

Aiming for Zero Waste Plan

A Vision for Sustainable Materials Management
 Benchmarking and Best Practices: Technical
 Memorandum #2

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Acronyms and Abbreviations

ARR	Austin Resource Recovery
CA	California
CDN	.....	Canadian Dollar
CY	.....	Calendar Year
C&D	.....	Construction and Demolition Debris
DEP	.....	Department of Environmental Protection
DSWS	.....	Division of Solid Waste Services
EPR	.....	Extended Producer Responsibility
FTE	.....	Full Time Equivalent
FY	.....	Fiscal Year
GHG	.....	Greenhouse Gas
HERC	.....	Hennepin County Energy Recovery Center
HHW	.....	Household Hazardous Waste
ICI	.....	Industrial, Commercial, and Institutional
ILA	.....	Inter local Agreement
L	.....	Litre
lb	.....	Pound
LEED	.....	Leadership in Energy and Environmental Design
L&Y	.....	Leaf and Yard Trim
MF	.....	Multi-family
MN	.....	Minnesota
MRA	.....	Maryland Recycling Act
MRF	.....	Material Recovery Facility
MSW	.....	Municipal Solid Waste
NMWDA	.....	Northeast Maryland Waste Disposal Authority
ON	.....	Ontario
PAYT	.....	Pay-As-You-Throw
RCW	.....	Revised Code of Washington
SF	.....	Single Family
SSO	.....	Source Separated Organics
TS	.....	Transfer Station
TX	.....	Texas
URO	.....	Universal Recycling Ordinance
USD	.....	Unites States Dollar
UTC	.....	Utilities and Transportation Commission
WA	.....	Washington
WEEE	.....	Waste Electronics and Electrical Equipment
WUTC	.....	Washington Utilities and Transportation Commission

Commonly Used Terms

The following presents a glossary of terms used in the Aiming for Zero Waste Plan consistent with definitions contained in Chapter 48 of the Montgomery County Code, The Code of Maryland Regulations, Maryland Recycling Act, or the County's Comprehensive Solid Waste Management Plan or the meaning in the context of this report.

Aiming for Zero Waste Plan – a master planning study conducted by HDR Engineering, Inc., an on-call consultant of the Northeast Maryland Waste Disposal Authority, on behalf of Montgomery County, Maryland. The plan will guide the future of responsible solid waste management in the County.

Anaerobic Digestion – a process used to manage organic materials whereby microorganisms break down materials in the absence of oxygen.

Ash - the solid byproducts of combustion, which are collected from grates or hearths in a furnace where combustion takes place and from filters or separators that process combustion gasses.

Biosolids - means treated sewage sludge that meets the standards for Class A or B sewage sludge. They are nutrient-rich organic materials resulting from the treatment of domestic sewage in a treatment facility. When treated and processed, these residuals can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth.

Bulk Trash – large items that do not fit in a container, set out at the curb for separate collection by appointment. Usually consist of items such as furniture, appliances, mattresses etc. Also known as Bulky Waste.

By-law – a regulation made by a municipality (see ordinance).

Commingled (Materials) – recyclable materials collected in the County-provided blue recycling bin including aluminum foil products, cans, glass bottles and jars, plastic bottles, containers, tubs and lids.

Compostable (Materials) – non-recyclable paper, food waste, yard waste (grass, leaves, brush/pruning).

Composting - the biological decomposition of organic material such as food waste into a stable, humus-like product, is a first step in the recycling of food waste.

Construction and Demolition (C&D) Debris - Solid waste from construction, demolition and renovation projects that produce debris including wood, wood products such as fiberboard and particleboard, cardboard, sheetrock and other drywall, plaster, fiberglass, plastic and other polymers, composite materials, glass, stone, steel and other metals, rubber, geotextile, asphalt, concrete, brick and mortar, rock, dirt, rubble, tree stumps, logs and large tree limbs.

County - Montgomery County, Maryland.

Department - the Department of Environmental Protection.

Diversion Rate – a calculation of the amount of solid waste diverted from disposal for most jurisdictions. In the case of Montgomery County, this represents the recycling rate plus credits earned for source reduction.

Dwelling Unit - a building or part thereof arranged or designed for occupancy by not more than one family for living purposes and having cooking facilities.

Extended Producer Responsibility – the responsibility producers, importers and brand owners have to reduce the environmental impact of their products and packaging. It extends across the product lifecycle and is also known as cradle-to-grave management.

Generator - the owner or occupant of any dwelling unit where solid waste is generated, and the owner or occupant of any other business, entity or institution at, from, or by which solid waste is generated.

Hauler - any person operating a commercial business or engaged in any enterprise regularly generating solid waste which requires collecting and hauling to an approved point of disposal, when such collecting and hauling is done by the person generating such material in his own vehicles or in vehicles leased for the purpose, in lieu of having a licensed collector perform this service.

Hazardous Waste - Includes listed wastes and characterized wastes that have one of the following properties: ignitability, corrosivity, reactivity, or toxicity.

Incremental Systems Benefit Charge – charges levied by the County to generating sectors for services not equally available or provided to all sectors equally.

Industrial, Commercial and Institutional Waste – waste generated by entities such as factories, hospitals, educational institutions, places of worship etc.

Landfill - an engineered facility for disposing of solid wastes on land by spreading, compacting and covering the wastes.

Maryland Recycling Act (MRA) - in 1988, the Maryland Recycling Act (MRA) authorized MDE to reduce the disposal of solid waste in Maryland through management, education and regulation. The MRA requires that:

- Each of Maryland's jurisdictions develop and implement recycling programs. Jurisdictions with populations greater than 150,000 are required to recycle 35% of their waste and jurisdictions with populations less than 150,000 are required to recycle 20% of their waste. State agencies must implement a recycling plan with a 30% recycling rate mandate. (2012)
- If a jurisdiction fails to meet the specified reductions, State and local authorities can prohibit the issuance of building permits for all new construction.
- Each jurisdiction selects materials to be recycled and the manner in which materials are to be separated and processed.
- State agencies participate in recycling programs.
- Newsprint and telephone directories distributed in the State have a recycled content, by weight, of 30% in 2001, increasing to 40% by 2005.

MRA Recycling – Maryland Recycling Act (MRA) materials are acceptable recyclable materials found under the Maryland Recycling Act. These materials can be reported as recyclable and counted toward the County's recycling rate. These materials generally include aluminum, glass, paper, and plastic.

MRA Waste and Non-MRA Waste – the list of materials that can be counted as a MRA material or not is constantly evolving. Every year MD counties have to get from MDE the latest guidelines prior to completing the MRA Tonnage Reporting Survey.

Multi-Family Dwellings – buildings comprised of seven or more dwelling units, as per the Montgomery County definition.

Municipal Solid Waste - solid waste generated at residences, commercial establishments and institutions; excludes land clearing, construction and demolition debris.

Municipalities – incorporated cities, towns, villages and municipalities located within Montgomery County and may provide their own waste management services (e.g. Rockville).

Northeast Maryland Waste Disposal Authority (NMWDA) - the NMWDA is a multi-county agency that provides support for the waste management systems for the eight participating jurisdictions in the state. The goal of the NMWDA is to minimize waste disposal costs.

Non-Processible Waste - a waste material which cannot be processed at the County's Resource Recovery Facility because of its size, bulkiness, composition or regulatory restrictions.

Non-Recyclable Paper - all paper products that are not accepted in the County's recycling program, including all tissues, paper towels, and napkins, carbon paper, and other non-recyclable papers.

Ordinance – a legislation enacted by a municipal authority.

Organic Materials – carbon-based materials such as food scraps, yard trim, manure, paper products, etc.

Pay-as-you-throw – a system where users are charged a rate based on how much waste they set out for collection.

Recyclables - materials that can be readily separated from a waste stream and reused in their present form or can be converted into raw materials from which new products can be made.

Recycling – recyclable materials (paper, paper packaging, glass, metal, plastics) that are collected and processed at a Material Recovery Facility. They may be either collected together (single-stream) or dual-stream (paper products collected separately from commingled containers).

Recycling Rate – the recycling rate is calculated by adding the tons of MRA recycling and credits for the resource recovery facility (i.e. the numerator) and dividing by the tons of MRA recycling tonnage and MRA waste (i.e. the denominator).

Recycling Services – County- provided weekly curbside collection of blue bins, paper carts, scrap metal and yard trim.

Refuse Collection Charge – charges levied to households in the County that receive trash collection by County-contracted collectors.

Resource Recovery Facility – a facility that processes solid waste by combustion to produce valuable resources such as steam to create electricity. Metals are also recovered from this process to be further recycled.

Scrap Metal – metal items collected at the curb or dropped off at the County’s transfer station.

Single Family Dwellings – buildings comprised of one to six dwellings as per the Montgomery County definition.

Solid Waste Charge – the overall charges levied by the County for waste management services. Includes the base systems benefit charge, incremental systems benefit charge, refuse collection charge, and disposal fees. May also include leaf vacuuming charges for residents living within the leaf vacuuming collection district.

Solid Waste Management Service - any service provided by or on behalf of the County to plan, implement, or administer any part of an integrated solid waste management system.

Source Reduction Credit – Maryland created a source reduction credit system to help the State meet its annual waste diversion goal. Depending on the type of source reduction activities conducted, a credit of up to 5% can be added to the recycling rate. Examples of source reduction activities include running demonstration sites, and outreach and education.

Source Separated Organics – organic materials separated by the generator and placed out for collection. Depending on the jurisdiction, this can include meat, dairy, vegetative food waste, paper and paper products (e.g. napkins, tea bags, pizza boxes), some yard trim, diapers, pet waste, sanitary products.

Stewardship programs – industry stewards are obligated under legislation to pay for part of the costs of managing certain materials (e.g. packaging, tires) under a shared responsibility model with municipalities.

Sustainable Materials Management – a systemic approach to using and reusing materials more productively over their entire lifecycles. By examining how materials are used throughout their lifecycle – from materials extraction to end-of-life management, this 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 there are sufficient resources to meet today’s needs and those of the future.

This approach means a product could be redesigned so it is manufactured using different, fewer, less toxic, and more durable materials. It could also be designed so that it can be readily disassembled for reuse or recycling of its parts at the end of its useful life.

Systems Benefit Charge - an annual service charge reflecting all or a portion of the cost to the County of providing base and incremental solid waste management services.

Transfer Station - a facility designed to reduce collection and/or transportation costs by the consolidation of solid wastes before transport to a site for final disposal.

Trash – solid waste that is not considered recyclable. Trash may be sent to be disposed of in a landfill or at the RRF.

Waste – materials collected from residences and businesses generally consisting of trash, recyclables, food scraps, yard trim, source separated organics, scrap metal, electronics, household hazardous waste and bulk trash.



Waste Generation Rate – the amount of waste created by residents or businesses over a certain amount of time.

Yard Trim - vegetative materials generated through the normal maintenance of yards, lawns, gardens or other landscaped areas including grass, leaves and brush; excludes soils, tree stumps, logs, large tree limbs, rock and other land clearing debris.

Zero Waste - The concept of Zero Waste is still evolving. However, the concept of Zero Waste is modeled on the biogeochemical and nutrient cycles found in nature, in which elements are continuously cycled in various forms between different compartments of the environment. Likewise, Zero Waste takes a cyclical approach to the vast flow of resources and products manufactured and utilized by human society. This cyclical, whole system approach seeks to minimize the extraction of resources from the earth by minimizing waste, reducing consumption, maximizing recycling, and developing products that are made to be reused, repaired, or recycled back into nature or the marketplace. Zero Waste requires changing the perspective from thinking of discarded materials as wastes to thinking of them as resources with functional value. Many professionals in the field believe that getting to Zero Waste does not mean achieving absolute zero.

1 Introduction

HDR has been retained by the Northeast Maryland Waste Disposal Authority (NMWDA) to assist the Montgomery County, Maryland (County) Department of Environmental Protection (DEP), Division of Solid Waste Services (DSWS) with developing the “The Aiming for Zero Waste Plan” (the Plan). There are three stated key objectives for the project:

- Develop a clear and realistic future vision of the County’s solid waste and recycling program and operations with the goal of maximizing waste reduction, reuse/repair, recycling, and sustainable management of materials;
- Develop actionable strategies (with projected costs, timelines, and outcomes) to achieve this goal; and,
- Identify impacts on existing solid waste management programs, facilities and operations, including new investments, initiatives, changes in methods of operations, and retiring or replacement of existing facilities.

The Benchmarking and Best Practices report is the second report of a series developed in support of this project. The first report, Technical Memorandum #1, documented Montgomery County’s baseline system. The purpose of this report is to compare waste management programs and services in Montgomery County against five communities located in the United States and Canada. This task is not meant to be an exhaustive review of every program and service provided by each community, but rather a high level overview in order to make a comparison to Montgomery County. As Montgomery County’s system has been documented in Technical Memorandum #1, a description of its programs and services have not been included in this document, but specific pieces of information have been provided in the comparative tables. The result of this task may result in the identification of options that may be considered by Montgomery County as part of Task 5: Improvements to the Current Diversion/Recycling System¹.

2 Selection of Communities and Metrics

There are many jurisdictions in North America that have innovative features as part of their waste management programs, services and how these are delivered. The intent of this benchmarking exercise was to select five communities that have some similarities to Montgomery County and also utilize best practices that might be of interest to the County.

Five jurisdictions/communities were selected with input from Montgomery County staff and the Task Force² established to support this project. The communities

¹ [HDR Scope of Work](#)

² <https://www.montgomerycountymd.gov/SWS/Resources/Files/master-plan/County%20Executive%20Memo%2005302018.pdf>

selected include Austin, TX; King County, WA; Minneapolis, MN; San Francisco, CA; and Toronto, ON.

