sorts

As discussed in Section 3.2.1, the City should prioritize completing a detailed waste sort at regular intervals (recommended every 5-years at a minimum; however, more frequent sorts would provide added "real-time" results). This information will provide an opportunity to defensibly estimate quantities of materials diverted and disposed. The City should consider performing waste sorts for each facility type to evaluate specific waste streams at the individual building level if feasible. This would also provide the opportunity to develop targeted educational outreach for each building and/or department.

Table 5-1: Strategy Summary: Conduct Regular Waste Sorts

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Conduct Regular Waste Sorts	Property Services, SW&R	Low	Low	Medium	Near-Mid	Additional staffing and resource needs; potentially conducted internally

5.2.2 Enhance Existing City Practices

City staff and departments occupy a total of 55 facilities in and around the City, including an estimated 50 City-owned and five leased facilities. Though most City facilities have standardized garbage, recycling, and organics collection services and many engage in additional waste reduction and diversion activities, there is not consistency among departments. The City should consider enhancing, expanding, and/or standardizing programs and policies that support zero waste goals. The City should consider the following strategies to meet waste reduction and diversion goals.

Actions and Recommendations

1. Hire a Coordinator for Property Services who is assigned to tracking, monitoring, and improving internal City zero waste programs.
2. Develop an internal work group to evaluate waste reduction, reuse, and diversion strategies.
3. Create a guide (a "What-To-Do" list) for internal City-wide distribution addressing the proper methods by which to reuse, recycle, or dispose of items generated from City buildings (e.g. electronics, bulbs, ballasts, large items, etc.). Waste sort results and employee questions may be used to identify specific materials to address.
4. Integrate enterprise-wide waste reduction and diversion information into new hire orientation and ongoing training to instill expectations to divert waste to all employees.
5. Require annual reporting of solid waste management and waste reduction and diversion methods by facility similar to the Energy Benchmarking Program reporting requirements for City facilities greater than 25,000 square feet. The City should also develop a method to track collection data separate from residential data to adequately track the City's internal progress towards zero waste goals.
6. Evaluate successful activities in individual departments/facilities and assess feasibility of implementing City-wide. Such as:
    a. Require offices in City Hall to dispose of confidential paper materials through use of the City's commercial shredder by citing efficiency, convenience, and decreased costs to City.
    b. Evaluate the expansion of the plastic bag and film pick-up/recycling for all City facilities and evaluate a funding source to sustain the program.
    c. Encourage the expansion of the Public Work's scrap metal collection program to all departments.
7. Require future City construction (e.g., the planned "Downtown Campus") to incorporate the recommended strategies for building construction in Section 4.2.9 (e.g., three chute system if installed in the building and storage space for reuse items).
8. Install water fountains and water filling stations to reduce waste from plastic bottles and to promote use of refillable containers.
9. Modify the City's procurement policy to allow and encourage the purchase of secondhand goods.
10. Work with office supply vendor to automatically substitute eco-friendly products (products that contain recycled content, are remanufactured, refillable or rechargeable).
11. Encourage or require the sale or donation of reusable items before disposal. Evaluate the feasibility of holding regular public sales or auctions (e.g., one day per month or twice per year, depending on the quantity of items available). Promotion of these events may be modeled after existing events, such as Police Department and impound lot auctions.

12. Expand and promote the existing classified ads directory for reuse so that departments and City staff may view available items (e.g., binders, filing cabinets, shelves, desks, computer stands, etc.) before purchasing new goods.
13. Designate storage spaces for surplus City goods.
14. Develop partnerships with reuse outlets, such as schools and small businesses, for non-sellable items.

Table 5-2: Strategies for Enhance Existing City Practices

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Hire Coordinator for Internal Program	Property Services, SW&R	Medium	Low-Medium	Medium	Near-Mid	
Develop Internal Work Group	Property Services, SW&R	Medium	Low-Medium	Low	Near-Mid	
Develop Internal "What-To-Do" List	Property Services, SW&R	Low-Medium	Low	Low	Near	Additional staffing and resource needs
Integrate Information into New Hire and Ongoing Training	Property Services, SW&R	Low-Medium	Low	Low	Near	
Annual Reporting by Facility	Property Services, SW&R	Low-Medium	Low-Medium	Low	Near-Mid	Additional staffing and resource needs
Evaluate Existing City Programs and Feasibility of Expansion	Property Services, SW&R	Low-Medium	Low-Medium	Low-Medium	Near-Mid	Additional staffing and resource needs
Install Water Filling Stations	Property Services, SW&R	Low	Low	Low	Near-Mid	
Require City Construction to Follow Recommended Building Design Requirements	Property Services	Medium	Medium	Low	Near-Mid	
Allow for Purchase of Secondhand Goods	Property Services, Procurement	Low	Low	Low	Near	
Substitute Eco-Friendly Products in Purchasing	Procurement	Low	Low	Low	Near	

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Encourage Donation and Sale of Items	Property Service, Procurement	Low-Medium	Low-Medium	Low-Medium	Near-Mid	
Expand Reuse Program	Property Services, SW&R	Medium	Medium	Low	Near-Mid	Additional staffing and resource needs
Designate Reuse Areas	Property Services	Medium	Medium	Low-Medium	Near-Mid	
Develop Reuse Partnerships	Property Services, Procurement, SW&R	Low-Medium	Low-Medium	Low	Near-Mid	

5.3 Strategies for Specific Waste Types

In addition to the overall strategies presented, there are unique challenges to specific types of waste generated internally by the City, which require development and implementation of strategies tailored specific to each waste type.

5.3.1 Recyclable Materials & Organics

The City has a standard recycling and organics collection program implemented at all City owned facilities. The primary goal of the following strategies is to incrementally increase the waste reduction and diversion amounts of these materials within the City.

Table 5-3: Strategies for Recyclable Materials & Organics

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Require All City Catered Events to Comply with Green to Go Ordinance	Procurement, Property Services, SW&R	Low-Medium	Low	Low	Near	Change of City policy, promote change to employees who make purchases for each office
Evaluate Organics Collection at Leased Facilities	Property Services, SW&R	Medium	Medium	Low	Near	
Provide Regular Recycling and Organics Updates to City Employees	Property Services, SW&R	Low-Medium	Low	Low	Near	Additional program tracking needed to gather data for reporting

5.3.2 Large Item and Specialty Recyclables

The City currently sells, donates or disposes of surplus property in accordance with the City's Surplus Ordinance. The primary goal of the following strategies is to further encourage reuse or recycling of large items and specialty recyclables.

Table 5-4: Strategies for Large Item and Specialty Recyclables

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Expand and Promote Posting of City Classified Ads for Reuse	Property Services, Procurement, SW&R	Low-Medium	Low	Low-Medium	Near-Mid	Additional staffing and resource needs
Textile Recycling Program	Property Services, Procurement, SW&R	Medium	Low-Medium	Low	Near	Bid for collection and assured recycling of City branded textiles; additional staffing and resource needs
Specialty Recycling Program for Other Items	Property Services, SW&R	Low-Medium	Low-Medium	Low-Medium	Near-Mid	E.g., bulletproof vests, firefighter uniforms, hardhats, streetlight casings, etc.

5.3.3 Hazardous Waste

Hazardous waste generally refers to relatively small quantities of toxic, corrosive, flammable, or reactive products that pose environmental and health risks when not disposed of properly. Currently, hazardous wastes are disposed of through contracts with private vendors; however, there is not a comprehensive understanding of how each City department is managing their waste. The primary goal of the following strategies is to provide convenient access to proper hazardous waste disposal.

Table 5-5: Strategies for Hazardous Materials

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Inventory the City's Existing Practices for Hazardous Waste Management	Property Services, PW, Health	Low	Low	Low	Near	Additional staffing and resource needs
Develop a Coordinated Plan for Managing Hazardous Wastes	Property Services	Low-Medium	Low-Medium	Low-Medium	Near	

5.4 Potential Program Funding

Enhancing and expanding programs and activities within City departments will require increased funding and allocation of resources such as additional staff. The strategies presented in this section are relatively low-cost, but are important for the City to lead by example to foster waste reduction and diversion. The City will need to allocate resources for effective management of the City's zero waste programs.

Without adequate funding, program implementation of any of the options is unlikely to be successful. In many instances, these strategies also require additional SW&R or Property Services FTE staff to implement and provide ongoing support for the program strategies implemented.

5.5 Strategy Summaries & Conclusion

Figure 5-1 provides a graphic representation of the available strategies to increase diversion in the context of the difficulties to implement and ongoing costs to the City.

Figure 5-1: Summary: City Operations Program Strategies

6.0 INSTITUTIONAL SECTOR

The institutional sector includes primary, secondary, and higher education schools, hospitals and nursing homes, and other (non-City) governmental facilities. The institutional sector presents unique challenges due to the following:

- The City has a limited understanding of the specific needs, challenges, capabilities, and current solid waste management approaches in institutions;
- The City has limited authority to regulate solid waste and recycling activities for a subset of the institutional generators (as discussed in more detail below);
- This sector includes a mix of public and private generators; therefore, multiple strategies are necessary to foster diversion; and
- The City does not license or inspect most institutions.

To address these unique challenges, the waste reduction and diversion strategies are addressed separately in this section for the institutional sector instead of being combined with the CIM sectors (Section 4.0). With this approach, the City can better target the individualized waste streams in the institutional sector and recommend strategies that are designed to effectively influence waste reduction and diversion.

The institutional sector includes several different types of building and facilities. Based on data from Hennepin County, the Minneapolis Public School (MPS) district has 75 public schools and there are 21 private and 38 charter schools within the City. Data from Minnesota Employment and Economic Development (MDEED) indicate that there are 20 public and private colleges and universities, including one junior college, (North American Industrial Classification System (NAICS) 611310, 611210) within the City. The City also has 10 general medical and surgical hospitals (NAICS 622110) and 50 nursing homes and assisted living facilities (NAICS 623110, 623311, 623312). Lastly, there are 59 federal and state governmental institutions (NAICS 92) within the City, and numerous city and county governmental institutions.

City ordinances pertaining directly to the institutional sector are the following:

City Ordinance Chapter 174.435 requires the following commercial recycling service requirements:

- Building owners must provide adequate recycling containers in convenient locations for those recyclable materials generated by the respective businesses in the buildings being offered service;
- Building owners must provide collection of recyclable materials at least twice a month by self hauling or by contract with licensed hauler;
- Building owners must distribute written information to each business or commerical use located in the buildling on at least an annual basis describing the recycling service being provided; and
- Building owners must provide a recycling plan that describes the recycling services offered upon request of the Fire Marshal.

These requirements for commercial buildings are to be enforced by the City Fire Marshal and the Fire Marshal's authorized representatives and designees. A commercial building is defined in the ordinance as any building subject to the requirements of the building and fire codes approved for an occupancy use other than residential occupancy. These requirements apply to all buildings in the institutional sector; however, the City's capacity to enforce this ordinance is limited by state, federal, and other regulations. Therefore, it is encouraged that the City develop partnerships with the entities it does not have the

authority to regulate, similar to the partnerships that have been successfully formed for the City's Energy Benchmarking Program.

At the state level, Minnesota Statute section 115A.151 addresses recycling requirements for institutional generators, including school districts and state institutions and for entities classified in sectors 42 to 81 of (NAICS) such as schools, hospitals, and nursing homes. These institutional generators were required to recycle at least three materials beginning January 1, 2016. Single stream collection meets the recycling requirement if three or more materials are collected and recycled. The Minnesota statutes, in addition to the applicable City ordinances, help create the policy framework for the City's existing institutional generators.

6.1 Overview of Sector

Collection of solid waste and recycling for the institutional sector is provided by licensed haulers through an open competitive collection system where generators contract directly with their service provider. The City's collection system and hauler licensing are described in more detail in Section 4.1.

6.2 Overall Institutional Issues and Recommended Strategies

Available data and information on current institutional sector collection programs is limited, including waste tonnages and material types. Challenges with the institutional sector are compounded by the City's limited authority to regulate solid waste and recycling activities for some of the generators in this sector. The following sections present overall system issues and proposed strategies.