While there are many aspects of programs that could be benchmarked, the following metrics were chosen in consultation with the County for benchmarking;

- Population and demographic information
- Level of service provision
- Waste management infrastructure
- Funding mechanisms and costs
- Relevant policies, regulations, ordinances
- Recycling, diversion and generation rates

To the extent possible, and where information was available, a direct comparison to Montgomery County was made. Recycling rates for each community were calculated using the Maryland Recycling Act (MRA) methodology (the same methodology as Montgomery County uses) to provide a more “apples to apples” comparison.

3 Population and Demographics

The following sections provide an overview of the population and demographics of each community according to the US Census and Statistics Canada.

3.1 Austin, Texas

The City of Austin is the capital of the State of Texas. It is the 11th largest city in the United States and the 3rd largest state capital. Geographically, the City spans 320 square miles, approximately 25 miles from north to south and 20 miles from east to west. The City’s population in 2017 was about 950,715 and the population density was 2,653 persons/square mile. The City’s population grew by 3% from 2010-2016.

3.2 King County, Washington

King County is located in Washington State and is the most populous County in the state. It is made up of 39 cities, one of which is Seattle, the state’s largest city. Geographically, the County’s service area (excluding the City of Seattle) spans approximately 2,050 square miles, approximately 45 miles from north to south and 59 miles from east to west. The County’s service area includes approximately 1.5 million residents³ with a density of about 732 persons/square mile. It should be noted that the cities of Seattle and Milton King County do not participate in King County’s solid waste system. The description of King County in this document,

³ 2019 Comprehensive Solid Waste Management Plan – July 2018

includes 37 of the 39 cities (not including Seattle and Milton) and the unincorporated areas of King County.

3.3 Minneapolis, Minnesota

Minneapolis is the largest city in Minnesota, located in Hennepin County. It is the 46th largest city in the United States. Geographically, the City spans 58 square miles, approximately 11 miles from north to south and 6 miles from east to west. The City's population in 2017 was about 422,330 with a population density of 7,821 persons/ square mile. The County's population grew by about 10% from 2000-2017.

3.4 San Francisco, California

San Francisco, located in northern California, is both a City and County (referred to as the City hereafter). It is the 13th largest city in the United States. It has a population of 884,363 (2017) and a population density of 18,854 persons/square mile. Geographically, the City spans 47 square miles, approximately 7 miles from north to south and 7 miles from east to west.

3.5 Toronto, Ontario

The City of Toronto is the capital of the Province of Ontario and Canada's largest city with approximately half of the City's population born outside Canada. Geographically, the City spans an area of 243 square miles, approximately 13 miles from north to south and 26 miles from east to west. The population in 2016 was approximately 2,731,570 and the City's population density is 11,241 persons/square mile. The City's population grew by 4.5% from 2011 to 2016.

3.6 Comparison of Demographics

The following table provides a summary of the information above in relation to Montgomery County. Compared to the other communities, Montgomery County has the third highest population, the second highest geographic area, the second lowest population density and the highest median income.

Table 3-1: Comparison of Demographics

	Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
Population	1,058,810 (2017)	950,715 (2017)	1,500,000 (2017)	422,331 (2017)	884,363 (2017)	2,731,571 (2016)
Foreign Born (%)	32.6	18.2	21.6	15.3	34.9	46.1
Geographic Area (square miles)	492	320	2,050	58	47	243
Population Density (people per square mile)	2,152	2,653	732	7,820	18,854	11,241
Median Household Income (In 2016 dollars)	\$100,352	\$60,939	\$78,800	\$52,611	\$87,701	\$50,194

Source: US Census and Statistics Canada

4 Type and Quality of Services Provided

The following sections provide an overview of the types of materials management services and programs provided by each community.

4.1 Austin

Austin’s solid waste service division is known as Austin Resource Recovery (ARR). ARR provides curbside collection services of trash, recyclables, organics, yard trim, bulky waste, clothing and housewares, and large brush to single family homes and multi-family homes with up to four units. Multi-family properties with five or more units must hire a licensed private hauler.⁴ The majority of businesses are required to hire a licensed private hauler for trash, recycling, and/or composting services. Some small businesses that are located in residential areas are provided trash and recycling collection services by ARR.⁵ In accordance with the Universal Recycling Ordinance (URO), property owners are required to provide curbside recycling services and as of October 2018, food establishments such as grocers, farmers markets, restaurants, bars, and caterers are required to provide access to organic diversion services.⁶

4.1.1 Services Provided

The following provides an overview of the curbside and drop-off services provided by the City of Austin.

⁴ <http://www.austintexas.gov/department/residential-services>.

⁵ <http://austintexas.gov/department/commercial-collection-services>

⁶ <http://austintexas.gov/uro>

Curbside Services

Trash

The City of Austin provides curbside collection of trash to single family homes on a weekly basis. The fee for trash is on a Pay-As-You-Throw (PAYT) system and four different cart sizes are available. Rates for the various trash cart sizes can be found in Table 6-1. Commercial properties that receive service from the City may receive service several times a week depending on volume.

Residents may opt to change their cart size. There is no fee to downsize; however, there is a one-time fee to upgrade to a larger cart. Excess trash that does not fit in the cart may be placed out with a purchased “Extra Trash” sticker or without a sticker for a higher fee.

Recyclables

Single stream recycling is collected on an every two week basis using 96-gallon wheeled carts. The program accepts paper (mixed paper, magazines, newspapers, boxboard, toilet/paper towel rolls), plastic containers (water, soda, milk, detergent bottles, jars and tubs), hard plastics (non-battery children’s toys, laundry baskets), cardboard, metals (steel and tin cans, aluminum foil and trays), and glass bottles and jars. Plastic bags and Styrofoam® are not accepted.

Source Separated Organics

ARR began a pilot for curbside collection of Source Separated Organics (SSO) on June 25, 2018. This pilot started with 38,000 households and currently services 90,000 households, slightly less than half of the 200,000 households in the City. By 2020, ARR plans to have every household participate in the program. Currently, ARR provides SSO collection on a weekly basis and residents may use the provided 32-gallon cart with BPI-certified compostable bags to contain material. Acceptable material includes food scraps (meat, dairy, and vegetative waste), yard trim, natural fibers (popsicle sticks, chopsticks, untreated wood, fur, hair, sawdust, shredded paper) and food soiled paper (paper bags, napkins, towels, plates, cups, and containers, newspaper, pizza boxes, tissues). Organics may not be collected in plastic bags.⁷

Yard Trim

Curbside collection of yard trim is provided on a weekly basis year-round. Yard trim must be placed in Kraft paper yard trim bags, reusable containers that are at most 34 gallons and no heavier than 50 pounds, or the provided 32-gallon cart for composting. Branches or limbs cannot be larger than 5 feet long and 3 inches in diameter. Yard trim placed in plastic bags will be collected as trash and is subject to extra fees.

⁷ http://www.austintexas.gov/sites/default/files/files/Resource_Recovery/Composting-HowTo-Guide-English_.pdf

Bulky Waste

Bulky waste is collected twice per year from single family residents up to four units and any commercial property that is provided with trash collection. Bulky items are to be separated into three different piles at the curb: metal items, car tires, and nonmetal items. Should bulk trash be placed in a bag or container, it is treated as extra trash and subject to a fee.

Clothing and Housewares

The City of Austin provides curbside collection of textiles and housewares on the same day as recycling pickup. Textiles and housewares collected include clothing, shoes, hats, fabrics, toys, tools, kitchenware, and books. Simple Recycling, a nonprofit that collects and sells used clothing, has partnered with the City to increase the recycling of textiles. Residents are mailed Simple Recycling bags which may be set out with recyclables. Simple Recycling collects the bags containing textiles and housewares at the curb and provides a new bag during pick up. This service is free of charge for residents and Simple Recycling pays the City \$20/ton collected while keeping all revenue from the resale of the material.⁸ Materials collected are either reused or recycled.

Large Brush

Large brush is collected twice per year (in April and October), from single family residents up to four units and any commercial property that is provided with trash collection. Large brush is classified as being between 5 to 15 feet in length and tree trunks must be 3 feet long or less if the diameter is more than 8 inches.⁹ The large brush that is collected is ground and mixed with biosolids from the Homsby Bend Biosolids Management Plant “Hornsby Bend”, composted, and sold as Dillo Dirt.¹⁰

Drop-Off

The City of Austin owns the Recycle and Reuse Drop-Off Center which is free for Austin and some Travis County residents. Items that may be dropped off include Household Hazardous Waste (HHW) (up to 30 gallons annually), electronics and appliances, single stream recycling, tires, clothing and housewares and brush and yard trim. Tires that are 19 inches or smaller cost \$6/each to drop off and tires that are 20 inches or larger cost \$7/each.

The Recycle and Reuse Drop-Off center also includes a ReUse Store and Austin ReBlend Paint which allows residents to pick up items that are in usable condition. Some of these materials include art supplies, cleaning products, household chemical, automotive fluids, and paint. Mulch is also available at the Recycle and Reuse Drop-Off Center. The mulch is free and must be loaded by the residents

⁸ <http://www.austintexas.gov/clothing>

⁹ <http://www.austintexas.gov/brush>

¹⁰ <http://www.austintexas.gov/dillodirt>

taking the material. The ReUse Store and the Austin ReBlend Paint is also free for residents, nonprofits, and businesses.

4.2 King County

King County's solid waste system is made up of 37 of the 39 cities that comprise the County. The Cities of Milton and Seattle are the exceptions and are not part of the information included in this report about King County. Waste management services in King County are primarily provided through the private sector. Washington State law¹¹ prohibits counties from providing curbside garbage collection services. Collection is regulated through the cities and the Washington Utilities and Transportation Commission (UTC) which sets and adjusts rates and requires compliance with local and state ordinances and waste management plans. The cities in King County and the Washington UTC provide collection services of trash, recycling, and organics through four private sector companies. The level of collection services varies with service providers and individual cities. Solid waste generated in King County's service area is disposed of at King County's landfill.

4.2.1 Services Provided

Curbside Services

Residents of single family (up to four units), multi-family homes and the non-residential sector that are located within King County's solid waste system may be provided with curbside collection of trash, single stream recycling, yard trim, and organics through private collection haulers. Types of materials collected and how they are collected varies from jurisdiction to jurisdiction. Residents may also self-haul their waste to the County's Transfer Station. The following sections provide a high level overview of the services available within King County.

Trash

Provision of trash collection varies from city to city within King County; however, in general, trash is collected by private service providers. Collection frequency, containers, limits and rates depend on the city and the contract with the private service provider. Trash collection for single family homes is generally weekly; however, it is mandatory that it be picked up once per month. Trash collection is on a volume based system, residents may request carts from 10 to 90 gallons. The trash collection fee also includes recycling and organics collection for single family homes. Multi-family trash collection is weekly or more if needed and multiple container sizes are available. The fee for multi-family homes includes the size of the cart and the frequency of the pickup. Recycling is included in the trash collection fee for multifamily properties.

¹¹ State Law 81.77.020 and 36.58.404, (2019 Comprehensive Solid Waste Management Plan - July 2018)

Recyclables

Recycling in King County is single stream and is collected every other week or more often if needed. Cart sizes are generally 90 gallons; however, residents can request a smaller cart. Additional carts are also available to residential customers at no charge. Recycling in multi-family properties is picked up weekly or more if needed.

Source Separated Organics

SSO collection consists of food scraps (meat, dairy, and vegetative waste), and food soiled paper, co-collected in a single container with yard trim. Collection of SSO from single family dwellings is generally weekly. SSO collection may be included in the trash fee or may be a separate fee. Cart sizes are generally 96 gallons however, residents can request a smaller cart. Additional carts are also available to residential customers for an additional fee. SSO collection in multi-family properties is either weekly or every two weeks. SSO collection for multi-family properties is not included in the trash fee.

Yard Trim

Yard trim collection is included in the SSO collection service. This service varies by individual municipality.

Bulky Waste

The collection of bulky waste by collection haulers in King County is not widely used as the majority of residents self-haul to a transfer station due to the high price charged by haulers. Haulers charge from \$25 to \$128 per item to dispose of bulky waste.¹² To self-haul, residents pay from \$10 to \$30 for bulky items at the transfer stations.¹³

Drop-Off

King County currently owns eight transfer stations and two drop box locations located throughout the County which are accessible to residents. The County-owned transfer stations accept trash and materials such as appliances and wood, and yard trim. The County has one mobile and one fixed HHW facility.

4.3 Minneapolis

The City of Minneapolis provides curbside collection service to predominantly single family households (four units or less). Multi-family and commercial properties are responsible for contracting with the private sector for collection service. The Hennepin County Energy Recovery Center (HERC) is the primary disposal facility for Minneapolis and surrounding communities to manage trash. Electricity generated by the facility is exported to the local power grid and steam is exported to the

¹² [King County SWMP- 2019](#)

¹³ <https://www.kingcounty.gov/depts/dnrp/solid-waste/facilities/disposal-fees.aspx>

Minneapolis district energy system and to the adjoining outdoor baseball stadium and light rail station.¹⁴ Minneapolis is working towards their goal of recycling and composting 50% of its city-wide waste by 2020 and has implemented a (voluntary) curbside organics collection program, along with a number of initiatives intended to reduce waste.

4.3.1 Services Provided

The following provides an overview of the curbside and drop-off services provided by the City of Minneapolis.

Curbside Services

Minneapolis' Division of Solid Waste and Recycling provides collection, processing, and disposal services for single family homes, a small number of businesses, City facilities, and public spaces. The Division of Solid Waste and Recycling provides curbside collection solid waste services to all residential properties which are classified as homes with up to four units. The City contracts with a private hauler to provide waste collection. All residential customers are required to participate in trash collection however participation in the City's recycling program is voluntary. Some townhomes and a small number of larger buildings, parks, commercial and municipal properties may also receive curbside collection from the City. Residents pay for collection services through their utility bill. The solid waste base fee includes the collection of trash, recycling, organics, yard trim, large items, and the voucher program. The voucher program provides each property with the Solid Waste and Recycling service "clean up" vouchers for disposal of trash, construction, and paving materials. Each property is given 6 vouchers per year and allows for the disposal of a maximum of 2,000 pounds (1 ton) of waste at no charge. The voucher program also includes two tire vouchers for the disposal of eight tires per voucher a year at no charge.

Commercial, industrial, and multi-family units with five or more units are provided collection, processing, and disposal services from licensed haulers through an open competitive system.

Trash

The City of Minneapolis collects trash weekly. Residents have the option of a 96 or 32-gallon trash cart which costs \$5 or \$2 per month respectively. The maximum weights allowed in the 96 and 32-gallon carts are 200 and 40 pounds respectively. Extra trash bags, preferably bags that do not contain trash that can attract animals, may be placed next to the cart. The trash crews keep track of the frequency of extra trash pickup per resident and will provide an extra cart for an additional \$5 per month.

¹⁴ <https://www.politico.com/magazine/story/2015/08/minneapolis-trash-incinerator-121570?o=1>

Recyclables

The City of Minneapolis collects single stream recyclables every two weeks. Acceptable materials include plastic bottles, jugs, cups and containers, metal food and beverage cans, aluminum foil and trays, glass food and beverage bottles and jars, paper (mixed paper, shredded paper, magazines, books, newspaper, cardboard, boxboard), gable top and aseptic containers and cardboard cans. Plastic bags and Styrofoam® are not accepted. Residents are provided a 96-gallon cart that may not weigh more than 200 pounds. Residents may place extra recyclables next to the cart in cardboard boxes or paper bags. Recyclables may not be collected in plastic bags. Additional recycling carts may be available at no extra charge. Collection crews will not pick up recyclables if not prepared correctly or if there is contamination in the bin. A recycling education tag is placed on the cart if there is an issue with setout with the issue highlighted. Residents are required to address and fix the issue and collection will be completed on the next scheduled pick up day.¹⁵

Source Separated Organics

Residents who want to participate in SSO collection must sign-up. SSO collection occurs weekly and the maximum weight for the cart is 200 pounds. Residents with one to two units are provided with a 32-gallon cart and residents with three or more units are provided with a 64-gallon cart. SSO must be placed in a paper bag or certified compostable bag before being placed into the cart. Educational tags are used when SSO are not placed out properly. The acceptable SSO materials include food (meat, dairy, vegetative waste, and grease in small amounts on a paper towel) and non-recyclable paper (napkins, paper towels and tissues, pizza boxes, paper egg cartons, paper cups, plates and bowls) and other materials (compostable cups, plates, bowls and utensils, coffee grounds and filters, tea bags, houseplant trimmings).¹⁶

Yard Trim

Yard trim is collected weekly on a seasonal basis between mid-April and mid-November. Containers are not provided by the City; however, yard trim stickers are available for rigid containers. Alternatively, compostable bags or Kraft paper bags may be used.¹⁷

Bulky Waste

Large items may be collected with regular trash collection. Each resident is allowed up to two large items per pickup free of charge.

¹⁵ <http://www.ci.minneapolis.mn.us/solid-waste/recycling/index.htm>

¹⁶ <http://www.ci.minneapolis.mn.us/solid-waste/organics/index.htm>

¹⁷ <http://www.ci.minneapolis.mn.us/solid-waste/yardwaste/index.htm>

Drop-Off

Minneapolis residents may drop-off trash, recyclables, scrap metal, appliances, tires, and C&D waste to the South Transfer Station in Minneapolis. This transfer station is free for residents that receive collection service and \$40 for other residents of Minneapolis. There are also two drop-off centers in Hennepin County: Hennepin County Recycling Center and Transfer Station and South Hennepin Recycling and Problem Waste Drop-Off Center located in Brooklyn Park, MN and Bloomington, MN respectively. Both facilities accept recyclables, electronics, HHW, appliances (for a fee of \$30 per full size refrigerator or air conditioner and \$15 per half size refrigerator), and tires for a fee of \$3 each. In addition to the above mentioned items, the facility located in Brooklyn Park accepts mattresses and box springs for a fee of \$15 per item and trash at a fee of \$19 per cubic yard. The Bloomington facility accepts small one-pound propane and gas cylinders. These facilities also contain free product centers that allow residents to pick-up or drop-off reusable items such as paint, cleaners, and automotive products.¹⁸ In general, products dropped off are recycled to the extent possible, with some reuse opportunities as applicable.

Collection events for HHW also take place in throughout the year in Hennepin County for residents.¹⁹

4.4 San Francisco

The City of San Francisco is well known for its “Fantastic Three” program which features automated cart-based collection of trash, recycling and organics. The program was implemented to meet the State of California’s mandate of 50% diversion. San Francisco has exceeded this diversion goal through a number of measures including mandatory participation in diversion programs, partnerships with a private service provider (Recology), availability of material processing/disposal facilities, education and outreach, as well as flexibility in service provision (i.e. adjusting the program as required).

4.4.1 Services Provided

The following provides an overview of the curbside and drop-off services provided by the City of San Francisco through their service provider, Recology.

Curbside Services

The City of San Francisco provides its customers (residential and non-residential) with curbside collection services through a contract with Recology. Recology does all the collection services for the City.

¹⁸http://www.minneapolismn.gov/www/groups/public/@publicworks/documents/webcontent/convert_283097.pdf

¹⁹ <https://www.hennepin.us/residents/recycling-hazardous-waste/collection-events>

Trash

Recology collects trash weekly from residential and non-residential units. The standard default service for trash collection container is 16 gallons per unit. Rates for each additional increment increase accordingly. One-unit residential buildings are provided with one 16-gallon container as the default but can pay more for 32- or 64-gallon containers. Similarly, two-unit residential buildings are provided with one 32-gallon container but can pay more to receive 64-gallon container service for an additional fee.

Recyclables

Recology collects single stream recyclables weekly. Acceptable materials include paper (paper coffee cups, newspapers, magazines, cereal boxes, mixed paper, shredded paper, egg cartons, ice cream containers), cardboard, metal (food and beverage cans, aluminum foil and trays, empty aerosol cans, CDs/DVDs, jar lids and bottle caps, and small metal household items (e.g. broken pots and pans)), plastic (plastic clamshells, food containers, bottles, jugs, cups, plates, plastic coffee cup lids, tubs and lids, plastic toys, plastic buckets, and plastic bags/wrap (bundled inside one bag)), glass food and beverage bottles and jars, and cartons (milk, soup, juice). Fabric (ideally non-reusable) can be bundled in a clear bag and placed in the blue bin for collection. The standard default container is 64 gallons. Recycling containers can be upsized or downsized and fees paid accordingly.

Source Separated Organics

SSO is collected weekly by Recology and include food scraps (meat, dairy, vegetative waste and grease in small amounts), food containers (paper boxes, pizza boxes, paper clamshells) compostable bags, cups, plates etc., waxy cardboard, wax paper, corks, natural wood, wood chopsticks, stirrers, and toothpicks, soiled paper (paper plates, paper towels, tissues, napkins, greasy paper bags), feathers, and yard trim. 32-gallon containers are the only option for all residential units.

Yard Trim

In San Francisco, yard trim is collected with SSO.

Bulky Waste

Bulky items may be picked up two times a year and the pick-up must be scheduled. Residents have two bulky pickups for free and commercial accounts must pay a fee. Each unit in a multi-family building is eligible to receive one curbside collection annually at no charge. Additional collections for all building types can be scheduled for a fee. Curbside collection includes up to 10 items per collection, along with up to 10 additional boxes, bags, or bundles of textiles per collection. Acceptable items include appliances, electronics, mattresses, furniture, metal, textiles, carpets and padding etc. Items such as tires, construction debris, and regular household trash,

recycling or organics are not accepted. Items collected are recycled to the extent possible.

Drop-Off

Waste may be dropped-off at San Francisco's transfer station. Customers can bring containers for deposit redemption, drop-off materials including electronics, HHW, construction and demolition debris and other non-divertible waste. Items collected are recycled to the extent possible. Fees may apply. Public drop-off and disposal rates can be found here: <https://www.recology.com/recology-san-francisco/sf-transfer-station/>

4.5 Toronto

The City of Toronto provides solid waste collection services to all single-family homes, religious institutions, charities, City divisions, schools and to some multi-family buildings and small commercial businesses. Collection is provided through a combination of municipal and privately contracted staff.

Under provincial legislation, the City is not obligated to provide service to multi-family or commercial establishments. Multi-family and small commercial businesses may choose to receive service from the City which is less expensive than from the private sector; however, they must participate in diversion programs to be eligible. Many multi-family and large commercial businesses mainly contract with private waste service providers for collection. In Ontario, the Industrial, Commercial and Institutional (ICI) sector is not required to report on waste generated, recycled or disposed.

4.5.1 Services Provided

The following provides an overview of the curbside and drop-off services provided by the City of Toronto.

Curbside Services

The City of Toronto provides curbside collection services for trash, recycling, organics, yard trim, waste electronics and electrical equipment (WEEE), bulky waste, and household hazardous waste (HHW). The City of Toronto provides service for 460,000 single family customers, 414,000 multi-family customers, and 17,300 non-residential customers which are made up of businesses, City divisions, school, charities, and religious institutions.

Trash

Trash is collected every other week (on alternate weeks from recycling) using fully automated trucks. The City of Toronto uses a PAYT volume-based cart system and provides four different cart sizes: small, medium, large, and extra-large. Excess trash may be collected with the purchase of a garbage tag for ~\$4 (USD).

Recyclables

Single stream recyclables are collected every other week using fully automated trucks (on alternate weeks from garbage). The City of Toronto provides four different cart sizes to residents at no cost: small, medium, large, and extra-large. Acceptable recyclable materials include glass bottles and jars with the lids on, plastics such as bottles, clamshells, tubs, disposable plates and cups, beverage bottles, and plastic paint pails, CD cases, soft stretchy plastics such as sandwich bags and grocery bags, metal (aluminum/steel cans, aluminum trays, aerosol cans, paint cans), paper (bags, newspaper, gift wrap, tissue paper, shredded paper, books, cardboard, boxboard, toilet paper rolls, milk/juice cartons and boxes and cans (chips, nuts, frozen juice), and Styrofoam® (drinking cups, egg cartons, meat trays, takeout food containers).

Source Separated Organics

SSO collection occurs every week using fully automated trucks. Acceptable SSO material includes food waste (meat, dairy, vegetative waste, and grease, oils and fats), diapers, pet waste, and sanitary products, soiled paper (food packaging, ice cream containers, popcorn, flour and sugar bags, soiled tissues, napkins, paper towels), house plants including soil, coffee grounds/filters, and tea bags. Yard trim is not accepted in the green bin. Residents are allowed to place materials in plastic bags in order to encourage participation in the program. The City of Toronto provides residents with one composting cart (one size only). The City recently replaced the original smaller carts that were manually emptied with larger, rodent (e.g. raccoon) resistant carts suitable for automated collection.

Yard Trim

Yard trim is collected seasonally from mid-March to mid-December on an every other week basis. Christmas trees are also picked up in January. Leaf and yard trim includes leaves, small tree limbs, trunks, weeds, brush, mulch, pumpkins, and corn stalks. Grass clippings, sod, and soil may not be collected as yard trim. Leaf and yard trim must be set out in paper Kraft bags or open top rigid containers. The City also collects leaves from roadways in the fall.

Bulky Waste

Bulky waste is collected curbside on trash collection day. No appointment is needed. Bulky waste includes oversized and metal items, carpets and underpads, mattresses etc. The City recycles metal items, appliances and mattresses.

Household Hazardous Waste

Household Hazardous Waste (HHW) may be picked up curbside by the Toxic Taxi, a service that provides HHW collection to residential units receiving collection services by the City. Residents may schedule an appointment online or by phone. HHW may also be dropped off a certain transfer stations.

Drop-Off

The City of Toronto owns and operates seven transfer stations with drop-off centers which manage trash and divertible items. Materials accepted at the drop-off centers include trash, recyclables, HHW, and private, commercial, and industrial waste.

The City of Toronto also holds Community Environment Days which are seasonal events that allow residents to drop off HHW, electronics, and household goods for diversion. These events are held in each of the 44 wards in the City.

4.6 Comparison of Services Provided

The following table provides a summary of the information above with respect to provision of service.