6.2.1 Collaborate with Institutional Generators

Although some institutional generators do not fall directly under City jurisdiction, the City should work in partnership with these institutions to meet similar requirements proposed for consideration for the CIM sector which include:

- Generator waste reduction and diversion plans coupled with material disposal bans (Section 4.2.7)
- Recycling in all facilities (Section 4.3.1)
- Organics collection in all facilities (Section 4.3.2)

Actions and Recommendations

1. Determine the regulatory framework available for the City to influence diversion within institutions.
2. Identify all institutional generators within the City and the waste diversion methods each facility currently practices. Identify the lead contact(s) at each institution for collaboration.
3. Clarify which City department is responsible for administering the program including technical assistance, monitoring, and oversight.
4. Allocate additional resources in addition to existing budgets.

Table 6-1: Strategy Summary: Collaborate with Institutional Generators

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Collaborate with Institutional Generators	SW&R	Medium-High	Medium-High	Medium-High	Mid	Additional staffing and resource needs

6.2.2 Conduct Regular Waste Sorts

As discussed in Section 3.2.1, the City should prioritize completing a detailed waste sort at regular intervals (recommended every 5-years at a minimum; however, more frequent sorts would provide added "real-time" results). The primary challenges associated with conducting institutional waste sorts is to effectively target institutional sector waste when not all institutional waste is transported to HERC. Furthermore, a number of private haulers collect materials throughout the Twin Cities Metro area. Thus, the institutional waste sampled and sorted may not be representative of the City's institutional sector. The City would need to partner with Hennepin County to conduct waste sorts at HERC or find an alternative location to sort institutional waste. The City could also partner with certain institutions to potentially conduct waste sorts on-site. The City would need to work closely with haulers to collect samples of materials that are not delivered to HERC.

Table 6-2: Strategy Summary: Conduct Regular Waste Sorts

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Conduct Regular Waste Sorts	SW&R	Low	Low-Medium	Medium-High	Near-Mid	Measurement tool allowing City to identify target areas; consultant needed for sorts; additional staffing and resource needs

6.2.3 Support Organics Diversion Programs

Several generators within the institutional sector generate large amounts of organics through the operation of cafeterias and restaurants (e.g., schools, nursing homes, and hospitals). The City should collaborate with these entities to encourage organics diversion programs (and require where the City has legal authority).

Actions and Recommendations

1. Clarify which City department is responsible for administering the program including technical assistance, monitoring, and oversight.
2. Allocate additional resources for support in addition to existing budgets.
3. Encourage organics diversion programs (e.g., food donations, food-to-animals, composting, etc.) across all institutional sectors (and require where the City has legal authority).
4. Determine the regulatory framework available for the City to require organics diversion at select institutions.
5. Require use of Hennepin County signage or approved alternative on all containers to provide consistent messaging.
6. Support development of public-private end users for organics management (e.g. composting and/or anaerobic digestion).

Table 6-3: Strategy Summary: Support Organics Diversion Programs

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Support Organics Diversion Programs	SW&R	Medium	Medium	Low-Medium	Near-Mid	Determine regulatory authority; additional staffing and resource needs

6.2.4 Allocate Additional Resources for Education and Outreach

As discussed in Section 3.2.7, the City should develop improved education and outreach campaigns. The City will need to identify a funding source(s) to support increased education and outreach. It is important that solid waste and recycling education and outreach efforts are appropriately funded. If underfunded, investments that the City makes in other waste reduction and diversion strategies may not realize their full potential. The City should also partner with existing organizations or programs that provide funding for waste diversion education or program support. For example, Hennepin County has an existing grant program to support development or improvement of recycling, organics, or waste reduction programs in institutions, such as schools and businesses. Partnering with other organizations with successful programs may help to maximize the City's investment in education and outreach.

Table 6-4: Strategy Summary: Allocate Additional Resources for Education and Outreach

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Allocate Additional Resources for Education and Outreach	SW&R	Medium	Low	Low-Medium	Near-Mid	Additional staffing and resource needs

6.3 Strategies for Specific Generators

In addition to the overall strategies presented, there are unique challenges to addressing waste reduction and diversion for different institutional waste generators. Schools, hospitals and nursing homes, and governmental facilities may require implementation of strategies specific to each type of generator. Each of these are summarized below.

6.3.1 Primary, Secondary, and Higher Education Schools

Schools are unique in that they are large generators of waste with an existing focus on education. This focus should be harnessed to create strong waste reduction and diversion programs that have a built-in audience (students, teachers, school staff and custodians, parents, and volunteers) that may be more readily engaged and mobilized than individuals in other sectors or organizations. Engagement levels and program success will be dependent on a combination of potential regulatory mandates and buy-in from school district officials, boards, staff, and students. Education and development of waste diversion, recycling, and organics programs in schools supports the City's long-term goals including training children to become future citizens engaged in waste reduction efforts.

Hennepin County provides funding for recycling, organics, and waste reduction education initiatives and programs for public, private, and charter schools through its School Recycling Grant program. In 2017, the program awarded grants totaling $150,700 to schools and school districts within the County. Six schools within the City, including four MPS and two private schools, were awarded grants totaling $49,900, or approximately 33 percent of the total 2017 program grant funding. The County has published a Best Practices Guide to Organics Recycling in Schools that may aid in supporting development of organics programs in schools within the City.

Minneapolis Public Schools

The MPS district has a policy goal (established in 2009) to promote environmental sustainability, including waste diversion. MPS is comprised of approximately 75 elementary, middle, high schools, and alternative schools. Based on a 2010 study conducted by the MPCA, 78 percent of waste generated by MPS is either recyclable (28 percent) or compostable (50 percent) material. All schools in the district participate in single-sort recycling collection. Data received from Hennepin County showed that 47 percent of MPS district schools participated in organics recycling programs during the 2016-2017 school year. The MPS district's existing sustainability and education efforts, which include single-sort recycling and organics collection at some schools, make it an ideal partner for the City to collaborate with to expand programs and activities that reduce and divert waste.

Private and Charter Schools

There are 59 private and charter schools located within the City, of which approximately 31 percent participated in organics recycling programs during the 2016-2017 school year, based on data received from Hennepin County. Since there is limited information available on how private and charter schools approach recycling, organics collection, and hauling contracts, it is recommended that more research be conducted to identify effective strategies for private and charter schools. For example, the City of Lakes Waldorf School has implemented an array of waste reduction and diversion activities as well as other environmental initiatives. The school developed an environmentally responsible purchasing policy, hosts zero waste events, and has strong recycling and organics diversion programs with a recycling and

diversion rate of 67 percent. The school was recognized in 2015 by the U.S. Department of Education's Green Ribbon Schools program for these efforts.

Higher Education Schools

There are approximately 20 higher education schools (including junior colleges) located within the City. Since there is limited information available on how higher education schools approach recycling, organics collection, and hauling contracts, it is recommended that more research be conducted to identify effective strategies for these institutions. For example, the University of Minnesota has extensive recycling and reuse programs and is in the process of rolling out organics recycling to all buildings on campus.

Actions and Recommendations

1. Clarify which City department is responsible for administering this program including technical assistance, monitoring, and oversight.
2. Allocate additional resources for support and enforcement in addition to existing budgets.
3. Conduct research on private and charter schools and higher education schools to determine what programs are currently being offered and help develop effective strategies for diversion.
4. Promote uniform waste diversion programs administered by MPS rather than varying by school. Advocate for one or more dedicated staff within the MPS district to administer these programs.
5. Support the development of organics programs such as food donation, food-to-animals, and composting in all schools.
6. Evaluate legal authority to require organics collection in schools.
7. Encourage resource management contracts with private haulers. MPS has implemented resource management contracts with its waste hauler, giving the district access to extensive data about the garbage, recycling, and organics generated at its schools. The City should consider partnering with the school district to utilize the waste data collected over time to develop new and better strategies for schools. Data collected from public schools can reasonably be applied to private and charter schools, where actual data may not be available.
8. Encourage all schools to educate students about waste reduction and diversion at the beginning of the school year and through curriculum. Consider partnering with Hennepin County to create an educational video and curriculum.
9. Encourage all schools to develop waste reduction and diversion training for staff, specifically custodians.
10. Encourage schools with cafeterias to switch to reusable cafeteria trays, cups, plates, bowls, and silverware instead of disposable items.
11. Encourage reuse and donation before disposal of items such as school supplies, textiles (lost and found clothing items), unopened food, surplus goods, etc.
12. Coordinate with schools and colleges to ensure that problem materials and hazardous wastes (e.g., bulbs and chemicals from labs) are properly disposed.
13. Encourage all schools to add recycling to all indoor and outdoor event spaces (e.g. gymnasiums, sports fields, etc.). See Section 7.3.4 for strategies specific to sports facilities at schools.
14. Encourage schools with residence halls to follow the strategies outlined in the CIM Section for multifamily buildings (such as providing Hennepin County signage, single sort recycling, organics collection, large item, and specialty recyclables).
15. Encourage use of Hennepin County signage or approved alternative on all containers to provide consistent messaging.

Table 6-5: Strategies for Primary, Secondary, and Higher Education Schools

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Conduct Research on Current Diversion Practices	SW&R	Low	Low	Low	Near-Mid	Additional staffing and resources needed
Promote Uniform Waste Diversion Programs	SW&R	Medium	Low	Low	Mid	Based on the district rather than school by school; additional staffing and resources needed
Support Organics Program Development	SW&R	Medium-High	Medium-High	Low-Medium	Mid	Additional staffing and resources needed; collaborate with Hennepin County
Evaluate Legal Authority to Require Organics Collection	SW&R	Medium-High	Medium-High	Low-Medium	Mid	Additional staffing and resources needed
Encourage Resource Management Contracts with Private Haulers	SW&R	Medium	Medium	Low-Medium	Mid	Model after MPS contracts; additional staffing and resources needed
Encourage Education for Waste Reduction and Diversion	SW&R	Low	Medium	Low	Mid	Partner with Hennepin County
Encourage Reuse	SW&R	Low-Medium	Low	Low-Medium	Mid	
Coordinate to Ensure Proper Problem Material and Hazardous Waste Disposal	SW&R	Low	Medium	Medium	Mid	Additional staffing and resources needed
Encourage Recycling at Events	SW&R	Medium	Low	Low	Mid	
Encourage Residence Halls to Follow Recommendations in CIM Section	SW&R	Medium	Medium	Medium	Mid	
Encourage Use of Hennepin County Signage	SW&R	Low	Low	Low	Mid	

6.3.2 Minneapolis Public Housing Authority

The Minneapolis Public Housing Authority (MPHA) provides housing for low income population within the City and owns and manages over 6,000 public housing rental units, which include approximately 42 high-rise apartment buildings, 753 single-family homes, and 184 town home units. Generally, residents residing in MPHA units pay 30% of their adjusted income as monthly rent through a federal subsidy. In addition, MPHA has over 1,900 apartments in 12 buildings designated for seniors (50 years of age or older). Due to the mix of housing types, waste collection services are provided both by SW&R and commercial haulers and strategies for waste reduction and diversion reflect both residential and CIM sector strategies.

Actions and Recommendations

1. Determine the regulatory framework available for the City to influence diversion.
2. Clarify which City department is responsible for administering this program including technical assistance, monitoring, and oversight.
3. Revise building design requirements as discussed in Section 4.2.9:
    a. Advocate for modifications to State building code to increase capacity for recycling.
    b. Consider requiring mandatory recycling days for existing multifamily buildings where there is only one chute.
4. Implement consistent waste reduction and diversion programs and educational messaging across MPHA properties. Educate tenants on proper waste management before moving in and provide annual refresher information. Advocate for one or more dedicated staff within the MPHA to administer these programs.
5. Encourage the development of waste reduction and diversion training for onsite management and facilities maintenance staff.
6. Evaluate organics collection in senior housing where food services are offered.
7. Encourage reuse and donation before disposal of items. Follow residential waste reduction and reuse strategies presented in Section 3.2.5 and 3.2.6.
8. Coordinate to ensure that problem materials and hazardous wastes (e.g., bulbs and HHW) are properly disposed.
9. Encourage the use of Hennepin County signage or approved alternative on all containers to provide a consistent message.