Table 4-1: Comparison of Service Provision

	Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
Number of Customers Receiving Service	217,828 units (recycling) 91,900 units (trash) (2017)	~200,000 (2017)	Individual municipalities provide service	107,000 (2018)	141,531 residential, 8,337 apartments, 17,099 commercial, 233 compactors (2017)	460,000 single family customers, 414,000 multi-family customers, and 17,300 non-residential customers (2017)
Sectors receiving collection	All residential properties up to 6 units	All residential properties up to 4 units, some small businesses	Varies	All residential properties up to 4 units, some non-residential properties	All residential and commercial properties	All residential and some small businesses
Number of Collection Days/Week	Five (Monday – Friday)	Five (Monday – Friday)	Five (Monday – Friday)	Five (Monday – Friday)	Five (Monday – Friday)	Four (Tuesday – Friday)
Trash Collection	Weekly	Weekly	Varies	Weekly	Weekly	Every two weeks (over a 4 day week)
Use of PAYT	None	PAYT	Varies	PAYT	PAYT	PAYT
Trash Container type/size	None provided. Residents may place up to 5 bags < 45 lbs. each at the curb for collection	Wheeled Cart 24-gallon 32-gallon 64-gallon 96-gallon	Wheeled Cart Range from 10 to 90-gallon	Wheeled Cart 96-gallon 32-gallon	Wheeled Cart 16-32 gallon depending on number of units	Wheeled cart 24-gallon 32-gallon 64-gallon 96-gallon
Overflow	Extra trash is accepted with no limits	Additional bags - \$9.60 per bag without stickers or \$4 for “extra trash” stickers for bags		Up to 2 items/week may be placed out for collection	Extra trash may be placed out with the cart – extra charges apply	Bag tags required - ~\$4/bag tag
Recycling Collection	Dual stream, weekly	Single stream, every other week	Varies by sector and contractor	Single stream, every other week	Single stream, weekly	Single stream, every other week (over a 4 day week)

	Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
Recycling Container type/size	64-gallon wheeled cart for paper, 22-gallon bin for commingled (containers)	96-gallon wheeled cart	90-gallon wheeled cart (smaller carts available by request)	96-gallon wheeled cart	32-64 gallon wheeled cart depending on number of units	4 sizes of wheeled carts (same as trash carts)
SSO (Food Scraps) Collection	None	Pilot scale for 90,000 hhlds	Weekly to every other week	By subscription, weekly	Weekly	Weekly (over a 4 day week)
SSO Container type/size	N/A	32-gallon wheeled cart	90-gallon wheeled cart (smaller carts are available by request)	64-gallon wheeled cart for properties with 3+ units 32-gallon wheeled cart for properties with for 1-2 units	32-gallon wheeled cart	32-gallon wheeled cart, Large multi-family buildings may have a front end bin
SSO Accepted	None	Meat Dairy Vegetative Waste Yard Trim Soiled Paper	Meat Dairy Vegetative Waste Soiled Paper	Meat Dairy Vegetative Waste Soiled Paper	Meat Dairy, Vegetative Waste, Yard Trim Soiled Paper	Meat Dairy Vegetative Waste Soiled Paper Pet Waste Diapers/Sanitary Waste
Yard Trim Collection	Weekly year round Seasonal leaf vacuuming in certain areas	Weekly year round. Collected with organics	In general, Organics and Yard Trim are collected together weekly to every other week	Weekly, seasonal from mid-April and mid-November	Collected with organics year round	Every other week, seasonal from mid-March to mid-December. Separate collection. Seasonal leaf vacuuming.
Yard Trim Container type/size	Kraft paper bags or open rigid container	Kraft paper bags or open rigid container	Residents are provided with 90-gallon wheeled cart (smaller carts are available by request)	Kraft paper bags or open rigid container	Extra yard trimmings may be placed in a compostable bag and set out with green cart. Extra charges may apply	Kraft paper bags or open rigid container

	Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
Bulky Waste Collection	5 pickups per year upon request. No limit on number of items. Unlimited scrap metal collected separately	2x/year. No limit on number of items but must be sorted into metal, tires and non-metal items	Self-haul to Transfer Station	Weekly collection of two items	2x/year by appointment. 10 items per collection	Every other week, year round curbside collection of oversized and metal items, carpets. No renovation or tires accepted. No limit on number of items setout
Other Materials Collection	Scrap metal curbside collection upon request	Weekly collection of textiles and housewares Large Brush 2x/yr			Up to 10 additional boxes, bags or bundles of textiles maybe set out with bulky trash collection	Every other week curbside collection of waste electronics.
Collection Service Provider	Contracted Service Providers	Municipal Staff	Contracted Service Providers	Municipal Staff	Contracted Service Provider - Recology	For cart-based collection, municipal staff provide collection in one half of the City, contracted staff provide collection in other half of the City. The City contracts for collection from large multi-family building with the private sector.
Other Facilities Available to Customers	One Transfer Station One Drop-off Center at County's Transfer Station and one drop-off center in Poolesville	One Recycling and Reuse Drop Off Center where residents may pick up gently used materials	Eight Transfer Stations and two Drop-off locations	Two Drop-off Centers	One Drop-off Centre at Recology Transfer Station	Seven Transfer Stations / Drop-off Centers

	Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
Materials Accepted at Transfer Station/Drop-Off Center	At the Transfer Station Drop-off area: Trash, metal items, building materials in usable condition, clothing and shoes, recyclables, electronics, HHW, bulky rigid plastics, yard trim, tires (some materials only accepted from residents). Poolesville Beauty Spot: only bulky trash.	HHW, electronics and appliances, single stream recycling, tires, clothing and housewares and brush and yard trim.	Varies by facility	Recyclables, electronics, HHW, appliances, tires, mattresses and box springs and trash	Trash, electronics, HHW, C&D debris	Varies by location: trash, HHW, electronic waste, renovation waste, yard trim, metal, recycling
Other Services / Programs	Confidential paper shredding			Each property with Solid Waste & Recycling service is offered clean up vouchers (6/year/property) for trash, construction and paving materials disposal for up to 2,000 lbs. at no charge and two tire vouchers for disposal of eight tires per voucher annually at no charge.	Gigantic 3 program is a free bulky item drop-off service at various locations around the City. Environmental Learning Center located at TS. Hosts an Artist in Residence. Recology TS also has a buy-back center for deposit redemption for recyclable bottles and cans.	Toxic Taxi service by appointment Community Environment Days – seasonal events, one event held in each ward of the City for drop-off of household goods, electronics, and household hazardous waste for a total of 44 events. Recently started an Artist in Residence program.

	Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
Reference	https://www.montgomerycountymd.gov/sws/	http://www.austintexas.gov/resident/trash-and-recycling	https://kingcounty.gov/depts/dnrp/solid-waste.aspx	http://www.minneapolismn.gov/solid-waste/	https://www.sfdph.org/dph/EH/refuseLiens/default.asp https://www.recoology.com/recology-san-francisco/	https://www.toronto.ca/city-government/accountability-operations-customer-service/city-administration/staff-directory-divisions-and-customer-service/solid-waste-management-services/

5 Waste Management Infrastructure

The following sections provide a high level overview of some of the more significant infrastructure owned and/or operated by each community.

5.1 Austin

The City's landfill is the primary method of disposal. The City also maintains and monitors 80 closed landfills. The City provides collection services with municipal staff with a fleet of collection vehicles and equipment (e.g. carts). The City also operates a recycle & reuse drop-off center where residents can drop-off HHW, electronics, appliances, clothing and housewares, single stream recyclables, and brush and yard trimmings. The center also features a ReUse Store where residents can access gently used items free of charge. ReBlend paint and mulch is also available free of charge. Austin uses private sector facilities to process recyclables and organics but has their own yard trim composting facility.

5.2 King County

The King County Solid Waste Division is responsible for several facilities in the urban and rural areas of the County. The facilities include:

- Eight transfer stations
- Two drop box facilities
- One active landfill
- Seven closed landfills

Drop Box Facilities are small collection facilities that allow residents to drop off a limited amount of trash. The trash is then sent to the County's landfill. The County's landfill is anticipated to reach capacity in approximately 2027- 2028. The County has investigated waste-to-energy but does not currently utilize it as a disposal method.

5.3 Minneapolis

Minneapolis does not own or operate any waste management infrastructure. The [Hennepin County-owned waste-to-energy facility, HERC](#) is the primary means of trash disposal. Recycling and organics are processed at private sector facilities. Residents can access drop-off sites located in other jurisdictions (see Section 4.3.1). Minneapolis uses privately contracted service providers for waste collection.

5.4 San Francisco

San Francisco has an exclusive partnership with a private firm, Recology. Recology provides waste collection in San Francisco and is responsible for processing and disposal of waste collected. Residents can access infrastructure owned and operated by Recology, including the San Francisco Transfer Station and Hazardous

Waste Facility. San Francisco does not own/operate any waste infrastructure, nor does it utilize waste-to-energy as a method of waste disposal²⁰.

5.5 Toronto

The City of Toronto is responsible for approximately \$600 million in assets consisting of:

- Thirteen maintenance and operating yards
- Seven transfer stations and drop-off depots
- Two organics processing facilities (anaerobic digestion)
- One active landfill
- Over 150 closed landfills
- Over 750 fleet assets, and
- Over 1.5 million bins and carts.

All City facilities are operated by municipal staff and the City contracts out the processing of recyclables to a private service provider.

Toronto's organics processing facilities utilize anaerobic digestion technology which enables materials such as diapers and pet waste to be included in the source separated organics stream. One facility is currently under construction to expand its capacity and the City is considering a third facility. The City is also investigating mixed waste processing with organics recovery, primarily for multi-residential waste, but also for street and parks litter. No waste managed by the City of Toronto, or its contractors, is disposed of at a waste-to-energy facility.

5.6 Comparison of Municipal Infrastructure and Assets

It is difficult to make a direct comparison of waste management infrastructure and assets due to the differences in the way municipalities choose to deliver services. For example, San Francisco chooses to contract with the private sector for waste collection, processing and disposal and does not own or operate any waste management infrastructure. King County has disposal facilities but the individual cities are responsible for collection and processing. Toronto and Austin provide either partial or full waste collection services and thus own collection vehicles and provide collection containers. Toronto owns and operates a number of waste processing and disposal facilities and only contracts out recycling processing. Montgomery County is a hybrid, owning a number of waste management facilities, fully contracting out waste collection but providing only recycling containers.

The following Table 5-1 provides a comparison of municipally-owned infrastructure, and assets. The number of facilities owned by the municipality is indicated as well as

²⁰ It should be noted that a small amount of medical waste is incinerated.

whether or not the municipality owns collection vehicles and provides collection containers as part of their program.

Table 5-1: Comparison of Municipally-Owned Infrastructure and Assets

	Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
Transfer Station	1	0	8	1	0	7
Public Drop Off Center	2	1	2	0	0	7
Active Landfill	1 permitted but not active	1	1	0	0	1
Closed Landfills	2	80	7	0	0	>150
Resource Recovery Facility	1	0	0	0	0	0
SSO Processing Facility	0	0	0	0	0	2 (Anaerobic Digestion)
Leaf & Yard Trim Composting Facility	1 (Composting)	1	0	0	0	0
MRF	1	0	0	0	0	0
Collection Vehicles	No	Yes	No	No	No	Yes
Collection Containers	Yes (Recycling only)	Yes	No	Yes	No (provided through Recology)	Yes

6 Funding Mechanisms

The following sections provide an overview of the various mechanisms utilized by the communities to fund waste management programs and services. These mechanisms can vary from property taxes to Pay-As-You-Throw (PAYT) programs.

6.1 Austin

Austin Resource Recovery utilizes a base rate and cart rates to fund its solid waste management programs and services in addition to property taxes. It charges residents for trash on a monthly basis according to the size of trash cart. No additional fees are charged for recycling or organics collection. Table 6-1 below shows the trash cart sizes and rates.

Table 6-1: Austin Trash Cart Rates for Residential and Commercial Sources (2018)

Trash Cart Size (gallons)	Residential Monthly Rates*	Commercial Monthly Rates
Base Rate	\$ 14.05	\$ 14.05
24	\$ 17.90	\$ 17.90
32	\$ 19.15	\$ 19.15
64	\$ 24.15	\$24.30
96	\$ 42.85	\$42.85

Source: <http://www.austintexas.gov/department/rates-fees>. Date Accessed: September 18, 2018

*All monthly rates include the base fee of \$14.05.

Residents may opt to change their cart size. There is no fee to downsize; however, there is a one-time fee of \$15 to upgrade to a larger cart. Excess trash that does not fit in the cart will be collected for a fee of \$9.60 plus tax per bag. Alternatively, residents can purchase “Extra Trash Stickers” which can be purchased at most local grocery stores for \$4 plus tax and placed on the excess trash bags.

Commercial customers pay a monthly base rate of \$14.05, a clean community fee of \$20.75 and are charged for trash collection based on cart size, number of carts and frequency of collection. Recycling collection is offered weekly, and more frequently for an additional charge.

Residents of Austin pay a Clean Community Fee of \$8.95/month on their utility bills to fund services that help keep the City clean.²¹

6.2 King County

As discussed in Section 4.2, King County does not provide curbside garbage collection services and instead, provides a variety of transfer and disposal services. Funding is primarily realized through tipping fees (85%). 33 out of the 37 communities that participate in King County’s solid waste program signed the Solid Waste Interlocal Agreement (ILA) which allows them to share in the cost and benefit of the transfer and disposal systems. The ILA is an agreement between King County and the cities which started in 1988 and has been extended until 2040. The financial

²¹ <http://www.austintexas.gov/department/rates-fees>

information provided in Table 6-6 is primarily related to the operation of the landfill and transfer stations which are funded through tipping fees and the ILA.

6.3 Minneapolis

Minneapolis funds its solid waste program through solid waste fees, grants and recycling revenue. In addition to a base fee which covers collection of all materials, residents also pay for the size of trash cart that best suits their needs. Approximately 56% of the City’s expenses are for contractual services and approximately 94% of the revenue received is through charges for services.

Table 6-2 presents the 2018 fee structure utilized by Minneapolis for its single-family customers.

Table 6-2: Minneapolis Solid Waste Fees (2018) for Single-Family Dwellings

Category	Fees and Charges																												
Solid Waste Base Fee Effective 1/1/2018	\$23.99 per month per dwelling unit for collection of garbage, recycling, organics recycling, large items, yard trim, and the voucher program.																												
Large 96-Gallon Cart Disposal (trash)	\$5.00 per month																												
Small 32-Gallon Cart Disposal (trash)	\$2.00 per month																												
Recycling Cart (95-gallon or 64-gallon)	No additional charge. An additional recycling cart may be provided at no additional charge.																												
Organics Cart (32-gallon or 64-gallon)	No additional charge. A larger or additional organics cart will be provided at no additional charge.																												
Minnesota Solid Waste Management Tax	The State requires Minneapolis to collect a tax on mixed municipal solid waste services. The solid waste base fee has a taxable and a non-taxable component. The taxable component is for mixed municipal solid waste services. The non-taxable component of the solid waste base fee is the portion that pays for recycling, organics recycling, yard trimmings and other materials separated from the waste stream. The entire garbage cart disposal fee is taxable. The residential tax is 9.75% while the commercial tax is 17%.																												
Hennepin County Fee	<p>Hennepin County Ordinance No. 15 established a County Solid Waste Management Fee. The fee (9% for residential and 14.5% for commercial) is charged on everything that is disposed of as trash in Hennepin County. The revenue collected from the fee is used to fund environmental programs such as waste reduction, reuse, recycling, land conservation and problem materials management.</p> <p>An example of how Solid Waste Management taxes and fees are calculated is as follows for one residential dwelling unit with a single large garbage cart per month:</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Rate</th> <th>Taxable Portion</th> <th>Tax Rate</th> <th>Total Tax</th> <th>Fee Rate</th> <th>Total Fee</th> </tr> </thead> <tbody> <tr> <td>Base Fee</td> <td>\$23.99</td> <td>\$13.67</td> <td>9.75%</td> <td>\$1.33</td> <td>9%</td> <td>\$1.23</td> </tr> <tr> <td>Cart Fee</td> <td>\$5.00</td> <td>\$5.00</td> <td>9.75%</td> <td>\$0.49</td> <td>9%</td> <td>\$0.45</td> </tr> <tr> <td>Total Tax</td> <td>-</td> <td>-</td> <td>-</td> <td>\$1.82</td> <td>-</td> <td>\$1.68</td> </tr> </tbody> </table>	Type	Rate	Taxable Portion	Tax Rate	Total Tax	Fee Rate	Total Fee	Base Fee	\$23.99	\$13.67	9.75%	\$1.33	9%	\$1.23	Cart Fee	\$5.00	\$5.00	9.75%	\$0.49	9%	\$0.45	Total Tax	-	-	-	\$1.82	-	\$1.68
Type	Rate	Taxable Portion	Tax Rate	Total Tax	Fee Rate	Total Fee																							
Base Fee	\$23.99	\$13.67	9.75%	\$1.33	9%	\$1.23																							
Cart Fee	\$5.00	\$5.00	9.75%	\$0.49	9%	\$0.45																							
Total Tax	-	-	-	\$1.82	-	\$1.68																							

Source: http://www.ci.minneapolis.mn.us/solid-waste/customer/solid-waste_billing Accessed September 24, 2018

6.4 San Francisco

San Francisco funds their waste management program through two different sources. Program-related funding for the San Francisco Environment Department is derived through property taxes to

support oversight, research and outreach. Funding to support waste collection, processing and disposal is derived through monthly charges levied on residential and commercial customers.

The fees presented in the following table are primarily associated with costs for Recology to manage residential waste. Charges for the commercial sector depend on service configurations, collection frequency, and site-specific diversion rates. Apartments, condos and commercial customers are eligible for a discount in their rates if they consistently sort their materials properly. Rates, recently updated in July 2018, depend on the volume and type of material collected. Customers have the ability to increase or decrease cart sizes to suit individual needs, with corresponding increases or decreases in fees.

Table 6-3: San Francisco Solid Waste Rates for Single Family Dwellings, Apartments and Condos (2018)

Rate Component	Monthly Charge - Single Family Dwellings (1-5 units)	Monthly Charge - Apartment & Condos (6+ units)
Base charge per dwelling unit	\$16.12	\$5.37
Trash per 16-gallon bin	\$6.73	n/a
Recycling per 32-gallon bin	\$6.73	n/a
Composting per 32-gallon bin	\$6.73	n/a
Premium for trash above 32 gallons per unit	\$10.75	n/a
Diversion discount floor	n/a	25%
Trash, recycling, and composting per 32-gallon bin	n/a	\$25.82
1-cubic yard bin	n/a	\$162.92

Source: <https://www.recology.com/recology-san-francisco/rates/> Accessed September 24, 2018

6.5 Toronto

Toronto utilizes a hybrid funding system, with a portion of funding coming from property taxes and a portion coming from waste management fees. In general, waste management fees are levied upon trash, and vary according to the size of trash cart and frequency of collection. The City charges \$3.88 (USD) or 5.11 (CDN)²² for tags for excess trash bags and recently, the City added an annual fee of \$6.07 (USD) or \$8 (CDN) per residential unit for collection of oversized and metal items.

The City has separate rates for the following types of customers that depend on the type of collection (curbside, front end bins, or bag only) and the frequency of collection:

- Residential Customers
- Multi-Residential Customers
- Commercial Customers
- Charities, Institutions & Religious Organizations

²² Based on an exchange rate of \$0.76 (November 19)

- Schools & City Divisions, Agencies & Corporations

Table 6-4 presents the annual rate charged for the four sizes of trash carts for residential customers. The rebate refers to the amount already paid as part of property taxes, so the homeowner only has to pay the difference which is shown as the annual cost to the resident in the table below. This rebate is necessary to adjust for the assessed property tax charges that the City must continue to allocate to comply with current Provincial legislative requirements.

Table 6-4: Toronto Trash Cart Fees for Single Family Dwellings (2018)

Cart Size	Annual Rate		Rebate		Annual Cost	
	\$USD	\$CDN	\$USD	\$CDN	\$USD	\$CDN
20-Gallon (75L)	\$193.36	\$254.66	\$172.36	\$227.01	\$20.99	\$27.65
32-Gallon (120L)	\$234.72	\$309.14	\$124.34	\$163.76	\$110.38	\$145.38
65-Gallon (240L)	\$318.78	\$419.85	\$54.98	\$72.41	\$263.80	\$347.44
95-Gallon (360L)	\$369.76	\$486.99		\$0	\$369.76	\$486.99

Source: <https://www.toronto.ca/services-payments/recycling-organics-garbage/houses/garbage-bin-sizes-fees/> Accessed September 24, 2018

75% of the total revenue that funds the City’s Solid Waste Management Services is derived from the residential volume-based solid waste management services rates and property tax support. Tipping fee revenues provide a small portion of funding towards the City’s Solid Waste Management budget.

6.6 Comparison of Waste Fees

The following table provides a comparison of the fees single family residents would pay considering the highest or maximum level of service (e.g. the largest carts), including all taxes, fees, etc. which would be equivalent to the level of service provided by Montgomery County. For those residents receiving trash collection, Montgomery County charges an annual fee (\$282.11) which includes the cost of collection (trash bags or containers – not carts, recycling, yard trim, bulky trash and scrap metal), processing and disposal. A separate charge for leaf vacuuming service (\$102.93) is charged to those residents in the leaf collection districts. For the purposes of comparison to other communities, the annual fee has been converted to a monthly amount for comparison and leaf vacuuming service included as part of the highest level of service provided.

All communities except Montgomery County utilize some sort of PAYT system, typically charged on a monthly or annual basis. While the determination of annual waste fees is a very complex process that include a myriad of charges, typically fees are based on a cost recovery basis to include all costs associated with waste management. While fees are set to recover costs associated with providing waste management services, they also reflect the policy decisions to incentivize diversion through higher fees associated with larger trash carts and/or more frequent collection of recyclable materials.

The comparison of fees in the table below shows that Montgomery County charges the lowest fees for a comparable level of service (except for the provision of food scraps collection). It also shows how other communities have set fees to disincentivize trash.

Table 6-5: Comparison of Waste Fees for Single-Family Dwellings

	Montgomery	Austin	King County	Minneapolis	San Francisco	Toronto
Equivalent monthly fee for highest level of service (e.g. largest carts)	\$23.51 ¹	\$42.85	n/a*	\$28.99	\$94.17	\$30.81
Other Fees						
Leaf Vacuuming Charge for those Single Family Homes in Leaf Collection District	\$8.58					No additional charges
Monthly Bulk trash charge						\$6.07
Monthly Utility Charge		\$8.95				
Taxes and Fees				\$3.50		
Total Monthly Fee	32.09 ²	\$51.80	n/a*	\$32.49	\$94.17	\$36.88
Total Annual Cost	\$385.08	\$621.60	n/a*	\$389.88	\$1,130.04	\$442.56
Note	Fees are charged annually. Annual fee includes base charge, base and incremental system benefit charge, refuse collection and leaf vacuuming charges for those in the Leaf Collection District..	Monthly fee includes the base fee.	Fees are set by individual jurisdiction.	Monthly fee includes base fee and cart fee. Taxes include 9% Hennepin County fee and 9.75% State tax.	Monthly fee includes per unit base charge and excess trash premium.	Fees have been converted to USD and to a monthly rate for comparison. Leaf vacuuming is only available in certain areas of the City, seasonally.

*Collection fees in King County fees are set by individual jurisdictions.

¹ While Montgomery County does not charge for trash carts, residents are allowed to put out 5 containers of trash.

² Fees in Montgomery County are paid annually but have been converted to a monthly fee for comparison.

6.7 Comparison of Waste Management-Related Budgets

The following table provides a comparison of the expenditures and budgets reported by each community. It should be noted that each community includes different items in their budget which may not be present in budgets for other communities. In the case of San Francisco, SF Environment has their own budget and Recology also reports on revenue and expenditures. Both

sets of data have been included in the table below to give a more fulsome picture of the costs related to San Francisco’s waste management program. It should also be noted that Toronto receives revenue from stewards of organizations representing printed paper and packaging, tires, and electronics, in addition to tipping fees, charges to residents etc. Because not all the line items are the same, and each community has their own way of reporting, it is difficult to make an “apples to apples” comparison between communities and care should be taken when interpreting the costs.

Table 6-6: Comparison of Budgets

	Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
Source	Approved FY18 Budget	2017-2018 Amended	2017-2018 Proposed Budget	2018 adopted	2017-2018 Adopted Budget 2017 Recology	2018 budget
Department/ Division	Solid Waste Services	Resource Recovery	Solid Waste Division	Solid Waste & Recycling Department	SF Environment	Solid Waste Management Services
Expenditures	\$96,543,375	\$94,304,132	\$291,139,031	\$40,847,039	SF Environment: \$17,243,160 Recology: \$396,147,587	\$290,443,880
Revenue	\$107,575,550	\$92,302,698	\$272,365,891	\$40,376,038	SF Environment: \$1,165,287 Recology: \$297,014,846	\$307,943,488

Sources: Montgomery County - Rate Model FY18, Austin - FY19 Proposed Budget, King County 2017/2018 Budget – Physical Environment Program Area, Minneapolis – 2018 Budget, San Francisco - Budget & Appropriation Ordinance FY 17 and FY 18, Recology Quarterly Rate Report, Year Ended June 30, 2017, Toronto - 2018 Budget (Converted to USD at an exchange rate of \$0.76 (November 19, 2018))

7 Quantities of Waste Managed

The amount of waste reported managed by each community varies depending on whether or not the community provides services to various sectors and/or whether or not those sectors who are not provided with service by the municipality are required to report on tons of materials diverted and disposed.

Montgomery County, San Francisco and Austin require all sectors to report on waste diverted and disposed. Toronto, Austin and Minneapolis only report residential waste managed by their service providers, whether municipal or contracted. Commercial establishments are not required to report on waste in Ontario, so the City of Toronto does not keep track of large commercial waste, nor do they manage it at any of their facilities.

The following table presents the tons of waste recycled and disposed by each community, including non-residential waste and ICI waste. It should be noted that these amounts do not represent the total amount of materials generated in each community, as each community has different requirements for reporting by various sectors.

Table 7-1: Comparison of Tons of Materials Recycled and Disposed

	Disposed				Recycled				Total
	Single Family	Multi-family	Non-residential	Total	Single Family	Multi-family	Non-residential	Total	
Montgomery County ^a (2017)	153,433	70,098	262,788	486,318	256,556	28,215	331,963	616,733	1,103,052
Austin ^b (2017)	136,448	n/a	n/a	136,448	113,323	n/a	n/a	113,323	249,771
King County (2015)	259,511	137,084	235,537	632,132	325,125	36,034	572,907	934,066	1,566,198
Minneapolis ^b (2017)	81,551	n/a	n/a	81,551	52,044	n/a	n/a	52,044	133,595
San Francisco (2016)	234,128		185,860	419,988	193,899		186,140	380,039	800,027
Toronto ^{b, c, d} (2017)	207,702	244,469	98,127	547,298	366,654	94,213	46,829	507,696	1,054,994

^a Source: Montgomery County, Capture Model CY17. These numbers do not include C&D or non-processibles.

^b Residential (single and multi-family) waste includes some waste from small commercial and municipal facilities.

^c Toronto does not provide collection service to all Multi-family buildings in the city. Tons reported for multi-family represent only those managed by the City.

^d Non-residential waste includes waste direct hauled to the transfer station/drop-off depots which may include some residential waste.

Totals may not add due to rounding.

As mentioned previously, not all communities provide service to the multi-family and commercial sectors, and not all communities report on these sectors and/or require these sectors to report on materials diverted and disposed. It is difficult to make a comparison of waste generation rates between communities when it is unknown what materials are being included in the reported tons of residential waste (i.e. does it include residue from recycling) and whether some portion of non-residential waste is included in the residential tons reported.