Table 6-6: Strategies for Minneapolis Public Housing Authority

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Determine Regulatory Framework to Influence Diversion	SW&R	Low	Low	Low	Near	Additional staffing and resources needed

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Clarify Departmental Responsibility	SW&R	Low	Low	Low	Near	
Revise Building Design Requirements	SW&R	Medium-High	Medium	Low	Near	Further review of City zoning requirements necessary
Implement Consistent Programs Across MPHA Properties	SW&R	Medium	Low	Low	Mid	Additional staffing and resources needed
Encourage Development of Training for Staff	SW&R	Low	Medium	Low	Mid	
Evaluate Organics Collection	SW&R	Medium	Medium	Low	Mid	
Encourage Reuse and Donation	SW&R	Low-Medium	Low	Low-Medium	Mid	
Coordinate to Ensure Proper Hazardous Waste Disposal	SW&R	Low	Medium	Medium	Mid	Additional staffing and resources needed
Encourage Use of Hennepin County Signage	SW&R	Low	Low	Low	Mid	

6.3.3 Hospitals and Nursing Homes

Hospital and nursing home waste streams are large and diverse. Effectively managing these waste streams to maximize waste diversion and recycling and ensure safe handling to minimize health and environmental threats, requires that facilities utilize many different waste disposal and recycling methods. A key barrier to promoting waste diversion and recycling within hospitals and nursing homes is the varied ownership and operation (e.g., universities, non-profits, Health Maintenance Organizations, privates, state, etc.). In addition, the City does not currently have access to waste stream data specific to hospitals and nursing homes within Minneapolis because these facilities either contract with private haulers for solid waste and recycling services or manage waste streams onsite.

Hospitals also produce large quantities of medical waste requiring specialized treatment, collection, and disposal that is handled by the producing facility and contracted companies equipped to handle biohazards safely. The City realizes that medical waste is a significant component of hospital and nursing home waste streams, but is not advocating waste diversion for this specialized waste stream.

One additional challenge with the hospital and nursing home waste stream is the switch to single-use plastics from reusable items that would typically be cleaned/sanitized after each use. The substitute of

plastics for reusable tools results in a larger, changing waste stream. Because these plastic items are from a medical setting, haulers and recycling processors need to be educated on this material's recyclability as there is a common misconception that these materials are potential biohazards.

Actions and Recommendations

1. Allocate resources to gather information on existing programs for hospitals and nursing homes within the City to determine programs currently being offered and to help develop effective strategies for diversion. This includes gathering information from the MPCA on hospital incinerators.
2. Evaluate legal feasibility of requiring organics programs (e.g., food donation, food-to-animals programs, composting) for hospitals and nursing homes.
3. Connect generators to blue wrap recycling programs and evaluate legal feasibility of requiring blue wrap recycling (encourage if no legal authority). Blue wrap, which is a sterile woven plastic wrap commonly used for wrapping surgical instruments, is generated in large quantities by hospitals. There are existing organizations and programs, such as Merrick, Inc., the Healthcare Plastics Recycling Council, and the Halyard Blue Renew program, that partner with hospitals and healthcare facilities to find solutions for solid waste management, including blue wrap recycling. The City should further research these organizations and programs to identify potential partners in working with hospitals and clinics within the City.
4. Encourage the development of medical specific recycling programs (such as rigid plastics and pill bottles).
5. Encourage reuse or donation of unclaimed appropriate patient items (clothing, furniture, etc.).
6. Encourage the use of reusable items such as items that are cleaned/sanitized after each use versus items that are single-use or throw away (e.g., tools, gowns, linens, etc.).
7. Encourage the promotion of medicine take-back programs.
8. Coordinate with hospitals and nursing homes to ensure that problem materials and hazardous wastes (e.g., bulbs and chemicals) are properly disposed.
9. Encourage use of Hennepin County signage or approved alternative on all containers to provide consistent messaging.

Table 6-7: Strategies for Hospitals and Nursing Homes

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Allocate Resources to Gather Information on Existing Programs	SW&R	Low	Medium	Low	Mid	Additional staffing and resources needed
Evaluate Legal Authority to Require Programs	SW&R	Low	Low	Low	Mid	Additional staffing and resources needed
Encourage Organics Programs	SW&R	Medium-High	Medium	Low-Medium	Mid	Partner with Hennepin County
Encourage Blue Wrap Recycling Collection	SW&R	Medium	Medium	Low-Medium	Mid	Evaluate legal authority to require
Encourage Recycling of Medical Materials	SW&R	Medium	Medium	Low-Medium	Mid	Such as rigid plastics and pill bottles
Encourage Reuse	SW&R	Low	Low	Low	Mid	
Encourage Unused Medicines Collection	SW&R	Low	Medium	Low-Medium	Mid	Partner with Hennepin County
Coordinate to Ensure Proper Problem Material and Hazardous Waste Disposal	SW&R	Low	Medium	Medium	Mid	Additional staffing and resources needed
Encourage Use of Hennepin County Signage	SW&R	Low	Low	Low	Mid	

6.3.4 Other Governmental

Other governmental institutions include non-City governmental facilities such as Hennepin County, state, and federal facilities located within the City of Minneapolis. The City does not have direct authority to mandate programs or behaviors in other non-City governmental institutions; however, it is common for many governmental institutions to prioritize environmentally responsible business practices, including waste reduction and diversion. Therefore, other governmental institutions may be willing and well-equipped partners in expanding the City's zero waste efforts.

For example, Hennepin County already has several internal initiatives addressing recycling and waste reduction in County Facilities identified both in their Solid Waste Management Master Plan and with discussions with staff, which include but are not limited to:

- In-house recycling program at all County-owned facilities, many leased locations, all 41 Hennepin County libraries, and the Hennepin County Medical Center. The program services include: single sort recycling, cardboard, organics (back-of-house at corrections facilities, Park Café, and several pilots), library books (including reuse), media (CDs, DVDs, etc.), household batteries, and scrap metal;
- Lead-by-Example Incentive Fund grant program supports County departments in implementing internal waste reduction and diversion projects;
- Environmentally Preferable Purchasing and Waste Reduction Resolution (passed in 2001) incorporates environmentally preferable products and materials into County contracts and procurements; and
- Sustainable purchasing initiatives the County has in place include a partnership with Staples to automatically substitute eco-friendly products that save the County money (e.g., remanufactured toner cartridges), the purchase of Electronic Product Environmental Assessment Tool (EPEAT) registered electronics, use of environmentally preferable cleaning products and methods, and the reuse of office supplies organized through the County's purchasing department.

In addition to Hennepin County's initiatives, the City operations waste reduction and diversion strategies (detailed in Section 5.0), can be used as an example for other governmental facilities.

Actions and Recommendations

1. Gather data on state and federal waste management programs within the City.
2. Encourage development of strategies for other governmental institutions similar to the City and Hennepin County because opportunities for diversions exist in similar facility types and departmental operations.
3. Evaluate the City Operations (Section 5.0) strategies developed for waste reduction and diversion for application to other governmental institutions within the City. These include hiring a coordinator for internal programs; requiring benchmarking or annual reporting for each facility; develop reuse partnerships; comply with state laws for public entities requiring recycling programs; encourage organics collection programs; and inventory and coordinate hazardous waste management practices.

Table 6-8: Strategies for Other Governmental

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Gather Data on Existing State and Federal Programs	SW&R	Low	Low	Low	Mid	Additional staffing and resources needed
Encourage Development of Strategies for Other Governmental Institutions	SW&R	Low	Low	Low	Mid	Additional staffing and resources needed
Evaluate City Operations Strategies for Applicability	SW&R	Low-Medium	Low-Medium	Low	Mid	Additional staffing and resources needed

6.4 Potential Program Funding

The estimated costs for implementation of the various options described above will vary considerably for the City. Generally, achieving greater incremental growth in diversion requires additional financial investment which includes higher program costs. With the City's existing institutional program generating very limited revenues through its hauler licensing program, the City will need to increase its capacity to raise revenues to achieve greater diversion. Expanding capacity to raise revenues requires implementation of a new funding mechanism or, in the alternative, a greater commitment of funding through the general fund. Typically, program funding mechanisms that have been successful address the following:

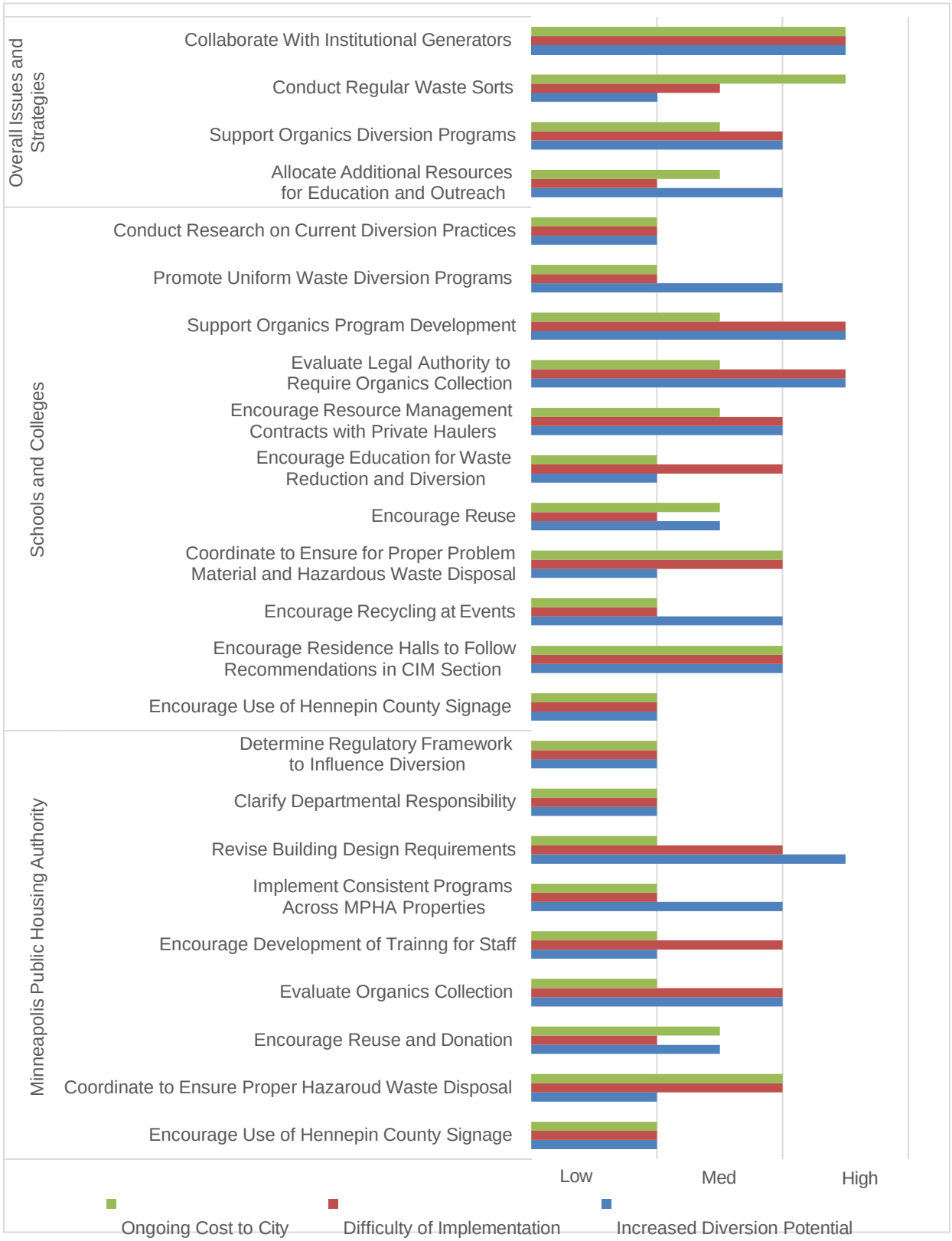
- Total revenues generated clearly align with estimated program costs;
- Levied fees impact relevant stakeholders, including haulers and generators; and
- Financially sustainable approach is tied to a long-term program commitment.