Table 7-2 presents a comparison of the estimated daily per capita residential municipal solid waste generation rate. In order to estimate the per capita residential waste generation rate, it was necessary to make some adjustments to the population receiving the service. Toronto’s waste generation rate has been estimated using the population served with City collection to be more representative of the tons reported since there is a segment of the multi-family population that receives private collection which is not reported by the City. An average household size of 2.46 was used to estimate the population served. Toronto’s waste generation rate may appear lower due to the stewardship programs which manage some materials directly. As the City does not manage some materials, such as tires and some quantities of waste electronics, it is unknown what quantities are generated by residents.

Similarly, waste generation rates have been estimated for Austin and Minneapolis for the single family sector only based on the average persons per household from the US Census and the households reported receiving collection. The average household size for Austin and Minneapolis is 2.47 and 2.28 persons per household respectively. Inclusion of the entire population would underestimate the generation rate.

While care should be taken when making comparisons due to the variability in data, it appears that Montgomery has a relatively low residential waste generation rate compared to the other communities.

Table 7-2: Estimated Per Capita Residential Waste Generation Rate

	Residential Rate (lbs./capita/day)
Montgomery County (2017)	2.63
Austin	2.77
King County	2.77
Minneapolis	3.00
San Francisco	2.65
Toronto	2.56

8 Recycling and Diversion Rate

One of the goals of this exercise was to provide a comparison of the recycling rates reported by the jurisdictions to that of Montgomery County using the same methodology as Montgomery County uses.

The following sections provide a breakdown of how the recycling rates are calculated in each community, and how the methodology was adjusted to be consistent with that used by Montgomery County.

It should be noted that Montgomery County uses Maryland Recycling Act (MRA) methodology to calculate the “recycling rate” as the actual tons of material recycled as a percentage of the total waste generated, and the “diversion rate” which includes a source reduction credit (up to 5%) for various waste reduction activities in addition to the recycling rate.

Other jurisdictions typically use the term “diversion rate” to indicate the percent of materials diverted from disposal. For the purposes of this report and to be consistent with the other jurisdictions, the term recycling rate is used; however, it should be noted that most municipalities report on a diversion rate.

It should be acknowledged that a reported recycling or diversion rate may not truly reflect all waste diversion activities conducted by a community. There may be additional activities that are not reported such as use of materials as alternative daily cover, or other waste reduction activities that are difficult to report on as tons recycled.

8.1 Austin

Austin reports on tons of waste from single family only. Items are considered as Disposed (including garbage, litter, mixed litter, sweepings, dead animals) and Diverted (including brush, bulk, mattresses, mulch, recycled metal, single stream recycling, tires, yard trim and Christmas trees). In 2017, a diversion rate of 45.4% was reported. Using the MRA methodology, a recycling rate of 45.4% was calculated as all the materials recycled are consistent with that methodology.

Table 8-1: Austin – Tons of Single Family Waste Recycled and Disposed (2017)

Disposed	Tons
Garbage	131,718
Litter	80
Mixed Litter	293
Sweeping	4,311
Dead Animals	46
Total	136,448
Recycled	Tons
Brush	8,374
Bulk	11,160
Mattress	5
Mulch	660
Recycled Metal	8
Recycling-Single Stream	59,060
Tires	189
Yard Trim/SSO	33,868
Total	113,323
Total Generated	249,771
Calculated Recycling Rate	45.4%

Source: <https://catalog.data.gov/dataset/waste-collection-diversion-report-daily>

8.2 King County

King County includes the known amount of materials diverted from landfill and does not include C&D debris or car bodies that are handled by the private sector.²³ King County's reporting methodology is consistent with MRA methodology. The following table presents the tons of materials recycled and disposed and the calculated recycling rate.

Table 8-2: King County – Tons of Single Family, Multi-family and Non-Residential Materials Disposed and Recycled (2015)

Material	Single Family		Multi-family		Non-residential		Total
	Recycled	Disposed	Recycled	Disposed	Recycled	Disposed	
Recycling	138,932	54,336	31,114	31,848	273,113	68,447	77,936
Food scraps & food soiled paper	293	89,848		44,445	110,940	72,920	318,446
Clean wood					27,186	9,629	36,815
Yard Trim	160,463	7,285	1206	3,157	10,303	8,614	191,028
Scrap metal	15,101	6,895	3315	3,733	54,524	6,895	90,463
Carpet and pad, furniture & mattresses						4,748	4,748
Other materials ¹	10,336	101,147	399	53,901	96,841	64,284	326,908
Total	325,125	259,511	36,034	137,084	572,907	235,537	1,566,198
Calculated Recycling Rate	55.6%		20.8%			70.9%	59.6%

¹ Other materials includes latex paint, toner and ink cartridges, photographic film, tires and other materials reported as recycled to the Department of Ecology in response to annual recycling surveys.

Source: King County 2019 Comprehensive Solid Waste Management Plan

²³ King County 2019 Comprehensive Solid Waste Management Plan, July 2018

8.3 Minneapolis

Minneapolis reports on single family waste only and its residential recycling rate is calculated as follows:

Total tons MSW = Waste to Energy + Recycling + Other Recycling + Composted + Landfilled

% Recycled = (Recycling + Other Recycling (e.g. ferrous and non-ferrous scrap metal accepted by scrap dealers, electronics and mattresses) / Total MSW

Any credits from Waste to Energy are not included in the recycling rate. For the purpose of comparing to Montgomery County and to be consistent with MRA methodology, it was assumed that a portion of the back-end metals from Hennepin Energy Recovery Center (HERC) could be attributable to Minneapolis although this tonnage is not reported by Minneapolis. Approximately 75% of the waste managed at HERC is generated by Minneapolis and approximately 11,400 tons of scrap metal are recycled. Assuming the single family sector generates approximately 35% of the waste disposed at HERC, it was assumed that 2,993 tons of back end metals could be considered as diverted by Minneapolis, similar to what Montgomery County claims.

The following table presents the tons of single family materials disposed and recycled, consistent with MRA methodology.

Table 8-3: Minneapolis - Tons of Single Family Materials Disposed and Recycled (2017)

Disposed	Tons
Trash	81,551
Recycled	Tons
One-Sort Recycling	27,235
Mattresses	926
Appliances & Scrap Metals	1,030
HHW	20
Tires	111
Electronics	487
Source Separated Organics	4,763
Yard Trim	17,473
Back End Metal	2,993
Total Recycled	55,037
Total Generated*	133,596
Calculated Recycling Rate	45.4%

Source: <http://www.minneapolismn.gov/solid-waste/about/stats/WCMSP-208551>
(Accessed August 29, 2018)

*Note that back end metal counts toward diversion but not towards total generated as it is removed post processing.

8.4 San Francisco

San Francisco does not report on diversion or recycling, instead they use a disposal rate, consistent with the State’s reporting requirements. San Francisco reports on tons managed from the residential, commercial and C&D sectors and includes sustainable crushing and adjusts tons managed from changes due to inventory, moisture etc. Various internet sources cite an 80% diversion rate. In addition to the approximately 55% of materials reported as diverted by Recology (including all sources of waste (i.e. C&D, sustainable crushing, adjustments for inventory, moisture etc.)), San Francisco has indicated there is additional diversion through private recyclers, including C&D recyclers who recover large tonnages of concrete, wood and metal and contribute to the 80% diversion rate.

For the purposes of calculating a recycling rate with the same methodology as Montgomery County, the following materials were considered as generated by the C&D Sector and not included in the recycling rate calculation: inerts, construction material reuse, sustainable crushing, and debris box collection. The City includes an allowance for moisture loss which was not included in the calculation of the recycling rate.

Recology reports on materials managed as Tunnel Avenue Trash, Compostables, MRF, Recycle Central Recyclables, other sources of source separated waste, sustainable crushing and direct material recycling – debris box collection. The various materials from these areas were allocated to public (i.e. residential), commercial and C&D sources.

The following table presents the tons of residential and commercial materials diverted and disposed, consistent with MRA methodology.

Table 8-4: San Francisco – Tons of Residential and Commercial Recycled and Disposed (2016)

	Residential		Commercial		Total
	Recycled	Disposed	Recycled	Disposed	
Trash	22,716	213,040	6,824	133,197	375,776
Recycling	106,935	16,818	79,497	46,251	249,501
Compostables	64,248	4,270	99,819	6,412	174,749
Total Recycled	193,899		186,140		380,039
Total Disposed		234,128		185,860	419,988
Total Generated					800,026
Calculated Recycling Rate	45%		50%		48%

Source: Recology, Rate Application 2016, Schedule E

8.5 Toronto

Toronto only reports on residential waste diverted, which includes some small commercial waste collected along with residential waste. The ICI sector in Ontario is not required to report waste generated so it is unknown how much or what type of ICI waste is disposed/diverted in Toronto.

Toronto calculates its diversion rate according to the following formula:

Total Waste Generated = Trash + Recyclables + Yard Trim + Green Bin Organics + Other (includes Electronics, Appliances, Scrap Metal, HHW, Material collected at Environment Days/Drop-off Depots, Allowance for deposit containers (beer/spirits/wine bottles & cans), Allowance for grasscycling and backyard composting)

Total Diverted = Blue Bin Recycling + Yard Trim + Green Bin Organics + Other

Diversion Rate = Total Diverted / Total Waste Generated

For the purposes of calculating a recycling rate with the same methodology as Montgomery County, the allowance for backyard composting, tires, deposit return, stewardship programs and grasscycling was not included. Note that some tires are managed directly by the City and sent for recycling but the majority are not managed by the City. It should be noted that the quantities of single-family and multi-family materials may include some component of non-residential waste collected on residential routes (e.g. from schools, places of worship etc.). The quantity of non-residential and direct hauled waste to the transfer station may include some component of waste generated by the residential sector. Non-residential waste also includes materials generated by commercial, City agencies/boards/ commissions/departments and non-profits. Table 8-5 presents the tons of residential and non-residential waste recycled and disposed as per MRA methodology for waste managed by the City.

Table 8-5: Toronto – Tons of Residential and Non-residential Waste Recycled and Disposed (2017)

	Single Family	Multi-family	Non-Residential & Direct Haul to Transfer Station	Total
Trash Disposed	204,702	244,469	98,127	547,298
Recycling	142,192	65,555	21,504	229,252
Source Separated Organics	134,966	27,019	12,846	174,831
Leaf and Yard Trim	84,328	0	12,478	96,806
Electronics	663	442	0	1,105
Other (Porcelain, Tires)	531	287	0	818
Mattresses	842	561	0	1,403
White Goods	3,132	348	0	3,480
Total Recycled	366,654	94,213	46,829	507,696
Total Disposed	204,702	244,469	98,127	547,298
Total Generated	571,356	338,682	144,956	1,054,994
Calculated Recycling Rate	64.17%	27.82%	32.31%	48.12%

Source: [Information provided by City of Toronto](#)

*Totals may not add due to rounding

8.6 Comparison of Tons Recycled and Disposed

The following table provides a comparison of the major categories of materials recycled and disposed as well as a comparison of the percent recycling calculated and reported.

The percent recycling calculated reflects the MRA methodology which may have resulted in a change from the reported recycling rate depending on what materials were counted as diverted. For instance, the City of Toronto’s reported residential recycling rate of 53% is for primarily residential waste (with some small commercial collected with residential waste) only and includes credits for materials diverted through stewardship programs, including deposit containers, and tires, as well as credits for grasscycling and backyard composting. These items were not included in the calculated recycling rate to be consistent with the MRA methodology. Additional tons of non-residential waste managed by the City were included to give a more accurate picture of the total waste managed. In the case of Minneapolis, an estimated rate of recovery of back-end metals was added to the tons diverted to be consistent with Montgomery County methodology. For San Francisco, only residential and commercial waste were included in the diversion rate calculation. Tons of C&D waste were not included in the calculations for any community.

The following table presents the tons of materials managed by each community, reported to be consistent with the MRA methodology, and also presents the calculated recycling rate consistent with MRA methodology as well as the reported recycling rate using the community’s own methodology.

Table 8-6: Comparison of Tons Recycled and Disposed and Recycling Rate

		Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
	Sectors	Single Family, Multi-family, Non-Residential	Single Family, some Non-Residential	Single Family, Multi-family, Non-Residential	Single Family	Single Family, Multi-family, Non-Residential	Single Family, Multi-family, some Non-Residential
	Materials Recycled						
A	Recycling (commingled containers and fibers)	171,356	59,060	443,159	27,235	141,902	229,252
B	Appliances/Metal	7,714	11,173	72,940	1,030		3,480
C	HHW	2,472			20		
D	Electronics	2,235			487		1,105
E	Yard Trim	160,609	42,902	171,972	17,473		96,806
F	Source Separated Organics ¹	10,774		111,233	4,763	164,067	174,831
G	Other ²	98,455	189	134,762	1,037	74,069	2,221
H	Metals Recovered from RRF	7,039			2,993		
I	Recycled Ash from RRF	156,080					
J	Total Materials Recycled (A+B+C+D+E+F+G+H+I)	616,734	113,323	934,066	55,037	380,039	507,696
K	Total Disposed	486,317	136,448	632,132	81,551	419,988	547,298
L	Total Generated (J+K)	1,103,051	249,771	1,566,198	133,596	800,026	1,054,994
M	Calculated Recycling Rate (J/L)	55.9%	45.4%	59.6%	45.4%	47.5%	48.1%
N	Reported Recycling Rate	55.9%	45.4%	59.6%	37.4%	>80%	53.0%

		Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
	Methodology Comparison	MRA Does not include tons of C&D recycled or disposed nor does it include non-processibles.	Same as MRA	Same as MRA	Does not include tons of C&D recycled or disposed. Includes estimated quantities of back end metal from HERC.	Does not include any C&D waste, sustainable crushing or adjustments for inventory or moisture.	Reported recycling rate is residential only and includes credits for grasscycling, and materials managed through stewardship programs (converted to tons). Calculated includes additional tons managed from other non-residential sectors.

¹ Materials included as source separated organics are described for each community in previous sections, but in general include food scraps (meat, dairy, vegetative waste) and food soiled paper. It may include yard trim depending on how materials are collected and reported.

² Materials included in the “other” category vary by community but in general may include materials such as mattresses, tires, latex paint etc. collected for recycling. These are further described for each community in previous sections.

9 Regulatory Mechanisms

The following sections provide an overview of various regulatory mechanisms used by the communities to reduce and manage waste and that have been implemented as part of a drive to zero waste.

9.1 Austin

Universal Recycling Ordinance (URO)²⁴– The City phased in this ordinance over 5 years with the final phase rolled out on October 1, 2018. The URO requires property owners to provide on-site convenient recycling services to tenants and employee. All food service establishments (e.g. a business with a food service permit) are required to provide employees with convenient access to methods of keeping food scraps and other organic material out of landfills. This includes any food enterprise that requires a food permit. An annual Organic Diversion Plan will need to be filed by the person responsible for organics diversion.

- Single Use Carryout Bag Ordinance²⁵ – Austin City Council approved this ordinance in 2012 and the ordinance became effective in 2013. The ordinance prohibits the provision of single use carryout bags by businesses or at any City facility, city-sponsored event, or any event held on City property. In 2018, the City announced it would no longer be enforcing this ordinance due to a Texas Supreme Court ruling that a similar ban in Laredo violated state law.
- Construction and Demolition Recycling Ordinance²⁶ – This ordinance began in 2016 and applies to construction projects larger than 5,000 square feet. In 2019, the ordinance will apply to all commercial demolition projects. Projects must do at least one of the following; divert at least 50% of construction project debris or dispose of no more than 2.5 pounds of material per square foot of floor area.
- Take Back Ordinance - The City of Austin has not yet incorporated a Take Back Ordinance, shifting disposal costs from taxpayers to product manufacturers, however it is being addressed and considered in their Master Plan.²⁷

9.2 King County

- Jurisdictions in King County have their own individual ordinances regarding waste. Under the Revised Code of Washington (RCW) 81.77.020 and 36.58.040, counties within Washington State are prohibited from providing their own curbside collection services. RCW 81.77 allows cities; however, to provide their own collection services. The Washington Utilities and Transportation Commission (WUTC) regulates collection and sets and adjusts rates.

²⁴ <http://www.austintexas.gov/uro>

²⁵ <https://1bagatatime.com/learn/guide-bag-bans/austin-bag-ban/>

²⁶ <http://www.austintexas.gov/cd>

²⁷ http://austintexas.gov/sites/default/files/files/Trash_and_Recycling/PublicMasterPlan_lowres.pdf

- Title 10: Solid Waste Code²⁸, revised in November 2018, provides recommendations and general guidelines that the City should follow. The code suggests implementing an in-house recycling and waste reduction program that incorporates an environmental policy of purchasing recycled products and green building practices. Residential recycling services in the unincorporated areas may be voluntary but available to single family dwellings. The code also provides waste reduction and recycling policies such as identifying primary and secondary recyclables, management of recyclable materials and yard trim at the transfer station.
- Green Building Ordinance- In 2001 the Green Building Initiative was adopted in December 2013. This ordinance creates standards for building designs. Reporting requirements include greenhouse gas savings, energy and water savings, waste diversion rates, and annual issues from the project manager yearly.²⁹ All eligible renovation and remodel projects are required to achieve LEED Certification.

9.3 Minneapolis

- Bring your own bag ordinance – In 2016, Council approved an ordinance to regulate the use of plastic carryout bags in retail establishments. The ordinance was to take effect on June 1, 2017; however, state lawmakers barred local communities from banning plastic carryout bags. In August 2017, Council declined to vote on the ordinance and asked staff to come back with a recommendation for reducing plastic waste. It does not appear there have been any further recommendations.
- Multi-family recycling ordinance³⁰ – As of 2009, all apartment building owners are required to provide their tenants with the opportunity to recycle.
- Commercial recycling ordinance³¹ – As of 2011, all Minneapolis commercial and business property owners are required to offer recycling. Regular collection (at least twice per month), adequate recycling containers, collection and storage areas, written recycling information for tenants and a written recycling plan must be provided.

9.4 San Francisco

- Single use plastic checkout bag ban³² – This ordinance banned the use of plastic bags less than 2.25 mils, and allowed only the use of reusable bags (cloth or thicker plastic). In 2012, the

²⁸ https://www.kingcounty.gov/council/legislation/kc_code/13_Title_10.aspx

²⁹ <https://kingcounty.gov/~media/depts/dnrp/solid-waste/green-building/documents/sustainable-scorecard-guidelines.ashx?la=en>

³⁰

https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=COOR_TIT11HESA_CH225GARE_ARTVIREBUHATWMODWUN#TOPTITLE

³¹

https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=COOR_TIT9FIPOPR_CH174MIFIDEFIPRBU_ARTIVCOBURERE_174.435RECOBU

³² <https://sfenvironment.org/checkout-bag-ordinance>

ordinance was modified to institute a 10 cent fee on carryout bags, expanded the stores covered by the ban and fee to include all retail establishments and to food establishments. The definition of a reusable bag also was changed to specify it must be made for at least 125 uses and carry 22 pounds over a distance of 175 feet.

- Plastic, toxics and litter reduction ordinance³³ – Passed in 2018, this ordinance bans the sale and distribution of single-use plastic and bio-plastic straws, utensils, stirrers and similar items, and food ware containers that contain fluorinated chemicals. The ordinance further requires that all single-use food ware and accessories must be compostable (accepted by the City's composting program) or recyclable. The ban takes effect July 1, 2019.
- Food service waste reduction ordinance³⁴ - Bans polystyrene and other non-recyclable, non-compostable food service items.
- C&D debris recovery ordinance³⁵ – C&D debris must be transported by a registered C&D provider to a registered C&D recycling facility (not a landfill) that can process the debris and divert at least 65% from landfill. This ordinance applies to all commercial and residential indoor and outdoor construction projects including repairs, improvements, additions, remodeling, and demolitions.
- Green Building Code- In 2008, the City adopted green building requirements to new construction projects for residential and commercial buildings and to major renovation projects. These requirements are intended to reduce energy and water use, divert trash from a landfill, encourage alternative modes of transportation, keep noise levels to a minimum, and improve the health of San Francisco residents.
- Event recycling and composting ordinance³⁶ – Every event held in San Francisco must offer recycling and composting.
- Cigarette litter abatement ordinance³⁷ – Every cigarette retailer is responsible for paying a cigarette litter abatement fee of \$0.75 per pack of cigarettes sold to offset the cost of managing cigarette litter.
- Mandatory Recycling and Composting Ordinance³⁸– Requires the separation of recyclables, compostable materials, and trash from commercial and residential properties. This ordinance also requires businesses and residents to participate in the recycling and composting programs.

³³ <https://sfenvironment.org/download/plastic-and-litter-reduction-ordinance-factsheet>

³⁴ Food service waste reduction ordinance

³⁵ <https://sfenvironment.org/construction-demolition-requirements>

³⁶ <https://sfenvironment.org/event-recycling-and-composting>

³⁷ <http://www.greencitiescalifornia.org/zero-waste-1/san-francisco-cigarette-litter-abatement-fee>

³⁸ <https://sfenvironment.org/recycling-composting-faqs>

- Introduction of an ordinance to require audits every 3 years of large waste generators for compliance with waste separation requirements and to establish enforcement measures for non-compliance.

9.5 Toronto

- Plastic Bag Ban and Bag Fee³⁹: In 2009, the City introduced a mandatory 5 cent fee on plastic bags. In 2012, City Council reversed the fee as a result of legal challenges from the Ontario Convenience Stores Association and the Canadian Plastic Bag Association. The City proposed a total ban on plastic bags but this initiative was never carried forward due to opposition from retailers and associations. Most major grocery stores have continued to charge the 5 cent fee on plastic bags.
- The City has a number of by-laws and standards which incent and mandate participation in diversion programs. The City's waste collection by-laws require all customers, including multi-family dwellings, to participate in the Blue Bin materials and Green Bin organics programs to receive trash collection.
- In Ontario, Extended Producer Responsibility (EPR) programs are in place for agricultural products (pesticide, solvents and fertilizer and containers, seed and pesticide bags), tires, alcoholic beverage containers, WEEE, paint, HHW, fluorescent lamps (ICI only), pharmaceuticals, and refrigerants. Stewardship programs are in place to help fund the management of recyclable materials.⁴⁰
- The City also has Green Standards⁴¹ related to sustainable site and building design for new public and private development. The standards are designed to work with the regular development approvals and inspections process. Achieving the requirements contributes towards LEED certification and a decrease in development charges. The standards provide guidelines for the storage and collection of waste, management of C&D waste, and recycled content.
- Event Recycling – all events requiring a City permit must offer recycling and composting diversion.

9.6 Summary of Ordinances, Regulations, By-laws

Many communities, including Montgomery County, have implemented ordinances, regulations and/or by-laws to enforce diversion by various sectors. Many of these are driven by state or

³⁹ <https://www.toronto.ca/311/knowledgebase/kb/docs/articles/311-toronto/information-and-business-development/plastic-retail-shopping-bags-5-cent-charge-plastic-bag-ban.html>

⁴⁰ In 2016, the Province of Ontario introduced the Waste Free Ontario Act, Bill 151, intended to reduce waste and recover resources. As part of the Act, a strategy has been developed to move to Individual Producer Responsibility (IPR). With a recent change in provincial government, progress on IPR has stalled and its future is uncertain. IPR would force producers to be responsible for end-of-life management of their products and packaging.

⁴¹ <https://www.toronto.ca/city-government/planning-development/official-plan-guidelines/toronto-green-standard/>

provincial regulations. San Francisco has the greatest number of ordinances, followed by Montgomery County.

The success of an ordinance greatly depends on the ability of the municipality or jurisdiction to provide outreach and/or enforcement and the resources available to do so. Additionally state regulations play a big role in the success of an ordinance rather than a municipality trying to implement an ordinance on its own. Both California and Maryland are progressive states in implementing waste reduction and diversion goals that support individual municipal efforts to reduce waste. Both Minneapolis and Toronto have tried to implement plastic bag bans but were not successful for a variety of reasons.

The following table provides a comparison of the municipal regulatory mechanisms implemented by Montgomery County and the other jurisdictions.

Table 9-1: Comparison of Municipal Regulatory Mechanisms

	Montgomery County	Austin	King County	Minneapolis	San Francisco	Toronto
Mandatory Recycling	Residential and Commercial	Multi-family and Commercial	No	Multi-family and Commercial	Residential and Commercial	No
Yard Trim Disposal Ban	Yes, MD 9-1724	No	No	No	No	Grass is banned
Mandatory Composting	Yes	Multi-family and Commercial	No	No	Residential and Commercial	No
Plastic Bag Ban/Fee	Fee for bags	Yes, but not enforced	Depends on local municipality	Overtured	Yes	Overtured
Disposal of Recyclable Materials Ban	Yes, ER 18-04	No	Yes	No	Yes	No
Mandatory C&D Recycling	No	Yes	No	No	Yes	No
Ban on polystyrene and non-compostable food service items	Yes	No	No	No	Yes	No
Plastic, toxics and litter reduction	Partial	No	No	No	Yes	No
Mandatory Event Recycling	Yes	No	No	No	Yes	Yes
Cigarette litter abatement ordinance	No	No	No	No	Yes	No
Compliance audits for large generators	Yes	No	No	No	Yes	No
Requirements for Reporting by Generators not serviced by Municipality	Yes Business with more than 100 employees	Yes	No	No	Yes	No
Requirements for Reporting by private haulers	Yes	Yes	Yes	Yes	Yes	No
EPR Programs	No	No	Yes	No	Yes	Yes
Green Building Program	Yes, ER 19-07	No	Yes	Yes	Yes	Yes

10 Zero Waste Goals/Policies

Many of the communities in this report have either stated or aspirational goals of reducing waste or achieving zero waste.

- Austin City Council has set a goal of Zero Waste by 2040, interpreted as reducing the amount of trash sent to landfills by 90% by 2040 from the date the Zero Waste Strategic Plan was adopted in 2009.
- King County has adopted a policy to work toward Zero Waste by 2030. In 2004, the County adopted “Zero Waste of Resources”, as a principle intended to eliminate the disposal of materials with economic value. The County’s goal is to achieve zero waste of resources, by 2030 with an interim goal of 70% recycling through a combination of efforts in the following priorities: waste prevention and reuse, product stewardship, recycling and composting and beneficial use. Zero Waste does not mean that no waste will be disposed, rather that feasible and cost-effective efforts will be made to prevent, reuse and reduce waste to the extent possible.⁴²
- In 2015, Minneapolis published a goal to recycle and compost 50% of its city-wide waste by 2020 and 80% by 2030. The resolution also called to achieve zero-percent growth in the City’s total waste stream from levels set in 2010.
- San Francisco has adopted goals of 75 percent landfill diversion city-wide by 2010 and zero waste to landfill by 2020. Zero waste means zero discards to the landfill or high temperature destruction. The City’s mayor has acknowledged that the City will not achieve this goal and has set a new goal of reducing the amount of waste generated per person by at least 15% and to reduce the amount of trash incinerated⁴³ or landfilled, compared to the present tonnage of 600,000 tons per year, by 50% by 2030 compared to 2015 levels.
- Toronto’s original goal was 70% diversion by 2010, but as that goal was not achieved, a new goal of 70% diversion by 2026, with an aspirational goal of working towards a Zero Waste future.
- Montgomery County has a goal to recycle 70% of its waste stream by the end of 2020.