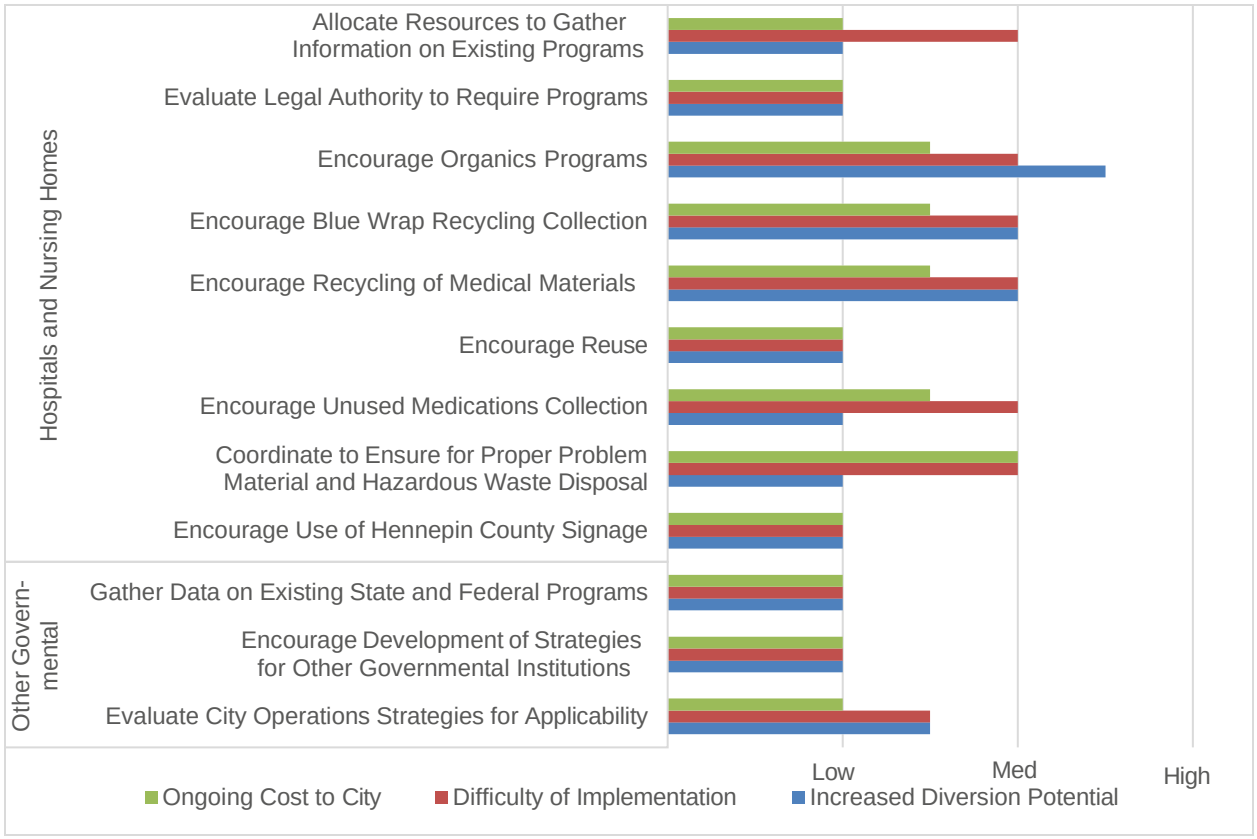
Without adequate funding, program implementation of any of the options is unlikely to be successful. In many instances, these strategies also require additional SW&R or designated office FTE staff to implement and provide ongoing support for the program strategies implemented.

6.5 Strategy Summaries & Conclusion

Figure 6-1 provides a graphic representation of the available strategies for the institutional sector to increase diversion in the context of the difficulties to implement and ongoing costs to the City.

Figure 6-1: Summary: Institutional Program Strategies




Hospitals and Nursing Homes
Allocate Resources to Gather Information on Existing Programs
Evaluate Legal Authority to Require Programs
Encourage Organics Programs
Encourage Blue Wrap Recycling Collection
Encourage Recycling of Medical Materials
Encourage Reuse
Encourage Unused Medications Collection
Coordinate to Ensure for Proper Problem Material and Hazardous Waste Disposal
Encourage Use of Hennepin County Signage
Other Govern-mental
Gather Data on Existing State and Federal Programs
Encourage Development of Strategies for Other Governmental Institutions
Evaluate City Operations Strategies for Applicability
Low
Med
High
Ongoing Cost to City
Difficulty of Implementation
Increased Diversion Potential

7.0 PUBLIC SPACE SECTOR

The public space sector is inclusive of activities and special events taking place in various public spaces in Minneapolis. Specifically, this section addresses issues and strategies for special events held in City-controlled spaces, parks, Special Service Districts (SSDs), sporting and entertainment facilities, mobile food vendors, public transit stations and shelters, and quasi-public spaces (privately owned areas where public events are held or where the public regularly gathers).

The public space sector has several barriers to overcome to foster successful waste diversion. These include but are not limited to varied and mobile generators, extensive geographic areas, and lack of opportunities to provide incentives to participate in waste diversion programs. Influencing waste diversion in public spaces is also challenging because of the highly varied characteristics and needs of each space or event.

Ordinances and permitting requirements governing public spaces vary widely by space or activity. Some public spaces require provision of recycling services, and some do not. Organics recycling is not currently required for public spaces presented in this section, with the exception of businesses with food permits.

The use of compostable products facilitates diversion of organics from all events and the City's Green to Go ordinance requires that businesses with food permits must collect organics when compostable plastics are used. As discussed in Section 4.3.2, compostable products are not widely available at retail locations around the City and, where available, they may be cost prohibitive.

Ordinances and requirements specific to each type of public space or event are presented in the following applicable sections.

7.1 Overview of Sector

The available data and information on current waste generation and diversion conditions of the public space sector is limited. Collection services for public spaces varies space to space, but generally services are provided by either City collections (e.g., parks) or by licensed haulers (e.g., SSDs and events).

7.2 Overall Public Space Issues and Strategies

The primary issue in public spaces is providing access to containers in strategically placed locations. The behavior of individuals in the public space sector is difficult to monitor and it is very difficult to hold individuals accountable for proper waste separation. This can lead to high contamination rates for both single-sort recycling and organics collections.

Due to the high potential for contamination, it is not recommended that organics recycling be implemented as a part of every-day solid waste services in public spaces that are reliant solely on individual citizen participation with no container monitoring. This may change as organics recycling becomes universally known and is a more common practice. High contamination rates

would result in increased costs of service with little impact on waste diversion. However, mechanisms may be developed for successful organics collection for controlled events and for mobile food vendors.

Potential strategies for the public space sector should be focused on waste reduction, material type restrictions, and on increasing availability of single-sort recycling containers. Educational campaigns to encourage waste diversion behaviors in public spaces should also be implemented. The following sections present overall system issues and proposed strategies for increasing diversion.

7.2.1 Provide Convenient Access to Recycling

As mentioned previously, the primary barrier with diversion in public spaces is providing access to the proper container. If recycling containers are not available, many individuals will dispose of recyclables in a garbage container due to ease of access and not likely recycle these items. The following strategies offer opportunities to provide recycling containers throughout public spaces.

Actions and Recommendations

1. Promote and expand the City's Adopt-a-Recycling Container program. Encourage all Adopt-a-Litter Container participants to also adopt a recycling container.
2. Consider adding recycling containers to pedestrian priority corridors. Clarify who would be responsible for servicing the containers. Allocate additional resources for servicing these containers.
3. Modify existing commercial parking lot licensing. If the establishment allows for tailgating in the parking lot, they must provide recycling at the same size/volume ratio as garbage.
4. Clarify responsibility for compliance of City ordinances.
5. Allocate additional resources for enforcement in addition to existing budgets.

Table 7-1: Strategy Summary: Provide Convenient Access to Recycling

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Provide Convenient Access to Recycling	SW&R	Low-Medium	Low-Medium	Low-High	Near-Long	Additional staffing and resource needs

7.2.2 Allocate Additional Resources for Education and Outreach

As discussed in Section 3.2.7, the City should develop improved education and outreach campaigns. The City will need to identify a funding source(s) to support increased education and outreach. Education and outreach efforts should target the general public, SSD member businesses, businesses with quasi-public spaces, and organizations holding special events within the City. It is important that solid waste and recycling education and outreach efforts are appropriately funded. If underfunded, investments that the City makes in other waste reduction and diversion strategies may not realize their full potential.

Table 7-2: Strategy Summary: Allocate Additional Resources for Education and Outreach

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Allocate Additional Resources for Education and Outreach	SW&R	Medium	Low	Low-Medium	Near-Mid	Additional staffing and resource needs

7.3 Strategies for Specific Generators

In addition to the overall strategies presented, there are unique challenges to addressing waste reduction and diversion for each public space component. These areas vary widely in public use, operation, and regulation and require development and implementation of strategies specific to each, as summarized below.

7.3.1 City Permitted Special Events

The City's Business Licenses & Consumer Services (Licensing) oversees permitting procedures for special events held within the City, and has the authority to issue or reject permit applications. SW&R reviews solid waste and recycling plans required with event permit applications and makes recommendations to Licensing regarding event recycling compliance. Event organizers rent containers from the City, Hennepin County, private haulers, or work with event waste management services to manage waste from the event.

The Block Event Special Event (BESE) committee, comprised of City staff in various departments with permit requirements for special events, meets regularly to streamline the application review process for special events by granting or denying approval from multiple departments through an all-hands meeting. Existing permit requirements pertaining to recycling apply to large block events (expecting at least 2,500 participants) and all parades/races. Licensing requirements for large block events (City Ordinance 455.36) and parades/races (City Ordinance 447.91) include:

- Collection of recyclable material separate from non-recyclable material must be provided and all recyclable materials must be delivered or self-hauled to a recyclable materials processing facility.
- Recyclable material collection containers must be in equal number and capacity (1:1 ratio) to collection containers for garbage and must be placed within five feet of one another. At least one location must be provided for the separate collection of corrugated cardboard.
- Signage must be placed on all collection containers, permanent entrance points, and at all points of sale directing participants to recycle all paper, plastic, glass, and metal containers.
- Prior to the event, the event applicant must provide a written plan to the City demonstrating compliance with the recycling requirements.
- Event organizers must submit a recycling facility weight ticket, photos, and/or other evidence verifying compliance with recycling requirements. Failure to submit required reporting may result in the forfeiture of the security deposit ($500.00) required for permit issuance.

Though reporting of materials collected and recycled at large events is required, it is often not enforced due to lack of City administrative resources. The City does not regularly receive or maintain data regarding large block event or parades/races recycling. The ordinances also contain language encouraging organics collection at events where food is served, however there is no requirement for organics collection to be provided by event organizers. In addition, the requirement that garbage and recycling containers be provided in a 1:1 ratio eliminates the opportunity for "zero waste" events.

Large block events are also required to follow the City's Green to Go ordinance, enforced by the City's Health Department, which requires food prepared for immediate consumption to be served on reusable, refillable, recyclable, or compostable containers.

Actions and Recommendations

1. Modify the existing special event ordinance as it pertains to solid waste and recycling at large events and parades/races to incorporate the following:
    a. Lower attendance threshold for required recycling from 2,500 to 200 participants per day and encourage collection of recyclables for events with fewer than 200 attendees.
    b. Allow for zero waste events by removing requirement for garbage containers in equal number and volume to recyclable material containers for events with an approved zero waste plan.
    c. Require organics collection, including post-event reporting requirements, at controlled or enclosed events where food is served.
    d. Require event organizers to use Hennepin County signage or approved alternative on all garbage, recycling, and organics containers to provide consistent messaging.
2. Enforce compliance with event reporting requirements.
3. Revise the special event permit application to detail the types and number of waste containers that will be provided at the event. The current application language provides only basic information.
4. Develop database for special events to evaluate overall waste generation and diversion.
5. Collaborate with the City's Health Department to verify compliance with event recycling requirements. The City's Health Department oversees most permitted special events where food is served.
6. Provide incentives for hosting zero waste events. This may include providing a reduced, no-fee, or tiered-fee (e.g., extra fee if not a zero-waste event) approach for the permit application process

for event organizers holding zero waste events. The City should promote existing zero waste event resources such as Rethink Recycling's Zero Waste Event Planning Guide, Hennepin County's Low-waste Events, and MPRB's Green Events Go Certification Guidelines.

7. Encourage distribution of "giveaways" from vendors that are useful, reusable or recyclable (e.g., reusable water bottles, plastic frisbees, flashlight keychains, etc.). Consider restrictions on problematic "giveaways" (e.g., plastic bags, items individually wrapped in plastic, etc.).
8. Collaborate with the MPRB so that event recycling requirements in parks are the same for City permitted events. MPRB has a separate set of event recycling requirements for events held in parks, as described in Section 7.3.3.

Table 7-3: Strategies for City Permitted Special Events

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Modify the Existing Special Event Ordinance	SW&R; Licensing	Medium	Medium	Low	Near	
Enforce Reporting Requirements	SW&R	Medium	Medium	Medium	Near	Additional staffing and resource needs
Revise the Special Event Permit Application	SW&R; Licensing	Low	Low	Low	Near	
Develop Database for Special Event Reporting	SW&R	Low	Medium	Low	Near	Additional staffing and resource needs
Collaborate with Health Department for Compliance	SW&R; Health	Low	Low	Low	Near	Additional staffing and resource needs
Provide Incentives for Zero Waste Events	SW&R; Licensing	Medium	Medium	Medium	Mid	
Encourage Reuse "Giveaways"	SW&R; Licensing	Medium	Medium	Low	Mid	
Collaborate with MPRB	SW&R; Licensing	Low	Low	Low	Mid	Additional staffing and resource needs

7.3.2 Special Services Districts

SSDs (including Improvement Districts) are defined service areas within the City, formed to provide member businesses and property owners with special services in addition to regular City services. Minnesota Statute 428A allows for the creation of SSDs. The City currently has 16 active SSDs.

As stated in the City's Special Service District Policy, SSDs are intended to "enhance, not replace City service deliveries". Services provided by SSDs are funded through fees collected by the City from the businesses and property owners within each SSD. The assortment of services provided in each district are guided by the district's advisory board, which is comprised of a small group of SSD member business and property owners. Special services provided include activities such as those presented below:

- Trash and recycling collection in public spaces;
- Snow and ice removal in areas not regularly serviced by the City;
- Repair and maintenance of fixtures in public spaces, such as sidewalks, landscaping, electrical and irrigation systems, fountains, etc.;
- Maintenance of public parking facilities; and
- Promotion of special events.

Further detail regarding specific services provided by each district can be found in City Title 17, Streets and Sidewalks. SSDs are not required to provide solid waste services; however, currently all active SSDs provide some form of garbage collection service in the public space. Collection frequency varies greatly based on need. Imposing additional requirements on SSDs without added benefits may potentially serve as a disincentive to the formation of additional SSDs within the City.

The existing framework of SSDs for providing public services allows for the implementation of recycling services in these areas, and some SSDs have implemented recycling collection. For example, the Minneapolis Downtown Improvement District (MDID) launched the City's first outdoor recycling program in 2011 with 20 recycling cans, and expanded the program to 100 cans in 2012 in response to the success of the pilot program. MDID also creates public awareness campaigns to educate and motivate the public to participate in the public space in a responsible manner.

Actions and Recommendations

1. Require SSDs that provide garbage and recycling services to use Hennepin County signage or approved alternative on all public containers to provide consistent messaging. Work with the City's design team and the Public Art Commission to require similar signage on containers that receive public art funding.

2. Collaborate with SSDs that already provide recycling services to identify existing issues and to identify strategies and programs that have and have not been successful in the past.
3. Collaborate with individual SSDs to create public awareness campaigns to maximize participation and reduce contamination.
4. Collaborate with Hennepin County and SSDs to identify recycling containers that are functional, attractive, easy to service, and consistent to cultivate member buy-in and public participation.
5. Create a grant program or similar incentive for SSDs to provide recycling services. Historically, Hennepin County operated a grant program for public spaces that is no longer in existence. The City should work to create a similar grant program for SSDs or collaborate with Hennepin County to reinstate a grant program for public spaces and SSDs. Lastly, the City should prioritize incentives for lower-income and underfunded SSDs.
6. Evaluate feasibility for SSDs to provide recycling services if they choose to provide garbage services.
7. Encourage SSDs to compost seasonal plantings and use finished compost in operations.

Table 7-4: Strategies for Special Service Districts

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Require SSDs to Use Hennepin County Signage (Where Applicable)	PW	Low	Low	Low	Near	Additional staffing and resource needs
Collaborate with SSDs to Identify Specific Program Issues	PW	Low	Low	Low	Near	Additional staffing and resource needs
Collaborate with SSDs to Create Public Awareness Campaigns	PW	Medium	Medium	Low	Near-Mid	Additional staffing and resource needs
Collaborate with Hennepin County and SSDs to Identify Recycling Containers	SW&R, PW	Low	Medium	Low	Mid	Additional staffing and resource needs
Create a Grant Program or Similar Incentive for SSDs to Provide Recycling Services	PW	Medium	Medium	Medium	Mid	Additional staffing and resource needs
Evaluate Feasibility for Recycling by SSDs Providing Garbage Services	PW	Medium	Medium	Low	Near-Mid	
Encourage SSDs to Compost and Use Finished Compost in Operations	SW&R	Low	Low	Low	Near	

7.3.3 Parks and Recreation Board

MPRB maintains and regulates an expansive system of parks and recreation-related sites within the City, including 179 parks and numerous lakes, recreation centers, gardens and bird sanctuaries, historical sites, and trails and parkways. In addition, MPRB contracts for restaurant vendors located at some regional parks and partners with MPS to distribute over 130,000 meals annually at 39 sites through after school and summer lunch programs.

Solid waste service in City neighborhood parks is administered similarly to residential collection. Waste throughout neighborhood parks is collected by City services in separate carts for trash and recycling. SW&R also provides separate organics collection for materials collected inside park buildings. MPRB collects trash and recycling throughout the regional parks located within the City and maintains separate contracts for processing of these materials. MPRB also contracts with private haulers to collect dumpsters for garbage, recycling, organics, and specialty items at select locations (e.g., restaurants located at regional parks and headquarters buildings).

In addition to regular operations, MPRB also regulates use of City park spaces and facilities for special events. There is a different permitting process, implemented by MPRB, for special events held in City parks than for events held in non-park City public spaces (addressed in Section 7.3.1). The 2017-2018 Park Use and Event Permit requirements pertaining to solid waste for events held in City parks include but are not limited to the following:

- All events are required to recycle recyclable waste;
- All events are required to provide trash/recycling removal services;
- All events must provide recycling containers for event attendees in a 1:1 ratio of recycling containers to garbage containers; and
- If dumpsters are requested, they must be placed at locations designated by the MPRB.

Additionally, MPRB offers an Events Go Green certification to recognize events that adopt sustainable practices. There are currently no organics diversion requirements to obtain an MPRB event permit.

The nationally recognized park system provides a great opportunity to education residents and influence waste diversion behaviors, especially at scheduled indoor and outdoor activities. Strategies to supplement the existing waste diversion activities are provided below.

Actions and Recommendations

1. Encourage MPRB to update park event solid waste management requirements to match City requirements upon the City updating its event recycling ordinances.
2. Encourage MPRB to expand waste management requirements for Events Go Green certification to include organics diversion.
3. Encourage increased recycling through education and more conveniently placed containers.
4. Collaborate with MPRB to receive internal waste hauling and diversion data to evaluate overall waste generation and diversion.
5. Collaborate with MPRB to develop staff educational resources and training.
6. Collaborate with MPRB and MPS to order the appropriate number of meals for after school and summer lunch programs and explore the feasibility of donating leftover edible food.
7. Encourage MPRB to host after school programs on waste reduction and diversion and the associated benefits.
8. Support MPRB Ecological System Plan for community composting on park property.
9. Encourage MPRB to use finished compost in its operations.

Table 7-5: Strategies for Parks and Recreation Board

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Encourage Recycling through Education and Convenient Container Placement	SW&R	Medium	Low	Low	Mid	Additional staffing and resource needs
Encourage MPRB to Revise Park Event Requirements to Align with City Requirements	SW&R	Low	Low	Low	Near -Mid	Additional staffing and resource needs
Encourage MPRB to Expand Events Go Green Certification to Include Organics	SW&R	Medium	Low	Low	Mid	Additional staffing and resource needs

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Collaborate with MPRB to Receive Internal Waste Hauling and Diversion Data	SW&R	Low	Low	Low-Medium	Mid	
Collaborate with MPRB and MPS to Order the Appropriate Number of Meals for School Programs	SW&R	Low	Low	Low	Mid	
Collaborate with MPRB to Develop Staff Educational Resources and Training	SW&R	Medium	Low	Low	Mid	Additional staffing and resource needs
Encourage MPRB to Host After School Programs	SW&R	Medium	Medium	Low	Mid	
Support MPRB Ecological System Plan for Community Composting on Park Property	SW&R	Low	Low	Low	Near-Mid	Additional staffing and resource needs
Encourage MPRB to Use Finished Compost in its Operations	SW&R	Low	Low	Low	Near	

7.3.4 Sporting and Entertainment Facilities

Sporting and entertainment events draw large audiences into the City and are a great opportunity to show visitors that Minneapolis values the financial, economic and environmental benefits that come with diverting waste through recycling and composting. While the City has an event recycling ordinance for events in public spaces (such as parades, races and large block events), the ordinance does not extend to other sporting or entertainment events that take place on fields or stadiums. In addition, varying ownership structures at each venue provides different challenges.

Beginning January 1, 2016 professional or collegiate sports facilities were required to collect at least three materials for recycling per Minnesota Statute 115A.151. The owner of the sports facility is required to ensure that at least three recyclable materials are collected and are transferred to a recycler.

Sporting and entertainment facilities (including K-12 schools) must abide by the City's Green to Go ordinance which requires food prepared for immediate consumption that is distributed in sporting and entertainment facilities, including concession stands, must be served in reusable, refillable, recyclable or compostable containers and collection for materials generated is available. Due to the number of attendees and the quantity of food and beverages consumed at sporting and other entertainment events, waste diversion requirements should be extended to these facilities.

Actions and Recommendations

1. Encourage waste reduction of unnecessary items such as paper flyers.
2. Encourage facilities to have water fountains and water filling stations to reduce waste from plastic bottles.
3. Verify all professional and collegiate sports facilities are complying with State law, and that sporting and entertainment facilities are complying with the City's Green to Go ordinance.
4. Encourage K-12 schools to add recycling to outdoor sports facilities and ensure recycling containers are available for events held indoors.
5. Support the expansion of organics collection and complying with the City's Green to Go ordinance at all sporting and entertainment facilities (including K-12 schools). The City should also evaluate methods to increase availability and decrease cost for compostable products throughout the City.
6. Encourage the use of Hennepin County signage or approved alternative on all containers.
7. Encourage all sports facilities (including K-12 schools) to announce waste diversion efforts at the beginning, middle and end of each sporting event.
8. Encourage all sporting and entertainment facilities to have volunteers or staff near sorting stations to assist visitors in properly sorting waste.
9. Promote the development of a recycling and composting goal for each facility and encourage the development of annual reports to document their efforts.
10. Encourage distribution of "giveaways" from vendors that are useful, reusable or recyclable (e.g. reusable water bottles, plastic Frisbees, flashlight keychains, etc.). Consider restrictions on problematic "giveaways" (e.g. plastic bags, items individually wrapped in plastic, etc.).