The following table provides a summary of the zero waste or recycling/diversion goals for each community.

⁴² 2018 Solid Waste Management Plan

⁴³ A small amount of medical waste is incinerated.



Table 10-1: Zero Waste/Recycling Goals and Timing

	2020	2025	2026	2030	2040
Montgomery County	Recycle 70%				
Austin	75% diversion	85% diversion			Reduce the amount of trash sent to landfills by 90%
King County				Recycle 70%	
Minneapolis	Recycle and compost 50% of its citywide waste			Recycle and compost 80% of its citywide waste	
San Francisco	Original Goal - Zero waste to landfill			Revised Goal - Reduce amount of waste generated per person by 15% and reduce landfilled trash by 50%	
Toronto			70% diversion and aspirational goal of zero waste		

10.1 Programs/Policies Supporting Zero Waste Goals

The following sections provide an overview of the various methods each community uses to encourage participation in diversion programs as well as other programs that may be of interest to the County. Each community uses different methods to support their zero waste goals such as incentives to residents, education and outreach programs, and options for reuse. These are in addition to ordinances and regulations described earlier.

10.1.1 Austin

Austin has several incentives to reduce waste, recycle, and compost. These include:

- PAYT program that charges extra for larger trash carts on a monthly basis, a \$15 one-time fee to upgrade to a larger cart, a fee of \$9.60 + tax for every extra bag collected, and \$4 + tax for every extra trash tag.
- Home Composting Rebate Program which allows residents of Austin to earn \$75 off a home composting system. To qualify, residents must currently pay the Clean Community Fee and attend a composting class in person or online.
- Businesses may qualify for a \$1,800 rebate to start, expand, or improve their recycling and composting programs.⁴⁴

⁴⁴ <http://www.austintexas.gov/zwbizrebate>

- Instead of collecting bulk waste twice a year, the City is testing an on-call request system whereby residents can call to request collection of bulk waste up to three times annually. Residents must identify the items to be collected so the City can send out an appropriate collection vehicle.
- Other programs such as the Zero Waste Professional Certificate Program for business professionals and Pledges to Recycle.
- Zero Waste Rebates to make outdoor events more sustainable. Up to \$750 is available as a rebate to qualifying events to offset costs of waste reduction and diversion services.
- Curbside collection of textiles and housewares for reuse and/or recycling.
- A curbside collection pilot program for food scraps is available to 90,000 households using 32-gallon wheeled carts.

10.1.2 King County

Washington State Legislation, Revised Code of Washington (RCW) 81.77.185 gives private collection companies the opportunity to retain 50% of the revenue they receive from recycling. This is intended to act as an incentive for haulers to enhance their recycling collection services. Before this was created, residents would receive a credit back on their trash bills for recycling. Haulers must qualify for the revenue sharing.⁴⁵

King County is also involved in a program called LinkUp which works to expand markets for materials such as mattresses, carpets, textiles, and asphalt shingles. This program also creates “Take Back” Programs which offers a safe and easy way to recycle unique materials. A Mattress Recycling Summit was held in May 2017 as well as in 2011 and 2014. The Summit participants are working to increase mattress recycling by making it more convenient and available. LinkUp also works on a carpet recycling project to increase carpet recycling in Washington. Reuse of textiles can be done through Threadcycle, a public education campaign of King County, which recycles and reuses clothes, shoes, and linens. LinkUp Shingles is a Paving Project that works to establish a hot mix asphalt that could be created from recycled asphalt shingles.⁴⁶

10.1.3 Minneapolis

Minneapolis provides two sizes of trash carts, residents pay more for larger carts, and less for the smaller carts. Collection of other waste streams are included in the cost of trash disposal and are not subject to additional fees. Residents may also receive weekly curbside collection of source separated organics through a subscription.

10.1.4 San Francisco

San Francisco has developed a number of incentives to reduce waste, recycle, and compost. These include:

⁴⁵ <https://app.leg.wa.gov/rcw/default.aspx?cite=81.77.185>

⁴⁶ <https://kingcounty.gov/depts/dnpr/solid-waste/programs/linkup.aspx>



- San Francisco uses a PAYT system for waste collection with the base level of service including the smallest size of trash container (smaller than the green and blue bins) to incent participation in diversion programs. The pricing/volume structure was recently overhauled to reduce the size of the base trash container to further encourage diversion.
- The City restricts the number of bulky item collections - residential customers get two bulky item collections annually, multi-family tenants get one bulky item collection annually, multi-family owners/operators get one bulky item collection / building annually.
- Businesses receive a discount (up to 75%) on the waste collection rates if materials are consistently and properly sorted into the three bins.
- San Francisco has decided to work with one service provider to reduce administrative costs and collaborate on long term goals. Although a somewhat contentious issue at times, there are advantages to this model.
- Textiles are collected at the curb for recycling and reuse twice annually.
- Source separated organics are collected weekly.

10.1.5 Toronto

The City of Toronto utilizes a number of mechanisms to reduce waste and increase diversion:

- Customers are only charged for trash collection – curbside collection of recycling, organics, yard trim and electronics is provided at no additional charge.
- Excess trash may only be placed out for collection with a trash tag costing ~ \$4 (USD).
- Customers will only receive trash collection if they participate in diversion programs.
- Trash is collected every other week. Source Separated Organics are collected weekly.
- Implemented the “Love Food Hate Waste” campaign to reduce food waste.
- Chute closure program whereby multi-residential buildings may close their garbage chutes to discourage residents from disposing of divertible materials in the garbage chute. Certain eligibility requirements must be met including sufficient space for storage of waste containers, support by 51% of the residents, communication plan etc.
- Waste Reduction Community Grants are offered which support innovative community-led actions that reduce residential waste and increase participation in the City’s waste diversion programs.
- Five new Neighborhood Reduce and Reuse Projects started in 2018. These included the Urban Harvest (redistribution of surplus food), Sewing Workshops (textile repair), Community Composting, Bike Repair, and Sharing Libraries.
- As part of the recommendations in the recently developed Waste Strategy, the City established a Unit for Research Innovation and a Circular Economy and is investigating reporting on new metrics, including; reduction in per household waste generation rates, reduction in GHG emissions, measuring reuse and overall reduction of waste disposed to landfill.



- The City recently rolled out a TOwaste App for mobile phones. In addition to providing collection schedules and a waste wizard to look up proper sorting of materials, the app also provides information on locations of drop-off depots to properly dispose of items such as HHW and locations for donation or purchase of used items to promote reuse.
- Recognizing the challenge in increasing diversion rates in multi-family buildings, the City is investigating the feasibility of Mixed Waste Processing with Organics Recovery as a method of recovering materials, primarily from multi-family waste.

11 Best Practices for Consideration by Montgomery County

The best practices observed in the communities against which Montgomery County was benchmarked fall generally into the following categories: financial, physical, regulatory, administrative, and programmatic.

The following is a summary of the best practices utilized by other communities that could be considered by Montgomery County.

Financial:

- Making trash disposal the most expensive option, or by providing collection of other materials (i.e. not trash) at no additional cost.
- Providing a discounted collection rate for proper and consistent diversion.
- PAYT program.
- Discouraging the disposal of excess trash by the requirement for a tag/sticker.
- Making grants or rebates available to businesses to purchase equipment required to properly participate in diversion programs.
- Providing grants for communities to support programs/actions to reduce waste and increase participation in diversion programs.

Physical:

- Providing a standardized collection container which limits the amount of trash that can be set out. Residents may have some choice in the size of container required for their household. There may be some allowances for occasional disposal of excess trash through the use of bag tags/stickers.

Regulatory:

- Implementing ordinances that enforce diversion to include SSO diversion, if implemented or additional material bans.
- Phasing in ordinances over a number of years in consultation with those parties affected to ensure businesses and residents have time to prepare for implementation.
- Advocate for stewardship and/or extended producer responsibility (EPR) programs

Programmatic:

- Less frequent trash collection. Once the appropriate diversion programs are in place, trash can be collected on a less frequent basis (e.g. every other week) to encourage diversion.
- Collection of divertible materials (e.g. recycling) more frequently than trash.
- Restrictions on the number of bulk trash pickups and the number of items set out for collection.
- Curbside collection of textiles, housewares, electronics, HHW.
- Reuse areas at Drop-off Centers.
- Multiple Drop-off Centers.
- Consistent level of service in entire jurisdiction (i.e. provide trash collection to entire County).
- Provision of curbside collection of SSO (e.g. food scraps).
- Support for waste reduction, reuse and recovery projects.
- Development of a mobile app to assist residents with recycling/sorting information as well as information on reuse opportunities.

Administrative:

- Reducing the number of contracts with private service providers to help reduce administrative costs and provide more flexibility for programmatic changes.
- Reporting on waste disposal instead of waste diversion as a performance metric.

12 Summary

Montgomery County spans a large geographic area compared to the other communities, reflected in the low population density. Roughly thirty percent of its population is foreign born, and overall, Montgomery County has the highest median income of the benchmarking communities.

In general, Montgomery County provides a similar suite of services and level of service compared to other communities in terms of providing collection of trash, recycling, leaf and yard trim, scrap metal and bulk trash. It is the only jurisdiction of those benchmarked in this report without a food scraps collection program. Montgomery County accepts the greatest range of materials at its drop-off area at the Shady Grove Processing Facility and Transfer Station for diversion.

Compared to the other communities, Montgomery County:

- Provides differing levels of service to residents in different areas of the County
- Does not utilize a PAYT program
- Has a dual stream recycling program and provides weekly collection of recyclables
- Does not provide a curbside food waste collection program

- Provides a reasonable level of service for bulk trash collection (between no service and weekly service)

In terms of municipal infrastructure, assets and services provided, many of the benchmarking communities contract out processing and disposal services so do not own any infrastructure or waste collection vehicles. Montgomery County is unique in that it owns a significant amount of processing and disposal infrastructure used to manage trash, recycling and yard trim.

Montgomery County has developed and instituted a considerable number of regulatory mechanisms through ordinances developed to divert more materials. Only San Francisco has more regulatory mechanisms, in part driven by State requirements.

On a per capita basis, Montgomery has a low residential waste generation rate, based on estimates for population served and tons managed. Overall, Montgomery has a very robust reporting system compared to the other communities whereby all sectors/haulers are required to report on quantities of waste generated and how they are managed. Having reliable data enables recycling rates to be accurately reported, verified and tracked over time. Other communities may not require reporting by all sectors/haulers or do not keep areas/sectors segregated which makes allocation to various sectors more difficult and reporting on sectors less accurate.

Montgomery County has the third highest reported recycling rate; San Francisco has the highest anecdotally reported recycling rate and King County has the second highest. It is difficult to draw comparisons between recycling and recycling rates as not all municipalities calculate rates the same way, and utilize credits for various activities. San Francisco has moved away from use of a recycling rate and instead reports on waste disposal rates.

When recycling rates were calculated using the MRA recycling and diversion rate as Montgomery County uses, King County had the highest calculated recycling rate, (although this might change with more recent tonnage information). Montgomery County had the second highest calculated recycling rate, however, it should be noted that the amount of ash recycling and recovery of back-end metals are allowed under the MRA recycling calculation and not in the other communities benchmarked.

All communities have zero waste goals with various intentions and wording. Some have specific goals and others are more general. Many of the communities have had these goals for many years and have shifted the timing and intent of the goals when it became apparent the goals would not be achieved. Factors outside of municipal control have had a significant impact on achieving goals, particularly those associated with diversion, due to changes in packaging, consumer habits etc. With this in mind, some communities have made or are considering changes to their waste management programs to enable them to reach their goals. For example, the City of Toronto is investigating the feasibility of Mixed Waste Processing with Organics Recovery as a tool to reach their diversion goals.

All communities have developed programs and policies to support their zero waste goals and increase diversion to varying degrees. Montgomery County actively promotes waste reduction and reuse through education and outreach, however, does not have specific programmatic policies to disincentivize trash compared to other communities. All communities benchmarked in this report disincentivize trash, either through volume based fees, charging for trash collection only or reduced



collection frequency. All communities included in the benchmarking study offer some type of incentive (e.g. grants, discounts, revenue sharing) for participating in diversion programs. Similar to Montgomery County, all communities have or support waste reduction and reuse programs. Montgomery County's diversion programs at Shady Grove are the most comprehensive however, residents are required to drop-off materials themselves. Some other communities provide curbside collection of some additional divertible materials.

The fees that Montgomery County charges to its customers are the lowest among the benchmarking communities for a comparable level of service, noting that Montgomery County is the only community without a food scraps collection program. Montgomery County has no financial incentives to divert more materials with a relatively low annual fee to the homeowner and generous setout limits (e.g. 5 bags of trash weekly).

In summary, Montgomery County has a very comprehensive waste management program, on par with others in the nation. Although the County continues to improve their programs, and conduct outreach and education, recycling rates have remained relatively constant over the last few years. It is clear that in order to increase diversion, the County will have to make some changes to their program which could include initiatives such as curbside collection of additional recyclables (e.g. textiles, electronics, housewares), diversion of additional materials (e.g. food waste), financial incentives to divert more material (e.g. PAYT, grants, rebates), provision of a uniform level of service etc. These options will be considered as part of Task 5.

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