Table 7-6: Strategies for Sporting and Entertainment Facilities

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Encourage Waste Reduction	SW&R	Low-Medium	Low	Low	Near-Mid	
Encourage Installation of Water Filling Stations	SW&R	Low	Low	Low	Mid	
Verify Compliance with State Statute and City's Green to Go Ordinance	SW&R	Low	Low	Low	Near	
Encourage Recycling at K-12 Facilities	SW&R	Low-Medium	Low	Low	Near	
Support Organics Collection	SW&R	Low-Medium	Low	Low	Mid	
Encourage Use of Hennepin County Signage	SW&R	Low	Low	Low	Mid	
Encourage Announcements of Waste Diversion Efforts	SW&R	Low	Low	Low	Near	
Encourage Staff at Sorting Stations	SW&R	Low-Medium	Medium	Low	Near-Mid	
Develop Recycling and Composting Goals	SW&R	Low-Medium	Medium	Low-Medium	Near-Mid	
Encourage Reuse "Giveaways"	SW&R	Medium	Medium	Low	Mid	

7.3.5 Mobile Food Vendors

Mobile food vendors (e.g., food trucks and food carts) represent significant waste generators that are regularly present in public spaces. They are required to follow the City's Green to Go ordinance.

Mobile food vendors are "responsible for all litter and garbage left by customers" in accordance with the Mobile Food Vendor Ordinance; however, there is some uncertainty regarding the requirements for waste collection, as vendors are also not allowed to have any "external signage, bollards, seating, or other equipment not contained within the vehicle." Most often food vendor patrons utilize existing waste containers provided in public spaces (e.g. on the street nearby, in parks, etc.). This creates a barrier to both recycling and organics collection. In addition, a lack of sufficient containers and volume may result in littered areas or compostable material being treated as garbage. Due to the amount of waste generated by mobile food vendors, methods to divert waste should be evaluated and improved.

Actions and Recommendations

1. Clarify ordinance requirements for mobile food vendors to provide waste collection and collaborate with City's Health Department inspectors to verify the ordinance is accurately being followed.
2. Revise mobile food vendor ordinance using a phased approach for organics collection for patrons (not to be allowed in free flow traffic areas). Initially encourage collection but require collection in three to five years. Organics collected would need to be disposed of at the licensed food establishment where the food is prepared.
3. Clarify responsibility for compliance and enforcement of City ordinances.
4. Allocate additional resources for education, enforcement, and program administration in addition to existing budgets.
5. Encourage the use of Hennepin County signage or approved alternative on all containers.

Table 7-7: Strategies for Mobile Food Vendors

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Clarify Existing Ordinance	SW&R, Health	Low	Low	Low	Near	
Encourage Organics Collection at Mobile Food Vendors	SW&R, Health	Medium	Medium	Low	Near	
Require Organics Collection at Mobile Food Vendors	SW&R, Health	Medium	Medium	Low	Mid	
Enforce Compliance with Ordinances	Health	Medium	Medium	Medium	Mid	
Encourage Use of Hennepin County Signage	SW&R	Medium	Low	Low	Near	

7.3.6 Public Transit Stations and Shelters

Metro Transit, the Public Transit system serving the Minneapolis/St. Paul Metro Area, is an extensive bus and light rail system, averaging nearly 267,000 rides per weekday (2016). Metro Transit owns and maintains more than 700 transit stations and shelters throughout the Twin Cities. This highly utilized public space has the potential to reach a significant portion of the population, further the City's zero waste initiatives and support positive waste reduction and diversion behaviors.

Currently, Metro Transit provides recycling at most light rail platforms; however, recycling services are not provided at all bus stations. Organics collection is not provided at public transit locations; however, it is not recommended that organics collection be provided as the containers in these areas are unmonitored and contamination rates could be very high (as discussed in Section 7.2). Methods to increase waste diversion at public transit stations and shelters are described below.

Actions and Recommendations

1. Collaborate with Metro Transit to identify stations and shelters within the City of Minneapolis and the corresponding service frequency.
2. Evaluate light rail recycling performance and work with Metro Transit for improvements if needed. Obtain existing garbage and recycling data if available.
3. Encourage the use of Hennepin County signage or approved alternative on all containers.
4. Evaluate the potential for (and legal authority to require) adding recycling collection at bus stations and shelters on "high-frequency" transit lines and where the highest volume of public transit waste is likely to be generated.

Table 7-8: Strategies for Public Transit Stations and Shelters

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Identify Stations and Shelters within Minneapolis	SW&R	Low	Low	Low	Near-Mid	Collaborate with Metro Transit; additional staffing and resource needs
Evaluate Light Rail Recycling Performance	SW&R	Low	Low	Low	Near-Mid	Additional staffing and resource needs
Encourage Use of Hennepin County Signage	SW&R	Medium	Low	Low	Near	
Evaluate Potential for Recycling at High-Frequency Transit Shelters	SW&R	Medium	Medium	Low-High	Mid	Additional staffing and resource needs

7.3.7 Quasi-Public Spaces

Quasi-Public Spaces include privately owned areas where public events are held or where the public regularly gathers (e.g., downtown courtyards and private green space). The City has limited regulatory authority to impose waste diversion requirements on activities taking place in Quasi-Public Spaces, as opposed to designated public spaces. Though enforcement of waste diversion regulations is limited, the City should work to encourage waste reduction and diversion in these spaces.

Actions and Recommendations:

1. Identify where Quasi-Public Spaces are located. By locating these spaces, the City can target these areas to promote waste diversion.
2. Ensure that mandatory generator waste reduction and diversion plans (strategy for CIM Sector, Section 4.2.7) include quasi-public spaces.
3. Encourage composting of seasonal plantings and to use finished compost in operations.
4. Require the use of Hennepin County signage or approved alternative on all public containers.

Table 7-9: Strategies for Quasi-Public Spaces

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Identify Quasi-Public Spaces	SW&R; CPED	Low	Low	Low	Near-Mid	Additional staffing and resource needs
Ensure Quasi-Public Spaces are Included in Mandatory Recycling Plans	SW&R	Low	Medium	Low	Mid	Additional staffing and resource needs
Encourage Composting and Use of Finished Compost in Operations	SW&R	Low	Low	Low	Mid	
Require Hennepin County Signage	SW&R	Low	Low	Low	Mid	

7.4 Potential Program Funding

Increasing access to recycling service and additional containers across the City in the wide variety of public spaces creates increased program costs. The City will need to increase its capacity to raise revenues to achieve greater diversion. Expanding capacity to raise revenues requires implementation of a new funding mechanism or, in the alternative, a greater commitment of funding through the general fund. Typically, program funding mechanisms that have been successful address the following:

- Total revenues generated clearly align with estimated program costs;
- Levied fees impact relevant stakeholders such as haulers and generators; and

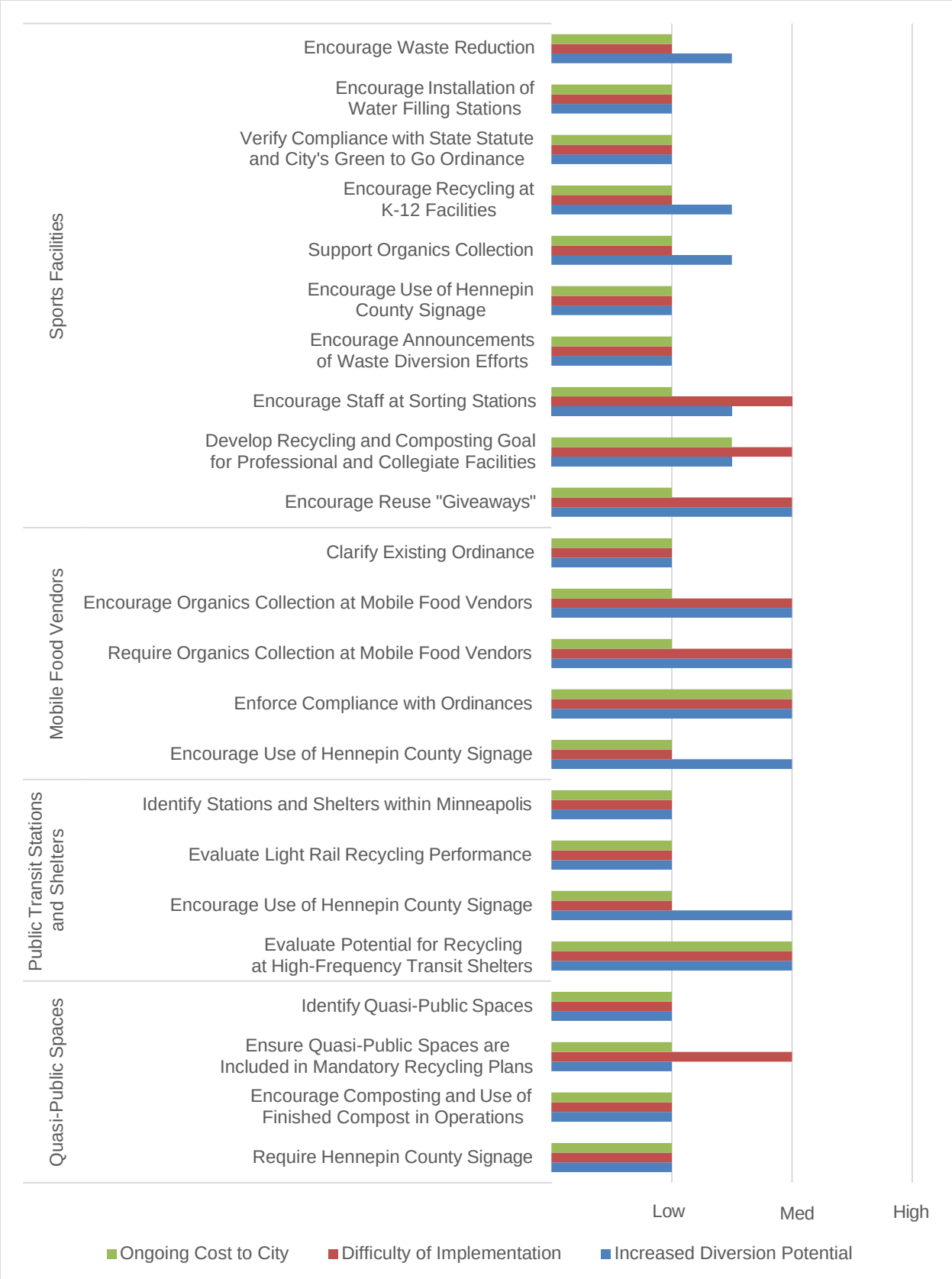
- Financially sustainable approach is tied to a long-term program commitment.

Without adequate funding, program implementation of any of the options is unlikely to be successful. In many instances, these strategies also require additional SW&R FTE staff to implement and provide ongoing support for the program strategies implemented.

7.5 Strategy Summaries & Conclusion

Figure 7-1 provides a graphic representation of the available strategies to increase diversion in the context of the difficulties to implement and ongoing costs to the City.

Figure 7-1: Summary: Public Space Program Strategies


Sports Facilities
Encourage Waste Reduction
Encourage Installation of Water Filling Stations
Verify Compliance with State Statute and City's Green to Go Ordinance
Encourage Recycling at K-12 Facilities
Support Organics Collection
Encourage Use of Hennepin County Signage
Encourage Announcements of Waste Diversion Efforts
Encourage Staff at Sorting Stations
Develop Recycling and Composting Goal for Professional and Collegiate Facilities
Encourage Reuse "Giveaways"
Mobile Food Vendors
Clarify Existing Ordinance
Encourage Organics Collection at Mobile Food Vendors
Require Organics Collection at Mobile Food Vendors
Enforce Compliance with Ordinances
Encourage Use of Hennepin County Signage
Public Transit Stations and Shelters
Identify Stations and Shelters within Minneapolis
Evaluate Light Rail Recycling Performance
Encourage Use of Hennepin County Signage
Evaluate Potential for Recycling at High-Frequency Transit Shelters
Quasi-Public Spaces
Identify Quasi-Public Spaces
Ensure Quasi-Public Spaces are Included in Mandatory Recycling Plans
Encourage Composting and Use of Finished Compost in Operations
Require Hennepin County Signage
Low
Med
High
Ongoing Cost to City
Difficulty of Implementation
Increased Diversion Potential

8.0 CONSTRUCTION AND DEMOLITION DEBRIS

Construction and demolition (C&D) debris is generated from the construction of new buildings, demolition of old buildings, as well as renovations of existing buildings. C&D debris is presented separately in the Zero Waste Plan as it transcends all sectors. According to the MPCA, more than 80-percent of the C&D debris generated in 2013 was landfilled. The following available studies offer relevant findings for C&D debris diversion:

- Construction and Demolition Diversion Capacity Study, Hennepin County (August 2015). Key findings included:
  - The current price of C&D debris disposal does not incentivize diversion.
  - High value or readily reusable items are being landfilled.
  - Existing reused building outlets are not being utilized.
  - Deconstruction of residential buildings can divert up to 90-percent of the waste generated.
  - Large commercial projects are more likely to include recycling than residential projects.
- City of Minneapolis Green Building and Deconstruction Report (March 2015). This study reviewed the current state of green building in Minneapolis compared to peer cities and identified any incentive programs being offered by the City. Six strategies recommended included:
  - Form an internal committee to coordinate development of current and future incentive programs related to green building strategies, deconstruction, and C&D debris diversion.
  - Expand the availability of density bonuses to projects that incorporate green building best practices.
  - Explore the possibility of including more green building strategies in the Residential Point System.
  - Develop a C&D diversion ordinance requiring the recycling of a portion of C&D debris.
  - Collect additional data on deconstruction markets specific to Minneapolis, including cost analysis, appraisal knowledge/availability, secondary markets for reclaimed products, and evaluation of potential housing stock for demolition.
  - Become a regional leader in deconstruction by increasing the number of city-owned properties undergoing intensive deconstruction.

Collection of C&D debris is generally provided by commercial licensed haulers (licensing process identified in Section 4.1) and is placed in roll-off containers for removal and ultimate disposal.

8.1 Overview of Sector

The City of Minneapolis currently requires a Building Permit for residential and commercial properties (including building permits for homeowners to work on their own home). Permits are required for:

- Work that is structural in nature; and
- Work not specifically exempt from the building code.

In addition, Wrecking Permits are required for demolishing a structure, which include: commercial buildings and houses, but exclude minor structures such as private garages or sheds.

Currently, very few buildings are either deconstructed or demolished using an approach in such a way that materials are diverted. Typical structural materials capable of being diverted in C&D debris include: metals, wood, shingles, concrete, brick, cardboard (from packaging), and drywall.

City of Minneapolis residents can readily dispose of C&D debris at the South Transfer Station by use of the City's voucher program or by paying a fee (discussed more in Section 3.1.1). Contractors may also use the City's South Transfer Station by paying for disposal.

8.2 Overall C&D Issues and Strategies

Improved waste reduction and diversion for C&D debris requires implementation of strategies that address priority issues with the City's current system. The following sections present the overall issues and proposed strategies. To foster progress towards Zero Waste goals, the City needs to reduce the amount of C&D debris currently being disposed.

8.2.1 Conduct Regular Waste Sorts

As discussed in Section 3.2.1, the City should prioritize completing a detailed waste sort at regular intervals (recommended every 5-years at a minimum; however, more frequent sorts would provide added "real-time" results). The primary challenges associated with conducting C&D debris sorts are ensuring a representative portion of the City's waste stream is studied and the need to conduct a visual assessment (as opposed to a physical sort) of the C&D materials. The City should partner with individual sites, haulers, and Hennepin County to conduct these studies.

Table 8-1: Strategy Summary: Conduct Regular Waste Sorts

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Conduct Regular Waste Sorts	SW&R	Low	Low	Medium-High	Near-Mid	Measurement tool allowing City to identify target areas; consultant needed for sorts; additional staffing and resource needs

8.2.2 Promote Reuse

Promotion and expansion of reuse options is a relatively low cost, low difficulty strategy that may increase waste diversion. Useable items that are typically removed and may be reused include unique architectural features, cabinets, doors, windows, hot water radiators, non-asphalt shingles, wood flooring and trim, structural lumber, fixtures, and other appliances. The City should work to facilitate reuse of these and other items to not only reduce disposal, but also to reduce the need for natural resources required to manufacture new items.

Actions and Recommendations

1. Promote existing materials exchange facilities (e.g., Twin Cities Habitat for Humanity ReStore, Bauer Brothers Salvage, and Better Futures) and local materials exchange websites (e.g., Twin Cities Free Market and ReUSE Minnesota).
2. Promote Hennepin County reuse programs and services such as Choose to Reuse.
3. Create a reuse/recycling plan for temporary structures as part of special events as identified in Section 7.3.1 (e.g., Holidazzle).
4. Support development of markets for material reuse.

Table 8-2: Strategy Summary: Promote Reuse

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Promote Reuse	SW&R, CPED	Low	Low	Low	Near-Mid	Additional staffing and resource needs

8.2.3 Revise Permitting Requirements and Fees

The existing City permitting requirements for construction and demolition of buildings creates a framework for reuse and/or processing of C&D debris for recyclable materials. For example, several other local governments have mandates through municipal ordinances and permitting requirements for the diversion of C&D debris. Some community examples include:

- Portland, Oregon Deconstruction of Buildings Ordinance mandates the deconstruction of primary dwelling structures (houses and duplexes) older than 1916 or primary dwelling structures that have been designated as a historic resource. In addition, Ordinance 17.102.270 requires the general contractor (or property owner) to recycle at least 75 percent of all the solid waste produced on the site for all building projects that exceed $50,000.
- Cook County, Illinois Demolition Debris and Diversion Ordinance requires that (except in unusual circumstances) 70-percent of all C&D debris must be diverted from disposal for construction and demolition projects and five-percent by weight shall be reused.
- Madison, Wisconsin Construction and Demolition Recycling requires all new construction projects that use concrete and steel supports must recycle 70-percent of their construction debris by weight. New construction projects that use wood framing and remodeling projects (with values more than $20,000) must recycle clean wood, clean drywall, shingles, corrugated cardboard, and metal.

- Ramsey County has a pre-demolition inspection program for all house demolitions and all commercial/industrial major renovations and demolition. Enforcement on the proper recycling or disposal for appliances, asbestos, electronics or any other hazardous waste is part of the pre-inspection process. Ramsey County also has a 4R Program (reuse, recycle, renovate for reinvestment) for tax forfeiture properties for deconstruction or renovation.

These examples provide options for the City to consider to increase diversion of C&D debris.

Actions and Recommendations

1. Include education and outreach information for reuse and recycling to be included in all building permit applications.
2. Update the wrecking permit to allow for sufficient time for salvaging and deconstruction and/or create a separate deconstruction permit. The permit(s) should also be updated to allow for waste sorts for any building receiving the permit and to allow for no wetting of the structure until salvaging and deconstruction activities are complete.
3. Develop incentives for deconstruction and recycling such as decreased permitting fees and/or more time.
4. Mandate reporting requirements for all building permits for materials disposed and diverted to measure diversion. Consider disincentivizing demolition of buildings when a specified percentage of reuse and recycling is not achieved.
5. Consider requiring a mandated minimum recycling percentage and reuse percentage for all construction and demolition projects (similar to Cook County, Illinois).
6. Develop an internal policy requiring deconstruction for all City buildings slated for demolition and processing of all C&D debris from City buildings that are not worthy of deconstruction.
7. Revise City ordinances to create a viable framework for coordinated program planning and enforcement between applicable City departments.
8. Clarify which City department is responsible for program oversight and compliance.
9. Increase permitting fees to a level to generate adequate revenues to cover program oversight and compliance.
10. Allocate additional resources for enforcement in addition to existing budgets.

Table 8-3: Strategy Summary: Revise Permitting Requirements and Fees

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Revise Permitting Requirements and Fees	CPED	High	Medium	Medium	Near	Additional staffing and resource needs

8.2.4 Revise Current Residential Voucher Program

As discussed in Section 3.2.2 of the Residential Sector, the City should consider revisions to the current voucher program. The current voucher program is funded through residential service rates paid by all residential customers; however, the service is utilized only by a small percentage of customers. Drastic changes to the voucher program may result in illegal dumping. Thus, the City should engage residents on voucher program usage and make changes to increase waste reduction and diversion of C&D debris.

Actions and Recommendations

1. Evaluate residential voucher use and engage residents on potential program changes.
2. Consider reducing the number of vouchers offered as a potential program change and ultimately, consider transitioning to a pay-as-you-use voucher program. A pay-as-you-use voucher program is more equitable for all residential customers and has the potential to reduce monthly rates. In addition, a pay-as-you-use program would further incentivize residential customers to seek reuse or recycling options for C&D items.

Table 8-4: Strategy Summary: Revise Current Residential Voucher Program

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Revise Current Residential Voucher Program	SW&R; Finance	Low-Medium	Medium	Medium	Near-Mid	

8.2.5 Support Processing Facilities and End Use Markets for Diverted Materials

To accommodate the potential increases in the amount of C&D debris required to be diverted from the waste stream, the City should collaborate with the MPCA and other relevant entities to foster development of processing and end use markets for recoverable materials within C&D debris.

Currently, three licensed processing facilities located in the Twin City Metro area process commingled C&D debris including the following:

- Broadway Resource Recovery, LLC (Atomic Recycling), Minneapolis
- Dem-Con Recovery & Recycling, LLC, Shakopee
- Como Recycling & Transfer Facility (Veit), Minneapolis

Based on our preliminary review of existing studies, there is some uncertainty as to whether the current C&D processing (recycling) facilities can handle additional C&D materials throughput. More analysis is recommended. Notwithstanding current materials processing capacity, markets for end use of the recoverable materials must be enhanced to absorb these additional materials.

To support the development of end markets for organics processing facilities (described in Section 2.2), construction projects should be required to add a specific percentage of organic content into topsoil (placed on disturbed areas).

The following strategies are recommended to support the development of processing facilities and end use markets.

Actions and Recommendations

1. Evaluate current processing (recycling) facility capacity in parallel with revisions to revised permitting requirements. Support development of processing facilities if needed.
2. Support the development of select end markets for C&D debris (e.g., gypsum wallboard, shingles, green-treated lumber, etc.).
3. Support (through the City's legislative agenda) change of the Minnesota Department of Transportation specifications to allow for use of shingles in hot mix asphalts.
4. Require addition of organic content into topsoil with finished compost.

Table 8-5: Strategy Summary: Support Processing Facilities and End Use Markets for Diverted Materials

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Support Processing Facilities and End Use Markets for Diverted Materials	SW&R; CPED	Medium	Medium	Low	Mid	Collaborate with MPCA

8.2.6 Allocate Additional Resources for Education and Outreach

As discussed in Section 3.2.7, the City should develop improved education and outreach campaigns. The City will need to identify a funding source(s) to support increased education and outreach. It is important that solid waste and recycling education and outreach efforts are appropriately funded. If underfunded, investments that the City makes in other waste reduction and diversion strategies may not realize their full potential.

Table 8-6: Strategy Summary: Allocate Additional Resources for Education and Outreach

Strategy	Lead Depts	Increased Diversion Potential	Difficulty of Implementation	Ongoing Cost to City	Implementation Timing	Comments
Allocate Additional Resources for Education and Outreach	SW&R	Medium	Low	Low-Medium	Near-Mid	Additional staffing and resource needs

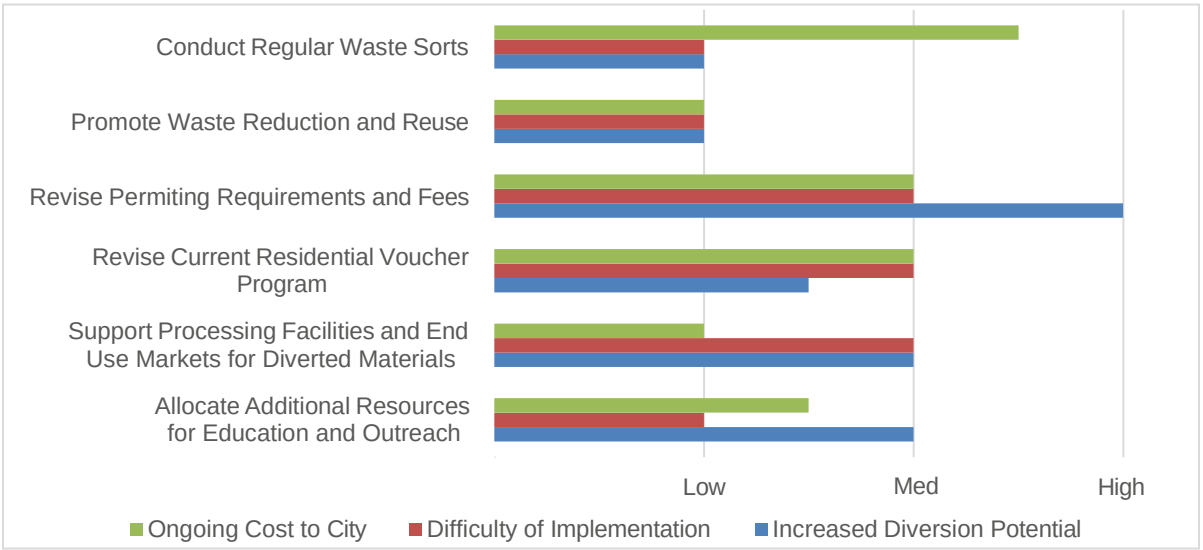
8.3 Potential Program Funding

Stable funding is critical to long term solid waste management program success. The City's present building and wrecking permitting fees generate revenues for the recovery of costs for program implementation. The City should evaluate its permitting fees in the context of program implementation to meet overall revenue needs and continue to encourage waste reduction and diversion of C&D debris.

8.4 Strategy Summaries & Conclusion

Figure 8-1 provides a graphic representation of the available strategies to increase diversion in the context of the difficulty of implementation and ongoing costs to the City.

Figure 8-1: Summary: Construction and Demolition Waste Strategies



9.0 CONCLUSION

The Zero Waste Plan addresses solid waste generated by all sectors within of the City of Minneapolis (City). The purpose of the Zero Waste Plan is to identify strategies to collaborate with the City's residents, businesses, non-profits, commercial haulers, and other stakeholders to reduce waste across all sectors and ensure that all materials are managed for their highest and best use to minimize environmental impacts. Overall, the Zero Waste Plan provides a comprehensive set of strategies designed to meet the City's zero waste goals.

As part of the Zero Waste Plan, the City evaluated each strategy on a preliminary basis applying the following criteria:

- Ongoing cost to the City;
- Difficulty of implementation; and
- Increased diversion potential.

The results of the application of these criteria to the strategies are provided at the end of each section to assist in prioritizing the strategies within each of the sectors.

As discussed in Section 2.4, the City has conducted numerous stakeholder engagement meetings to obtain feedback from the community, businesses, commercial haulers, and other stakeholders on the Zero Waste Plan's contents. It should be noted that **the strategies proposed in the Zero Waste Plan will undergo a detailed implementation planning process that may include additional stakeholder engagement prior to enacting an ordinance change, policy change, funding request, or program modification**.

9.1 Overall Strategies

Upon review of the specific strategies across the various sectors, the following five strategies are identified frequently and considered high priority:

1. Conduct regular waste sorts to measure progress;
2. Clarify which City department is responsible for administrating programs;
3. Allocate additional resources to education and outreach;
4. Establish sustainable program funding to support implementation; and
5. Promote source reduction and reuse.

The first overall recommended strategy is to conduct regular waste sorts to fill existing data gaps and establish a baseline to measure progress towards the City's zero waste goals. Some limited waste sort data exists, but this data primarily addresses quantities disposed and, generally, are not specific to the City's various waste streams.

The second overall recommended strategy is to clarify which City department is responsible for administrating programs. The Zero Waste Plan identifies many new strategies and improvements to existing programs. The City needs to clarify which Department is responsible for the implementation and oversight of specific strategies identified in the Zero Waste Plan.

The third overall recommended strategy is to allocate additional resources to education and outreach to supplement all programs to foster consistent messaging and targeted participant buy-in. It is important

that solid waste and recycling education and outreach efforts are appropriately funded. If underfunded, the City's programs will not realize their full potential.

The fourth overall recommended strategy is to establish overall sustainable program funding to increase the City's program resources to achieve greater diversion. Expanding capacity to raise revenues requires implementation of a new funding mechanism(s) or, in the alternative, a greater commitment of funding through the general fund. Effective program funding mechanisms must address the following:

- Total revenues generated clearly align with estimated program costs;
- Financial burden shared by relevant stakeholders, including waste generators and haulers; and
- Financially sustainable approach is tied to a long-term program commitment.

Without adequate funding, program implementation is unlikely to be successful.

The fifth overall strategy is to promote source reduction and reuse. Source reduction is the most preferred method in the waste management hierarchy. Source reduction is typically defined as precluding the generation of waste (i.e. ban on the use of plastic bags) and more efficient product design (i.e. light weighting of plastic bottles) that results in less overall waste being generated. Reuse is the second most preferred method in the waste management hierarchy and may apply to an array of material types.

9.2 Residential Sector

As described in the residential sector, SW&R provides solid waste and recycling services to approximately 290,000 residents in 106,000 dwellings up to four individual units. In addition, SW&R provides solid waste and recycling services to the City's residential parks, select City-owned buildings, and a small number of businesses with carted collection service.

Based on the Zero Waste Plan's assessment, restructuring the residential rates charged to customers to foster additional waste reduction and diversion was identified as a key strategy by the City. The City presently utilizes a volume-based variable rate structure for residential service charges; however, the current price differential of $3.00 per month between small and large cart offers minimal incentive for customers to reduce quantities disposed and increase recycling. The table below depicts the number of customers with the various cart options.

Table 9-1: Current Residential Solid Waste and Recycling Cart Enrollment

Service	Number of Households (Percentage of Total Households)			Total Percentage of Households
Number of Carts	Less Than One	One	More Than One	
Small Garbage Cart (32-gal)	255 (0%)	8,782 (8%)	1 (0%)	8%
Large Garbage Cart (96-gal)	10,520 (10%)	74,875 (71%)	11,221 (11%)	92%
Recycling Cart	10,208 (10%)	88,854 (84%)	2,509 (2%)	96%
Organics Cart	12,242 (12%)	33,496 (32%)	10 (0%)	44%

Findings from industry conducted studies reflect the demand for larger garbage carts decreases relative to the extent of the price differential between the smallest and largest available cart sizes. The price

differential between rates (potential financial savings for customers) in a PAYT program should be large enough to incentivize use of smaller garbage carts over larger carts and increase use of recycling and organics carts. To address potential pricing concerns with low-income and/or disabled customers, the City should consider supplementing the restructuring of residential rates to include a lower fee for qualified customers within these identified groups. In addition, the City should evaluate adjusting collection frequencies (e.g. every other week refuse collection and every week recycling) in tandem with revisions to the residential solid waste and recycling rates. A comprehensive cost of service and rate study is recommended prior to implementing these potential changes.

Another key strategy for the residential sector is for the City to build on the existing organics program. As indicated above, the current customer sign-up rate for organics collection is 44 percent. The City should work towards both increasing the participation rate in organics, as well as continued education to residents to maximize organics diversion and minimize potential contamination. Additional options for residential organics are provided in Section 3.3.2.

Additional detailed strategies for specific waste types in the residential sector are included in Section 3.0.

9.3 CIM Sector

The City has an open competitive collection system for servicing CIM generators with licensed haulers directly contracting with CIM customers to provide services. Data from the MDEED indicates that for the first quarter of 2017, approximately 11,562 business establishments were located within the City. In addition, according to City rental license data, approximately 63,177 multifamily units are located within the City. All residential buildings containing five or more dwelling units are included in the multifamily sector.

Based on the Zero Waste Plan's assessment, the City plans to develop an ad hoc work group to establish a baseline and collaborate on zero waste strategies. In addition, the City plans to further evaluate the three CIM strategies listed below:

1. Targeted outreach and assistance to generators;
2. Mandatory generator recycling plans coupled with material disposal bans; and
3. Increased hauler accountability that will include one of the following:
    a. Expand hauler licensing and establish minimum service standards;
    b. Transition to a non-exclusive franchise; and
    c. Establish organized commercial collection.

Hennepin County provides technical assistance through its business recycling program to select commercial generators within the County, including generators within the City of Minneapolis. A more targeted generator outreach and assistance program in the City represents very limited implementation challenges compared to the other identified strategies, as well as offers increased waste diversion potential.

To supplement the existing ordinances, the City should consider implementing mandatory generator recycling plans and ban select recyclable materials from disposal. The generator recycling plan program could be tied to the City's existing commercial building registration and inspection program, business licensing, or independent of these programs. Phasing the program in over multiple years in conjunction with banning the disposal of targeted recyclable materials is a preferred implementation approach. This

strategy requires a medium degree of difficulty for implementation but also offers medium to high waste diversion potential.

The third strategy for consideration focuses on increased hauler accountability. The City's existing licensing program and applicable ordinances provide a framework to increase diversion by developing a more comprehensive CIM solid waste and recycling program. The three options supporting this strategy can be considered mutually exclusive and increase in difficulty in implementation from 3(a) to 3(c). Each of these three options includes unique implementation challenges, but offer medium to high levels of increased waste diversion potential. The potential benefits include not only increased waste diversion, but also a decrease in vehicle miles traveled on City roads, reduced GHG emissions, and greater rate transparency for generators.

The City should select one of the three options addressing increased hauler accountability and couple the selected option with strategies 1) and 2) listed above. Such an approach offers a higher likelihood of success to incrementally increase CIM waste diversion.

In addition to the strategies above, the City has the potential for increased diversion through implementation of organics programs in the CIM sector. Section 4.3.2 within the CIM sector identifies a comprehensive set of strategies to increase organics diversion. In addition, estimated processing capacity for organics within the region is limited and the City recognizes the need to foster increased processing capacity as part of its recommended strategies. It is understood that Hennepin County intends to release a request for proposal for the development of an anaerobic digestion facility in 2018 to address capacity concerns.

Additional detailed strategies for specific waste types in the CIM sector are included in Section 4.0.

9.4 Other Sectors

The Zero Waste Plan includes an assessment of other sectors and waste streams including the following:

- City Operations (Section 5.0)
- Institutional (Section 6.0)
- Public Space (Section 7.0)
- Construction and Demolition Debris (Section 8.0)

As referenced above, each of the Zero Waste Plan sections includes a graphical summary evaluating the various strategies. The City should implement the various strategies for each of these sectors and waste streams beginning with those strategies offering the largest increase in diversion potential for the least ongoing costs to the City. For example, for the institutional sector, the strategies offering the largest potential increase in diversion for the least costs are related to developing organics collection programs.

9.5 Progress Towards Achieving Zero Waste

As referenced in Section 2.3, the progress associated with implementation of the prioritized strategies and programs should be closely monitored by the City. Measurement of progress could be depicted by the City using a dashboard on the City's website.

The City also should provide written updates every three years on the status of the Zero Waste Plan. The updates should address the implementation progress of the priority strategies and the City's progress

towards achieving the zero waste goal to recycle and compost 50 percent of its overall waste stream by 2020, 80 percent by 2030, and achieve a zero-percent growth rate in the total waste stream from 2010 levels. The Zero Waste Plan will serve as a roadmap to move the City toward achieving its zero waste goals.

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